

FP240

## Kernel Processing Units



ÛH









## Run With the Leader and Increase Profit

At the head of the pack in roll technology, Horning is passionate about kernel processing scores and profitability for all players in the dairy food chain. This processor package embodies the passion. Built for KP optimization, durability, and ease of use, these units are money makers.



## Kernel Processor Kits

### Soup Up a Brand New Machine or Your Current Model

Many Horning fans order their new pull-type forage choppers straight from the factory without a kernel processor. They love bringing their new baby into the field for the first time with processing power to burn. Or you can also get a thrill by revving up performance on your existing rig.



### Looks Good, Works Better

Horning roll technology is essential, but those fine-looking beauties are tucked away out of sight. Looks ain't everything, but this sleek unit doesn't have anything to be ashamed of in that department either.





#### **Plug and Play Installation**

Horning Kernel Processing Kits are turnkey packages engineered for simple installation to make your job easier. Bolt it into place and it will look like it was born there. Everything fits and all the components are field-ready—hook up the belts and starting rolling.

#### Workmanship We'll Stand Behind

Precision-built, premium quality, powerful performance—we want this processor to be an asset that serves you with excellence through many harvest seasons. We stand by you with a one-year workmanship and materials warranty on the whole unit and a five-year unconditional warranty on the bearing housing and idler arms, to be sure that is true.

#### We've Got You Covered

John Deere, New Holland, Case IH and more. We have units customized for most major makes and models of pull-type choppers.

John Deere

New Holland



all models: 3940 thru 3975

all models: 782 thru FP240

model FHX300

+ more



#### **Powder Coated Finish**

Perfectly paint-matched to your brand, the tough galvaneal steel external shields with powder coat finish looks great and protects against rust and flaking. The lines and decals match your machine, too.









#### **Speedy Switcheroo**

Forage season is short. Minutes are monumental. Clever engineering allows you to switch from corn to hay in minutes. Just remove the pan at the bottom of the processor, take off the belts, and you are ready to cut hay. It's as simple as pulling two spring-loaded pins and popping it out.

#### Serious Shafts, No Joke

Bearing the load inside the processor are two TG&P alloy shafts. These big, two-inch workhorses run smooth and true no matter the load. Horning shafts don't have stepped milling for either bearings or pulleys. Too much depends on them being simply the strongest.



## Why Kernel Processing?

What does it take to run with the best in obtaining kernel processing scores that will optimize nutrition, health and milk production in dairy cows? It takes a Kernel Processor unit: a good one. There are four key factors that need to be understood, implemented and monitored to consistently crank out KP scores that will put you at the top of your dairy nutrition game.

#### **1. Roll Condition**

Farmers and custom operators take great pains to select the right rolls. And they should – it's critical. An often overlooked factor to quality processing is the condition of the processing rolls. If rolls continue to be used when they pass their prime, KP scores begin to falter, then drop off sharply. Running a roll too long can actually be worse than choosing the wrong roll.

#### 2. Tooth Spacing

Tooth spacing is the next critical factor in quality kernel processing. There are many different options in the marketplace.

- Running tooth spacing combination of of 4 grooves per inch on one roll and 4.5 grooves per inch on the other, is optimum for corn silage in the self propelled industry.
- In direct-cut, whole-crop such as wheat, sorghum, etc., testing has shown 6 grooves per inch using a with Fibertech Chevron roll with a straight tooth profile instead of a sawtooth profile, produced unmatched results in grain processing.
- ► For the feed mill industry 10 groove rolls do a good crack on wheat, barley, etc. To just crack corn 6 groove rolls are the most common but 8 grooves can be used if you'd like to process it a bit finer.



#### 3. Tooth style

The third critical factor in outstanding kernel processing is the style of the tooth.

First a brief history of the development of tooth style designs. Kernel Processing first debuted in the 80's with straight tooth rollers. When processing took hold in the industry in the mid 90's, innovation soon followed with the sawtooth design for more ripping action. The Hi-Capacity sawtooth design was pioneered by Horning in 2002. In 2007 Horning introduced Dual Cut (now being discontinued in favor of better designs) to the marketplace with great success. The design that Shredlage began using in 2011, is a similar variation of the dual cut design. A huge breakthrough came to the industry when Horning unveiled the innovative Fibertech Chevron design in 2015, a patented offering that continues to lead the market. (What will be the next innovation? Stay tuned!)

