TOMAHAWK
Models 404M, 4040, 404XLM, 4040XL
505M, 5050, 505XLM, 5050XL

Instruction Book

404M - from Serial No: 30437
4040 - from Serial No: 50278
505M - from Serial No: 41745
5050 - from Serial No: 60485

Serial No: _______________________

Owners Club Registration

Issue 01/18 404M/4040/404XLM/4040XL/505M/5050/505XLM/5050XL
# Lubrication Schedule

## 20 Hours

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1    | Booster fan bearings (if fitted)  
     | Single greasing point |

## 50 Hours

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
</tr>
</thead>
</table>
| 2    | Swivel mechanism (if fitted)  
     | Four greasing points |
| 3    | Rotor shaft bearing housing  
     | Single greasing point |
| 4    | PTO - Cross journals & sliding members  
     | Three greasing points |
| 5    | PTO Guard sliding rings  
     | Two greasing points |

## Other

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
</tr>
</thead>
</table>
| 6    | Twin roller mount pivot  
     | Single greasing point - Monthly |
| 7    | Drum guard hinge  
     | Lubricate - Monthly |
| 8    | Belt tensioner pivot  
     | Single greasing point - Monthly |
| 9    | Flap operating linkage  
     | Lubricate - Monthly |
| 10   | Hydraulic cylinder pivots on hydraulic deflectors (if fitted)  
     | Two greasing points - Monthly |
| 11   | Extended drum support roller pivot (if fitted)  
     | Single greasing point - Monthly |

Note: Use good quality semi-solid grease for all procedures detailed above

For more detailed information see maintenance section
EC Declaration of Conformity
conforming to EEC Directive 2006/42/EC

Teagle Machinery Ltd.
Blackwater
Truro
Cornwall
TR4 8HQ
United Kingdom

declares in sole responsibility that the

Tomahawk 404M & 505M Hammer Mill
Tomahawk 4040 & 5050 Silage Feeder

to which this certificate applies
conforms to the essential Health and Safety requirements of

To effect correct application of the essential
Health and Safety requirements stated in
the EEC Directives, the following harmonised standards were consulted:

BS EN ISO 12100-1
BS EN ISO 12100-2
BS EN ISO 13857:2008

Signed:
Duncan Wilson (Engineering Director)

Dated: 8th August, 2017

Person authorised to compile Technical File
Duncan Wilson,
Teagle Machinery
Blackwater, Truro
Cornwall, TR4 8HQ
United Kingdom

Machine Serial No. . . . . . . . .
SAFETY FIRST!

1. READ THE OPERATOR’S MANUAL THOROUGHLY before attempting to operate or carry out any maintenance on the machine. If you do not understand any part of this manual, ask your dealer for assistance.

2. DANGER. Always carry out safe maintenance. Never clean, adjust or maintain the machine until the engine has been stopped, the machine come to rest, the PTO disengaged and the key removed.

3. DANGER. Never work under a machine raised on the 3-point linkage unless it is securely supported.

4. WARNING. Never operate the machine with any parts or guards missing. Check that all guards including the PTO shaft guards are in good condition and in place before operating the machine.

5. WARNING. Operate safely. Before starting work, check that there are no persons or animals in the immediate vicinity of the machine or tractor. Always maintain full control of the tractor and machine. Ensure that you know how to stop the tractor and machine quickly in case of emergency.

6. WARNING. Secure the PTO guard by means of check chains to suitable points on the tractor and machine to prevent the outer plastic shield from rotating.

7. DANGER. Never stand between the machine and the tractor wheels.

8. WARNING. Do not wear loose or ragged clothing.

9. CAUTION. Beware of dust. Under dusty conditions, keep the cab windows and doors closed. The use of a dust mask conforming to EN149 is strongly recommended.

10. CAUTION. Beware of high noise levels. Some tractor/implement combinations give noise levels in excess of 90dB at the operator's ear. Under such circumstances, ear defenders should be worn. Keep cab windows and doors closed to reduce noise level.

Throughout this handbook, the term ‘tractor’ is used to refer to the power source used to drive the machine. It does not necessarily refer to a conventional agricultural tractor.

HEALTH AND SAFETY AT WORK

Our equipment is designed so as to conform with current Health & Safety Regulations and therefore poses no significant hazard to health when properly used. Nevertheless, in the interests of all concerned, it is essential that equipment of our manufacture is used in accordance with the instructions that are supplied or are available from our Technical Staff.

Legislation requires that all operators are instructed in the safe operation, cleaning and maintenance of equipment and machines. This handbook forms part of that instruction and it must be read and understood before fitting the machine onto the tractor or attempting to use it.

Your supplier is responsible for carrying out any necessary pre-delivery inspection, fitting the machine onto the tractor and test running. The supplier must also give instruction in the safe use, maintenance and adjustment of the machine.

In the interests of safety, please ensure that the instructions referred to above are brought to the attention of all your employees who are to use the equipment. We recommend that the use of this equipment is restricted to capable trained operatives. Persons under the age of sixteen should not operate the machine and should be

WARRANTY

The standard warranty is against faulty materials and workmanship. Components supplied as part of the original machine, but manufactured by another company, e.g. PTO shafts, wheels etc., are subject to the original manufacturer’s conditions and warranty.

Where repairs are carried out under warranty:-

a) Claims for the fitting of non original parts will not be considered unless prior agreement has been obtained.

b) The repairer must be advised that the work is to be the subject of a warranty claim beforehand.

c) Any claim must be submitted within four weeks of the repair.

d) The damaged parts must be retained for inspection and returned carriage paid if required.

