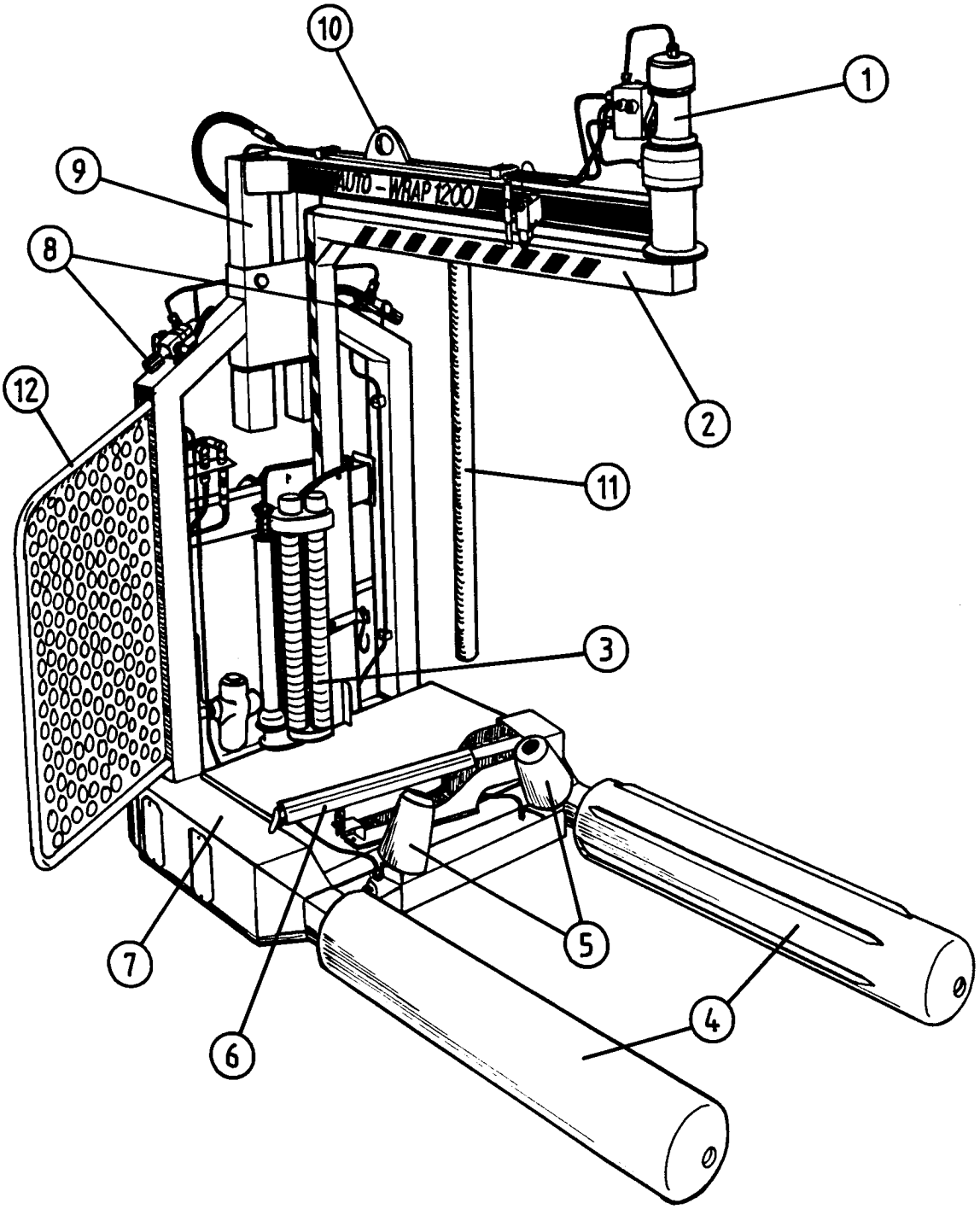
USER'S MANUAL

NORSE AUTO WRAP 1200 M

*** Emergency stop: see chapter 1.0**

NORSE AUTO WRAP 1200 M
Balewrapping machine



1. Wrapping arm motor
2. Wrapping arm
3. Prestretcher
4. Rollers
5. Support rollers
6. Cutter
7. Main frame
8. Speed control
9. Stationary arm
10. Lifting sling
11. Emergency stop*
12. Safety guard

*** Emergency stop: see chapter 1.0**

1.0 INTRODUCTION.

TELLEFSDAL A.S congratulates you with the choice of AUTO WRAP bale wrapping machine. We are certain you will be satisfied with the machine, and that you will have the pleasure of your investment for many years.

The AUTO WRAP bale wrapping machine has more features than any other bale wrapping machine available. AUTO WRAP can pick up the bale, wrap and stack them without the operator leaving the tractor cab. This system is protected by patent law's almost world wide.

AUTO WRAP 1200 M is hydraulically driven by the tractors hydraulic system, and is mechanically controlled from the tractor cab with levers. The machine can either be mounted to three point linkage, front mounted with quickcouplers to the tractors frontloader or on a wheel loader. Then it's possible to stack the bales upon each other.

AUTO WRAP 1200 M is designed to wrap bales of grass, hey or straw, with nominal diameter of 3½ - 5½ ft. (110-170cm), and weights up to 1760 lbs. (800kg). The machine is developed and has been improved since the beginning in 1986, and is now a very reliable and safe machine with high security built in.

This manual is meant to explain how AUTO WRAP is prepared, mounted, used and how it works, and shall together with the spare part's list be a reference for maintenance and troubleshooting. So take good care of the books, they are a part of the machine.

Read carefully through this manual, and specially chapter 2.0, safety instructions, before starting the machine, and follow the instructions thoroughly. If problems should occur, check with chapter 17.0, and try to find out what is wrong. Ask your dealer for advice before you make the problem worse than it is.
See also chapter 19.0, conditions of warranty.

