

Lindab **Safe Air Duct System**

Product overview

Lindab®

For a better climate

Most of us spend the majority of our time indoors. Indoor climate is crucial to how we feel, how productive we are and if we stay healthy.

We at Lindab have therefore made it our most important objective to contribute to an indoor climate that improves people's lives. We do this by developing energy-efficient ventilation solutions and durable building products. We also aim to contribute to a better climate for our planet by working in a way that is sustainable for both people and the environment.

Lindab | For a better climate

Lindab Safe & Safe Click

As a result of this tight and high quality ventilation system with quick mounting time you will save both time and cost. And this is not all, you will also contribute to a sustainable future with energy savings.



lindQST – Lindab Quick Selection Tool

lindQST is an advanced web tool that makes the selection of our solutions quick and simple.

With lindQST all documentation is made available directly on the web. That means consultants, installers and architects always have access to the latest documentation, installation instructions and product images etc. lindQST is a unique online tool were you can simulate your room in the Indoor Climate Designer, keep track of your projects and share it with your business partners etc. lindQST provides a simple shortcut to Lindab's material and is a tool that speeds up and simplifies the daily work. All information is just a mouseclick away



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2023-06-26

Lindab Safe air duct system

Lindab Safe air duct system is a complete range of circular ducts, fittings, silencers, t-pieces etc. The system is based on a double, factory-installed gasket made of EPDM rubber. This gasket makes the system not just quick and easy to mount, but also airtight and is Eurovent certified to tightness class D. The product range covers a wide field of applications within industry-, comfort- and residential ventilation. In special materials or coatings it can also be used in environments with extreme demands on hygiene, such as clean room-, hospital- and food and beverage industries.

What is the Lindab Safe air duct system?

- Safe is a quickly assembled system for circular ventilation ducts.
- Safe is Eurovent certified to tightness class D.
- The complete programme has dimensions according to EN 1506.
- The system is based on a double-lipped, factory-installed gasket made of EPDM rubber. The gasket, which can withstand rough handling, and is almost insensitive to temperature changes, gives a very air-tight system.

Advantages

- Quick assembly.
- Can be twisted and adjusted with tightness unaffected.
- Installation without sealant or solvents.
- Can be used in all environments.
- Gasket remains tight from 5 000 Pa negative pressure to 3 000 Pa positive pressure.
- Can withstand high pressure which are specified in the SR duct data sheet.
- Eurovent certified to tightness class D.
- Air tight systems gives energy savings.

Available materials

The system is available in several material such as;

- Galvanized Z275
- Recycled galvanized steel R2 (min. 75% recycled steel)
- Stainless steel EN 1.4301 (AISI 304)
- Stainless steel EN 1.4404 (AISI 316L)
- Aluminium 1050 A
- AluminiumZink AZ 185
- Zink-Magnesium ZM 310
- and powder coated polyester epoxy.

You can read about the corrosivity of the different materals in our General information and theory.