The right to withdraw warranty is reserved if:-

a) Non-original parts are fitted.

b) The machine has been abused, badly maintained or used for purposes other than that for which it was designed.
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1.0 SPECIFICATIONS

1.1 Basic machine specifications

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<thead>
<tr>
<th>Specifications</th>
<th>404M</th>
<th>4040</th>
<th>505M</th>
<th>5050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width - chutes closed</td>
<td>1.98m</td>
<td>1.98m</td>
<td>1.98m</td>
<td>1.98m</td>
</tr>
<tr>
<td>Width - operating</td>
<td>2.06m</td>
<td>2.48m</td>
<td>2.13m</td>
<td>2.48m</td>
</tr>
<tr>
<td>Operating width with Giraffe Chute</td>
<td>2.28m</td>
<td>2.64m</td>
<td>2.28m</td>
<td>2.76m</td>
</tr>
<tr>
<td>Length (1.55m drum fitted)</td>
<td>2.36m</td>
<td>2.36m</td>
<td>2.36m</td>
<td>2.36m</td>
</tr>
<tr>
<td>Height lowered (1.55m drum fitted) *</td>
<td>2.18m</td>
<td>2.18m</td>
<td>2.44m</td>
<td>2.44m</td>
</tr>
<tr>
<td>Drum diameter</td>
<td>1.57m</td>
<td>1.57m</td>
<td>1.83m</td>
<td>1.83m</td>
</tr>
<tr>
<td>Upper chute discharge height *</td>
<td>1.14m</td>
<td>1.14m</td>
<td>1.14m</td>
<td>1.14m</td>
</tr>
<tr>
<td>Lower chute discharge height *</td>
<td>0.4m</td>
<td>0.4m</td>
<td>0.4m</td>
<td>0.4m</td>
</tr>
<tr>
<td>Straw Giraffe chute height *</td>
<td>1.84m</td>
<td>1.84m</td>
<td>1.84m</td>
<td>1.84m</td>
</tr>
<tr>
<td>Unladen weight (1.55m drum fitted)</td>
<td>904kg</td>
<td>811kg</td>
<td>970kg</td>
<td>877kg</td>
</tr>
<tr>
<td>Minimum tractor power requirement</td>
<td>37kW</td>
<td>45kW</td>
<td>37kW</td>
<td>45kW</td>
</tr>
<tr>
<td>Sound power level</td>
<td>93db A</td>
<td>93db A</td>
<td>93db A</td>
<td>93db A</td>
</tr>
</tbody>
</table>

* Heights listed are with the machine on the ground. When operating these heights can be increased by up to 1m depending on the tractor to which the machine is attached.

1.2 Booster fan specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall machine width</td>
<td>2.82 m</td>
</tr>
<tr>
<td>Minimum tractor power requirement</td>
<td>90kW</td>
</tr>
<tr>
<td>PTO Speed</td>
<td>1000 rpm</td>
</tr>
<tr>
<td>Additional weight over basic machine (including hydraulic oil)</td>
<td>420kg</td>
</tr>
<tr>
<td>Sound power level</td>
<td>130 dB A</td>
</tr>
<tr>
<td>Maximum hydraulic oil pressure</td>
<td>220 bar (3190 psi)</td>
</tr>
<tr>
<td>Hydraulic oil specification</td>
<td>ISO HV46</td>
</tr>
<tr>
<td>Hydraulic oil tank capacity</td>
<td>150 Litres (33 gallons)</td>
</tr>
</tbody>
</table>
2.0 EXPLANATION OF PICTOGRAMS

Please read instruction book before using the machine

Blockage removal tool

Allow rotor to stop before removing blockage with tool provided
3.0 SAFETY

In addition to the standard safety guidelines listed at the beginning of this handbook, the following special safety items apply to the Tomahawk.

3.1 WARNING. Never put your hands inside the delivery chutes. In the event of a blockage, clear it using the tool provided (stored across the top of the rotor bearing housing). First, stop the engine, remove the key, disengage the PTO and wait for the rotor to come to rest.

3.2 WARNING. Never enter the drum unless the machine is resting on the ground, the engine stopped, the key removed, the PTO disengaged and the rotor come to rest.

3.3 WARNING. Never attempt to connect/disconnect flexible duct connections with the PTO operating or the booster fan turning.

3.4 WARNING. Never insert anything inside the flaps, booster fan housing, outlet chutes, flexible ducting or drum whilst the machine is running.

3.5 WARNING. Do not allow anyone to ride on the machine or tractor linkage.

3.6 WARNING. Do not allow persons or animals to stand in front of the outlet chutes whilst the machine is running.

3.7 CAUTION. Always ensure good rearward visibility when reversing.

3.8 WARNING. Never put your hand over a hydraulic leak. Oil under pressure may enter the blood stream.

3.9 CAUTION. Exercise caution after prolonged use of a Tomahawk equipped with a booster fan as the oil temperature will have risen causing hydraulic fittings and hoses to be hot.

3.10 CAUTION. The shredding of dusty or mouldy material can cause dust having adverse health effects. Operator exposure to such conditions should be avoided where possible. When circumstances prevent this, either use a tractor with a suitable forced air cab filtration system or use an adequate respirator. Respirators must comply with the relevant Standard and be approved by the Safety Inspectorate. Disposable filtering face piece respirators to EN149 or half mask respirators to EN140 fitted with filters to EN 143 are likely to be adequate.

3.11 NOTE. If a hydraulic top link is used, ensure that the top of the Tomahawk is clear of the cab with the machine fully raised and the top link in the fully contracted position.

3.12 NOTE. When lifting the machine on the three point linkage, always check the clearance between the upper front of the Tomahawk and the rear of the cab, particularly the window if it is open, as the machine is lifted.

3.13 CAUTION. Care must be taken when handling large bales, as they have sufficient weight and density to cause serious injury. Large bales should be handled with appropriate machinery and loaded directly into the Tomahawk drum. Do not manually load machinery from a stack above the machine, so as to prevent the risks of falling into the machine and collapse of the stack of bales.

