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Spare Part Catalogue

EC Declaration of Conformity for Machinery

(Directive 89/392/EEC, Annex II, sub. A; en)

Manufacturer:
Aimo Kortteen Konepaja Oy
Pohjolantie 2
FIN-84100 Ylivieska
Finland

Herewith declares that

Murska 350 S2 / 700 S2 Crimper
Frame nr: *xxxx* Roller Cassette nr: *xxxx*

is in conformity with the provisions of the Machine Directive (Directive 89/392/EEC), as amended, and with national implementing legislation.

Ylivieska, Finland 3. January 2003

AIMO KORTE
Managing Director

Warranty

All items are guaranteed for one year from the date of purchase against failure due to defective manufacture. This does not cover fair wear and tear or damage due to failing to correctly carry out safety or operating instructions in this booklet.

The rollers can be worn very rapidly by incorrect setting. Particular attention should be paid to setting them correctly.

Other conditions according to
ORGALIME S 92

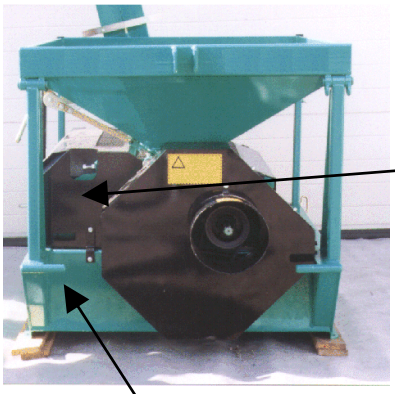
The manufacturer is continually striving to improve the product. Any changes or improvements does not imply or be understood to mean, that any machine produced prior to the date that the modification was introduced, will be fitted by the manufacturer after that date with the modified parts free of charge.

Introduction

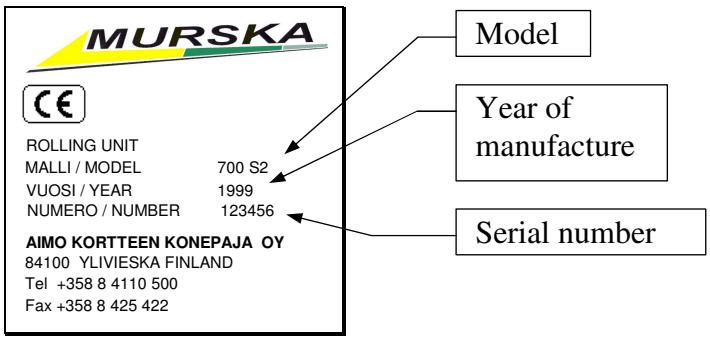
Purpose:

The machine has a dual purpose, either to crimp grain prior to ensiling or to roll dry grain.

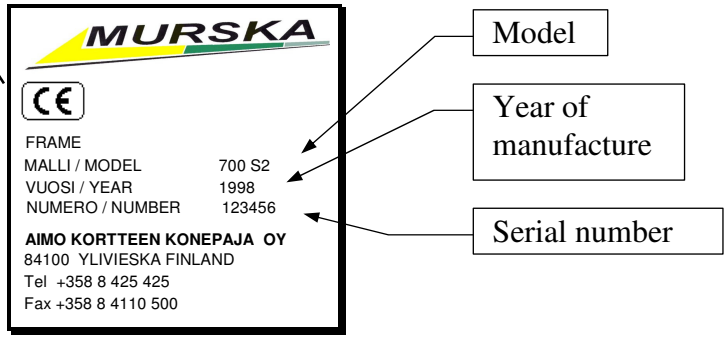
Made in Finland, EU.



Rolling Unit Identification Label
(backside of the machine)

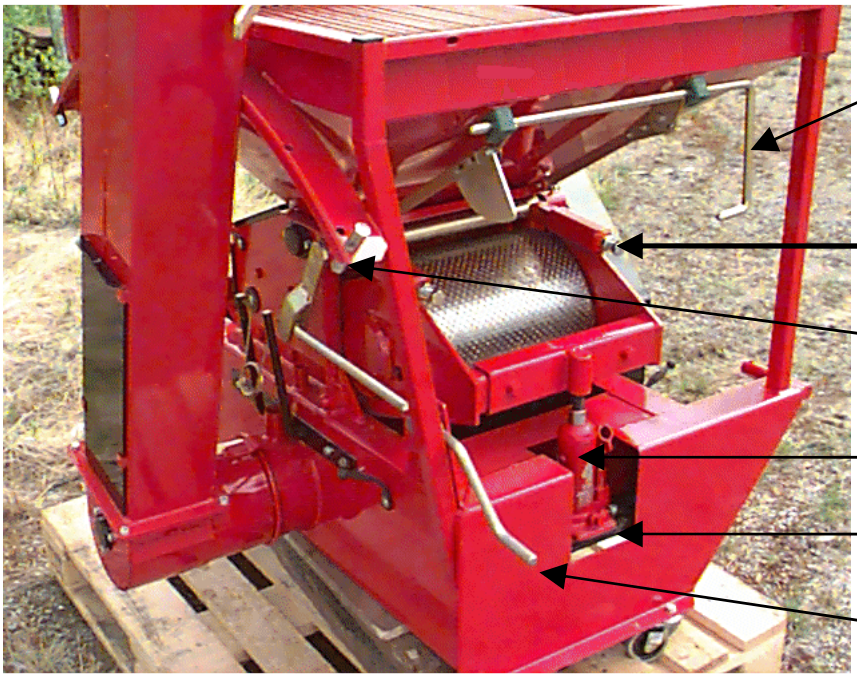


Frame Identification Label



Reference Numbers: (relate to pictures on page 6)

