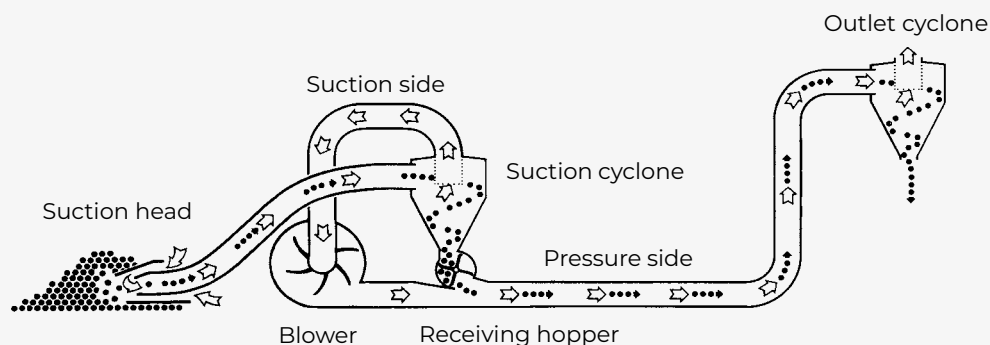


Pneumatic Grain Conveying

Flexible Pneumatic Conveying Solutions



Suction Blowers SUC



How A Suction Blower Works

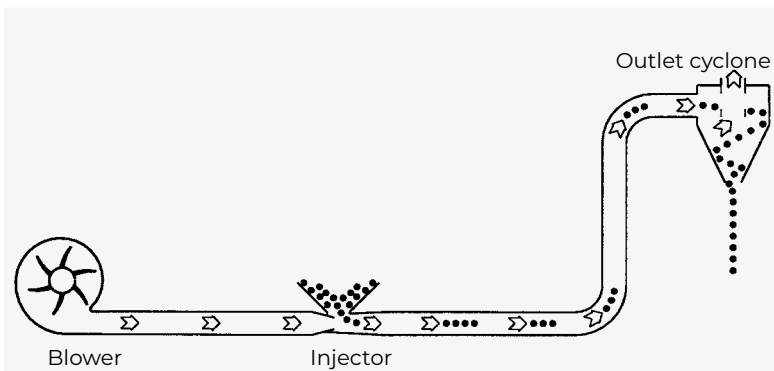
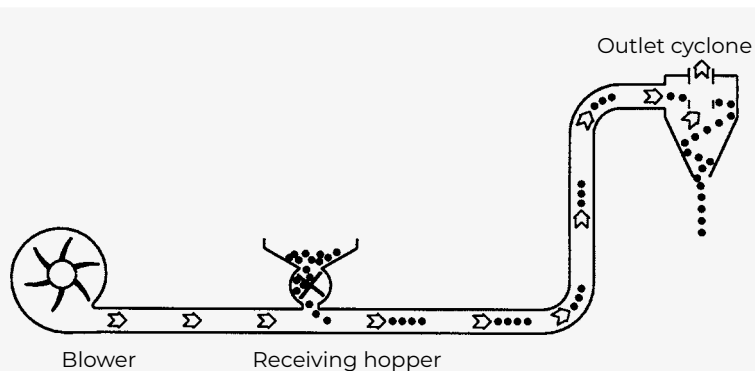
The suction blower is a unique solution when flexible conveying is needed and is used everywhere for conveying grain. The suction system is suitable for picking up grain from various locations and blowing it to any desired location.

Grain is sucked into the system on the intake side of the blower. The blower's intake is connected to the top of a suction cyclone. In this cyclone, grain and air get separated. The grain drops down into the rotary valve fitted to the outlet of the cyclone. The rotary valve leads the grain into the pipeline on the pressure side of the blower. At the point of delivery an outlet cyclone slows down the speed of the grain before it is dropped out of the bottom outlet.

Benefits

- Tractor-powered models are independent of electric power supply.
- Can be used in fields for loading grain.
- Moves the grain horizontally, vertically and around corners.
- No requirements for configuration of buildings or grain pit.
- If higher capacity is needed, the suction blower can be replaced by a larger model using the same pipe system.
- Indoor storage of the machines means that it is less exposed to the weather.

High Pressure Blowers TRL



Our Kongskilde TRL blowers offer highly customized solutions to moving grain from A to B and beyond. Some of our belt-driven TRL blowers can be upgraded with a larger motor, making it easy to increase capacity later by simply changing the motor and drive package.