3.14 NOTE. If the machine is to be lifted by means other than the standard 3 point linkage then it should be lifted using the loop provided on the top of the machine. When lifting the machine it will hang with the drum horizontal. Upon lowering the rear of the frame will touch the floor first and the machine will tilt forwards until the front foot of the frame touches the floor.

4.0 LEFT AND RIGHT HAND

In this handbook and parts list, the terms Right and Left Hand apply to the machine when viewed looking towards the rear of the tractor.

5.0 USE OF THE TOMAHAWK

Tomahawk 404M and 505M hammer mill models are designed to chop round bales of dry straw and hay only. Tomahawk 4040 and 5050 silage models are designed to chop round bales of straw, hay, silage and roots. Tomahawks fitted with the booster fan kit are designed to chop dry materials only.

Optional chutes available are:
1. Low level chute on the left hand side, suitable only for dry materials (standard on 404 / M and 505 / M models).
2. Giraffe high level straw chute, suitable only for dry materials.
3. Giraffe high level silage chute, (only available on 4040 and 5050 models) suitable for all materials the machine is designed to handle.

The various delivery options are shown in Figs. 1 - 3.
Material can be delivered from two chutes simultaneously or from one chute at a time. By fitting the optional high level straw or silage Giraffe Chute, material can be discharged over gates or barriers etc. The extra discharge height is also useful when it is necessary to spread over a greater distance.

Where equipped with a right hand silage chute (4040 and 5050 models only) and it is necessary to deliver material over a substantial distance, the hinged plate fitted in the chute base may be swung up into a horizontal position to act as a deflector - as shown in figure 3.

The machine must never be run with either of the two chute blanking plates removed unless the correct chute is fitted onto the aperture in question. Unapproved chute modifications should not be carried out, otherwise Safety Regulations may be infringed.

6.0 PREPARATION OF THE TOMAHAWK

If fitted with the booster fan kit, position the Tomahawk on a level surface and check the hydraulic oil level using the sight gauge on the right hand side of the tank.

On the tank outlet pipe check that the tank isolation valve is open allowing oil to flow into the pump. The valve is open when the lever is in line with the pipe.

If fitted with the remote drum rotation kit, check that the handheld drum rotation transmitter is fitted with 3 x AAA batteries.

7.0 PREPARATION OF THE TRACTOR

The PTO power required to drive the Tomahawk is typically about 45KW (60 HP). However, the suitability of any particular tractor will depend upon, a) the strength/capacity of the 3 point linkage, b) its stability and c) operating conditions. Front end weights may be considered necessary depending upon circumstances. Castor wheels are available as an optional extra where stability is a particular problem.

A Quick Hitch A-Frame built into the machine, so this can be used as an option to the normal 3 point linkage. In either case, stabilisers or adjustable check chains must be fitted.

**NOTE.** Do not use the A-Frame quick-hitch system if the optional castor wheels are fitted. The normal 3-point linkage system must be used if castor wheels are attached to the machine.

The machine is designed to use the standard 540 R.P.M. PTO shaft. However speeds of up to 1000 R.P.M may be used if specific circumstances necessitate this. The higher speed will cause an increase in power consumption.

The Tomahawk uses the tractor hydraulic system to power the drum rotation motor. A rotational speed of approximately 7 - 10 R.P.M. is required for the shredding of wet material (4040 and 5050 models only). Where the tractor does not incorporate a means controlling the hydraulic flow, it may be necessary to fit a separate flow control valve to achieve the correct drum speed. For dry materials, drum speeds of up to 15 - 20 RPM may be used to improve the feed rate if necessary.

The hydraulic motor requires a double acting spool valve or a single acting valve with an unrestricted return. Whichever is used, the hydraulic supply must be independent of the 3 point linkage. Some tractors may require a separate linkage isolating valve to achieve this. If a hydraulic top link is used then an additional valve will be required to operate it.

If fitted with the booster fan kit the electric power supply cable for the oil cooler should be connected to the tractor auxiliary 3 pin DIN9680 socket. Should a socket not be available on the tractor then an additional power supply cable with a 3 pin female connector is available (part number EC2001) which can be wired directly to the battery. The brown wire is to be connected to the positive (+) battery terminal and the blue wire to the negative terminal (−). There is a 7.5 amp fuse fitted in the electric power supply cable to protect against electrical overload. Under no circumstances should the electrical overload protection be bypassed or fuses with a rating exceeding 7.5 amps be used. **Warranty will be invalidated if this occurs.**

If fitted with the remote drum rotation kit the electric power supply cable for the remote drum rotation kit should be connected to the tractor auxiliary 3 pin DIN9680 socket. Should a socket not be available on the tractor then an additional power supply cable with
a 3 pin female connector is available (part number EC2001) which can be wired directly to the battery. The brown wire is to be connected to the positive (+) battery terminal and the blue wire to the negative terminal (-). The drum rotation receiver box is fitted with a 5A fuse inside to protect against electrical overload. Under no circumstances should the electrical overload protection be bypassed or fuses with a rating exceeding 5 amps be used. Warranty will be invalidated if this occurs.

8.0 FITTING THE MACHINE ONTO THE TRACTOR

Unbolt the round metal guard from the front of the main shaft bearing housing and fit the slip clutch end of the PTO shaft onto the machine. Ensure the clamp bolts are tightened fully, check that there is no free play on the splines of the shaft otherwise damage will occur. Refit the metal guard.

These bale shredders are designed for use either on the normal category 2, 3 point linkage or on a ‘Quick Hitch A Frame’. If the 3 point linkage is to be used, the implement lifting frame and the adjustable upper link should both be in the lower positions. The upper position should be used where the machine is to be mounted on an A Frame. These two positions take into account the height of the A Frame.

Fit the machine onto the tractor in the usual manner and fit the stabilisers or tighten the check chains. Using the multi-hole tie bar at the top of the lifting frame, angle the frame such that it is vertical, or leaning away from the tractor. The top link pin should be in the lower of the two holes at this stage. The angle of the machine may be adjusted in use to give the required feed rate. A steeply sloping drum will generally produce a faster feed and vice versa. This adjustment is greatly facilitated by the use of a hydraulic top link.