1 .....Grain Feed Controller Handle
2 .....Locking Nut
3 .....Spacer Bolt
4 .....Elevator Safety Bolt
5 .....Bottle Jack
6 .....Jack Spring
7 .....Adjusting Crank
8 .....Roller Adjusting Shaft Arm
9 .....Scraper Knife Rod
10 .....Scraper Knife Spring
11 .....Cut-off Plate
13 .... Elevator Hat
14 .... Elevator Chain Adjuster
15 .... Taper Lock Drive Pulleys
16 .... Adjustable Roller
17 .... Beltclamp/Auger & Elevator Belt Tensioner
18 .... Fixed Roller
19 .... Roller Drive Belt
20 .... Roller Belt Tensioner
21 .... Auger & Elevator Drive Belt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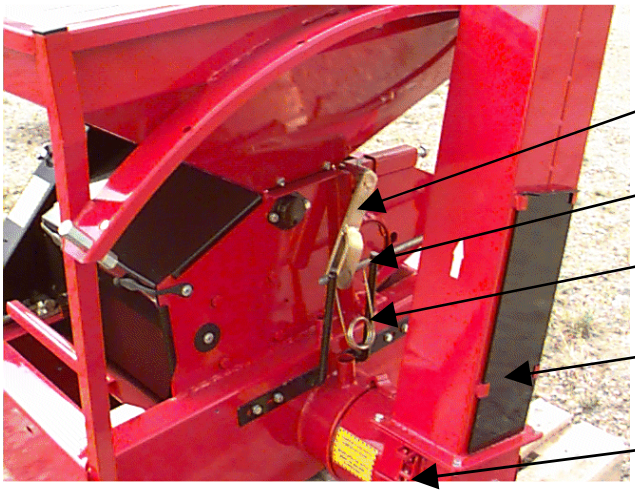
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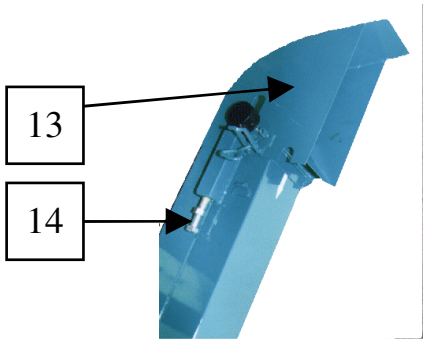
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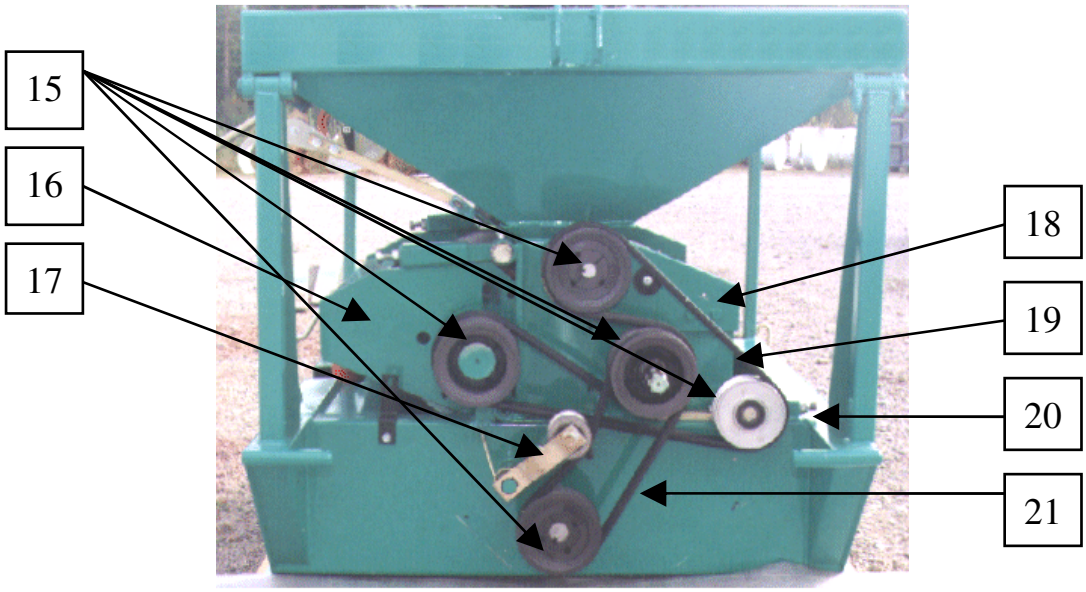
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Technical Data

MACHINE	Murska 350 S2	Murska 700 S2
Capacity	3 000 - 5 000 kg/h	5 000 - 10 000 kg/h
Power demand	13 - 30 kW	20 - 50 kW
Hopper capacity	190 litres	270 litres
Lifting height of standard elevator	330 cm	330 cm
Length	120 cm	145 cm
Width	115 cm	115 cm
Height without elevator	102 cm	104 cm
Weight	350 kg	570 kg
Three-point linkage fixation	+	+
Rotation rate(wet grain)	200 - 300 rpm	200 - 300 rpm
Production rate (maximum)	5 tonnes/h	10 tonnes/h
Rollers		
Fluted and spring loaded	+	+
Both rollers are driven	+	+
Width	350 mm	700 mm
Diameter	300 mm	300 mm
Weight	80 kg each	160 kg each
Equipment (supplemental)		
Hopper	800 l or 1700 litres	2700 litres
Tempered rollers	+	+
Dry grain rollers	+	+
Maize rollers	+	+
Elevator extension	1 m and 2 m	1 m and 2 m
Electric motor fitting set	+ (11 - 15 kW)	+ (22 - 30 kW)
Roller resurfacing service in factory	+	+

PTO Shaft Requirements

- The PTO shafts recommended for use with crimper machines are:
    - PTO Torque Limiters
- The Torque Limiters to be set at:
    - Murska 350S2: 1200 Nm (67 kW)
    - Murska 700S2: 1500 Nm (97 kW)
- It is important that the PTO shaft meets the above requirements.
- The torque limiter/slip clutch should be at the machine end and shrouded or protected by a guard.
- Check that the linkage of the machine is compatible with the tractor.
- Ensure that the tractor and the machine are levelled so that the PTO shaft is horizontal.
- The extended length is compatible for the tractor power and the machine.
- The PTO shaft guard must be in working order and proper clearances maintained between the machine and the tractor.
- The PTO shaft guard should be secured in order to prevent it rotating.
- Whilst the three-point linkage is connected the PTO should also be connected to the machine and tractor.
- The PTO shaft should be supported when the machine is not connected to a tractor, so that it does not foul the guard or get damaged.
- Refer to **PTO Operation and Maintenance**, page 9.

PTO Operation And Maintenance

- If the PTO is shortened, both male and female shaft should be reduced. The male shaft should be made 5-10 mm shorter than the female shaft.
- After cutting, clean off any burrs so that the male shaft moves smoothly and without difficulty within the female shaft. Lubricate both shafts.
- When the PTO is working at its maximum length the working engagements of both shafts should be one third of its overall length. At the minimum working length it is essential that the two half shafts do not bottom.
- The shaft guards should also be shortened, so that the shaft protudes the guards by 5-10 mm.
- A torque limiter will cut out once the torque set is exceeded. Allow the PTO to come to a halt and it will automatically reset itself. It is important to carry out daily maintenance as stated in pages 23 and 24, rather than wait for the torque limiter to operate.

Lubrication

- When in use, clean the outer and inner surfaces of the shafts daily. Lubricate with lithium based grease.
- Grease nipples at the universal joints; to be lubricated with good quality lithium grease daily.
- Ensure that the spring loaded plunger on the quick release yoke is adequately lubricated and located correctly.
- The torque limiter assembly needs no maintenance, except to be cleaned of any dust or dirt contamination.

End-of-Season Maintenance

- It is good practice for the PTO, out of season, to be disconnected from the crimper, dismantled, greased up, reassembled and stored in a dry place free of dirt.

