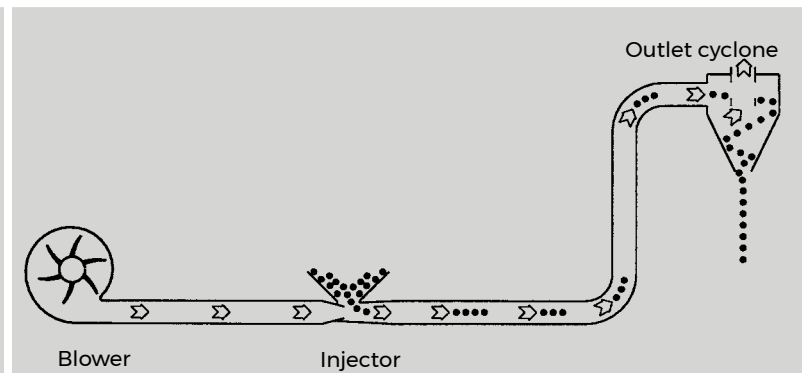
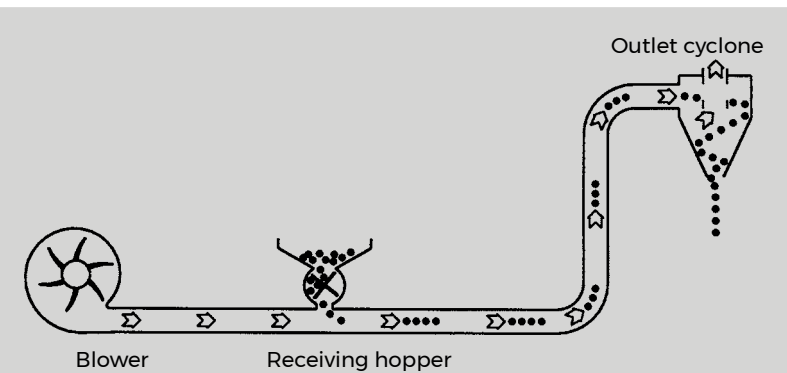




Pneumatic Grain Conveying

**Flexible Pneumatic
Conveying Solutions**

High Pressure Blowers TRL



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

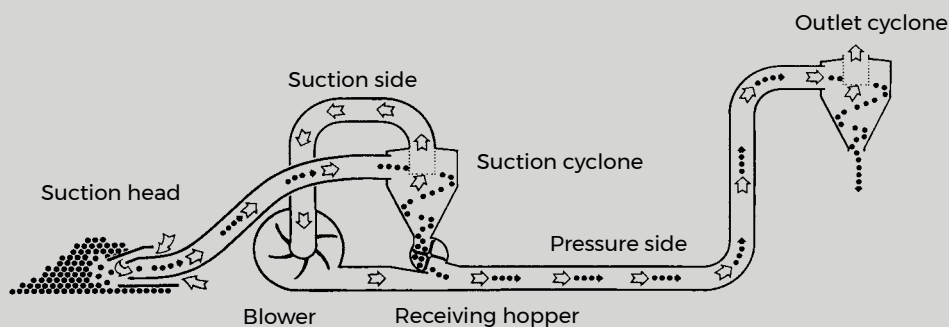
Benefits

- 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.

How a pressure blower system works

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. Divertors are used to convey the grain easily to different delivery locations.

Suction Blowers SUC



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.

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.

How a suction blower works

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.

Directly Driven TRL'S



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's shaft.

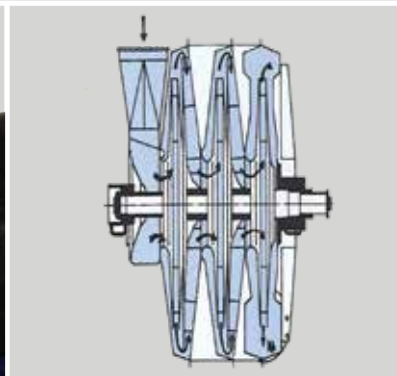
Benefits

- 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 VS/Pa	Weight kg	rpm
TRL 20	1.5/2	3 x 400V	10	3.1	1900*	250/2455	36	2850
TRL 40	3/4	3 x 400V	16	4.4	2600*	350/3440	68	2890
TRL 55	4/5.5	3 x 400V	16	7.5	1800	650/6380	77	2900
TRL 75	5.5/7.5	3 x 400V	20	10.5	3200	650/6380	92	2880