How A Pressure Blower System Works

Pressure conveying systems are used to move grain from one place to another. These systems require grain to be fed directly into a hopper above the injector or rotary valve.

When the conveying pipe is connected to the blower's pressure side a powerful air flow is directed through the conveying pipe. An injector or rotary valve leads the material to be conveyed into the piping system. Diverters are used to convey the grain easily to different delivery locations.

Benefits

- Minimal space for installation, the conveying pipes can reach anywhere.
- Low weight of the conveying pipe means only small loads on buildings.
- No heavy components to be installed in inaccessible places.
- Wide range of modular pipe components and joining clamps means flexible installation options.
- Only electrical installation to blower and rotary valve intake, which are centrally located.
- Easy capacity regulation with shutter on the inlet of the rotary valve intake unit.

Directly Driven TRL



TRL 55 blower with TF 55 injector.



Directly driven rotor.



TRL 55 conveyor blower with damper for automatic adjustment of air flow.



TRL 75 blower for grain conveying and drying.

The TRL blower creates an air flow in the pipes that conveys the grain. The amount of grain that can be blown through the pipes depends on the blower's power. Kongskilde provides blowers with different output to meet different needs.

The small blower models are directly driven, i.e. the blower's rotor is fitted directly to the motor shaft.

Benefits

- Blower housings shaped in press toolings.
- Dynamically balanced rotors provide smooth running.
- Control of the air provides efficient conveying and minimises pipe wear.
- Minimal maintenance.

Technical specifications	Motor kW/hp	Power supply 50 Hz	Min. fusing recommended A	Power consumption A	Air volume max. m ³ /h	Air pressure max. mm WC/kPa	Weight kg	RPM
TRL 20	1.5/2	3 x 400V	10	3.1	1900*	250/2.5	36	3000
TRL 40	3/4	3 x 400V	16	4.4	2600*	350/3.5	68	3000
TRL 55	4/5.5	3 x 400V	16	7.5	1800	650/6.4	77	3000
TRL 75	5.5/7.5	3 x 400V	20	10.5	3200	650/6.4	92	3000

* Injector required (Minimum back pressure from the injector necessary in order not to overload the motor.)

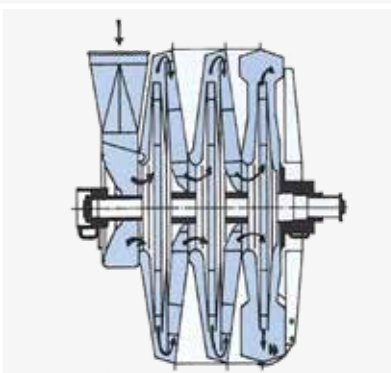
Belt Driven TRL



Control cabinet of TRL 150.



Automatic air control on TRL 1000. Damper closes automatically during startup.



Construction of high pressure blower with 3 rotors.



V-belt drive for TRL 150.

Higher capacities require higher pressure output from the blower. The most effective way to achieve this is by increasing the rpm. For this reason, the large blowers use a belt drive between the motor shaft and the blower shaft. In order to achieve more pressure for larger capacities, the large blowers have multiple rotors.

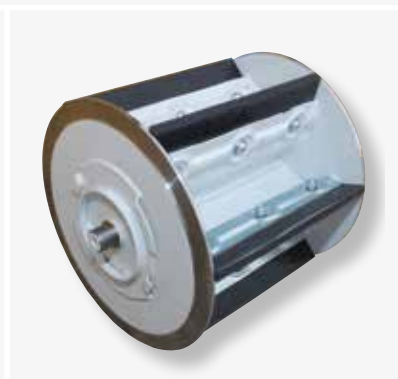
Benefits

- Effective modular system to build blowers with different outputs.
- Proven design.
- Air control ensures constant air flow for grain transport.
- Can be used for both pressure and suction systems.

