KEENAN
an Alltech company

Operator's Manual
MechFiber250 and 280

KEENAN MechFiber250 and 280 Operator's Manual

Effective from model 25L100 and 28L100

Revision C01, 04th Dec 2019

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PART I

(Service & Maintenance)

1 Introduction

KEENAN MechFiber mixer wagon

Thank you for purchasing a KEENAN product. The KEENAN MechFiber 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 MechFiber 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 MechFiber System, delivering improved efficiency and profitability on the farm.

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. Recent revision updates are indicated by a line in the right-hand column, as shown to the right.

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 MechFiber mixer wagon is the cornerstone of the KEENAN MechFiber System, delivering improved efficiency and profitability on the farm.

2 Warning notes

Please read this manual carefully before operating your new machine, paying particular attention to the warning notes, explained here.

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 MechFiber mixer wagon. Failure to observe the information contained in a caution may invalidate your warranty.

> **Note:**
> Texts with this heading give general information that improves the operation efficiency of your KEENAN MechFiber mixer wagon.

The KEENAN MechFiber mixer wagon 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 5) before attempting to operate the machine.

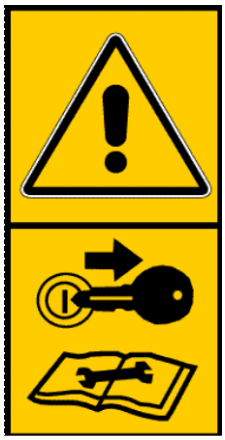
3 Warning signs

Read the operators manual before using the machine.

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

Stay clear of sharp blades.

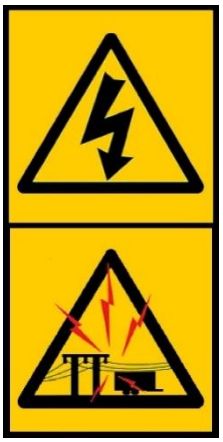
Do not open or remove safety guards while the machine is connected to the tractor.



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.

4. Operating principles

The KEENAN MechFiber mixer wagon's main operating functions are weighing, chopping/mixing and feeding out.

4.1 Weighing

The KEENAN MechFiber 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 6 (Weighing System) and the Readout Manual for more detailed information.

4.2 Chopping/mixing

Load ingredients in the sequence recommended by your KEENAN Physical Nutritionist, or as suggested in Section 7 (Operation). Ensure bales are broken up prior to loading. 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 six angled paddles revolving at 5–6rpm. 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 MechFiber 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.

4.3 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, 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.

4.4 Maintenance

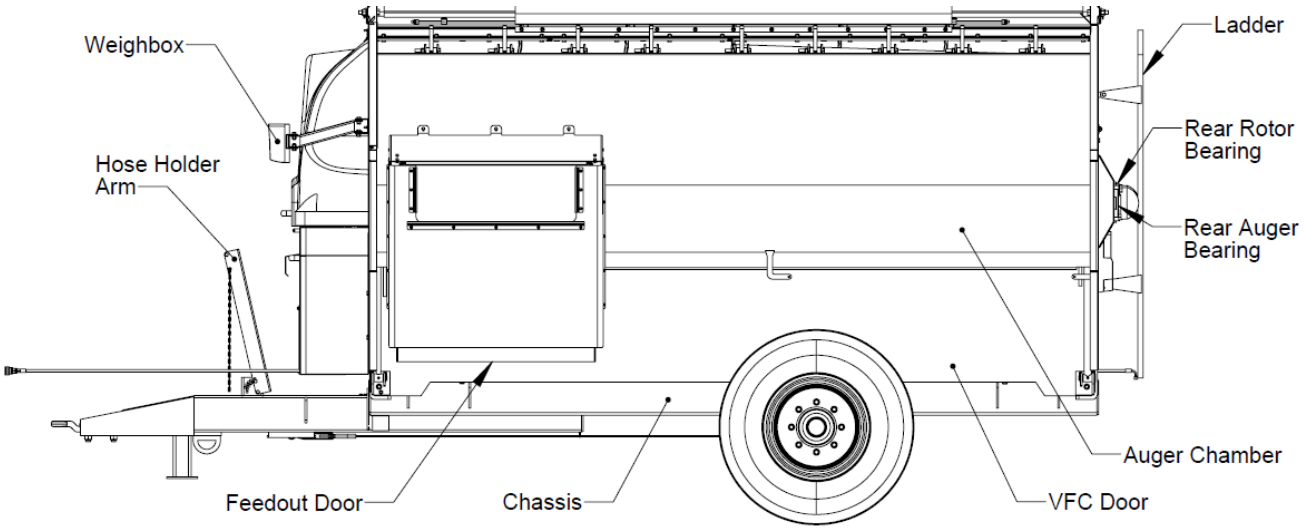


Figure 1: KEENAN MechFiber250 Mixer Wagon

A properly operated and maintained KEENAN mixer wagon promises to operate trouble-free for years. **Regular maintenance of the machine is essential both for long machine life and also to meet the warranty requirements**. Refer to instructions in the 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. Still, any material that sits or lodges on the machine may adversely affect both the operation of the machine and the quality of the mix, if it subsequently falls into the feeder during mixing. It is therefore essential to routinely clean and wash down the feeder.**

4.5 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 5) 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.

> **WARNING:**
> The Breakaway Safety Brake Device should be attached to the tractor at all times.

5 Safety

The KEENAN MechFiber 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.

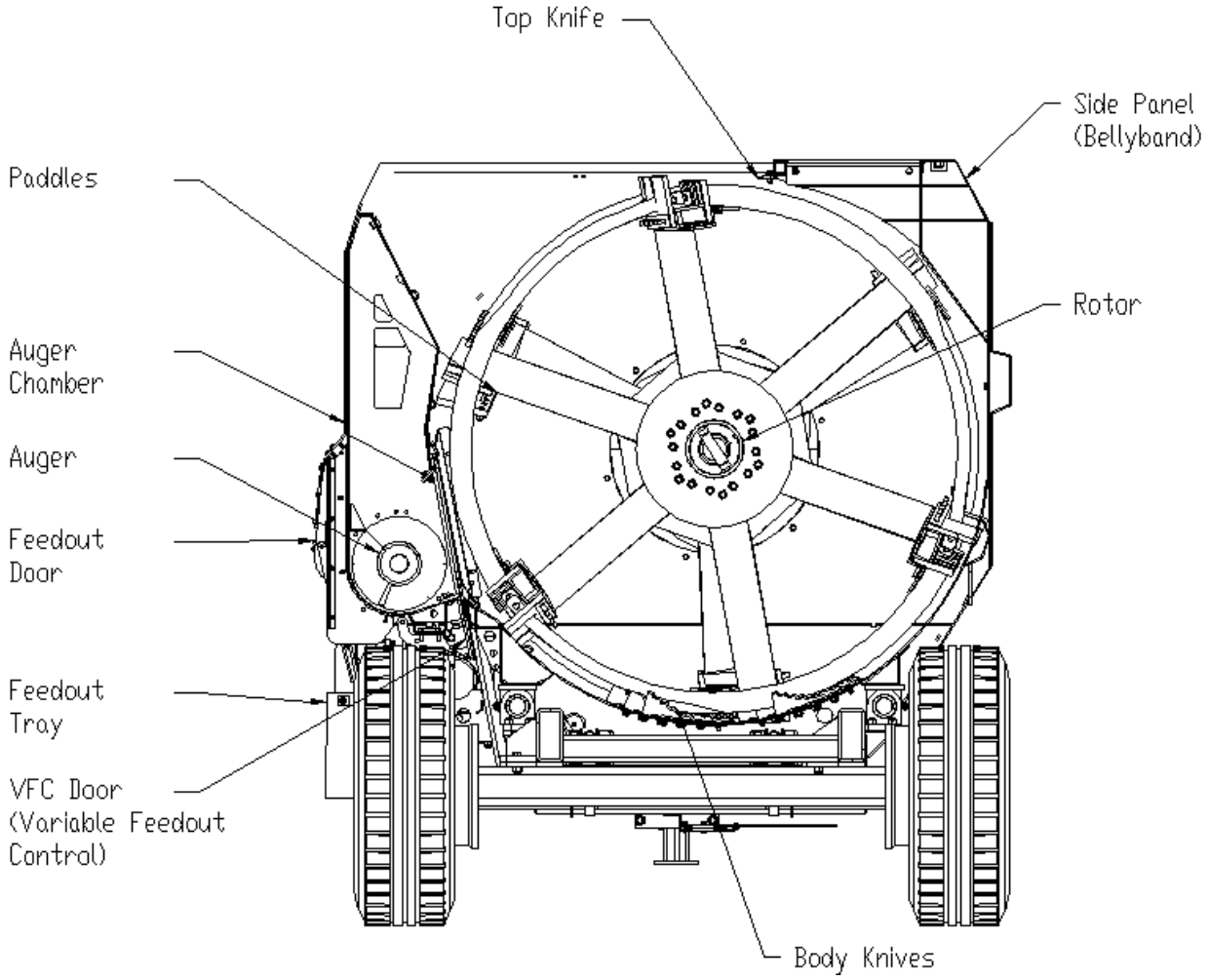


Figure 2: KEENAN Machine Rear View

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.

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 the machine is in transit on public roads, 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) Ensure the VFC-door is closed and all feed-out trays/elevators are in the closed and transport position prior to use on the public road.

d) Exercise extreme caution for possible overtaking traffic at either side when turning.

e) Do not stand on the ladder while the feeder is in transit. The mixer wagon should never be used for the transport of people, animals or objects.

f) Do not stand between the tractor and mixer wagon while it is in use.

g) Use only a PTO shaft with a properly fitted safety guard and correct shear bolt.

h) 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.

i) Ensure all trailing leads, hoses, etc. are well clear of the PTO.

j) Never operate the PTO in “ground speed mode” or drive the PTO in reverse.

k) Make sure all covers/guards are fitted and closed correctly. Never remove guards when the mixer wagon is connected to the tractor.

l) 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.

m) 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.

n) 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.

o) Load only from the side indicated — see figure 7 (auger chamber side), using suitable equipment.

p) Standing level with or above the machine in order to load manually is not permitted. Loading should only be carried out with suitable equipment.

q) Regularly inspect all chains (at least weekly), sprockets and moving parts for wear and check all nuts and bolts for tightness.

r) 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 rim of the machine body. The height of the machine presents a potential fall hazard during entry and exit.

s) The noise emission level of the KEENAN MechFiber250 has been recorded at 89.4dB. Noise emission levels above 90dB would require the wearing of suitable ear protection.

t) The Breakaway Safety Brake device should be attached to the tractor at all times. Cable ties fix the wire rope along the handbrake handle in place. Cable tie the wire rope to the drawbar (see figure 4). Fix the other end of the wire rope to a solid location on the back of the tractor (e.g., the top link pin). In the event that the Breakaway Safety Brake device has been activated or damaged, it is recommended that KEENAN Service is contacted for directions to reset.

u) Routine cleaning may be carried out using a power washer. Isolate any power sources before beginning. If washing the inside the Mixing Chamber, open the drain bung underneath the body to allow water to escape. Always disconnect PTO shaft from the tractor & stand on suitably safe ladder or platform. Do not to climb on top of the machine or into the Mixing Chamber.

v) It is recommended that only trained and qualified KEENAN 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 disconnected
2. Apply the mixer wagon handbrake and disconnect the tractor from the machine on level ground
3. Use suitable PPE such as protective footwear, eyewear and gloves
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. Be aware that sharp components may be hidden in or under material within the mixing chamber
6. The top knife should always be fitted with the supplied guard (Figure 3b) before entering the machine. Begin by fitting the first 500 mm of the guard from the rear of the machine. Then as you enter, continue to fit the guard along the full length of the Top Knife
   Note: the machine is supplied with a top knife guard, which can be found inside the driveline covers of the mixer wagon
7. Use a suitable & secure ladder for access to and from the mixer wagon. *Note: The ladder at the rear of the machine is provided as a means of viewing the ration only and should not be used as a means of access the mixing chamber.*
8. Always maintain 3 points of contact while entering, exiting & moving within the mixing chamber of the machine
9. When entering the base of the body, it is recommended to cover the body blades in the vicinity of where work is to be carried out.
10. When removing trapped objects, be aware that some machine components may move unexpectedly when cleared.
11. Take extreme care when moving around inside the body as surfaces may be slippery.

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 MechFiber250 is 2,500 kg & KEENAN MechFiber280 is 2,750 kg.

The soda grain process can be completed using a KEENAN mixer but before treatment on your farm, make sure you are adhering to local animal feed legislation and health and safety guidelines involving the treatment of grain.

Figure 3a: Body blade and blade cover

Figure 4: Breakaway Safety Brake

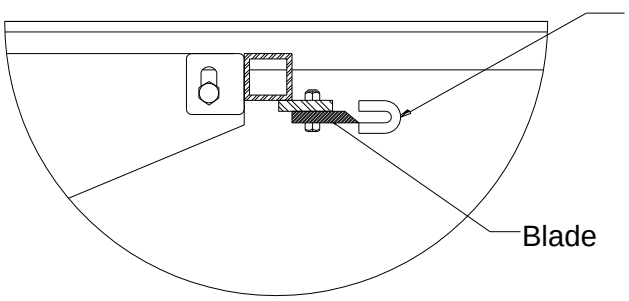


Figure 3b: Top Knife Protection

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

6 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

7 Operation

The simplicity of the KEENAN 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.

7.1 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 MechFiber 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, seven-pin plug or to a 12-volt 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 seven-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 the 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 MechFiber 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
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.

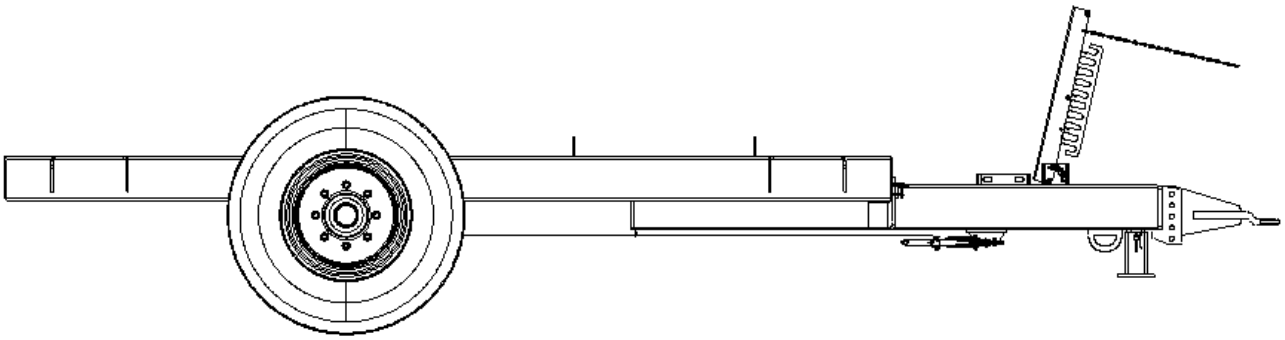
C: If there is a **valve chest** fit to the machine, it is essential to connect the valve chest hydraulic feed and return pipes correctly. The return pipe is not designed to take the hydraulic pressure normally seen in the valve chest feed pipe, and so seals and/or the valve chest itself may be damaged if oil flows in the wrong direction through the chest. Typically, the hydraulic return pipe on the valve chest is fitted 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.)

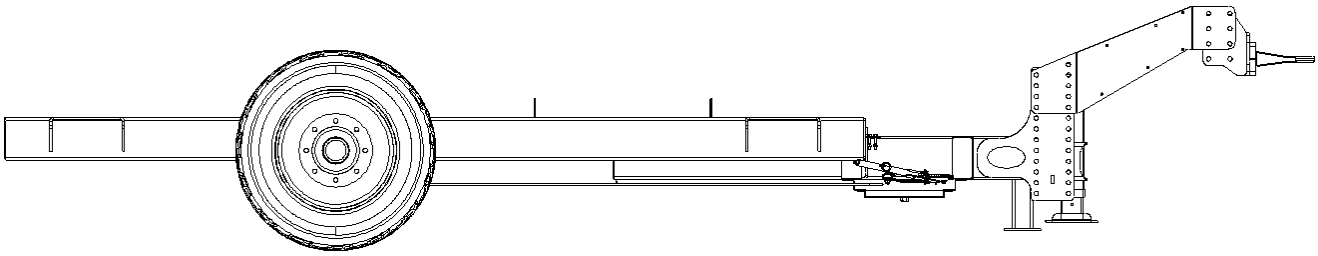
Figure 5: Valve Chest

7.2. Hitch height adjustment

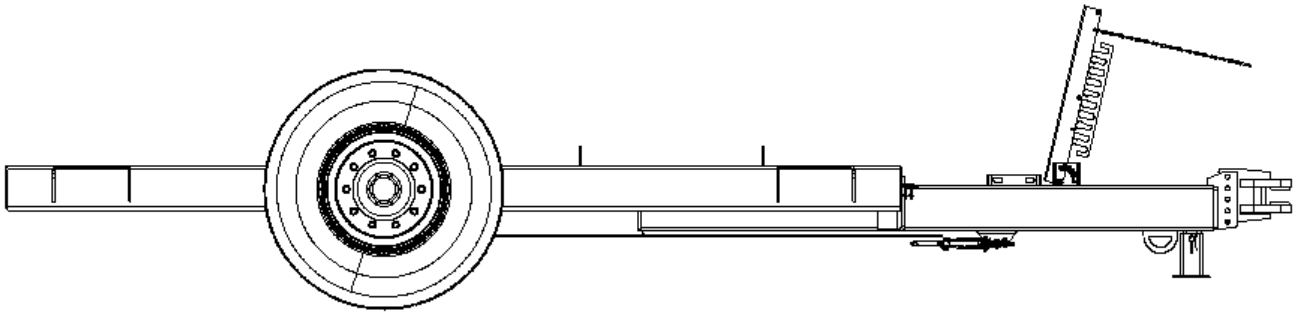
The MechFiber250 and 280 hitches have been designed to allow for various hitch height options with the same components used. Hitch height is normally selected for the application and set at the factory. However, if required, the hitch can be adjusted on-farm to level the machine. Some options are shown below.



Standard Hitch



High hitch (typically for the German market)



Clevis hitch (typically for the U.S. market)

Note:
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.

7.3 Mixer wagon capacity

Due to the diversity of the materials available for feeding and the KEENAN 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 6: Photograph illustrates a well-mixed ration showing consistent fibre length and integration of forages and grains.

7.4 Loading and 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 are 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.