Fit the PTO shaft and with ‘Position Control’ selected, lift the machine fully on the linkage, continuously checking that the PTO shaft does not come to within 25 mm. (1 inch) of bottoming. With the shaft in its most extended position, there should not be less than half of the original overlap between the sliding members. If necessary, cut the PTO shaft to the correct length. If a hydraulic top link is used, check the PTO for bottoming throughout the full range of adjustment of the top link.

Connect the hydraulic hoses into the spool valve connections of the tractor. The connections and valve operation must be such that the drum rotates in an anticlockwise direction when viewed from the rear. This ensures that a) the belt drive operates safely and effectively and that b) the bale is fed into the rotor in the correct manner.

In use, the drum rotates, feeding the bale into the rotating blades. The output (and power requirement) can be increased by tilting the machine forwards slightly, thereby increasing the pressure of the bale against the blades.

It is essential to get the relationship between the tractor PTO shaft and the Tomahawk splined shaft correct to give a satisfactory PTO shaft life.

The correct geometry exists when the angle between the tractor shaft and the PTO shaft is the same as the angle between the Tomahawk splined shaft and the PTO shaft (see Fig. 4). Any significant deviation from this situation will adversely affect the life of the drive line and may cause the machine to vibrate.

The geometry will vary from one tractor to another but the basic layout is obtained by adjusting the angle of tilt using linkage geometry and height of lift. Once the correct top link lengths/positions/working heights have been established for a particular tractor, these should always be used when the machine is shredding.

9.0 OPERATION

The Tomahawk will shred string, but putting twine or netwrap through the machine is not recommended as it will eventually be spread on the land and pollute the next crop of silage or hay. The strings or net should be removed from the bale as it is being loaded into the machine.

Bales can be loaded into the machine in two ways, using a loader or by hand. If a loader is used, simply load the bale into the drum such that it is fully inserted, but without ramming it against the end plate. It may also be possible to load straw bales by hand with the machine lowered onto the ground.

9.1 Silage (4040, 4040XL, 5050, 5050XL models only)

Minor adjustments to the machine are required when switching from silage to straw and vice versa as outlined below.

Place the locking pin across underneath the end of the lower flap. This prevents the lower on/off flap from being forced open by the pressure of the silage.

Remove or fully hinge down the straw plate in the base of the right hand chute. It is essential that the base of the silage delivery chute slopes steeply to prevent blockage. If silage is to be discharged via the giraffe chute, open the blanking disc at the front of the machine by slackening the two wing nuts and sliding it fully towards the tractor (see Fig. 5). This will allow more air into the rotor and ensure a more positive delivery.
9.2 Straw

If it is necessary to use the bottom chute, remove the locking pin from underneath the end of the lower flap so that the flap becomes operational again. If it is necessary to spread the straw over any significant distance from the right hand chute, raise the bottom hinged plate to a horizontal position (4040 and 5050 models only). On 404M, 4040, 505M and 5050 models close the blanking disc at the front of the rotor (see Fig. 5).

![Fig. 5 Blanking Disc Adjustment](image)

A large air flow into the front face of the rotor when straw is being chopped will cause an excessive amount of material to be blown out through the rear of the drum. The feed rate may also be very low.

Raise the machine on the linkage until the PTO shaft working geometry described under ‘Fitting the Machine onto the Tractor’ is obtained. Open the flap on the side(s) to which the shredded straw is to be delivered and adjust the deflector(s) to give the desired spread width. Never run the machine with no flaps open, as a severe blockage and possible damage is liable to occur.

Engage the PTO with the tractor engine on low idle and increase the speed rapidly when the clutch has engaged fully. Once the rotor is turning at 540 RPM, operate the spool valve so that the drum starts rotating and shredding is commenced.

When it is necessary to stop shredding part way through a bale, always stop the drum rotation a few seconds before the rotor, so that the shredded material in the area around the outside of the rotor has time to be blown clear of the machine. Failure to do this may result in a blockage occurring when the machine is restarted.

The length of chop will vary with the condition of the bale. Fresh clean straw will tend to result in a longer chop length than that which is old, slightly damp, weathered or caked together in the bales. The power consumption will also vary with the material being shredded. In general, materials producing a short chop length will require a relatively high power input.

The length of chop can be adjusted on 404M and 505M models by changing the size of screen fitted. A smaller hole diameter creates a finer chop and a bigger hole diameter provides a longer chop.

**IMPORTANT.** The machine is fitted with a slip clutch on the rotor shaft. If this slips repeatedly, it should not be tightened until the machine has been examined to check that there is no fault or blockage. Refer to ‘Maintenance’ for the correct clutch setting.

9.3 Booster fan

Ensure the power supply cables for the oil cooler and remote drum rotation kit are connected to the tractor.

If a flexible duct is fitted to the fan outlet ensure that it is sensibly routed with no sharp turns or kinks. Always attempt to create as straight a route as possible for the ducting to improve material flow. Make sure that the outlet end of the ducting is secure, pointing in the correct direction and not obstructed. Any personnel in the vicinity should be wearing ear defenders and respirators or dust mask filtering. If a chute with an adjustable deflector is fitted make sure that it is set at the desired angle before operating the PTO.

Select 1000 PTO speed on the tractor. Start the PTO and increase to operating speed. The fan will automatically start and increase in speed in accordance with PTO speed.

Once at 1000rpm PTO speed, material feed into the booster fan can commence by rotating the drum. To rotate the drum the handheld transmitter must be firstly switched on. To do this there is a master switch on the rear face of the transmitter that must be pushed to the ‘on’ position. Next, the green button on the front face can be depressed. At this point the central LED on the transmitter will begin to flash green. Drum rotation can be started and stopped by pressing the white ‘rotation’ button. When drum rotation is engaged a red LED at the left of the transmitter illuminates. When bale processing is complete be sure to switch the handheld transmitter off using the red button so as to preserve battery life.