Technical specifications	Motor kW/hp	Power supply 50 Hz	Min. fusing recommended A	Power consumption A	Air volume max. m ³ /h	Air pressure max. mm WG/kPa	Weight kg	Blower RPM	Motor RPM
TRL 100	7.5/10	3 x 400V	25	20	1800	950/9.3	129	3650	3000
TRL 150	11/15	3 x 400V	35	27	1800	1300/12.8	171	4200	3000
TRL 200	15/20	3 x 400V	35	33	1800	1700/17.0	206	4700	3000
TRL 300	22/30	3 x 400V	63	39	1800	2300/22.6	347	4100	3000
TRL 500	37/50	3 x 400V	100	65	1800	3500/34.4	468	4300	3000
TRL 600	45/60	3 x 400V	-	78	1800	5200/51.1	950	3905	3000
TRL 750	55/75	3 x 400V	-	96	1800	6400/62.8	965	4310	3000
TRL 1000	75/100	3 x 400V	-	129	1800	7900/77.5	1065	4780	3000

The above data refer to electrical connection 3x400V/50Hz. For other power supplies please contact Kongskilde.

Rotary Valves and Injectors



TF injector with inlet hopper.

CAD 20 rotary valve with inlet hopper and damper.

CAE 20 rotary valve mounted below the cyclone in a pure suction installation.

Rotor for CA 20 rotary valve fitted with rubber paddles.

A rotary valve or an injector delivers the grain into the pipeline in pressure conveying systems. Injectors are an ideal, simple solution for small capacities.

A rotary intake unit is used for larger capacities. The rotary valve is driven by a small motor. Using a rotary valve instead of an injector increases the capacity significantly. CAD Rotary valve units are used for pressure conveying, while CAE models are used for suction conveying.

Benefits

- The CAD Rotary valve is equipped with polyurethane paddles, and a gear motor to run the unit.
- Rubber paddles provide an excellent seal against air loss.
- The rubber paddles can bend to minimise clogging.
- Standard inlet hoppers and shutters to regulate inlet volumes.

Blower	TRL 20	TRL 40	TRL 55	TRL 75
Injector	TF 20	TF 40	TF 55	TF 55

Technical specifications	Capacity t/hour 700 kg/m ³	Motor kW/hp	Power supply 50 Hz	Power consumption A	Cell wheel/ motor rpm	Weight kg	Connection top/bottom	Max pressure mm WG/kPa	Connected to control cabinet as standard
CAD 20	16	0.55/0.75	3 x 400V	1.33	65/1500	37	OK200/OK160	2000/19.6	TRL 150-200
CAD 30	26.5	1.1/1.5	3 x 400V	2.3	65/1500	84	OK200/OK160	4000/39.2	TRL 300
CAD 40	53	1.5/2.0	3 x 400V	3.1	65/1500	87	OK250/OK160	5000/49.1	TRL 500
CAE 20	16	0.55/0.75	3 x 400V	1.33	65/1500	34	OK200/(OK200)*	2000/19.6	TRL 150-200
CAE 40	53	1.5/2.0	3 x 400V	3.1	65/1500	76	OK200/(OK200)*	5000/49.1	TRL 500
CAD 50	100	1.5/2.0	3 x 400V	3.4	65/1500	100	OK160	8000/80.0	TRL 600/750/1000

