CFG Chain and Flight Elevator Technical specifications

The Kongskilde CFG chain and flight elevator is available for 40 t/h as standard and 20 t/h at request. The capacities are for grain with a bulk density of 670 kg/m³.

The Kongskilde CFG chain and flight elevators are produced in galvanized material to give max. protection against the impact from the weather on outdoor installations.

The CFG range is built up in modules in order to be able to combine these with several conveying solutions.

Range of Components

The elevator system is built up in modules, which means that different

solutions can be made by combining the modules in different ways to do vertical, inclining and horizontal conveying. The basic part of the elevator consists of an elevator head with drive, which can be either belt transmission or gear drive.

A number of different extensions are available to be able to build the elevator in various lengths. The boot can be either open (standard or flex type) or closed. The type with the open standard boot is placed in an open elevator trough or hopper. The flex type boot is used for closed systems keeping the grain inside the system.









Typical Building-up of an Elevator System



Iding-up of an Elevator System

To do horizontal conveying in connection with the elevator a range of trough augers are available. The auger extensions are available in various lengths from 0,5 m up to 2,0 m.

The trough augers are named CFG12 (12 t/h), CFG16 (16 t/h) and CFG20 (20 t/h).

Lengths of side augers up to 6 m can be driven from the bottom shaft on the elevator, which means that only one motor is necessary to run the system.

Drive sections are available for installing a separate gear motor to run the trough auger, in case the load on the elevator motor is too high due to the actual layout of the system (more than 5,5 kW is required).





For longer distances of the feeding augers or for high elevators separate motor kits are available to run the auger.

The motor can be placed either beside the elevator boot or at the end of the trough auger. Trough augers are available for both right-hand side and left-hand side.

The side is defined by looking at the elevator extensions in the direction, which the grain outlet on the elevator head is pointing. The augers to be used on the left side are those called "Left", and for the opposite side they are called "Right".

The elevator can also be installed to be used as a chain conveyor. The elevator is then installed horizontally or with an inclination of max. 10 degr. The closed bottom boot is used in this situation. Special 45 degr. inlet and 90 degr. outlet are required.

The elevator system can also be built up as an angleveyor system, which means that in the elevator extension system an angle piece is installed, which bend the elevator either 45 degrees or 90 degrees.

The elevator can then do both horizontal, vertical or 45 degr. inclining conveying. The elevator chain with the paddles is then doing all the conveying both horizontally and vertically driven by one motor.

Special extensions with side inlets are available to be installed on the horizontal part of the system to allow grain to enter the elevator along the sides of the extensions. In connection with a grain pit this can be a beneficial solution.

Angleveyor



A tightening section shall allways be mounted, in that way you allways have two possibilities for tightening the chain,

Accessories

Outlet for elevator head.

Adapter for the outlet on the elevator head to make it possible to connect OK160/OK200 down pipes. The head can be used when the elevator is installed in angles from vertical down to 45 degr. inclination.





Outlet 90 Degr.

Outlet is to be used when the elevator is used as chain conveyor. The outlet can be used, when the unit is installed in angles from horizontal and up to inclining 45 degr. from horizontal.



Inlet 45 Degr.

Inlet is to be installed on the backside (the elevator conveying chain is moving downwards) in the elevator casing. The inlet is normally used in combination with the closed elevator boot.



CFG20 920 51249 CFG40 920 52249 CFG20 920 51231 CFG40 920 52231

The inlet is installed on the side of the elevator extension where the conveying chain is moving downwards. It is possible to install 2 inlets, one on each side.

In systems where the 45 degr. inlet is used, it is important to be able to control the flow of grain into the elevator, as it is possible to load more grain into the elevator than it is able to convey.

Inlet for "Flex" Elevator Boot

The inlets are to be installed on the elevator flex trough. One inlet can be installed on each side.



Extension 0,5 m with Inlet to Turn

The inlet is installed on the side where the conveying chain is moving towards the elevator head. The inlet can be used on elevators installed in angles from horizontal and up to 60 degr. inclination. In this configuration it is necessary to control the amount of grain going into the elevator, as it is possible to overload the unit.

In the system layout it means that the equipment installed before the elevator has to deliver a continuos flow of grain at a lower rate than the max. capacity of the elevator.





Extension 0,5 m with Side Inlet

The inlet is to be used when the elevator is installed to work as a chain conveyor. The elevator can be installed in angles from horizontal and up to 10 degr. inclination.

Flow of grain into the unit has to be controlled in the same way as for the previous inlet.



Hopper for Elevator

The elevator with an open boot is placed in the hopper. The elevator has to be installed with two propellers to reach max. capacity.



Support Brackets

Support kits are available both in single and double versions. The elevators can normally be installed with a max. distance of 5 m between the supports.

The single version is supporting the casing structure to take the load from the weight of the elevator components and the grain. This means that the elevator can be installed with a free span between the supports corresponding to the length of the support structure.

If the elevator is installed outside it has to be equipped with the double version, which also takes the side load from the wind.



Double version taking load from weight and wind. Single version for weight load.



Solutions

We have illustrated 8 different solutions. All solutions are build up from the configuration sheet.

1.

Elevator with open boot placed in trough or in hopper. The trough is open on the top allowing for the grain to enter the bottom of the elevator.