* **EMERGENCY STOP. Auto wrap 1200 M is equipped with a so-called emergency stop on the wrapping arm. This device stops all functions momentarily, but is per definition not an emergency stop, because it does not shut down the inputs. But it has the same function, so we have decided to call it an emergency stop in this manual.**

Technical Specifications	AUTO WRAP 1200 M
Height in working position, min. / max.	2280 / 2480 mm (7' 6" / 8' 2")
Width, min. / max.	1290 / 2880 mm (4' 2" / 9' 5")
Length, min. / max.	2170 / 3040 mm (7' 1" / 10')
Weight	615 kg (1356 lbs)
Wrapping arm speed, recommended	22 revolutions' per minute
Wrapping arm speed, max.	27 revolutions' per minute
Bale size, max.	ø1700 mm (5' 7")
Bale weight, max.	800 kg (1765 lbs)
Capacity	Approx. 25 bales per hour
Prestretcher	500 mm / 750 mm (20" / 30")
Hydraulic connection	1 pcs. single working, + free return
Oil pressure / amount, min.	180 bar / 15 litre perminut
Oil amount, max.	40 litre per minute
Counter pressure, max.	10 bar
Electric connection	12 V DC

TELLEFSDAL A.S can change the construction and/or technical specifications without warning and without rights to changes on already delivered products.

With precaution of printing failure.

2.0 SAFETY PRECAUTIONS.

TELLEFSDAL A.S does not take the responsibility for damages that may occur on machine, persons or other equipment, because of the machine NOT being used as described in this manual, or because of the safety precautions NOT being followed.

2.1 SAFETY EQUIPMENT.

Before using the machine, make sure that all guards and covers are securely fitted. The machine must not be operated if a function does not work as described later in this manual. (See chapter 2.5).

2.2 BECOME FAMILIAR WITH THE OPERATIONS OF THE MACHINE.

If you are unsure how to operate the machine properly, either use of or maintenance to your Auto Wrap, please contact your Auto Wrap dealer.

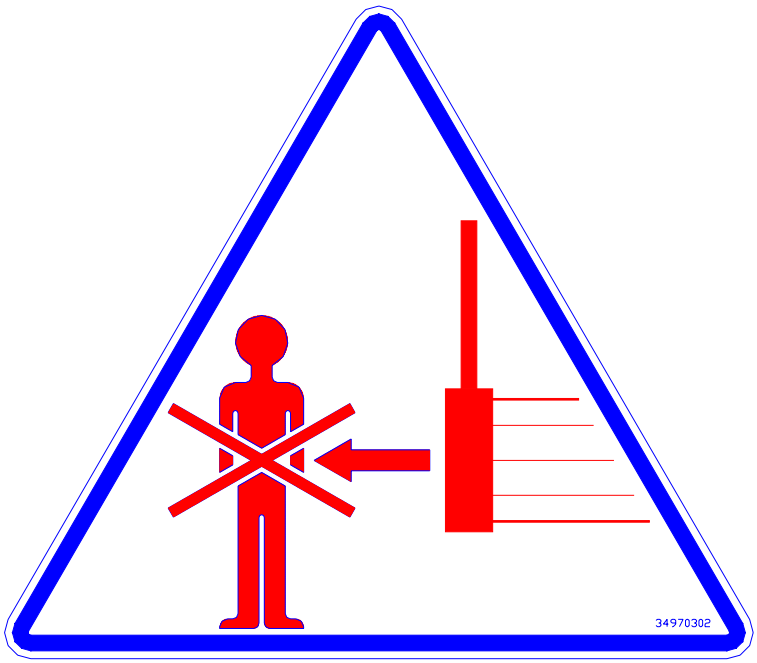
2.3 ADJUSTMENTS' / MAINTENANCE.

Turn off the tractor and discharge the oil pressure before performing any adjustment or maintenance on the machine. Remember that a well maintained machine is a safe machine.

2.4 IMPORTANT!

MAKE ALWAYS SURE THAT NOBODY IS IN THE HAZARD AREA OF THE WRAPPING ARM WHEN THE MACHINE IS IN USE.

THE MACHINE MUST NEVER BE OPERATED BY PERSONS WHOM DOES NOT KNOW ENOUGH ABOUT HOW TO SAFELY OPERATE THE MACHINE, OR BY PERSONS UNDER 16 YEARS OF AGE.