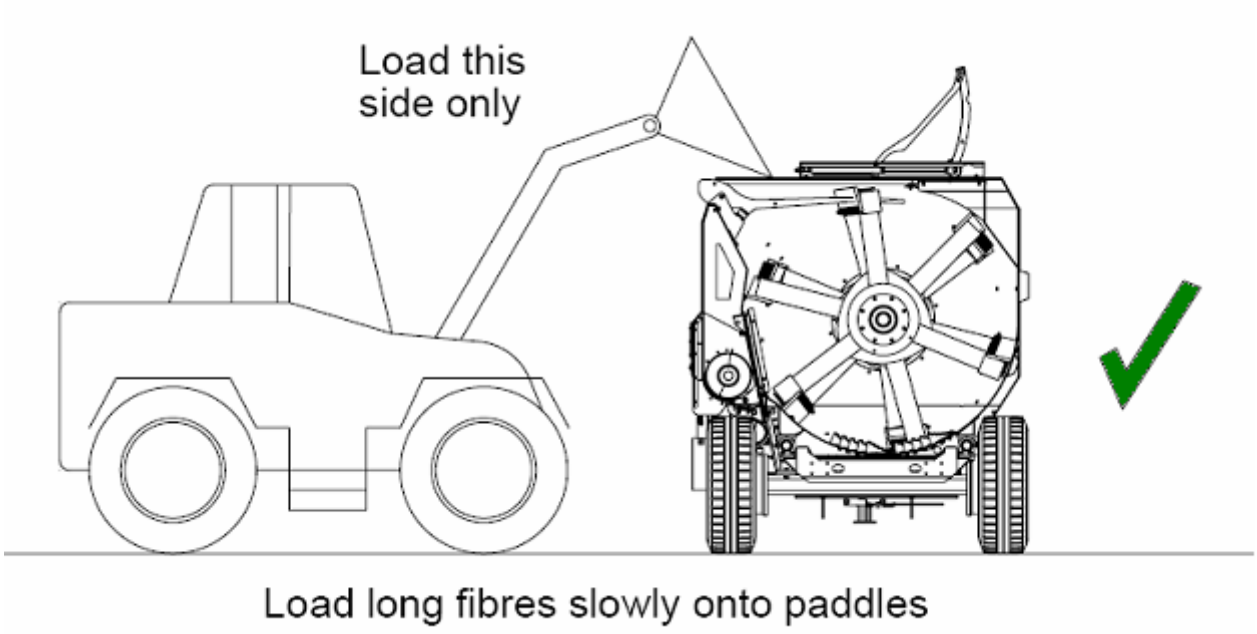


Figure 7: Loading the KEENAN mixer wagon

7.5 Operating the KEENAN mixer wagon

LOADING THE KEENAN MIXER WAGON

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

- 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 mixing.
- Remove all twine, wrap or polythene from bales.
- Round or square bales should be split or broken into four pieces **minimum.** Use front grab or forks as required.
- Stop PTO before moving to feed out area.
- Mixing time will depend on chop length required.

Below is a guide to the correct loading order. Consult your local InTouch office/nutritionist for best loading order for your ingredients.

Order Speed	Feed Ingredients	Paddle RPM	Tractor Engine
1st	Straw, Hay	All at 6–8 RPM	1,400–1,600 RPM
2nd	Water, Liquid Feeds		
3rd	Minerals, Concentrates, Protein Meals, Pulps, Cereal Grains		
4th	Grass Silage		
5th	Maize Silage		

Table 2: Loading the KEENAN Mixer Wagon

7.6 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 lbs.) 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 8+ revs.

For low usage, best results are achieved by chopping sufficient material for two days.

7.7 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 paddle running speed of 6–8 rpm. Allow the TMR to loosen and tumble for 15-20 seconds.
3. Slowly open the VFC-door to a maximum of halfway then allow at least one minute 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 VFC-door, run the machine for 10–20 seconds to empty auger chamber, then disengage the PTO before turning out of 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.

8 Maintenance

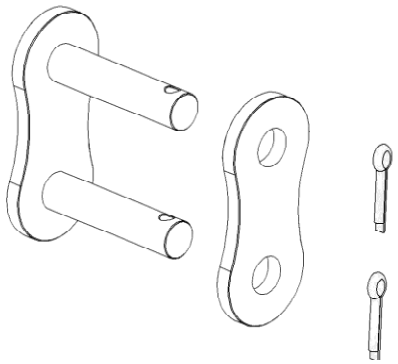
The KEENAN Mixer Wagon has been designed for optimum performance with a minimum of maintenance. Chains, bearings and grease points have been kept to a minimum without compromising function. All components are of high quality and provide excellent durability. Regular routine maintenance will ensure your KEENAN 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 PTO and hydraulic hoses from the tractor. Observe safety precautions at all times when working on machine, read Section 5 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.

8.1 Chains

1. Each week check the condition of the chain tension arms and adjust as required. There are two chains used on the KEENAN model. The primary drive chain (ASA100) drives the idler shaft, and the auger shaft from the input shaft (see figure 9) and the secondary chain (ASA140HS) drives the rotor. 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 8: 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 backpressure 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 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 less oil and anticlockwise more.

3. After each season, remove all chains by loosening the tensioners and removing the joiner links - see figure 8.

4. Wash off all dirt using paraffin. Dry the chains before soaking overnight in oil and then refit.

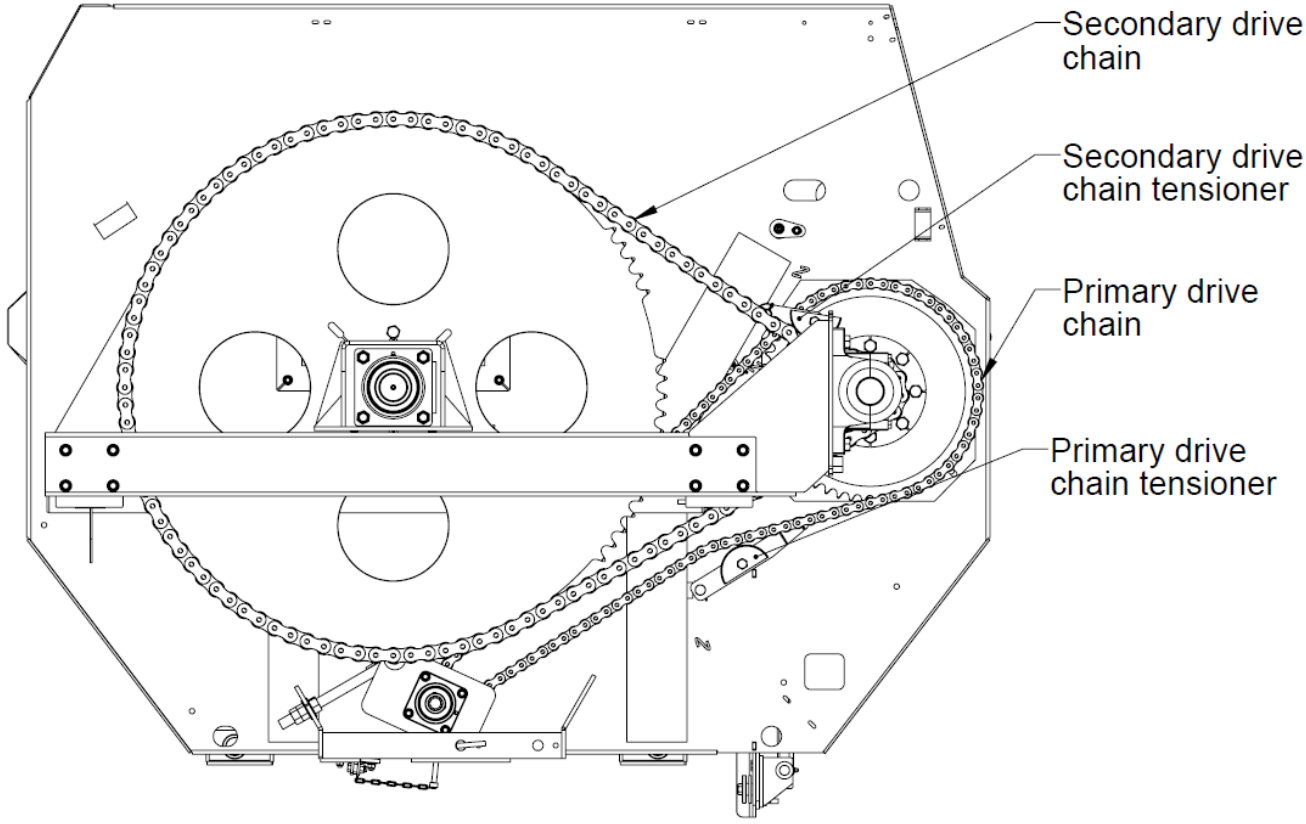


Figure 9: Front panel of KEENAN 250/280 Mixer Wagon

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 both the primary and secondary chains. (See next section)

CAUTION:
For the first month of ownership (i.e., during the chain bedding-in period), it is recommended to check chain tension daily. (See next section)

8.2 Chain tensioning

1. 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.

Coarse adjustment of the Primary Chain Tensioner is made by adjusting the top mounting position of the tensioner spring where it attached to the front panel of the machine. Fine adjustment is made by turning the adjuster nut on the gearbox retaining bolt (**A**) — see figure 10. **35 mm** (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 **270–290 mm** coil length.
There is no adjustment required on the secondary drive chain tensioner. The spring is nominally stretched to **600–700 mm** coil length.
If either spring becomes overstretched, they should be replaced.

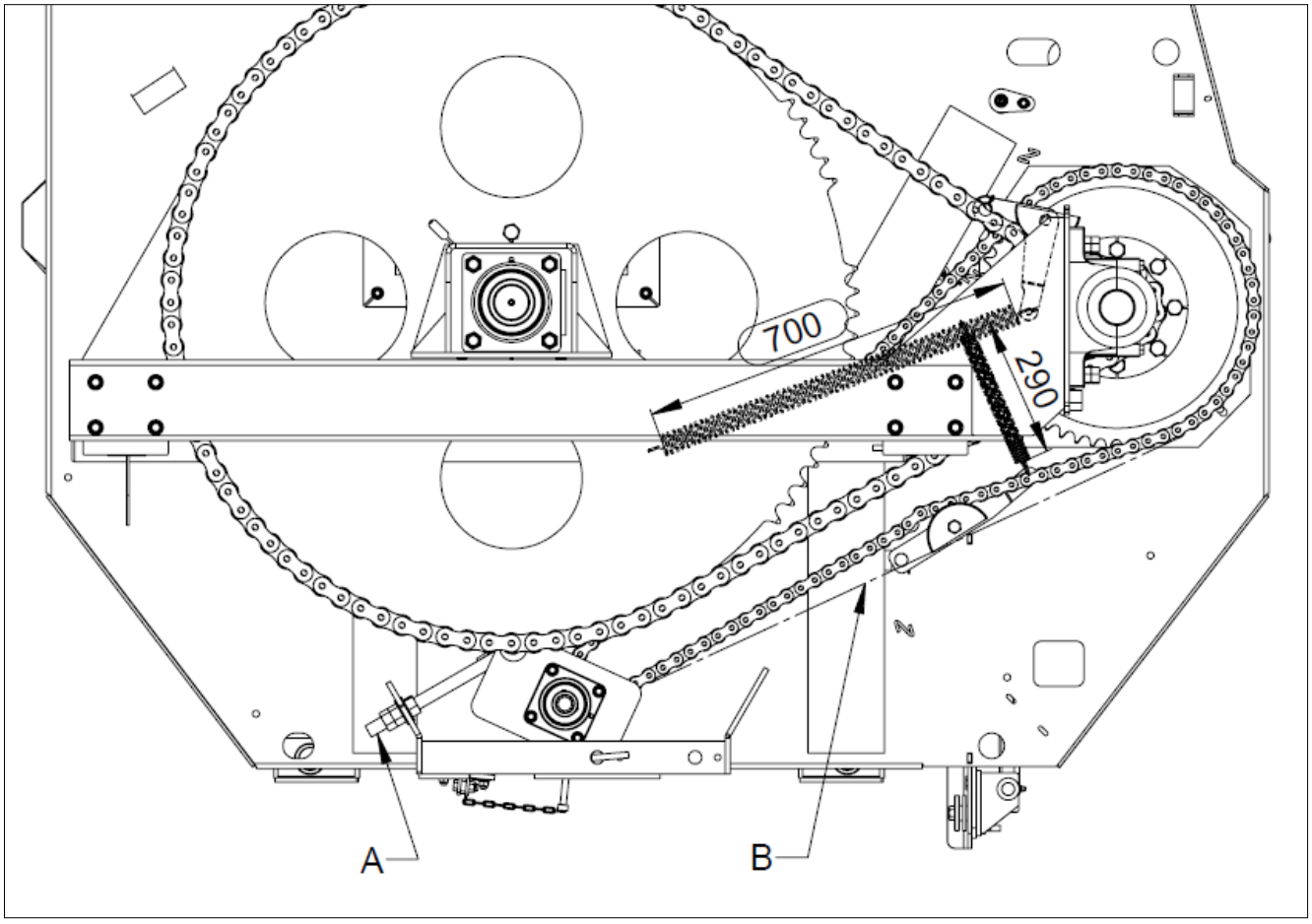


Figure 10: KEENAN 250/280 Chain Tensioning (showing springs fully stretched)

Model	KEENAN 250/280
Primary Drive Chain	**ASA 100**
Links	108 (inc. joiner)
Pitch (mm)	31.75
Pitch (inches)	1.25
Chain length (mm)	3,397.25
Chain length (inches)	133.75
Rotor Drive Chain	**ASA 140HS**
Links	106 (inc. joiner)
Pitch (mm)	44.45
Pitch (inches)	1.75
Chain length (mm)	5,711.7
Chain length (inches)	185.5

Table 3: KEENAN 250/280 drive chains

8.3 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 Machine (A, figure 11).
b. Two main bearings on the front and rear of the input drive shaft (B & C, figure 11).
c. The auger bearing at the front of the KEENAN Machine (D, figure 11)
d. The two main bearings at the rear of the KEENAN Machine (G & H, figure 12).

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 13)
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 14)
d. Grease fitting in pivot bush on gearbox pin (m, figure 11)

3. **VFC-door** - Check the VFC-door is able to move freely each day and grease as appropriate.

