

Keenan Mech-Fiber 320



Operator's Manual

WARNING NOTES

Thank you for purchasing a Keenan product. Please read this manual carefully before operating your new machine, paying particular attention to the warning notes, explained here. Most sections of the manual apply to both the Keenan Mech-Fiber Mixer Wagon and the Keenan Mech-Fiber Bale Processor machines. Sections which do not apply to both machines will be clearly stated in the heading and the text.

There are 3 different types of notes, as follows:



WARNING:

Texts with this symbol contain safety information. They warn you of serious dangers, possibly involving accident or injury.



CAUTION:

Texts with this symbol draw your attention to a possible risk of damage to your Keenan Mech-Fiber Mixer Wagon. Failure to observe the information contained in a caution may invalidate your warranty.

Note:

Texts with this heading give general information which improves the operation efficiency of your Keenan Mech-Fiber Mixer Wagon.

The Keenan Mech-Fiber Mixer Wagon and the Keenan Mech-Fiber Bale Processor machines are subject to International patents including the following:

Europe:	E0, 833,558	USA:	5,967,433
Japan:	Pending	Canada:	Pending
Australia:	691418	New Zealand:	305943
South Africa:	96/3148		



WARNING:

Read the safety section (section 3) before attempting to operate the machine.

Keenan Mech-Fiber Mixer Wagon and Keenan Mech-Fiber Bale Processor

Introduction

The Keenan Mech-Fiber Mixer Wagon is a TMR feeder with a difference. The original Keenan mixer wagon became a market leader due to its reliability and durability, founded on simplicity, fast efficient mixing and feed out and low horsepower requirements. The Keenan Mech-Fiber Mixer Wagon has built on these capabilities by adding the ability to chop and present in a consistent fashion, time and time again. This ability is the cornerstone of the Keenan Mech-Fiber System, delivering improved efficiency and profitability on the farm. More recently, the Bale Processor models have introduced the ability to handle bales of all sizes and types.

The minimum moving parts ensure a robust machine with high mechanical efficiency. Simple routine maintenance and correct operation will deliver many years of service. However in the event of unforeseen problems, Keenan's world class service means you can be assured of a prompt solution.

This manual has been designed to present the information you need to operate and maintain your machine. If you require further assistance or information, please contact your Physical Nutritionist. Telephone numbers are listed on the back cover of this manual.

The Keenan Mech-Fiber Mixer Wagon is the cornerstone of the Keenan Mech-Fiber System delivering improved efficiency and profitability on the farm.

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1. WARNING SIGNS



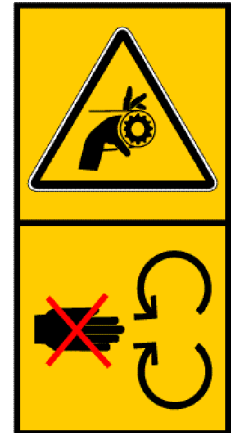
Read the operators manual before using the machine.



Danger of flying objects.
Keep a safe distance from the machine.



Stay clear of sharp blades.



Do not open or remove safety guards while the machine is connected to the tractor.

Warning signs



Shut off the engine and remove the key before performing maintenance or repair work on the machine.



Never reach into the rotating auger.
Danger of entrapment.



Do not ride on the platform or ladder.



Look out for overhead power lines.



Apply the handbrake when parked.



Do not stand between the tractor and mixer wagon while it is in operation.

2. OPERATING PRINCIPLES

The Keenan Mech-Fiber Mixer Wagon's main operating functions are weighing, chopping/mixing and feeding out.

Weighing

2.1 WEIGHING

The Keenan Mech-Fiber Mixer Wagon's electronic weighing system allows the exact quantity of individual materials to be loaded into the mixing chamber for accurate rationing. Individual loads can be weighed or successive loads accumulated to give total weight of feed. See Section 4 (Weighing System) and the Readout Manual for more detailed information.

2.2 CHOPPING / MIXING

Load ingredients in sequence recommended by your Keenan Physical Nutritionist, or as suggested in Section 5 (Operation).

For non Bale Processor models, ensure bales are broken up prior to loading. For Bale Processors, wait until the bale has been taken in completely before adding further bales. As a general rule, material should be tumbling freely when mixing. If not then the machine is overloaded and will not achieve the desired mix quality. Mixing is carried out by a centrally-mounted rotor fitted with 6 angled paddles revolving at 6-8rpm. Each paddle imparts a shearing action, sweeping the feed ingredients onto the strategically placed knives to produce a consistent and thorough mix with all types of materials, including baled silage, hay or straw, roots and liquids.

The angled paddles help mixing by sweeping the material from end to end. The placement of the blades ensures the materials reach optimum size/length, without grinding it down and destroying the all important 'scratch factor' of the forages producing a Mech-Fiber mix.

Mixing time will be determined by the required chop length. Follow procedures contained in this manual or consult your Keenan Physical Nutritionist for further information.

Chopping/mixing

- A small black circle icon used to denote a caution or warning.
- CAUTION:**
For Bale Processor models, do not load a complete 6x4 round bale, or more than one 5x4 or 4x4 round bale onto the machine at any one time. Overloading the machine may seriously affect the safe operation and life of the machine, and will invalidate the warranty.

For Bale Processor models, do not load a complete 6x4 round bale onto the machine as it may potentially be unstable, possibly falling off and causing injury. 6x4 round bales should be first broken up and then loaded onto the machine in sections; alternatively the bale may be held in place by the loader until sufficiently chopped down, 1/3 to 1/2 way, to allow it safely complete chopping on the top of the machine. If in doubt consult your local Keenan representative for the recommended safe operation of the machine to suit your particular application.

2.3 FEEDING OUT

During mixing, the mixing chamber is separated from the feed out chamber by a Variable Feed Control (VFC) or guillotine door, thus ensuring complete mixing. The feed out chamber contains an auger which runs the entire length of the machine.

When chopping/mixing is complete, the feed out tray should be set to the required position, and the VFC door dropped, allowing the material to be swept up by the paddles and pushed onto the auger – see figure 2. The VFC door should be partially opened at first, ¼ ways, and when feed is seen discharging then 15-20 seconds should be allowed before opening the VFC door fully. Door position and ground speed should be set/used to allow an even feed out rate.

- CAUTION:**
- The VFC door should only be opened or closed when the PTO is engaged (paddles turning) when material is in the machine.

2.4 MAINTENANCE

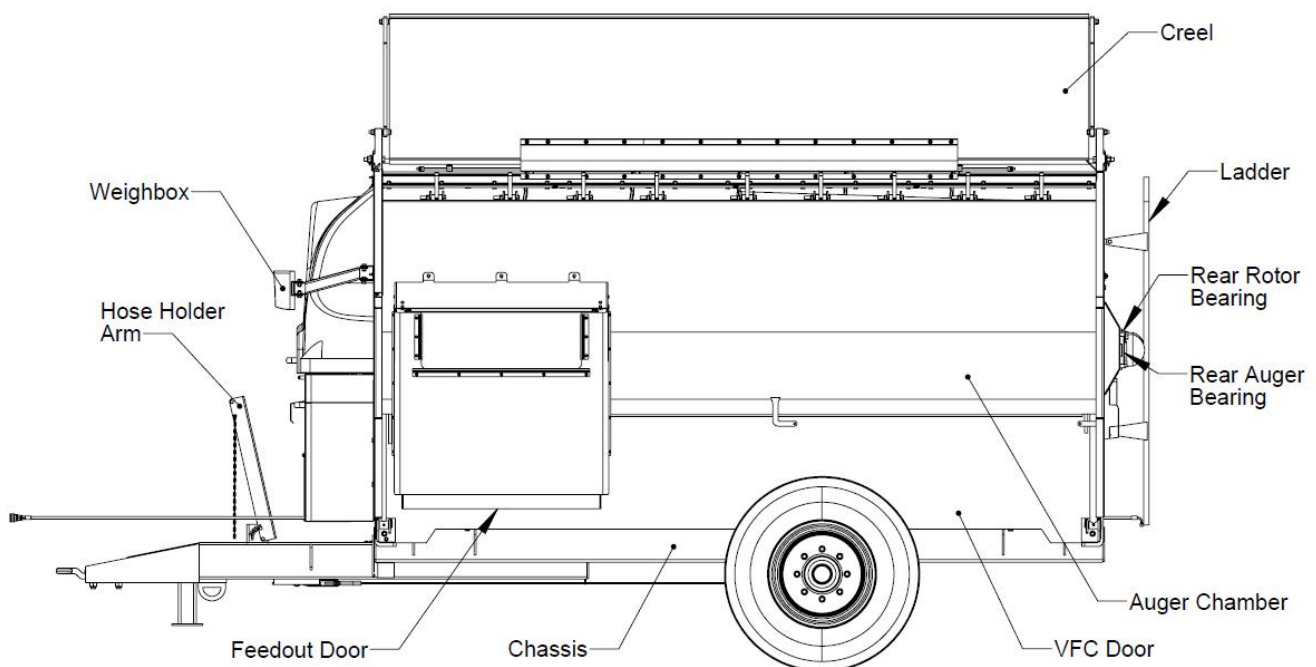


Figure 1: Keenan Mech-Fiber 320 Mixer Wagon (Bale Processor Option Shown)

A properly operated and maintained Keenan mixer wagon will give years of trouble free operation. **Regular maintenance of the machine is essential both for long machine life and also to meet the warranty requirements.** Refer to instructions in maintenance section of this manual. Weekly cleaning of the machine is recommended to prevent corrosion to the mixer body from old feed. **The level of cleaning required will depend on the material being mixed, but any material which sits or lodges on the machine may both adversely affect the operation of the machine and affect the quality of the mix if it subsequently falls into the feeder during mixing.** It is therefore essential that routine cleaning and washing down of the feeder is completed.

2.5 SAFETY PRECAUTIONS

Keenan mixer wagons have been designed to reduce risk to a minimum. However, as with any machine, careful observation of safety procedures is necessary to prevent accidents. See inside for further details on each section. If you have any further questions please contact your local Keenan centre for advice.

⚠ WARNING:
Read the following safety section (section 3) before attempting to operate the machine.

⚠ WARNING:
The operator is responsible for the safe operation of the machine at all times. This machine should only be operated by one person at all times. The machine should never be left unattended during operation.

3. SAFETY

The Keenan Mech-Fiber Mixer Wagon has many safety features built into its design but ultimately, safe operation requires the vigilance of the operator and an understanding of potential safety hazards.

The machine is designed to be used as a mixer/chopper wagon for mixing animal feeds. It should not be used for any other purpose which will affect its performance or safety.

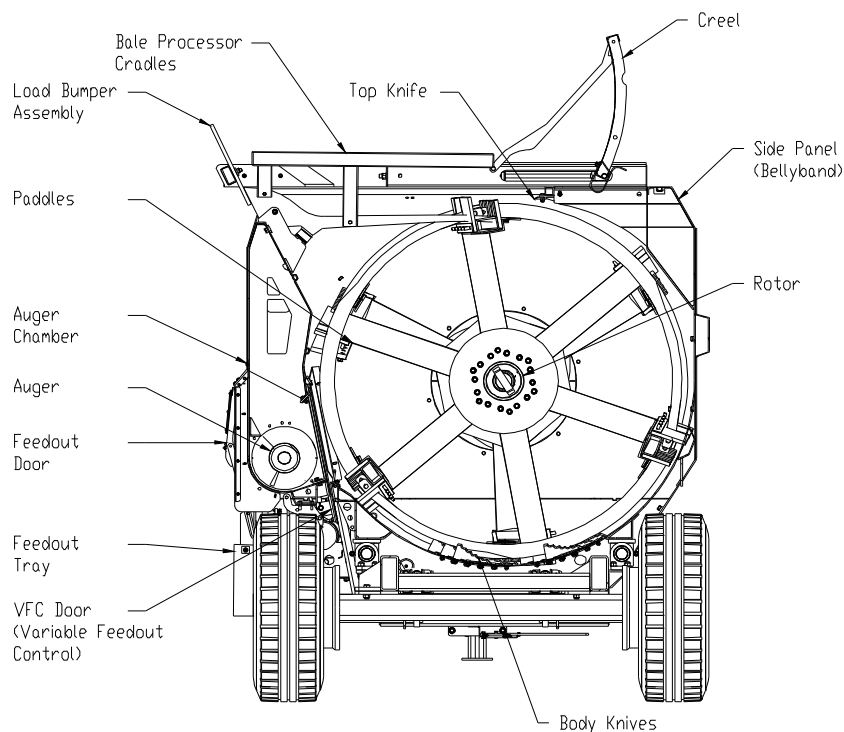


Figure 2: Keenan Mech-Fiber Rear View

The following safety points are general guidelines. Given the wide variety of possible operating conditions other safety risks may exist which are not captured in the list over.

Safety

- a) Always park the mixer wagon on level ground and apply the handbrake when not in use.
- b) Do not exceed 15 km/h (10 mph) when in use/transit. Local road traffic laws will apply when machine is in transit on public road, on which the maximum permissible speed is 25 km/h. Exceeding this will compromise the life and safety of major components such as the hitch, axle, wheels and chassis.
- c) Exercise extreme caution for possible overtaking traffic at either side when turning.
- d) Do not stand on the ladder whilst the feeder is in transit. The mixer wagon should never be used for the transport of people, animals or objects.
- e) Do not stand between the tractor and mixer wagon while it is in use.
- f) Use only a PTO shaft with a properly fitted safety guard and correct shear bolt.

Safety

- g) Always connect the PTO shaft with the shear bolt end to the machine. The operating speed of the PTO is 540 rpm and the direction of rotation is marked on the front cover. Always use a well maintained PTO shaft and keep the safety covers in good condition.
- h) Ensure all trailing leads, hoses, etc. are well clear of the PTO.
- i) **Never operate the PTO in “ground speed mode” or drive the PTO in reverse.**
- j) Make sure all covers/guards are fitted and closed correctly. Never remove guards when the mixer wagon is connected to the tractor. Ensure that the engine of the tractor is stopped and PTO shaft disconnected before carrying out service or maintenance work and especially if removing trapped objects from the machine.
- k) Ensure the mixer wagon and the immediate area surrounding it is clear of people, especially children, before commencing operation. Ensure that there is sufficient visibility for the operator to observe all danger zones and that the tractor is equipped with mirrors to enable the operator to see both sides of the machine while it is in operation.
- l) When connecting the tractor to the mixer wagon only connect using the ring hitch/hitch on the mixer wagon to ensure safe coupling. Ensure that the hitch is connected properly to the tractor and that all pins and clips are properly installed. Then connect the PTO shaft in the correct fashion. Connect the hydraulic hoses ensuring that the functions match the indicated valve on the tractor.
- m) When disconnecting always ensure that a stand or jack is used to secure the mixer wagon in the park position and ensure that the handbrake is properly applied. Before driving the tractor away from the mixer wagon ensure that all hoses and cables are disconnected.
- n) Load only from the side indicated – see figure 8 (auger chamber side), using suitable equipment.

Safety

- o) Standing level with or above the machine in order to load manually is not permitted.** Loading should only be carried out with suitable equipment.
- p)** Regularly inspect all chains (at least weekly), sprockets and moving parts for wear and check all nuts and bolts for tightness.
- q)** The ladder on the rear of the mixer wagon is to be used as a viewing point for the mixing chamber. It should not be used as a means of access to the mixing chamber nor onto the body of the machine. It is strictly forbidden to climb on the upper brim of the machine body. The height of the machine presents a potential fall hazard during entry and exit.
- r)** Routine cleaning should be carried out using a power hose, with the drain bung open, eliminating any reason to climb into the mixing chamber.
- s)** The top knife should always be fitted with the supplied guard (figure 4) before routine cleaning or maintenance is carried out. *Note: the machine is supplied with a top knife guard which should be removed before the machine is used.*
- t) It is recommended that only Keenan trained and qualified maintenance personnel enter the mixing chamber.** In the case of an untrained person entering the mixing chamber, at the very minimum, the following precautionary safety guidelines should be strictly adhered at all times.
 - 1. Ensure the PTO **and hydraulic hoses** are removed.
 - 2. Apply the mixer wagon handbrake and disconnect the tractor on level ground.
 - 3. Use a suitable ladder for access to and from the mixer wagon.
 - Note:** *The viewing ladder is only used for viewing and not for access to the mixing chamber.*
 - 4. Personnel should make themselves familiar with the location of all potential hazards before entering the machine, in particular the location of the top knife and body blades.
 - 5. Use suitable PPE and fit blade covers as shown in figure 4.
- u)** If the person intending to enter and work within the machine is not confident about doing so safely, then they should contact a Keenan Service Person to complete the work.
- v)** The noise emission level of the Mech-Fiber 320 has been recorded at 89.4dB. Noise emission levels above 90dB would require the wearing of suitable ear protection.

SODAGRAIN: Additional safety instructions and warnings are available and covered in a soda grain leaflet which should be read carefully before soda treating grain. When finished treating grain, clean out any remaining material in the mixing and/or auger chamber by loading in 200-300 kg of silage or 50 kg of straw and allow the machine to mix before unloading in the normal manner. *Note that when mixing soda grain, the maximum gross load that can be mixed in the Keenan Mech-Fiber 320 is 3,800 kg.*



Figure 3: Body blade

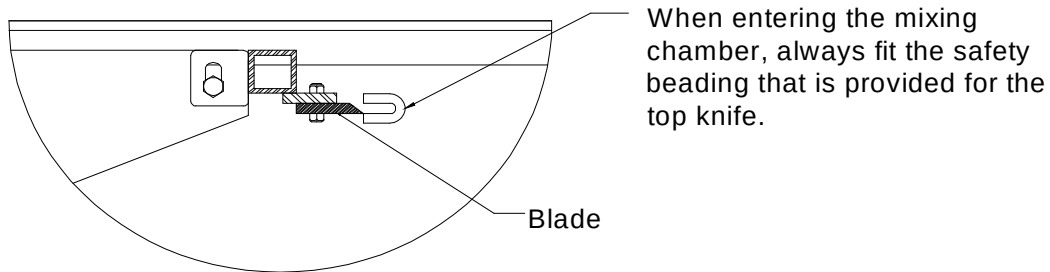


Figure 4: Top Knife Protection



WARNING:

Failure to follow the safety guidelines above may lead to accident or injury.

4. WEIGHING SYSTEM

The weighing system is designed to be simple to operate, accurate and robust. It consists of four load cells connected to a weigh box unit (readout box) at the front of the machine. The system uses 12 volt DC power from the tractor, or battery if fitted. The weigh box unit can be rotated for visibility during loading and from the tractor cab, but should be folded out of the line of the tractor wheel for road work. Loads are displayed in kilograms or lbs with scale increments of 5 kg/10 lb. The unit is capable of measuring up to 18,140 kg (39,999 lbs) with the appropriate weight bars. The system is maintenance-free, being fully electronic with no moving parts. All components are sealed against moisture and dust and are resistant to frost and corrosion. The unit should, however, not be directly exposed to a high pressure water jet. The weigh box unit may vary from model to model and region to region. A separate manual is supplied for your weigh box unit, which you should refer to for specific operating instructions.

INSTRUCTIONS FOR ELECTRONIC READOUT BOX ARE CONTAINED IN A SEPARATE MANUAL

5. OPERATION

The simplicity of the Keenan Mech-Fiber Mixer Wagon design is reflected in its low power requirement. The power required varies, depending on the mix used, the dry matter, and the amount of chopping required.

If a tractor is at its limit during mixing, this will translate into extra strain on moving parts as there will be surges in power as the engine recovers during certain periods of the mix.

A tractor that has sufficient power will provide a much smoother drive to the mixer wagon during all stages of operation.

5.1 SET-UP

1. Ensure the machine is level when hitched up. If the machine is un-level, this can be corrected by adjusting the hitch height. The hitch height on the Keenan Mech-Fiber Mixer Wagon provides a certain level of adjustment from the manufactured height.
2. The PTO shaft should be attached with the shear bolt end coupled to the machine. Make sure that the PTO guard is in good condition and well secured.

CAUTION:

- Do not operate the PTO in “ground speed” mode. Reversing the drive on your machine will cause serious damage.

3. Connect the hydraulic hoses (see table 1) from the machine to double and single acting spool valves on the tractor, as appropriate.
4. Examine the mixing chamber to ensure that:
 - All blade covers have been removed.
 - All spare parts and foreign objects have been removed.
 - No damage has occurred during transport.
5. Check the weigh box and ensure the power lead from the weighing system is either connected to the tractor battery via a direct fused line, 7 pin plug or to a 12v battery located in the side box of the feeder. To zero the weigh box press and hold the ‘zero’ and ‘minus’ keys together and hold until ‘end’ appears on the screen then release the buttons. If the power is supplied through a 7 pin lights connection, the tractor lights will need to be switched on to provide power to the weigh box. If you stand on the ladder, at rear of the machine, you can check the reading on the weigh box against your known weight, this may require assistance.
6. With the tractor running, check that the VFC door opens fully and closes completely. Similarly check the movement of the feed out tray. Engage the PTO and check the turning of the paddles. The initial turning of the paddle rubbers against the side of the Keenan Mech-Fiber Mixer Wagon will generate noise but this will decrease as the paddle rubbers become more pliable.

Hydraulic and brake hoses	
Operation	Colour
Guillotine door	Red & yellow
Feed out tray	Blue
Bale Processor creel	Green
Brakes	White
Beetgrid	Black

Table 1: Hydraulic and brake hoses

Note:

A: The design life of hydraulic hoses is subject to the level of wear and tear/usage and also factors like harsh climate. It is recommended that they be reviewed periodically (yearly) and typically replaced after ten years of operation if necessary.

B: The maximum oil pressure of the hydraulic system is 3000 psi.

C: If there is a **valve chest** fit to the Mech-Fiber machine, it is very important to connect the valve chest hydraulic feed and return pipes correctly. The return pipe is not designed to take the hydraulic pressure normally seen in the valve chest feed pipe, and so seals and/or the valve chest itself may be damaged if oil flows in the wrong direction through the chest. Typically the hydraulic return pipe on the valve chest is fit with a one-way flow valve to prevent oil being fed to the valve chest in the wrong direction. This is identifiable as a steel connection on the end of the pipe with an arrow stamped on its side to indicate the direction of oil flow through it. Oil flows into the valve chest through holes marked P (Pressure) and out through holes marked T (Tank), see Figure 5 below.

(The valve chest is set up for open centre hydraulics. If the tractor has an alternative hydraulic system (other than open centre) then contact should be made with the tractor agent. To alter to closed centre hydraulics, there is a plug that can be fitted to the spool valve block and is available from Keenan Service on request.)