**WARNING.** Never operate the transmitter whilst in the immediate vicinity of the drum or whilst other people are standing near the machine. Always make sure the outlet chute/ducting is clear and that the drum is within line of sight.

Drum rotation speed has a direct impact on material throughput. The faster the drum rotates the greater material throughput will be. It is advisable to begin bale processing with drum rotation speed set low so as to avoid chute blockages. Speed can then be increased to the desired level once material flow has been assessed.

The speed of drum rotation can be adjusted by means of the flow control knob positioned above the oil cooler. Screwing the knob fully in a clockwise direction achieves minimum drum rotation speed which is set at one third of a rotation per minute. Unscrewing the knob fully in an anticlockwise direction achieves maximum drum rotation speed which is dependant on oil flow available from the tractor.
Fan speed can be controlled using the control knob at the base of the oil cooler. Turning the knob in a clockwise direction reduces fan speed.

Should oil temperature increase to 45 degrees Celsius the oil cooler will automatically begin to operate. The cooler will automatically reverse for a short time every fifteen minutes to keep the cooler screen clear of debris.

To stop fan operation, reduce PTO speed gradually and when at idle disengage the PTO. Allow 3 minutes for the rotor and fan to stop turning, turn the tractor engine off and remove the ignition key before disconnecting ducting from the fan outlet.

9.4 Blockage removal

**WARNING.** Never begin to unblock a machine until the PTO has been disengaged, the engine stopped, the key removed from the ignition, and the machine has come to rest.

Should the fan or ducting become blocked, use the blockage removal tool loosen material inside and pull it out.

10.0 USE ON THE PUBLIC HIGHWAY

If the machine is to be transported along the public highway (any road where the public have access) behind the tractor it will be necessary to comply with local road traffic legislation as the machine is likely to obscure the rear light units of the tractor.

Failure to comply with road traffic legislation may lead to prosecution by local law enforcement agencies and could also result in a road traffic accident.

11.0 MAINTENANCE

11.1 Safety

**WARNING.** Never open the guards surrounding the driveline or fan unless the PTO has been disengaged, the engine has been stopped, the key removed and the machine come to rest.

The fan and rotor will take approximately 3 minutes to come to rest from operating speed.

11.2 Blades

When carrying out maintenance work on the blades, wedge the rotor to prevent it from turning. Always keep your hands away from the edges of blades particularly new ones, as they are extremely sharp. A leather glove will give some protection against minor cuts.

**IMPORTANT.** When replacing blade retaining bolts, clean the threaded section and treat with a threadlocking compound. The bolt should be tightened to a torque of 150Nm (112lb/ft).

11.3 Hammers (404M & 505M only)

Hammers will wear with use and are designed to give four different cutting surfaces before needing replacing. Before removing the hammers note the size and position of the spacers. Remove the bolt retaining the hammers and either turn them or reposition them using the unused pivot hole. Refit the bolt making sure the spacers and blade bushes are replaced in the correct order.

11.4 Drum removal

**NOTE.** This operation requires two persons.

To remove the drum, dismantle the belt guards then slacken and remove the belts. Swing the motor assembly around so that it is well clear of the drum and restrain it in that position. Turn the drum so that the large hole in its periphery is at the top. Suspend the drum from the spiral bar inside the lifting hole using a certified lifting strop or chain with a load rating in excess of 520kg.

Remove the two lower rear drum retainers and roller guards so that is it possible to slide the drum rearwards. Slacken the two bolts holding the top bearing channel in place and carefully remove it, ensuring that the loader is just taking the weight of the drum as the bolts are loosened. Raise the drum slightly and slide it rearwards, away from the machine. Reassembly is a reverse of the above procedure.

11.5 Drum mountings

The lower rollers which support the drum are mounted on eccentric hexagonal bosses - see Fig. 6. By rotating these bosses, it is possible to centralise the drum and adjust the clearance between the drum and back plate at the bottom. The roller at the top of the drum can be adjusted by moving the channel in its slots. No adjustment is normally required as the rollers are correctly positioned during factory assembly. The clearance between the drum and back plate should be 10 - 15mm.

11.6 Screen replacement (404M & 505M only)

Undo the six bolts retaining the screen to the back plate. Rotate and slide the screen towards the rear of the machine until it clears the rotor. Select the screen to give the desired chop length and fit in the reverse order of the above.
11.7 Rotor removal

First, remove the drum as described previously. Undo the eight bolts securing the rotor sealing ring / screen and lower segment to the housing assembly and remove. Suspend the rotor from a lifting device so that it can be removed safely. Wedge the rotor to prevent rotation and unscrew the bolt in the centre of the rotor.

The rotor is located on a taper and will usually require a sharp blow to be administered to the end of the rotor shaft to dislodge it. Care should be taken not to damage the tapped hole in the end of the shaft. On machines equipped with a mill rotor, a rotor removal tool is available, this releases the rotor from the tapered shaft. The part number for the rotor removal tool is SC1757.

The refitting procedure is a reversal of the above.

11.8 PTO shaft

Check once a week that the clamp bolts on the rotor shaft are tight and that there is no free play on the splines.

Access to the grease nipples for the PTO shaft joints is via a hole in the cone.

11.9 PTO slip clutch

If the clutch slips repeatedly for no apparent reason, it should be adjusted as follows.

1. Remove the large metal guard fitted over the clutch.
2. Insert a piece of wood through the top discharge chute and position it such that it prevents the rotor from turning.
3. Insert a steel bar through the rear PTO yoke and use a spring balance to obtain the correct torque setting. The clutch should just slip at a torque of 1200 Nm (900 lb.ft.) - equal to a force of 1200N at 1 metre (300 lb. at 3 feet) from the centre of the yoke. Adjust the clutch as necessary using the eight spring loaded clamp bolts. If the clutch linings show signs of damage or excessive wear, they should be replaced. When new they are 3mm (1/8") thick.