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

Belt Driven TRL'S



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 VS/Pa	Weight kg	Rev. blower /min	Rev. motor /min
TRL 100	7.5/10	3 x 400V	25	20	1800	950/9330	129	3650	2930
TRL 150	11/15	3 x 400V	35	27	1800	1300/12770	171	4200	2930
TRL 200	15/20	3 x 400V	35	33	1800	1700/17000	206	4700	2930
TRL 300	22/30	3 x 400V	63	39	1800	2300/22600	347	4100	2940
TRL 500	37/50	3 x 400V	100	65	1800	3500/34400	468	4300	2950
TRL 600	45/60	3 x 400V	-	78	1800	5200/51050	950	3905	2960
TRL 750	55/75	3 x 400V	-	96	1800	6400/92800	965	4310	2960
TRL 1000	75/100	3 x 400V	-	129	1800	7900/61700	1065	4780	2960

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.

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.

CAD Rotary valve units are used for pressure conveying, while CAE models are used for suction conveying.

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 VS/Pa	Connected to control cabinet as standard
CAD 20	16	0.55/0.75	3 x 400V	1.33	65/1400	37	OK200/OK160	2000/19600	TRL150-200
CAD 30	26.5	1.5/2.0	3 x 400V	2.3	65/1400	61	OK200/OK160	4000/39200	TRL 300
CAD 40	53	1.5/2.0	3 x 400V	3.1	65/1400	97	OK250/OK160	5000/49100	TRL 500
CAE 20	16	0.55/0.75	3 x 400V	1.33	65/1400	32	OK200/(OK200)*	2000/19600	TRL150-200
CAE 40	53	1.5/2.0	3 x 400V	3.1	65/1400	89	OK200/(OK200)*	5000/49100	TRL 500
CAD 50	100	1.5/2.0	3 x 400V	3.4	65/1400	40	OK160	8000/80000	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
TRL 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

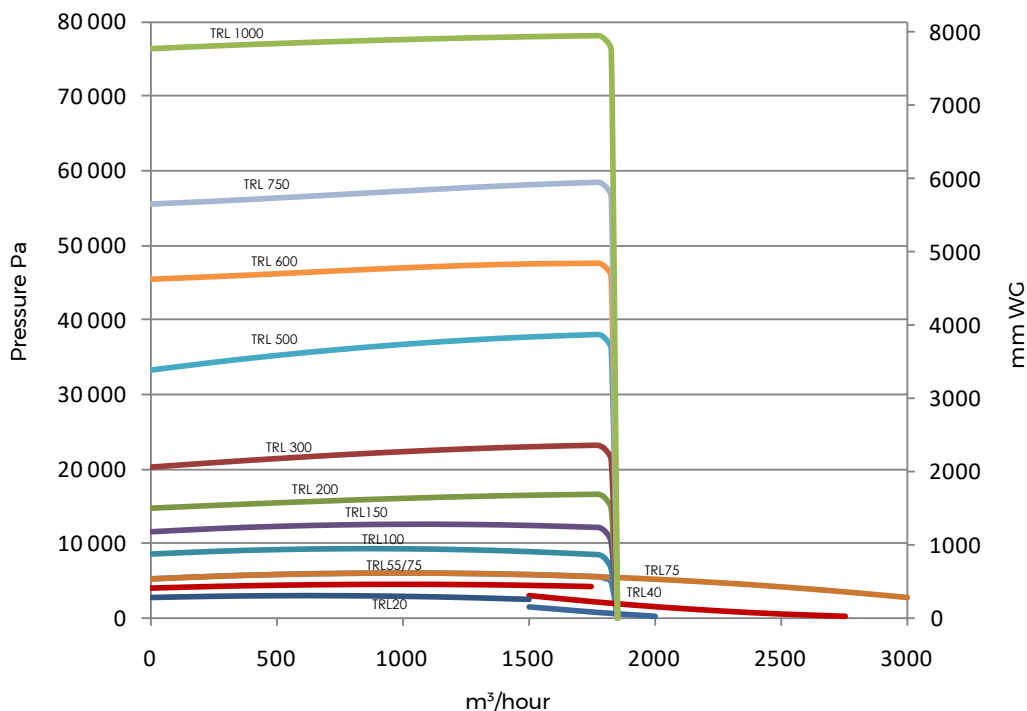
The table is based on a 4 m vertical lift and two 90° bends in the pipeline. The rest of the pipe is horizontal.