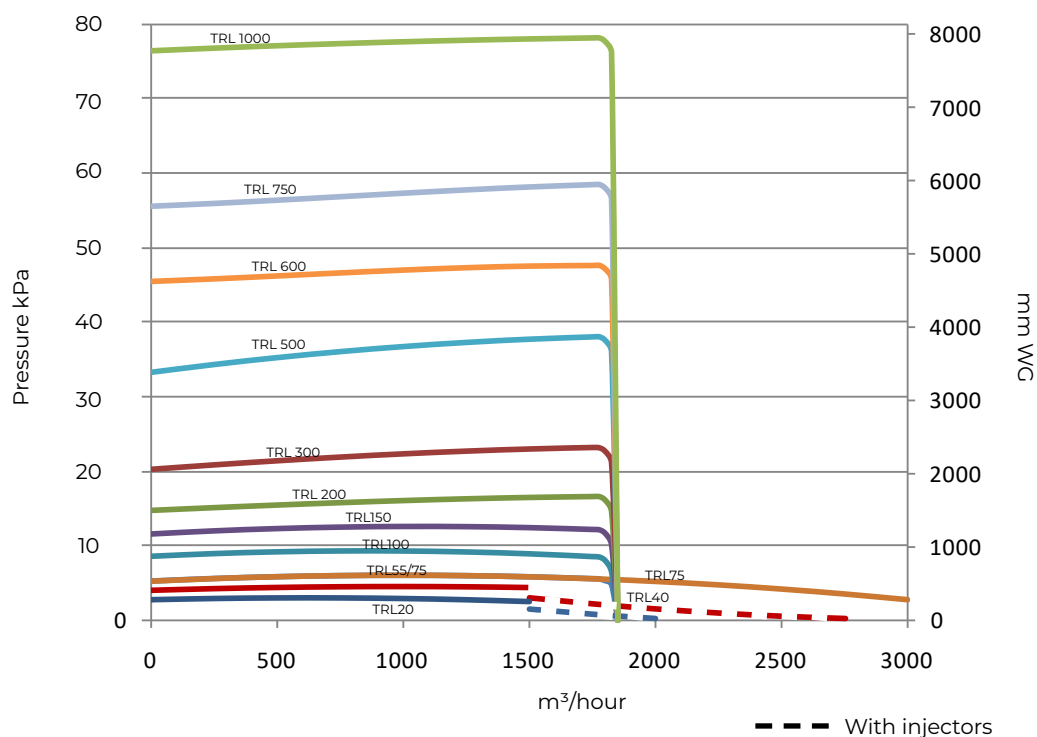
*Optional accessory

Capacities for TRL

Conveying capacity for purified and dried wheat (700 kg/m ³)(t/hour)	Transport Length (m)											
	10	20	30	40	50	60	80	100	120	150	200	
TRL 20 + TF 20	2.3	1.9	1.6	1.3	1.1	0.9	0.7	0.5				
TRL 40 + TF 40	4.0	3.3	2.8	2.5	2.1	1.9	1.5	1.1				
TRL 55/75 + TF 55	4.3	3.7	3.1	2.7	2.4	2.1	1.6	1.3	1.1	0.8		
TRL 55/75 + CA 20	8.2	6.9	6.0	5.2	4.6	4.1	3.3	2.7	2.2	1.7		
TRL 100 + CA 20	15.3	12.9	11.1	9.7	8.5	7.5	6.0	4.9	4.0	3.0	1.9	
TRL 150 + CA 20	18.5	17.9	16.2	14.1	12.3	10.9	8.7	7.1	5.8	4.3	2.7	
TRL 150 + CA 30	22.3	18.8	16.2	14.1	12.3	10.9	8.7	7.1	5.8	4.3	2.7	
TRL 200 + CA 20	17.5	17.4	17.3	17.3	16.3	14.6	11.8	9.8	7.8	6.4	4.3	
TRL 200 + CA 30	27.9	23.8	20.6	18.1	16.0	14.3	11.7	9.7	7.8	6.3	4.3	
TRL 300 + CA 30	29.7	28.7	27.0	23.8	21.2	19.0	15.7	13.2	11.2	9.0	6.5	
TRL 300 + CA 40	36.1	31.0	27.0	23.8	21.2	19.0	15.7	13.2	11.2	9.0	6.5	
TRL 500 + CA 40	49.5	44.0	39.5	35.8	32.6	30.0	25.6	22.3	19.6	16.5	12.7	
TRL 600 + CAD 50	59.3	52.7	47.4	42.9	39.2	36.0	30.7	26.7	23.6	19.7	15.2	
TRI 750 + CAD 50	74.0	65.8	59.2	53.6	48.9	44.9	38.3	33.3	29.4	24.6	19.0	
TRL 1000 + CAD 50	91.6	81.4	73.2	66.3	60.5	55.5	47.3	41.2	36.4	30.4	23.5	

Note: The table is based on a 4 m vertical lift and two 90° bends in the pipeline. The rest of the pipe is horizontal.

Blower Curves



Conveying capacities for pneumatic conveying systems depend on variables such as commodity, moisture content, temperature, humidity and pipe layout:

- Multiple bends reduce capacity.
- Extra vertical pipe reduces capacity.
- Moisture contents, above figures are based on 15%.
- Purity of the grain.
- Air temperature, barometric and altitude pressure.

Electric-Powered SUC-E



Type SUC-E is trolley mounted and easy to move.



Control cabinet for automatic starting/stopping the motor.



SUC 300E with automatic air regulation.



Belt transmission protects drive of both blower and rotary valve.

Kongskilde's wide range of suction blowers can be supplied for either electric or tractor power. Permanently installed conveying systems are usually based on electrically powered devices.

Benefits

- Mainly used for grain conveying inside buildings.
- Capacities up to 33 t/h.
- On wheels and easy to move.