*** Emergency stop: see chapter 1.0**

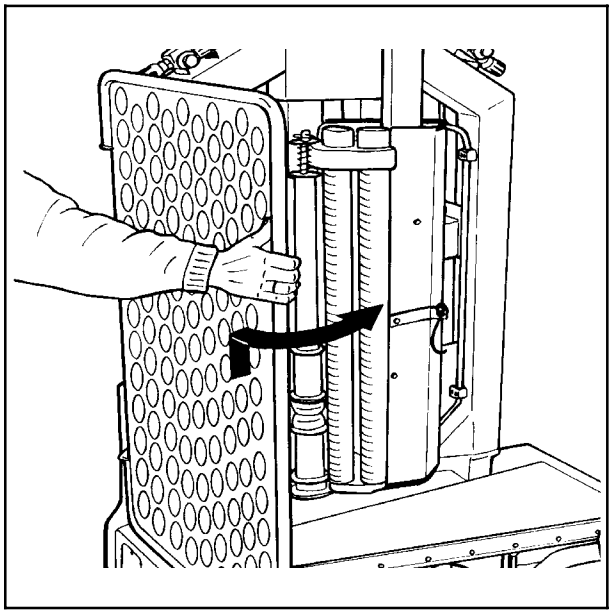


Fig. 2-1

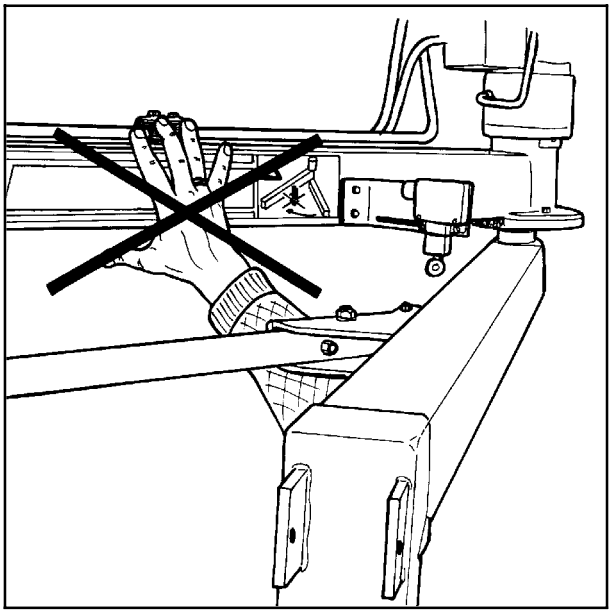


Fig. 2-2

2.5 DANGEROUS AREAS.

TELLEFSDAL A.S has given the safety to the operator the highest priority, but it is still impossible to secure oneself of every danger area on the machine. Therefore we will now go through some of the dangers that can occur when using the Auto Wrap balewrapper.

1. PUNCH OF THE WRAPPING ARM.

During the wrapping process the arm rotates with a speed of 20-27 revolutions per minute around the bale. On the arm there is mounted a prestretcher unit with a plastic roll. The speed on this can give a person serious injuries if one comes to close to the working area of the wrapping arm. To reduce this danger we have mounted an emergency stop* device on the wrapping arm, this stops all movement instantly when someone comes in the way of it. It is very important that this protection always works and that it should not under any circumstances be unconnected.
(See more about the emergency stop* in chapter 5.0).

2. SQUEEZE-DANGER BETWEEN THE MAIN FRAME AND THE WRAPPING ARM.

As earlier explained, we have a wrapping arm with a prestretcher and a plastic roll. Once every time around this wrapping arm passes the main frame. Here there may occur a squeeze danger if a person stands to close to the main frame when the wrapping arm passes. The distance between the main frame and the wrapping arm is not large enough to give place for a person. Between the prestretcher and the bottom frame there can also be a squeeze danger. To protect the user from this there is mounted a protection guard on the right hand side of the machine. You lift this up and turn it out on the side of the machine when operating the baler. You put it in transport position by lifting it up and turning it into the frame. The guard must not under any circumstances be removed, and if damaged it must be repaired before the machine is used again.

3. SQUEEZE-DANGER BETWEEN THE STATIONARY AND THE WRAPPING ARM.

During the main wrapping process the wrapping arm moves around a stationary arm. Every time the wrapping arm passes the stationary arm, there is a squeeze danger that can be dangerous for the fingers. The distance between the stationary and the wrapping arm is between 25-40 mm.

*** Emergency stop: see chapter 1.0**

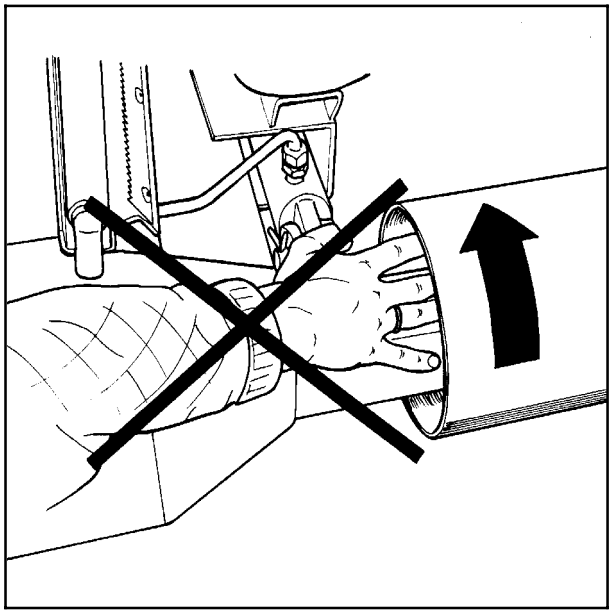


Fig. 2-3

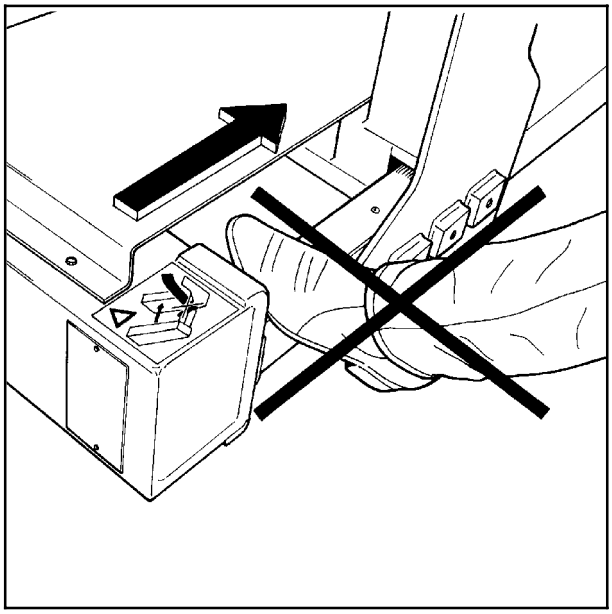


Fig. 2-4

4. SQUEEZE DANGER BETWEEN THE ROLLERS AND THE MAIN FRAME.
During the wrapping process the bale rotates on two rollers. These two rollers rotate around the square pipe they are mounted on. Between the roller and the square pipe there is a squeeze danger for the fingers. (See fig. 2-3).

5. SQUEEZE DANGER BETWEEN TELESCOPE FRAME AND MAIN FRAME, INWARDS.
When loading a new bale, the telescope frame moves into the main frame, and this is where there can occur a squeeze danger. This is secured with a cover on the telescope frame that slides on the main frame.
The machine must not be used if this cover is removed or damaged.

6. SQUEEZE DANGER BETWEEN TELESCOPE FRAME AND MAIN FRAME, OUTWARDS.
On both ends of the telescope frame there can occur a squeeze danger when loading a new bale. Keep therfore hands and feet away from this area. (See fig. 2-4).

