TECHNIKA

Installation manual

Rectangular 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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Rectangular ducts and fittings

Type of products

OFI, AF, FAK, FAKT, FAP, FBA, FPA, FPD, FPS, PRAV, SLJ, SP, SPTS, SSR, SSP, ST, STT, SSUP, SSUR, SSUPIZ, SSURIZ, VOZT, GR.

Technical data

- Rectangular ducts and fittings are manufactured in accordance with the standards LST EN 1505, where dimensional tolerances are observed and LST EN 1507, LST EN 1751, which determine the tightness and strength of the products.
- The ducts and fittings can be made B and C tightness class, all products use flanges with internal mastic, which means that the ducts do not require additional sealing on the flanges when assembling the duct system.

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 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.
- Prepare the hanging and fastening materials, which must be installed before hanging the duct parts.

1 picture. Protective film on the product

- Make sure that the materials and parts are not bent, as the rectangular parts are very sensitive to bending, which can cause the system to make noise due to vibration of the surface sheet, before starting the assembly work.
- All damaged parts should be left unused and placed in a place of poor quality materials.

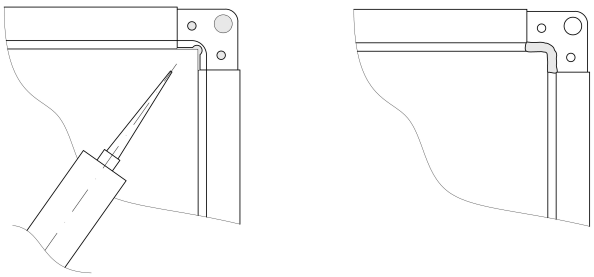
System assembly

- Depending on the weight, the rectangular parts can be partially assembled on a flat surface, or directly by placing each part in its intended position on the hanging elements.
- Before lifting the duct part, always prepare and glue the gasket onto one part of the flange.
- U-profiles, rubber brackets of type L or Z, brackets, threaded rods, anchors and other hanging elements can be used for hanging the duct system.
- It is recommended that the long sections of the rectangular duct system be joined together only partially so that the individual parts can be aligned horizontally or vertically with a slight movement before the corners are finally tightened and the clips or clamping profiles applied. This way, joining parts of the system will prevent them from rotating or curving.
- If the building is inaccurate, the last element may need to be truncated, use a tin clippers or, in exceptional cases, a circular saw. Wear safety glasses, gloves, respirator and other protective equipment.
- The cutting edge must be machined with a file to avoid sharp edges that can injure a person during system assembly. Wear safety glasses and gloves when handling duct elements.
- The edge must be protected with liquid zinc paint.
- After cutting the product, use specialized connection flanges and angles to ensure product strength and joint tightness. The flange can be attached to the duct part by means of self-tapping, closed rivets, or spot welding, followed by spraying the welding points with zinc paint.
- In most cases, rectangular ducts and fittings are ready for immediate installation, but it is always necessary to visually inspect the technological gasket sealant at all corners of the flanges. If the sealant is missing, damaged or has a gap, then apply on the affected area.

System assembly

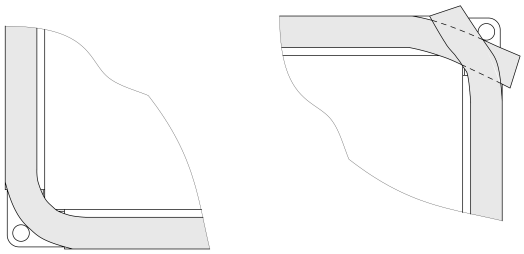
With out sealant

With sealant



2 picture. Preparation of the duct

- For rectangular ducts and fittings corners, the sealant shall be used as a technological seal between the thin steel sheet of the duct and the corner piece. The flanges are used with an integrated mastic inside, so there is no need to seal the flanges.



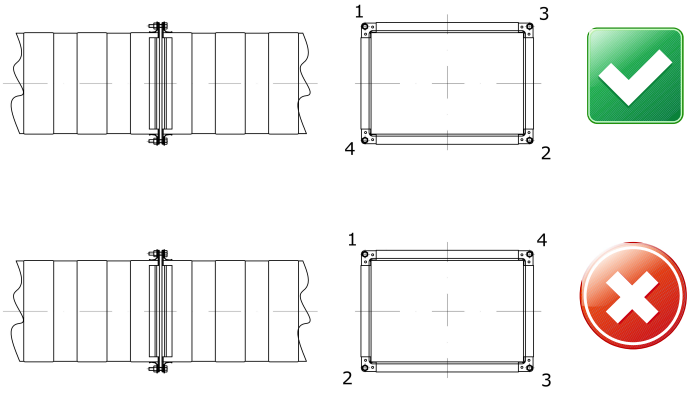
3 picture. Sealing gasket applying scheme

- When connecting two ducts or fittings, use the GT4 special sealing gasket. It is closed pores resistant to moisture and UV radiation. Glue the gasket over the outer perimeter of the flange, twisting at the corners or overlapping with a cross. Leave free access to the holes through which the flange will be bolted.
- Attach the gasket to only one element of the flange, ducts, or fittings in the joint.
- In cases where extremely large ducts or fittings are joined, a thicker gasket may be required. Use 6mm or glue double GT4.
- The same GT4 gasket can be used for F20, F30 and F40 flange connection.