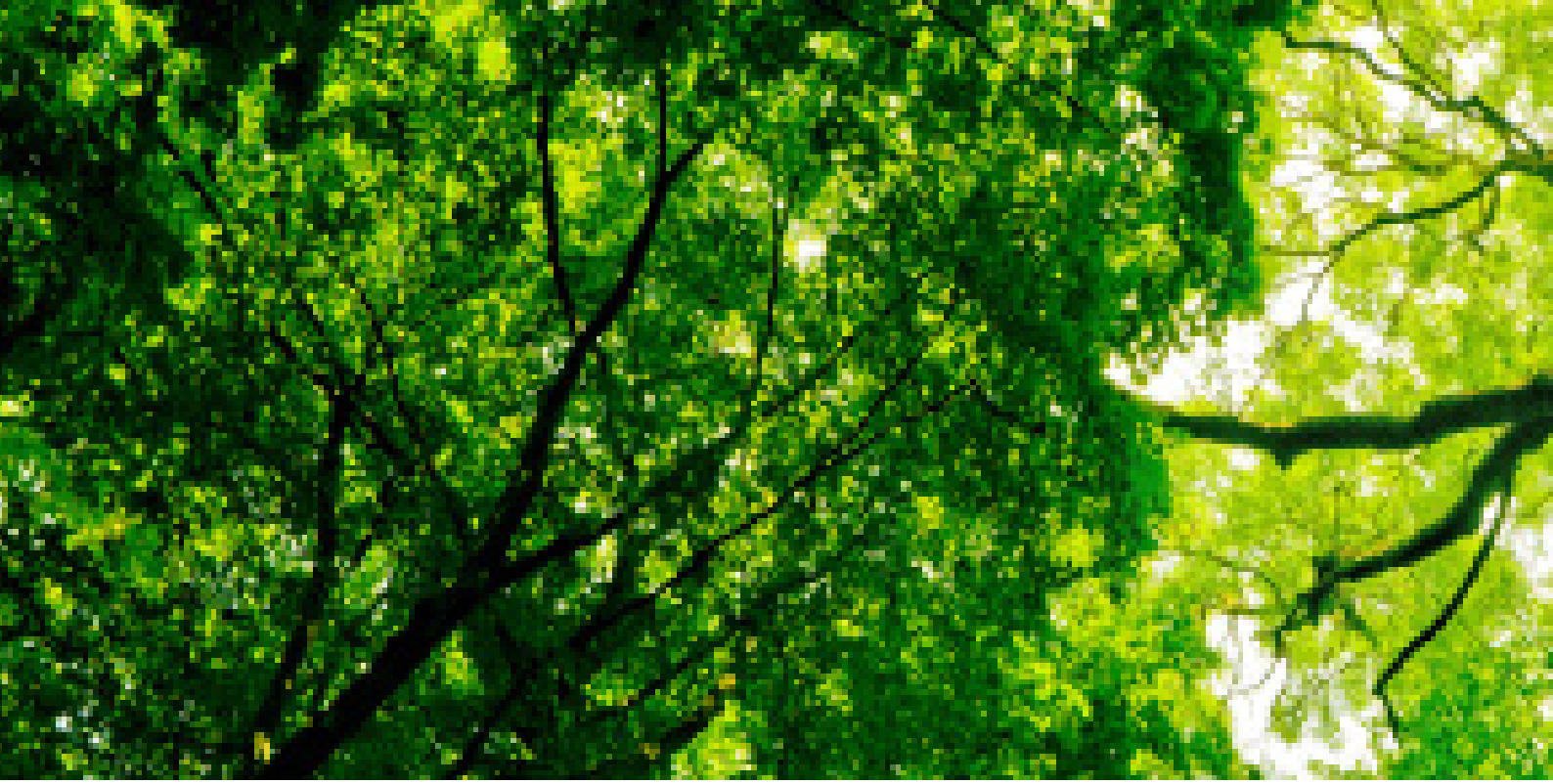
Joining

The connections should be screwed or riveted to firmly fix the ducts to the fittings. In many cases the click function can be suitable for example in shafts and in standardises factory made systems. The Click function exists in principle on all Safe products on the dimensions Ø80–315. The exceptions are stated under each product.

The Click function means;

1. that an end with male measure has an open turned-over end and
2. that an end with female measure has a number of notches.





Eurovent certification

Lindab's circular duct system with rubber gasket connections Lindab Safe and Lindab Safe Click is certified to strength and leakage in tightness class D according to the Eurovent Certified Performance program for circular metallic duct systems (DUCT-MC). Check ongoing validity of certificate:

www.eurovent-certification.com

The purpose of Eurovent third party Certification is to create a common set of criteria to all relevant features for the rating of products in this system and ensure the constancy of performance over time.

Through specification of products in Lindab's certified system, Lindab Safe and Lindab Safe Click, the engineer's tasks become easier, since there is no need to carry out detailed comparison and performance qualification testing. Consultants, specifiers and users can select products with the assurance that the catalogue data are accurate to a certain level.

Lindab products that are Eurovent certified have the Eurovent logotype in the footer of the technical documentation.

Note: Most Lindab Safe and Lindab Safe Click and the most commonly used product in a ventilation system are essentially better than class D, however some products are according to EN 15727 not class D as a single product. These products are stated in the documentation as class C and can be used in D class systems to a limited extension.