2.

Elevator with trough augers (feeding augers) connected to the bottom boot. The bottom boot can either be the closed type (flex boot) or the open type. The auger can either be to one side or to both sides.

The trough auger is connected to the bottom chain wheel and thus driven by the same motor as running the elevator.

A clutch can be installed between the flight and the auger making it possible to disengage the auger.

This can be useful, if the elevator is used e.g. for conveying from pit to storage, and for emptying storage.

The feeding auger to the one side is then installed in the grain pit. The feeding auger to the other side is installed in the grain storage.

The trough auger is connected to the bottom chain wheel and thus driven by the same motor as running the elevator.

Closed type feeding augers. Grain is feeded through an inlet.



Open type feeding augers (right + left). Grain is feeded along the length of the auger.



3.

Elevator with Trough Auger on the Right Side Driven by its Own Motor

Motor on the elevator boot



It is possible to install trough auger sections between the elevator boot and the gear motor also.

Max length of feeding auger: Open 7,5 m, closed 18 m.

Same arrangement is available with the trough auger to the left side.



4.

Trough Auger to the Left Side

Motor on the end of the auger.



Max length of feeding auger: Open/closed 4 m.

Same arrangement is available with the trough auger to the left side. Feeding auger can also be installed on the right side driven by the same gear motor.

5.

Elevator with Closed Bottom Boot

Separate inlet on the bottom extension is used. Continuos controlled flow of grain into the elevator is necessary to avoid overload of the unit.



6.

Elevator with 90 Degr. Angle Section





7.

Elevator with 45 Degr. Angle Section



8.

Horizontal Conveyor

The CFG elevators can be installed as chain conveyors for horizontal or slightly inclining conveying. The conveying chain is installed and running in the opposite way as normally.



The elevator extensions are split in separate rooms in the length direction. When the unit is used as elevator, the narrow room is on the up-going side, where the grain is conveyed. When used as chain conveyor the grain is conveyed in the room with the large cross area.

Data Chain Elevators

Trough augers for feeding elevators:

FLG12 trough auger, winding distance 60 mm:			
FLG16 trough auger, winding distance 90 mm:	16 t/h		
FLG20 trough auger, winding distance 125 mm:	20 t/h		
Diameter of all auger windings:	135 mm		
Auger RPM driven by gear motor:	250		
Max. length of feeding auger driven by elevator:	6 m		
Max. length of feeding auger driven by separate motor at auger end: (when pushed)	4 m		
Max. length of feeding auger driven by separate motor at elevator boot			
With open trough:	7,5 m		
With closed trough:	18 m		

Capacities CFG20

The capacities are approximate and valid for normal clean and dry grain (15%). It is important to take into consideration when doing the systems layout that the capacity performed by a chain elevator may vary a lot.

In case a chain elevator is installed as the first unit in a row of conveying equipment, it is then necessary to include in the solution, how the excess of grain is handled, if the elevator conveys more than it is rated for.

CFG20 without feeding propellers inlet on both sides:	12 t/h
CFG20 with feeding propellers on both sides:	20 t/h
CFG20 with FLG12 auger feeding from one side:	12 t/h
CFG20 with FLG16 auger feeding from one side:	16 t/h
CFG20 with FLG20 auger feeding from one side:	20 t/h
Capacities CFG40	
CFG40 with feeding propellers on both sides:	40 t/h
CFG40 with FLG20 augers feeding from both sides:	40 t/h
For other configurations of feeding augers the capacity depends on the	e capacity of these.
RPM on drive shaft in elevator head:	280
Deverserentien	

Power consumption:	
FLG trough auger open type:	0,40 kW/m
FLG trough auger closed type:	0,18 kW/m



Power Consumption

Power consumption in kW for elevators alone and in combination with trough auger with side inlet. Elevator height is the length of the extensions.

CFG20	Length of trough auger side inlet (m)			
Height (m)	0	2	4	6
3	2,2	2,2	3	4
4	2,2	2,2	3	4
5	2,2	2,2	3	4
6	2,2	3	4	5,5
7	2,2	3	4	5,5
8	2,2	3	4	5,5
9	3	4	4	5,5
10	3	4	5,5	5,5
11	3	4	5,5	5,5
12	3	4	5,5	5,5
13	4	4	5,5	
14	4	5,5	5,5	
15	4	5,5	5,5	
16	4	5,5	5,5	
17	5,5	5,5		
18	5,5	5,5		
CFG40 Length of trough auger side inlet (m)				

CFG40	Length of trough auger side inlet (m)			
Height (m)	0	2	4	6
3	2,2	3	4	4
4	2,2	3	4	5,5
5	2,2	3	4	5,5
6	3	4	4	5,5
7	3	4	5,5	5,5
8	3	4	5,5	5,5
9	4	4	5,5	
10	4	5,5	5,5	
11	4	5,5	5,5	
12	4	5,5	5,5	
13	5,5	5,5		
14	5,5	5,5		
15	5,5	5,5		
16	5,5			
17	5,5			
18	5,5			

For angleveyors 2 m can be added to the length of extensions. An angleveyor with 14 m length of extensions requires e.g. the same motor size as an elevator with 12 m length of extensions.





































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