Tooth style contributes to quality kernel processing in 3 ways:

- 1. Groove patterns affect the way the forage crop mat feeds through between the rolls. This affects wear life, crop mat penetration and throughput capability.
- 2. Tooth shape, formed by the intersecting lines running horizontally and vertically across the roll, is key to the type of processing action. Fibertech Chevron tooth shape has square corners and can be used with either the Hi-Capacity sawtooth profile or the straight tooth profile depending on the application. The shape and profile combination of the teeth have a huge bearing on how much ripping action happens, how the crop mat is penetrated and the wear pattern of the roll.
- 3. Tooth quantity configurations can be chosen for different fineness in processing for various applications.

The more aggressive roll patterns are designed for higher throughput on higher horsepower machines and better processing.

#### 4. Speed difference

The fourth critical factor (a driving factor) to quality kernel procession, is the speed difference at which the rolls are spinning. 20% differential was common in the early days but has been stepped up to 30% in most models. Today new machines are delivered with at least a 30% speed differential, and most times in the self propelled industry a 40% to 50% differential which delivers the optimum processing action.

Some older machines will not be able to go more than 30% but quite a few can be updated. It simply takes more horsepower to do a better processing job. The higher the speed differential the more visible the results. See page 23 in this brochure on how to figure speed differential.

#### **Flex Champ**

The suspension framework that holds the rolls is ingeniously equipped with spring-loaded tension. If a large piece of foreign material runs through the processor, this flexing action allows it to pass through without tearing things up.

#### **Heavy End Frames for Stability**

Inside, the processor is built like a tank. Every aspect of the construction takes it to the max. The super-duty end frames give the whole unit excellent stability and consistency. Fifty years from now it will still be a heavy hunk of steel.







#### **Coated for Durability**

Many parts and components are coated for extra-long life. All hardware parts are zinc-coated, and all shields wear a protected galvanneal undercoating.

#### **Heavy-Duty Cast Bearing Housings**

No give, just solid muscle. That was the vision of this design. And it works! Less than 0.03% failure rate. The premium quality custom bearing housings are just plain massive. They last for years, but if you need to replace them, it's easy.

Unconditional 5-year warranty on bearing housing and idler arm.

#### Adjusts In a Wink

Roll adjustment is almost child's play with the Horning processor. A simple taper block system easily moves the rolls in small increments. A few turns to the hex head adjustment bolt dials in the perfect gap for optimum processing action.

## **Roll Options**

#### Extraordinarily capable.

Versatile takes on a whole new meaning when it comes to the range of roll options the Horning processor makes possible!



#### Sawtooth Roll

Studies have shown that in most applications, sawtooth roll configurations running at 30% to 40% differential are the most energy efficient with kernel processing scores topping the charts for premium forage digestibility. Four teeth per inch heat treated are standard for pulltype. Sawtooth rolls at the right configurations can offer excellent cost efficiencies in the production of high quality feedstuffs for Dairy or Beef.



#### **Fibertech Chevron**

Or... you can run Fibertech Chevron in either heat treated or chrome coating<sup>\*</sup> for rolls that very well could outlast your machine! Take advantage of the patented Fibertech tooth design for unmatched performance in standard forage harvest applications. Fibertech can run at either a standard 40% speed differential or an optional 30% speed differential for customized applications. Four teeth per inch is standard on pull type machines. Custom tooth configuration available. Fibertech Chevron is great for snaplage or extreme processing. Try the Fibertech Chevron, you'll be amazed.

#### **Full Access for More Elbow Room**

We designed the access doors to "button down" tight and stay put while being easy to get in and out of. Need more elbow room? Remove the doors completely for wide-open access to the heart of the processor.

#### Premium belts.

Horning KP units come standard with premium kevlar belts which are 1.5 to 2x stronger than non-kevlar belts. This allows us to run only 4 belts on the processing unit for greater performance, greater longevity and less cost over the lifetime of the KP Unit. Premium belts also reduce mechanical failure due to belts to nearly zero.







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### **Optional Haylage Shields**

Horning goes the extra mile to keep your equipment in top form. This haylage shield snaps under the roll to protect the roll from the pack and prevent rusting.