General Safety

- While operating, the machine must be kept on a solid base.
- The machine should not be moved when the grain hopper is full or being filled.
- It is recommended that approved safety goggles are used whilst operating the machine.
- Do not allow anyone on to the tractor whilst operating the machine, especially when making adjustments.
- Do not stand on the PTO shaft or linkage or between the tractor and the machine.
- The PTO shaft guard should be secured in order to prevent it rotating.
- Maintenance and repairs/adjustments should be carried out when the machine is stationary with the tractor engine stopped and the PTO shaft out of gear.
- Never attempt to remove any straw or grain from the rollers whilst the machine is in motion.
- A mask should be worn in dusty conditions.
- It is recommended that the current health and safety guidelines are used when operating the machine.

Guards

- The tractor power must be switched off before the guards are taken off.
- All guards must be in place and properly secured when the machine is operating. Partspicture 8 (see *Part Catalogue*) shows the guards that must be fitted to the machine.
- If it is found necessary continually to take the guards off the clear the rollers, the machine has not been properly adjusted (see operating adjustments).

Noise Level

- The noise level of the machine when operating can be between 98-116 dB. Ear muffs of approved type for noise levels above 100 dB must be worn.
- Any person who comes close to the machine for a period of hours should also wear similar ear muffs.

…General Safety

Hopper

- The hopper must not be entered whilst the machine is operating.
- Check all bolts for tightness on a regular basis.
- Keep hands, clothing, tools etc. away from the hopper.

Additives

If an acid applicator is used, full protective clothing should be worn in accordance with the additive producers instructions, and legislative regulations must be applied.

In addition to the safety instructions in this manual you must observe all statutory safety instructions and regulations.

Assembly Instructions

Packages to check on receipt

- ☐ Pallet with Crimper
- ☐ Crate with Elevator Assembly inclusive chain connector
- ☐ Operating booklet
- ☐ Crate with Hopper Panels inclusive nuts and bolts (if ordered)
- ☐ Additional Rolling Unit (if ordered)
- ☐ Acid applicator (if ordered)
- ☐ Elevator Extension (if ordered)
- ☐ Magnetic Strip (if ordered)
- ☐ PTO Shaft (if ordered)
- ☐ Crimper Transporter (if ordered)

Assembly of Hopper

- It is much easier for two people to assemble the hopper working together.
- Build it upside down, one person inside and one person outside.

1. Consult the picture ***Hopper Assembly*** (page 32) and ensure that the end panels are on the inside.
2. Use a screwdriver if necessary to line up the holes before putting the bolts in.
3. Do not tighten each bolt until all nuts and bolts have been put in place.
4. Do not forget to bolt on the top outer edges and bottom lug panels.
5. Fit the centre stays.
6. Finally tighten all nuts and bolts until they are tight.

…Assembly Instructions

After Having Fitted the Hopper Assembly And Commissioned the Crimper

Turn the hopper the right way up and place on top of the main frame, ensure that the lug panels are not damaged when lowering into place.

Assembly of Elevator

Safety

- Be aware that the elevator unit is heavy to lift.
- All covers need to be replaced and secured.
- The spring bolt needs to be well home.

Assembly

1. Take off auger cover.
2. Take off bottom end bolts if already fixed on to the elevator assembly.
3. Push the locking bar through the spring. Lock the locking bar with split pin below the spring and split pin above the spring.
4. Ensure that the bolt securing handle is facing upwards.
5. Place the Elevator assembly near the cover to the auger. The Elevator needs to be placed on a block whilst the chain is placed around the auger shaft, having detached the connecting link by removing the split pins.
6. Bolt the elevator to the auger cover frame.
7. Fit the connection link and replace the split pins and secure by bending over.
8. Having fitted the chain link, tighten the conveyor chain by the two bolt lug adjusters at the top of the elevator. Tighten each adjuster equally to ensure that there is the same tension on each. Take up the slack in the chain until some sideways movement is felt.

…Assembly Instructions

9. Replace the auger cover and ensure that it is secured by fitting the pin clips in place. Fit/replace the top cover direction shute and ensure that toggles are securing them.
10. Lift up the conveyor attachment until it can be secured by the spring bolt. Ensure that spring bolt is well home to hold the conveyor.
11. Fit end safety bolts - these will be in place when received.
12. Check all is well.

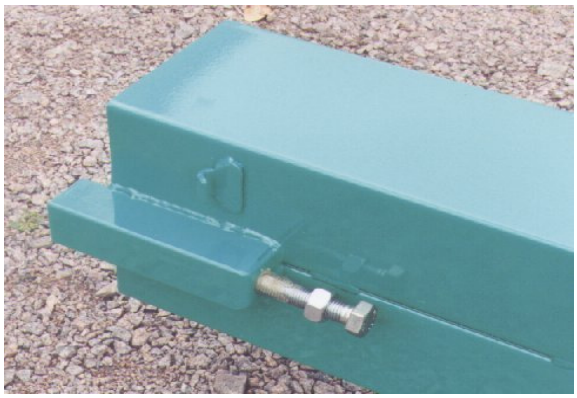
Before attempting to start the crimper:

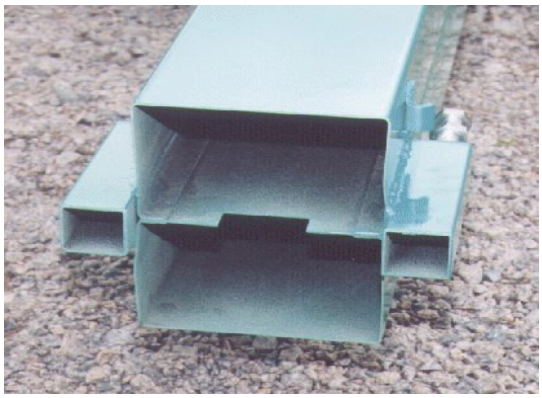
Check roller alignment and start-up procedure
as noted on page 15

When transporting the crimper, the elevator must be removed or tied in a way that the bolts or auger are not taking the strain or vibration.

Elevator assembly 1

1.





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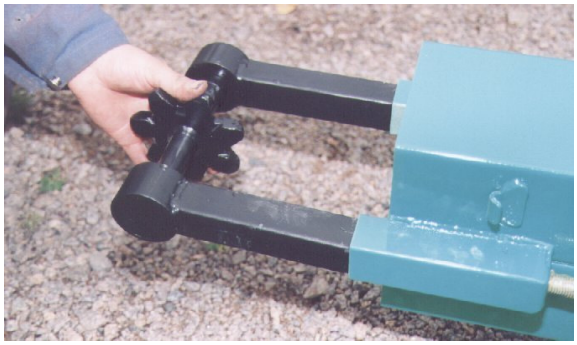