Figure 5: Valve Chest

5.2. HITCH HEIGHT ADJUSTMENT

The MF320 hitch has been designed to allow for a number of various hitch height options with same components used, the hitch height is normally selected for the application and set at the factory per the options below. The complete range of options is shown below:

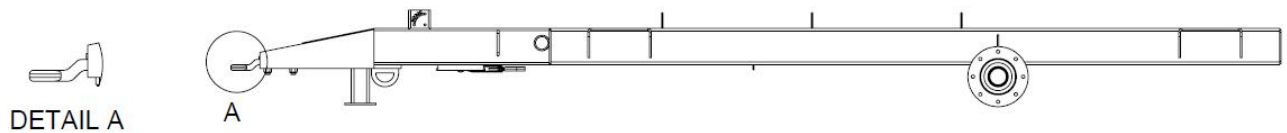


Figure 6.1: Standard Hitch

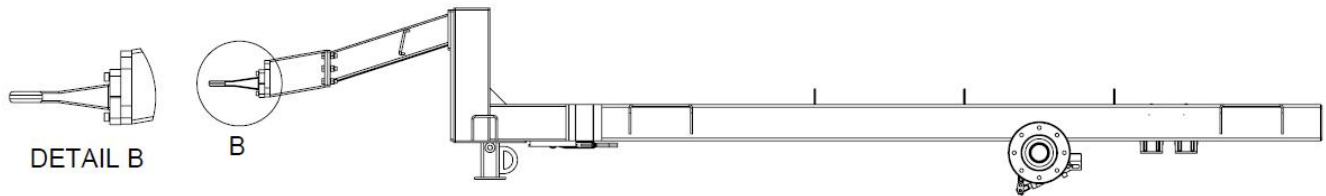


Figure 6.2: High Hitch (Typically for German market)

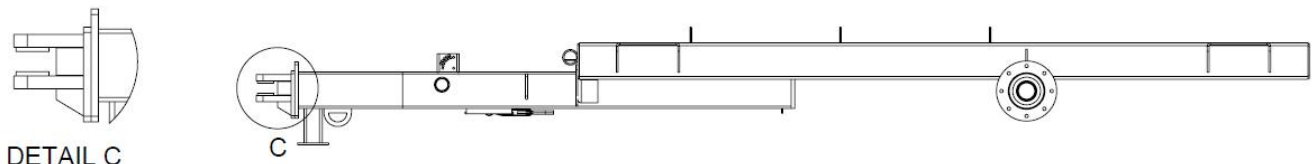


Figure 6.3: Clevis Hitch (Typically for US market)

Notes:

1. Care must be taken, when adjusting the hitch height, so that there is adequate PTO clearance and that there is enough ground clearance below the stand.
2. Optional towing eye bush can be used on standard hitch – see section 9.10.

5.3 MIXER WAGON CAPACITY

Due to the diversity of the materials available for feeding and the Keenan Mech-Fiber's ability to incorporate a wide range of feed types into the ration the capacity of the machine will vary. Ensure that overloading is avoided at all times as mix quality will be seriously affected and potential machine damage may result.

Overloading must be avoided because:

- The mix will not be homogenous (evenly mixed), preventing the maximum benefit being gained from the machine.
- Mechanical failure will result. Due to the nature of the loading this may occur at load levels below that necessary to break the shear bolt.

CAUTION:
○ The machine can be overloaded, before the shear bolt breaks. Therefore not breaking a shear bolt is not an indication that the machine is not being overloaded.

The overall amount of material that can be chopped/mixed in one load depends on the following:

- Machine size.
- Overall dry matter of the TMR.
- The chop length and quality of the material added.
- The loading procedure and loading order of the materials used (this has a major effect on machine capacity, e.g. the addition of straw first or last).
- Tractor H.P. rating.



Figure 7: Photograph illustrates a well mixed ration showing consistent fibre length and integration of forages and grains.

5.4 LOADING & MIXING

Note: The unique tumbling action of the machine is what carries out the mixing. If the machine is overloaded or loaded in an incorrect order, or insufficient time is allowed for proper chopping, this tumbling action will not take place correctly. In addition to reducing mix quality, it increases the horsepower requirements and reduces the life of the machine.

CAUTION:

- Overloading will seriously affect machine performance and life, and will invalidate your warranty.

The effectiveness and speed of chop is determined by:

- The number of effective (sharp and intact) blades.
- The dry matter of the material to be added.
- The amount of pre-chopping of material.
- The loading sequence.
- The total amount of material to be chopped.
- The density of the bale.

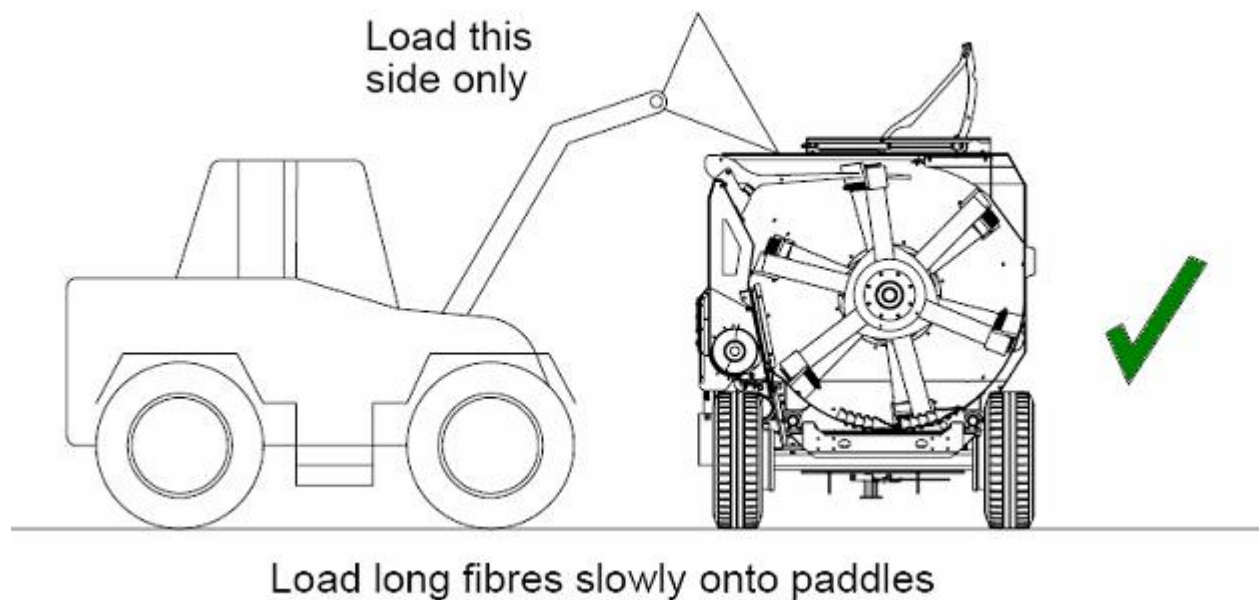


Figure 8: Loading the Keenan Mech-Fiber mixer wagon

5.5 OPERATING THE KEENAN MECH-FIBER MIXER WAGON

LOADING THE KEENAN MECH-FIBER MIXER WAGON

GENERAL

- Park on level ground.
- Ensure the variable feed control door (VFC) (guillotine door) is closed.
- **Do not start PTO when VFC door is open.**

LOADING AND MIXING SEQUENCE

- Load feed as close as possible to the loading side of the unit.
- Load concentrate feeds along the length of the machine.
- Load forages to the front, back and centre of the unit in alternate grabs during the mixing process.
- Remove all twine, wrap or polythene from bales.
- Round or square bales should be split or broken into 4 pieces **minimum**.
Use front grab or forks as required.
- Load in the order shown below.

Load Order	Feed Ingredients	Paddle RPM	Tractor Engine Speed RPM
1st	Water, liquid feeds	All at 6-8 RPM	1300-1600 RPM
2nd	Straw		
3rd	Minerals, Protein meals, Pulps, Cereal grains		
4th	Grass silage		
5th	Maize silage, Cereal silage.		

- Mixing time will depend on chop length required.
- Stop PTO before moving to feed out area.

Table 2: Loading the Keenan Mech-Fiber Mixer Wagon

5.6 OPERATING THE KEENAN BALE PROCESSOR

LOADING THE KEENAN BALE PROCESSOR

GENERAL

- Park on level ground.
- Ensure variable feed control door (VFC) is closed.
- **Do not start PTO when VFC door is open.**

LOADING AND MIXING SEQUENCE

- Set paddles running at **6-8 RPM** for **all** bale types. **Note:** When chopping straw, higher revs can be used.
- Load round bales to the centre of the unit with the flat end towards the top knife.
- Allow sufficient time for previous bale to clear before adding more.
- Add ingredients in order shown below:



CAUTION:

Do not load more than one bale at a time.

Load Order	Feed Ingredients	Paddle RPM	Tractor Engine speed RPM
1st	Water, liquid feeds	All at 6-8 RPM	1400-1600 RPM
2nd	Straw		
3rd	Minerals, Protein meals, Pulps, Cereal grains		
4th	Grass silage		
5th	Maize silage, Cereal silage		

- Mixing time will depend on chop length required.
- Stop PTO before moving to feed out area.

Table 3: Loading the Keenan Bale Processor

5.7 SPECIFIC INSTRUCTIONS FOR BALE PROCESSOR MODELS

1. The creel should be raised before loading bales.
2. The bale (round bales) should always be loaded in the centre of the machine so that it gets the maximum agitation from the 6 paddles and the full effect of the rings.
3. The bale should be gently lowered in the centre of the machine onto the tines/rings. The Bale Processor will then begin its cutting action, with the tines/rings working in conjunction with the top knife, body blades and six paddles to evenly chop the bale material in a timely manner. The bale should be chopped evenly throughout this process which will avoid large lumps of the bale entering the mixer at any time. This will result in a better mix quality and more even chopping action.
4. After the bale has been fully chopped and entered into the machine the next bale can be added to the mix in the same manner as above.
5. The standard chopping times for different materials of round 4' x 4' (120 cm) bales are as follows:



Bale:

Straw

Hay

Wet silage (up to 20% DM)

Dry silage (20-30% DM)

Very dry silage (over 35%)

Time:

6-8 minutes (140 kg)

4-6 minutes (300 kg)

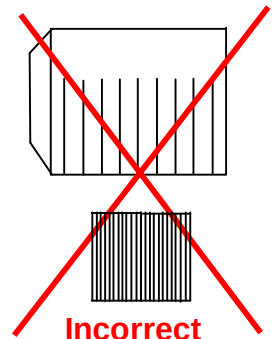
2-4 minutes (700 kg)

4-5 minutes (500 kg)

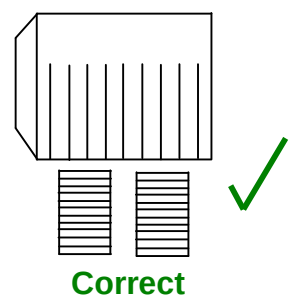
4-6 minutes (400 kg)

Note: Heavy bales must be loaded gently on to the Bale Processor, not dropped from a height, or damage may occur.

6. These times are achievable if the bale is loaded in the correct position and the loading method, as described above, is followed. These times may vary slightly depending on the tightness of the bale and the behaviour of the bale when it is being chopped.



7. When loading large square bales the method is to load the bale so that the sections lie across the tines/rings so as to prevent the sections falling through the gap in the tines/rings (see diagram to the right: sections of large square bale loaded perpendicular to the tines/rings). The easiest way to do this is to load the bale in two halves on the loader (one half in each side of the bucket, if wide enough) and flick the sections out onto the tines/rings. In this way the sections will remain up on the tines and rings for longer and get a better chop against the top knife.



8. If loaded the opposite way the sections will tend to fall through the tines and rings, not get chopped, and cause additional stress on the chopping mechanism.
8. The key to the successful operation of the Bale Processor is that the bale remains on top of the tines/rings long enough to allow the pre-chopping to take place against the serrated top knife. This ensures that the amount of further chopping within the mixing chamber is reduced, and though it may take longer for the bale to be taken in, during this time the material that has already been cut from the bale is being processed within the chamber.

5.8 WASHING AND CHOPPING ROOT CROPS

With the machine stopped add the root material to be washed and chopped. Ensure that there are no stones or foreign objects hidden in the roots.

1. Add water at approximately 300 kg (650 pounds) per tonne of material to be chopped. Rotate the machine for 1-2 minutes at 6-8 rpm.
2. Park the machine on an incline, open the wash gate and allow the water to drain off.
3. It may be necessary to repeat this if materials being chopped are particularly dirty.
4. Chop the materials by running the machine at 6+ revs.

If small quantities of material are to be washed and chopped best results are obtained by washing and chopping sufficient material to supply two days feed.

5.9 FEEDING OUT

1. Ensure that the VFC door is still closed.
2. Re-engage the tractor PTO at idle, increasing engine revs to between 1,400 and 1,600 rpm to achieve a paddles running speed of 6-8 rpm. Allow the TMR to loosen and tumble for 15-20 seconds.
3. Partially open the VFC door, ¼ ways. Once the TMR is seen on the feed out tray, allow 15-20 seconds before opening the door fully.
4. Select a ground speed to feed out at an even rate along the feed area.
5. When feed out is complete, close the guillotine door and always disengage the PTO before attempting to make tight turns away from the shed.

- **CAUTION:** Never open VFC door before engaging PTO - serious damage may be caused as a result of sudden load being put on the auger. Disengage the PTO before turning corners.

6. MAINTENANCE

The Keenan Mech-Fiber Mixer Wagon has been designed for optimum performance with a minimum of maintenance. Chains, bearings and grease points have been kept to a minimum without compromising function. All components are of high quality and provide excellent durability. Regular routine maintenance will ensure your Keenan Mech-Fiber Mixer Wagon gives you the best results with a minimum of problems.



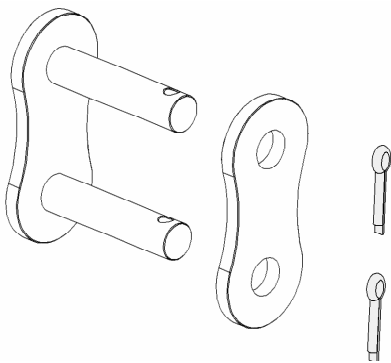
WARNING:

Prior to carrying out any maintenance on the machine, always ensure tractor engine is stopped and disconnect the P.T.O. and hydraulic hoses from the tractor. Observe safety precautions at all times when working on machine, read Section 3 on safety before attempting to work on machine.

The recommended operating pressure in the hydraulic circuit is 170 bar and a flow rate of 40 litres per min. Replacement hoses should comply with DIN EN 853. When replacing hydraulic hoses, always wear suitable protective equipment.

6.1 CHAINS

1. Each week check the condition of the chain tension arms and adjust as required. There are two chains used on the Keenan Mech-Fiber 320 model. The primary drive chain (ASA100) drives the auger shaft and the secondary chain (ASA140HS) drives the rotor (see figure 10). Both chains are tensioned by spring assemblies on the slack side of the chain.



Note: ASA100 chain uses split pins in the joiner link as shown while the ASA140HS chain uses roll pins due to the high loads involved.

Figure 9: Chain Joiner Link

2. Each day check the level of oil in the automatic oiler reservoir (where fitted). If the oil level is low, top it up with light oil, grade SAE 10 or similar. The capacity of the reservoir is 1.89 litres.

Note:

A: Do not use heavy/high viscosity oil, as the back pressure in the pipes may cause them to be blown out.

B: Do not use grease on the chains, as it is unsuitable for the application and will not allow lubrication of the vital internal parts of the chain.

C: The automatic chain oiler attachment (where fitted) gives a squirt of oil (approx. 15ml) every time the guillotine door ram cycles. In this way, the machine is oiled in direct proportion to the number of cycles and adequate lubrication is assured. There is an adjustment screw on the base of the automatic oiler, turning clockwise applies more oil and anticlockwise less.

3. After each season, remove all chains by loosening the tensioners and removing the joiner links - see figure 9.
4. Wash off all dirt using paraffin. Dry the chains before soaking overnight in oil and then refit.

Chains

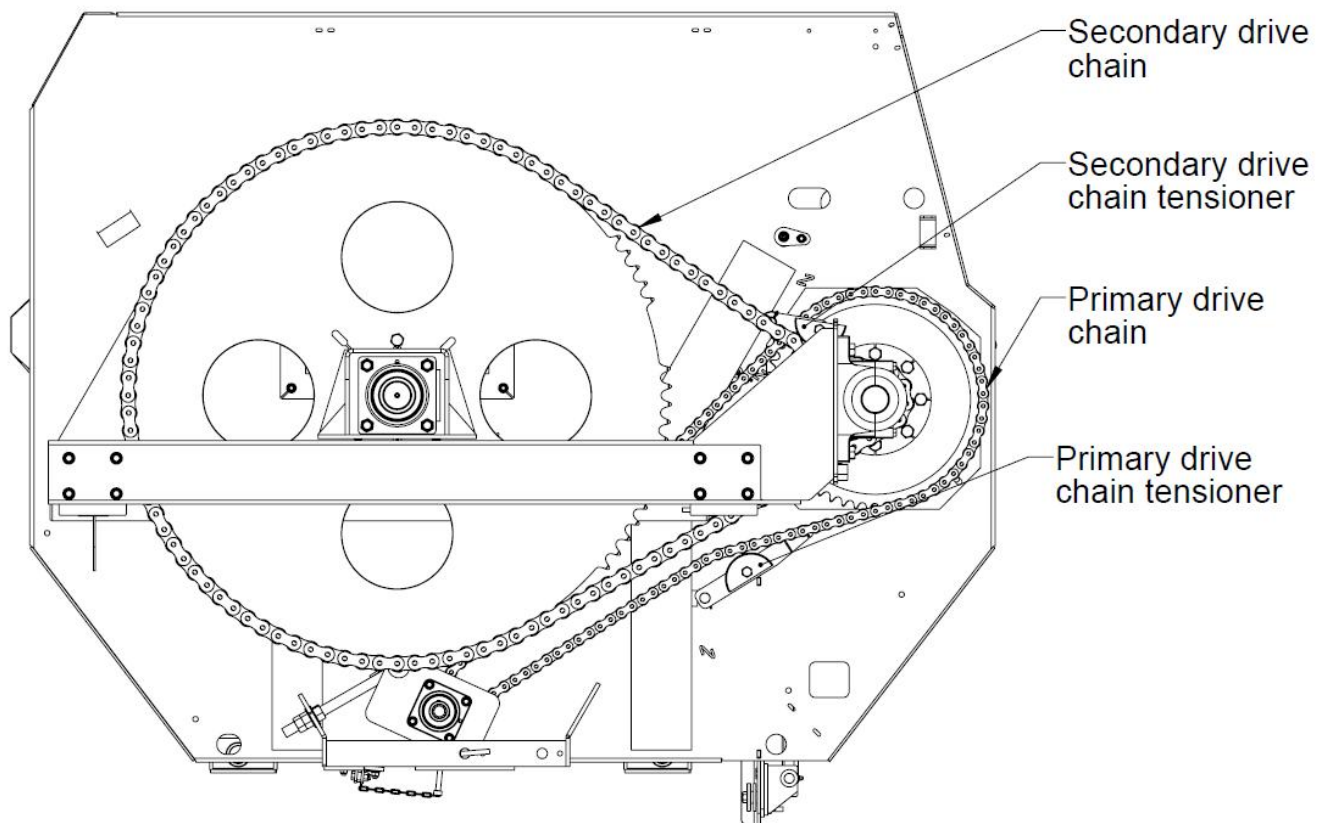


Figure 10: Front panel of Keenan Mech-Fiber Mixer Wagon



CAUTION:

Failure to maintain oil on the chains may reduce the working life by 90%. Chain damage is not covered by factory warranty. See warranty section for more details.

It is also essential to monitor and maintain the required chain tension. Chain tension is adjustable for the primary chain. (See next section)

6.2 CHAIN TENSIONING

Setting Tension on Primary Chain

Tension is set on the primary chain to remove excess slack, and to prevent sagging or whipping when under heavy loads. The secondary drive chain is adjusted automatically.

The primary chain tension is adjusted by turning the adjuster nut on the gearbox retaining bolt (**A**) – see figure 11. The final adjustment is applied by adjusting the tensioner spring on the chain links attached to the body. **35mm (1.5 inches)** deflection from a straight line (**B**) is advised. Do not overtighten, or damage to the bearings will result. The primary drive chain spring is nominally stretched to **270-290mm** coil length and the secondary drive chain spring is nominally stretched to **600-700mm** coil length. If the springs overstretch they will need to be replaced.