7. SQUEEZE DANGER CAUSED BY PLASTIC AUTOMATION.
At the end of the wrapping process the plastic shall be perforated and held tight until the start of the next wrapping process. When the cutter arm moves down to lock the plastic, there can occur a squeeze danger between the cutter arm and the cutter holder. The cutter blade that perforates the plastic is very sharp, so keep hands away from the cutter. (See fig. 2-5).
Always put the security cover over the cutter blade when the machine is not in use.

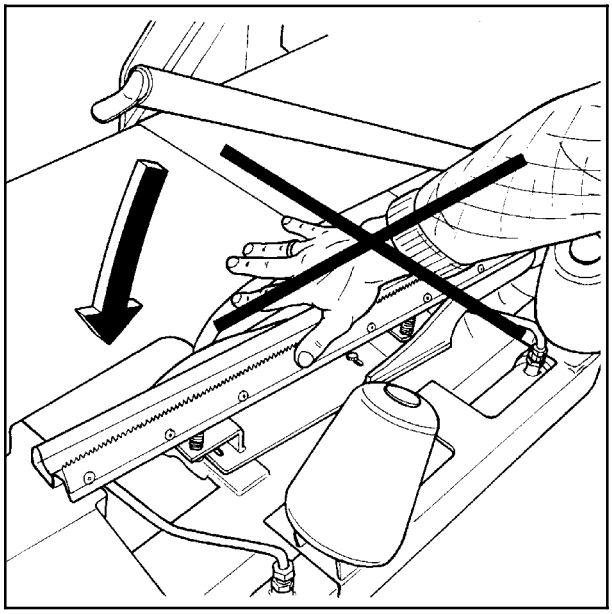


Fig. 2-5

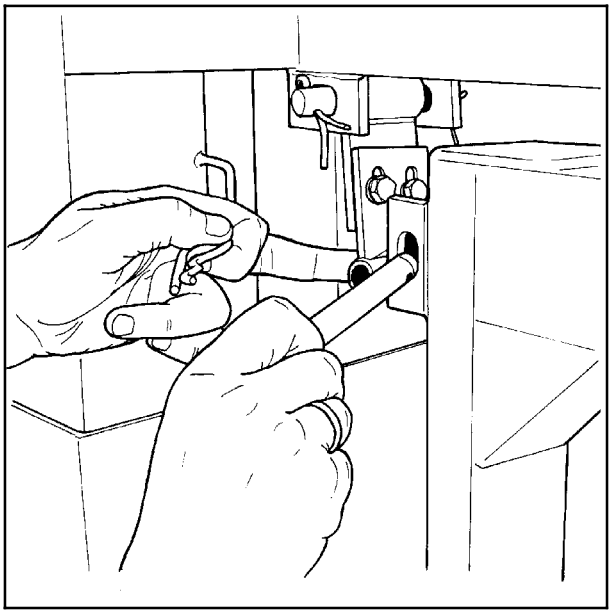


Fig. 2-6

2.6 LOCKING THE WRAPPING ARM.

When the machine is not in use, make sure the locking bolt for the wrapping arm is mounted, and that the secure pin is fitted. If the bolt is not mounted, the wrapping arm and/or the machine could be damaged during transport. (See fig. 2-6).

2.7 THREE POINT MOUNTING.

When the machine is mounted in the three point linkage, make sure that the lifting arms are tightend up so there is no sideways movement.

2.8 FRONT MOUNTING.

If the machine is mounted on the front loader there must be a counterweight in the three point linkage. It must be large enough to give the tractor good stability.

2.9 TRANSPORTING.

When transported on a public road there are certain safety measures that must be taken:

1. Make sure that the locking bolt on the wrapping arm is mounted. (Chapter 2.6).

2. Lift the protection guard, turn it into the machine and secure it with the locking pin. (See chapter 2.5.2).

3. Move the main rollers completly together.

4. Always transport the machine in the lowest possible position.

5. Make sure that the machine do not cover the tractors lights. If necessary, mount extra lights.

6. Make sure that at least 20% of the tractor's total weight is on the steering wheels.

7. If the machine is front-mounted, it's necessary to balance the weight with a counterweight mounted to the three-point linkage.

3.0 GENERAL INFORMATION ON BALE WRAPPING.

3.1 THE PRINCIPLE.

The advantages of round bale ensilage are many, and include fewer feed units, a flexible harvesting system, large capacity and the possibility of selling feed units.

In principle, the same fermentation processes occur whether the fodder is placed in a silo or pressed into bales and packed in plastic, i.e. lactic acid fermentation in anaerobic conditions. The oxygen in the bale must be exhausted before fermentation begins.

The grass should be dried to approximately 30-40% solid content. The solid content can be determined by twisting the grass by hand. If drops of liquid are forced out of the grass, the solid content is less than 25%. Low solid content, (wet grass), can lead to increased butyric acid fermentation if preservatives are not added to the grass. If the solid content is too high, (over 50%), normal fermentation will not take place and there will be enough oxygen in the bale to produce mould fungus.

3.2 THE BALE PRESS.

It is vital that the bale press produces compact, well-formed bales, as misshapen bales can be difficult to pack. Pressing will also often take longer, thereby increasing the amount of plastic used.

3.3 DIFFICULT BALES.

When a misshapen bale is packed, it will have a tendency to move outwards or inwards on the rollers. If the bale begins to move outwards, the machine must be lifted slightly at the rear edge to get the bale to rest against the support rollers on the main frame. It can therefore be useful to use a hydraulic top stay to make this adjustment easier. (See chapter 4.2).

If the support rollers almost disappear into the bale the machine should be pressed down slightly at the rear edge in order to remove the bale from the machine. The plastic can be damaged when friction against the rollers increases. Best results are achieved when the bale rolls easily against the support rollers all the time.