11.10 Drum drive belt adjustment

The belt tension should be sufficient for slip not to occur, but over tightening should be avoided. Tensioning is carried out by means of an adjuster attached to the motor bracket.

If the belts slip persistently, check that the drum is not fouling on the back plate.

If the belts turn over in their grooves or appear to run out of alignment, the position of the motor pulleys should be adjusted by means of the large nuts on the threaded pivot shaft.

11.11 Booster fan pump drive belt adjustment

**WARNING.** Never attempt to tension the pump drive belts unless the PTO has been disengaged, the engine has been stopped, the key removed and the machine come to rest.

To tension the belts driving the hydraulic pump, loosen the four locking bolts in their slots on the pump mount plate. Next loosen the two lowest nuts on the tension screw and wind the lowest nut in to pull the pump assembly lower. Belt tension is correct when at mid centre distance of the belt a deflection of 7.9mm is created when a force of 75N is applied at that point. Figure 7 shows where the force is applied and the deflection measured. There is a slot in the housing at mid centre distance through which deflection can be measured.

Once tension is correctly set the nuts can be locked off on the tension screw and the four locking bolts in the pump mounting plate retightened.

If the drive belts require replacement it will be necessary to remove from the bearing housing the red guard on the lower rear face, the circular red PTO guard and the PTO shaft itself. The four locking bolts on the pump housing should be loosened and using the two lower nuts on the tension screw raise the pump and its mount plate as high as possible in its slots. With the pump fully raised it should now be possible to feed the belts off the pulleys and replace with new matched belts.

The new belts should be tensioned using the nuts on the tension screw, the locking bolts should be tightened to secure the pump mounting plate. The PTO shaft and guards can now be refitted.

Operate the machine for 10 - 15 minutes to test operation. Afterwards with the PTO disengaged, the engine stopped, the key removed and the machine...
come to rest it is advisable to recheck belt tension and adjust if necessary.

11.12 Hydraulic circuit

**CAUTION.** Never attempt to maintain the hydraulic circuit unless the PTO has been disengaged, the engine has been stopped, the key removed and the machine come to rest.

**CAUTION.** The hydraulic pump is driven from the drive to the mill rotor and means that the pump will continue to operate until the machine comes to rest.

**CAUTION.** If the machine has been operating then the hydraulic oil and components will be hot, allow time for the system to cool before working on the hydraulic circuit.

11.13 Hydraulic oil reservoir

All machines are delivered from the factory filled with hydraulic oil. With the machine on level ground and attached to tractor the oil level in the reservoir should be between the minimum and maximum marks on the sight gauge on the right hand side of the tank.

Only a good quality ISO HV46 grade hydraulic oil should be used. Total capacity of the tank is approximately 150 litres (33 gallons).

When filling the tank make sure the strainer inside the filler cap is in place.

11.14 Hydraulic oil change and suction filter

The most accurate way of determining when the oil needs replacing is to undertake an oil analysis to check if the base oil has degraded or if the additive package has become depleted. As a guide a 1000 hour oil change interval would be recommended.

To drain the tank remove the drain plug at the base of the tank and collect the oil in suitable containers. Oil may drain faster if the filler cap is loosened.

Waste oil is considered to be a hazardous substance and as such should be stored and disposed of in compliance with local legislation.

Whilst the tank is empty the condition of the suction filter should be checked by removing the filler cap assembly and visually inspecting it. Should it need to be replaced it can be removed by reaching down into the tank and unscrewing it. Screw the new filter into the tank.

Replace the drain plug and refill the tank.

11.15 Return filter

The return line filter should be changed when the gauge on top of the filter housing indicates it needs replacing.

Failure to replace the element at the appropriate time will result in the filter bypass opening when the back pressure reaches 1.75 bar. At this point filtration will no longer be taking place thus exposing all elements of the system to damage. The filter should be replaced when the indicator on the gauge fitted to the top cover reads 1.4 bar (the top of the green section on the gauge).

To replace the element remove the 3 screws holding the top cover onto the filter body, there is a spring underneath the cover holding the filter in place. Remove the cover and withdraw the filter element. Fit the new filter element into the filter housing making sure the “O” ring around the top cover is in place. Replace the cover and tighten the screws.

11.16 Hose inspection

**IMPORTANT.** Due to ageing, wear, damage and for other reasons, hydraulic hose assemblies represent a particular hazard. Therefore, the user has to check hydraulic hose assemblies prior to their first use and at regular 3 month intervals.

**NOTE:** Subject to the conditions of operation, all hydraulic hoses have a defined lifespan of up to 8 years. It is recommended that the hoses are replaced within this time to minimise risk of failure.

**Visual Inspection Hose/Fitting:** Any of the following conditions require immediate shut down and replacement of the Hose Assembly:

- Fitting slippage on Hose;
- Damaged, cracked, cut or abraded cover (any reinforcement exposed);
- Hard, stiff, heat cracked, or charred Hose;
- Cracked, damaged, or badly corroded Fittings;
- Leaks at Fitting or in Hose;
- Kinked, crushed, flattened or twisted Hose;
- Blistered, soft, degraded, or loose cover.

**Functional test:**

**WARNING.** Fluids under pressure can be dangerous and potentially lethal and, therefore, extreme caution must be exercised when working with fluids under pressure and handling the Hoses transporting the fluids. From time to time, Hose Assemblies will fail if they are not replaced at proper time intervals. When Hoses fail, generally the high pressure fluids inside escape in a stream which may or may not be visible to the operator. Under no circumstances should you attempt to locate a leak by “feeling” with your hands or any other part of the body. High pressure fluids can and will penetrate the skin and cause severe tissue damage and possibly loss of limb.