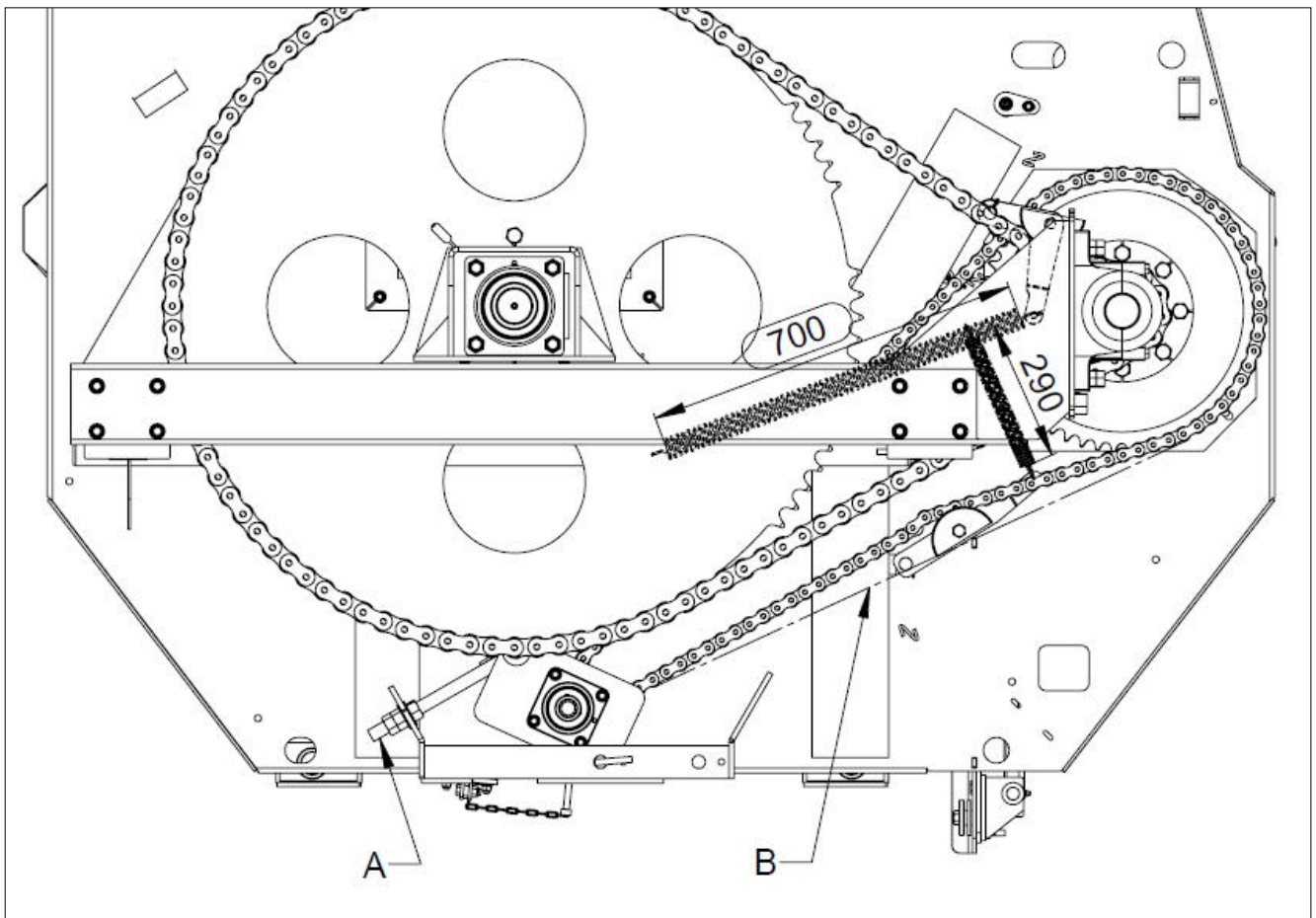


Figure 11: Mech-Fiber 320 Chain Tensioning (showing springs fully stretched)

Model	Mech-Fiber 320
Primary Drive Chain	ASA 100
Links	118 (inc. joiner)
Pitch (mm)	31.75
Pitch (inches)	1.25
Chain length (mm)	3,747
Chain length (inches)	147.5
Rotor Drive Chain	ASA 140HS
Links	115 (inc. joiner)
Pitch (mm)	44.45
Pitch (inches)	1.75
Chain length (mm)	5,112
Chain length (inches)	201.2

Table 4: Keenan Mech-Fiber 320 drive chains

6.3 GREASING

1. **Bearings** - Each week apply grease to the eight bearings with grease fittings. The bearings are as follows:
 - a. The main rotor bearing at the front of the Keenan Mech-Fiber (A, figure 12).
 - b. Two main bearings on the front and rear of the input drive shaft (B & C, figure 12).
 - c. The auger bearing at the front of the Keenan Mech-Fiber (D, figure 12)
 - d. The two main bearings at the rear of the Keenan Mech-Fiber (G & H, figure 13).
2. **Grease Fittings** - Each week apply grease to the following points with grease fittings (there are up to 25). The points are as follows:
 - a. 2 pins & 2 bushes on the guillotine door lifting rams (I, J, K & L, figure 14)
 - b. 18 grease fittings on the tandem axle assembly (where fitted):
 - 2 on each brake rod, 1 on each pivot (8 in total)
 - 1 on each brake arm (4 in total)
 - 1 on each front spring pin (4 in total)
 - 1 on each centre spring assembly pivot (2 in total)
 - c. 2 grease fittings, 1 on the secondary chain tension arm and 1 on the primary chain tension arm (see figure 15)
 - d. See section 6.4 for Bale Processor maintenance details
 - e. Grease fitting in pivot bush on gearbox pin
3. **VFC Door** - Check the VFC door is able to move freely each day and grease as appropriate.

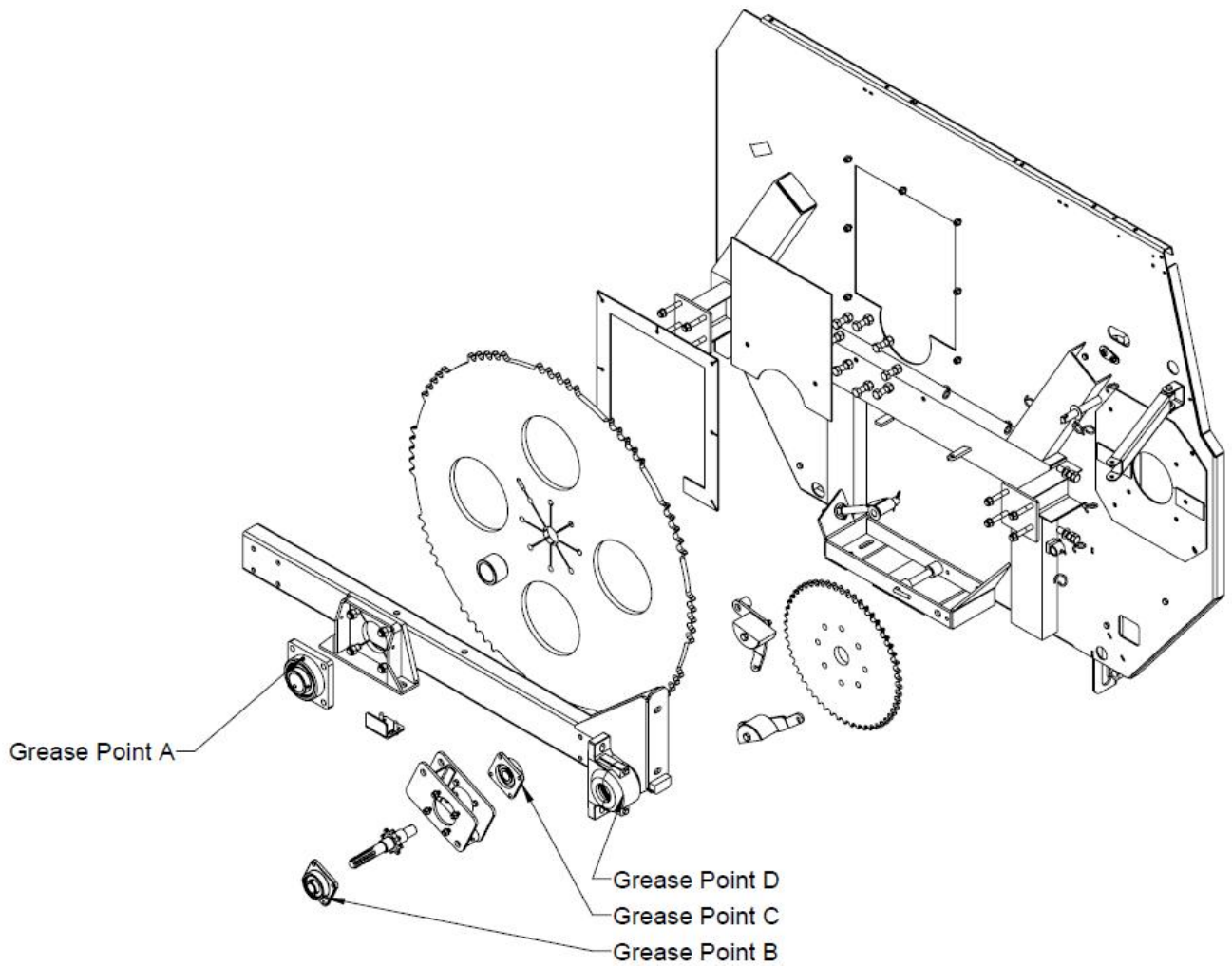


Figure 12: Front grease points

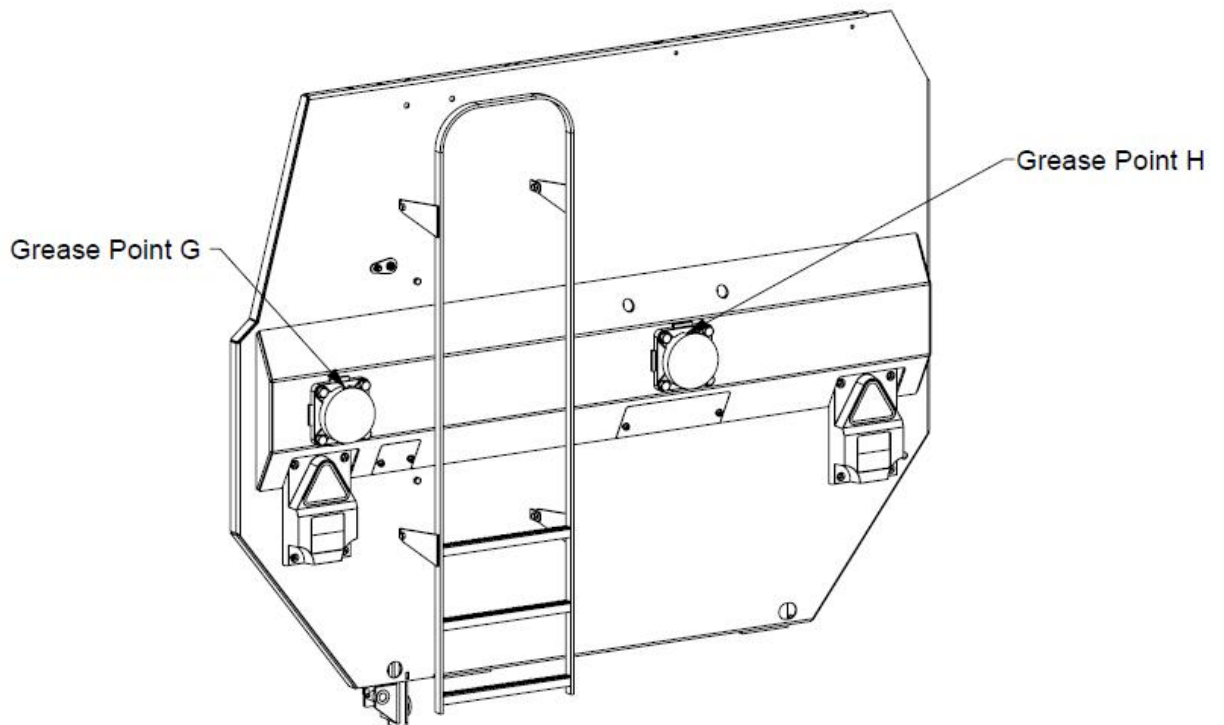


Figure 13: Rear grease points

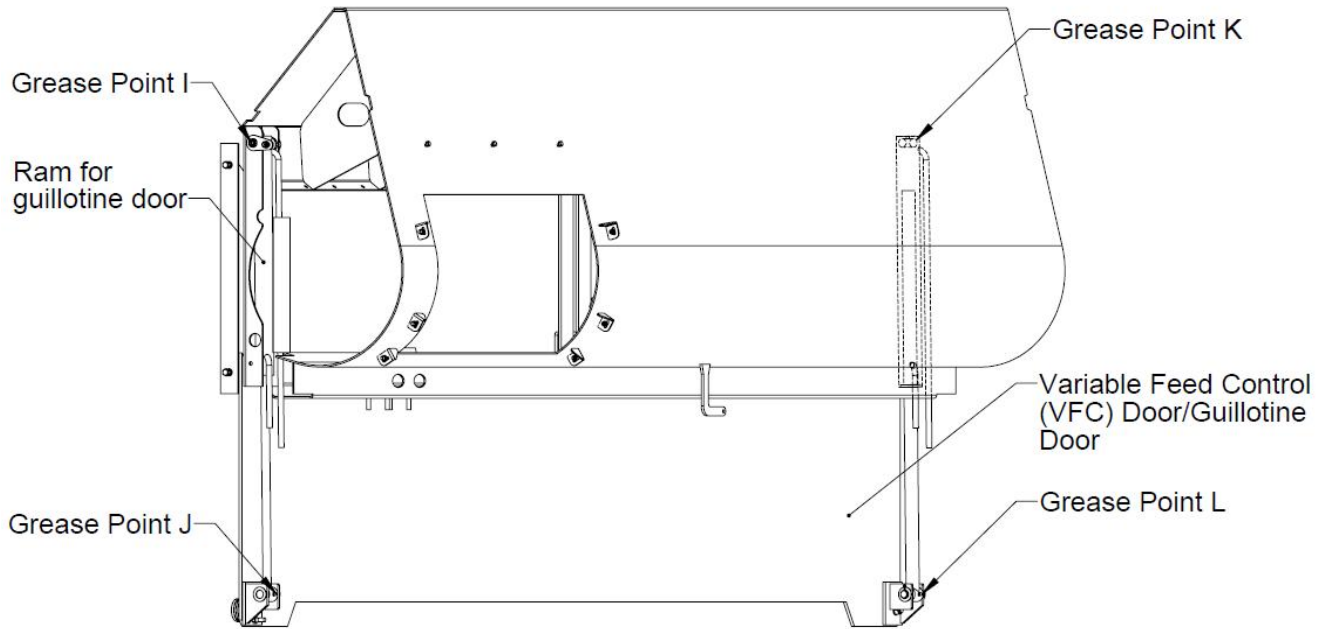


Figure 14: VFC Door grease points

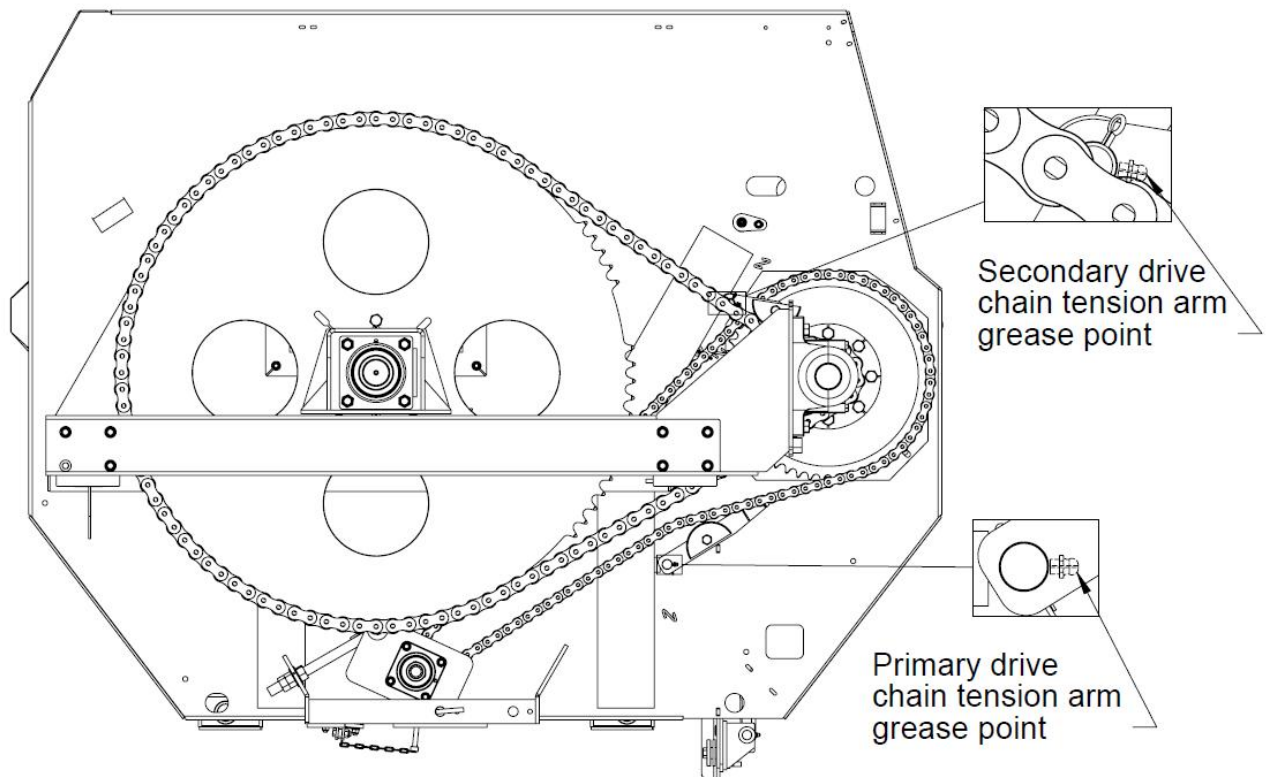


Figure 15: Tension arm grease points

6.4 MAINTENANCE FOR BALE PROCESSOR MODELS

There are no grease points fitted to the Bale Processor creel bolt-on attachment. The simplicity of design and the use of self lubricating bushes negate the need for weekly greasing. However, the following should be checked on a monthly basis:

- 1: The M16 tine bolt lock nuts should be checked for tightness, they should be tight enough to prevent the tine from having any side movement, but allow it fall under its own weight when let drop.
- 2: The rubber buffer should also be checked for wear or signs of damage which may affect its shock absorption. Optimum tine to top knife gap is 235mm +/- 5mm, but may vary depending on application and the design of tine fitted. Please consult your local Service Centre for settings. The optimum distance from the ring to the top of the castellation is 20mm +0/-4mm on the rear of the ring (Series II Bale Processor machines only – see figure 16).

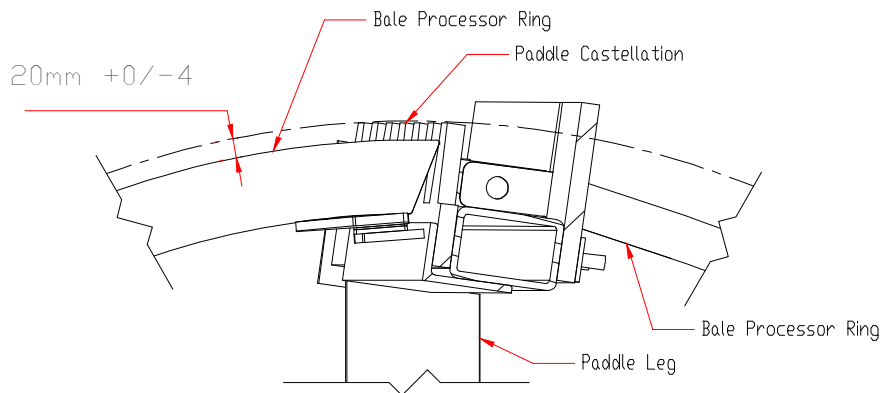


Figure 16: 08 Bale Processor ring to paddle tip setting

- 3: Check that the operation of the creel both up and down, is smooth and unobstructed.
- 4: Check the creel rubber is in place, undamaged and lowering and raising with the creel.

Note: The creel rubber is fitted to prevent material sitting on the top knife of the machine, preventing a build up of material getting under the creel and damaging it as it is lowered. To prevent damage to this rubber do not drop material on it from a height when loading material onto Bale Processor arms.

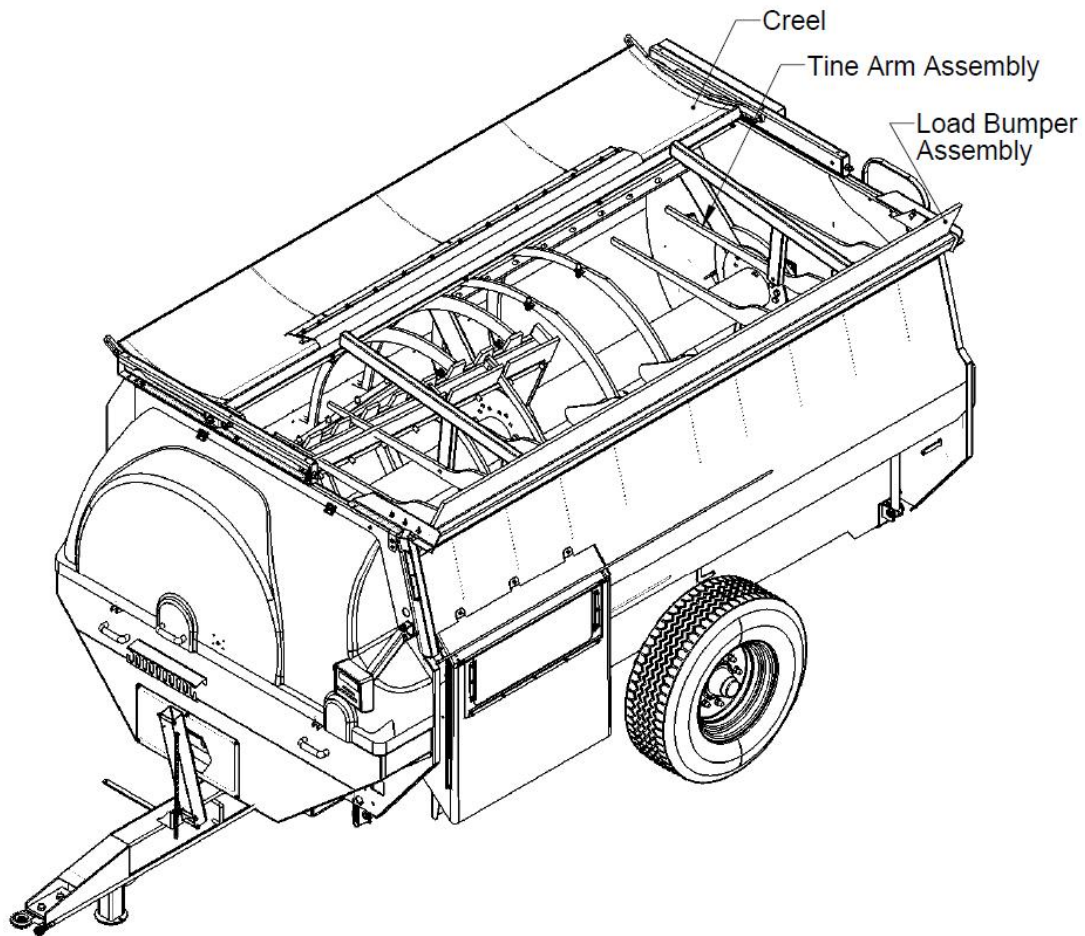


Figure 17: Mech-Fiber 320 with Series II Bale Processor attachment

6.5 SHEAR BOLTS

The following is the recommended grade shear bolt to be used with the Keenan Mech-Fiber 320:

Machine type	Shaft	Shear Bolt
Mech-Fiber 320	T60	M10 x 60 x 6.8

Table 5: Shear bolt

- CAUTION:**
- Failure to use the correct grade of shear bolt can result in overload failure of the machine and will invalidate your warranty.

6.6 NUTS AND BOLTS

1. After the first day, and regularly thereafter, inspect wheel nuts and tandem axle U-bolts (where fitted).
2. After the first week, and each week thereafter, check all nuts and bolts, including bearing nuts, for tightness.

General Torque

Stud / Bolt type	FT/LB	N.M
M22	335	450
M20	260	350
M18	200	270

Table 6.1: General torque for wheel studs

U-Bolt Diameter (mm)	Tightening Torque (Nm)
18	230
22	450
24	500
27	600

Table 6.2: Recommended torque for U-bolts for tandem axles (where fitted)

6.7 TYRES

1. Each week check the tyres for wear and damage.
2. Each week check the tyre pressures. Optimum tyre pressures are shown in Table 7.