If the bale to be packed is conical you must ensure that the sharp end is pointed at the tractor. It will then be easier to get the bale to lie correctly during packing. It is easy for such a bale to "turn" forward in the direction in which it is pointing, and therefore lie against the support rollers. If the bale is lying on a slope it must be picked up from the lower side. A hydraulic top stay will again be advantageous.

3.4 TYPES OF PLASTIC.

A good type of plastic with good adhesive properties, and which is recommended for bale wrapping, must be used. The thickness of the plastic foil should be at least 25 µ. (25/1,000 mm). In order that the plastic tightens sufficiently around the bale, it is stretched before being wrapped, so it is somewhat thinner when it is put on the bale. With short-term storage, (up to eight weeks), it is recommended that bales have a minimum of four layers of plastic at the thinnest points, with at least 52-53% overlap.

For long-term storage, or when the grass is wet when it is packed, the bale should have 90-100 µ plastic, (6 layers), and the same amount of overlap. If thinner plastic is used, more layers should be applied. If it is very hot the plastic will be stretched further, and more layers should be applied. It is better to have slightly too much than too little plastic on the bale.

From experience, light plastic produces slightly lower temperatures within the bale, and tends to improve feed quality.

3.5 STORAGE LOCATION.

Care should be taken in finding a suitable location for the storage of bales. The storage location should preferably be prepared before the bales are laid out. An elevation close to well-drained roads is recommended. If the wrapped bales are simply placed on stubble there is a danger of the plastic being pierced. A tarpaulin or a thin layer of sand should therefore be laid where the bales are to be stored over the winter.

Bales should be stored in the shade as far as possible. This reduces the danger of air leakage in the bales. A bale which is stored in sunlight and which therefore undergoes greater swings in temperature "pumps in" a great deal of air in comparison to a bale which is stored in the shade. According to "Teknik for Lantbruket" [Technology for Agriculture] in Sweden, a bale which is stored in the shade has only 40% of the air leakage of a bale which is stored in sunlight.

3.6 STACKING / PROTECTION.

If bales are hard and well formed, they can be stacked vertically, but loose and misshapen bales with low solid content should not be stacked higher than one layer, as this could easily cause deformity and the danger of runoff will be increased.

Bales can also be stored on their sides. The layer of plastic is thicker here, providing greater protection against piercing.

Bales should be covered with a tarpaulin or a fine-mesh net to protect against birds and small rodents. If the plastic is pierced, it must be sealed with weatherproof, hard-wearing tape, preferably under the outermost layer of plastic. Ensure that the hole is adequately sealed.

3.7 The best wrapping results are obtained by...

1. ...harvesting the grass early.

2. ...drying it out to 30-40% solid content. If there is a danger of rain, press and pack the grass anyway.

3. ...taking care not to mix any earth in with the grass.

4. ...using a press which produces even, firm bales.
   Bales 1.2 m in width and with a diameter of 1.2-1.5 m are the preferred size.

5. ...packing the bales soon after pressing, never later than two hours afterwards.

6. ...using a good type of plastic and six layers of plastic. This removes the need to use preservatives.

7. ...storing bales in the shade to reduce the danger of air leakage.

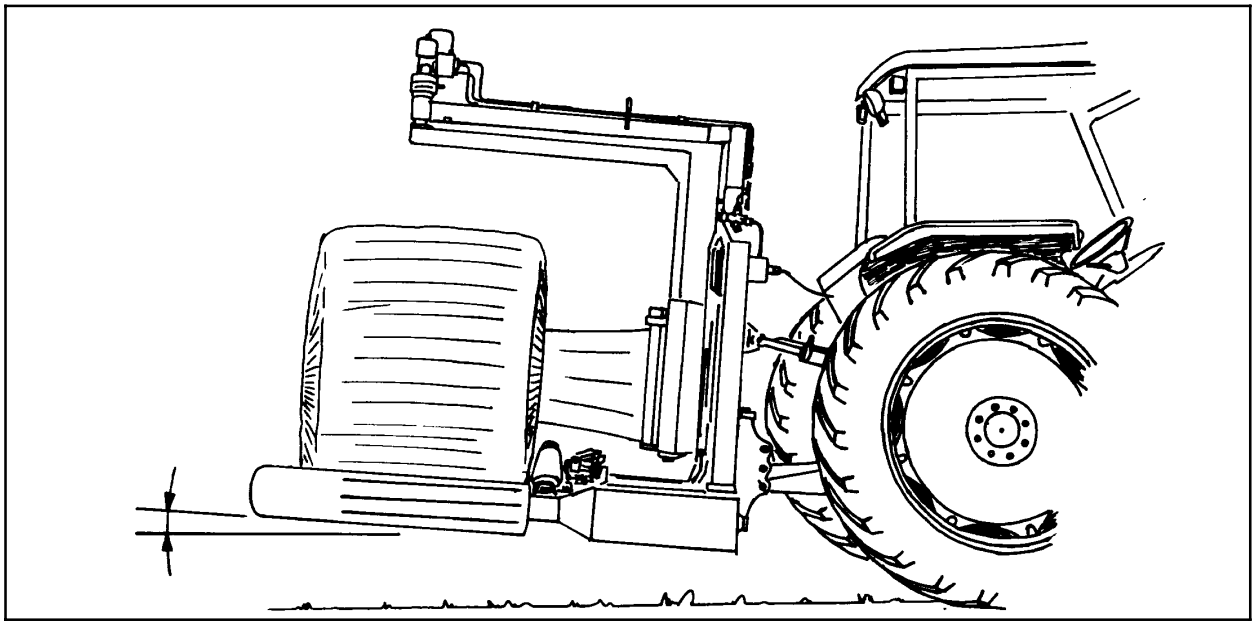


Fig. 4-1

4.0 SETTING UP / MOUNTING OF THE MACHINE.

4.1 THREE POINT LINKAGE.

AUTO WRAP 1200 M is intended for rear mounting to the three point linkage, category 2. With considering of transportation are not the three point brackets mounted on the machine when it leaves the factory. (See spare parts list chapter 2-1 for more details). When attached to three point linkage, make sure the machine is level across the tractor. Tight up and lock the lifting arms so there is no sideways movement.