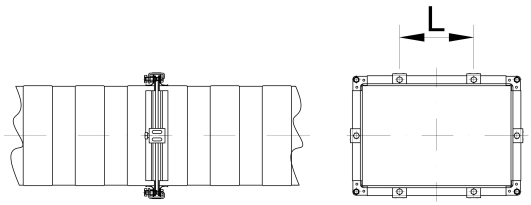
Fastening of duct and fittings

- Fixing should be done with self-tapping or rivets.
- The fastening sequence must be opposite, the ducts and fittings will stay in line.

- Make sure that the duct elements used for assembly are clean, have smooth edges, have a smooth surface or have a glued gasket. Only use elements of the same dimensions for assembly. If elements of different dimensions are to be joined, transitions of the desired shape must be used.



4 picture. Fastening elements insertion scheme



5 picture. Duct connection using joint clamps

- When the leakage class of the ducts in the object is to be classified as Class B, then the maximum distance L between the clamps or bolts is 700 mm. When the air tightness class of the ducts in the object has to meet class C, then the maximum distance L between the clamps or bolts is 400 mm.
- An alternative method of connecting duct flanges is to use a C-type push-in profile, which is suitable when there is no space to insert a clamp.

6 picture. Duct connection with C profile

- If the duct system is installed near an escape route or pedestrian platform, there is a risk of injury to the duct flange connection corners. To eliminate this possibility of injury, we recommend installing a corner guard on the flange joint.

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 aluminium 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 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

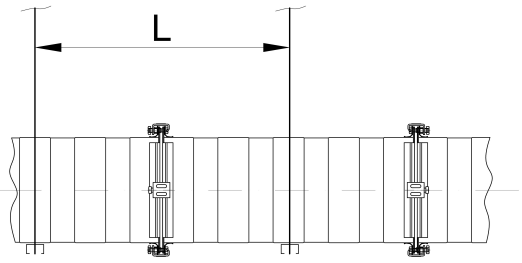
Fastening of duct and fittings

Hints!

- Always use factory-made fittings and ducts to avoid possible assembly and leakage errors. UAB “MK Technika” uses state-of-the-art production equipment to make rectangular products the right shape and to meet tightness requirements.
- When installing the duct system, we recommend the use of specialized element holders, brackets and other hanging elements to ensure that the duct system is properly installed.
- It is recommended that some fittings be mounted on ready-made straight ducts.
- Whenever possible, fix the rectangular duct system to the rigid elements through a damping rubber, which will facilitate overall system installation, the ducts will not move, and the ability to press, tighten, and hang.
- If necessary, be sure to remove sharp edges remaining after cutting, which may injure a person during installation by cutting elements of the required length. 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 blind 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 ducts and fittings

Straight duct



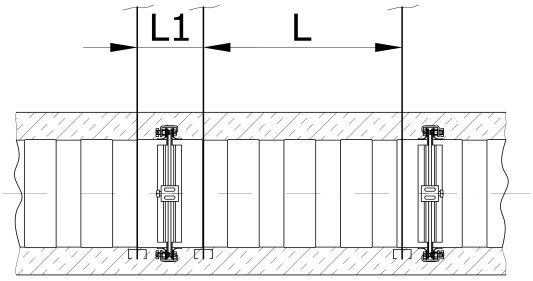
7 picture. Hanged straight duct

- There shall be no more than one duct connection between the two hanging elements.

Straight duct

- The maximum distance L between the hanging elements shall not exceed 2400 mm.
- Position the hangers within 600 mm of the joint.
- In addition, fasten the brackets to the duct with fixing bolts when stability is needed.

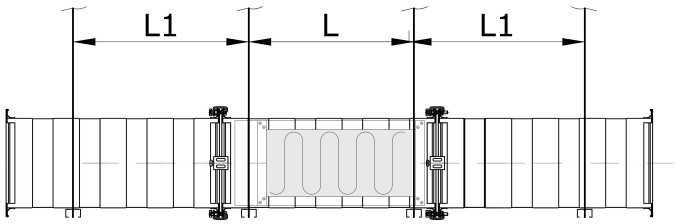
Insulated straight ducts



8 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 the suspension elements L is 1.5 m and L1 is 1 m. Always calculate and select the hanging elements according to their load capacities.