**WARNING.** Even seemingly minor hydraulic fluid injection injuries must be treated immediately by a doctor with knowledge of the tissue damaging properties of hydraulic fluid.

Operate the system at maximum operating pressure and check for possible malfunctions and leaks. Avoid potential hazardous areas while testing and using the system.

11.17 Hydraulic valve and electric controls

If problems are experienced with either the hydraulic system or electric controls, please contact Teagle Machinery Ltd. for advice.
11.18 Electric controls for solenoid valve

**NOTE.** Before maintaining any part of the electronic controls and wires, disconnect the 12v supply. Failure to do so may result in damage to the electronic components.

11.19 Lubrication

A good quality semi-solid grease should be applied to all grease points highlighted in the lubrication and frequency diagrams at the front of this manual.

Grease for bearings in the booster fan housing must be NLGI 2 and suitable for high speed applications.

The lubrication intervals listed are based on typical daily use for bedding purposes. Continuous use for special applications may necessitate more frequent lubrication.

Besides lubrication the following maintenance procedures should be performed.

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greasing</td>
<td>See separate chart on page 2</td>
</tr>
<tr>
<td>PTO slip clutch</td>
<td>Dismantle, assess condition and rebuild slip clutch at start of season</td>
</tr>
<tr>
<td>Hydraulic oil</td>
<td>Check oil level daily</td>
</tr>
<tr>
<td>Cooler</td>
<td>Check / clean cooler screen daily</td>
</tr>
<tr>
<td>Return line filter</td>
<td>Check gauge weekly</td>
</tr>
<tr>
<td>Hydraulic pump drive belt tension</td>
<td>Monthly, depending on use</td>
</tr>
<tr>
<td>Hydraulic oil</td>
<td>Analysis of oil condition annually</td>
</tr>
</tbody>
</table>

12.0 STATIONARY USE

When used as a stationary machine it should always be attached to the power source to prevent separation of the drive shaft. If it is necessary for the operator to be anywhere other than on the tractor seat, then means must be provided to stop the tractor from the operating position.

If the Tomahawk is to be installed as a permanent stationary machine it is subject to the regulations which apply to stationary machinery. The person installing the machine along with its power source is responsible for ensuring the installation complies with all relevant legislation.

13.0 OPTIONAL EXTRAS

13.1 Left hand (lower) chute

This option provides the chute, on/off flap, deflector and control linkage.

In the event of the Lower Chute being removed, the machine must not be operated without the blanking plate being bolted securely in place.

13.2 Giraffe chute

Two Giraffe chute options are available:

a) A silage chute suitable for all types of material (see Fig.2).

b) A straw chute suitable for dry materials where a greater discharge height/distance is required (see Fig.3).

Included in both kits are the deflector, on/off flap and operating linkage.

In the event of the Giraffe Chute being removed, the machine must not be operated without the blanking plate being bolted securely in place.

The flap pivot bar and operating linkage should not be removed until the engine has been switched off, the PTO disengaged and the rotor come to rest.

13.3 Drum extension

This is a factory fitted option and it is intended only for holding bales of straw. Where the Tomahawk Silage Feeder (4040 & 5050) equipped with a drum extension is also used for feeding silage, only one bale of silage should be loaded in the machine at any time.

14.0 MACHINE STORAGE

When the machine is not being used it is recommended that it be stored in a dry location. If the machine is to be laid up for any great length of time it should be thoroughly cleaned down. All lubrication points should be attended to ready for subsequent reuse.

15.0 DISPOSAL

At the end of the machine’s working life, the method of disposal must be within the legislation laid down by the local authority or the National Environment Agency.

The machine is composed of ferrous materials, synthetic paints and rubber compounds.

Waste oil from the hydraulic system is considered to be a hazardous substance and as such should be drained from the machine, stored and disposed of in compliance with local legislation.
## TOMAHAWK FAULT FINDING CHART

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Fault</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drum does not turn</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydraulic connection to tractor faulty</td>
<td>Rectify</td>
</tr>
<tr>
<td></td>
<td>Drum drive belt slack</td>
<td>Tighten belt</td>
</tr>
<tr>
<td></td>
<td>Drum fouling backplate</td>
<td>Adjust drum away from backplate using adjusters</td>
</tr>
<tr>
<td></td>
<td>Motor not turning</td>
<td>Check connections and tractor hydraulics</td>
</tr>
<tr>
<td></td>
<td>Rollers seizes</td>
<td>Turn motor with belts slack and hoses disconnected</td>
</tr>
<tr>
<td></td>
<td>Material packed between drum and backplate</td>
<td>Replace motor if seized</td>
</tr>
<tr>
<td></td>
<td>Bale out of shape</td>
<td>Replace bearings or complete rollers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clear material and adjust drum closer to backplate if problem continues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check belt tension</td>
</tr>
<tr>
<td><strong>Slow discharge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blades blunt or worn</td>
<td>Sharpen or replace blades</td>
</tr>
<tr>
<td></td>
<td>Bale not sitting against rotor sufficiently</td>
<td>Tilt drum at steeper angle - shorten toplink</td>
</tr>
<tr>
<td></td>
<td>Drum speed too slow</td>
<td>Increase oil flow rate from tractor to Tomahawk</td>
</tr>
<tr>
<td></td>
<td>Drum rotating in wrong direction</td>
<td>Rotate drum in correct direction</td>
</tr>
<tr>
<td></td>
<td>Bale not turning in drum</td>
<td>Fit more bale grippers in drum</td>
</tr>
<tr>
<td></td>
<td>Rotor speed too low</td>
<td>Check slip clutch on PTO is not slipping</td>
</tr>
<tr>
<td></td>
<td>Bale jammed in drum or not feeding</td>
<td>Ensure PTO is rotating at correct operating speed</td>
</tr>
<tr>
<td></td>
<td>Hammers / blades worn (404M &amp; 505M)</td>
<td>Remove bale grippers if fitted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peel a layer off outside of bale before loading in drum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn or replace hammers / blades</td>
</tr>
<tr>
<td><strong>Poor delivery from Giraffe Chute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotor speed too low</td>
<td>See above - rotor speed too low</td>
</tr>
<tr>
<td><strong>High power consumption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excess pressure of bale upon rotor</td>
<td>Lengthen toplink</td>
</tr>
<tr>
<td></td>
<td>Blunt blades causing long material to hang on rotor</td>
<td>Sharpen knife sections</td>
</tr>
<tr>
<td><strong>Rotor won’t start</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PTO slip clutch setting too low</td>
<td>Check setting and adjust</td>
</tr>
<tr>
<td></td>
<td>Bale pushed hard against rotor</td>
<td>Lower machine, lengthen toplink and rotate drum one or two turns.</td>
</tr>
<tr>
<td><strong>Insufficient delivery from bottom chute when both chutes in use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drum speed too low</td>
<td>Increase oil flow rate from tractor to Tomahawk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check drum drive belt tension</td>
</tr>
</tbody>
</table>
## BOOSTER FAN AND DRUM FAULT FINDING CHART