4.2 TOP LINK.

Adjust the top link of the tractor so that the machine is level with the ground. It is recommended to use a hydraulic top link, as this makes it easy to adjust the angle of the machine.
During the wrapping process it is recommended to tilt the machine towards the tractor, as this will prevent the bale from falling off the rollers. (See fig. 4-1).

4.3 FRONT MOUNTING.

As extra equipment the machine can be equipped with quick-couplers for front loader or wheel loader. (See spare parts list chapter 2-2 for what types of quick couplers there are).
You also need longer hydraulic hoses. (See spare parts list chapter 4-2 for more details).
When front-mounted there must be mounted a large enough counterweight in the three point linkage, this is to secure the tractors stability.

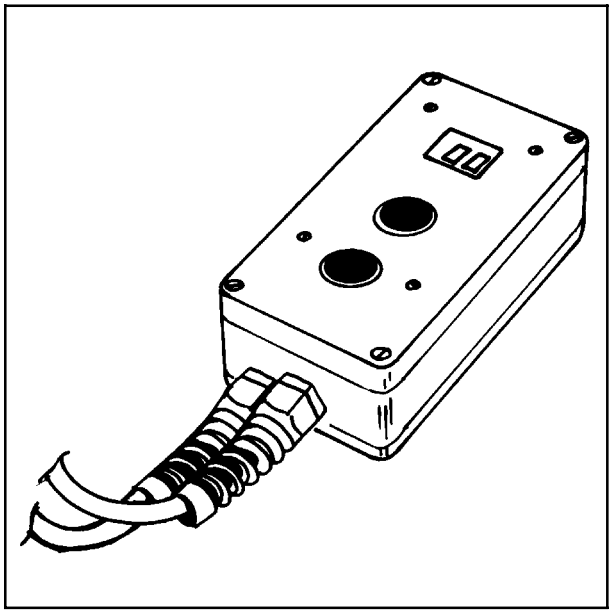


Fig. 4-2

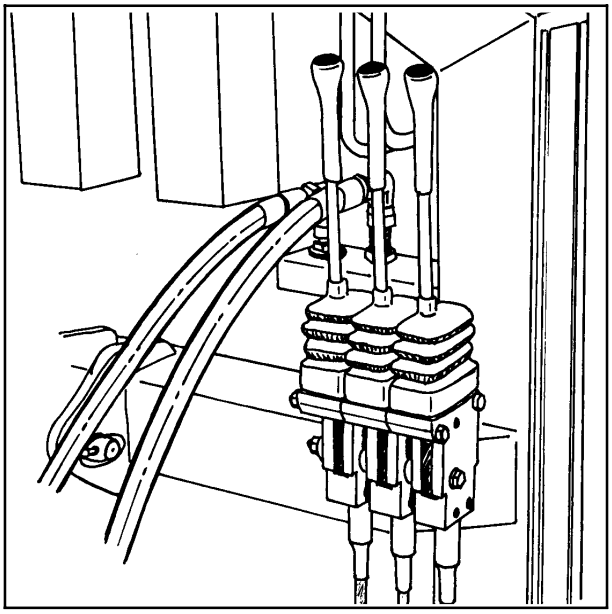


Fig. 4-3

4.4 ELECTRIC CONNECTION.

The electric equipment on Auto Wrap 1200 M consists of an emergency stop* switch on the wrapping arm, an electric operated emergency stop* valve and a switch that count the number of revolutions' of the wrapping arm. It is all controlled by an electronic counter-unit that also is used to reset the emergency stop*. (See fig. 4-2).

The counter has to be connected to the tractor's 12 volts battery, BROWN leader to the plus-pole, and BLUE leader to the minus-pole. To secure against short-circuits there is an 8A fuse on the plus-leader, near to the battery pole.

The 7-pin plug shall be connected to the contact on top of the machine. (See also chapter 5.0, Emergency stop*).

4.5 MECHANICAL LEVER CONTROL.

The control unit consists of a control block with three levers, connected to the machine with wire transmission. The control block should be attached to a suitable place in the tractor cab.
When the balewrapper is not in use, the lever-block should be placed on the machine. (See fig. 4-3).
(The fastening bracket for mounting in the tractor cab is also placed here by delivery).