This information is given as guidance. If in doubt please contact Keenan service.

⚠ WARNING: When refitting and re-inflating tyre/wheel assemblies, a safety cage should be used to prevent possible injury. Incorrectly fitted tyres are dangerous. Please make sure tyre repairs are carried out by experienced tyre fitters.

Type	Bar	PSI
305 / 55 R 22.5	7.0	110
285 / 70 R 19.5	8.5	125
400 / 60 R 15.5	4.6	68
385 / 65 R 22.5 (8 stud)	5.5	81
385 / 65 R 22.5 (10 stud)	9.0	132

Table 7: Tyre pressure

6.8 WHEELS

1. Each year lever off the hub cap, remove the split pin and castle nut and remove the hub.
2. Check seals, bearings, brake shoes, springs, studs, and all other internal parts.
3. Replace worn parts, re-grease and refit.

Note: When re-fitting the wheels, tighten the castle nut until resistance is felt (do not over tighten). Release the castle nut 1/6 of a revolution, check for movement in the hub, and if none, re-fit the split pin.

Note: At the end of the feeding season wash the machine down thoroughly preferably using a power washer. Grease or oil all lubrication points and open the drain bung on the bottom of the machine.

Changing a wheel

1. Park the mixer wagon on level ground and apply the handbrake.
2. Fit chocks to opposite wheels to prevent machine movement during the operation. Loosen the wheel nuts with a wrench but do not remove the nuts at this stage.
3. Jack up the mixer wagon underneath the axle until the bottom of the wheel is off the ground. Remove the nuts completely and slide off the wheel.
4. Refit the wheel ensuring that the centre of the wheel is properly located on the hub and hand tighten wheel nuts.
5. Lower the machine and tighten the nuts to the recommended torque using suitable equipment.
6. Check the wheel nuts for tightness after 1 hour of use, repeating on a weekly basis.

6.9 REAR FEEDOUT ELEVATOR (WHERE FITTED)

An elevator system requires regular maintenance in order to achieve optimum performance. Every week the elevator needs to be checked to make sure that the belt is running straight and not wearing unevenly on one side. If the belt is not running straight then adjust the tension by adjusting the tensioner nut on the side and run again to check.

The elevator surface needs to be kept clean at all times in order to avoid feed building up and falling into the rollers during operation. Do not allow old feed to build up on the sides of the belt.

Each week ensure that the bearings are greased as per figure 18 below. Ensure that the elevator is free moving in each direction and there is no feed caught in the slideways. Replace belts and side rubbers when they become worn otherwise elevator will not function properly.

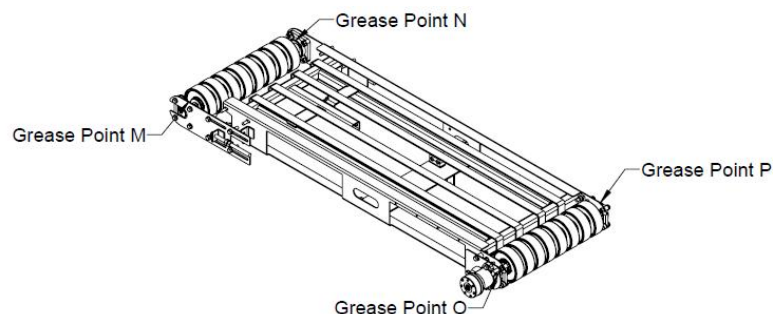


Figure 18: Rear feed out elevator grease points

7. MAINTENANCE CHECKLIST

Daily

Cleaning:	Clean all old feed from around the body to prevent corrosion and damage to paint.
VFC door:	Before using the machine, check that the door opens and shuts fully and operates smoothly.
Wheel nuts:	Check torque settings.
Oiler:	Check the oil level and replenish with SAE 10 oil as required.

Weekly (40 hrs)

PTO input shaft:	Grease the universal joints (2 nipples) and the sliding half shafts (smear grease on surfaces). For further information, please refer to the PTO Maintenance Booklet supplied with the PTO.
Drive (gear) box:	Grease the drive input-shaft bearings (2 nipples) & pivot bush nipple.
Rotor bearings:	Grease the front and rear rotor bearings (2 nipples).
Feed discharge auger:	Grease the front and rear auger bearings (2 nipples).
Idler shaft:	Grease the front and rear idler shaft bearings (2 nipples).
Tandem axle (where fitted):	The tandem suspension assembly is fitted with 18 grease fittings - 2 on each brake rod, 1 on each pivot (8 altogether) 1 on each brake arm (4 altogether) 1 on each front spring pin (4 altogether) 1 on each centre spring assembly pivot (2 altogether)
Guillotine door (VFC):	Grease the door's hydraulic cylinders (4 nipples) and the slide plates (smear food grade grease on surfaces). The recommended grease is "Ceran FG" supplied by TOTAL Lubricants, or similar food and feed industry grade grease.
Drive chains:	Keep the automatic oiler reservoir (where fitted) full of SAE 10 oil. Check the condition of the two jockey arms.
Tyres:	Check that tyres are inflated to the recommended pressures and make sure the wheel nuts are tight.
Jockey arm points:	Grease the grease points on each of the 2 tension arms.
Axle U-bolts:	Check axle U-bolt mounting torques.
Oiler pipes:	Check hoses for damage or leaks.

Monthly

Bale Processor arm buffer:	Check for cracks, splits or degradation.
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Yearly (end of season)

Drive chains:	Remove both chains; wash off all dirt and old oil using paraffin, then dry. Soak both chains in oil overnight or longer if possible.
Idler & auger shaft front bearing:	Remove and pack with grease.

- Machine:** Before storage, wash the complete machine, then grease or oil all weekly lubrication points as above. Open the drain cock in the mixing hopper. Check tyre pressures. Store the machine under cover or under a tarpaulin, if possible.
- Electronic weigh box:** If the machine is to be stored, remove the weigh box unit from the machine and keep in a dry place. Lightly grease the load cell cable connector end and place it into a plastic bag.
- Wheels:** Remove and inspect wheel hub. Replace worn parts, redress and re-fit.
- Blades:** Blades need to be kept sharpened. This will have to be done without taking the temper (over heating) from the blades. If the machine is operated with blunt blades it will cause major stress on the drive system. Blades may have to be replaced when it is not practical to sharpen them.

WARNING:



Due to hazards involved in entering the mixing chamber it is recommended that all blade replacement is carried out by a Keenan authorized service agent who is specially trained to do this. Contact your local agent (see back cover for details).

8. SPECIFICATIONS

8.1 WEIGHT

Model Weight		Mech-Fiber 320	
			+ Bale Processor
Unladen	kgs	6,250	6,500
	lbs	13,778	14,330
Payload	kgs		3,800
	lbs		8,377
Gross	kgs	10,050	10,300
	lbs	22,156	22,707

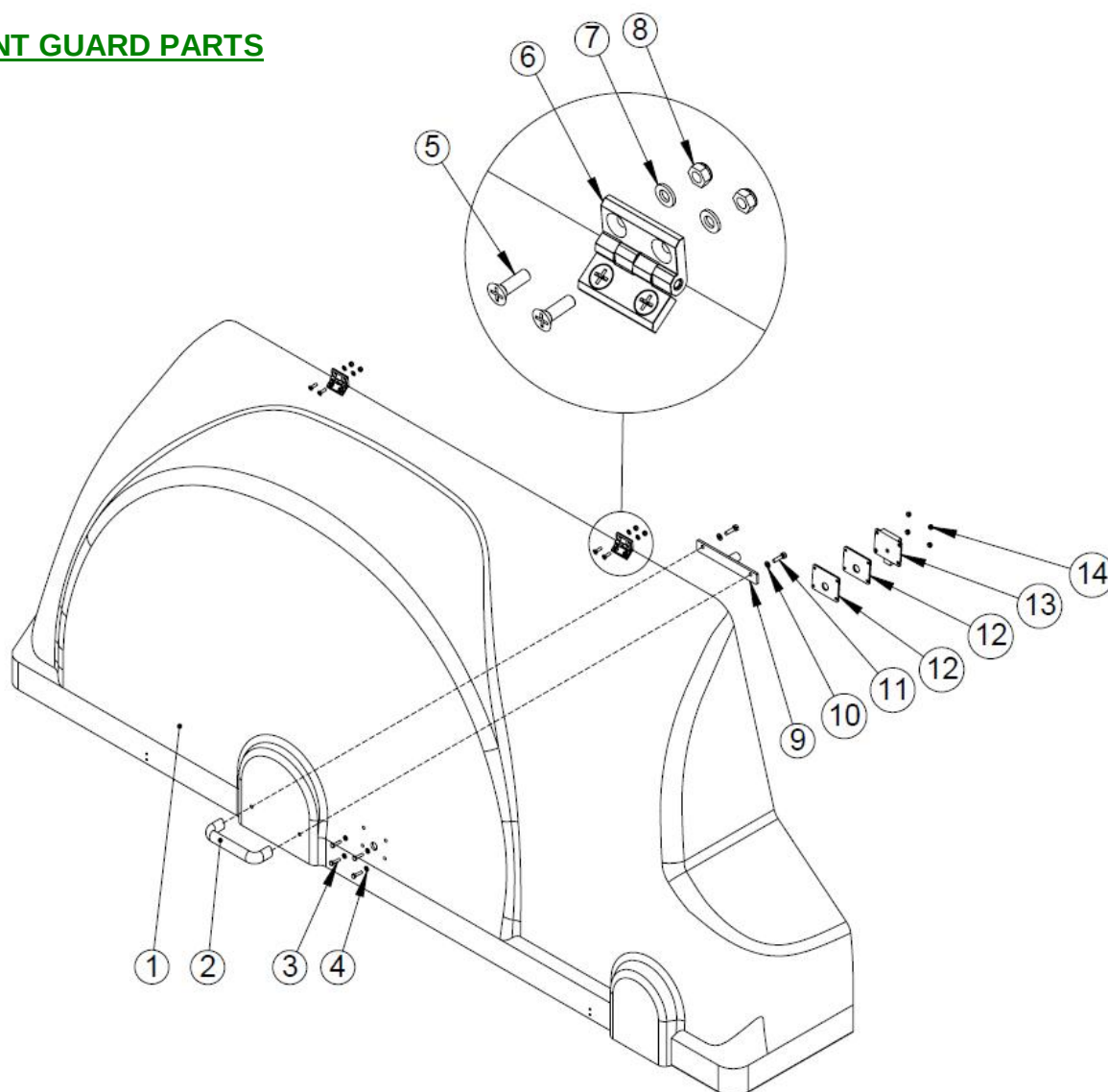
Table 8: Machine weights

Note:

- 1: Mech-Fiber 320 weight based on single axle, for a twin axle add approximately 500 kgs (1,102 lbs).
- 2: Weights may vary depending on exact specifications.

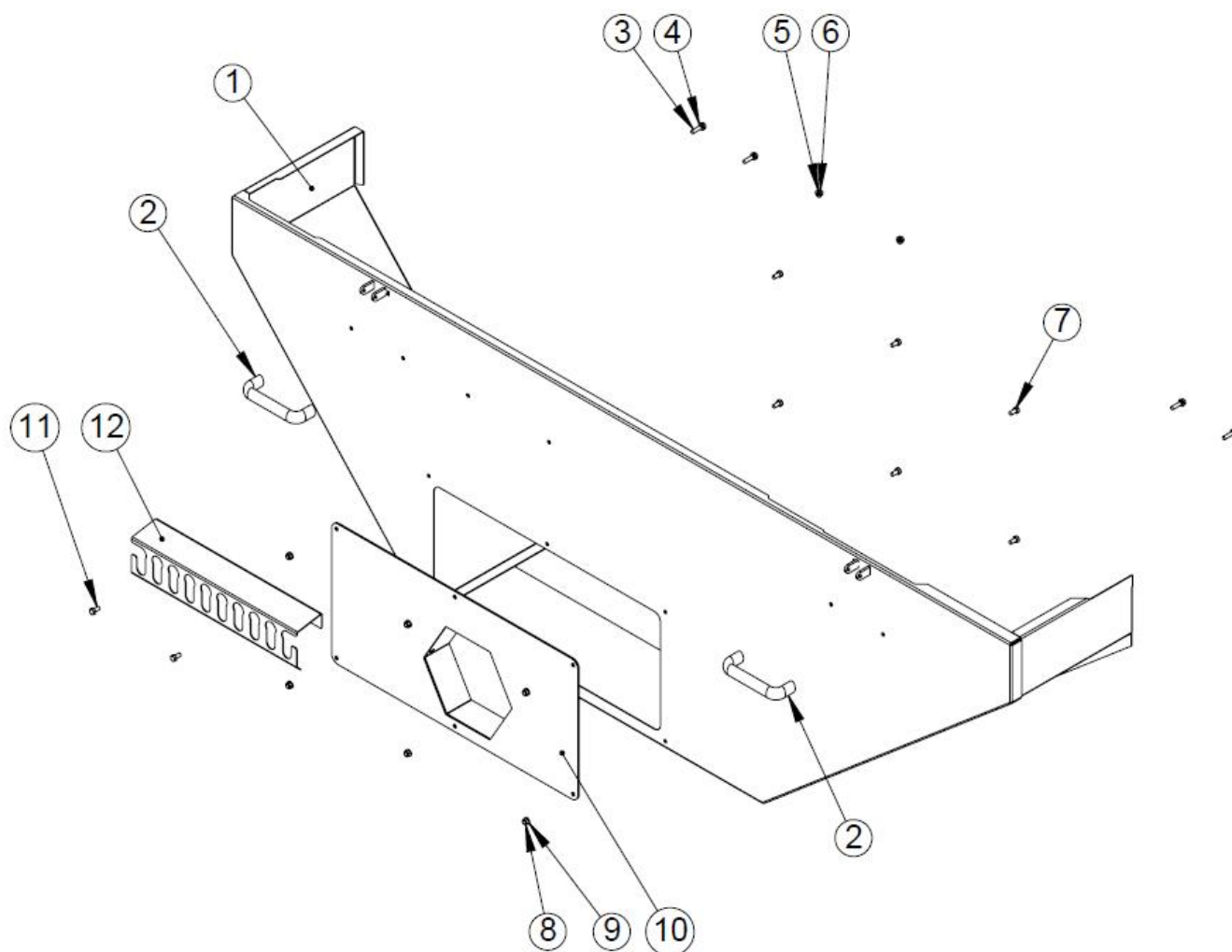
9. PARTS LIST

9.1 FRONT GUARD PARTS



Item:	P/N:	Qty:	Description:
1	FP140-037-0004	1	MF320 Fibreglass Front Guard
2	701363	1	Handles, U-Shape, 160mm hole centres, for Front Guards
3	700200	4	M6 x 25mm HT Setscrew
4	700751	4	M6 x 1.5mm Flat Washer
5	704393	8	M6 x 20mm Countersunk Bolt
6	704121	2	Steel Hinge - Black
7	700751	8	M6 x 1.5mm Flat Washer
8	700204	8	M6 Locknut
9	FP140-037-0016	1	Handle Mounting Plate Assembly - For Fibreglass Covers
10	700736	2	M8 Flat Washer
11	700212	2	M8 x 30 Bolts
12	FP280-037-0038	2	Spring Lock Spacer Plate
13	EF1038-16	1	Spring Lock (Drilled)
14	700204	4	M6 Locknut

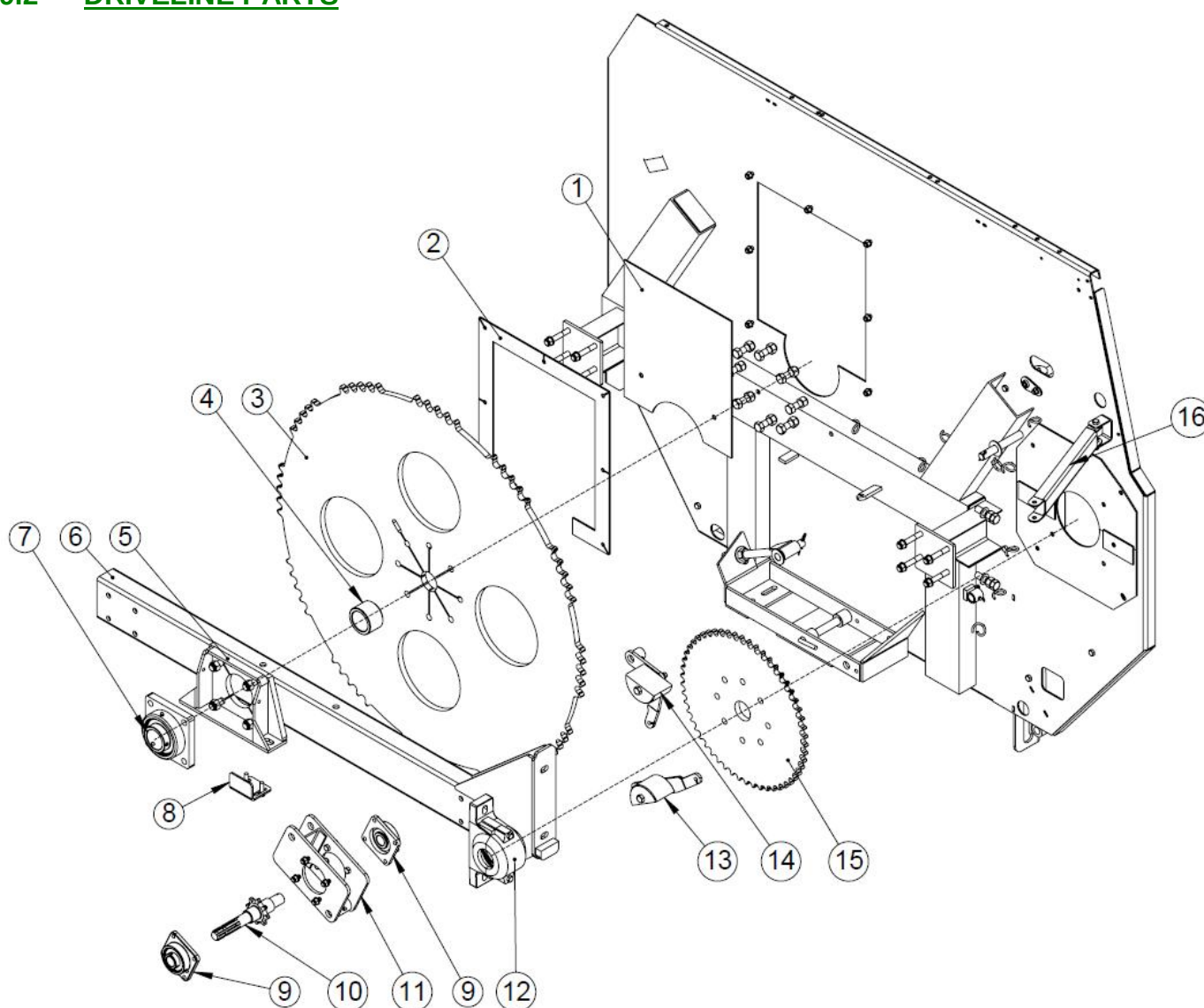
Table 9: Mech-Fiber 320 Fibreglass Front Guard (exploded view)



Item:	P/N:	Qty:	Description:
1	FP140-037-0022	1	MF320 Lower Front Guard Sub-Assembly
2	701363	2	Handles, U-Shape, 160mm hole centres, for Front Guards
3	700212	4	M8 x 30 Bolts
4	700736	4	M8 Flat Washer
5	700736	2	M8 Flat Washer
6	700223	2	M8 Nyloc Nut
7	700207	6	M8 x 16 Bolts
8	700223	6	M8 Nyloc Nut
9	700736	6	M8 Flat Washer
10	FP140-037-0012	1	MF320 Lower Door Assembly
11	700207	2	M8 x 16 Bolts
12	EF1038-21	1	Mounting Plate, for Hyd. Hoses, 10 Points

Table 10: Mech-Fiber 320 Lower Front Guard (exploded view)

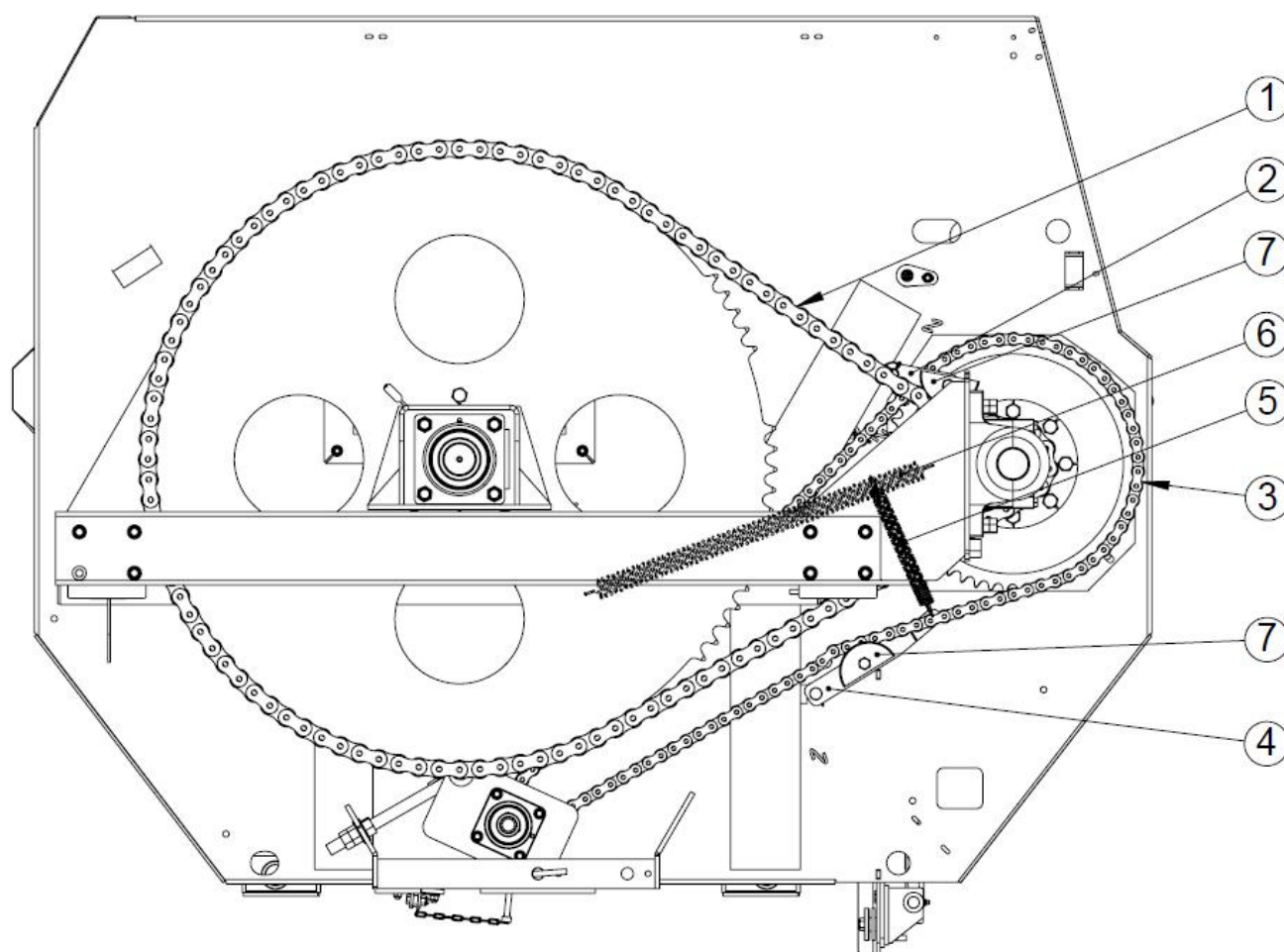
9.2 DRIVELINE PARTS



Parts list

Item:	P/N:	Qty:	Description:
1	EF142-5	1	Rotor Window Plate
2	EF142-37	1	Rotor Window Surround
3	EF147-34	1	Sprocket, ASA140, 96 Teeth, 20mm Plate
4	701534	1	Rotor Spacer, 95mm OD, 70mm ID, 64mm long
5	EF107-22	1	Bearing Front Housing Assembly
6	EF1017-14	1	Front Box 90 Degree Bearing Assembly
7	701520	1	70mm Bearing Flange Mount UCFX14
8	FP140-037-0032	1	Door Catch - Fibreglass Covers
9	700845	2	Bearing, 35mm, 4 Bolt, Flange Mount, UCF X07E.
10	700627	1	Shaft, 6 Spline with 8 Tooth ASA100 Sprocket
11	EF1018-10	1	Gearbox Casing Assembly
12	EF109-35	1	70mm Pillow Bearing Assembly, SNE 516
13	EF1015	1	Primary Drive Chain Tensioner Assembly
14	EF1014	1	Secondary Drive Chain Tensioner Assembly
15	701832	1	Sprocket, 20mm, ASA100, 54 tooth
16	FP140-002-0021	1	Weighbox Arm - Cranked, Long