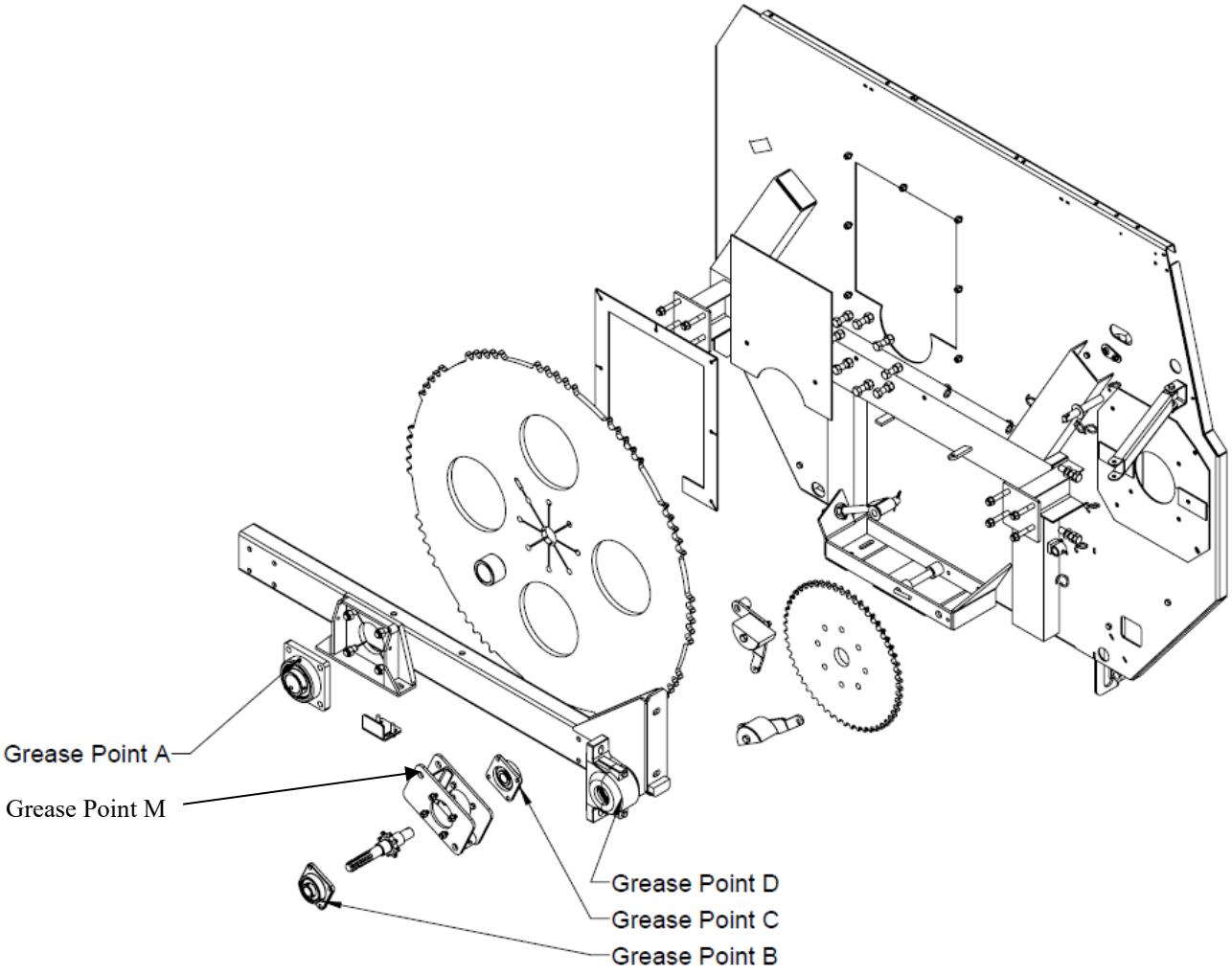


Figure 11: Front grease points

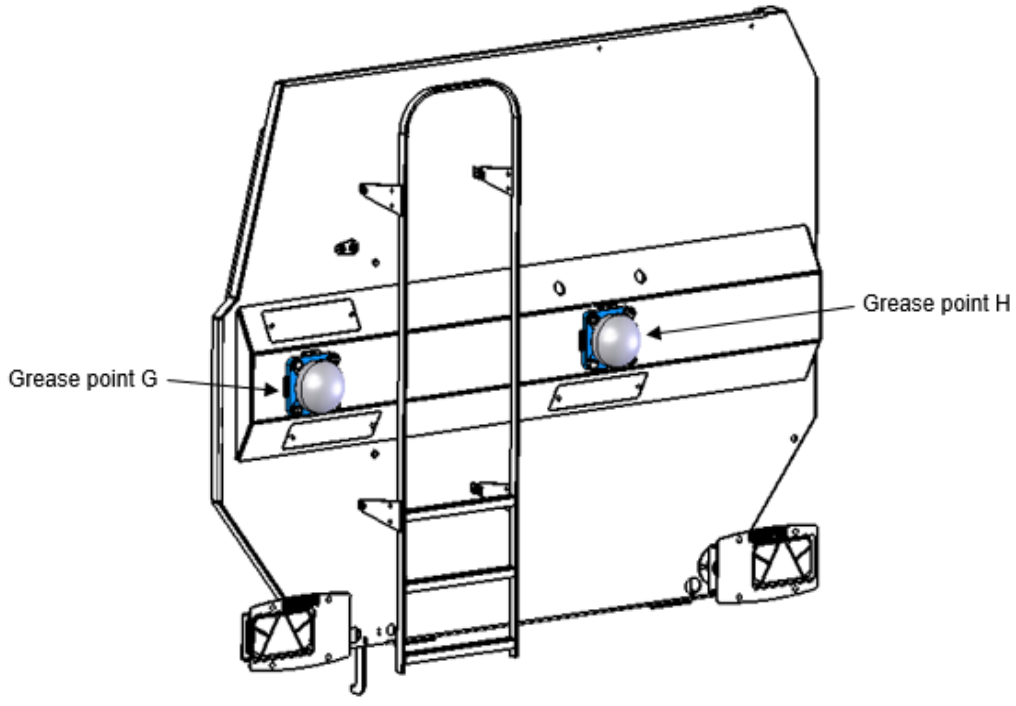


Figure 12: Rear grease points

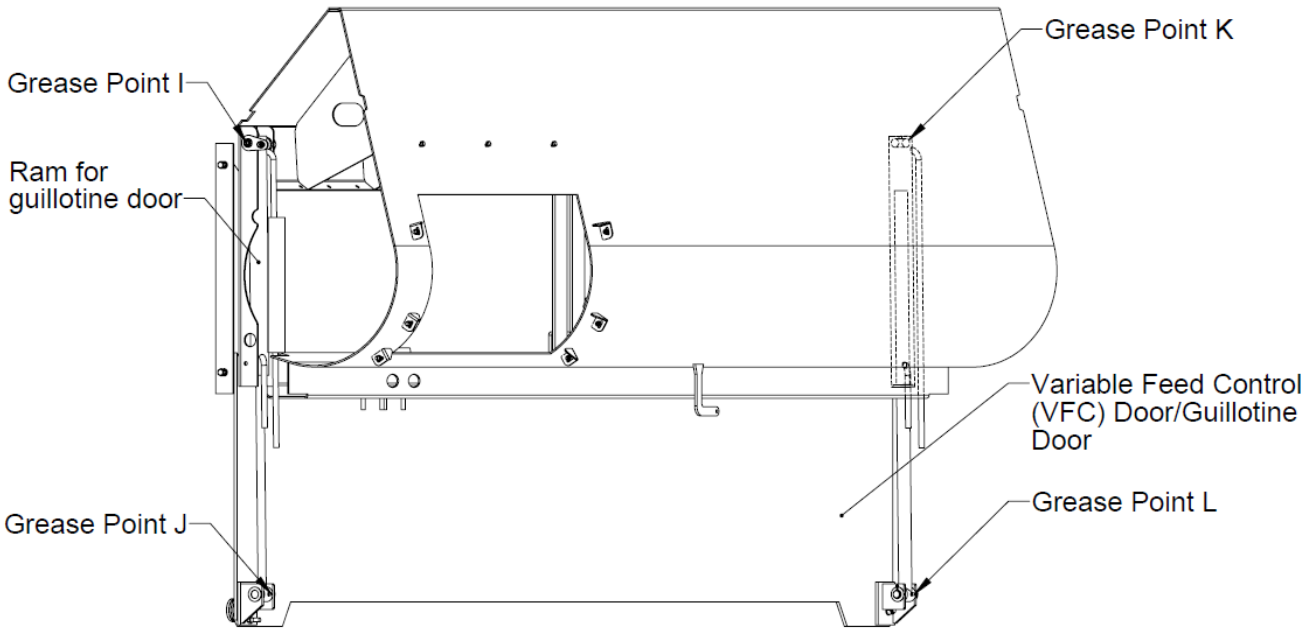


Figure 13: VFC-door grease points

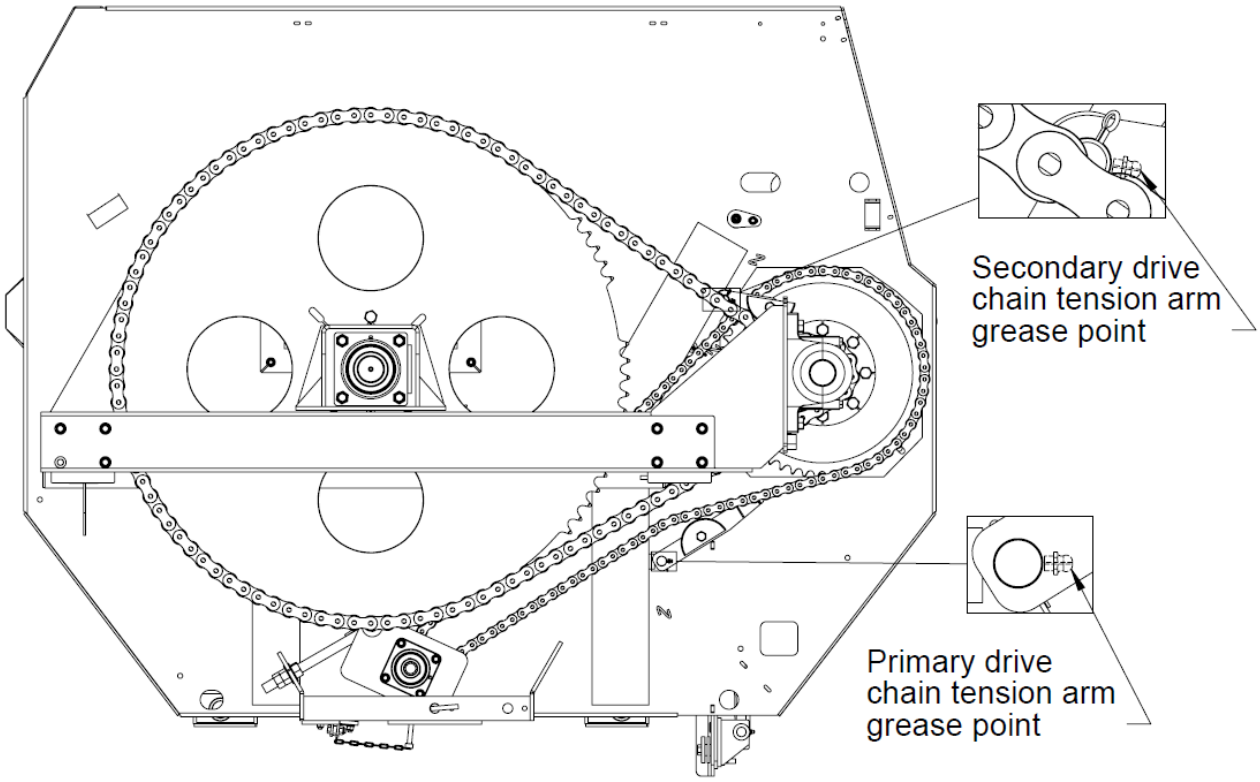


Figure 14: Tension arm grease points

8.4 Maintenance blades

Blade sharpening and/or replacement, it is recommended that only KEENAN Trained and/or qualified maintenance personnel should perform this task.

Blades need to be kept sharp. Blunt blades will increase power requirements. Sharpening must be done without taking the temper from the blades (without overheating). Blades can be sharpened many times, but when they reach the point where this is no longer practical, they must be replaced.

8.5 Shear bolts

The following is the recommended grade shear bolt to be used with the KEENAN MF250/MF280:

Machine type	Shaft	Shear Bolt
KEENAN 250	T50	M8 x 55 x 8.8
KEENAN 280	T50	M8 x 55 x 8.8

Table 4: 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.

8.6 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 5.1: General torque for wheel studs

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

Table 5.2: Recommended torque for U-bolts for tandem axles (where fitted)

8.7 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 re-fitting 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
30 x 11.5 R14.5	8.0	118
245 / 70 R 19.5	8.5	125
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 6: Tyre pressure

8.8 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 re-fit.

Note:
1. 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.

2. 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

- Park the mixer wagon on level ground and apply the handbrake.
- 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.
- 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.
- Re-fit the wheel ensuring that the centre of the wheel is properly located on the hub and hand tighten wheel nuts.
- Lower the machine and tighten the nuts to the recommended torque using suitable equipment.
- Check the wheel nuts for tightness after 1 hour of use, repeating on a weekly basis.

8.9 Rear feed-out 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 16 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. Refer to the Rear Feed-Out Operator Manual Supplement for spare parts, maintenance and operation

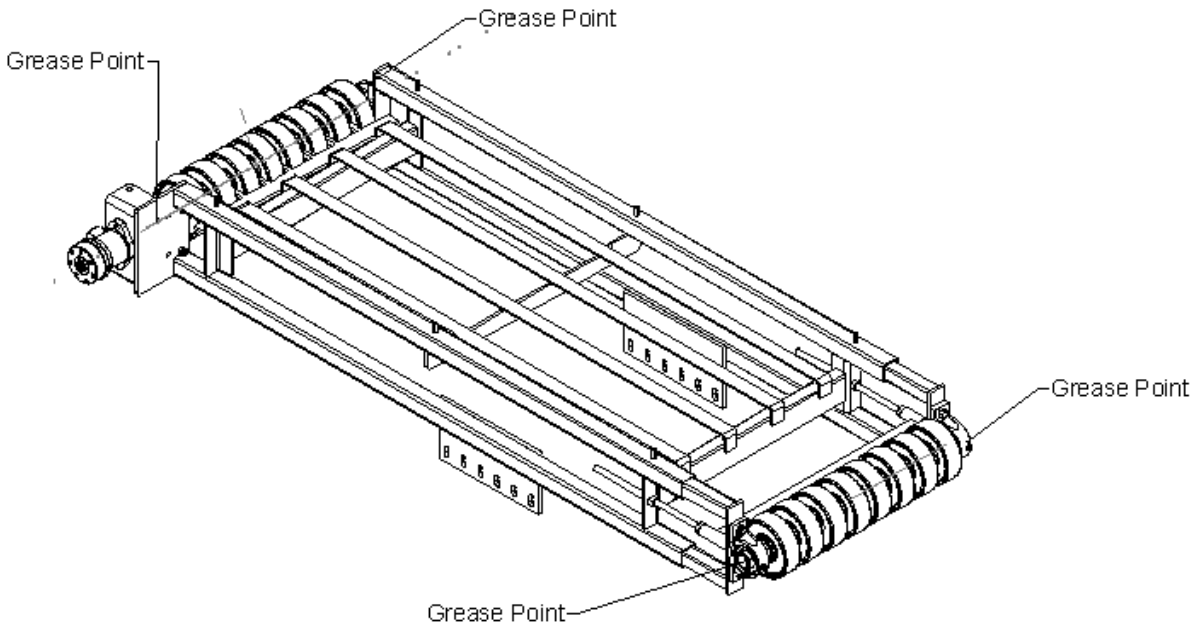


Figure 15: Rear feed out elevator grease point

8.10 Side and stub feed-out 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 it 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 15a and 15b below). Ensure that the elevator is free-moving in each direction and that there is no feed caught in the slideways.

Replace belts and side rubbers when they become worn; otherwise, the elevator will not function properly.

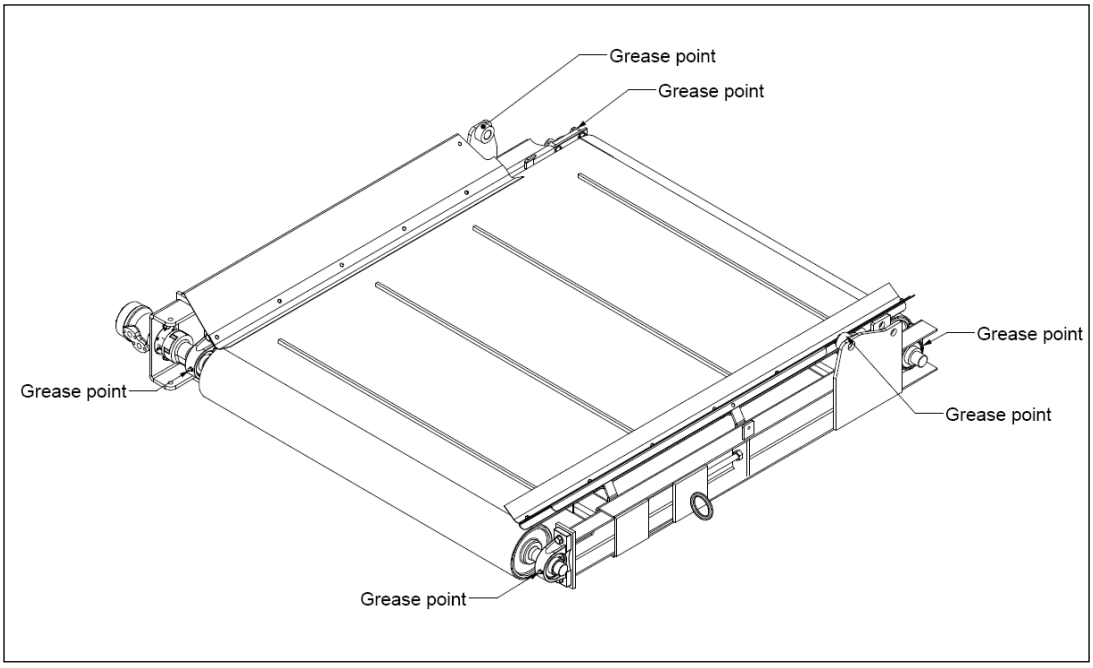


Figure 15a: Side elevator greasing points

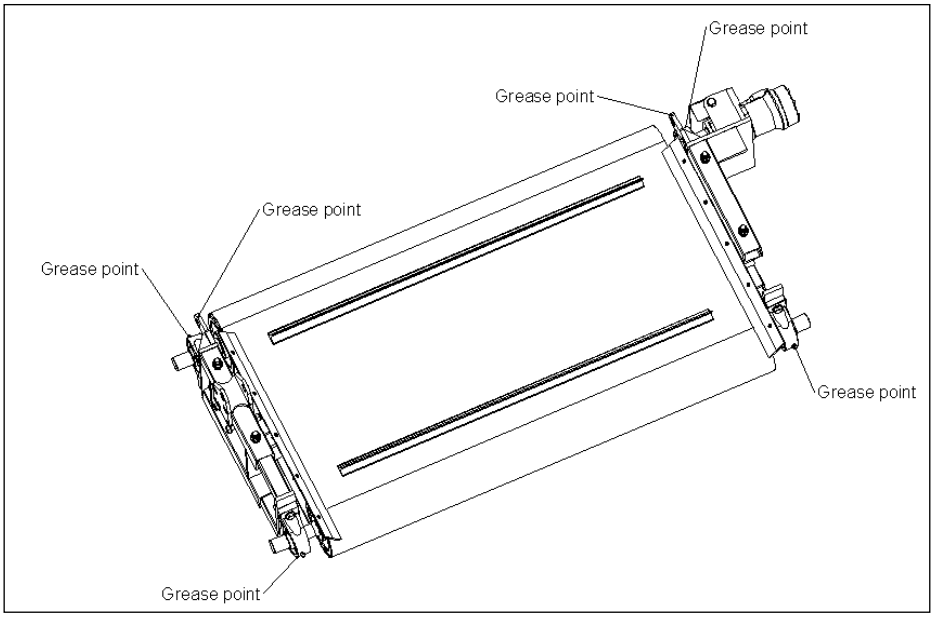


Figure 15b: Sub elevator greasing points

9 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).
Single axle:	Grease all 6 pivot points listed below: 2 on each brake rod (4 in total) 1 on each brake arm (2 in total)
VFC-door (guillotine):	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 (tandem only).
Oiler pipes:	Check hoses for damage or leaks.

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 (overheating) 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).

10 Specifications

10.1 Weight

Model Weight		MechFiber250	MechFiber280
Unladen	kgs	4,550	5,520
	lbs	10,022	12,159
Payload	kgs	2,500	2,750
	lbs	5,507	6,057
Gross	kgs	7,050	8,270
	lbs	15,529	18,216

Table 7: Machine weights

*** Note:**

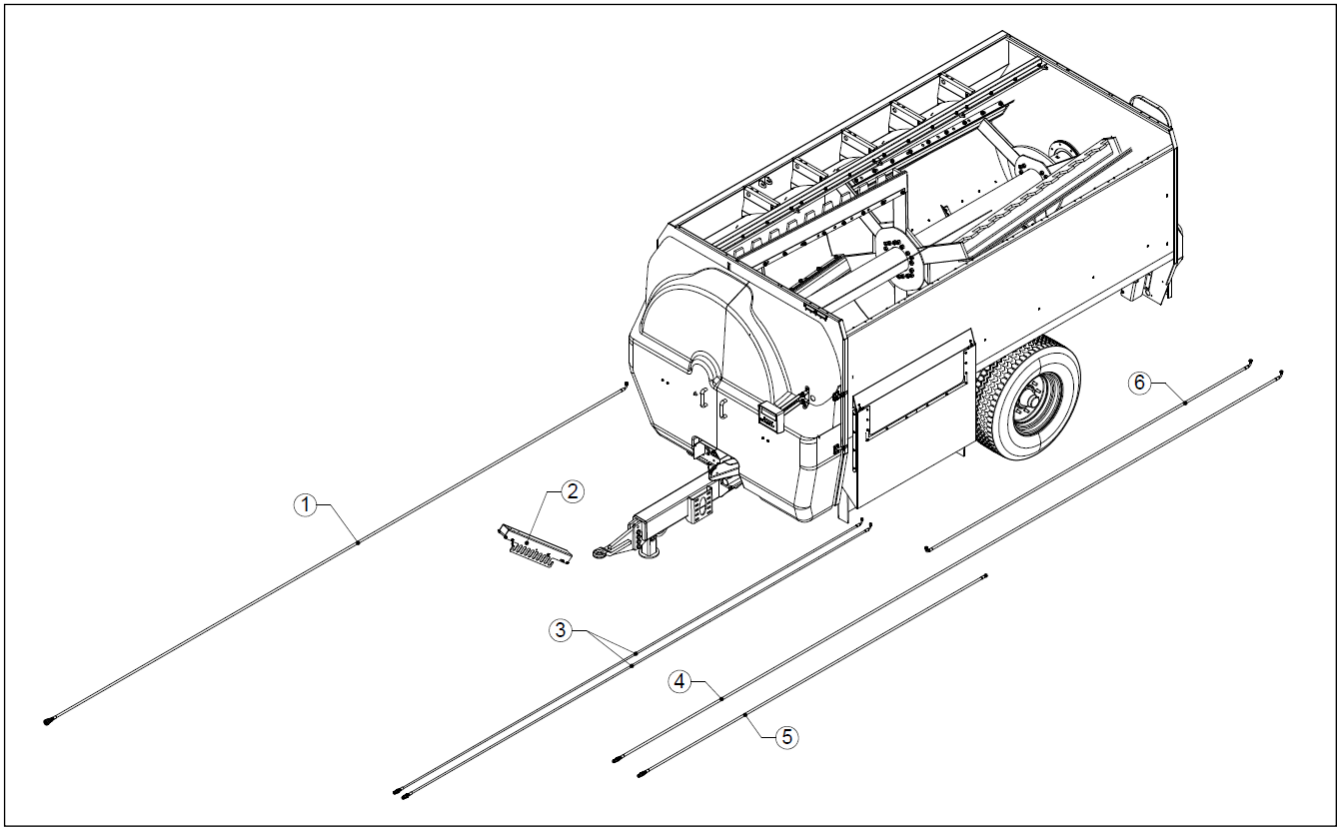
1: Weights may vary depending on exact specifications.