*** Emergency stop: see chapter 1.0**

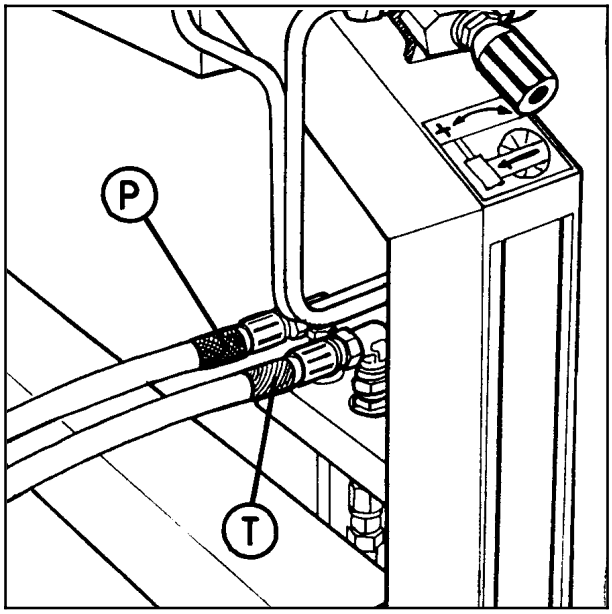


Fig. 4-4

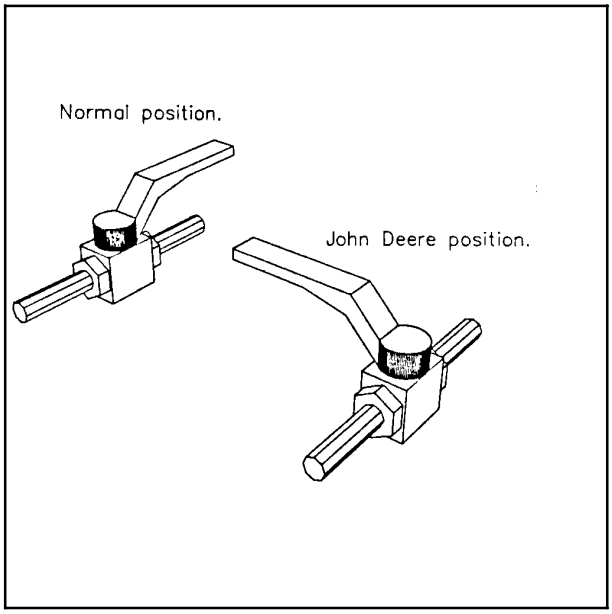


Fig. 4-5

4.6 HYDRAULIC CONNECTION.

The hydraulic hoses between machine and tractor are equipped with 1/2" ISO male quick-couplers. Discharge the oil pressure before you connect the oil hoses. Use the tractors' hydraulic lever.
To make sure that the balewrapper works properly, the tractors' oil pressure has to be at least 180 bar. The oil flow should be 15 - 25 litres per minute.

The counter pressure on the return must be as low as possible, and not exceed 10 bar. This should be measured with a gauge. It is recommended to use one single-working hydraulic outlet and arrange a free return circuit to the oil tank. If you are unsure of what oil pressure the tractor gives, or what oil pressure the balewrapper receives, please contact your machinery dealer. Generally all tractors have got some counter-pressure in their hydraulic return systems. Some tractors have more than others. **Hose with red cap shall be connected to pressure, (P), and hose with blue cap to the return. (T).** (See fig. 4-4).

4.7 OPEN AND CLOSED CENTRE HYDRAULIC SYSTEM. (See also chap. 14.1).

With the ball valve you can choose between a hydraulic system with open or closed centre. Almost all tractors have a hydraulic pump that gives a fixed oil flow per revolution. (Open centre). The valve, (with the red handle), shall then be in open position. Some tractors, (like f.i. John Deere), have an oil pump with variable volume per revolution. (Closed centre). The ball valve shall then be in closed position. (See fig. 4-5).

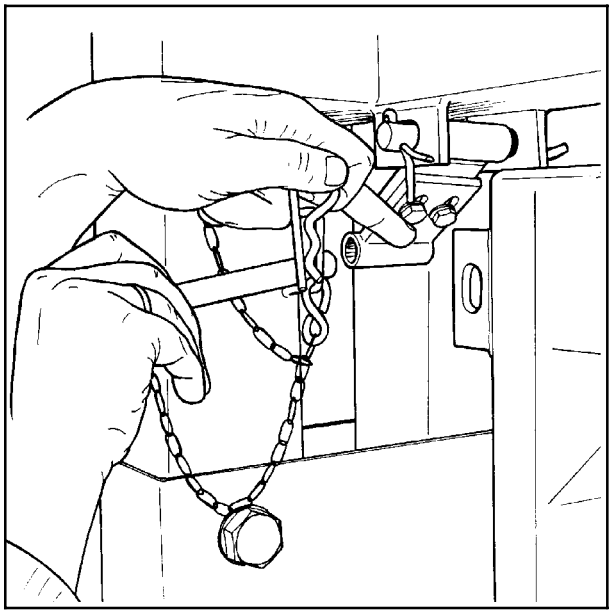


Fig. 4-6

4.8 CHECK LIST.

Before using the machine it is recommended to follow this check list:

1. Make it a habit to discharge the oil-pressure before connection or disconnection of the hydraulic hoses. (By operating the hydraulic control lever inside the tractor). (Use the tractors hydraulic control lever).

2. Return-oil should be led as directly to tank as possible. Beware that if the counter pressure is too high, the security valve on the main block will release some oil. (See chapter 14.3).

3. Hose with **BLUE CAP = RETURN OIL.**

4. Hose with **RED CAP = PRESSURE.**

5. Tie up loose hoses so that no squeeze damages occur.

6. Remove the locking bolt that holds the wrapping arm to the frame during transport. (See fig. 4-6).

7. Start the tractor and try out the functions. A bale is not required for this test.

8. Check all connections, hoses and couplings. If there is any oil-leakage, it should be rectified immediately.

If any problems should occur, it is most likely that the failure is in the quick-couplers on the tractors pressure and return-connections.
They can be very narrow and work badly after some years.

Make sure that both the male and the female-couplers opens properly for the oil flow. Check them carefully. The best thing to do is to exchange the quick-coupling on the return side and arrange a **"free return".**

Your AUTO WRAP bale wrapper has been tested in practical operation in approx. 2 hours at the factory.

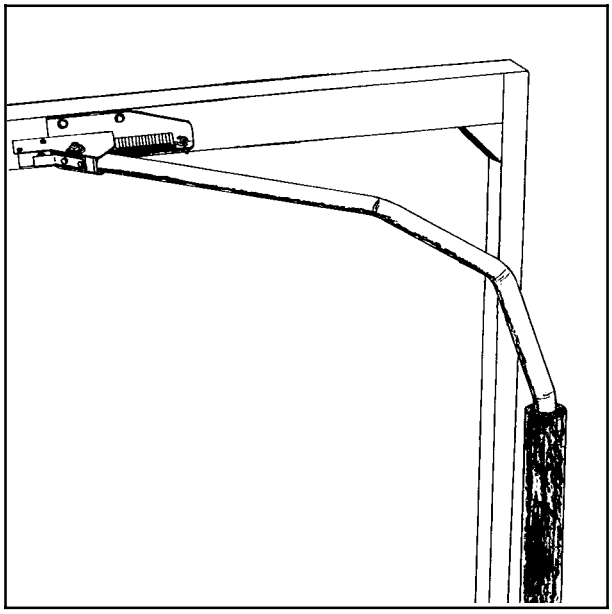


Fig. 5-1

5.0 EMERGENCY STOP*.

5.1 The machine is equipped with an emergency stop* device on the wrapping arm, and this function has to be tested before the operation starts.