Table 11: Front panel assembly



Parts list

Item:	P/N:	Qty:	Description:
1	702415	1	Secondary Drive Chain (Pulton ASA 140SH)
2	EF1014	1	Secondary Drive Chain Tensioner Assembly
3	702421	1	Primary Drive Chain (Pulton ASA 100)
4	EF1015	1	Primary Drive Chain Tensioner Assembly
5	701276	1	Primary Drive Chain Tension Spring, 6", 3.6mm wire, 32mm OD
6	701278	1	Secondary Drive Chain Tension Spring, 12", 4mm wire, 40mm OD
Wearing parts:			
7	701970	2	Polypenco Wear Block 85mm
Spare parts:			
-	702423	1	ASA100 Joiner Link
-	702416	1	ASA140 SH Joiner Link

Table 12: Chain and tensioner details (showing springs fully stretched)

9.3 ROTOR PARTS

Parts list

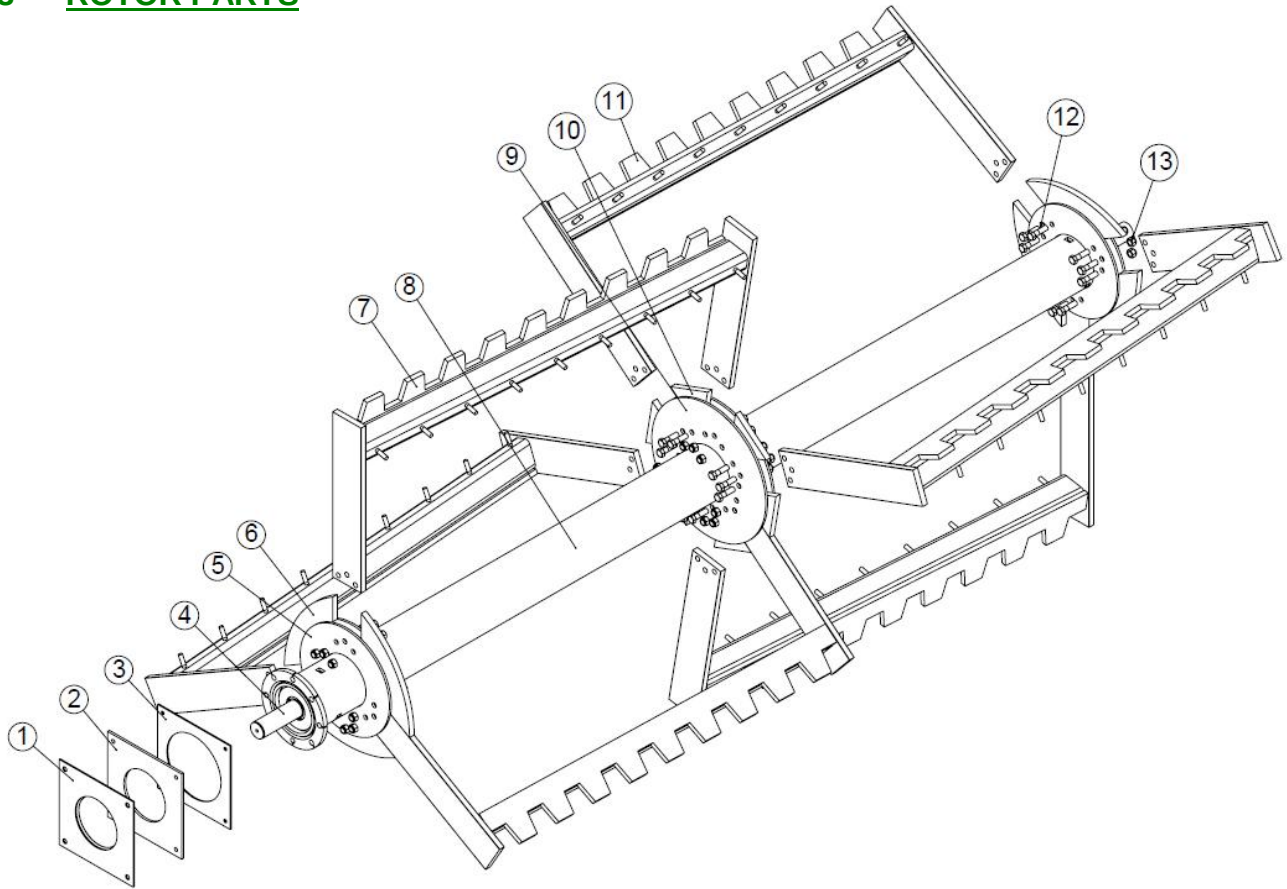


Figure 19a: Mech Fiber 320 Rotor

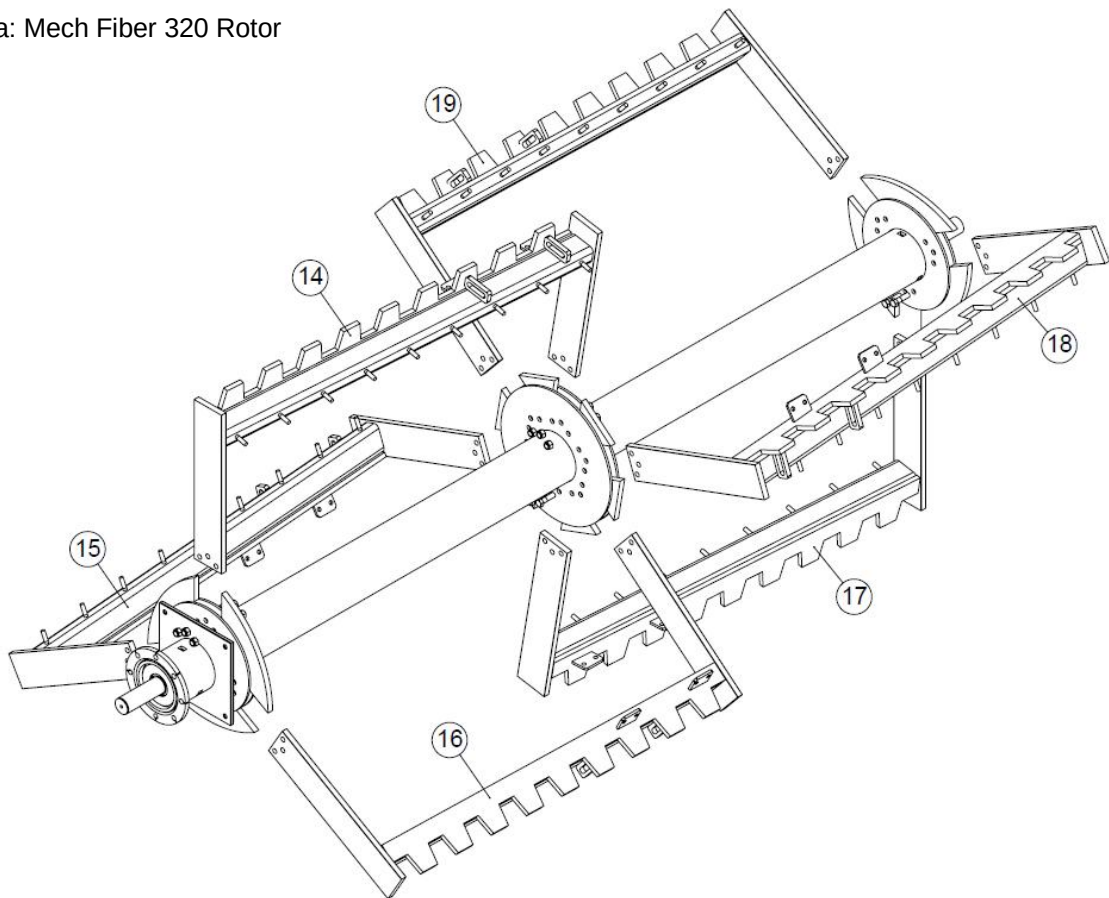


Figure 19b: Mech Fiber 320 Rotor Series II Bale Processor

Item:	P/N:	Qty:	Description:
1	701822	2	Rubber Seal, for Rotor, 10mm (EF147-26)
2	FP140-007-0017	2	Braided Rubber Seal, for Rotor, 10mm
3	FP160-007-0007	2	Rotor Seal Retainer
4	EF147-7	1	Front Rotor Stub Shaft Assembly
5	RDTP147-2	4	End paddle Mounting Flange
6	RDTP147-3	6	End Paddle Blocks
7 *	CPFP148-32	3	Front Paddle Assembly
8	FP140-007-0003	1	Rotor Assembly
9	RDTP207-1	2	Centre Paddle Mounting Flange
10	RDTP147-4	6	Centre Paddle Blocks
11 *	CPFP148-31	3	Rear Paddle Assembly
12	700298	36	M20 x 70 Bolts
13	700305	36	M20 Locknuts
14 **	FP140-008-0011	1	Front Paddle Assembly - Type A
15 **	FP140-008-0012	1	Front Paddle Assembly - Type B
16 **	FP140-008-0013	1	Front Paddle Assembly - Type C
17 **	FP140-008-0014	1	Rear Paddle Assembly - Type A
18 **	FP140-008-0015	1	Rear Paddle Assembly - Type B
19 **	FP140-008-0016	1	Rear Paddle Assembly - Type C

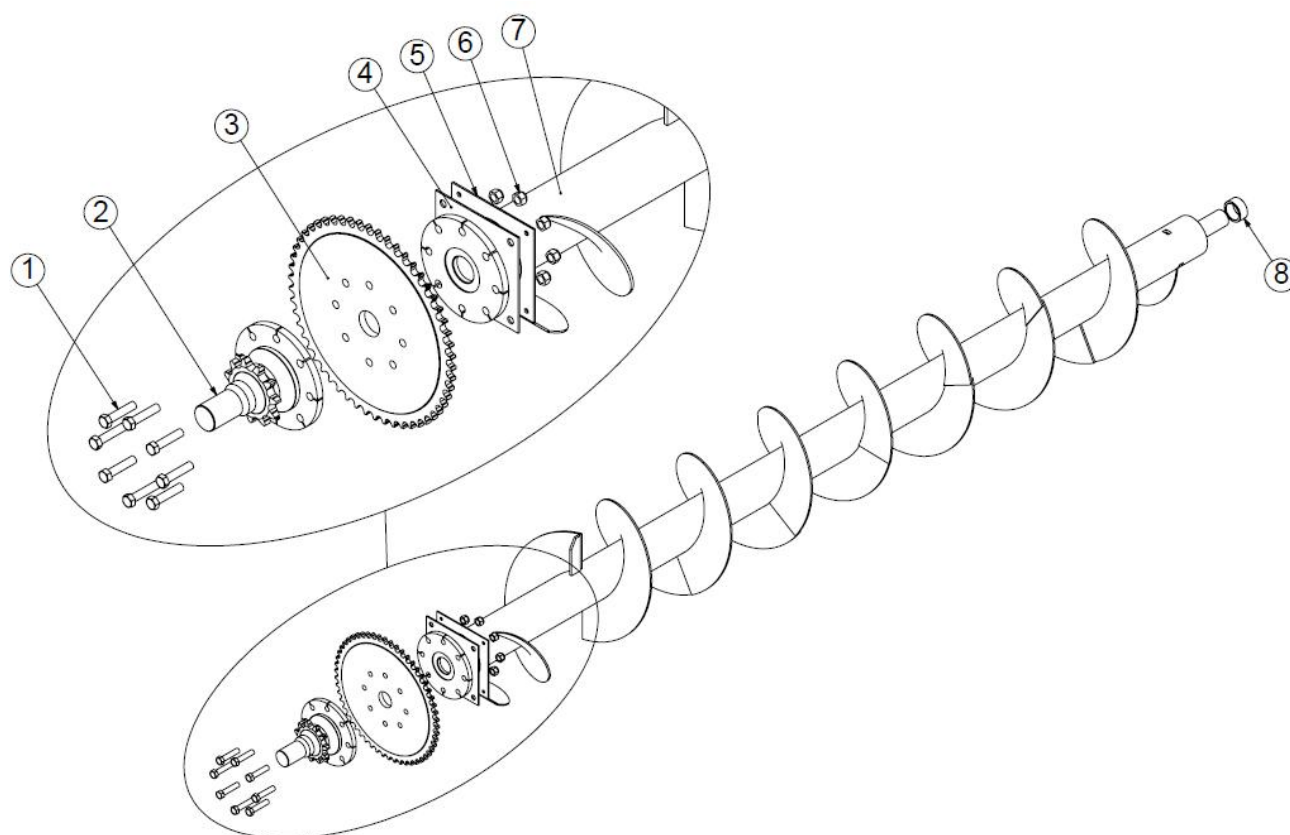
Table 13: Rotor assembly

Note:

* Assemblies used on Mech Fiber 320

* Assemblies used on Mech Fiber 320 Series II Bale Processor

9.4 AUGER PARTS

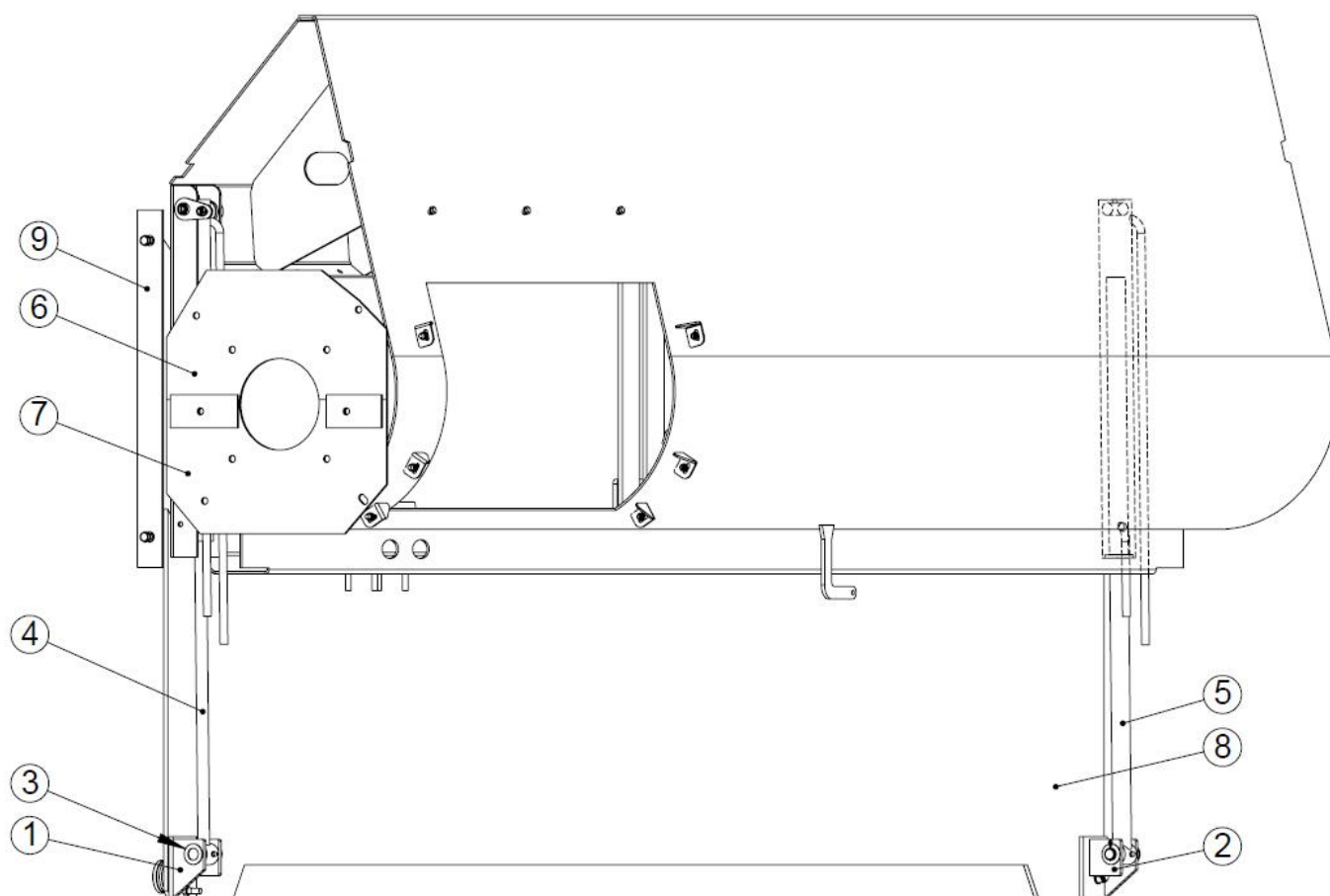


Parts list

Item:	P/N:	Qty:	Description:
1	700302	8	M20 x 90mm Bolts
2	702007	1	Auger Stub Shaft assembly, 70mm, forged
3	701832	1	Sprocket, 20mm, ASA100, 54 tooth
4	701191	1	Rubber Seal, 10mm, for Auger, 285mm x 285mm
5	EF106-120	1	Baffle Plate, 5mm, for Auger Seal Retainer
6	700305	8	M20 Locknuts
7	FP140-009-0001	1	Auger Assembly
8	701598	1	Rotor Spacer, 70.5mm ID, 90mm OD, 40mm long

Table 14: Auger assembly

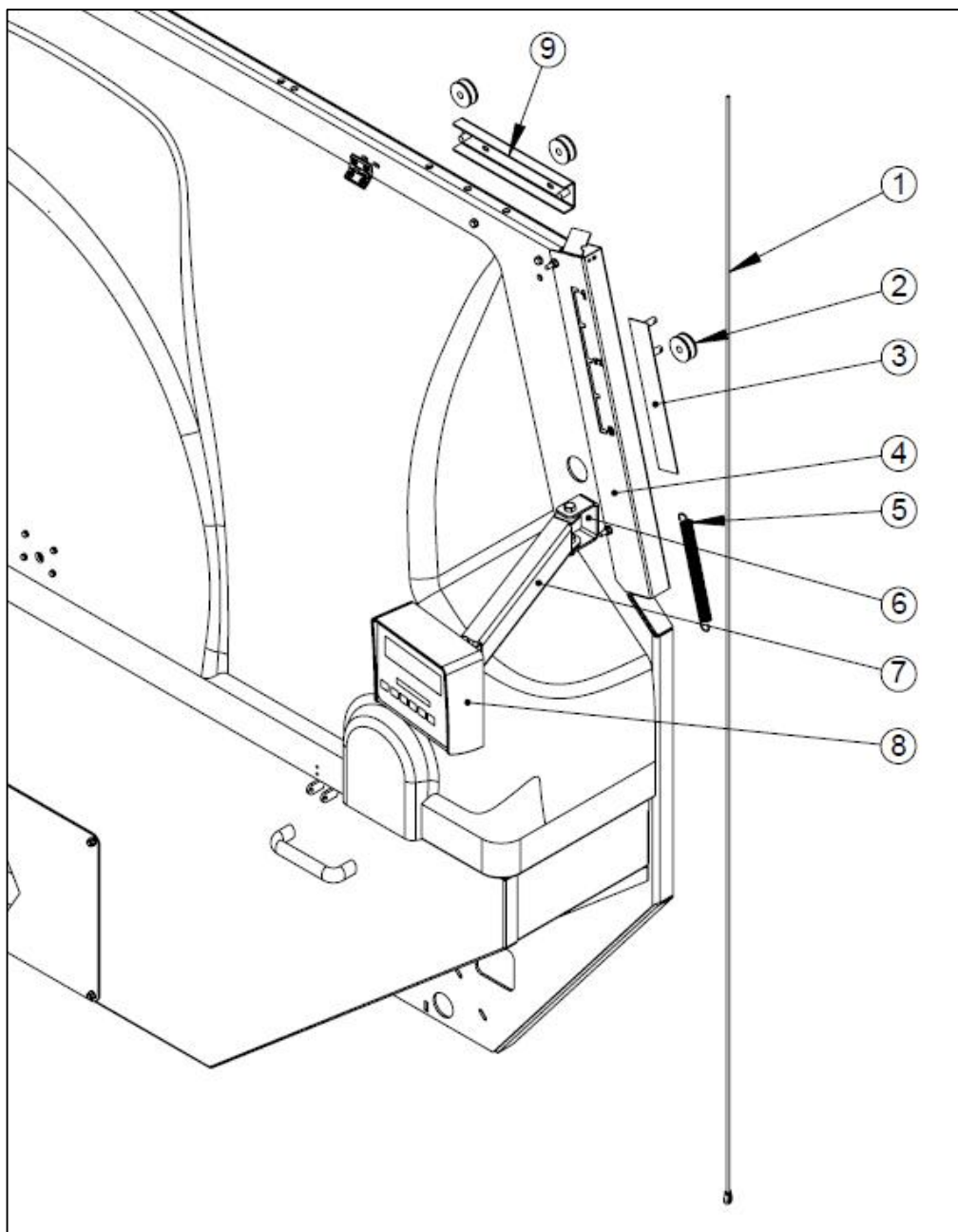
9.5 GUILLOTINE DOOR PARTS



Parts list

Item:	Qty:		Description:
1	RD1010-44	1	Guillotine Door Lower Ram Bracket (Front)
2	RD1010-45	1	Guillotine Door Lower Ram Bracket (Rear)
3	701591	2	Guillotine Door Bottom Hydraulic Cylinder Pin
4	701973	1	Front Guillotine Door Hydraulic Cylinder (Small)
5	701972	1	Rear Guillotine Door Hydraulic Cylinder (Big)
6	EF106-75	1	Auger Upper Cover Flange Plate Assembly
7	EF106-16	1	Auger Lower Cover Flange Plate
8	FP140-010-0001	1	Guillotine Door (V.F.C. Door)
9	701521	1	Rubber Seal for Guillotine Door Ends

