TECHNIKA

Installation manual

Circular ducts and fittings

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Important notes

Instruction

- This manual allows the installer or service personnel to properly install the product described and use it safely and efficiently. It is very important that these persons read and fully understand these assembly instructions before starting any work. The basic precondition for safe work is the observance of the safety requirements at work and all these instructions.
- In addition, workplace safety and health requirements must be observed.

Limitation of liability

- The information contained in this manual has been compiled in accordance with current standards and national guidelines, recent developments and years of experience. The manufacturer does not accepts any liability for damage resulting from:

  1. Failure to follow these instructions
  2. Incorrect use
  3. Personnel who have not been trained in the operation of the equipment
  4. Unauthorized product modifications

- In addition, individual products may have their own assembly and installation instructions, which must be followed first.

Personal protection equipment

- Personal protective equipment must be worn all the time to reduce the risk of injury to your workplace health.
- The appropriate protective equipment for a job must be worn for as long as the job takes.

Industrial safety helmet

Protective helmet protects head from falling objects, ducts, hanging corners, etc. It also prevents head injuries in sharp corners.

Safety glasses

Safety glasses protect the eyes from falling objects during installation. The safety glasses also protect the eyes from various mechanical tool shavings, splinters or accidental splinters.

Protective gloves

Protective gloves protect hands from dirt, deep cuts, burns and other various workplace injuries. Gloves should be used in the correct size, comfortable. The type of gloves to be used must be specified to the workplace.

Safety shoes and reflective vest

Safety shoes protect your feet from falling heavy objects. Properly used shoes provide stability on slippery surfaces.
Reflective vests help to effectively see the working personnel on site, thus protecting against a variety of injuries.

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Circular ducts and fittings

Type of products

AO, AKL, AKLT, AL, ALJ, AN, APL, ASR, ASP, ASUP, ASUR, BA, DEF, KA, KON, MO, NI, TR, TRK, PDD, PDDS, PER, PRAV, SA, SAL, SAP, ST, STT, VOZT.

Technical data

- Circular ducts and fittings are manufactured in accordance with the standards LST EN 1506, where dimensional tolerances and LST EN 12237, LST EN 1751 are observed, which determine the tightness and strength of the products.
- The ducts and fittings are made of tightness class C, all products use F-type double sealing with self-integrated slip material for easier system assembly.

Preparations for assembly

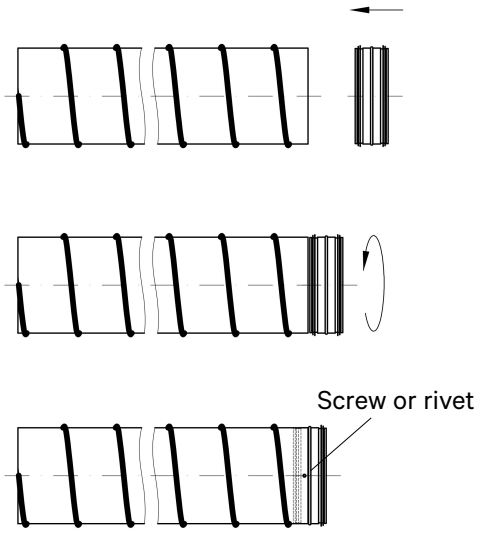
- Prepare the blueprints for the ventilation project and make sure that the details of the ventilation system to be installed meet the requirements of the technical design.
- Move and store parts in the same space where the ventilation system will be assembled, and protect duct parts from damage, dust or moisture accumulation on the surface of the parts.
- Use safety blinds or protective film on the parts to keep the inside air as clean as possible. When starting the ventilation system, you will not have to clean the duct system internally and the filters of the ventilation system will be kept clean. Use containers, boxes or other storage aids for convenient storage.

1 picture. Safety blinds and containers

- Make sure that the materials and parts are not bent or the gaskets are torn, only before starting assembly work.
- All damaged parts should be left unused and placed in a place of poor quality materials.