## **Kernel Processor Specs and Features**

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#### **New Holland**

782-790   5	590lbs   3-	belt drive
890-892   6	625lbs   4-	belt drive
900-FP230	665lbs	4-belt drive
FP240-FHX3	<b>00</b>   680ll	os   4-belt drive

#### **John Deere**

3940-55	750lbs	3-belt drive
	(Fibertech 4-belt)	
3960-75	790lbs	4-belt drive

#### **Additional Features**

- Easy Access for convenient belt removal
- Removable pan to convert for hay chopping
- Kevlar belts for maximum no-stretch life
  - 2" TG&P alloy through shaft with no steps
- Easy-open hood allows quick access to rollers for maintenance.
- Clear installation instructions included with all kernel processor kits for simple customer installation.
- Phone service for installation (if needed) included no extra charge!
- Minimal process power requirementdifferences between <sup>3</sup>/<sub>4</sub>' cut lengthwith processor vs <sup>3</sup>/<sub>8</sub>' cut length with-out a processor



#### **Figuring Speed Difference**

There are two methods used in figuring the speed difference in rolls.

Both differential calculation methods use the pitch diameter of the pulley as the basis for the measurement. Some brands figure it one way and some the other. Neither calculation is wrong. But it is important to know which way it is calculated so that you can be sure you are comparing "apples to apples".



(Notice that the greater the roll speed differential, the greater the gap between the results of these formulas.)

#### Horning Method (H Method):

(based on pulley pitch diameters)

Fast (small) ÷ Slow (large) = Subtotal - 1 = Answer

Example: ((5 ÷ 7 = .714) - 1) = .286 (or 28.6% speed difference)

#### **Other Method (O Method):**

(based on pulley pitch diameters)

Slow (large) ÷ Fast (small) = Subtotal - 1 = Answer

Example: ((7 ÷ 5 = 1.4) - 1) = .40 (or 40% speed difference)



## **Brand Comparison**

Features	Competitor 1	Competitor 2
KP Rolls	Iron hardened steel	Hardened Ductile
Roll Teeth	Straight tooth	Straight tooth
Roll Shaft	1 3/4" (non-replaceable)	1 3/8" (replaceable - half cost of new roll)
Bearing Housing	Gray Cast (30k psi tensile)	Gray Cast (30k psi tensile)
Bearing Spacing	Approx 5"" from roll end (shafts commonly break)	approx. 2"
Foreign Object Protection (FOP)	One Roll Spring Loaded	Both Rolls Spring Loaded
Roll gap Adjustment	No Info	Add and remove shims
Removable Shield (switch frowm corn to hay)	Bolted in place	Bolted in place
Processor End Frames	1/4 thick	1/4 thick
Exterior Finish	Painted	Painted
Drive System	4-Belt	Banded Belt & Flat Pulley
Power Requirements	Average	High Power Req. – Due to Poor Roll Angle – Some Crop Misses Roll & Gets Re-cut
Knife Access	Difficult to Access	Easy Access
Speed Differential (see page 23)	15 -25% H-method, 17.5 - 34% Figured O-method	18% H-method, 21% Figured O-method
Optional Haylage shield	No	No

Competitor 3	Horning	
Iron Hardened Steel	Iron Hardened Steel (chromed options available)	
Sawtooth	Hi- cap, Sawtooth & Fibertech	
2'' chromed	2" TG & P Alloy materail (replaceable)	
Gray Cast??? (30k psi tensile)	"Ductile Cast housing custom designed with SKF Inserts (60k psi tensile) Less than 0.03% Failure Rate (5-year warranty on housing)	
2" from roll end	2" from roll end	
Both Rolls Spring Loaded	Both Rolls Spring Loaded	
Taperblock	Easy-adjust Taperlock	
Spring loaded pins	2 spring-loaded (SS spring)pins for quick, easy removal	
3/8" thick	3/8" thick	
Powdercoated	Powder Coated. Galvanized Undercoat on exterior shields	
4- belt	Special High-strength, Double-sided Kevlar Belts	
Average	Lower Power Req., Optimal Roll Angle, Efficient Processing	
Easy Access	Easy Access	
31% H-method, 44% Figured O-method	30% or 40% Figured H-method, 43% & 66% O-method	
No	Yes	

# You lead. Profits will follow.



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