Capacities

Various factors affecting the conveying capacity:

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

Blower graph



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.

Electrical powered suction blower SUC-E:

- 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	0.3/0.5	0.37/0.5	0.37/0.5	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. 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	1000
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.

Trailer models type SUC-TR are powered by the tractor PTO shaft.

Loading equipment is standard on SUC-TR models. You use the loading equipment when you are loading grain onto a truck or trailer.

Technical specifications	SUC 500 TR		SUC 700 TR	SUC 1000 TR
Recommended min. power of tractor PTO kW/hp	48/65	48/65	62/85	90/120
PTO shaft speed, rpm	540	1000	1000	1000
PTO shaft dimension, tractor side	1 3/8"	1 3/8"	1 3/8"	1 3/8"
	6 splines	21 splines	21 splines	21 splines
Weight, kg	820	730	770	1050
Blower max. air output, m ³ /h	1800	1800	1800	1800
Type of conveying pipe	OK/OKR	OK/OKR	OK/OKR	OK/OKR
Diameter of the conveying pipe, mm	160	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 to our tractor-powered suction blower. With a capacity of up to 120 t/h, it loads even the largest vehicles quickly.

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 O228
Hydraulic pressure, min.	50 bar

Select the right **Suction Head**



The suction head makes the difference

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.



Universal Suction head:
A flexible solution for versatile applications.



Long suction head:
Suitable for conveying from grain pits.



Round suction head:
For suction from opening in the silo wall.

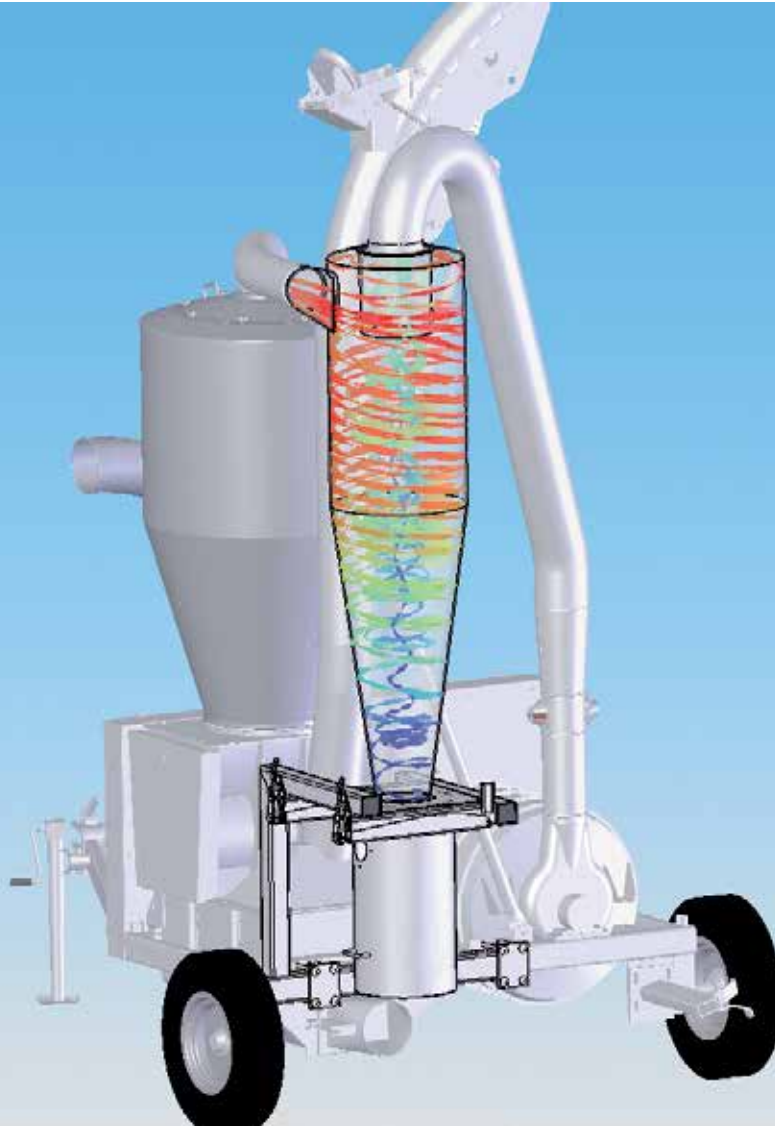


Suction head for cleaning purposes:
Easily picks up the last remnants of grain on the floor.