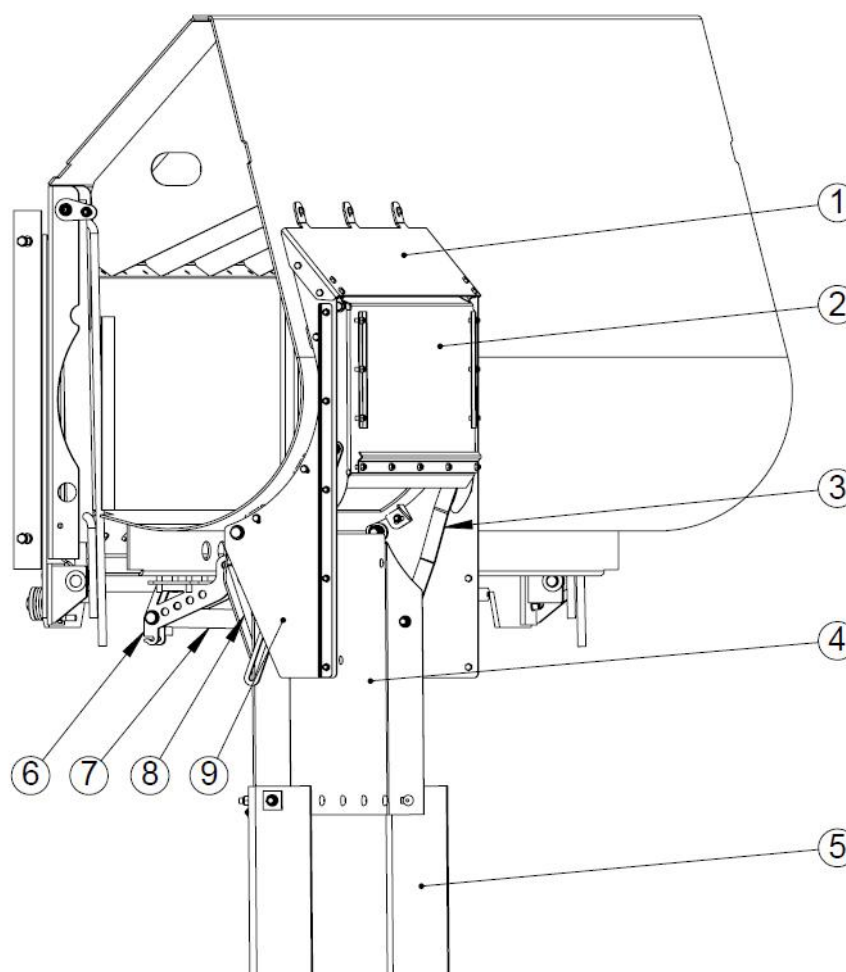
Table 15: Auger chamber assembly



Item:	P/N:	Qty:	Description:
1	703629	1	Wire Rope, for Door Indicator, 2470mm
2	701559	1	Pulley Wheel, 50mm OD, 20mm thick, for Indicator
3	RD1010-61	1	V.F.C. Door Indicator Slider Assembly
4	FP100-010-0008	1	Guillotine Door Indicator Kit
5	703625	1	Spring, 8" Expansion, 22mm OD, 2mm thick
6	EF102-108	1	Weighbox Arm Mounting Bracket
7	FP140-002-0021	1	Weighbox Arm (Cranked, Long)
8	703353	1	Weighbox, Dinamica Generale, Stad 04, c/w bracket
9	FP100-010-0007	1	Indicator Pulley Wheel Assembly, for Guillotine Door Indicator

Table 16: Front panel assembly

9.6 FEEDOUT TRAY PARTS



Parts list

Item:	P/N:	Qty:	Description:
1	FP100-006-0073	1	Feed Out Shroud Top Plate
2	FP100-006-0074	1	Feed Out Door Assembly
3	FP080-006-0012	2	Feed Out Frame Link Arm
4 *	FP100-006-0032	1	Feed Out Tray (for Rubber Extension)
5	700802	1	Feed Out Tray Rubber
6	FP100-006-0003	1	Feed Out Tray Ram Upper Mounting Bracket Assembly
7	703591	1	Feed Out Tray Hydraulic Cylinder 6" Stroke
8	FP100-006-0006	1	Feed Out Tray Subframe Assembly
9 **	EF106-166	2	Feed Out Shroud Side Plate
-	FP100-006-0016	1	Feed Out Shroud Rubber Curtain (not shown for clarity)
Feedout Tray Options:			
-	FP100-006-0059	-	Feed Out Tray (Standard)
-	FP100-006-0031	-	Feed Out Tray (Half Rubber)
-	FP100-006-0033	-	Feed Out Tray (for Magnets)
-	FP100-006-0030	-	Feed Out Tray (for Magnets & Rubber)

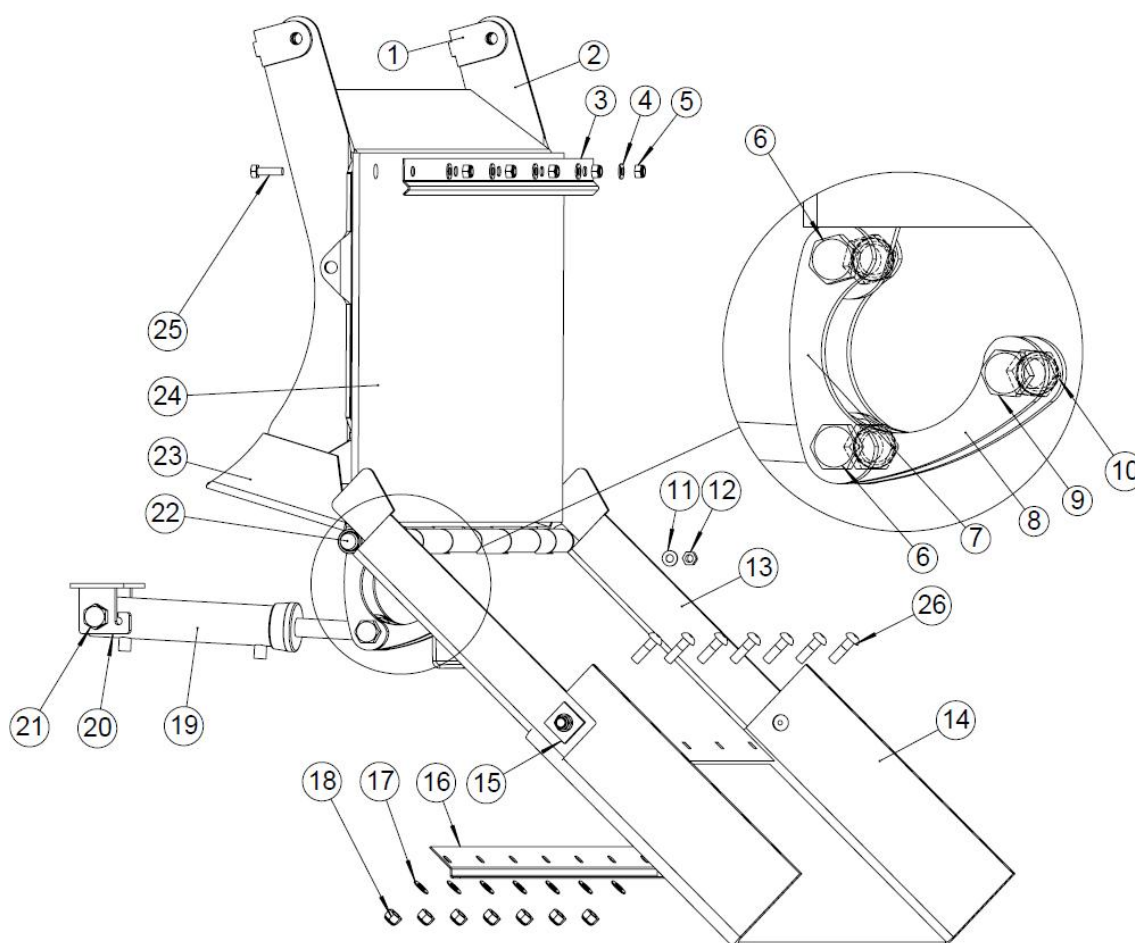
Table 17: Feed out tray details

Note:

* Tray options include standard tray, standard tray with magnets, fold down tray, and fold down tray with magnets. Tray option must be stated when ordering.

** Feedout shroud side plates differ when a fold down tray is used. Tray option must be stated when ordering.

9.7 FOLD DOWN TRAY OPTIONS

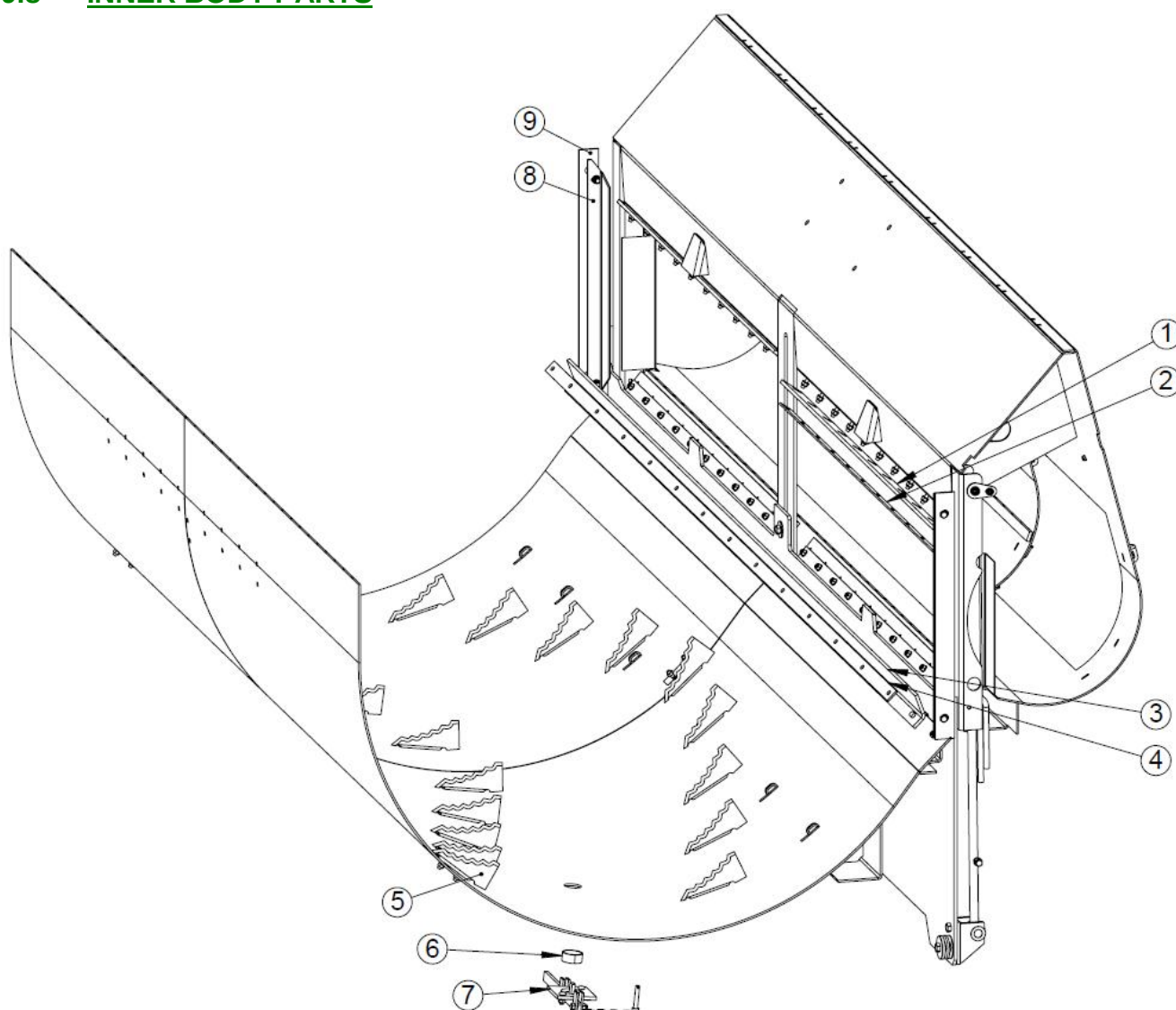


Item:	P/N:	Qty:	Description:
1	EF206-21	4	Feedout Door Bracket On Auger Chamber
2	RD106-10	1	Feedout Door Assembly
3	RD106-46	1	Rubber Retainer For Feedout Door
4	700729	5	M10 Washer
5	700241	5	M10 Locknut
6	701488	2	M20 x 110mm Bolt
7	US806-132	2	Feed Out Tray Link Arm (Outside)
8	EF106-131	2	Feed Out Tray Link Arm (Inside)
9	700302	1	M20 x 90mm Bolt
10	700305	4	M20 Locknut
11	700729	1	M10 Washer
12	700241	1	M10 Locknut
13 *	EF106-112	1	Fold Down Tray Assembly
14	700802	1	Fold Down Tray Rubber Extension
15	EF106-79	2	Feedout Tray Side Rubber Retainers
16	EF106-156	1	Feedout Tray Rubber Extension Retainer
17	700731	9	M12 Washer
18	700266	9	M12 Locknut
19	701064	1	Hydraulic Ram 6" (Keen 31)
20	EF106-48	1	Ram Bracket, Feedout Tray, for Auger Chamber
21	701496	1	M20 x 120mm Bolt
22	EF106-108	1	Fold Down Tray Hinge Bar Assembly
23	EF106-111	1	Fold Down Tray Mounting Plate Assembly
24	700812	1	Feedout Door Rubber
25	700228	5	M10 x 35 Bolt
26	700251	9	M12 x 40 Cupheads

Table 18: Fold down tray details

***Note:** Fold down tray assembly for Magnets is part number EF106-137.

9.8 INNER BODY PARTS



Parts list

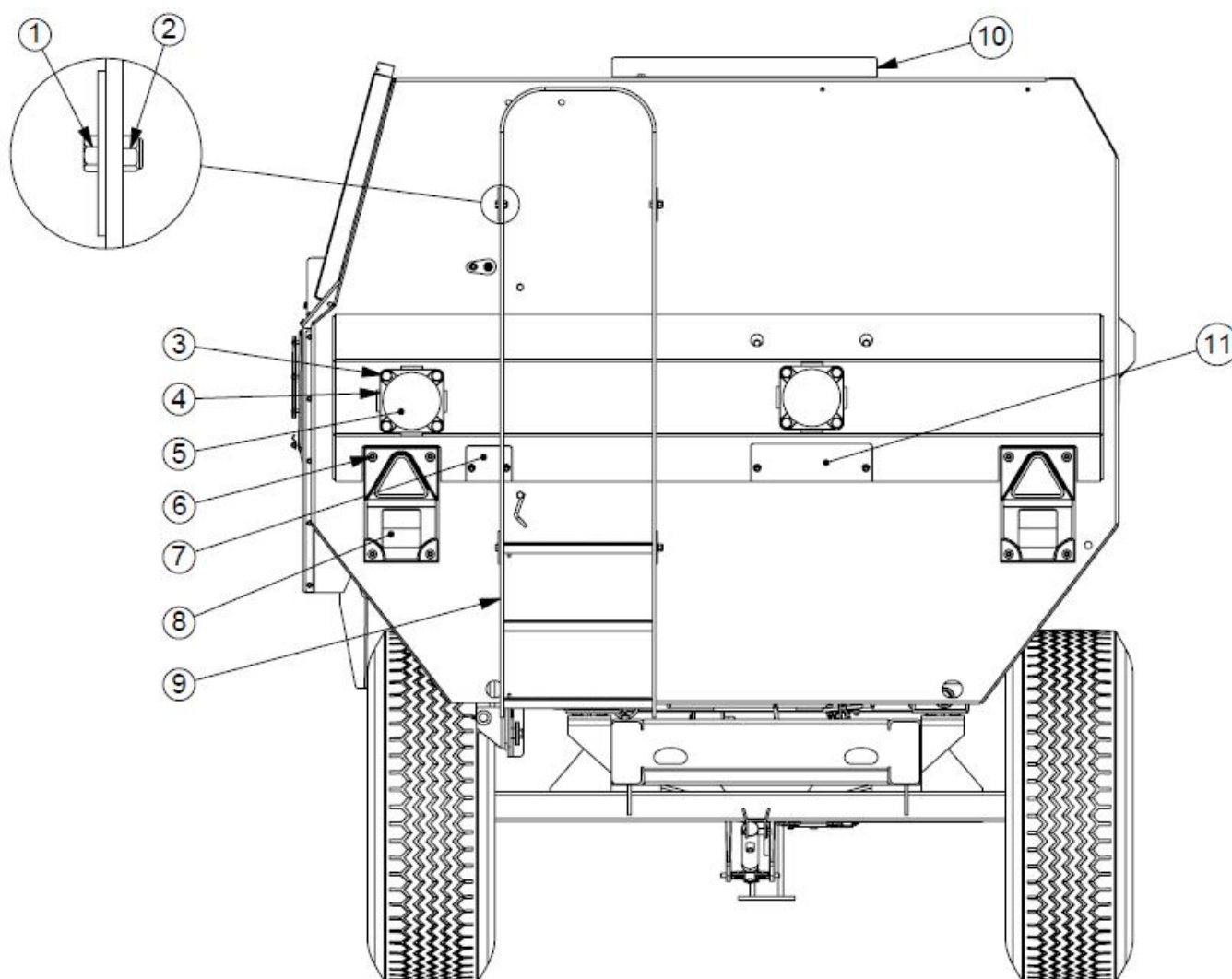
Item:	P/N:	Qty:	Description:
1	701195	4	Guillotine Door Outer Rubber Seal
2	FP140-006-0022	4	Guillotine Door Outer Seal Retainer
3	701290	1	Guillotine Door Lower Inner Seal
4	FP140-004-0003	1	Guillotine Door Lower Inner Seal Retainer
5 *	703955	22	Body Blade
	700227	44	M10 x 30 Setscrew
	700241	44	M10 Nut
	700737	44	M10 Spring Washer
6	EF104-6	1	Drain Bung Tube
7	EF104-12	1	Drain Bung Cover Plate Assembly
8	RD1010-12	2	Guillotine Door Front And Rear End Retainer Plate
9	701521	2	Guillotine Door Front And Rear End Rubber

Table 19: Body assembly

Note:

* There are 22 blades used as standard on the Mech-Fiber 320. 10 extra body blades are fit as standard to machines with Series II Bale Processor option.

9.9 REAR PANEL PARTS



Parts list

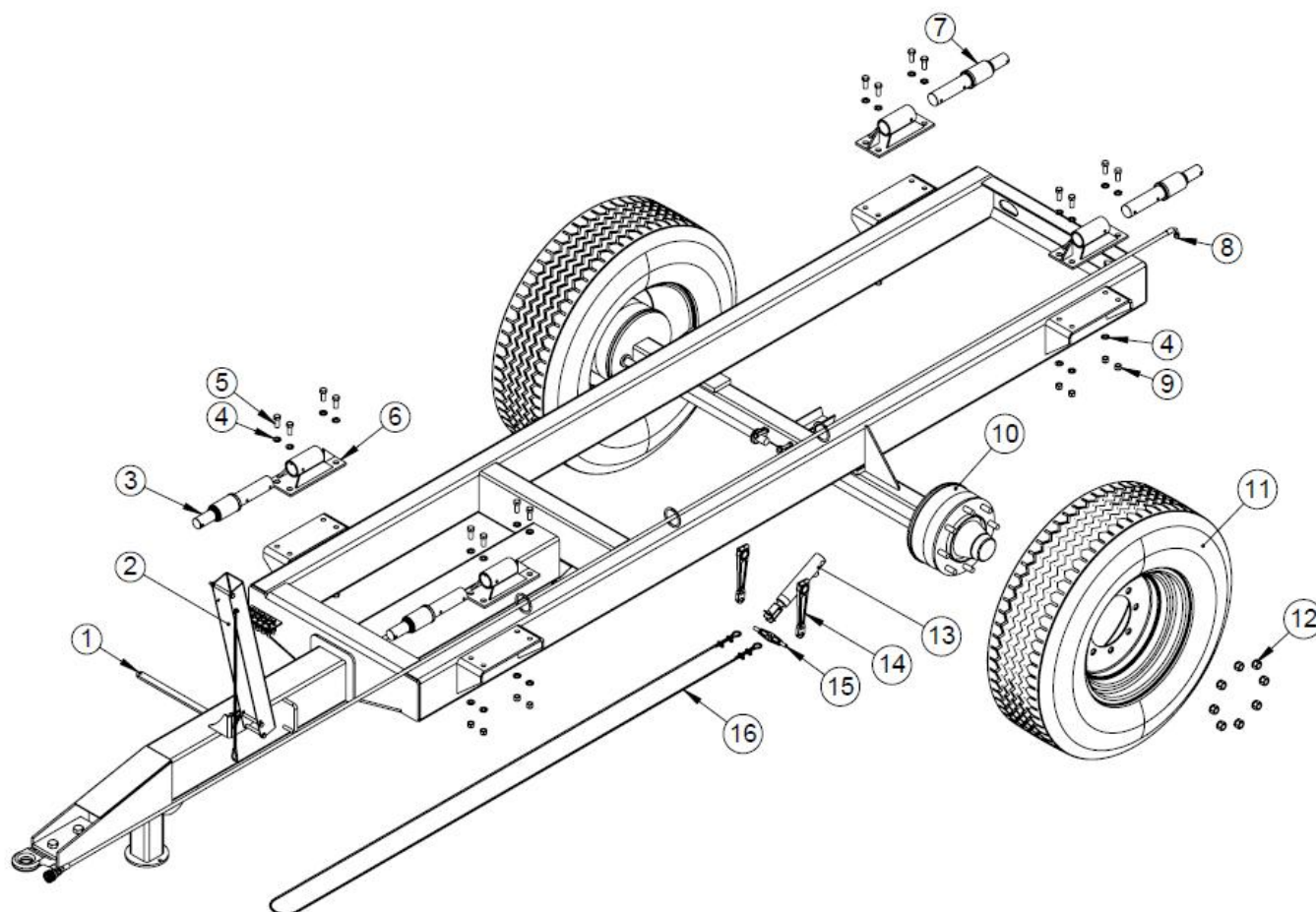
Item:	P/N:	Qty:	Description:
1	700246	4	M12 x 25 Bolt
2	700266	4	M12 Locknut
3	700297	8	M20 x 65 Bolt
4	700842	2	70mm Flange Bearing, UCF X14, Cast Housing
5	701273	2	Rear Bearing Cover
6 *	700223	8	M8 Locknut
7	FP140-003-0006	1	Rear Access Slot Cover Plate (Small)
8	700701	2	Rear Light Clusters
9	FP140-013-0002	1	Ladder Assembly
10 **	EF1041-1	1	Cover Plate, 3mm, Folded, for Rear Panel (Top)
11	EF103-32	1	Rear Access Slot Cover Plate (Large)

Table 20: Rear panel assembly

Note: *Also used with items no. 7 & 11 (Rear Access Slot Cover Plates).