The first air duct system in the world to be Eurovent certified to tightness class D.

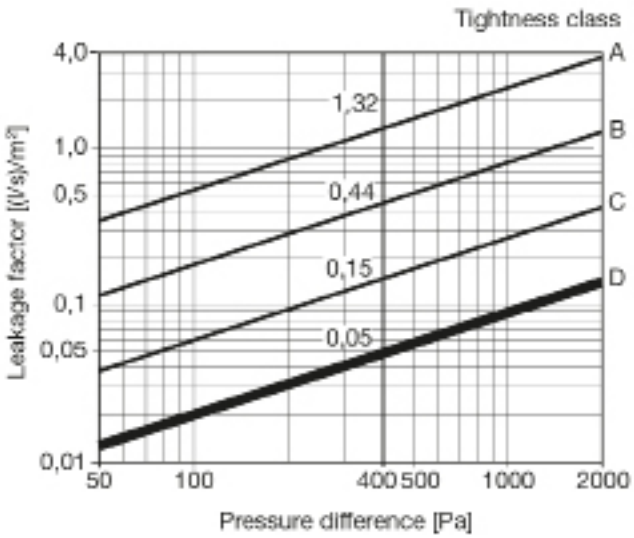
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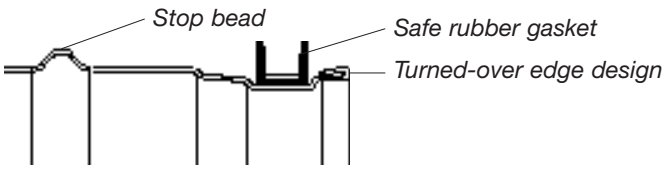
Build tight, **ventilate right**

Properties and tightness

A duct system will never be “completely tight”. The system will normally have some leaks at joints between ducts and fittings. The leakage will also increase as the pressure difference between the in- and outside of the duct sides increases.
The leakage factor in (l/s)/m² is always specified in relation to the pressure difference in Pa. (The unit (l/s)/m² denotes the leakage flow in l/s in or out of the system in relation to its duct area in m².) The graph below shows the leakage factor for the tightness classes A–D as a function of the pressure difference.



The graph shows that tightness class D is 3 times better than class C, which in turn is 3 times better than class B etc. Class D thus entails demands on not only the gasket but also the fittings and how well the system is installed.
This is one reason why we have given all fittings a turned-over edge and have given still more fittings a stop bead. This gives us stable products which are better suited to withstand handling on site at the same time as the risk of skewed assembly falls.
The current stringent demands for indoor climate entail



expensive air treatment. Leakage leads to uneconomical operation, adjustment difficulties and over-dimensioned equipment. For this reason, it is important that ventilation systems are very well sealed, to keep overall costs down and minimize environmental impact.
This is why official requirements for sealing vary with the size and use of systems.

Air tightness classes

Air tightness classes		
Certification	**Calculation**	**Comment**
	ATC 1	One better class than before but not used anywhere so far
Class D	ATC 2	
Class C	ATC 3	
Class B	ATC 4	
Class A	ATC 5	
	ATC 6	To be used in energy calculation if the class is not measured on site
	ATC 7	Not classified

Certification Classes

The certification classes A to D are used in all standards for metallic ducts. For the purpose of certify our products and for the customer to buy the appropriate products.

Calculation Classes

Classes ATC1 to ATC7 are calculation classes according to the EPBD (Energy Performance in Building Directive) standard EN 16798-3 for Ventilation systems performance requirement. They are used in the calculation standards EN 16798-5-1 and EN 16798-5-2. These classes are used in the design phase of the ventilation system and helps the designer and the building owner to agree on what level is suitable and what the effect will be of their decision. These standards also promote the leakage test of the system when handing over the building and include the assembly of the system.

Inspection/Testing

In order to make Safe comply with the requirements of air tightness class D, we have constant inspection procedures where we do daily samplings. Inspection is done on goods received from sub-contractors and our own production of ducts and fittings.
Goods reception inspection complies with standard for testing methods and batch acceptance levels. The inspection points include:

1. Inspection of gasket inner diameter. This is particularly important for ageing resistance of the rubber. The greater the load on the rubber, either stretching or pressure, the faster the rubber ages, causing brittleness and cracking.
2. The gasket profile is measured in a profile projector, where the dimensions of the gasket are checked against agreed tolerances.
3. The gasket material is tested by accelerated ageing in heat oven.