PART II

(Spare Parts)

11 Parts list

11.1 Hydraulic system parts



KEENAN MechFiber250

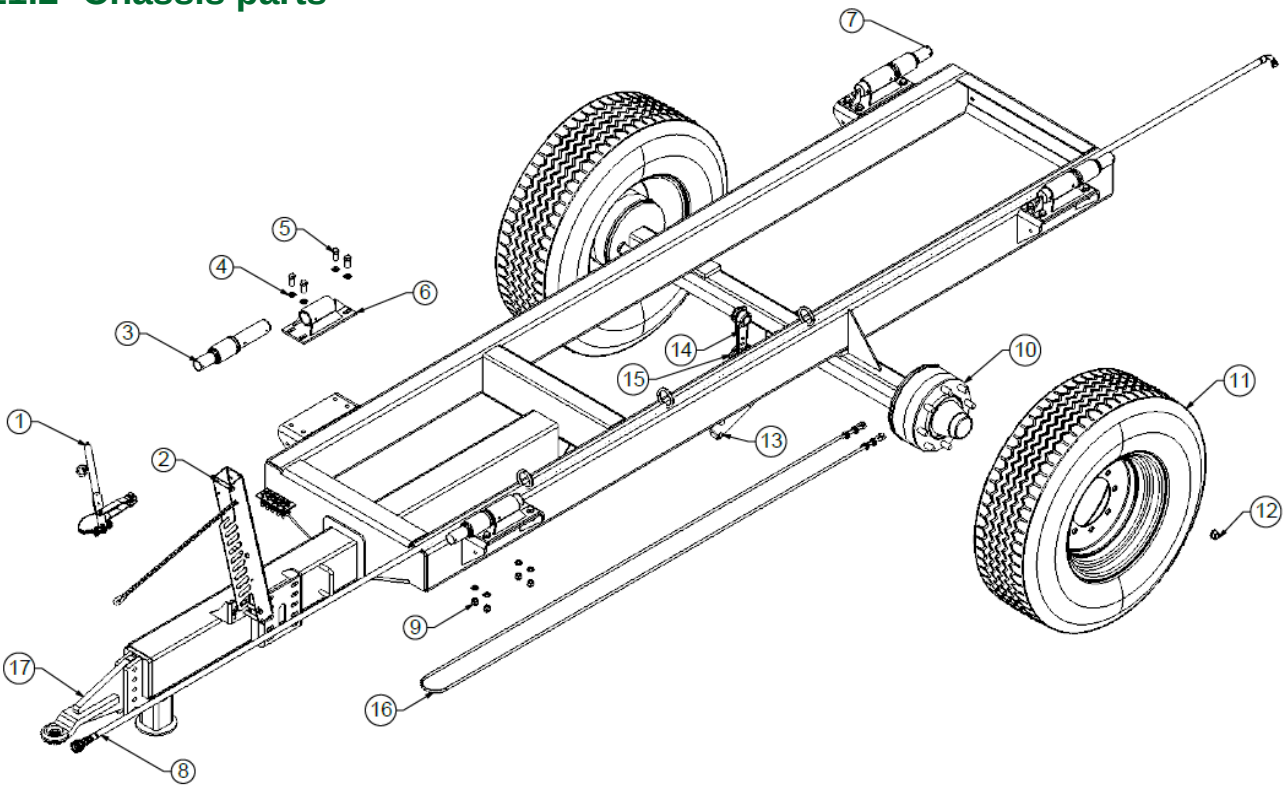
Item:	P/N:	Qty:	Description:
1	702107	1	Hydraulic Brake Hose Assembly – 5,200 mm - white Tag
2	FP140-001-0019	1	Hydraulic hose arm assembly
2a	EF1038-21	1	Hydraulic hose mounting plate
3	FP280-006-0134	2	Hydraulic feed-out tray hose assembly – 4,900 mm
4	701509	1	Hydraulic hose – tractor to rear VFC door ram
5	701511	1	Hydraulic hose – tractor to front VFC door ram
6	701507	1	Hydraulic hose – front VFC door ram to rear VFC door ram

KEENAN MechFiber280

Item:	P/N:	Qty:	Description:
1	702105	1	Hydraulic Brake Hose Assembly – 6,850 mm - white Tag
2	FP140-001-0019	1	Hydraulic hose arm assembly
2a	EF1038-21	1	Hydraulic hose mounting plate
3	FP280-006-0134	2	Hydraulic feed-out tray hose assembly – 4,900 MM
4	701512	1	Hydraulic hose – tractor to rear VFC door ram
5	701511	1	Hydraulic hose – tractor to front VFC door ram
6	701510	1	Hydraulic hose – front VFC door ram to rear VFC door ram

Table 8: Hydraulic system

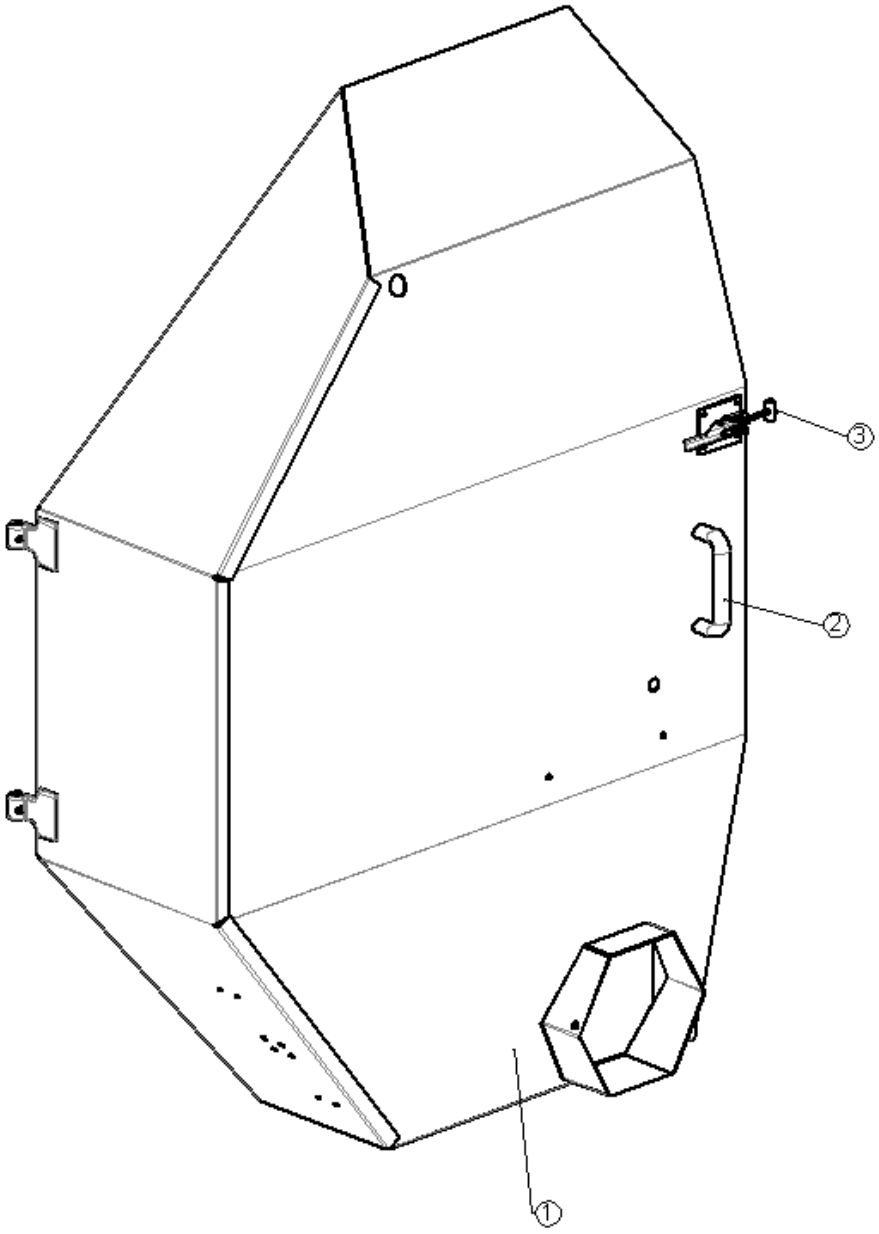
11.2 Chassis parts



Item:	P/N:	Qty:	Description:
1	704441	1	Handbrake assembly
2	FP160-001-0095	1	Hydraulic hose holder assembly
3	703350	2	Front weigh bar, 4.6-m cable
4	700732	16	M16 washer
5	703148	16	M16 x 40 bolt
6	EF101-9	4	Weigh bar bracket assembly
7	703351	2	Rear weigh bar, 9.2 m cable
8	702105	1	Hydraulic hose, 20-foot, brake hose assembly
9	700283	16	M16 locknut
10	700505	1	Axle, 90-mm square,1,930-mm track, with 8 x M20 studs (other options available)
11	700474	2	Wheel assembly, 385/65 R22.5, 8 stud- (other options available)
12	700288	16	M20 wheel 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, 6-mm cable x 5,600-mm long
17	FP300-001-0133	1	Adjustable hitch welded unit
Optional parts			
	P/N:		**Description:**
Hydraulic jacks	704897		Hydraulic jack, single-acting
	704288		Hydraulic jack, double-acting
	702043		Mechanical jack, side winding, U.S. option, 7,000 lbs.
Hydraulic jack brackets	700723-1		Hydraulic jack mounting bracket
	FP140-001-0030		Hydraulic jack mounting bracket (high hitch)
	EF1033-14		Sidewinding jack mounting bracket
	701885		Bulldog jack mounting tube
Bushes	704154		Towing eye bush, 32.5-mm ID
	702324		Towing eye bush, 30-mm ID

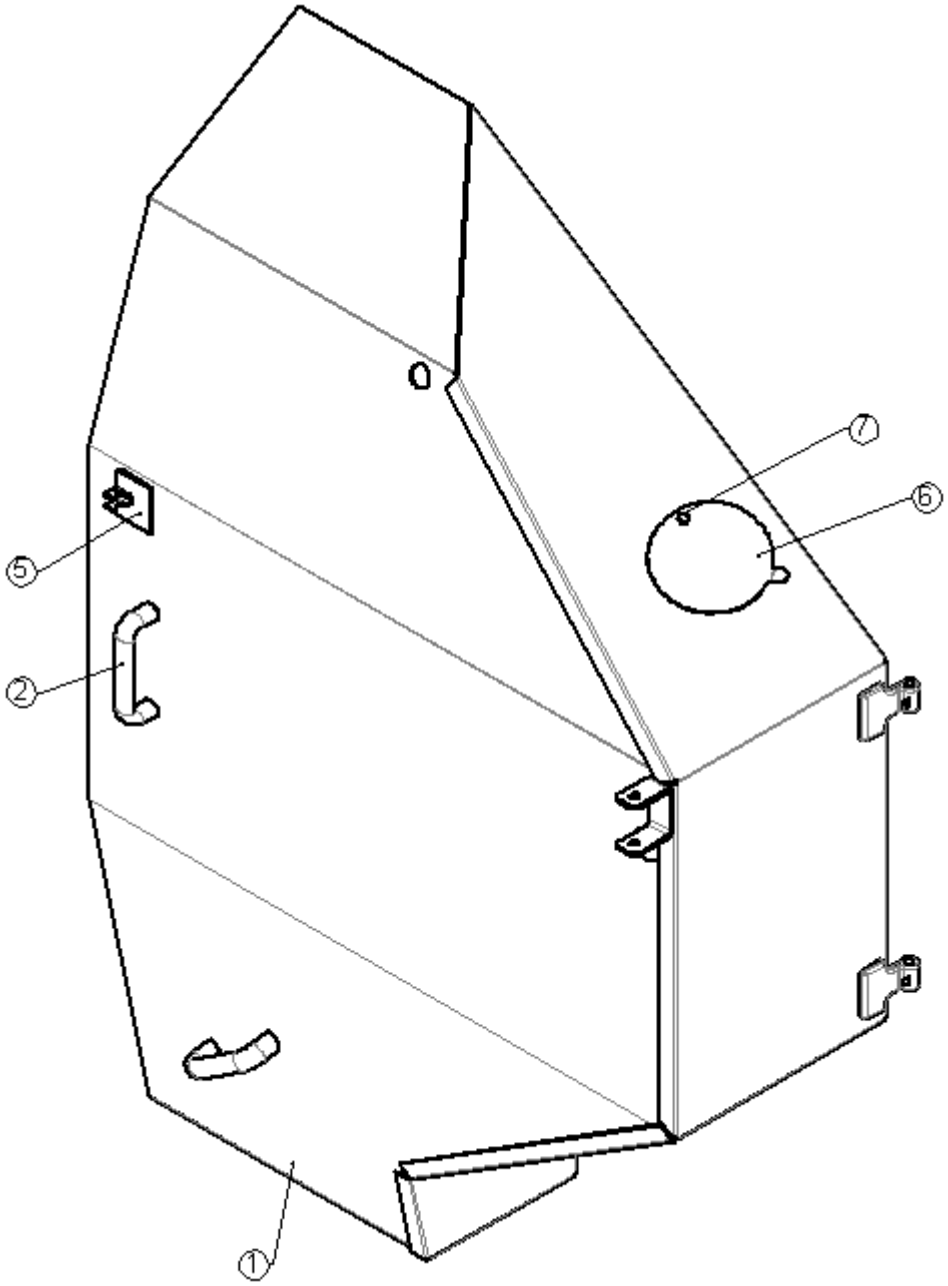
Table 9: Chassis assembly

11.3 Front guard parts



Item:	P/N:	Qty:	Description:
1	EF8038	1	Steel Front Guard (RHS)
2	701363	1	Handles, U-Shape, 160mm Hole Centres, for Front Guards
3	701184	1	Door Fastener Assembly
4	700736	2	Washer M8 Flat
5	700207	2	M8 x 16 Setscrew
6	EF1037-21	1	Door Strap, for inside of Guard (not shown)

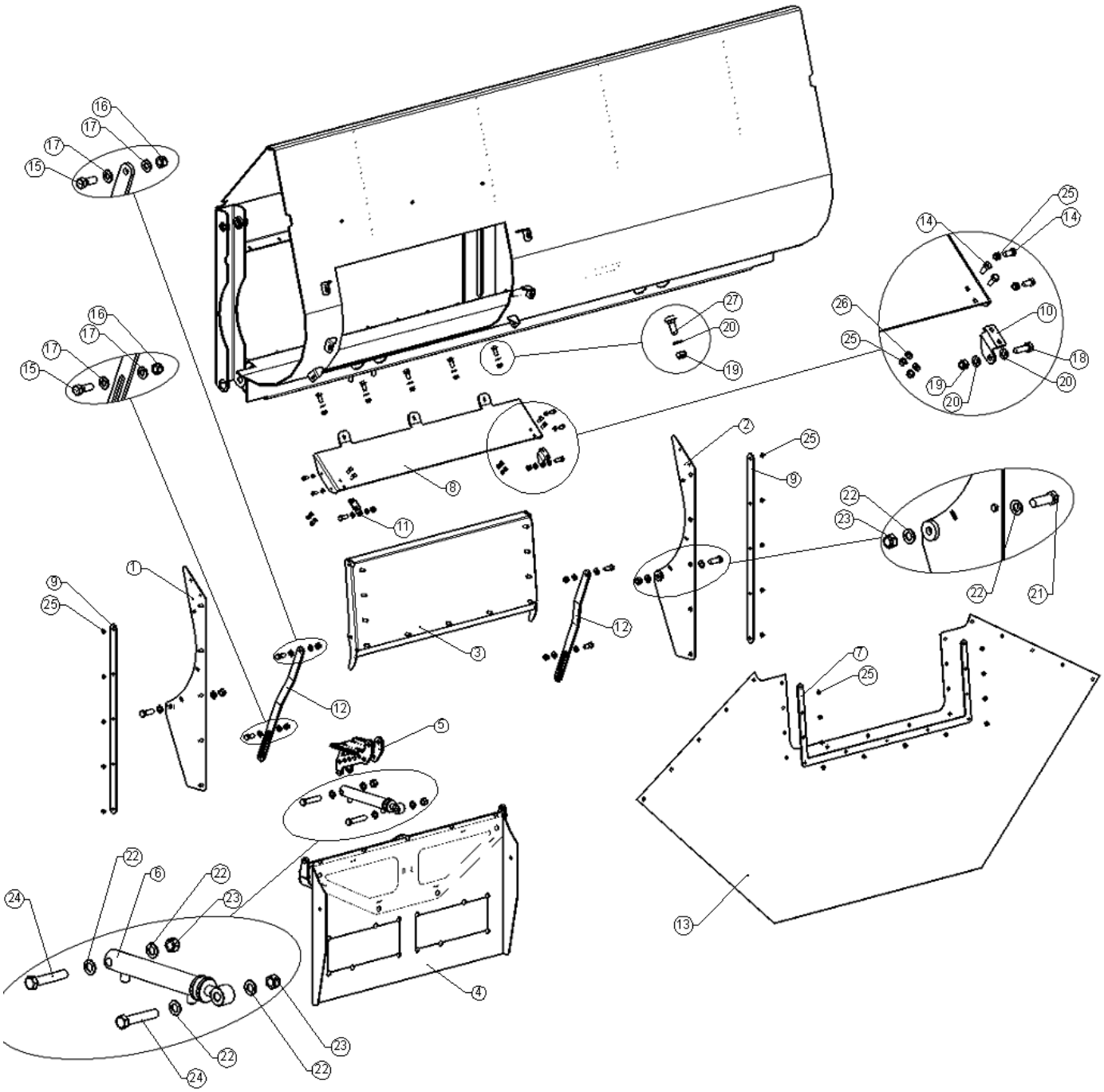
Table 10: Front Guards (Right Side)

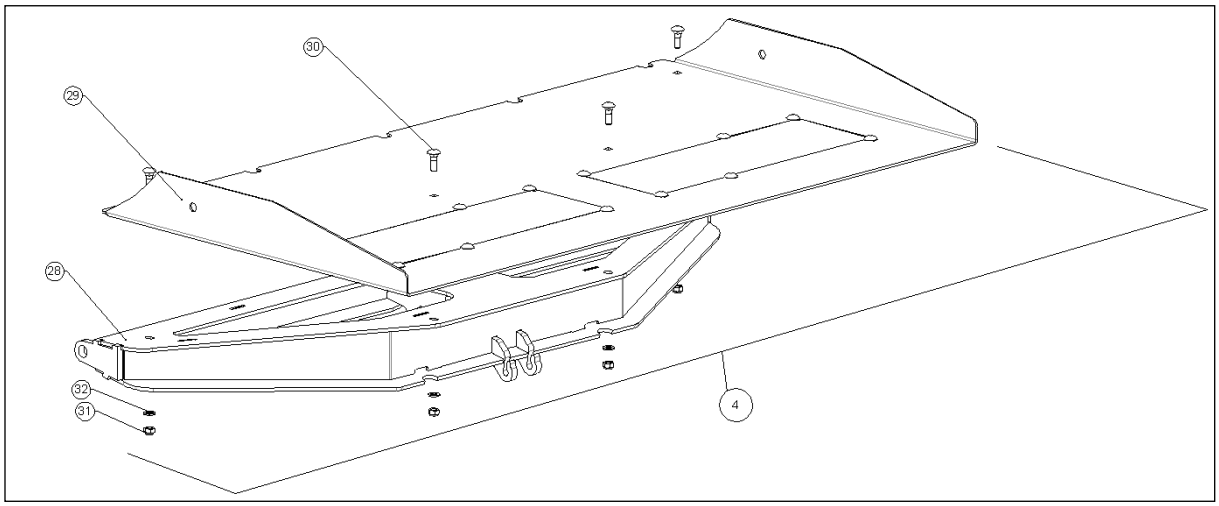


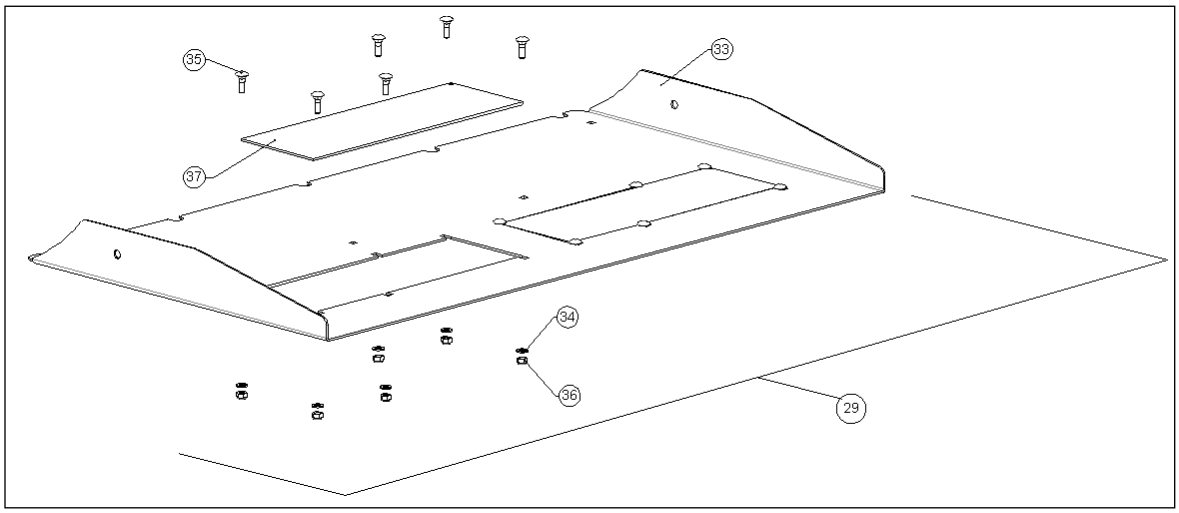
Item:	P/N:	Qty:	Description:
1	EF8037	1	Steel Front Guard (LHS)
2	701363	2	Handles, U-Shape, 160-mm Hole Centres, for Front Guards
3	700736	5	Washer M8 Flat
4	700207	5	M8 x 16 Setscrew
5	701356	1	Door Latch Bracket
6	EF1037-22	1	Cover Panel
7	700223	1	M8 Lock Nut
8	EF1037-21	1	Door Strap for inside Guard (not shown)