Short suction head:
For conveying directly from a vehicle or floor drying wall.

Fan Guard System



Conveying of Crops with High Dust Content

Crops sometimes contain abrasive particles such as soil 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.

Excessive wear of the blower is avoided by fitting the Fan Guard system, which filters out the dust before it enters the blower. SUC 1000 TR and SupraVac 2000 are available with the Fan Guard system.



Capacities for Suction Blowers

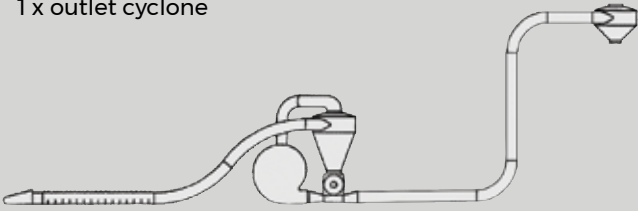
Example 1

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



Model	Conveying distance								
	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	

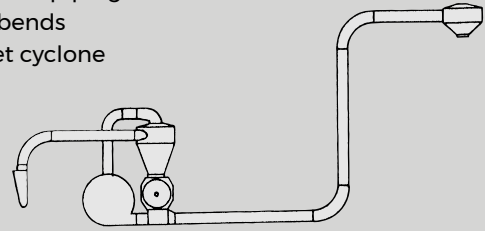
Example 2

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



Model	Conveying distance								
	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.

Use the wide range of OK piping components that are available and take advantage of the pipe components' easy connection method.

Capacities

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%.
- Contents of impurities like soil and dust also influence the capacity.

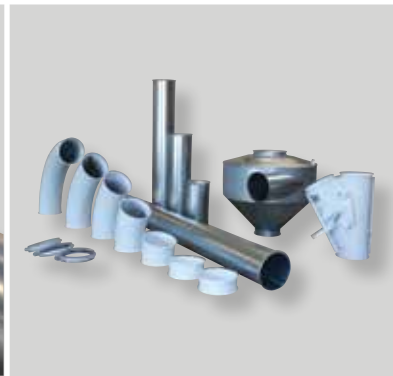
Kongskilde OK Pipe Systems



Bolt clamps and quick release coupling for assembly of pipe components.



Assembly of pipes with quick release coupling.



Wide range of pipe components for easy construction of pipe systems.



Pipe line for filling outdoor steel silos.

OK pipe systems

Access to an efficient pipe system is essential for the provision of high-performance pneumatic conveying systems. Kongskilde's OK160 and OK200 pipe ranges are built to meet the requirements of pneumatic conveying systems.

Benefits

- OK160 and OK200 are standard piping systems.
- OKR160 and OKR200 are reinforced piping systems with heavier material thickness.
- OKX160 bends have hardened wear surfaces to provide high durability and extra long life.
- Quick release couplings for pipelines, when frequent repositioning is needed.
- Bolt clamps for permanent pipeline installation.



Let the air do the work

With Kongskilde's pneumatic solutions the air is doing the work. We are pioneers within the field of conveying blowers for different solutions. Our solutions include conveying, cleaning and separation of grain and raw materials as well as handling of process waste from the paper, plastic and packaging industries. Quickly, efficiently and environment friendly.

In Kongskilde, our dedicated and experienced staff ensure that all products and solutions are in a league of their own both in regards to development, test, production and installation. The reliable and scalable solutions are designed in close cooperation with our customers, who always have the last say. Dialogue is the first step towards the best Kongskilde solution; you tell us your company needs - now and in the future.

Subject to be changed without notice. 121001809 EXP/CB/Pneumatic Conveying/BRO/0319

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