Circular system assembly

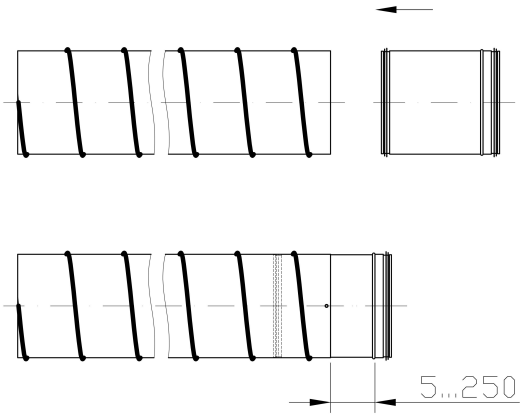
- Prepare circular individual ducts with floor-mounted sleeves. Push the coupling into the duct with a twisting motion. The other parts, bends, dampers, should be mounted on the suspended duct element. We always recommend that long duct sections be joined with couplings, which facilitate and accelerate system connection work.
- When connecting the system to the last duct that is likely to be shortened, use a tinplate trimmer or, in exceptional cases, a circular saw. Wear safety glasses, gloves, respirator and other protective equipment.
- The edge must be protected with liquid zinc paint.
- The cutting edge must be machined with the rasp to avoid sharp edges that could damage the rubber of the insert. Sharp edges can also injure a person during system assembly. Wear safety glasses and gloves when handling duct elements.
- Although all gasket products have an integrated self-slip material, a specialized lubricant can be used to facilitate the assembly of extremely tight systems.



2 picture. Coupling insertion

Circular system assembly

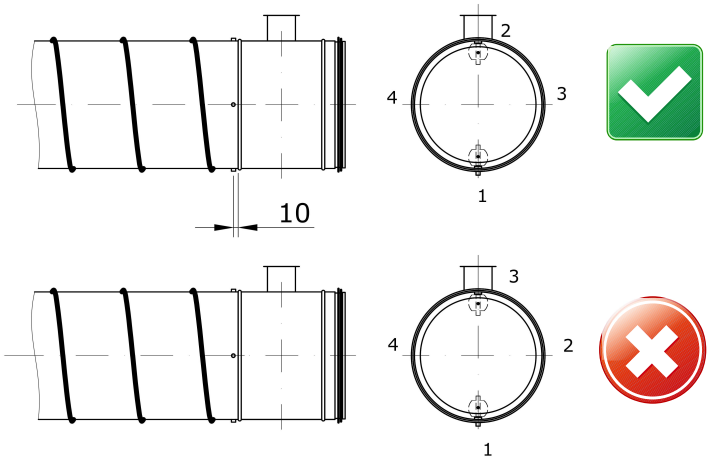
- If the length of the ducts allows, it is possible to use extended type couplings for the last element or several ducts, and they allow the insertion depth to be adjusted from 5 mm to 250 mm. This avoids extra duct cuts or the preparation and installation of very short elements. This type of MO coupling has a duct locking edge on one side only, and a sealing rubber on the other side, which rests inside the duct to seal the system regardless of insertion depth.



3 picture. Slide in coupling insertion

Fastening of duct and fittings

- All elements must be pushed to the intended formed duct supports.
- Fixing should be done with self-tapping or rivets.
- The fastening sequence must be opposite, it is not allowed to fasten in a circular order, because the last element will have a large wave and the connection will be leaky.
- The self-tapping screws must be screwed in and the rivets inserted 10 mm from the end of the duct for elements from Ø100 mm to Ø630 mm and larger up to 20 mm if the part is pushed up to the support, otherwise the sealing gasket may be damaged.
- Make sure that the duct elements used for assembly are clean, have smooth edges, have a smooth surface or have an intact gasket. Only use elements of the same diameter for assembly. If elements of different dimensions are to be joined, transitions of the desired shape must be used. Pay attention to the gasket, it should be smooth, not torn, covered with special talc and be in place in the groove.



4 picture. Fastening elements insertion scheme

- For systems up to 200 Pa, no additional joint locking devices can be used, since the tightening of the gasket ensures sufficient tightness. However, it is necessary to fix the ducts with screws to the hanging brackets or hanging straps. Self-tapping screws or rivets should be used when needed and for higher pressure systems. Make sure you do not damage the gasket when drilling. The number of connection points is shown in Table 1 below.