Table 11: Front Guards (Left Side)

11.4 Standard feed-out tray parts







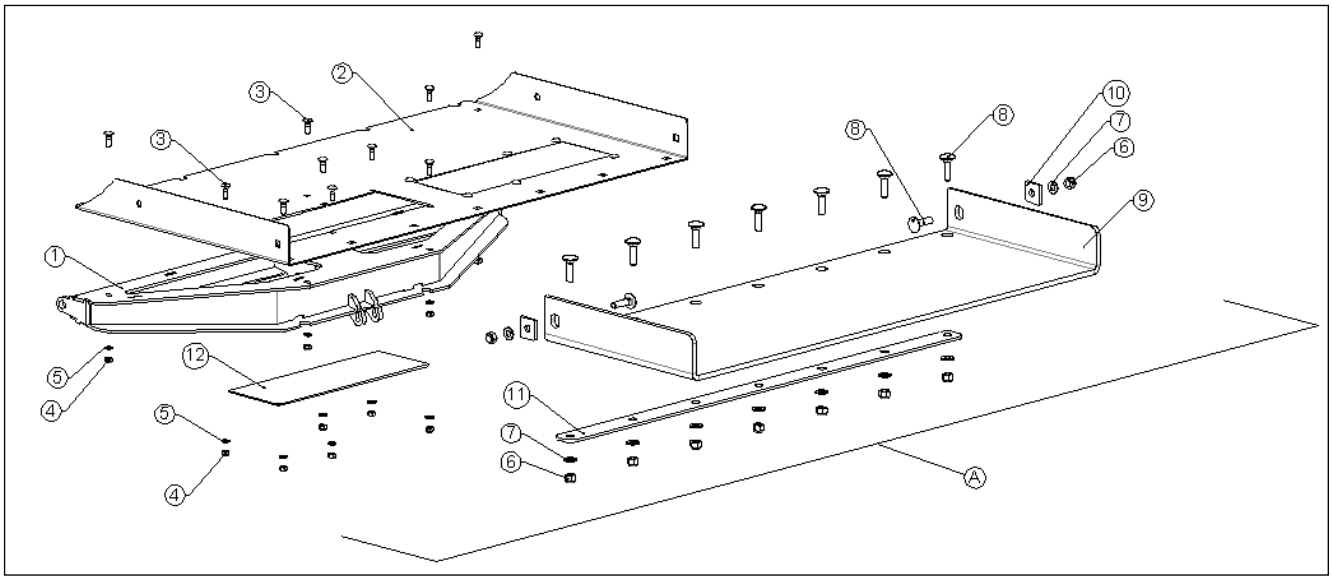
Item:	P/N:	Qty:	Description:
1	FP080-006-0051	1	Feed-Out Shroud Front Side Plate Assembly
2	FP080-006-0052	1	Feed-Out Shroud Rear Side Plate Assembly
3	FP100-006-0074	1	Feed-Out Door Arm Assembly
4	FP100-006-0013	1	Feed-Out Tray and Sub-frame Assembly
5	FP100-006-0003	1	Feed-Out Tray Ram Upper Mounting Bracket Assembly
6	703591	1	6” Stroke Feed-Out Tray Ram Assembly (KEEN-63)
7	FP100-006-0080	1	Feed-Out Door Shroud Retainer
8	FP100-006-0073	1	Top Shroud Feed-Out
9	FP100-006-0081	2	Feed-Out Door Shroud Side Retainer
10	FP160-006-0088	1	Hinge Bracket, Feed-Out Door RHS
11	FP160-006-0087	1	Hinge Bracket, Feed-Out Door LHS
12	FP080-006-0012	2	Feed-Out Door Link Arm
13	FP100-006-0016	1	Feed-Out Shroud Curtain
14	700208	8	M8 x 20 Set Screw
15	700249	4	M12 x 35 Set Screw
16	700266	4	M12 Lock Nut
17	700730	8	M12 Flat Washer
18	700228	2	M10 x 35 Set Screw
19	700241	7	M10 Lock Nut
20	700729	9	M10 Flat Washer
21	700275	2	M16 x 50 Bolt
22	700732	8	M16 Flat Washer
23	700283	4	M16 Lock Nut
24	700281	2	M16 x 90 Bolt
25	700223	29	M8 Nylock Nut
26	700736	4	M8 Flat Washer
27	700226	5	M10 x 30 Cup Head Bolt
28	FP100-006-0006	1	Feed-Out Tray subframe Assembly
29	FP100-006-0088	1	Feed-Out Tray & Blanks
30	702256	4	M8 x 25 mm Cup Head Bolt
31	700223	4	M8 Nyloc Nut
32	700736	4	M8 Flat Washer
33	FP100-006-0033	1	Feed-Out Tray Panel
34	700736	12	M8 Flat Washer
35	702256	12	M8 x 25 mm Cup Head Bolt
36	700223	12	M8 Nyloc Nut
37	FP160-006-0271	2	Tray Hole Blanking Plate (3 mm)
37a	701366	2	Magnet Plate (OE)

Table 12: Feed Out Tray

Note:
Complete Standard Feed-Out Kit P/N FP080-006-0042

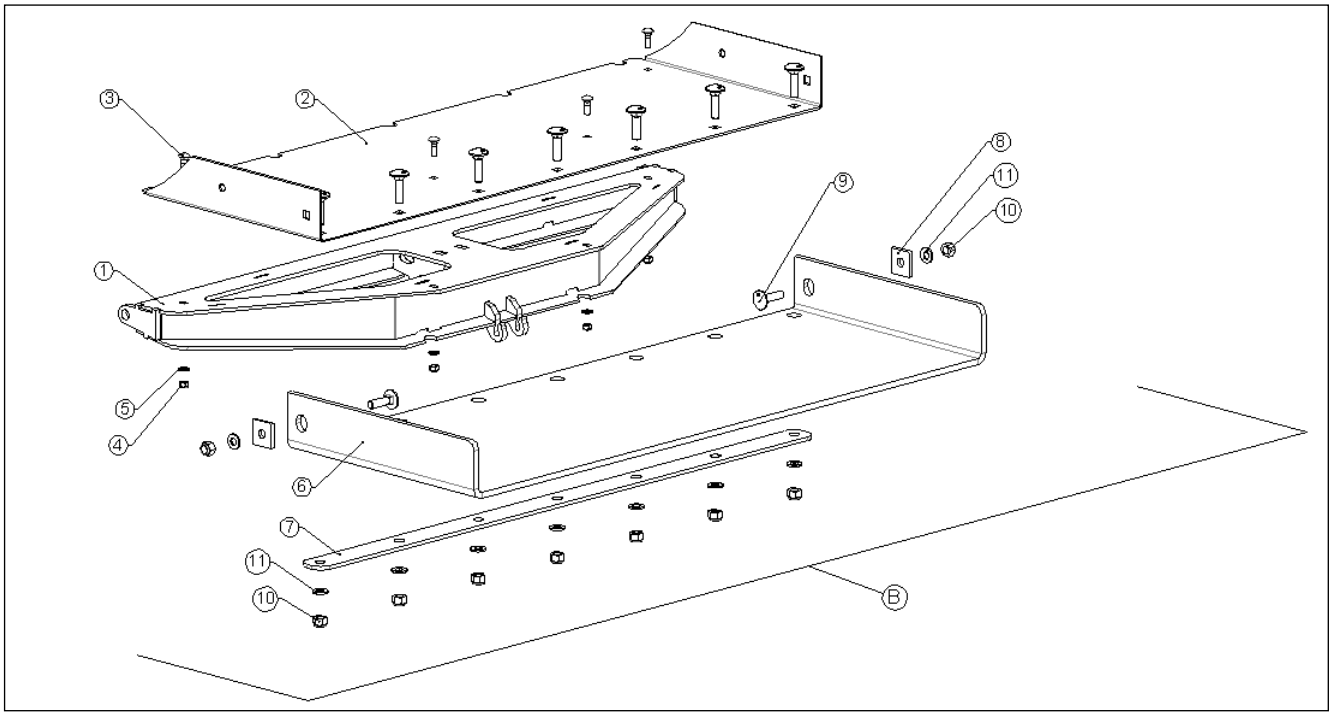
Feed-Out Tray can be supplied with the following:

- Magnet Assembly P/N FP100-006-0035
- Std & Rubber Extension P/N FP100-006-0036
- Magnets & Rubber Extension P/N FP100-006-0037
- ½ Rubber P/N FP100-006-0038



Item:	P/N:	Qty:	Description:
A	**FP100-006-0036**	1	**Std Tray with Rubber Extension**
1	FP100-006-0006	1	Feed-Out Tray Sub-Frame Assembly
2	FP140-006-0075	1	Feed-Out Tray Panel for Rubber Extension
3	702256	16	M8 x 25-mm Cup Head Bolt
4	700223	16	M8 Nyloc Nut
5	700736	16	M8 Flat Washer
6	700266	9	M12 Lock Nut
7	700730	9	M12 Flat Washer
8	703500	9	M12 x 45-mm Cup Head Bolt
9	700802	1	Rubber Extension
10	EF106-79	2	Rubber Side Retainer
11	FP100-006-0092	1	Rubber Retainer Flat
12	FP160-006-0271	2	Tray Hole Blanking Plate (3 mm)
12a	701366	2	Magnet Plate (OE) used on FP100-006-0037

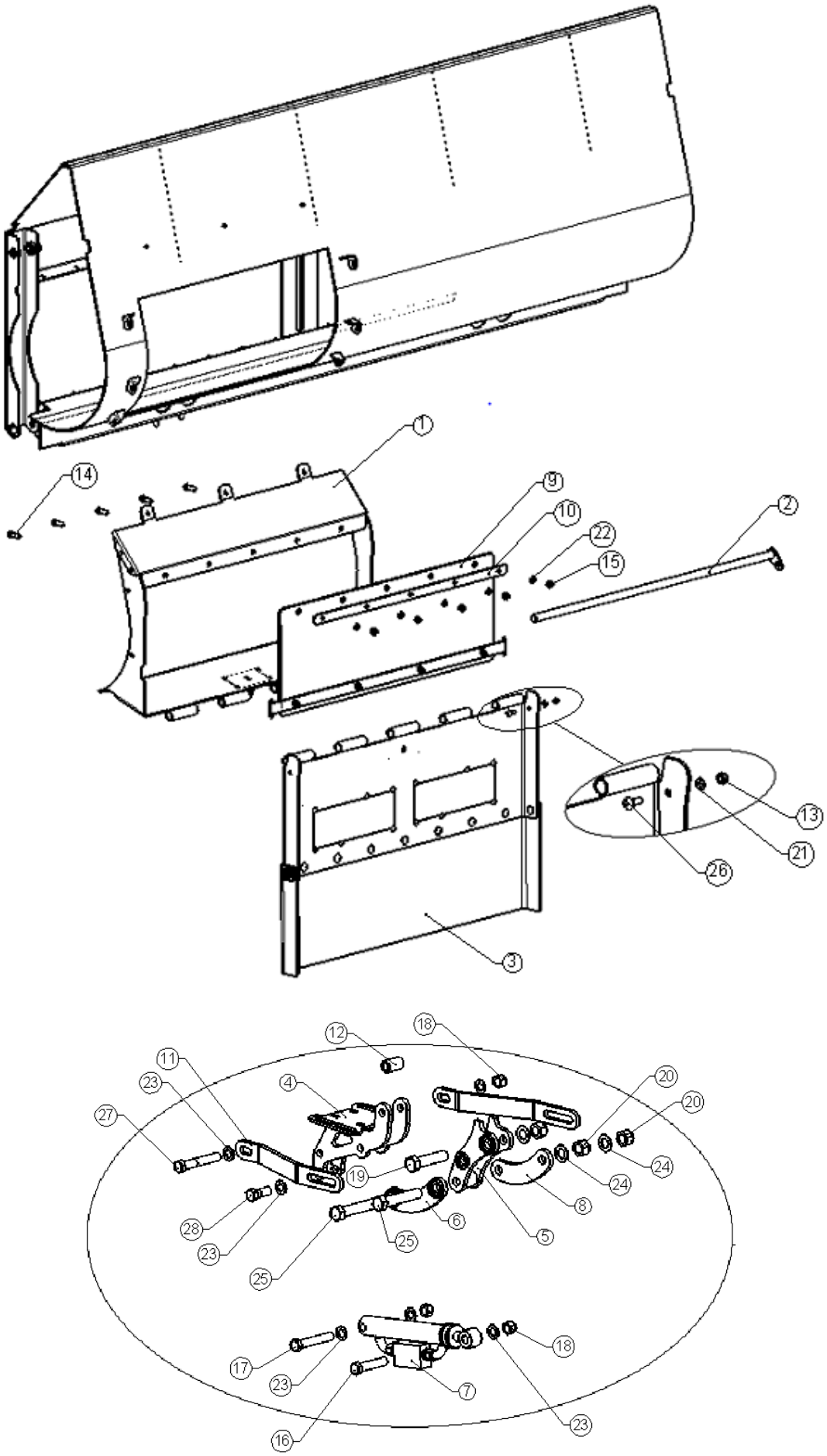
Table 13: Feed Out Tray with Rubber Extension

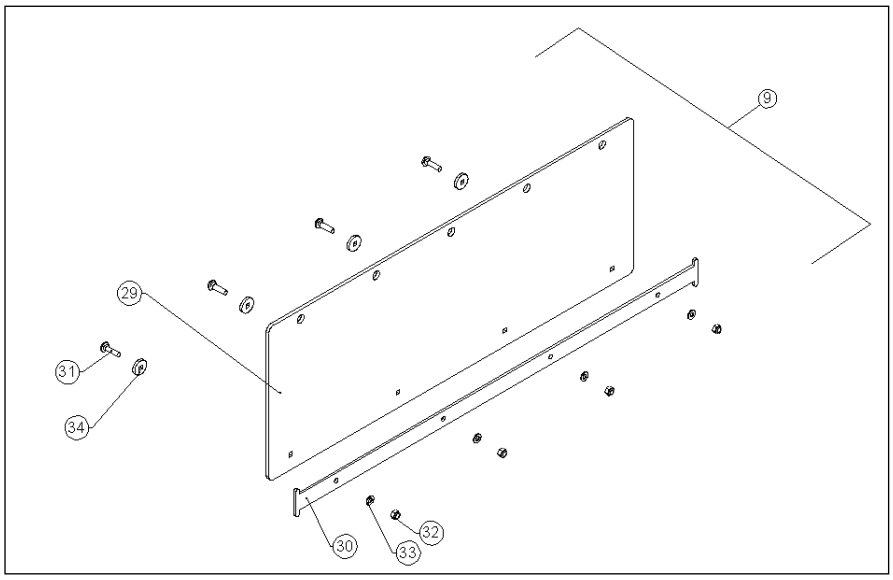


Item:	P/N:	Qty:	Description:
B	**FP100-006-0038**	1	**Feed-Out Tray ½ Rubber**
1	FP100-006-0006	1	Feed-Out Tray Sub-Frame Assembly
2	FP140-006-0031	1	Feed-Out Tray Panel ½ Rubber
3	702256	4	M8 x 25-mm Cup Head Bolt
4	700223	4	M8 Nyloc Nut
5	700736	4	M8 Flat Washer
6	700802	1	Rubber Extension
7	FP100-006-0092	1	Rubber Retainer Flat
8	EF106-79	2	Rubber Side Retainer
9	702500	9	M12 x 45-mm Cup Head Bolt
10	700266	9	M12 Lock Nut
11	700730	9	M12 Flat Washer