**Not used on Bale Processor models.

9.10 CHASSIS PARTS

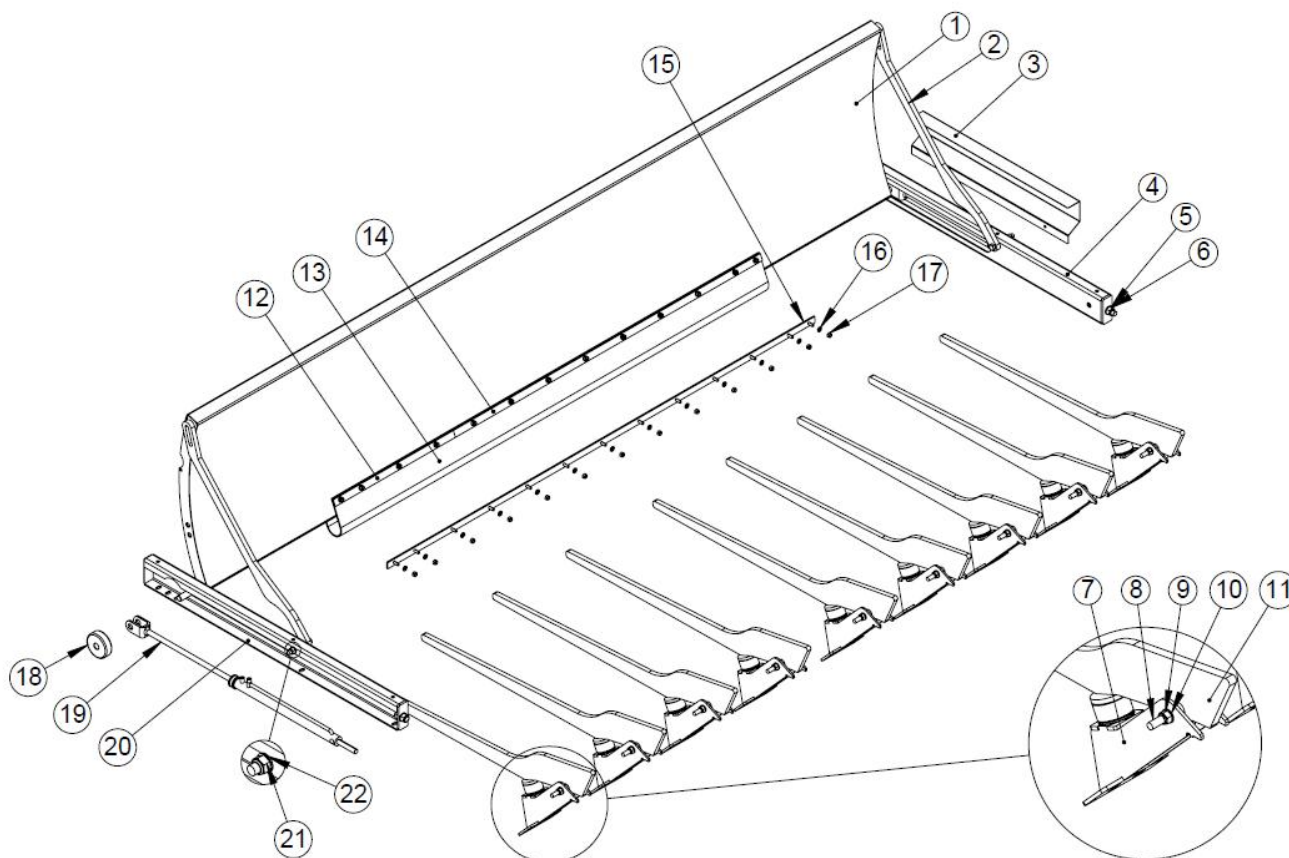


Item:	P/N:	Qty:	Description:
1	EF101-22	1	Handbrake Assembly
2	FP140-001-0019	1	Hydraulic Hose Holder Assembly
3	703350	2	Front Weighbar, 4.6m Cable
4	700732	16	M16 Washer
5	703148	16	M16 x 40 Bolt
6	EF101-9	4	Weighbar Bracket Assembly
7	703351	2	Rear Weighbar, 9.2m Cable
8	702105	1	Hydraulic Hose, 20Ft, Brake Hose Assembly
9	700283	16	M16 Locknut
10	700505	1	Axle, 90mm Square, 1930mm track, with 8 x M20 studs
11	700474	2	Wheel Assembly, 385/65 R22.5, 8 Stud.
12	700304	16	M20 Hex Nut (used with M20 Spring Washer P/N 700740)
13	700832	1	Brake Ram
14	703936	2	Brake Arm
15	703918	1	Brake Lever Tie Bar
16	702502	1	Handbrake Cable, 6mm Cable x 5600mm Long
Optional Parts - Brackets			
-	700723-1	1	Hydraulic Jack Mounting Bracket
-	FP140-001-0030	1	Hydraulic Jack Mounting Bracket (High Hitch)
-	EF1033-14	1	Sidewinding Jack Mounting Bracket
-	701885	1	Bulldog Jack Mounting Tube
Optional Parts - Bushes			
-	704154	1	Towing Eye Bush, 32.5mm ID
-	702324	1	Towing Eye Bush, 30mm ID

Table 21: Chassis and Weighbars (exploded view)

9.11 BALE PROCESSOR PARTS

Series I Bale Processor

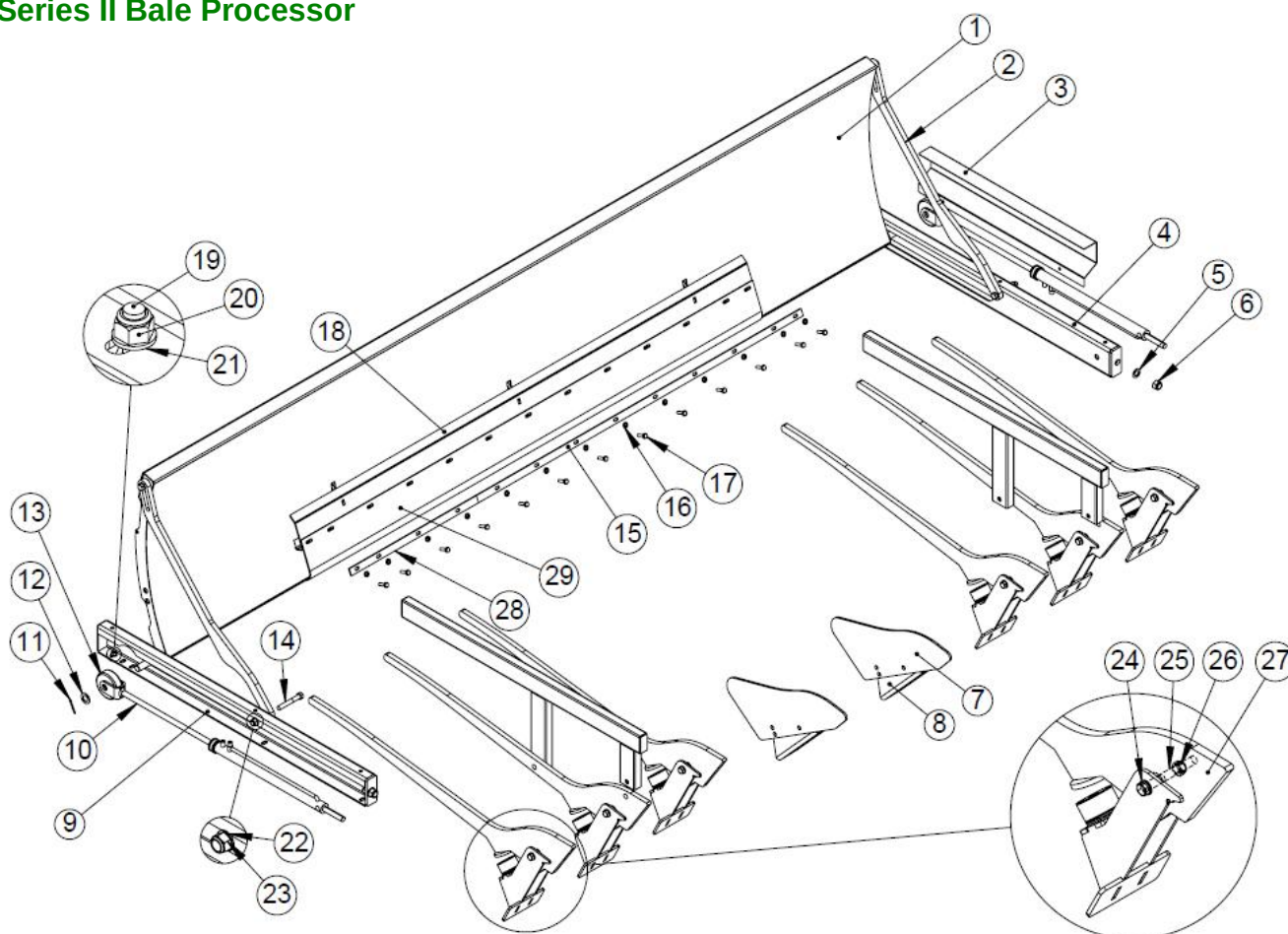


Item:	P/N:	Qty:	Description:
1	FP160-045-0011	1	Bale Processor Creel Curved Plate Assembly
2	FP280-045-017	2	Bale Processor Creel Guide Arm
3	FP160-045-0088	1	Creel End Cover Plate
4	FP160-045-0003	1	Bale Processor End Creel Assembly (Rear)
5	700733	2	M20 Washer
6	700305	2	M20 Locknut
7	FP140-045-0032	9	Bale Handler Tine Bracket Complete Assembly
8	700271	9	M16 x 130mm Bolt
9	700283	9	M16 Locknut
10	700732	9	M16 Washer
11	FP140-045-0033	9	Tine Arm Assembly
12	FP140-045-0004	1	Retainer Strip, 5mm, for Rubber Apron, 675mm long
13	FP140-045-0003	1	Rubber Apron
14	FP200-045-0004	1	Retainer Strip, 5mm, for Rubber Apron, 1725mm long
15	FP140-045-0005	1	Apron Rail & Stud Assembly
16	700729	13	M10 Washer
17	700241	13	M10 Locknut
18	FP280-045-010	2	Bale Processor Nylon Guide Wheel
19	704040	2	End Creel Ram Assembly
20	FP160-045-0002	1	Bale Processor End Creel Assembly (Front)
21	700283	2	M16 Locknut
22	700732	2	M16 Washer

Table 22: Series I Bale Processor Creel Assembly

Series II Bale Processor

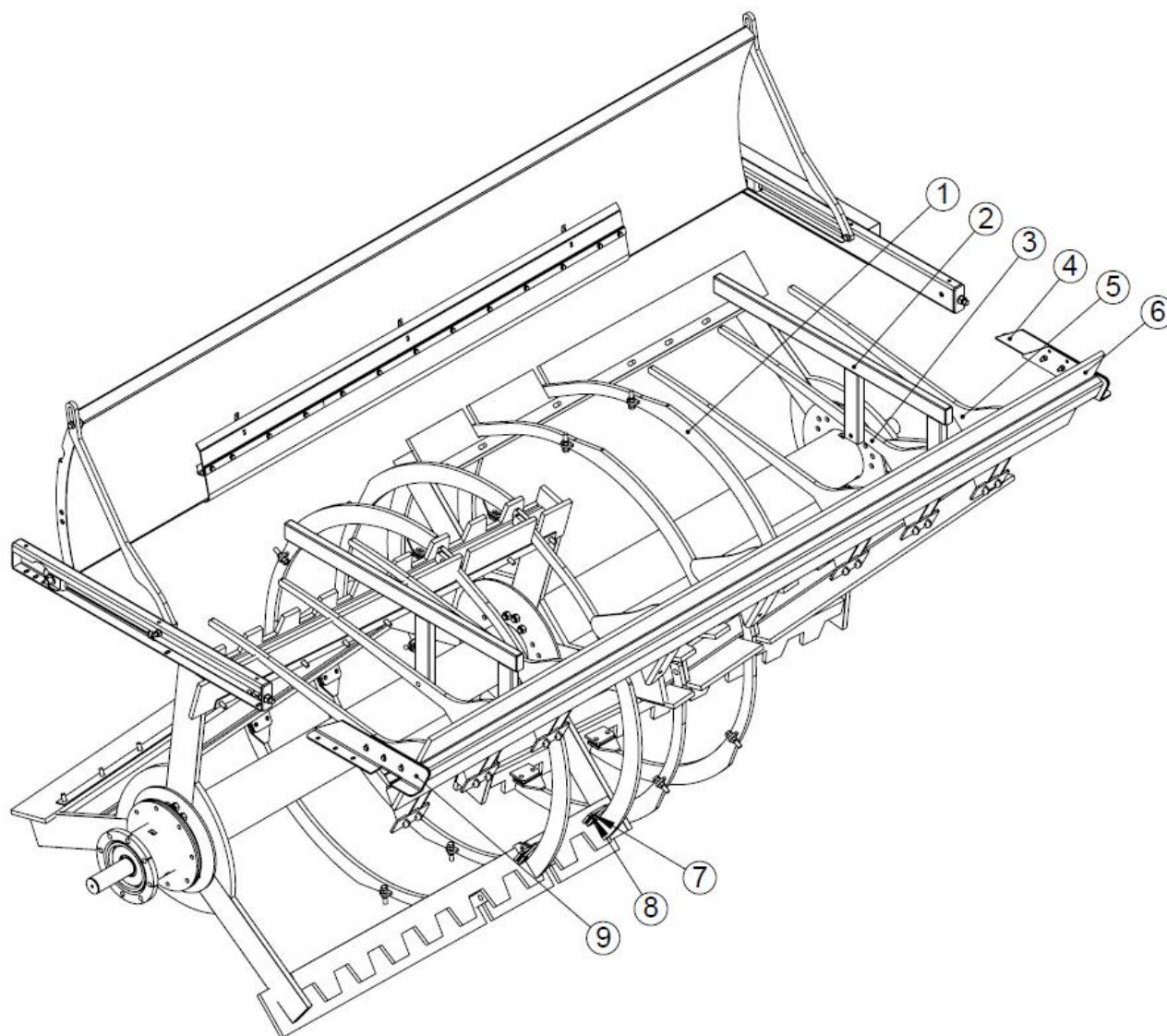
Parts list



Item:	P/N:	Qty:	Description:
1	FP160-045-0083	1	Bale Processor Creel Curved Plate Assembly
2	FP280-045-017	2	Bale Processor Creel Guide Arm
3	FP160-045-0088	1	Creel End Cover Plate
4	FP160-045-0003	1	Bale Processor End Creel Assembly (Rear)
5	700733	2	M20 Washer
6	700305	2	M20 Locknut
7	FP160-045-0089	2	Light Material Deflector
8	FP140-045-0051	2	Light Material Deflector Mounting Plate
9	FP160-045-0002	1	Bale Processor End Creel Assembly (Front)
10	704040	2	End Creel Ram Assembly
11	701112	2	R Clip
12	700746	2	M25 Flat washer
13	FP280-045-010	2	Bale Processor Nylon Guide Wheel
14	700269	2	M16 x 110mm Bolt
15	FP200-045-0004	1	Retainer Strip, 5mm, for Rubber Apron, 1725mm long
16	700729	13	M10 Washer
17	700228	13	M10 x 35mm Bolt
18	FP160-045-0075	1	Kicker Assembly, Rubber Mount Assembly
19	700247	6	M12 x 30mm Bolt
20	700266	6	M12 Locknut
21	700730	6	M12 Washer
22	700732	2	M16 Washer
23	700283	2	M16 Locknut
24	700732	6	M16 Washer
25	700271	6	M16 x 130mm Bolt
26	700283	6	M16 Locknut
27	FP140-045-0033	4	Tine Arm Assembly
28	FP140-045-0004	1	Retainer Strip, 5mm, for Rubber Apron, 675mm long
29	FP140-045-0003	1	Rubber Apron

Table 23: Series II Bale Processor Creel Assembly

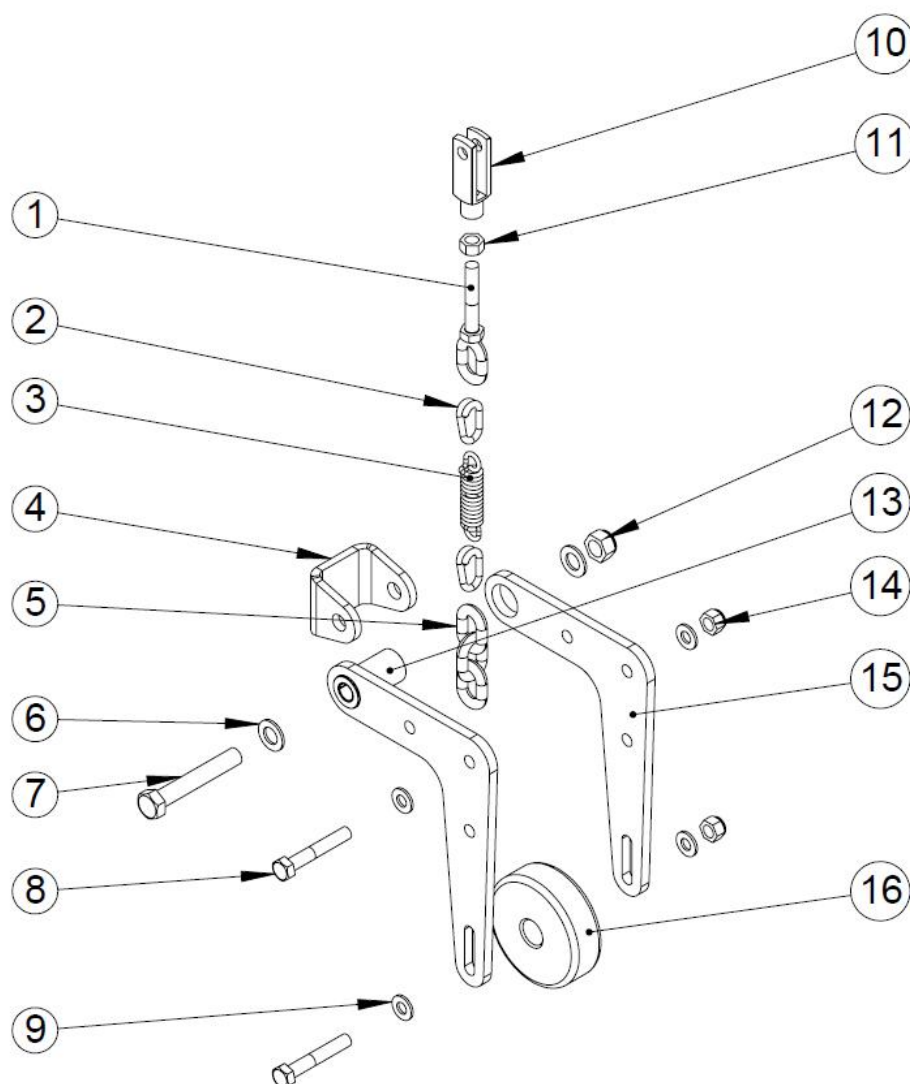
Series II Bale Processor (cont'd)



Item:	P/N:	Qty:	Description:
1	FP140-045-0050	12	Ring Assembly
2	EF1045-65	2	Cradle Arm Assembly
3	US1045-82	2	Tine Arm Assembly for Cradle Arm
4	FP100-050-001	1	Load Bumper Mounting Bracket - Rear
5	FP140-045-0033	4	Tine Arm Assembly
6	FP140-050-007	1	Load Bumper Assembly
7	FP160-045-0057	12	5mm Ring Spacer
8	FP160-045-0056	12	2mm Ring Spacer
9	FP100-050-002	1	Load Bumper Mounting Bracket - Front

Table 24: Series II Bale Processor Rings

Series II Bale Processor (cont'd)



Parts list

Item:	P/N:	Qty:	Description:
1	FP140-045-0054	1	Chain & Bolt Weld Assembly
2	704415	2	Chain Joiner Link
3	704414	1	Extension Spring, 87.2mm Long, 20mm OD, 4mm Wire
4	FP160-045-0073	1	Arm Mount Bracket
5	FP140-045-0052	1	Chain, 10mm x 49.5mm, Black Mild Steel, (3 Link)
6	700732	2	M16 Washer
7	700268	1	M16 x 100 Bolt
8	700262	2	M12 x 75 Bolt
9	700730	4	M12 Washer
10	FP140-045-0055	1	M12 Clevis
11	700265	1	M12 Hex Nut
12	700283	1	M16 Locknut
13	EF1045-94	1	Steel Bush
14	700266	2	M12 Locknut
15	FP160-045-0070	2	Side Plate
16	FP280-045-010	1	Nylon Guide Wheel

Table 25: Kicker Arm Assembly (Exploded View)

