



MODEL KF-400

FRICITION DISK EXTRUDER

The KoEx Friction Disk Extruder produces both Baked and Fry-Type twists using degermed corn grits, polished rice grits, lentils, peas etc.



Production rates of up to 400kg per hour, with expansion in the range of 75 to 80g/lit bulk density, are possible with a corn feedstock.

The extruder is designed for high productivity, at both high and low throughput, which is achieved by integrating a sophisticated mechanical design with advanced control systems. Using this level of automation ensures repeatable performance and minimum wastage, especially during start up and when raw material conditions change.

The system is easy to operate, with a well-designed graphic interface to assist both your operator and your maintenance staff. You are able to preset recipes for different products and raw material conditions, and the system diagnostics will tell you when there is a problem requiring attention.

Your new KoEx extruder is fully supported by our factory warrantee, spares and service facilities. We are able to supply you with replacement parts and tooling, and to design new tools for your specific requirements. We have the capacity to provide a complete service from the supply of individual parts, through to turnkey projects, including product development.

General Description

The KoEx KF-400 friction disk extruder is built around a massive cast iron frame that supports all of the mechanical assembly of the machine, and which is fully clad to provide both operator safety protection and an easily cleaned surface for hygiene maintenance.

All moving parts are enclosed, with safety interlocks on parts that are likely to be moved during normal operation of the machine. Adjustable feet allow the machine to be mounted on uneven and sloping floors.

The standard tooling consists of the feed worm, a rotating disk assembly and a stationary disk assembly, which may be in various forms depending on the product required. We have standard designs proved by many years of production performance, with custom designs available for your application.

Heating elements control the extruder barrel temperature, which considerably speeds the start up procedure. Temperature monitoring of the extruder barrel is a standard feature.

Machine maintenance and hygiene is well catered for. The tooling is easy to remove from the extruder with simple hand tools and is easy to replace.

To ensure the production of 'on – specification' product throughout the working life of the extruder tooling, infinitely

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variable and continuous adjustments are available for:

- Plate Gap (gap between the friction disk and the faceplate)
- Cone Gap (internal residence space between the worm end and the faceplate)
- Friction disk speed
- Worm speed

These adjustments enable precise control over the extruder cooking performance, and provide a full range of compensation for normal operational wear.

The control system fitted to the KF-400 allows semi automatic start-up of the extrusion process, and can be integrated with other aspects of your production line. The standard control system allows for several recipes to be entered for different products and /or raw material conditions, leading to a truly flexible extruder with highly repeatable results.

Your operators will find the KF-400 easy to use. A well-designed multi page graphic interface provides information and allows the operator to control the machine with a minimum of training. The standard system includes recipe setting, start-up and shutdown procedure guides as well as operational and alarm information.

The KoEx Friction Disk Extruder consists of the following major functional parts

Grain Delivery Subsystem:

Grain is gravity fed from the chute mounted on the machine, direct to the barrel inlet port. The operator can control the flow by means of a valve.

Head Assembly Subsystem:

This assembly houses the extruder Auger, Stationary Disc, Knives and the Auger Drive assembly. The complete sub-system slides along two linear bearing rails, driven by a precision screw, which is in turn, controlled by a variable speed, D.C. motor gearbox. This arrangement achieves the very accurate operational adjustments, which are required for consistent high quality production, and also provides for easy maintenance access by moving the sub-assembly up to 200 mm.

The Auger position within the barrel is also externally adjustable by the operator. The operator can adjust the auger speed from the Control Display Screen.

In order to reduce start up wastage to a negligible amount, electric heating is provided to raise the barrel system temperature to the required operating level, and this will then automatically heat the barrel to maintain the desired product process conditions.

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Rotating Disc Subsystem:

The Rotating Disc is driven by a 45 kW motor. The speed of the Disc motor is controlled from the Operator Display Screen via a variable speed controller.

Product Conveyor:

The two-way product conveyor is used to direct the finished product to either the collection conveyor or to waste as selected by the operator from the Display Screen. It can be easily removed as a complete unit for cleaning or maintenance.

Vapour Extraction:

The friction disk assembly is enclosed for operator safety. An integral vapour extraction hood that can be connected to a centralised extraction system protects the work environment. As an option for those plants that do not have centralised vapour extraction, the KF-400 can be equipped with its own extraction fan.

Frame:

The machine is built around a heavy cast iron base mounted on a frame constructed of heavy steel sections rigidly welded as a unit. Stainless steel covers provide protection for safety and cleanliness. The frame is mounted on four adjustable feet and may be skid mounted or bolted to a base or floor.

Control Equipment:

The machine control system provides the operator with control and indication of a range of functions. Functions available for control from screen displays include:

- Disk drive ON/OFF Status
- Disk drive variable speed and load control
- Auger drive ON/OFF, Status
- Auger drive variable speed and load control & Indication
- Barrel heater control and indication of temperature
- Disc gap control and indication
- Cone gap control and indication
- Conveyor Start / Stop
- Conveyor Direction
- Start up Sequence control
- Shutdown Sequence Control
- Menu Selection
- Alarms

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The use of this sophisticated and flexible control equipment provides superior control over your production quality, and will also assist your management of the production facility. Features such as simple trend displays keep track of production rates, maintenance schedules can be monitored, and on-line management reporting to a supervisor's computer can be implemented.

Safety Features:

Operators are protected from accidental injury by panels and guards that protect all rotating parts. Interlocks are also provided to sequence drives and thereby reduce the risk of accidental damage to the extruder.

Consumable Tooling:

We supply a wide variety of consumable tooling for the KF 200, including Stationary and Rotating Discs, Pins, Knives, Liners and Augers. These can be supplied as standard KoEx designs or to your specifications.

KoEx holds these and other component parts in stock, and they are normally available for dispatch within 24 hours of our receipt of your order.

Specifications

Dimensions

Overall	2150mm wide, 1008mm deep, 1950mm high		
Exit Conveyor	Height above the machine base		770mm
	Width between supports		250mm
Feed Hopper	Height above the machine base		1850mm

Power Requirements

Power Supply	380 - 500v	50 - 60 Hz	3 phase
Auger Drive	7.5 Kw		
Disk Drive	45.0 Kw		
Conveyor Drive	0.11 Kw		

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