Table 14: Feed Out Tray with ½ Rubber

11.5 Fold down tray parts

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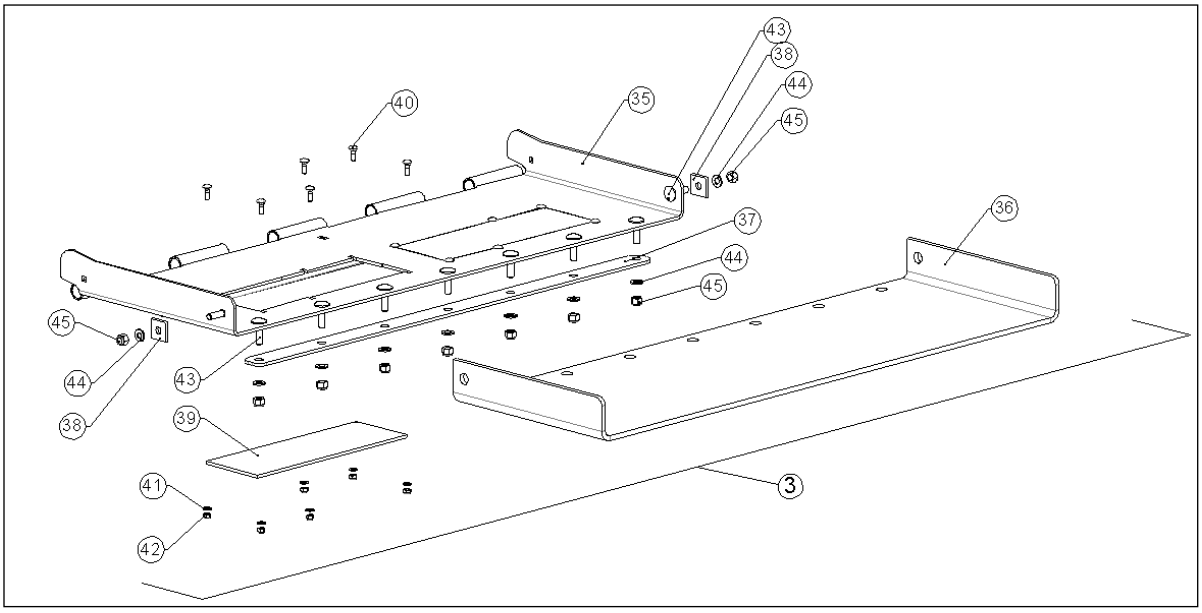
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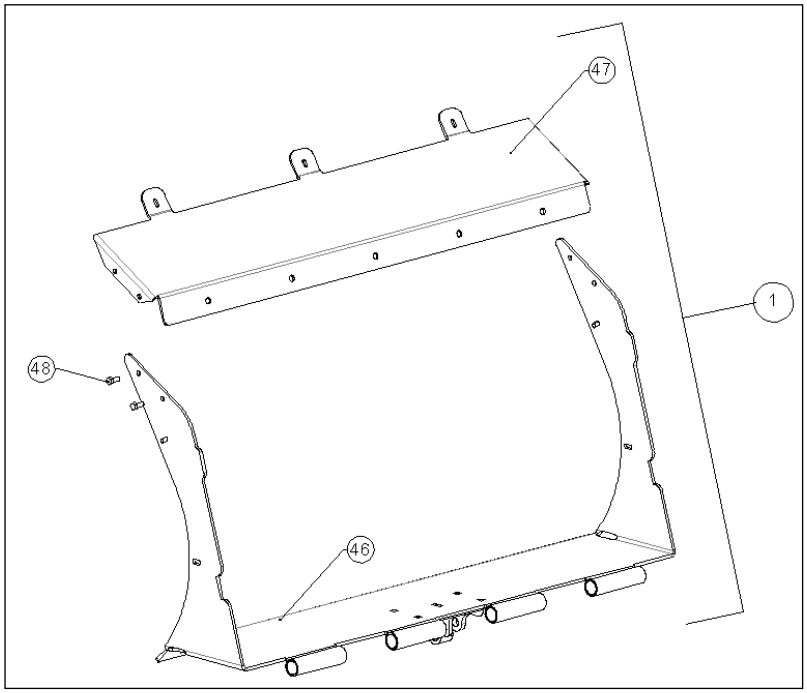
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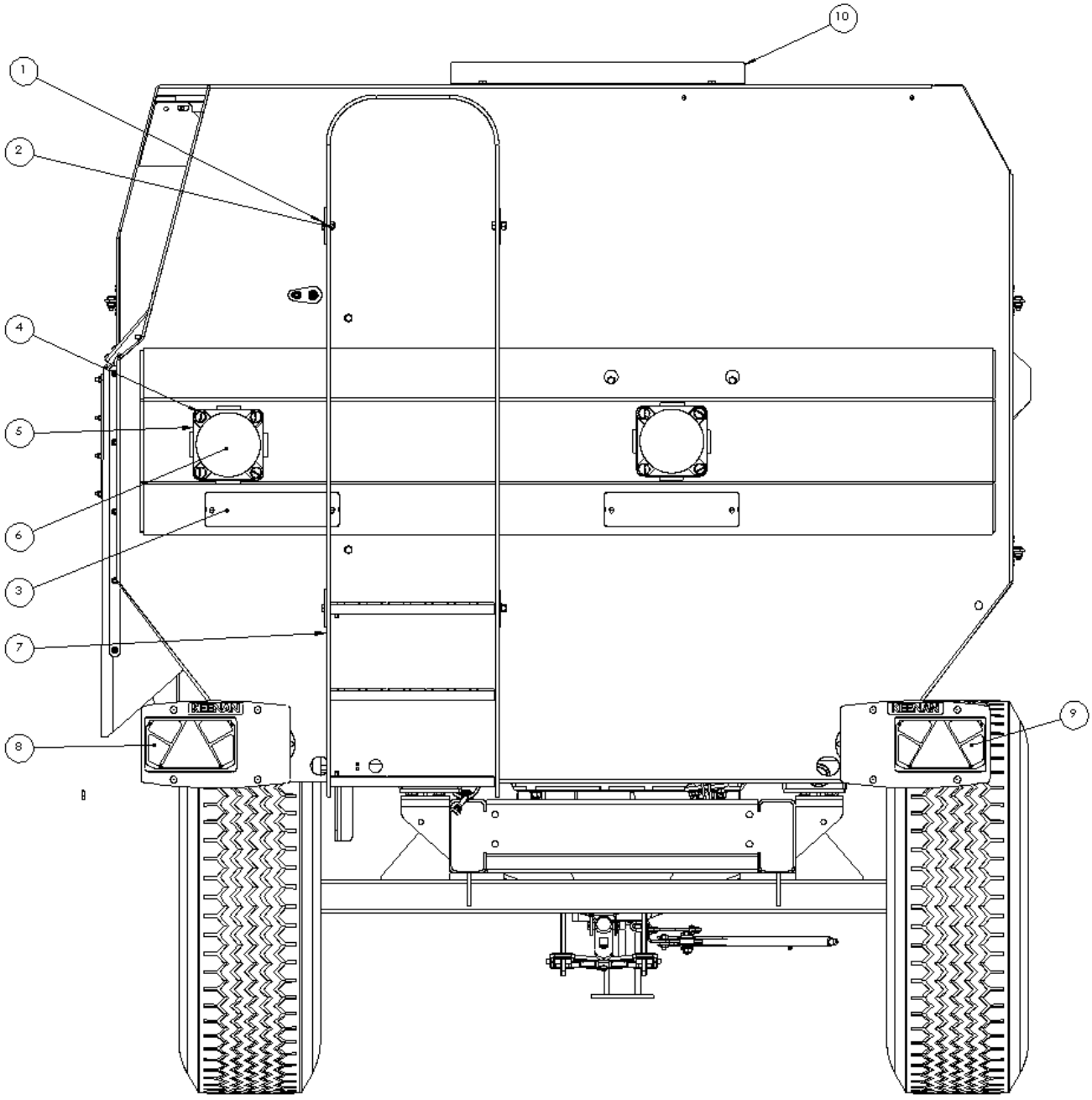
Item:	P/N:	Qty:	Description:
1	FP080-006-0043	1	Feed-Out Shroud Assembly (Fold Down Tray)
2	FP140-006-0321	1	Fold Down Tray Hinge Bar Assembly
3	FP140-006-0328	1	Fold Down Tray Assembly 2
4	FP080-006-0006	1	Feed-Out Tray Ram upper mounting bracket assembly
5	FP170-006-0162	5	Fold Down Tray Inner link arm assembly
6	FP200-006-0340	1	Fold Down Tray outer link arm assembly
7	705268	1	6” Stroke Ram with Check Valve (KEEN-63SP)
8	FP200-006-0332	1	Fold Down Tray Outer link arm (127mm Centres)
9	FP140-006-0325	1	Feed-Out Shroud Rubber Assembly
10	FP100-006-0101	1	Fold Down Tray Door Rubber Retainer
11	FP170-006-0168	2	Fold Down Tray Shelf to auger chamber tie plate
12	FP170-006-0156	1	Feed-Out Tray ram bracket spacer bush
13	700241	1	M10 Lock Nut
14	700250	5	M12 x 40 Set Screw
15	700266	5	M12 Lock Nut
16	700280	1	M16 x 80 Bolt
17	700268	1	M16 x 100 Bolt
18	700283	5	M16 Lock Nut
19	700302	1	M20 x 90 Bolt (HT)
20	700305	3	M20 NyLoc Nut
21	700729	1	M10 Flat Washer
22	700730	10	M12 Flat Washer
23	700732	7	M16 Flat Washer
24	700733	3	M20 Flat Washer
25	701488	2	M20 x 1110 Bolt (HT)
26	700226	1	M10 x 30 Cup head Bolt
27	700269	1	M16 x 110 Bolt
28	700274	2	M16 x 45 Bolt
29	FP140-006-0324	1	Feed-Out Shroud Rubber
30	FP140-006-0326	1	Rubber Retainer Plate
31	700251	4	M10 x 40-mm Cup Head Bolt
32	700241	4	M10 Lock Nut
33	700729	4	M10 Flat Washer
34	FP170-006-0188	4	Rubber Retainer Washer
35	FP140-006-0319	1	Fold Down Tray Assembly
36	FP140-006-0323	1	Rubber Extension
37	FP100-006-0092	1	Rubber Retainer Plate
38	EF106-79	2	Rubber Retainer Side Plate
39	FP160-006-0272	2	Magnet Hole Blanking Plate 6mm
39a	701366	2	Magnet Plate (OE)
40	702256	12	M8 x 25-mm Cup Head Bolt
41	700736	12	M8 Flat Washer
42	700223	12	M8 Nyloc Nut
43	702500	9	M12 x 45-mm Cup Head Bolt
44	700730	9	M12 Flat Washer
45	700266	9	M12 Lock Nut
46	FP080-006-0044	1	Feed-Out Shroud Lower Plate Assembly
47	FP140-006-0317	1	Feed-Out Shroud Top Plate
48	700208	4	M8 x 20 Set Screw

Table 15: Fold Down Tray Details

Note:
Complete Fold Down Tray Kit (Standard) P/N FP080-006-0040
Complete Fold Down Tray Kit (OE-100) P/N FP080-006-0041

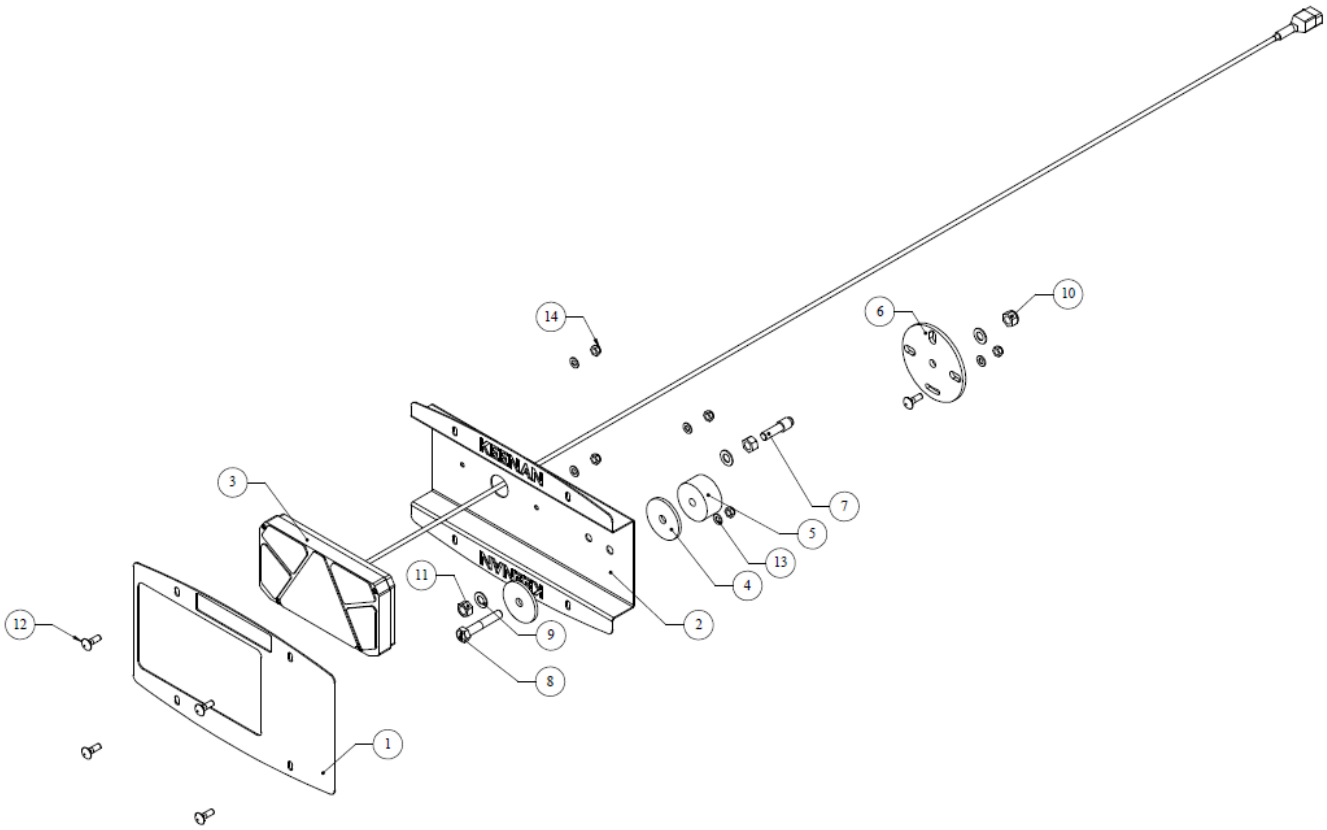
Fold Down Tray can be supplied with the Magnet Assembly P/N FP140-006-0318

11.6 Rear parts



Item:	P/N MechFiber250:	Qty:	Description:
1	700246	4	M12 x 25 bolt
2	700266	4	M12 locknut
3	FP160-003-0015	2	Rear channel blank
4	700297	8	M20 x 65 bolt
5	700842	2	70 mm flange bearing, UCF X14, cast housing
6	701273	2	Rear bearing cover
7	FP140-013-0002	1	Ladder assembly
8	FP280-003-0276	1	Adjustable light assembly — left-hand side
9	FP280-003-0277	1	Adjustable light assembly — right-hand side
10	EF1041-1	1	Cover plate, 3 mm, folded, for rear panel (top)

Table 16: Rear parts

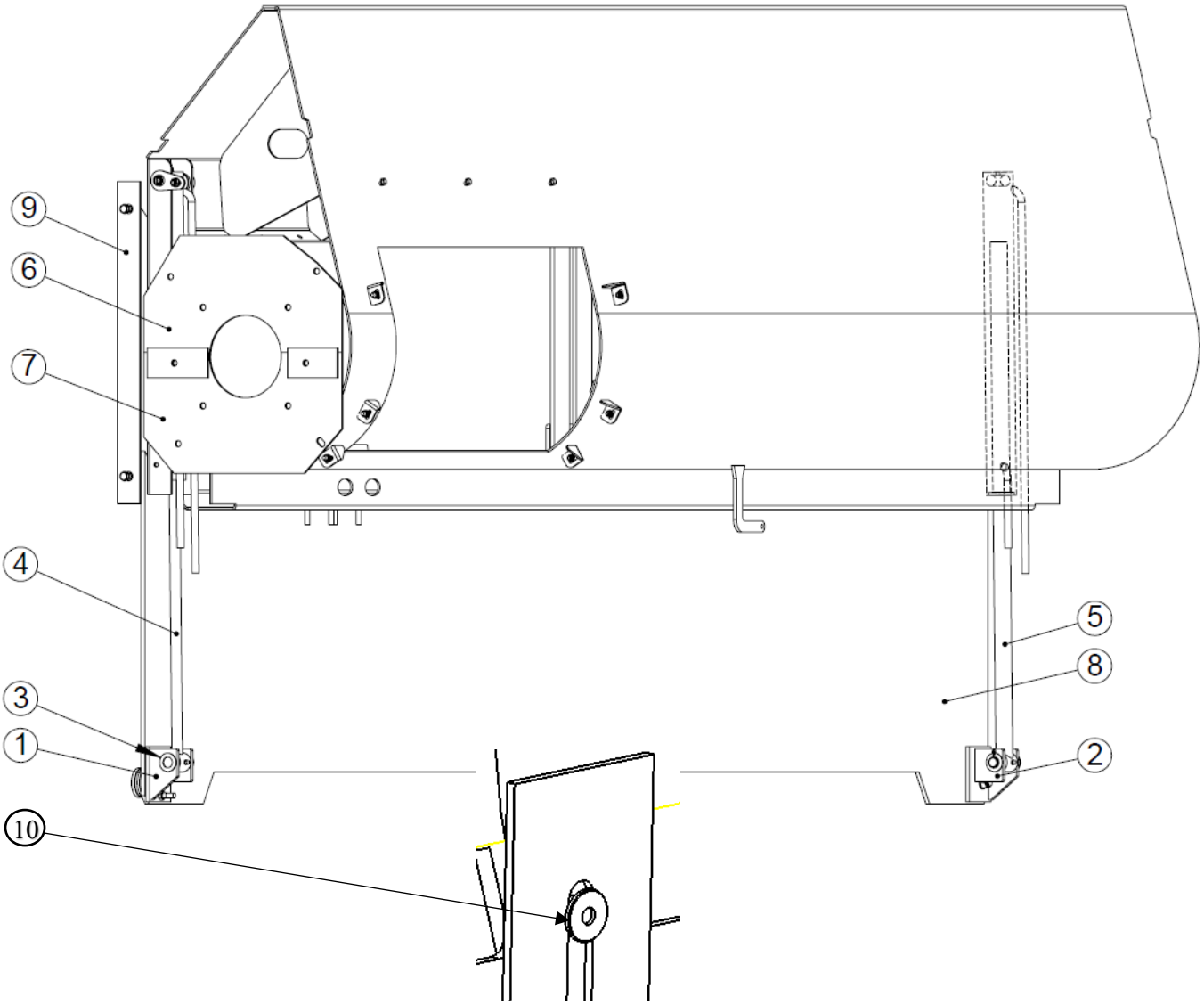


Item:	P/N:	Qty:	Description:
1	FP280-003-0274	1	Light pod cover
2	FP280-003-0273	1	LED light pod holder
3	706005	1	Rear LED light (left-hand)
	706006	1	Rear LED light (right-hand)
4	706412	2	LED light flat washer
5	706413	1	LED light rubber buffer
6	FP280-003-0272	1	Stainless steel wear plate
7	FP280-003-0275	1	Light pod locator pin
8	702869	1	M12 x 70 bolt
9	700731	3	M12 flat washer
10	700266	1	M12 locknut
11	700265	2	M12 hex nut
12	702256	5	M8 x 25-mm cup-head bolt
13	700736	5	M8 flat washer
14	700223	5	M8 locknut

Table 16a: Adjustable light assembly

Note: All parts are interchangeable between left and right sides, *except* for the light unit.

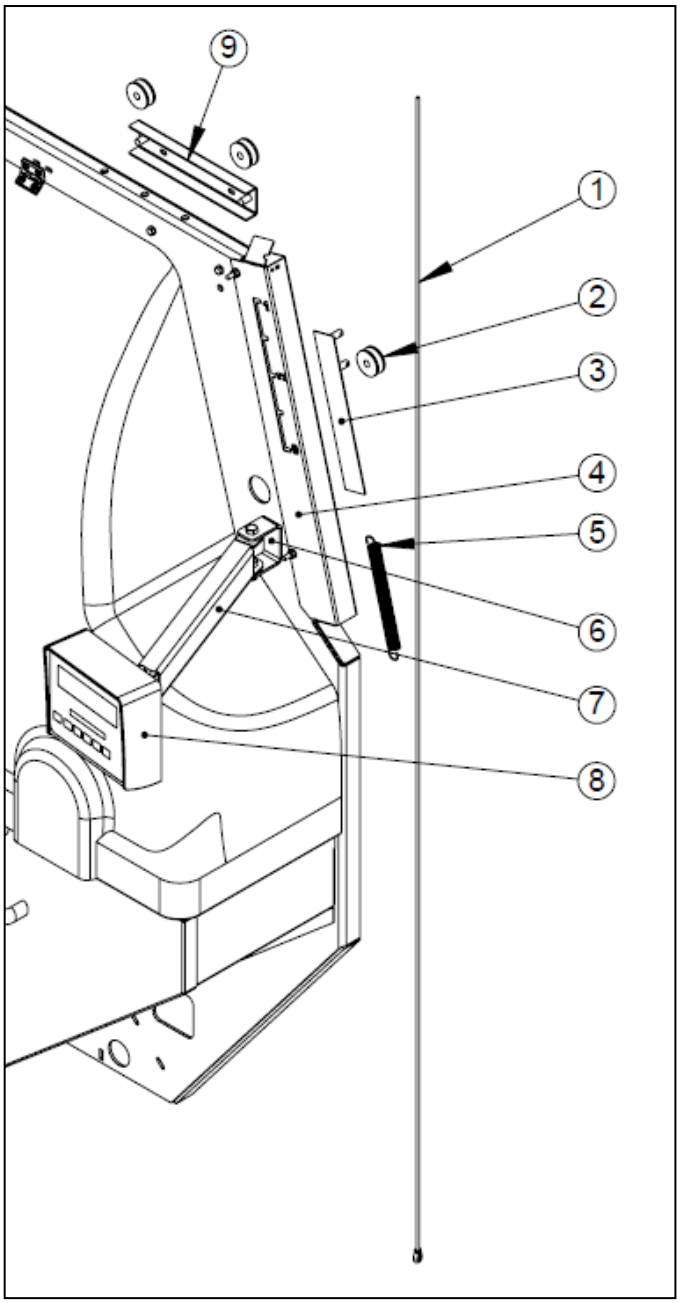
11.7 VFC-door parts



Item:	P/N Mechfiber250	P/N MechFiber280	Qty:	Description:
1	RD1010-44	*same as 250*	1	Guillotine Door Lower Ram Bracket (Front)
2	RD1010-45	*same as 250*	1	Guillotine Door Lower Ram Bracket (Rear)
3	701591	*same as 250*	2	Guillotine Door Bottom Hydraulic Cylinder Pin
4	704955	*same as 250*	1	Front Guillotine Door Hydraulic Cylinder (Small)
5	704954	*same as 250*	1	Rear Guillotine Door Hydraulic Cylinder (Big)
6	EF106-75	*same as 250*	1	Auger Upper Cover Flange Plate Assembly
7	EF106-16	*same as 250*	1	Auger Lower Cover Flange Plate
8	FP080-010-0001	FP115-010-0005	1	Guillotine Door (KEENAN VFC Door)
9	701521	*same as 250*	1	Rubber Seal for Guillotine Door Ends
10	701504	*same as 250*	1	Stepped Collar for Guillotine Door Centre