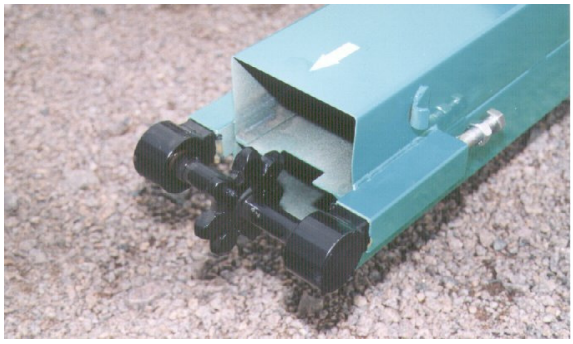

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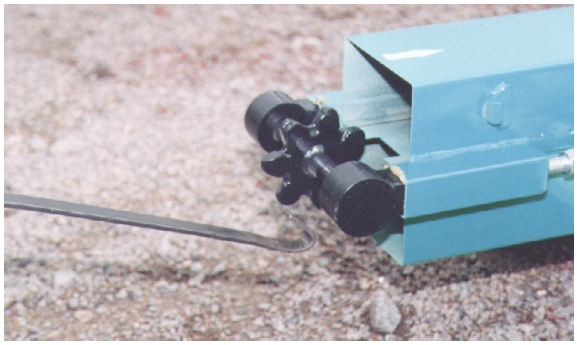

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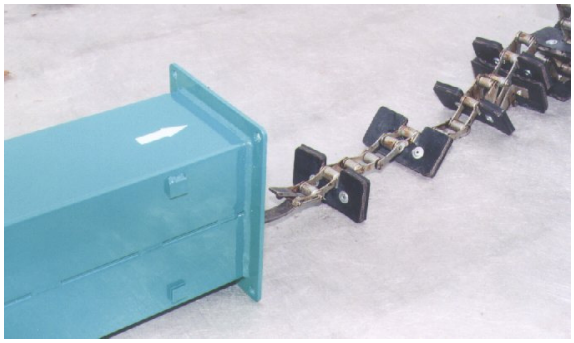

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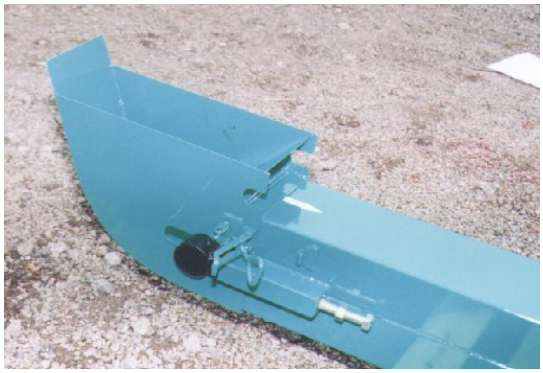


Operating Instructions

Do not operate the machine without all the guards in place and properly secured.

Recommended Procedures

1. Routine Machine Check

This should always be carried out each time the machine is started after a period of being idle and before any other operation is carried out.

2. Roller Alignment

To be carried out each time the machine is started after a period of being idle and before any other operation is carried out, also once a day when the machine is in constant daily use.

3. Start Up and Operating Procedures

To be carried out each time the machine is started after carrying out the Routine Machine Check.

4. Close Down Procedure

To be carried out each time the machine is stopped.

Reference numbers in [ ] relate to pictures on page 6.

Routine Machine Check

1. Check all nuts, bolts and Allen screws for correct tightness. Replace or tighten if required. Check tightness of all Allen screws in taper lock driving pulleys [15].
2. Remove the auger housing access plate.
3. Turn elevator to vertical position and check elevator chain tension (sideways movement should be possible). Adjust the tension if required and replace auger housing access plate.
4. Check the roller belt tension (2 cm total movement) and adjust if required. Care should be taken not to over tighten as damage may result.
5. Check auger/elevator belt tension. Replace the belts if the tension pulley arm does not give enough tension. The pulley arm should be at approximately ”2 o’clock”.
6. Check force feeder agitator. Clean and straighten if necessary.
7. Check and calibrate the acid applicator for acid-output to correspond with the average output of the crimper. The proper dosing is dependent on the preservative used, grain moisture content and producer’s instructions.

Roller Alignment

1. Release locking nuts [2] and release all pressure on spacer bolts [3].
2. Adjust jack spring [6] to a reasonable pressure by pumping the bottle jack [5] 2-3 times (half the maximum pressure).
3. Wind the roller adjustment crank [7] so that the spacer shaft arm [8] is pointing straight down.
4. Finger tighten spacer bolts [3]
5. Tighten spacer bolts 1/3 turn clockwise (or 2 flats).
6. Disengage scraper knives [9] by removing the spring [10].
7. Start tractor and engage the power-take-off at minimum revs
8. Check and adjust if necessary the spacer bolts [3] until silent running is just maintained. Ensure that rollers are parallel (placing a light under the rollers will make it easy to observe the space between the rollers if necessary).
9. Secure spacer bolts [3] with locking nuts [2].
10. Engage scraper knives.

- If rollers are allowed to touch, excessive wearing will occur which is not covered under the warranty.
- The machine is now ready for Start Up Procedure.

Do not operate the machine without all the guards in place and properly secured.

Start Up Procedure

1. Ensure that the Routine Check has been carried out.
2. Ensure that the Roller Alignment has been carried out.
3. Ensure the acid applicator is calibrated and ready. Close feeder hatch [1].
4. Fill up the hopper.
5. Wind the roller adjustment crank [7] until the spacer shaft arm [8] is vertical.
6. Apply maximum tension to the jack spring [6] by pumping the bottle jack [5] until the overload valve is operating.
7. Check all guards are installed and secured.
8. Engage tractor PTO at 300 rpm.
9. Open feeder hatch to provide a uniform flow of grain on the rollers. As flow increases, tractor revs may require adjustment.
10. Check the flow of grain is just sufficient to be pressed without a build up of grain on the rollers.
11. If dough balls are produced and the grain is mushy, increase the space between the rollers by turning the crank [7] clockwise.

> Care must be taken when turning the lever anti-clockwise not to let the spacer shaft arm [8] pass the vertical position as the rollers will touch.

12. The degree of crushing is also increased by reducing the output (feeder hatch [1]).
13. Start the acid applicator when a sample is produced where all grain is crimped and no dough balls are produced.
14. Add water if required (ideal moisture content of the grain is about 35-40 %).
15. Increase PTO speed to approximately 540 rpm.

It is very important that the rollers do not touch.
As a routine procedure, always check the temperature

of the rollers immediately they are stationary.

Do not operate the machine without all the guards in place and properly secured.

Close Down Procedure

1. Close the acid applicator and close the feeder shutter with the feed adjuster handle.
2. Wind the crank [7] clockwise 3-4 turns to increase the space between the rollers. Let the machine run until the hopper is empty and the machine is clean of grain.
3. Stop the tractor and disengage PTO drive.
4. Adjust the tension from the jack spring [6] to half of the working pressure via the bottle jack.
5. Check the rollers immediately for uneven or excessive heat.
   When excessive or uneven heating occurs:
   - ■ Check uneven alignments (refer to page 15].
   - ■ Clear stones by removing the roller adjusting shaft [8].
   - ■ Replace bearings if necessary.
6. Clean the crimper of all loose grain and debris.
7. Disengage scrapers by removing the scraper spring. The scrapers are reached by removing the access plate below the drive roller. Ensure the scraper spring is replaced.
8. Clean and straighten force feeder and elevator.
9. Thorough cleaning of cross and discharge auger is recommended after use.