Manufacturing inspection is logged. The inspection includes a diameter check of ducts and fittings, a check of the groove where the gasket has been fixed, and a check of its fixing. Pressure testing is done in



our air laboratory, to check the leakage flow from our products. This does not give the whole picture, so the best inspection of the Safe system is the pressure testing that Eurovent undertakes on randomly sampled products. In all these pressure tests, the Safe system has always exceeded the relevant air tightness requirements.

Dimensions

Almost all products in the Safe system can also be delivered in intermediate dimensions. For further information see the product overview further back.

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Negative pressure

At big negative pressure there is a risk for a ventilation system to collapse. This risk is greater the bigger dimensions you have.
In order to increase the strength of the ducts you can e.g. increase their sheet metal thickness. This is a simple solution but the effect is rather small. It exists other ways with higher result. For bigger dimensions then the ducts may be stronger than the fittings.
In order to increase the strength of the fittings other ways than thicker sheet metal thickness are more suitable.
Lindab has experience and knowledge about this and is willing to offer help at special cases. We can, as special, deliver duct systems that can withstand at least 5 000 Pa negative pressure.



Design

Our Safe gasket system is based on a U-shaped profile of solid rubber. The gasket is fixed with a steel band in a groove at the end of the fitting.

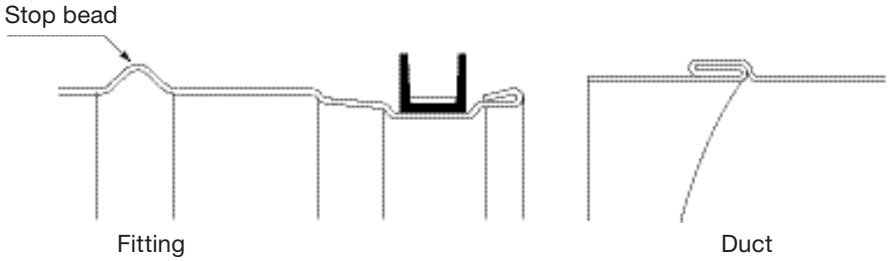
As standard are Safe-fittings always supplied with an EPDM (ethylene-propylene rubber) gasket. The material has been chosen due to its long service life and the best possible resistance to ozone and UV radiation. It is also highly tolerant to temperature variations. Under normal conditions, the gasket can withstand:
-30 °C to +100 °C continuous
-50 °C to +120 °C intermittent

As special for installations which demand high temperature tolerance and somewhat higher oil resistance, Safe fittings can be supplied with a special silicone rubber gasket. This gasket is recognized by its blue colour. Mastic sealed fittings for higher temperatures are also produced with a more temperature resistant mastic.

Temperature tolerance:
-70 °C to +150 °C continuous
-90 °C to +200 °C intermittent
When fittings are installed in ducts, the gasket lips will be bent backwards. This means that the gasket will be better at withstanding negative pressure than positive pressure, since the negative pressure will tend to press the lips harder against the duct walls. The following pressure differences must not be exceeded, to cope with tightness class D.

Positive pressure in duct 3000 Pa
Negative pressure in duct 5000 Pa

The European standards allow a greater tolerance range between the duct and matching fittings as the diameter increases. In order to achieve maximum air tightness for all dimensions, we have chosen to use successively bigger gaskets as duct dimensions increase.
See the chapter about general information and theory.



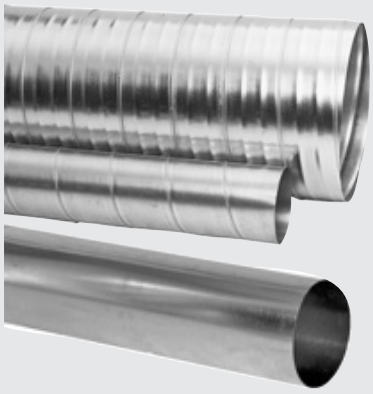
Product overview

Click on the product for link to detailed technical information and accessories, or visit www.lindab.com

Circular ducts, reducers and take-offs

Circular duct

Ducts are always produced locally and can therefore have different thicknesses and other specifications per country.