1 table. The quantity of fastening elements

Duct diameter Ød$_{nom}$, mm	Quantity of elements	
	>200 Pa	<200 Pa
100 - 250	-	2
250 - 500	2	4
560 - 710	3	6
710 - 1250	6	10

Fastening of duct and fittings

- When installing the ventilation duct system as high leakage class as possible you should follow the recommendations below. If you need to move the fasteners, be sure to seal any remaining holes with sealant or aluminum tape.
- Standard self-tapping screws often spin when fully turned, resulting in leaks, avoid such joints.
- Standard open rivets, the zipper often falls off and retains an open hole, making the connection leaky, which happens with low quality rivets.
- Blind rivets are also recommended, with the tip not falling out.
- We recommend the use of specialized self-tapping drills with a smaller diameter drill than the self-tapping core to secure the joints as tight as possible. The table below provides recommendations of usable fixing fasteners.

2 table. Allowed fasteners in the duct system

	Allowed screws an rivets for **A, B, C, D** duct tightness class	Allowed screws an rivets for **A** and **B** duct tightness class
	**Screw with sharp tip** • Very tight Very strong, since it forms collar form in sheet steel.	
	**Screw with reduced drill tip** • Very tight • Very strong, since it drills of small part of sheet steel.	
	**Tight, blind rivet** • Very tight • Strong connection • Very laborious to install	
		**Screw with drill tip** • Not tight • Weak connection, since it drills of big part of sheet steel.
		**Rivet** • Not tight if the inner splint falls out • Strong connection • Very laborious to install

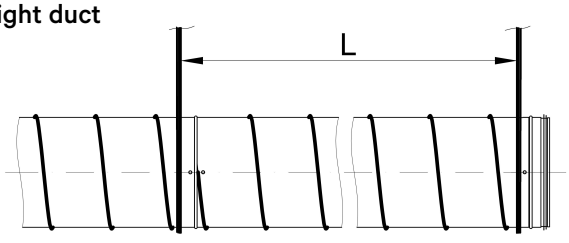
Fastening of duct and fittings

Hints!

- If the duct and the fittings are round, they are easy to assemble into a single system. UAB “MK Technika” focuses on producing extremely round parts using modern production equipment that ensures roundness and accuracy. However, very large products may be oval in shape due to their high weight.
- We recommend the use of specialized brackets for the elements, which ensure that the duct is as round as possible at the connection point.
- It is recommended that the fittings be slightly twisted into the duct to facilitate installation or removal.
- Lightly press the duct with the sides of the duct with your hand to make the fittings easier to fit inside.
- When cutting elements of the required length, be sure to remove any sharp edges remaining after cutting, which may injure a person during installation and damage the sealing gasket of the fittings. After cutting from the spiral duct, cut two sharp needle-like stitch remnants to make them blunt. Paint damaged areas with liquid zinc paint.
- If it is necessary to re-install an old product type, it is necessary to seal the existing holes in the housing with closed rivets, sealant or adhesive tapes. Leaving open holes causes air leakage and noise.
- If a system with a high degree of tightness is required using elements of a lower class, shall be kept as small quantity as possible and shall be additionally sealed with auxiliary means to achieve a high overall level of system tightness.

Hanging the ventilation duct and fittings

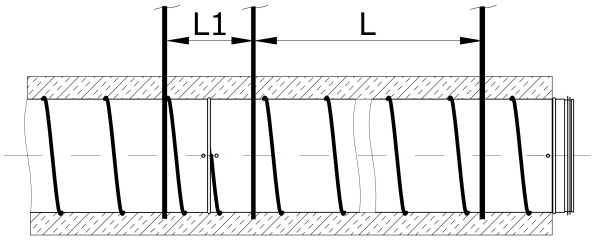
Straight duct



5 picture. Hanged straight duct

It is recommended to mount the hangers as close to each connection point as possible. In addition, fasten the brackets to the duct with fixing bolts when stability is needed. Always have at least one hanging element in the system at each connection. The maximum distance L between the hanging elements is 3m.