Fault Finding

1. Kernels are too crushed, i.e. have adoughy appearance:

- Rollers are adjusted too close to each other.
- Machine speed is too high.

➔ Widen the distance between the rollers and reduce the speed so that the grain slides through the rollers and does not stick to the roller surface. The recommended PTO operation speed is 200 - 300 rpm.

The machine is now ready for Start Up Procedure - refer to page 18.

2. A mixture of whole uncrushed kernels and doughy kernels:

- Rollers are not parallel to each other.

➔Adjust the rollers so that the distance is the same at both ends.

➔Check tension of leaf spring/jack.

The machine is now ready for Start Up Procedure - refer to page 18.

3. Rollers have a doughy appearance and some kernels are scattered around:

- Scraper knives under the rollers are incorrectly adjusted or spring not fitted.

➔ Clean scraper knives and check they peel the grain off the surface of the rollers evenly. If necessary, adjust the spring or replace the knives. The spring should press each knife against the roller.

The machine is now ready for Start Up Procedure - refer to page 18.

4. The bottom auger clogs up:

- Elevator belt or tension is loose.

➔ Tighten the elevator chain and tighten or replace drive belt and belt tension spring.

➔ If the grain is too coarse, wind the crank anti-clockwise (taking care that the rollers do not touch) to get the rollers closer to each other; or if the grain is too fine, wind the crank clockwise to get rollers further apart.

➔ Check that the flow of feed is not too high.

…Fault Finding

➔ Check cross auger is clean from previous use.

➔ Check PTO speed is between 300 - 500 rpm.

The machine is now ready for Start Up Procedure - refer to page 18.

5. If the tractor stalls or the PTO slips:

➔ Close applicator and water.

➔ Switch off the power and disconnect PTO.

➔ Close grain feeder hatch.

➔ Release pressure on jack.

➔ Remove auger well cover and elevator belt cover to clear blockage.

➔ Check and clear the build-up of grain between the rollers and check that no metal or stones are trapped between the rollers or auger, turn rollers backwards by hand to clear obstruction.

➔ Check that the flow of feed is not too high.

➔ Check tractor speed is correct in relation to flow.

The machine is now ready for Start Up Procedure - refer to page 18.

6. The flow of grain stops - the main belt starts to ”smoke”:

■ The force feeder is bound in straw.

■ The force feeder is jammed.

■ The rollers have stopped turning.

➔ Switch off power and disengage PTO.

➔ Close applicator and water.

➔ Insert the cut-off plate to hopper

➔ Remove the straw, stones etc.

➔ Manually reversing the rollers sometimes clears the obstruction.

➔ Remove the cut-off plate

The machine is now ready for Start Up Procedure - refer to page 18.

…Fault Finding

7. Output is reduced:

- ■ PTO speed is not correct
- ■ Stones etc. loose on top of rollers
- ■ Straw wrapped round butterfly-screw.
- ■ Main drive belt stuck or not adjusted correctly.
- ■ Auger/elevator belt worn or tensioning spring needs replacing.

➔ Close grain feeder door.

➔ Close applicator and water.

➔ Switch off power and disengage PTO.

➔ Insert the cut-off plate to hopper

➔ Release tension on jack and allow roller to fall back to stops and clear obstruction.

➔ Open grain feeder door

➔ Remove grain, stones etc. from rollers and butterfly.

➔ Close feeder door.

➔ Remove the cut-off plate.

The machine is now ready for Start Up Procedure - refer to page 18.

Daily Maintenance

Switch off all power to the machine before carrying out any maintenance.

Check the Belts

The elevator auger belt is spring loaded. Replace the belt when the tension pulley arm is at approximately ”3 o’clock”.

The roller and feeder belt tension should allow about 1-2 cm movement when pressed between the feeder pulley and the belt tightening pulley.

Check the Elevator Chain

When the elevator is in vertical position, the chain can be checked through the auger housing access hatch. Sideways movement should be possible on the sprocket.

Hopper Bolts

Check the hopper bolts and nuts every day, in order to avoid the bolts dropping on to the rollers.

Bearings

When the machine is in constant use, the bearings require a minimum of two strokes of grease gun daily.

Drive Pulleys

Should be checked for tightness of Allen screws and alignment.

…Daily Maintenance

Rollers

Alignment should be checked and adjusted if necessary. Also check for any signs of over-heating.

Discharge Auger

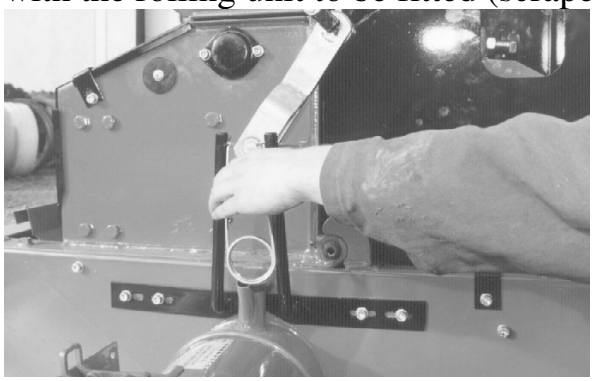
Remove cross auger pan-tray to clean at end of day to minimise contamination of feed and to minimise any possible corrosion.

End of Season Maintenance

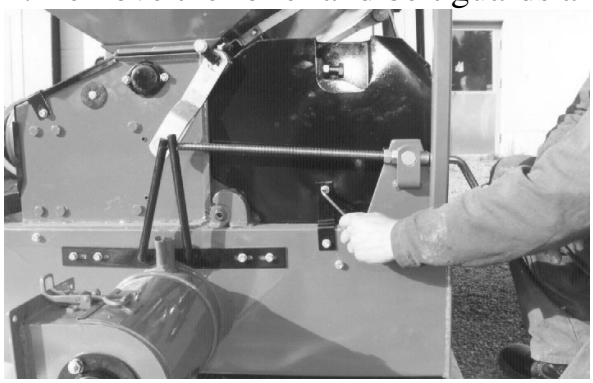
1. Clean the crimper thoroughly with a power hose. Do not aim the jet of water straight on the bearings.
2. Remove the elevator chain and put it into a suitable container filled with oil. Leave chain to soak for at least half an hour. Re-install the chain again.
3. Apply anti-corrosion protective material on all surfaces to minimise corrosion.
4. If the paintwork is damaged, apply anti-corrosive paint.
5. Check roller surfaces. If they are smooth, contact your Korte dealer for resurfacing advice.
6. When not connected to a tractor, the PTO shaft should be supported so that it does not get damaged or foul the protecting guard.
7. The crimper should be kept in a dry place when not in use.
8. During the winter period ensure that the jack spring [6] is under ¾ of full tension and the bottle jack pumped on half pressure.
9. For longer bearing life, turn the rollers by hand half a turn once or twice during the winter.
10. If any bearings are dismantled, they should be washed and greased thoroughly before being reinstalled.