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Fault</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Booster fan will not turn</strong></td>
<td>Fan outlet/ducting blocked</td>
<td>With machine safe investigate and clear blockage</td>
</tr>
<tr>
<td></td>
<td>Oil tank isolation valve turned off</td>
<td>Open valve</td>
</tr>
<tr>
<td></td>
<td>Pump drive belts slipping damaged</td>
<td>Investigate belt condition and tension</td>
</tr>
<tr>
<td></td>
<td>Oil tank suction filter blocked</td>
<td>Replace hydraulic oil and suction filter</td>
</tr>
<tr>
<td></td>
<td>Relief valve fault</td>
<td>Investigate relief valve for contamination / damage</td>
</tr>
<tr>
<td></td>
<td>Relief valve setting incorrect</td>
<td>The correct relief valve setting is 220Bar (3190psi)</td>
</tr>
<tr>
<td></td>
<td>Fan outlet/ducting partially blocked</td>
<td>With machine safe investigate for blockages</td>
</tr>
<tr>
<td></td>
<td>Poor route for ducting</td>
<td>Ducting route should be as straight as possible</td>
</tr>
<tr>
<td></td>
<td>Fan speed control knob incorrectly set</td>
<td>Turn the control knob anticlockwise to increase speed</td>
</tr>
<tr>
<td></td>
<td>Tomahawk drum speed too slow</td>
<td>Increase Tomahawk drum speed</td>
</tr>
<tr>
<td><strong>Booster fan output low</strong></td>
<td>Reliever valve fault</td>
<td>Investigate relief valve for contamination / damage</td>
</tr>
<tr>
<td></td>
<td>Reliever valve setting incorrect</td>
<td>The correct reliever valve setting is 220Bar (3190psi)</td>
</tr>
<tr>
<td></td>
<td>Fan outlet/ducting partially blocked</td>
<td>With machine safe investigate for blockages</td>
</tr>
<tr>
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<td>Poor route for ducting</td>
<td>Ducting route should be as straight as possible</td>
</tr>
<tr>
<td></td>
<td>Fan speed control knob incorrectly set</td>
<td>Turn the control knob anticlockwise to increase speed</td>
</tr>
<tr>
<td></td>
<td>Tomahawk drum speed too slow</td>
<td>Increase Tomahawk drum speed</td>
</tr>
<tr>
<td><strong>Hydraulic oil temperature too high</strong></td>
<td>Cooler power supply cable not connected</td>
<td>Connect cooler power supply cable to tractor</td>
</tr>
<tr>
<td></td>
<td>Cooler power supply fuse blown</td>
<td>Replace fuse</td>
</tr>
<tr>
<td></td>
<td>Cooler screen blocked with debris</td>
<td>Clear cooler screen</td>
</tr>
<tr>
<td></td>
<td>Cooler temperature sensor failed</td>
<td>Replace temperature sensor</td>
</tr>
<tr>
<td><strong>Excessive vibration</strong></td>
<td>Fan out of balance</td>
<td>Fan must be dynamically balanced</td>
</tr>
<tr>
<td></td>
<td>Fan blades damaged</td>
<td>Investigate fan condition</td>
</tr>
<tr>
<td></td>
<td>Fan housing bearings failing</td>
<td>Investigate condition of fan housing bearings</td>
</tr>
<tr>
<td><strong>Drum will not turn</strong></td>
<td>No oil flow from tractor</td>
<td>Engage spool in tractor cab</td>
</tr>
<tr>
<td></td>
<td>Incorrect oil flow direction from tractor</td>
<td>Reverse oil flow direction from tractor</td>
</tr>
<tr>
<td></td>
<td>No power to machine mounted receiver</td>
<td>Plug electric cable into tractor 3 pin power socket</td>
</tr>
<tr>
<td></td>
<td>Machine mounted receiver fuse blown</td>
<td>Remove receiver lid and replace 5A rated fuse.</td>
</tr>
<tr>
<td></td>
<td>Damaged hydraulic motor on drum drive</td>
<td>Replace hydraulic motor</td>
</tr>
<tr>
<td></td>
<td>Damaged quick release coupling</td>
<td>Replace quick release coupling at tractor connection</td>
</tr>
<tr>
<td><strong>Handheld transmitter will not switch on</strong></td>
<td>Batteries discharged</td>
<td>Replace 3 x AAA batteries in handset</td>
</tr>
<tr>
<td></td>
<td>Fault with remote control system</td>
<td>Replace remote control system</td>
</tr>
<tr>
<td></td>
<td>Slide switch on back of transmitter ‘off’</td>
<td>Move switch to ‘on’ position</td>
</tr>
</tbody>
</table>