Technical specifications	SUC 100 E	SUC 150 E	SUC 200 E	SUC 300 E	SUC 500 E
Motor power (blower), kW/hp	7.5/10	11/15	15/20	22/30	37/50
Motor power (rotary valve), kW/hp	0.55/0.75	0.55/0.75	0.55/0.75	1.1/1.5	1.5/2.0
Electrical connection, V/Hz	3x400/50	3x400/50	3x400/50	3x400/50	3x400/50
Total amps consumption	16	22	30	44	73
Min. amp. fusing (recommended)	25	35	50	63	100
Weight incl. motors, kg	210	243	285	477	668
Max. air output, m ³ /h	1800	1800	1800	1800	1800
Type of conveying pipe	OK/OKR	OK/OKR	OK/OKR	OK/OKR	OK/OKR
Diameter of the conveying pipe, mm	160	160	160	160	160
Control cabinet with automatic star/delta starter*	Yes	Yes	Yes	Yes	Yes

* Only motorised blowers

The above data refer to electrical connection 3x400V/50Hz. For other power supplies please contact Kongskilde.

Tractor Powered SUC-T



Three-point attachment to tractor lift.



SUC 500T compact construction.



Three-stage blower on SUC 500T provides high pressure for grain conveying.



Automatic air control is standard on tractor-powered blowers.

Tractor-powered suction blowers type SUC-T are attached to the tractor's three-point linkage. The blowers can be used to convey commodities to where high-capacity conveying is required and when no electrical power source is available. Capacities up to 44 t/h.

Also available without suction equipment for pure compressed air conveying. Provides approx. 20% increased capacity.

Technical specifications	SUC 300 T	SUC 500 T	SUC 700 T
Recommended min. power of tractor PTO kW/hp	34/45	48/65	62/85
PTO shaft speed, rpm	540	540	1000
PTO shaft dimension, tractor side	1 3/8" / 6 splines	1 3/8" / 6 splines	1 3/8" / 21 splines
Weight, kg	350	595	711
Blower max. air output, m ³ /h	1800	1800	1800
Type of conveying pipe	OK/OKR	OK/OKR	OK/OKR
Diameter of the conveying pipe, mm	160	160	160

Tractor Powered SUC-TR



The blower's loading equipment ready for road transport.

The TR models loading equipment is ideal for loading trucks and trailers.

Powerful blower with up to 4 steps provides great conveying out-put.

The belts can be tightened without using tools, although tools are required to gain access to the belts.

The SUC-TR models are pull-type PTO-driven suction blowers that can be used to load trucks or grain wagons directly from the on-floor storage, silos or grain bins.

They can also be used to convey commodities to storage where high-capacity conveying is required. The SUC-TR is available in three sizes.

Technical specifications	SUC 500 TR	SUC 700 TR	SUC 1000 TR
Recommended min. power of tractor PTO kW/hp	48/65	62/85	90/120
PTO shaft speed, rpm	540	1000	1000
PTO shaft dimension, tractor side	1 3/8" / 6 splines	1 3/8" / 21 splines	1 3/8" / 21 splines
Weight, kg	820	770	1050
Blower max. air output, m ³ /h	1800	1800	1800
Type of conveying pipe	OK/OKR	OK/OKR	OK/OKR
Diameter of the conveying pipe, mm	160	160	160

Tractor Powered SupraVac 2000



Loading equipment on SupraVac 2000 ready for loading grain onto lorry.



Loading equipment hydraulically folded to transport position.



Connection of pipe system. E.g. mounted on silos for filling.



Transport box (extra) for the suction head and pipe components.

SupraVac 2000 is the largest of our tractor-powered suction blowers. With a capacity of up to 120 t/h, it loads even the largest vehicles quickly. It has a hydraulic-folding truck loading boom that allows for quick setup. It conveniently locks into place for transport and storage.

Pipes can be connected quickly to the rear of the SupraVac 2000 to blow product into grain bins, flat storage or sealed tower silos. It uses OK200 (8") piping for maximum capacity or can use existing OK160 (6") pipelines on storage structures at reduced capacity.

Technical specifications	SupraVac 2000
Recommended min. power of tractor PTO kW/hp	125/170
PTO shaft speed, rpm	1000
PTO shaft dimension, tractor side	1 3/8" / 21 splines
Weight, kg	1600
Blower max. air output, m ³ /h	3300
Type conveying pipe (suction side)	OKR
Type conveying pipe (pressure side)	OK/OKR
Diameter of the conveying pipe, mm	200
Hydraulic connection	200, 1/2" ISO 0228
Hydraulic pressure, min.	50 bar

Suction Heads



Selecting The Right Suction Head

Maximize efficiency by selecting the best suction head for the job.