Procedure to Change the Rolling Unit 1(5)

1. Remove the scraper spring. Remove the scrapers if different scrapers follow with the rolling unit to be fitted (scraper-knives for maize-rollers).

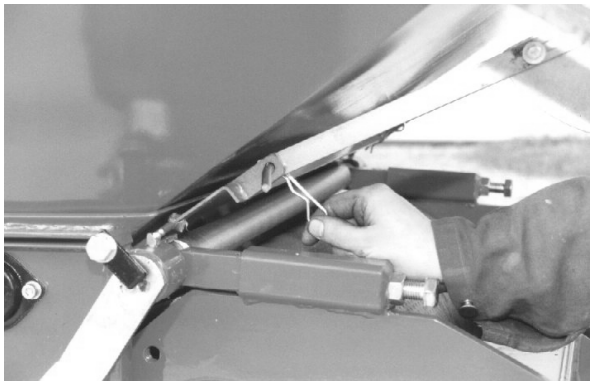


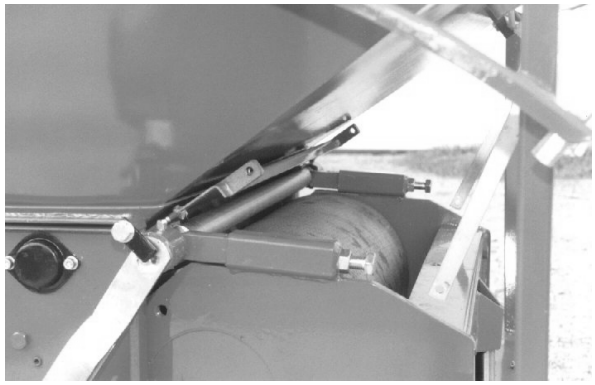
2. Remove the roller and belt guards and the extension hopper.



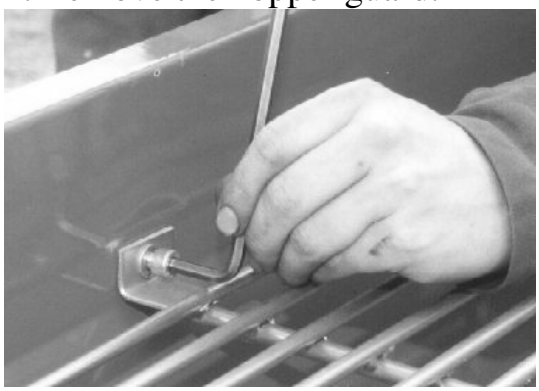
…Procedure to Change the Rolling Unit 2(5)

3. Release feeder door.

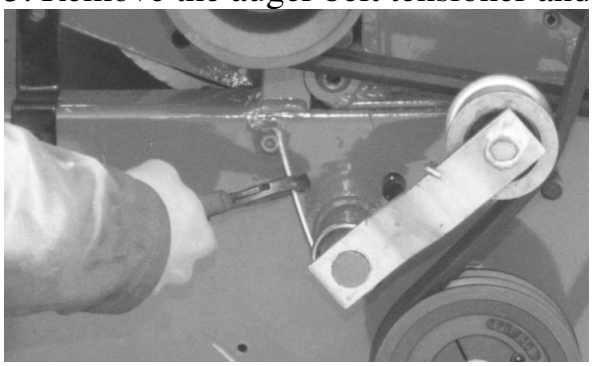


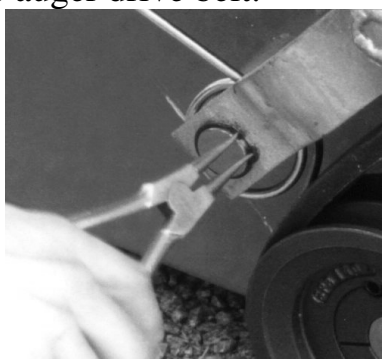


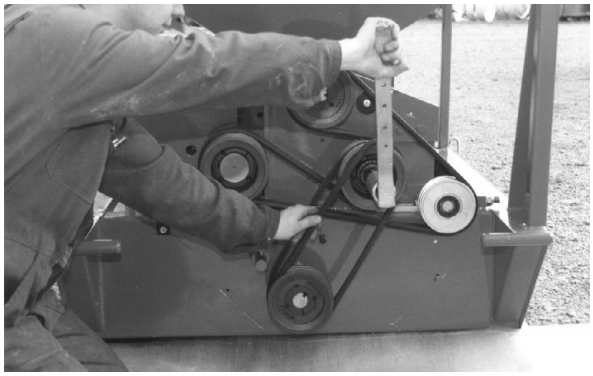
4. Remove the hopper guard.



5. Remove the auger belt tensioner and the auger drive belt.

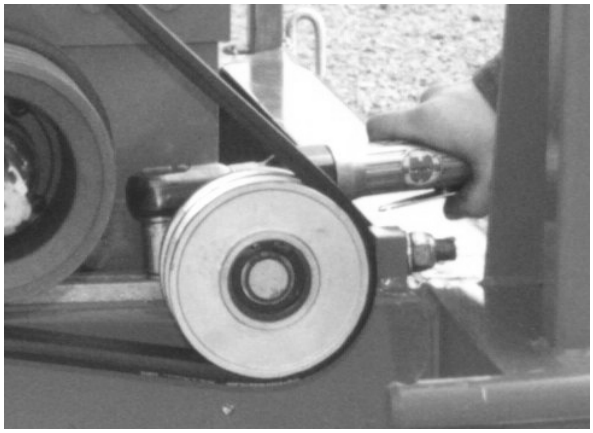


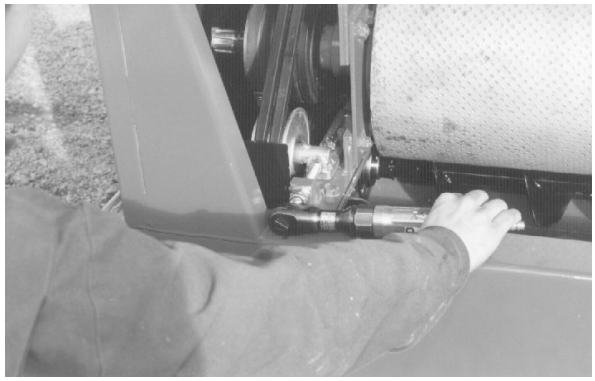


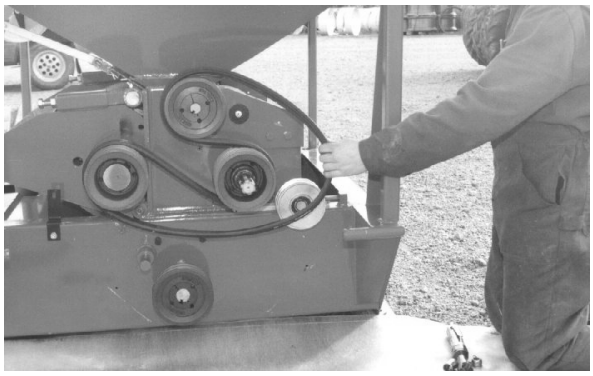


…Procedure to Change the Rolling Unit 3(5)

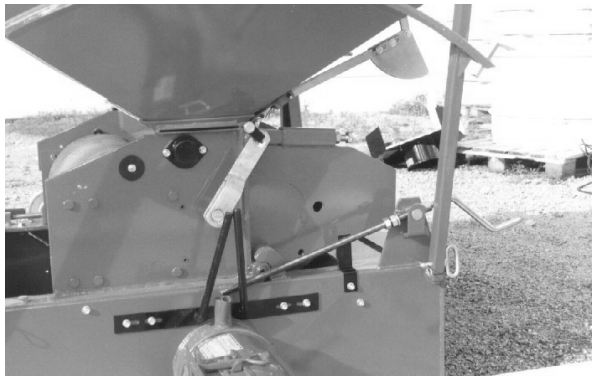
6. Remove the roller drive belt tensioner and the belt.