Table 17: VFC-door

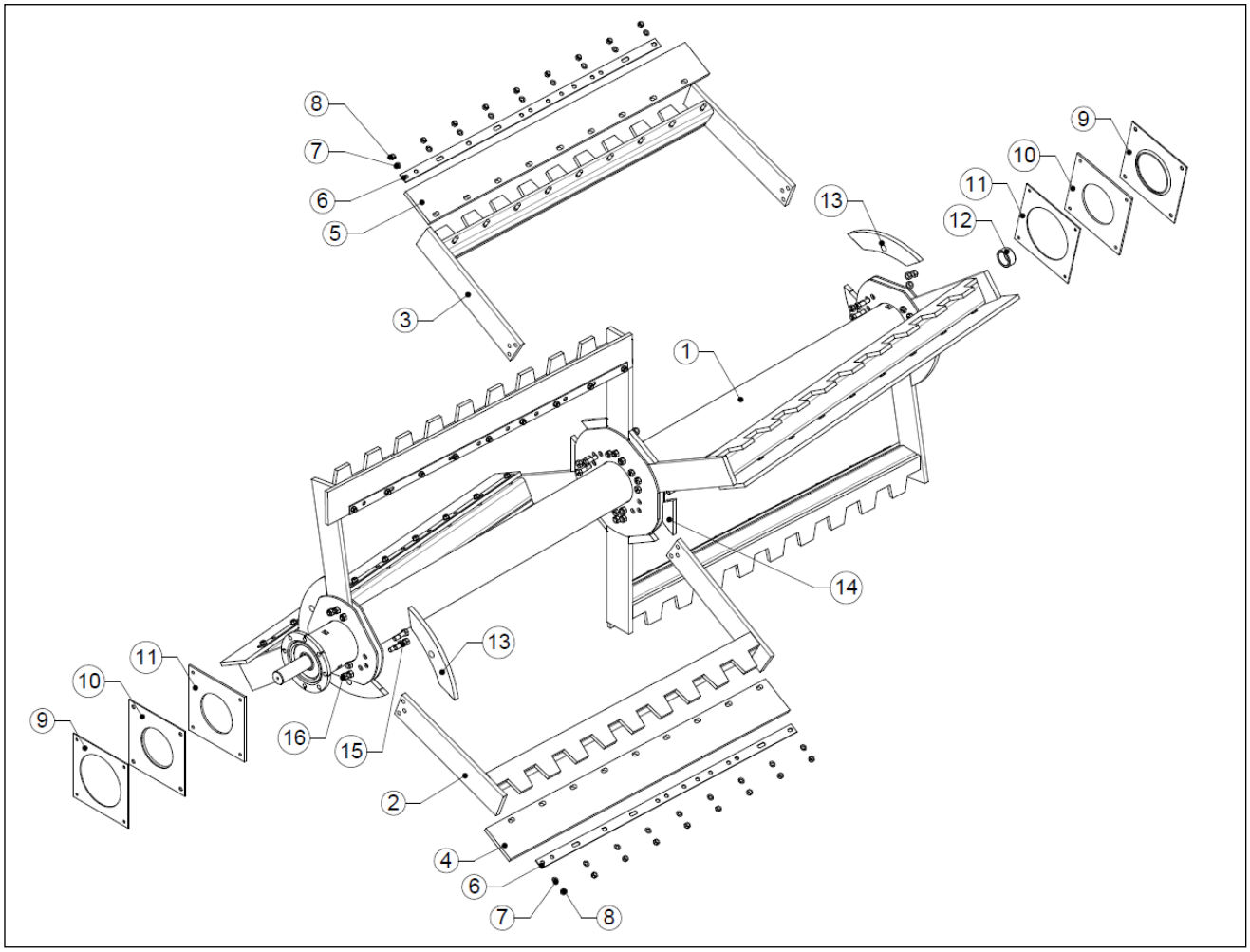
11.8 VFC-door indicator parts



Item:	P/N:	Qty:	Description:
1	703628	1	Door indicator wire rope assembly 2,185 mm (250/280)
2	701559	1	Pulley Wheel, 50 mm OD, 20 mm thick, for Indicator
3	RD8010-61	1	VFC-door Indicator Slider Assembly
4	RD8010-58	1	VFC-door Indicator Cover
5	703625	1	Spring, 8" Expansion, 22 mm OD, 2 mm 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 18: VFC-door indicator

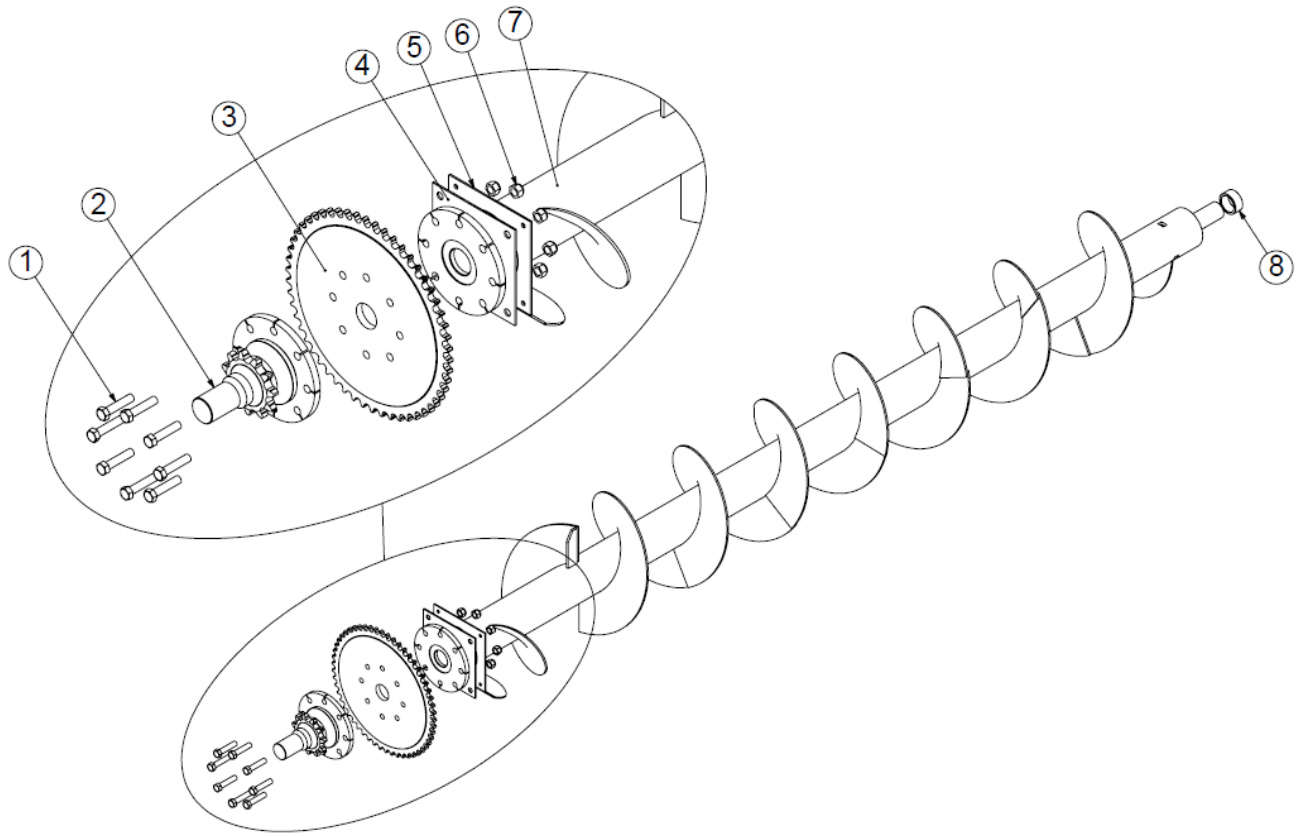
11.9 Rotor and paddle parts



Item:	P/N: Mechfiber250	P/N Mechfiber280	Qty:	Description:
1	FP100-007-0007	FP115-007-0001	1	Rotor Welded Assembly
2	FP080-008-0001	FP115-008-0001	3	Front Paddle Assembly
3	FP080-008-0002	FP115-008-0002	3	Rear Paddle Assembly
4	702285	702288	3	Paddle rubber 20 mm (Front)
5	702286	702287	3	Paddle rubber 20 mm (Rear)
6	FP100-008-0006	FP140-008-0009	6	Paddle rubber retainer
7	700732	*same as 250*	48/54	M16 flat washer
8	700283	*same as 250*	48/54	M16 Nyloc nut
9	701821	*same as 250*	2	Rotor Lip Seal Rubber
10	FP100-007-0008	*same as 250*	1	Braided Rotor Seal, Rubber
11	FP100-007-0009	*same as 250*	1	Rotor Seal Retainer
12	701598	*same as 250*	1	Rotor Spacer (70.5 mm ID x 90 mm OD x 40 mm long)
13	RDTP107-3	*same as 250*	6	End paddle block
14	RDTP107-4	*same as 250*	6	Centre paddle block
15	700298	*same as 250*	36	M20 x 70 Bolts
16	700305	*same as 250*	36	M20 Locknuts

Table 19: Rotor and Paddles KEENAN 250 and 280

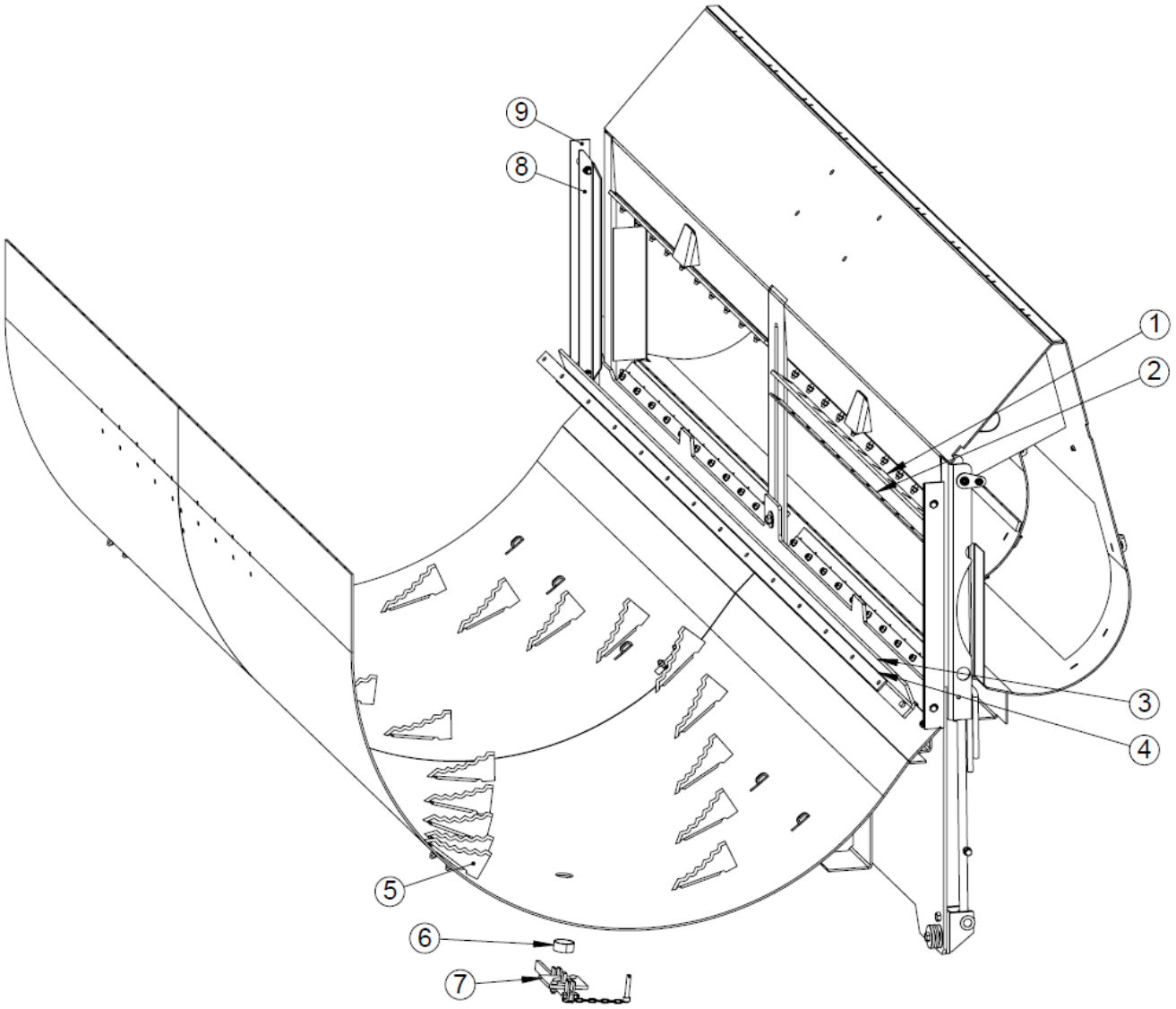
11.10 Auger parts



Item:	P/N: Mechfiber250	P/N: Mechfiber280	Qty:	Description:
1	700302	*same as 250*	8	M20 x 90 mm Bolts
2	702007	*same as 250*	1	Auger Stub Shaft assembly, 70 mm, forged
3	701833	*same as 250*	1	Sprocket, 20 mm, ASA100, 48 tooth
4	701191	*same as 250*	2	Rubber Seal, 10 mm, for Auger, 285 mm x 285 mm
5	EF806-120	*same as 250*	1	Baffle Plate, 5 mm, for Auger Seal Retainer Front
5a	FP115-006-0048	*same as 250*	1	Baffle Plate, 5 mm, for Auger Seal Retainer Rear
6	700305	*same as 250*	8	M20 Locknuts
7	FP080-009-0001	FP115-009-0001	1	Auger Assembly
8	701598	*same as 250*	1	Rotor Spacer, 70.5 mm ID, 90 mm OD, 40 mm long

Table 20: Auger assembly

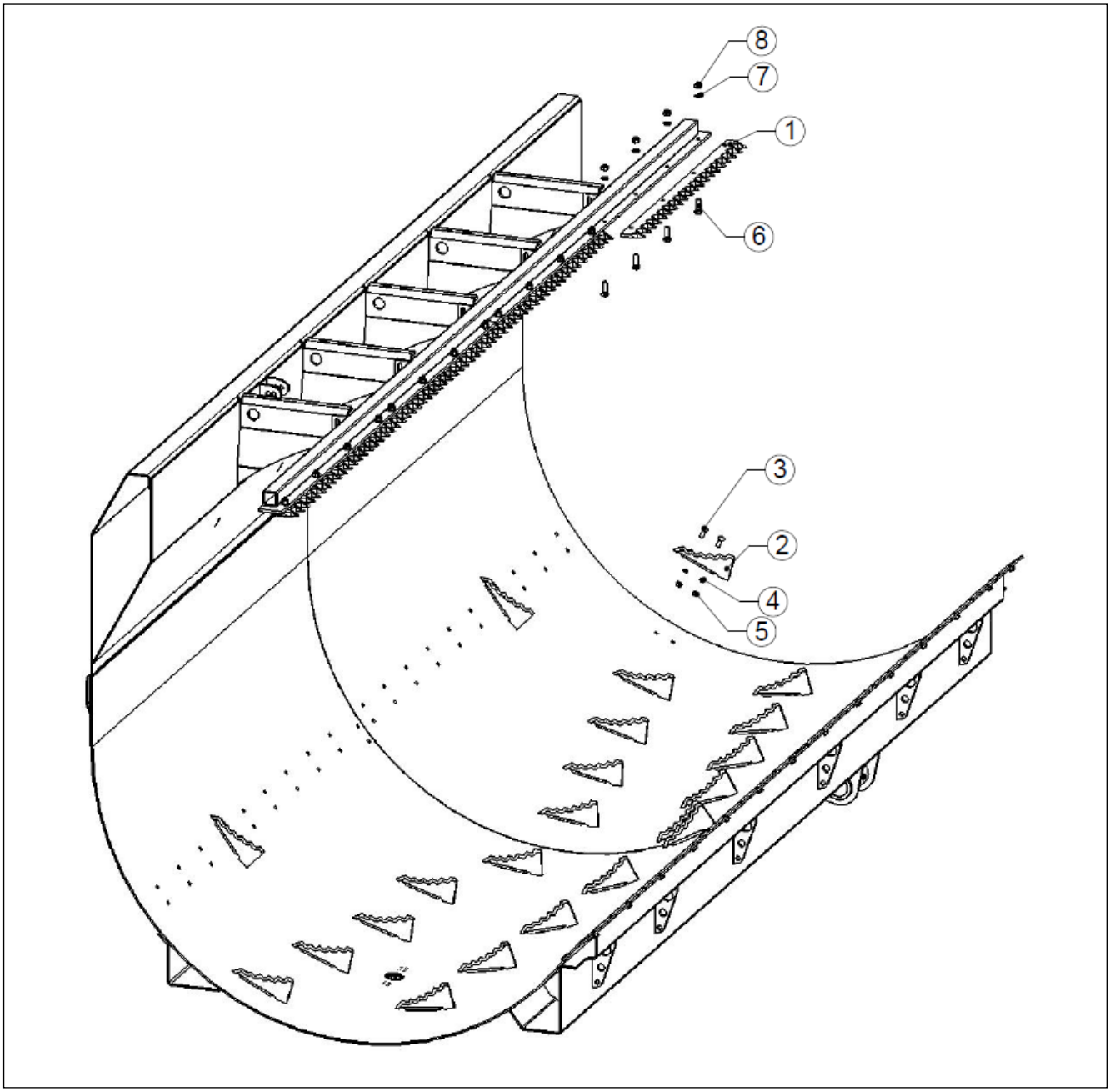
11.11 Body sealing parts



Item:	P/N: Mechfiber250	P/N: Mechfiber280	Qty:	Description:
1	701196	701195	4	Guillotine Door Outer Rubber Seal
2	FP100-006-0053	FP140-006-0022	4	Guillotine Door Outer Seal Retainer
3	701291	701290	1	Guillotine Door Lower Inner Seal
4	FP100-004-0001	FP140-004-0003	1	Guillotine Door Lower Inner Seal Retainer
5	703955	*same as 250*	18/22	Body Blade
6	EF104-6	*same as 250*	1	Drain Bung Tube
7	EF104-12	*same as 250*	1	Drain Bung Cover Plate Assembly
8	RD8010-12	*same as 250*	2	Guillotine Door Front and Rear End Retainer Plate
9	701521	*same as 250*	2	Guillotine Door Front and Rear End Rubber