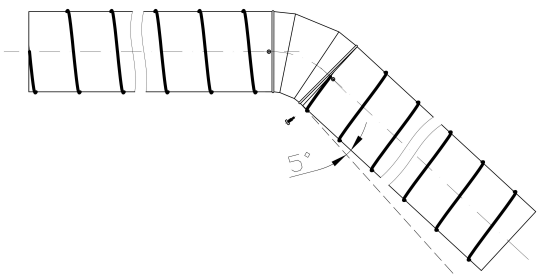
Insulated straight ducts



6 picture. Hanged insulated straight duct

When the ducts are overloaded, which may affect the shape of the duct and the hanging limit of the hanging elements, it is recommended to install 2 hanging elements per duct. In addition, fasten the brackets to the duct with fixing bolts when stability is needed. The maximum distance between hanging elements L is 2m and L1 is 1m. Always calculate and select the hanging elements according to their load capacities.

Bending the straight lines

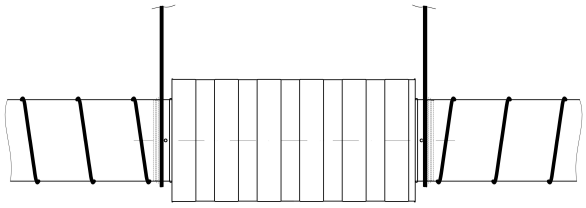


7 picture. Duct bending, obstruction bypass

When connecting the ducts to the fittings, it is best to insert the fittings as straight as possible into the fittings to the locking supports. This is the case when the duct needs only to be tilted from fitting. The possible bending angle is about 5º, but always make sure that the gasket is inside the joint and is not slipping. Always secure this connection with bolts.
In the case of an elbow mounted in the duct, first secure the end of the duct with the hanging element, then, after inserting the elbow and adjusting the elbow direction, secure it with a screw that will keep the elbow in the required twisted position.

Hanging the ventilation duct and fittings

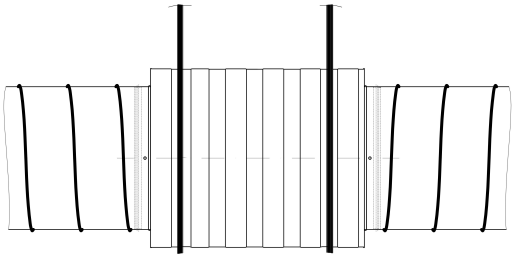
Hanging the straight small silencers



8 picture. Hanged straight silencer

- It is recommended to hang small silencers as close as possible to the damper body.

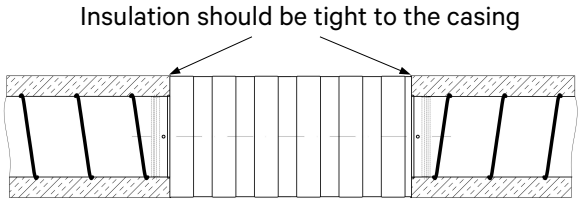
Hanging the straight heavy silencer



9 picture. Hanged straight heavy silencer

- It is recommended to hang large diameter dampers with hanging elements by placing them through the outer casing closer to the ends. Half clips can also be used for hanging. This makes hanging a heavy damper much easier and safer than inserting its ends into a duct. This way the suspended damper can be safely connected to the duct system. If necessary, attach the damper via bolts to prevent the product from slipping.

Insulated straight silencer



10 picture. Hanged straight silencer with duct insulation

- When insulating the ducts, always try to hold the material as close as possible to the damper body when heating the duct connection.

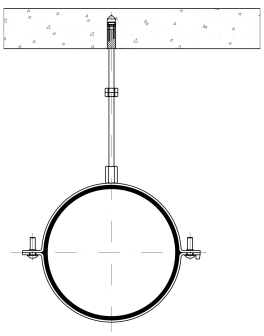
Hanging the ventilation duct and fittings

General information

- The function of the hanging elements is to keep the duct system in the desired position throughout its life. It can be divided into several structures. Duct hanging according to weight calculation, duct hanging according to fire safety requirements, in any case, the building classification and the requirements for the ventilation system should always be considered.
- The holding capacity of fasteners may be assessed differently in different buildings and premises. In low-risk areas, duct support elements may be selected at maximum load, and in locations where a duct system may pose a risk, additional consideration should be given to this with a lower allowable load factor of 0.75. Pay attention to escape routes, or areas where a fire duct may cause additional difficulty for people to escape or for firefighters in the event of a fire.
- In all cases, the ducts shall have at least one fastening / hanging element at each duct connection. For circular ducts, the maximum distance between hanging elements is 3m.
- The types and designs of the suspension elements shall be selected according to the load to be carried by the suspension element. Always calculate the maximum permissible storage load, based on the weakest element of the suspension system.
- The various types of hanging are shown below, with the average permissible loads indicated. Data is average, always refer to the technical data of the fastener.