The suction blower can be used with different types of suction heads to suit any specific conveying job.

Selecting the right suction head for the conveying job in question provides the highest capacity and makes the job easier.

All suction blowers, whether PTO or electric-powered, can be equipped with various suction heads to suit specific needs. Kongskilde offers a variety of suction heads for both OK160 and OK200 intake suction lines.



Universal Suction Head
Flexible solution for any kind of job



Long Suction Head
For conveying from grain pits



Round Suction Head
For suction from silo wall opening



Short Suction Head
For short distance direct conveying

Fan Guard Systems



Conveying of Crops with High Dust Content

While conveying crops from one place to another, there's another problem to consider: wear of blower units. Crops sometimes contain abrasive particles such as soil or dust, and it is inevitable that some of the dust will be sucked through the blower. When working at high capacities, large amounts of dust may be carried with the grain.

Kongskilde has developed the Fan Guard System to enhance the life of the blower of the SUC 1000 TR and SupraVac 2000 models. The Fan Guard System removes the majority of the dust and dirt particles from the air stream before they reach the blower housing.

The Fan Guard utilizes a high-efficiency dust cyclone in which the air must pass before entering the blower housing. The cyclone removes fine material, which is collected in an easily emptied canister directly under the cyclone.



Suction Blower Capacities

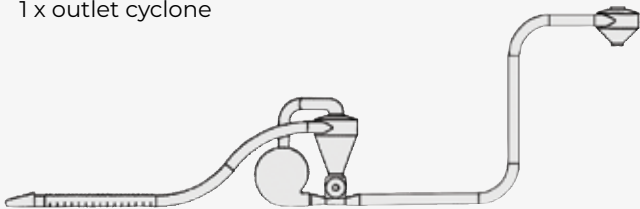
Example 1

Suction pipeline

- 1 x universal suction head
- 1 x 2.5 m polyurethane suction hose
- 2 x 2 m steel flex hose

Pressure pipeline

- A number of metres of horizontal piping
- 4 m vertical piping
- 2 x 90° bends
- 1 x outlet cyclone



Conveying distance Model	Metres							
	10	20	30	40	50	60	80	100
SUC 100	4.5	4.0	3.5	3.1	2.7	2.4	1.8	1.4
SUC 150	7.8	7.1	6.5	6.0	5.5	5.0	4.2	3.6
SUC 200	10.1	9.3	8.5	7.9	7.3	6.8	5.9	5.1
SUC 300	14.0	12.9	11.9	11.0	10.2	9.5	8.3	7.2
SUC 500	22.5	20.9	19.6	18.3	17.2	16.2	14.4	13.0
SUC 700	29.5	27.6	26.0	24.5	23.1	21.8	19.7	17.8
SUC 1000*	42.7	40.0	37.7	35.5	33.5	31.6	28.6	25.8
SupraVac 2000	68.1	65.4	64.0	58.5	55.8	60.0	44.3	39.1

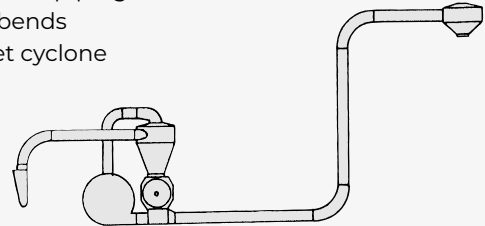
Example 2

Suction pipeline

- 1 x vertically-fixed universal suction head
- 1 x 90° bends
- 1 x 2 m horizontal piping

Pressure pipeline

- A number of metres of horizontal piping
- 4 m vertical piping
- 2 x 90° bends
- 1 x outlet cyclone



Conveying distance Model	Metres							
	10	20	30	40	50	60	80	100
SUC 100	7.1	6.2	5.4	4.7	4.1	3.6	2.7	2.0
SUC 150	12.1	10.7	9.6	8.6	7.8	7.0	5.8	4.8
SUC 200	15.7	13.9	12.5	11.2	10.1	9.1	7.5	6.2
SUC 300	20.4	18.2	16.4	14.9	13.6	12.5	10.6	9.1
SUC 500	33.2	30.1	27.4	25.1	23.1	21.4	18.6	16.3
SUC 700	44.2	40.3	36.9	34.0	31.5	29.3	25.6	22.7
SUC 1000*	64.0	58.4	53.5	49.3	45.7	42.5	37.1	32.9
SupraVac 2000	120.0	106.0	92.0	81.0	71.0	64.0	55.0	50.0

Conveying capacities in the tables are listed as t/hour for wheat as 700 kg/m³. The examples are for guidance purposes, as several factors influence the capacity. The capacities in the tables apply for the suction length indicated above the table.