Table 21: Body Assembly

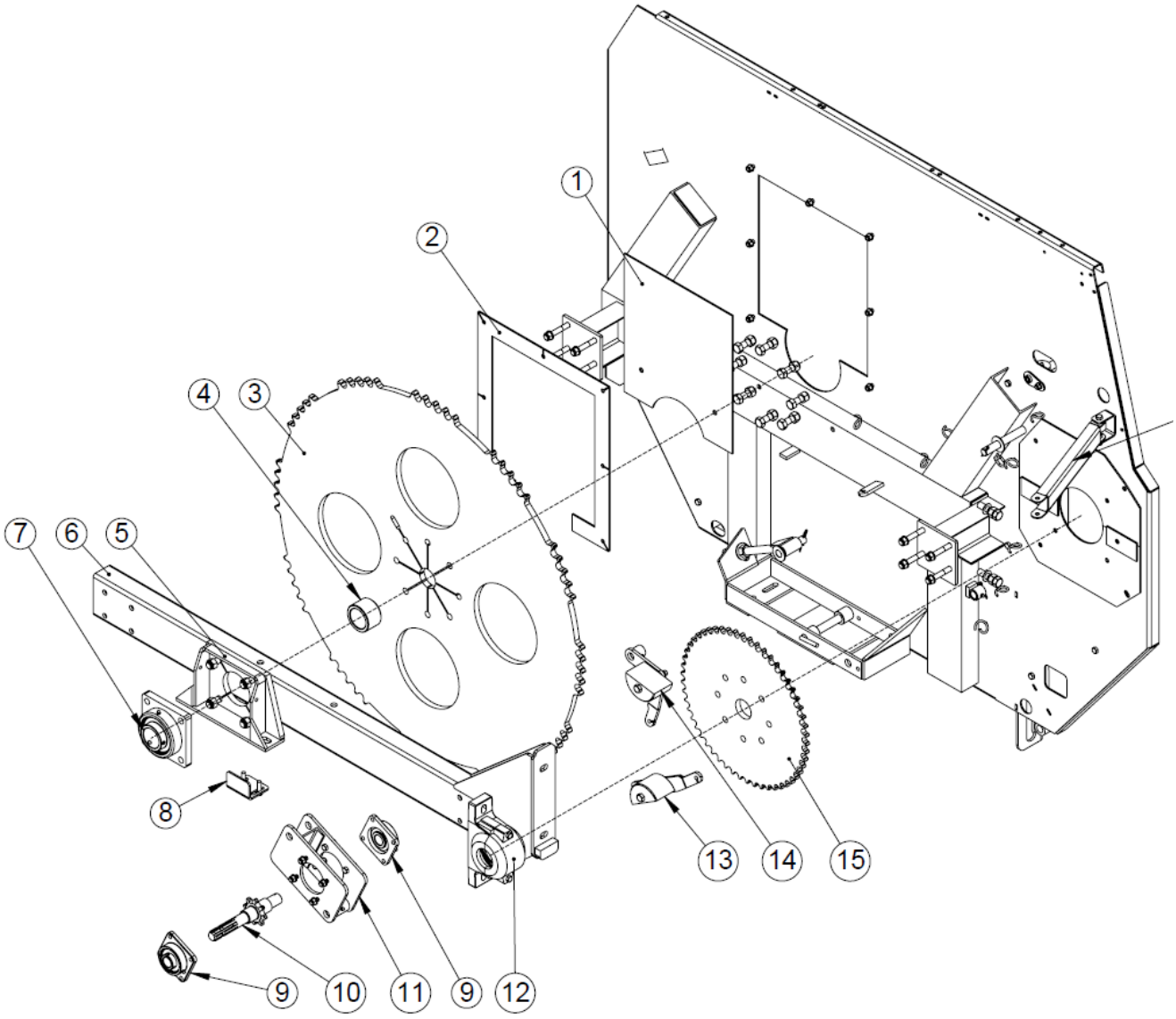
11.12 Body blade parts



Item:	P/N Mechfiber250:	P/N Mechfiber280:	Qty:	Description:
1	701518	*same as 250*	3/4	Top knife blade, 990 mm long, deep serrations
2	703955	*same as 250*	18/22	Body blade
3	700226	*same as 250*	36/44	M10 x 30 Cup Head Bolt, BZP, Gr: 8.8
4	700241	*same as 250*	36/44	M10 Spring Washer
5	700737	*same as 250*	36/44	M10 Nut
6	700250	*same as 250*	12/16	M12 x 40 mm bolt
7	700731	*same as 250*	12/16	M12 flat washer
8	700266	*same as 250*	12/16	M12 Nyloc nut

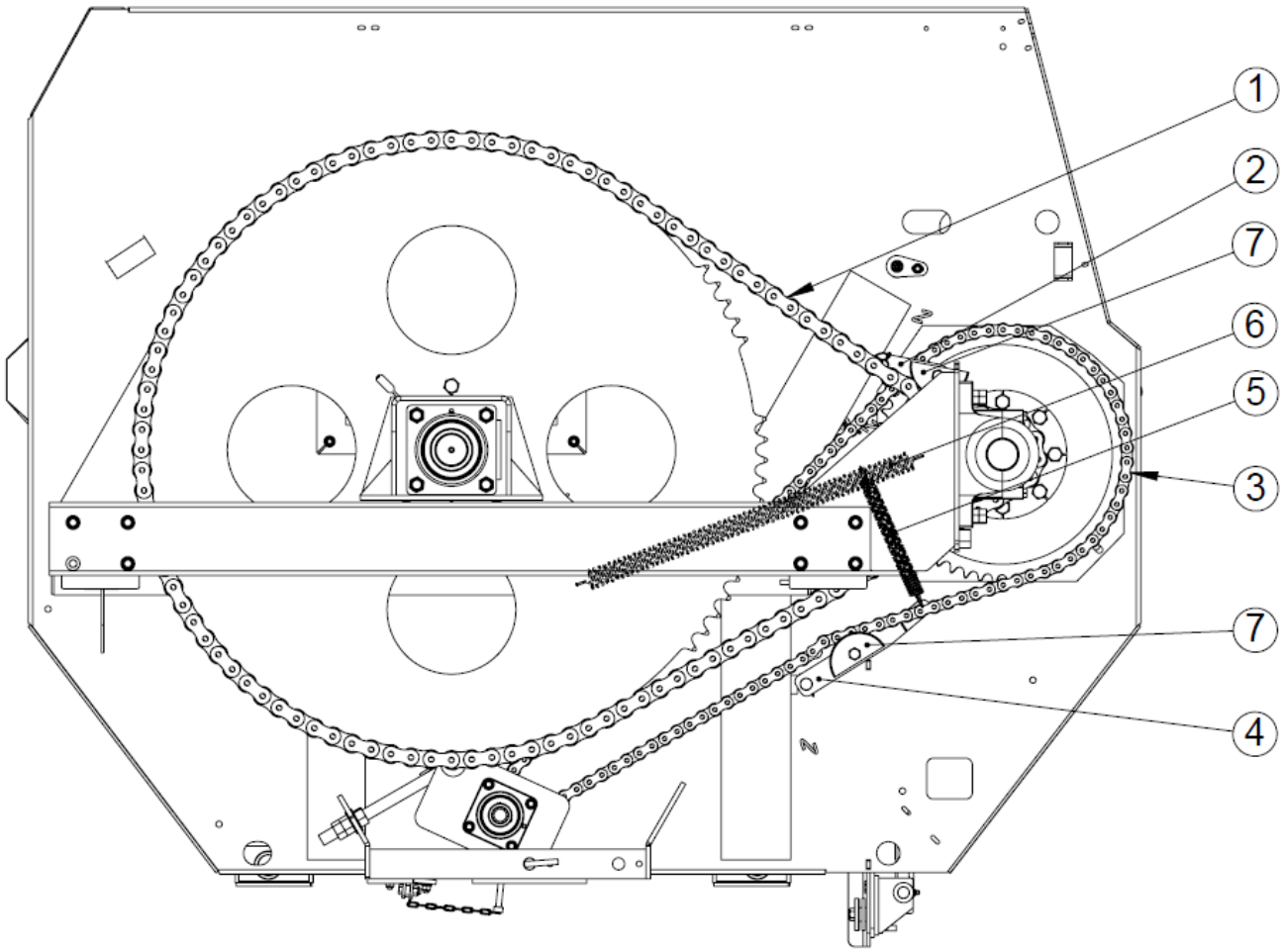
Table 22: Blades

11.13 Drive system parts



Item:	P/N:	Qty:	Description:
1	EF802-10	1	Rotor Window
2			Supplied welded to Part No 1
3	EF807-34	1	Sprocket, ASA140, 88 Teeth, 20 mm Plate
4	701534	1	Rotor Spacer, 95 mm OD, 70 mm ID, 64 mm long
5			Supplied welded to Part No 6
6	FP080-017-0001	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	704845	2	Bearing, 35 mm, 4 Bolt, Flange Mount, UCF 307
10	700627	1	Shaft, 6 Spline with 8 Tooth ASA100 Sprocket
11	EF1018-10	1	Gearbox Casing Assembly
12	EF109-35* containing:	1	70 mm Pillow Bearing Assembly, SNE 516
	701251	1	70 mm Pillow Bearing Housing, SNX 516
	700847	1	Bearing Insert, 80 mm ID, 140 mm OD, SNX 516 22216K
	701457	1	Bearing Taperlock SNX 516 H316, 70 mm ID
	701258	2	Bearing spacer ring, SR140 x 12.5
	702903	1	Shaft Seal, KEENAN 85
	702467	1	Bearing Seal SNX 516
13	EF1015	1	Primary Drive Chain Tensioner Assembly
14	EF1014	1	Secondary Drive Chain Tensioner Assembly
15	701833	1	Sprocket, 20 mm, ASA100, 48 tooth

Table 23: Drive System



Item:	P/N:	Qty:	Description:
1	702424	1	Secondary Drive Chain (Pulton ASA 140SH)
2	EF1014	1	Secondary Drive Chain Tensioner Assembly
3	702421	1	Primary Drive Chain (Pulton ASA 100) remove links to suit length
4	EF1015	1	Primary Drive Chain Tensioner Assembly
5	701275	1	Primary Drive Chain Tension Spring, 8”, 3.6 mm wire, 32 mm OD
6	701278	1	Secondary Drive Chain Tension Spring, 12”, 4 mm wire, 40 mm OD
Wearing parts:			
7	701970	2	Polypenco Wear Block 85mm
Spare parts:			
-	702423	1	ASA100 Joiner Link
-	702417	1	ASA140 SH Joiner Link

Table 24: Chain and tensioner details (showing springs fully stretched)

11.14 Axles

11.14.1 Axle options

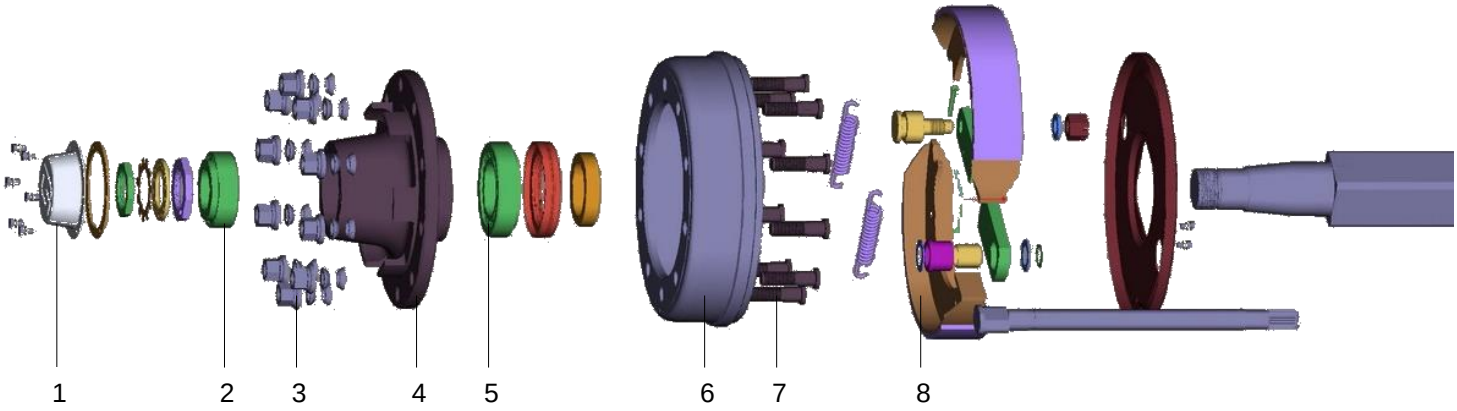


Figure 16: Typical Axle (Exploded View)

Axle Types				
Axle Application	**KEENAN MechFiber250 and 280**			
No. Studs	8	8	10	10
Axle Type	Straight	Cranked	Straight	Cranked
Axle Width (mm)	1,660, 1,760, 1,930	1,930	1,950	2,130
Brake Type/Dimensions (Type/Dia. x Width, mm)	309E, 300 x 90	309E, 300 x 90	Unbraked	Unbraked
Nut Size	M20 x 1.5	M20 x 1.5	M22 x 1.5	M22 x 1.5

Table 25: Axle Types

Axle Spare Parts	
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 26: Axle Spare Parts

11.14.2 Axle maintenance

Tightening and retightening wheel nuts

The following points should be followed for tightening and retightening of wheel nuts:

1. Impact wrenches should not be used as the impact torque may be excessive.
2. Wheel nuts should be tightened diagonally every time in conjunction with a torque wrench.
3. In the case that power tools are only available, they must be set to the correct torque (check heading 8.6), as it may cause damage or breakage to occur due to over-tightening.

The following periodical intervals should be taken to ensure nuts are correctly tightened after:

1. The first time of use.
2. The first laden journey.
3. The first 1000km.
4. Every six months thereafter or every 25,000km respectively.
5. Repeat every time a wheel is changed or removed (check how to safely remove a wheel, heading 8.8)

11.14.3 Hubcap maintenance

Hubcaps that become missing or damaged must be replaced immediately to avoid dirt penetrating the hub, which can cause damage to the bearings.

Check hub caps are always in place, and that they are in good condition.

If the hubcaps are a press fit, check visually they are fully home.
If the hubcaps are attached using screws, fit a new gasket if needed once the hubcap is removed.
Retighten the screws regularly every six months.

11.14.4 Bearing play

The bearing play should be checked after:

1. First 1,000km.
2. Before intensive use every six months or 25,000km.

Wheel bearings are subject to wear. Conditions which determine this are:

1. Operating conditions
2. The load
3. The Speed
4. Adjustment and lubrication

Wheel bearings should be checked by:

1. Lift the wheel off the ground and turn it slowly to check for any rough points or friction.
2. Turn it at a high speed to check for unusual noises such as grating or knocking.

If it is seen that there is damage or signs that the bearings are worn, both the bearings and the seals should all be replaced.

11.15 Ancillary parts

Planetary Gearbox		
P/N:	**Qty:**	**Description:**
701421	1	Planetary Gearbox A20A 1.88
Grease Fittings		
P/N:	**Qty:**	**Description:**
704913	1	Grease Tube Swivel Connector - 90 Degree Bend - M6 Thread
704914	1	Grease Tube Connector - Straight - M6 Thread
704941	1	Grease Tube Connector - Straight – 6 mm Thread
704942	1	Grease Tube Connector - Straight – 8 mm Thread
704943	1	Grease Tube Connector - Straight - 1/8" BSP Thread
704944	1	Grease Tube Connector - 90 Degree Bend - 1/8" BSP Thread
704945	1	Grease Tube Connector - 90 Degree Bend - M6 Thread
704946	1	Grease Tube Swivel Connector - 90 Degree Bend - 1/8" BSP Thread
704947	1	Grease Nipple Connector - Straight - 1/8" BSP To M6
Auto Oiler Parts		
P/N:	**Qty:**	**Description:**
703624	1	Automatic Oiler Kit (3 Chains)
703624-1	1	2 Quart (1.89 Litre) Reservoir
703724	1	Brush Assembly
704351	1	Brass Manifold - mounts to top of Lubeminder Pump
703765	1	In-Line Check Valve, to be used before brushes
703725	4	5/32" (4 mm) Ferrule Kits - used to replace ferrules in 704351 (4 pk)
703726	4	Sleeve Nut (4 pk)
704517	1	Repair Kit - Seal, Piston, and O-Rings
Spool Valve Parts		
P/N:	**Qty:**	**Description:**
701215	1	2 Bank with Detent
701216	1	2 Bank without Detent
701218	1	3 Bank with Detent
701219	1	3 Bank without Detent
702269	1	4 Bank with Detent
701208	1	4 Bank without Detent
702450	1	5 Bank with Detent
704447*	1	Electro-Hydraulic Spool Valve Kit, 4 Bank (contains 704445 & 704446)
704525	1	Electro-Hydraulic Spool Valve Kit, 5 Bank
Diverter Valve Parts (used on French machines)		
P/N:	**Qty:**	**Description:**
704139	1	Diverter Valve Kit (contains 703535 & 704394)
703894	1	Electro-Hydraulic Diverter Valve Kit (6 port)
Rear Feed-Out Parts (where fitted)		
		Refer to the Rear Feed-Out Operator Manual Supplement
Heavy Duty Top Knife (standard on all Bale Handlers)		
704229	4	Top knife blade, 990 mm long, deep serrations
Heavy Duty Body Blades (where fitted)		
703957	22*	Heavy Duty Body Blades

Table 27: Ancillary Parts

*4 Bank can be reduced to 3 Bank if required using the same part number.

12 Troubleshooting

12.1 General troubleshooting

PROBLEM:	SOLUTION:
1. Weighing display won't work properly	Check section 12.2 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 non-Bale Handler models never load bales directly down on paddle in one go – always chop up into at least four 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 Handler 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.
17: Blockage at top knife	On non-Bale Handler models, load smaller sections of material into machine On Bale Handler models check tine height settings Ensure all feed materials are free from foreign objects before loading into machine In the unlikely event of a large blockage occurring which prevents the machine from restarting using

	the tractor, it may be necessary to enter the mixing chamber to manually clear the blockage. Please refer to Section 5 – Safety, in particular, point “u.”
18: Blockage at auger	Use VFC-door to meter material intake into auger Refer to section 7.9 – Feeding Out for correct operation of VFC-door In the unlikely event of a large blockage occurring which prevents the machine from restarting using the tractor, it may be necessary to enter the mixing chamber to manually clear the blockage. Please refer to Section 5 – Safety, in particular, point “u.”
19: Blockage at rear feed-out conveyor	Use VFC-door to meter material intake into auger Refer to section 7.9 – Feeding Out for correct operation of VFC-door Ensure the conveyor belt rotates as VFC is opened Check setting of priority flow valve (if fitted) In the unlikely event of a large blockage occurring which prevents the machine from restarting using the tractor, it may be necessary to enter the mixing chamber or gain access to the discharge auger chamber to manually clear the blockage. Please refer to Section 5 – Safety, in particular, point “u.”

12.2 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 weigh box has been replaced, it is possible that the weigh box 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 Weigh cell 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 weigh box 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 weigh box will not switch on [Dinamica Generale weigh boxes power cable - white (+) & black (-)].

13 Warranty

13.1 KEENAN warranty policy

Alltech Farming Solutions Limited, trading as “KEENAN”, (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. This Warranty shall also apply to new and unused Goods being resold by authorised dealers and or distributors of the Supplier. The Warranty period from date of commissioning is twelve (12) Months for new equipment and such shorter periods as may be agreed from time to time in writing for other products. This Warranty shall cease to apply on any resale or alteration or incorrect usage of the equipment by the initial owner.

The Warranty shall not apply to:
A) Any machine used by a third party, who has not had instruction in the correct use of the machine by an official representative of KEENAN.
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. Wearing parts include paddle rubbers, chains, jockeys, wheels and tyres.
D) Any consumable or perishable parts such as knives, blades, rubbers 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 a person unauthorised by KEENAN.
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 while 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 authorised representative of the Company.
L) Any machine not used in accordance with the instructions for use of the machine.
M) Any machine which has been altered or tampered with in a manner not approved by 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 in writing at the address on the invoice.

This Warranty shall be construed in accordance with Irish law and shall be subject to the exclusive jurisdiction of the Irish Courts.

13.2 Product changes and improvements

Due to our policy of continuous improvement, Alltech Farming Solutions Ltd 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.

14 EC Declaration of Conformity/CE Certification

EC Declaration of Conformity.
In accordance with Directive 2006/42/EC.

Manufacturer:
Alltech Farming Solutions Ltd
Borris
Co. Carlow
R95 K223
Ireland

Certifies that the KEENAN MechFiber250 & KEENAN MechFiber280 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, I.S. EN ISO 13857, I.S. EN ISO 5674, EN349, EN703, I.S. EN ISO 4254-1, ISO 11684, ISO 12140

Date: 26th Oct 2016

Signed: _____

Robert Walker, CEO

15 Contact details

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