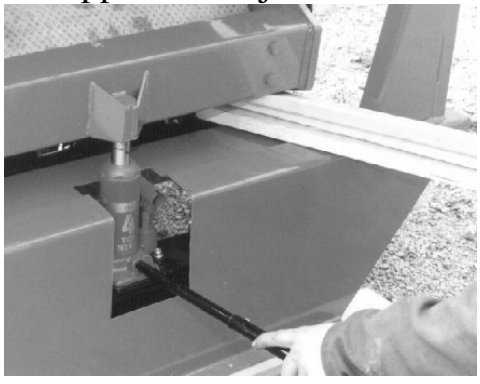


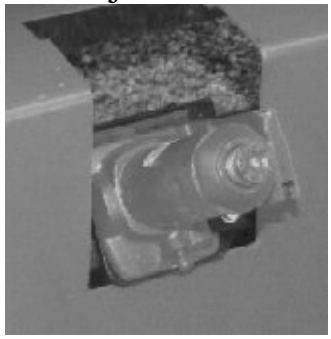


7. Release the roller adjusting crank.



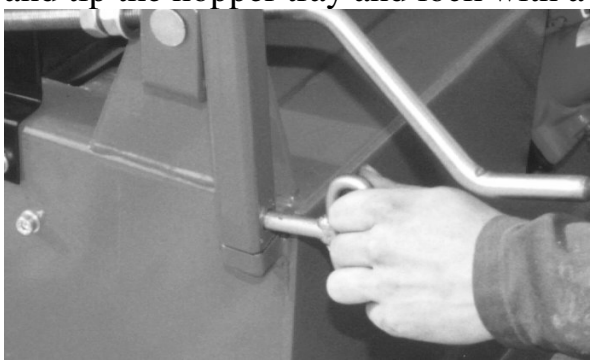
8. Support the adjustable roller, release the bottle jack and turn out.

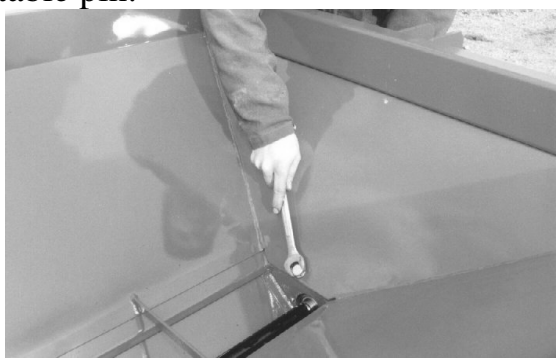




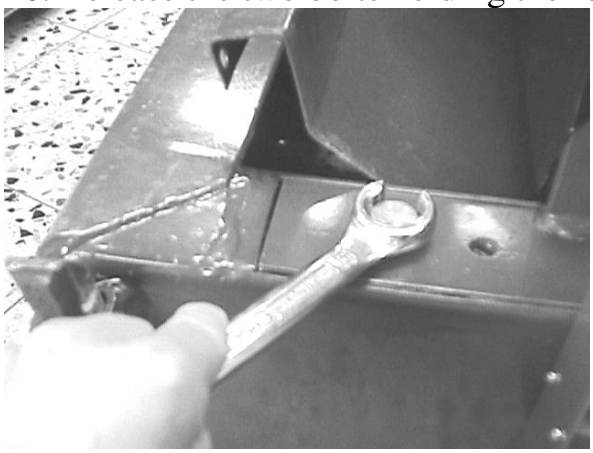
…Procedure to Change the Rolling Unit 4(5)

9. Remove the locking pins in hopper tray legs. Release the hopper screw. Lift and tip the hopper tray and lock with a suitable pin.



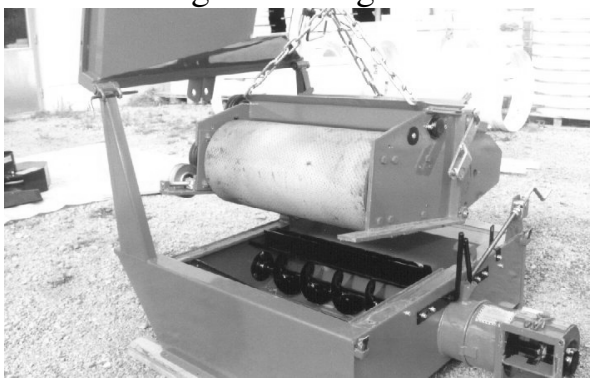


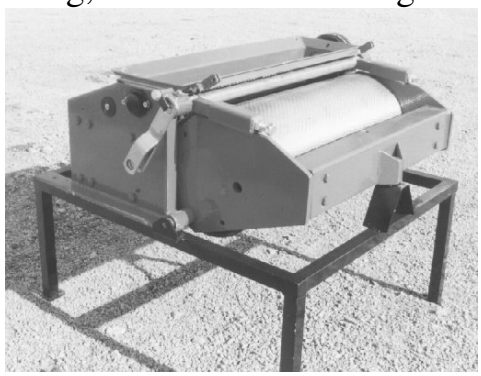
10. Release the two bolts holding the rolling unit to the frame. Use a 19 mm key.



…Procedure to Change the Rolling Unit 5(5)

11. Attach the supplied lifting chain through approved fixings. Lift the rolling unit from the crimper body with suitable equipment.
Note: Rolling units weigh: 350 S2 about 180 kg, 700 S2 about 360 kg.





Re-fitting is a reverse procedure of the above.
Care should be taken in the re-alignment of rollers in the exchange rolling unit.

The machine is now ready for Start Up Procedure - refer to page 18.

Pulley Removal and Assembly

Pulley fasten to shaft with a separete taper hub.