Hanging the straight silencer

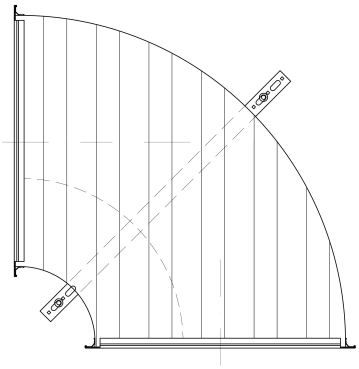


9 picture. Hanged straight silencer

- When installing a ventilation system made of heavy or large elements, we recommend hanging them on two hanging supports to help keep the element in position when it is lifted. In addition, heavy system elements require reinforced suspension elements that can withstand heavy loads.

Hanging the ventilation ducts and fittings

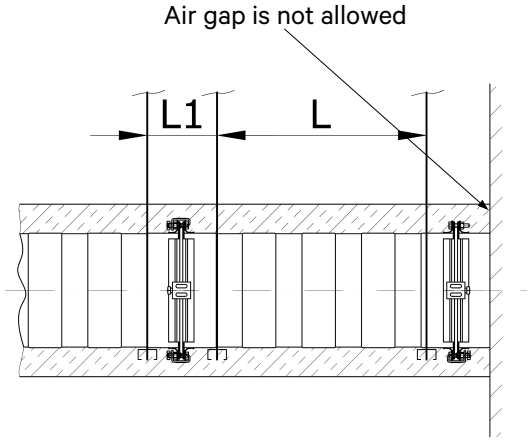
Hanging the heavy fittings



10 picture. Hanged elbow, view from above

- Large elbows are recommended for hanging using hanging profiles centred on the product. It is recommended to fix large-size transitions through straight sections or use angular elements for hanging them.

Straight insulated duct to wall or ventilation unit



11 picture. Hanged insulated duct

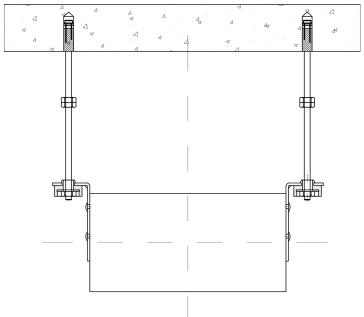
- When insulating ducts and other parts of the system, it is very important that the insulation material is pressed very tightly against the support surfaces, as well as against the duct, wall or other element, since any visible air gap allows warm air to enter the duct surface and precipitate moisture drops. As a result, there is a visible condensation of water drops in these areas, in many cases the water drops drip and damage the products, devices or other items below.

Hanging the ventilation ducts 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.
- There shall be no more than one duct connection between the two hanging elements. For rectangular ducts, the maximum distance between the hanging elements is 2.4 m.
- 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 L suspension

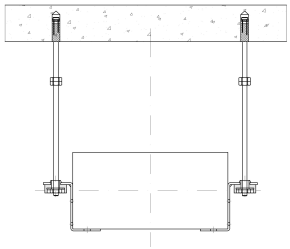


12 picture. Threaded rod and L suspension hanging system

Use this mount for extremely small systems. Using L type

mounts can be installed on systems that are not subject to any safety requirements where the duct does not present a risk of injury to a person. In many cases, the brackets are designed to partially hold the duct system.

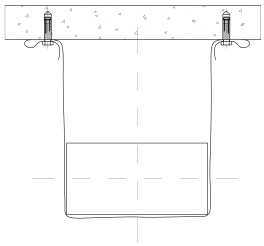
Duct hanging with threaded rod and Z suspension



13 picture. Duct hanged with Z suspension

- In addition, use the Z holder rubber to reduce vibration. This type of suspension is recommended for light systems, although the bracket can withstand loads up to 60 kg.

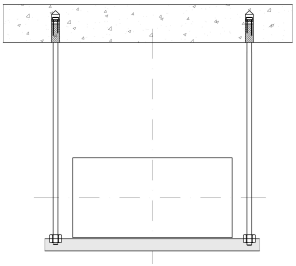
Duct hanging with suspension band



14 picture. Duct hanged with suspension band

- This suspension system can withstand loads up to 35 kg. It is easy to install and does not take up much space.

Duct hanging with suspension profile



15 picture. Duct hanged with suspension profile

- Used for hanging many ducts, depending on profile dimensions and duct size, can support loads from 5 kg to 200 kg. Be sure to calculate the load by length and the weakest element in the suspension system. Use damping rubber under the duct.

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. We recommend that you check part of the duct system bolts every year are they not loose. 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.
- *OFI, AF, FAK, FAKT, FAP, FBA, FPA, FPD, FPS, PRAV, SP, SPTS, ST, STT* cleaning and visual inspection of the products is recommended every 2-3 years. Clean corroded areas and paint with zinc spray paint.
- *SLJ* flexible joints should be inspected for material, intact, ruptured, flexible, non-hardened, and replaced if necessary.
- *SSR, SSP, SSUP, SSUR, SSUPIZ, SSURIZ* 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.
- *GR* - we recommend a visual inspection of the outdoor grill and cleaning it every 1 year,
- *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.