SR
SRL

LFR

Reducers



RCU



RCLU



RCFU



RLU



RCFLU



RFLU



RU



RFU

Male couplings



NPU



SNPU

Female couplings



MF



SMFU

Access doors



EPFH



ESHU



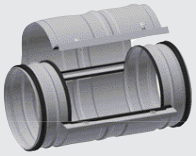
KCU



KCIVU



KCRU



TLU

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Product overview

Bends

Bends — ordinary

Ød1	Short radius rm ≈ 0,6 • d1		Normal radius rm ≈ 1 • d1		Long radius rm ≈ 1,5 • d1	
	Pressed and seam welded	Segmented and lockseamed	Pressed and seam welded	Segmented and lockseamed	Pressed and seam welded	Segmented and lockseamed
63			BU		BSU	
80	BKU 90°					
100						
125						
160						
200		BKFU 90°		BFU		BSFU
250						
315						
400						
500						
630						
800						
1000						
1250						

Bends — others

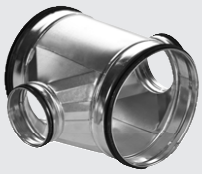
Ød1	Short radius rm ≈ 0,6 • d1		Normal radius rm ≈ 1 • d1						
	Pressed and seam welded	Segmented and lock-seamed	Pressed and seam welded	Segmented and lock-seamed	Segmented seam welded	Segmented and lockseamed	Segmented and lock-seamed	Pressed and seam welded	Pressed and seam welded
63									
80	BKMU 90°							BUCST	
100			BKCU 90°		BMU	BBKCU 90°			BSIUCST
125									
160									
200		BKFMU							
250				BFKCU 90°			BFBKCU 90°		
315									
400									
500									
630									
	Female end		Cleaning stud at side			Cleaning stud at back		Female end and nail flange	Air valve socket and nail flange

Product overview

Access doors, couplings, X-pieces, Y-pieces and end caps

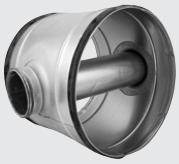
X-pieces


XCPU


XCU


XU


XVU45°


XBPU


XBPRU

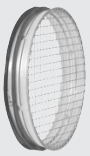
Take-offs


ILRU


ILU

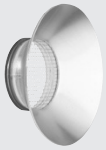

ILF

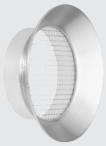

ILRNU

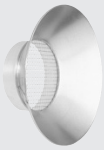

ESNU


EPNF

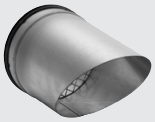

ILKNU 50


ILKNU 100


ILKNF 50


ILKNF 100


ILVU45°


AVU

Click on the product for link to detailed technical information and accessories, or visit www.lindab.com

Accessories


FL


FLH


TVILU


TVIL


SRC


IMSKU


STR

Y-pieces


YVU45°

End caps


EPF


ESU

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Product overview

T-pieces and saddles

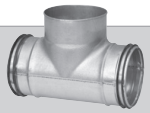
T-pieces — ordinary

	Short installation lenght	Normal installation lenght	
$Ød_1$	Pressed and seam welded	Pressed and seam welded	Segmented and lockseamed
63			
80			
100	 TCKPU	 TCPU	 TCU
125			
160			
200			
250			
315			
400			
500			
630			 TU
800			
1000			
1250			

Saddles and T-piece

Normal installation lenght	
Pressed and seam welded	Segmented and lockseamed
 PSU	 TSTCU
	 TSTU

T-pieces — others

	Short installation lenght	Normal installation lenght		
$Ød_1$	Pressed and seam welded	Pressed and seam welded	Pressed and seam welded	Pressed and seam welded
63				
80	 TCPUGYPS	 TCPMU	 TCPUCST	 TCSIUCST
100				
125				
160				
200				
250				
315				
400				

Click or scan to view the assemble instruction for Lindab Safe and Lindab Safe Click >>



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