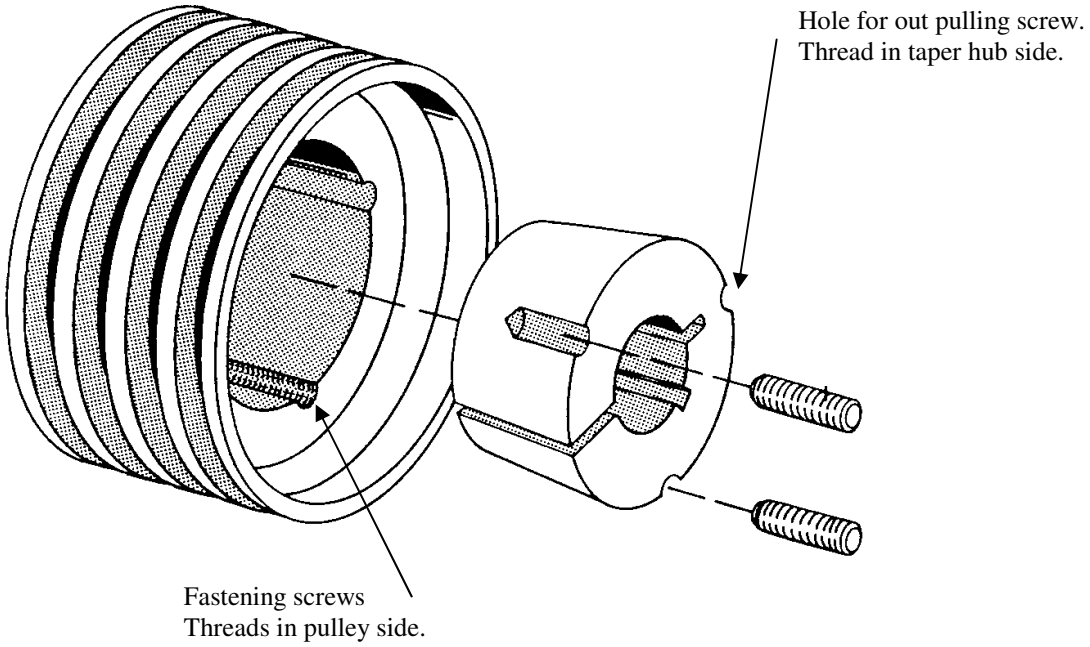
Assembly

1. Clean protective grease from taber hub and pulley nave.
2. Place taber hub inside the pulley nave and align the holes.
3. Oil the fixation screws and screw them in lightly.
   Note: Thread for the fixation screws is in the pulley. The threaded hole in taper hub is for removal of the pulley.
4. Clean the shaft. Push the pulley and taper hub on shaft.
   Note: When aligning the pulley, the taper hub part will fasten first on to the shaft. During tensioning the pulley still slides few millimeters.
5. Tighten the screws with proper force.
6. Knock the taper hub gently and check the tension again.
7. Fill the out pull holes with grease (to keep thread clean).

Taper hub	Tigtening moment
TL 1610-25, TL 1610-35	**19 Nm**
TL 2012-25, TL 2012-35, TL 2012-50	**31 Nm**
TL 2517-65	**49 Nm**

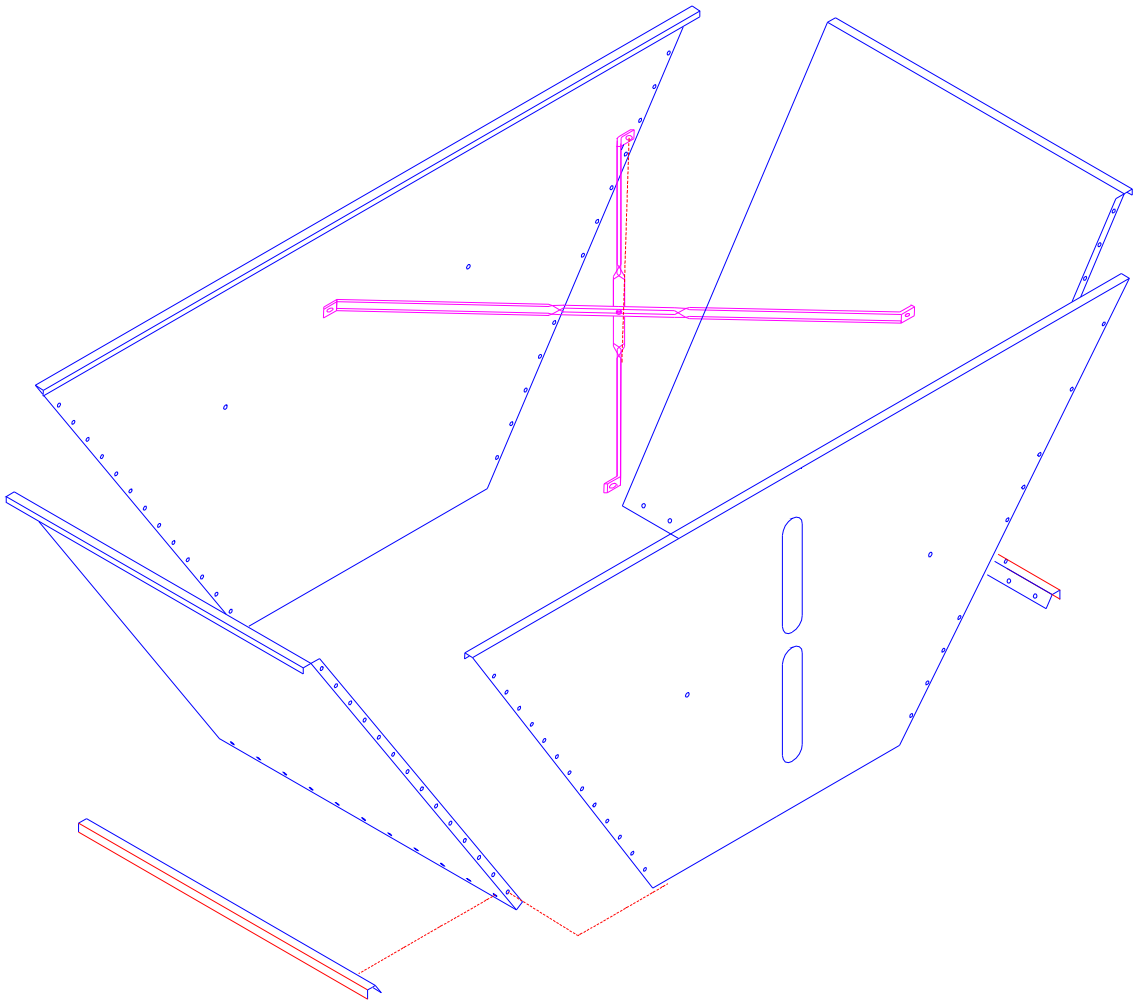
Removal

1. Open the fastening screws and remove them.
2. Screw one of the screws in the out pull hole (threaded hole in the taper hub).
3. Tension the screw untill the taper hub get loose from the pulley nave.
4. Remove pulley and taper hub from shaft.



Hopper Assembly Picture

Relates to Assembly of Hopper, page 12.



Note: When extra hopper is installed to crimper you can leave the guarding grating out from hopper.