Rubbers & Seals

Parts list

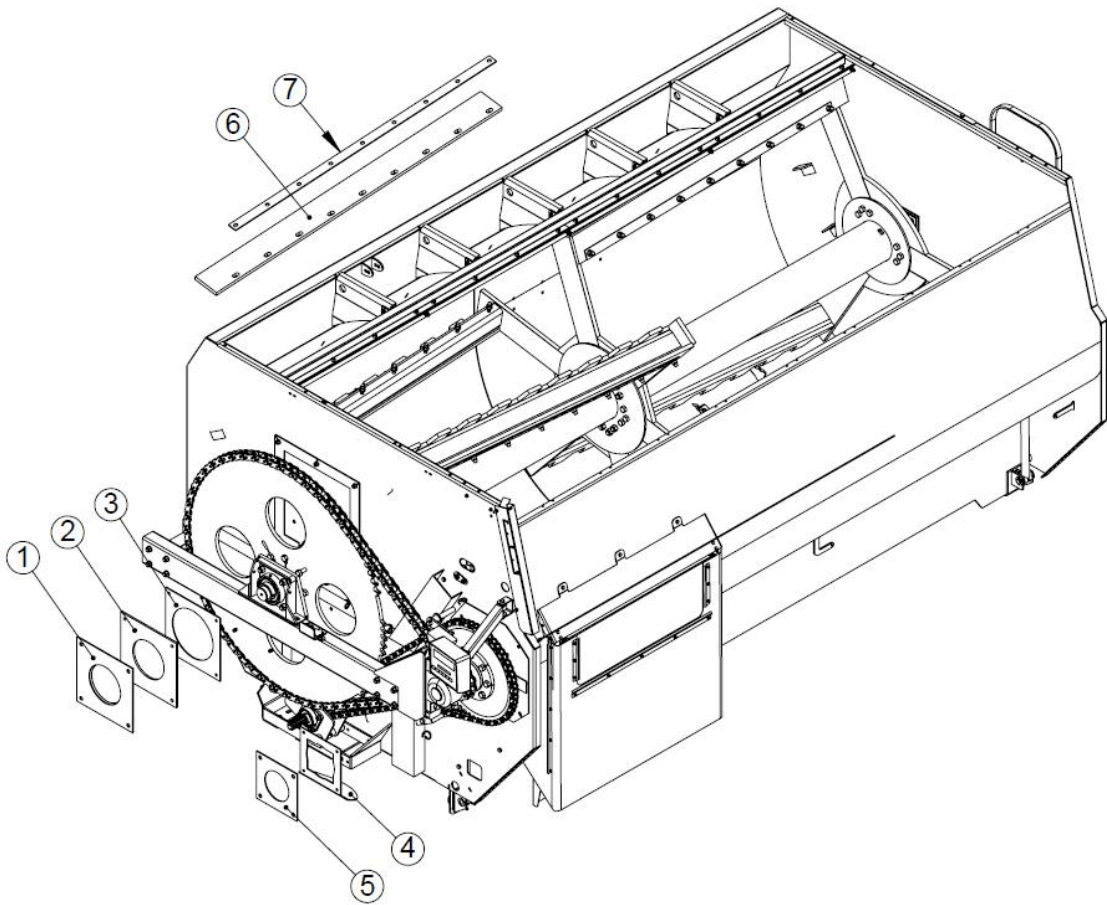


Figure 20a: Mech-Fiber 320 (non-Bale Processor Option)

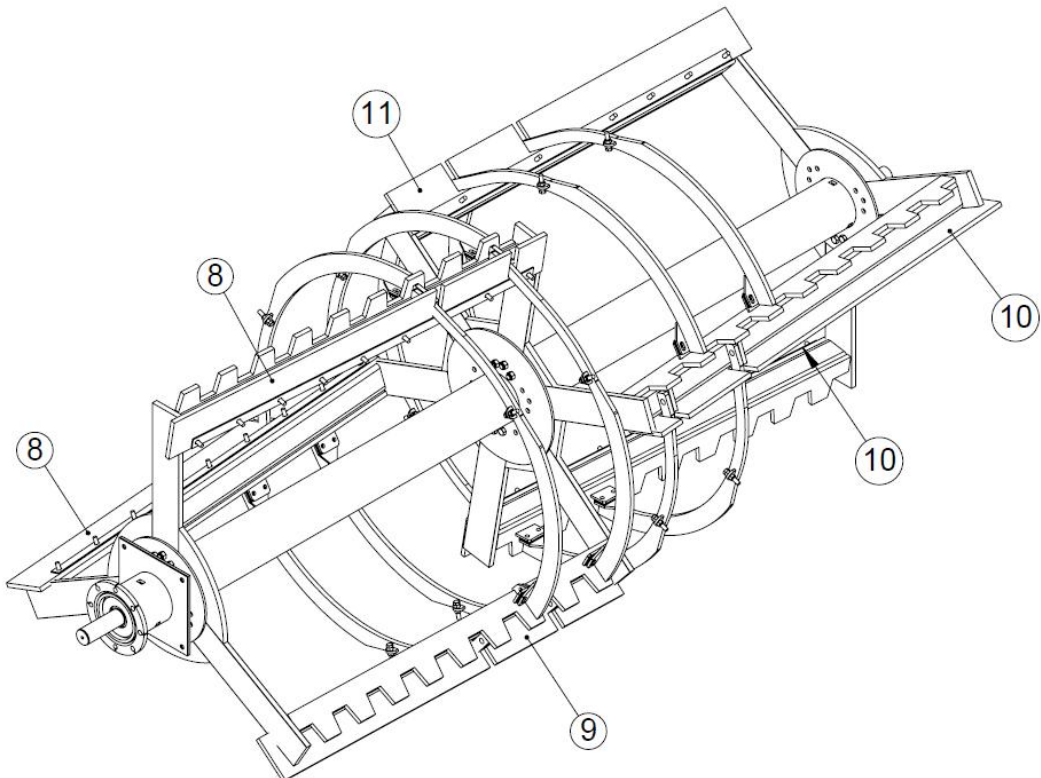


Figure 20b: Series II Bale Processor Option

Item:	P/N:	Qty:	Description:
1	701822	2	Rubber Seal, for Rotor, 10mm (EF147-26)
2	FP140-007-0017	2	Braided Rubber Seal, for Rotor, 10mm
3	FP160-007-0007	2	Rotor Seal Retainer
4	EF106-120	1	Baffle Plate, 5mm, for Auger Seal Retainer
5	701191	1	Rubber Seal, 10mm, for Auger, 285mm x 285mm
6 *	702288	3	Front Paddle Rubber
	702287	3	Rear Paddle Rubber
7	FP140-008-0009	6	Paddle Rubber Retainer
8 **	704262	2	Front Paddle Rubber – Type A
9 **	704264	1	Front Paddle Rubber – Type B
10 **	704263	2	Rear Paddle Rubber – Type A
11 **	704265	1	Rear Paddle Rubber – Type B

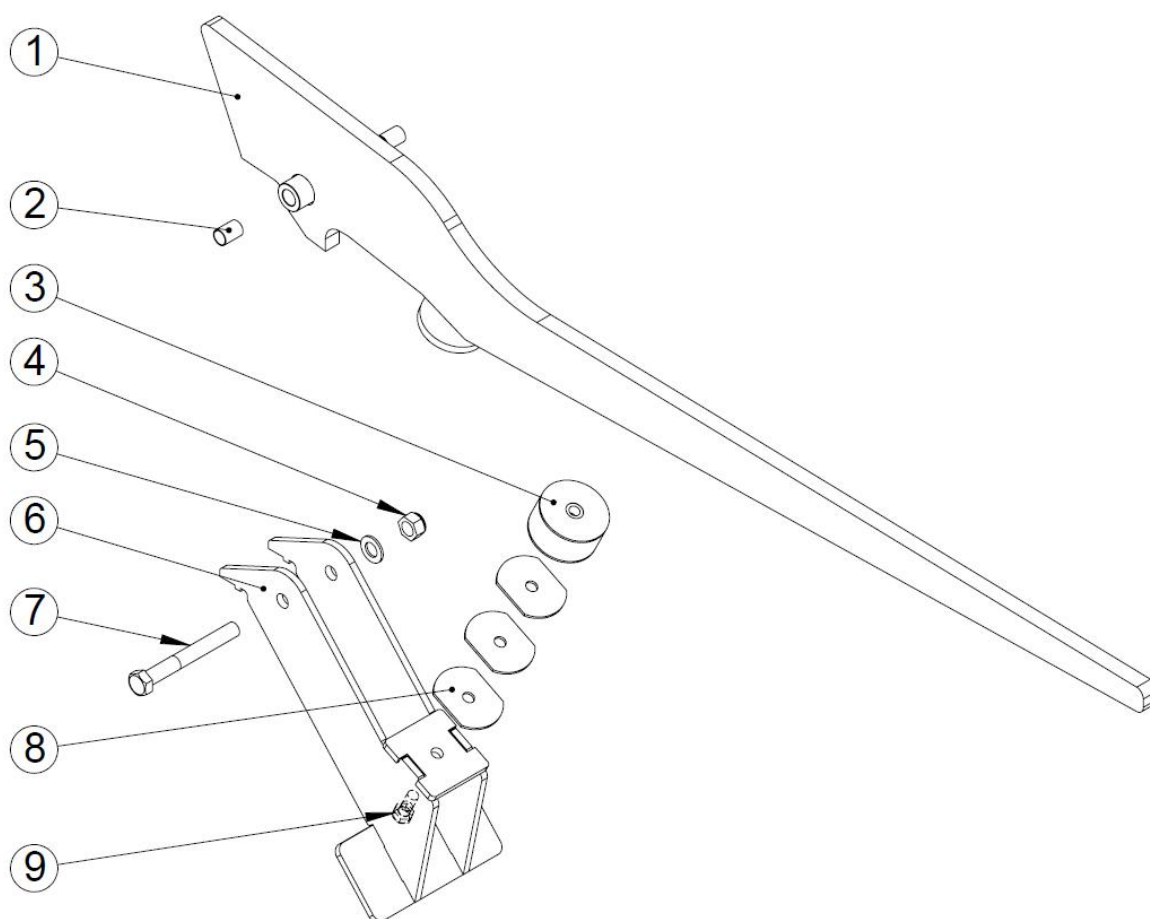
Table 26: Rubbers & Seals

Note:

* These paddle rubbers only used on non-Bale Processor machines.

** This paddle rubber used on Series II Bale Processor machines.

Tine Bracket & Tine Arm Assemblies



Item:	P/N:	Qty:	Description:
1	FP140-045-0033	9	Bale Processor Tine Assembly
2	703307	18	16mm I.D. & 18mm O.D. Self-Lubricating Bush
3	703943	9	Rubber Buffer 75mm O.D.
4	700283	9	M16 Locknut
5	700732	9	M16 Flat Washer
6	FP140-045-0031	9	Bale Processor Tine Bracket Welded Assembly
7	700269	9	M16 x 130mm Bolt
8	FP140-045-0019	9	Spacer Plate 3mm
9	700247	9	M12 x 30mm Bolt

Table 27: Bale Processor Tine Assembly Details (Weld-On)

* Longer M12 Bolt may be required, if additional spacers (item no. 8) are used.

9.12 AXLE OPTIONS

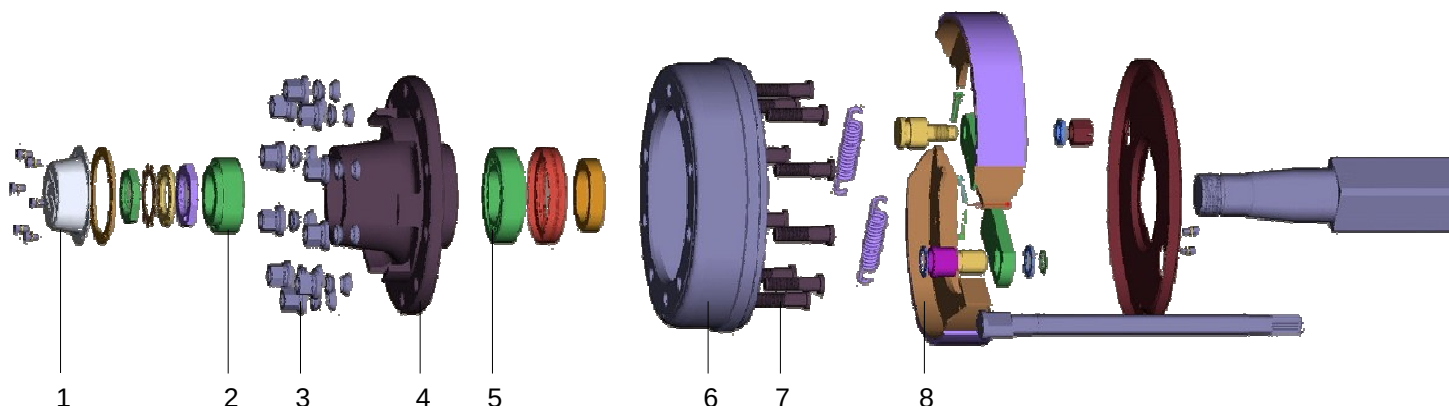


Figure 21: Typical Axle (Exploded View)

<u>Axle Types</u>					
Axle Application	Mech-Fiber 320				
No. Studs	6*	8	10	10	
Axle Type	Straight	Cranked	Straight/ Cranked	D/Cranked	
Axle Width (mm)	1830, 1930	2130	1950	2130	
Brake Type/Dimensions (Type/Dia. x Width, mm)	309E, 300 x 90	309E, 300 x 90	Unbraked	Unbraked	Braked 408E, 400 x 80
Nut Size	M18 x 1.5	M20 x 1.5		M22 x 1.5	

*also available as a tandem option

Table 28: Axle Types

<u>Axle Spare Parts</u>	
Item No:	Description:
1	Hub Cap
2	Outer Bearing
3	Nut (with washer)
4	Hub
5	Inner Bearing
6	Brake Drum
7	Stud
8	Brake Shoe

Table 29: Axle Spare Parts

10. TROUBLESHOOTING

10.1 GENERAL TROUBLESHOOTING

PROBLEM:

SOLUTION:

1. Weighing display won't work properly Check section 10.2 on weighing.
2. VFC door does not move
Check hydraulic hoses and that valves are open.
Check tractor hydraulic oil level.
Check ram condition and pins are secure.
3. VFC door drops during mixing
Insufficient hydraulic pressure – check spool valve on tractor or fit non return valve in line.
Check ram for signs of leakage.
4. VFC door closes unevenly/sticks
Rams operating out of sequence – operate door to fully open position and hold level to allow oil by-pass the ram when fully open and level door – Repeat on fully closed, until door is even.
5. Excessive shear bolt breakage
Machine overloaded.
Driving chain too loose – check condition and adjust idler springs.
Feed out too fast – open feed out door slowly at first then open fully.
Turn paddle a few turns before opening the feed out door to avoid huge load on machine, especially after feed has settled in body of machine.
Run machine slower.
For Klassik models never load bales directly down on paddle in one go – always chop up into at least 4 pieces.
6. Noisy operation
Oil chains liberally – adjust tension on chains.
Grease all nipples.
Check chain alignment.
7. Feed is not mixed properly
Insufficient mixing time.
Loading materials in wrong order.
Not enough time given for chopping.
Overloading of machine.
8. Feed out is too slow
Check condition of paddle rubbers.
Slow down tractor ground speed.
Reduce engine revs to give paddle more time to push material into auger. Ensure material is fully chopped before unloading.

- | | | |
|------------|------------------------------------|---|
| 9. | Horsepower requirement is too high | Check body blades and top knife sharpness.
Machine overloaded.
Bale Processor tines may be set too low. |
| 10. | Machine is not chopping | Blades blunt.
Not enough material in body – not heavy enough – try adding more material or in case of hay/straw add water or a fork of silage to weigh it down.
Machine overloaded. |
| 11: | Machine breaks ASA140 link | Check chain alignment of large sprocket,
Tolerance +/- 2 mm.
Check chamfer on edge.
Check roll pins used in joiner link.
Check idler tension. |
| 12: | Bale goes in too quickly | If the bale goes into the machine too quickly, it may place unnecessary load on the tractor and drive line, as well as slowing overall mixing time as the body blades aren't as efficient at chopping long fibrous material as the top knife. Check tine buffers and tine to top knife gap. |
| 13: | Excessive hitch wear | If excess hitch wear is noted check:
-Speed of use, hitch rated for 25 km/h maximum.
-Hitch is level on tractor.
-Fit of hitch & lubrication.
-Wear on tractor hitch.
-Check brake operation matches tractor brakes.
-Excessive movement – not tight on pin/hitch. |
| 14: | Leaking valve chest (where fitted) | Check oil is only flowing from pressure “P” side to tank “T” side. Reverse pressuring the valve check will damage the seals. The addition of a one way valve on the return pipe will prevent this. |
| 15: | Leaking oiler | If oiler leaks or loses oil, check the one way valves in oiler housing. Fit restrictor fitting to pressure line which will smoothen out any power surges in the line and protect servo. |
| 16: | Excess oil on chains | Adjust oiler – the volume of oil sent to the chains when the guillotine door is operated may be adjusted by turning the set screw on the base of the oiler.
The oiler operates on the closing stroke of the guillotine door, therefore the drive line should be left running for a period after the guillotine door is closed to allow the oil cover the full chain. |

10.2 WEIGHING TROUBLESHOOTING

Keenan troubleshooting tips on weighing

If you experience problems in the operation of the Weighing System, read through this Troubleshooting section first before contacting Keenan Service.

Reading Drifting

If the reading on the weigh box is drifting or does not stay steady, the most likely cause of the problem is dampness/moisture in or around the weigh box or cables. Please follow these steps to locate and correct the problem.

- Disconnect the cables on the weigh box. Ensure they are labelled correctly for reconnection. Check both the plug on the cable and the connector on the weigh box for dampness and/or corrosion of the terminals. If any dampness is found dry it off thoroughly with a hair drier. If corrosion is found on the terminals then clean thoroughly with electrical cleaner & dry. Reconnect cable and test.
- Check for loose wiring or dampness. Some machines are fitted with a junction box. The procedure as detailed above applies.
- Check Weigh cell plugs for dampness and also check Weigh cell cables for any breaks and/or dampness.

If the above measures do not rectify the problem then contact Keenan Service for further assistance.

System Weighing Inaccurately

If the machine is new or the weighbox has been replaced it is possible that the weighbox may have the incorrect calibration code for the model. Contact Keenan service who can go through the procedure to check (or alter) the code.

If you suspect that the system is weighing inaccurately, check all four weigh cells to make sure that they are mounted correctly. If the bolt through the weigh cell has come loose or broken, the weigh cell can rotate resulting in that weigh cell giving an inaccurate reading. To check that the system is weighing correctly, get some known weight (e.g. a bag of fertilizer) and place it on each corner of the machine in turn. You should get the same reading for each corner. If one corner returns a significantly different reading from the other three then this points to a faulty weigh cell on that corner. Also, if receiving a negative reading, it would indicate that the weighcell is upside down – rotate it 180° and repeat the test.

Weigh box will not switch ON

Check the power cable thoroughly and make certain that you are getting power from the tractor to the display. Unscrew the power cable from the weighbox and ensure there is a good 10 to 13 volt supply across the internal pins of the cable. If the negative (-) and positive (+) are wired the wrong way around, the weighbox will not switch on [Dinamica Generale weighboxes power cable - white (+) & black (-)].

11. WARRANTY

11.1 TERMS & CONDITIONS

Richard Keenan & Co. Ltd. ("the Company") shall undertake to correct by repair or replacement only at the Company's option, any defect of material or workmanship, which occurs in any of its products as listed herein within the following warranty period. This Warranty is for the benefit of the initial owner as notified to the Company. Standard Warranty period from date of commissioning is 12 months unless otherwise agreed in writing between the company and the owner. This Warranty shall cease to apply on any resale of the equipment by the initial owner.

The Warranty shall not apply to:

- A** Any machine used by a third party, who will not have had instruction in the correct use of the machine by an official representative of the Company.
- B** Any machine which has sustained damage through general wear and tear or neglect or use for which the machines were not intended to be used by the Company.
- C** Bearings, sprockets, chains and other wearing parts unless clear evidence of immediate working failure which is directly attributable to such parts can be furnished.
- D** Any consumable or perishable parts such as knives, blades, rubber seals, hydraulic components, shear-bolts, brake liners, electric components and running gear, unless clear evidence of immediate working failure which is directly attributable to such parts can be furnished.
- E** Any machine on which the identification marks have been removed or altered.
- F** Any machine that has not received effective routine maintenance using recommended Keenan products as laid down in the operator's manual.
- G** Any machine that has received repairs or modifications by persons unauthorized by the Company.
- H** Any machine fitted with spurious or non-genuine spare parts and attachments, or spare parts or attachments not approved by the Company.
- I** Any machine damaged in transit whilst being loaded or unloaded on premises other than those owned by the Company.
- J** Parts which may be defective or which may have failed and which are not retained on site pending further investigation by the Company. Such parts may need to be inspected in situ by a Company representative.
- K** Any machine damaged or any damage incurred prior to the machine being commissioned by an authorized representative of the Company.

The sole and exclusive claim against the Company made by the person specified above shall be for the repair or replacement of defective parts without prejudice to any rights pursuant to the Liability for Defective Products Act, 1991. No other claim, including, but not limited to, for incidental, direct or indirect or consequential damages or for lost profits, lost sales, lost business, lost savings, loss of goodwill or loss of reputation or any other loss of whatever nature however sustained shall be available.

This Warranty constitutes the only warranty made by the Company and supersedes and overrides all oral and written statements or representations made by any Company representative or dealer or any other agreement, arrangement, practice, custom or understanding between the parties. Any claim under the Warranty must be promptly notified to the Company at the address on the invoice.

In the event of the machine being loaned to or hired by a third party, warranty cover is not transferable unless given in writing and signed by a Director of Richard Keenan & Co. This Warranty shall be construed in accordance with Irish law and shall be subject to the exclusive jurisdiction of the Irish Courts.

Warranty

11.2 PRODUCT CHANGES AND IMPROVEMENTS

Due to our policy of continuous improvement, Richard Keenan & Co. reserve the right to make changes in design, to add improvements or to otherwise modify any of its products without incurring any obligation on products previously supplied.

12. EC DECLARATION OF CONFORMITY

EC Declaration of Conformity.

In accordance with Directive 2006/42/EC.

Manufacturer:

Richard Keenan & Co. Ltd.,
Borris,
Co. Carlow,
Ireland.

Certifies that the Keenan Mech-Fiber 320 complies with the essential safety requirements of the Directive 2006/42/EC.

To conform to these essential health and safety requirements, the provisions of the following harmonized standards were particularly considered.

BS EN ISO 12100-1, BS EN ISO 12100-2, I.S. EN ISO 13857, I.S. EN ISO 5674, EN349, EN703, I.S. EN ISO 4254-1, ISO 11684, ISO 12140

Date: 9th September 2009



Signed: _____

James Greene, Managing Director

Conformity

13. CONTACT DETAILS

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