Duct hanging with threaded rod and suspension

- Threaded rod M8
- Anchor M8
- Circular suspension
- Allowable load 65 kg

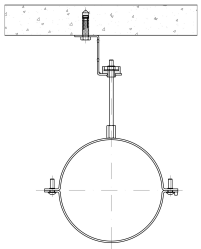


11 picture. Threaded rod and suspension hanging system

- In addition, use a rubber band that reduces vibrations.

Duct hanging with threaded rod, suspension and fasteners

- Threaded rod M8
- Anchor M8
- Z suspension
- Circular suspension
- Allowable load 60 kg

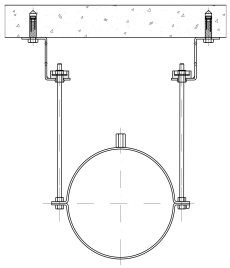


12 picture. Duct hanged with Z suspension

- In addition, use a rubber ring that reduces vibrations.

Duct hanging with threaded rod, suspension and fasteners

- Threaded rod M8
- Anchor M8
- Double Z suspension
- Circular suspension
- Allowable load 120 kg, if no Z suspension then load 160 kg.

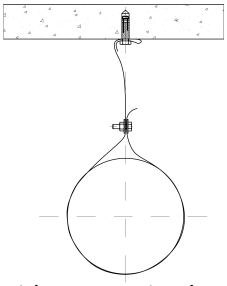


13 picture. Duct hanged with Z suspension

- In addition, use a rubber ring that reduces vibrations.

Duct hanging with suspension band

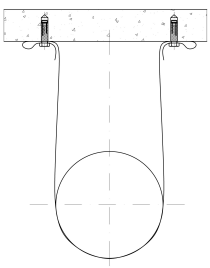
- Suspension band
- Anchor M8
- Allowable load 15 kg



14 picture Duct hanged with suspension band

Duct hanging with suspension band

- Suspension band
- Anchor M8
- Allowable load 35 kg



15 picture. Duct hanged with suspension band

Maintenance

- In most cases, metal ducts and fittings require no special service. Often, it is sufficient to visually inspect the duct system for tightness, with all bolts in place. It is recommended that the outside of the ducts be cleaned with a damp cloth or other means that does not damage the duct surface.
- In most cases, the duct interior needs to be cleaned for ducts that are installed up to the air handling unit filters and are usually dust-covered. The most polluted duct, dust, flies, cobwebs, leaves and other minor dirt, is from the outside air intake to the filter on the ventilation unit. We recommend cleaning this duct at least once a year.
- We recommend installing inspection access in convenient locations for interior duct cleaning.
- Cleaning can be done with a vacuum cleaner or a damp cloth.
- *AO, AKL, AKLT, AL, AN, APL, BA, DEF, KA, KON, MO, NI, TR, TRK, PER, PRAV, SA, SAL, SAP, ST, STT* cleaning and visual inspection of the products is recommended every 2-3 years. Clean corroded areas and paint with zinc spray paint.
- ALJ flexible joints should be inspected for material, intact, ruptured, flexible, non-hardened, and replaced if necessary.
- *ASR, ASP, ASUP, ASUR* we recommend checking the operation of the regulating and closing dampers once a year. Make sure that the flaps of the dampers are rotating, that the rotation points are not corroded, and if necessary clean and lubricate or cover with anti-corrosion additives. For electric geared products, check that the actuators are operating or rotating the stylus to the end positions, or the end position contacts, if any. If all electrical connections are secure at their junctions, or if there is no visible damage to the wiring, replace the wiring if necessary.
- *PDD, PDDS* we recommend visual inspection of the diffuser boxes and cleaning every 3-5 years,
- *VOZT* gravity valves do not require special service, but we recommend that they are inspected visually every 2 years. If possible, lift each feather by hand about 30° from the vertical axis and release. The feather must return to its original state and close the flow.