From grain to groats via the Drum Groat Cutter TGS

Drum groat cutters are used worldwide for cutting cereal grains. Unlike other crushing and grinding concepts, such as for example roller mills, the drum groat cutter cuts each grain cross-ways to the longitudinal axis in defined fashion (Figure 1). This allows a narrow grain spectrum, generates minimal amounts of cutting flour and permits largely two-sided opening up of the starch structure of the cereal grains. The drum groat cutter is used in the milling sectors that process wheat, oats, rye, spelt, barley, triticale, rice, as well as einkorn, emmer or kamut wheat types.

![Fig.1: Groated oats](image)

Range of applications

The cut cereal, also called “groats”, can be used in a wide number of fields. In human nutrition, flakes of different sizes known as baby flakes are produced from groats (Figure 2). These are consumed as mono components, as well as in muesli mixtures and bars and in the bakery industry for bread, rolls and biscuits.

The pure groats are also used in bread and rolls in the bakery industry. In addition, drum groat cutters are used to meet the different requirements made of bulgur qualities. Groats are primarily used in flake form, as this promotes a large number of nutritional benefits that are conducive to well-being and digestibility.
In the feed industry groated cereals can be used for special structurized feed, for instance in the production of barley-rich mixtures for piglets, lambs and calves, as a feeding control for parent animals in poultry breeding, and as bird feed. The precisely targeted cross cutting of cereal grains makes it possible to ensure that the coarse structure is maintained. Using the drum groat cutter produces a large number of positive effects, such as maintaining feed structure, uniform feed uptake, uniform feed conversion, improvement of the physiological layering in the gastrointestinal tract and stimulation of the gastrointestinal peristalsis. Animal welfare and animal health are promoted and feeding best suited to the animal species is enabled.

How it works

The grain is fed via a continuously adjustable vibrating channel into two perforated drums secured on a horizontal shaft. Specially arranged buckets in the drums ensure uniform distribution of the material to be cut. Excess quantities and oversized particles are discharged separately via an overflow. The drums are equipped with calibrated perforations that have different bore diameters depending on the cereal type. The lower half of the rotating drums is surrounded by a precision knife basket without shims. The grains falling through the drum holes in their longitudinal axis are caught by the knives and cut crossways. Thanks to the special precision knife basket, a uniform cutting pattern, less cutting flour and a longer service life of the knives are achieved.

The cutting angle can be varied by different knife baskets. Accordingly, it is possible to produce coarse, medium or fine groats. The service life of the knives can be increased further by easy lateral shifting of the entire precision knife basket. Individual shims are no longer necessary here. The knife basket can be changed quickly when selecting a different cutting size and the knives themselves changed by simply rotating the internal knife basket unit. The changeover times are approx. 75 % shorter than those of conventional machines.
In order to keep the drum perforations open, pinwheels are arranged above the carrier frame and push any grains clogging the holes back into the drum. The performance of the drum groat cutter depends on the type of grain to be processed, the purity of the input product, the uniformity, the desired cutting size and the perforation selected.

A large number of aspects have been optimized in the newly revised Drum Groat Cutter type 3000 (Figure 3). The objective was to optimize the inner unit while maintaining the outer dimensions. This has made it possible to distinctly increase the performance, thanks to larger drums and an increase in the number of knives.

**Fig.3: Drum Groat Cutter type TGS 3000**

**Summary**

The SCHULE-Drum Groat Cutter is a machine that is suitable for many different fields of application in food and feed production, making it possible to achieve a homogenously structured, cross-cut product with minimal power requirement.

According to the Victam Grapas Jury, the Drum Groat Cutter is an evolutionary development allowing important progress in efficient groating of grain. At the Victam Trade Fair in Cologne in mid-2015, the Drum Groat Cutter won third prize in the GRAPAS awards.

The newly developed, precision knife frame without shims has helped to reduce service and maintenance times distinctly. Furthermore, the new geometry and the use of special metals, as well as the adjustable knife basket have extended the service lives of the main wear parts substantially. And finally, with the precision knife basket, the enlarged drums and the increase in the number of knives, a higher output per drum and uniform, high quality cutting leading to a distinctly higher yield of cut grains per batch has been achieved by comparison with the other machines available on the market.

Demonstrations and trials with the Drum Groat Cutter can be agreed by arrangement at the Technical Centre of SCHULE Mühlenbau GmbH.
Contact and further information

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