*) Spec. round suction head.

Capacities

Conveying capacities for suction blowers depend on variables such as commodity, moisture content, temperature, humidity and pipe layout.

We recommend utilizing our wide range of OK piping components available to take advantage of their easy connection method.

To obtain the best possible capacity a few general guidelines are to be considered:

- Always use the correct pipe diameter, OK200 for SupraVac, OK160 for all other models.
- Keep the suction side as short as possible.
- Limit the use of suction hoses.
- Moisture contents of the crop will influence the capacity, above capacities are based on 15%.

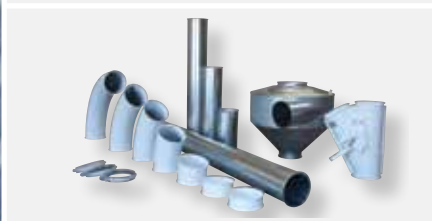
OK Pipe Systems



Bolt clamps and quick-release clamps for assembly of pipe components



Assembly of pipes with quick-release clamps



Wide range of components for easy construction of pipe systems

Kongskilde OK Pipe Systems

Every operation will have different requirements for capacity and layout. That demands a high degree of flexibility in choosing the piping systems that will allow all your equipment to work together.

The Kongskilde OK Pipe System is ideal for pneumatic conveying applications. The simple and flexible pipe systems may be adjusted to suit any specific purpose, resulting in shorter conveying distances and therefore the most efficient and economical solutions.

Robust Construction

Galvanized sheet steel makes the OK pipe system sturdy. The rolled pipe ends serve as reinforcements, maintaining the circular shape and ensuring tight joints.

Three choices of wall thickness are available, depending on the wear to which the pipe system will be exposed. Pipes are available in:

- OK standard,
- OKR reinforced
- OKD extra reinforced (for use after bends)

OK160 and OK200 are standard piping systems while OKR160 and OKR200 are reinforced with heavier material thickness.

Modular Pipe System

Designed in modular form, the OK pipe system comprises pipes, bends, branches, diverters, cyclones, outlets and other needed components, which are assembled quickly and easily using the unique OK quick-release clamp.

The wide choice of OK pipes and accessories ensures flexibility and ease of installation in existing buildings. The modular design of the pipe system makes maintenance and alterations easier, and the relatively low weight of the OK pipes makes assembly easier.

Temporary and Permanent Installations

Two types of OK couplings are available for temporary and permanent systems. If the pipe system is to be dismantled or altered frequently, the OK quick-release clamp will make assembly and removal easy without the use of tools. For permanent systems, the OK bolt clamp is recommended.

Full Utilization of the Air Stream

The advanced production machinery ensures a continuous, smooth inner surface of the pipeline, providing gentle and efficient conveying with and maximum utilization of the air stream.

Saved Floor Space

OK pipe supports permit wall and ceiling mounting, thus keeping clear valuable floor space in production areas or storage plants.



Trusted Global Provider of Grain Handling Solutions **Since 1949**

Since its establishment in 1949, Kongskilde has consistently prioritized the development of products aimed at enabling the efficient, appropriate, safe, and gentle handling of grain commodities, with a notable emphasis on the role of air in this process.

Furthermore, Kongskilde has cultivated a substantial level of expertise in mechanical conveying, cleaning, storage, and drying, positioning the company as a pioneer with unique knowledge in pneumatic conveying systems within the agricultural industry.

In the present day, Kongskilde remains dedicated to providing highly efficient pneumatic conveying systems in diverse layouts, alongside mechanical conveying systems. Each type of system offers specific advantages tailored to distinct solutions, ensuring both flexibility and effectiveness. We extend our efficient and proven solutions from a wide range of products and systems, making them available locally or globally through our own subsidiaries or trusted partners. This philosophy continues to empower us to serve customers worldwide.



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