5.2 The emergency stop* shall prevent the wrapping arm from hitting persons or any obstacle while starting and during the wrapping process.

5.3 The emergency stop* is constructed with a "positive" connection, i.e. it has to be in full order before the machine can be started.

5.4 It consists of a releaser hoop that activates a small electric switch. The switch activates a hydraulic valve that opens the oil flow to the wrapping arm.
When the electric circuit is broken, the valve shuts off the oil, and the wrapping arm stops. This is shown in the display on the counter-unit by two points lighting up.

5.5 To be able to start the machine, the counter-unit has to be connected to the battery, and the 7-pin plug has to be connected to the machine.

5.6 When this function shall be tested, you start the wrapping arm. Hold out an arm or any obstacle. The wrapping arm shall now stop before it hits the arm.

5.7 In order to start the machine again, the obstacle has to be removed and the hoop returned to its original position.
Then press the RESET-button on the counter-unit. Now the machine is ready to start wrapping again.

5.8 When the machine has been parked for some time, there might be copper acetate on the skidding rings, so there is no contact. If so, the machine cannot be started. Rub carefully off the rings with a fine rubbing paper. Clean it up with some alcohol or electric contact spray.

NB! TO GET A RELIABLE MACHINE, IT IS VERY IMPORTANT TO ALWAYS KEEP THE SKIDDING RINGS AND BRUSHES CLEAN AND IN ORDER AT ALL TIME.

*** Emergency stop: see chapter 1.0**

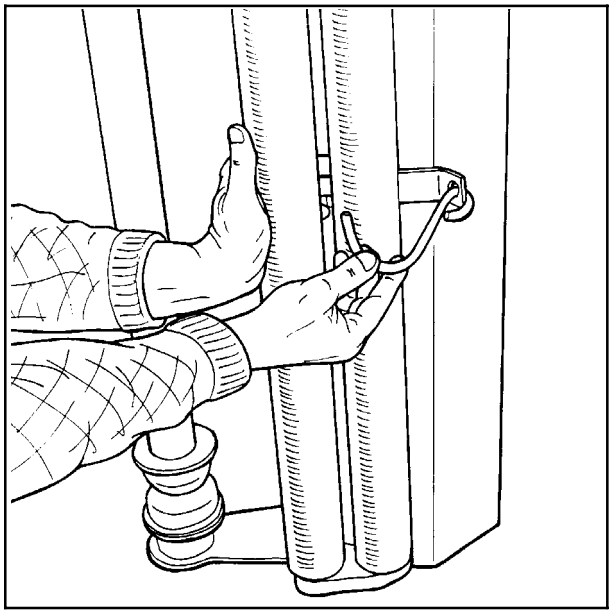


Fig. 6-1

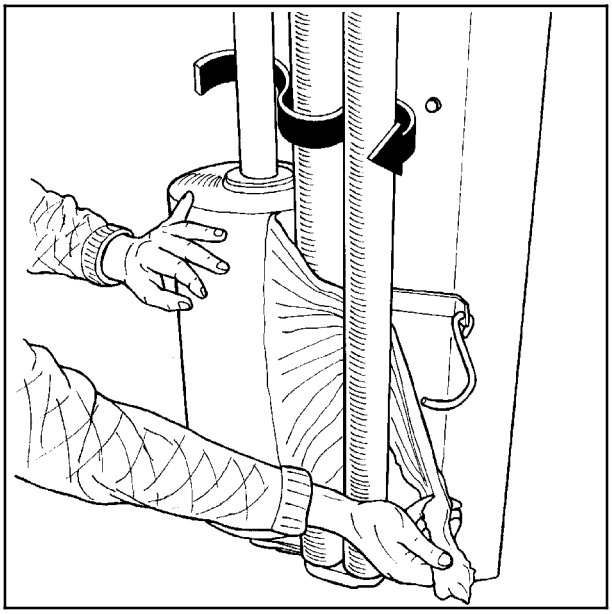


Fig. 6-2

6.0 MOUNTING OF PLASTIC FILM.

6.1 When the plastic roll shall be mounted, you have to hold the prestretcher-rollers aside, Hold the rollers aside and put on the holding hook. (See fig. 6-1).

6.2 Place a reel of film on to the prestretcher's holding axle and put on the springloaded lock.

6.3 Pull the film between the rollers on the prestretcher in the direction of the arrow. (See fig. 6-2). (See also the sign on the wrapping arm).

6.4 The filmholder / cutter opens by pulling the left lever on the control block. (See chapter 7.0). Pull out the film and place it over the U-shaped slot.

6.5 The cutter is closed by pushing the left lever away from you, and the film will be held in the U-shaped slot.

6.6 HEIGHT ADJUSTMENT OF PRESTRETCHER / PLASTIC FILM.
The plastic film shall hit at the middle of the bale wrapped, and therefore it can be necessary to adjust the height of the prestretcher. (See more about this in chapter 10.2).
If you use 500 mm plastic on a 750 mm prestrecher, then you can use the two distance sleeves to adjust the height on the plastic roll. There can be mounted one sleeve on each side of the plastic roll, or both sleeves can be mounted above or below.

7.0 CONTROL LEVER FUNCTIONS.

To make this description correct, the lever block has to be mounted so that the left lever corresponds to the left valve on the machine. (The one nearest to the middle of the machine). The levers can be attached both ways.

Left lever: Cutter.
Push away from you and the cutter opens.
Pull towards you and the cutter closes.

Centre lever: Rollers.
Push away from you and the rollers moves in. Pull towards you and the rollers moves out.

Right lever: START of wrapping.
Pull towards you and rollers and wrapping arm starts.
Leave the lever, (middle position), stops rollers and wrapping arm.

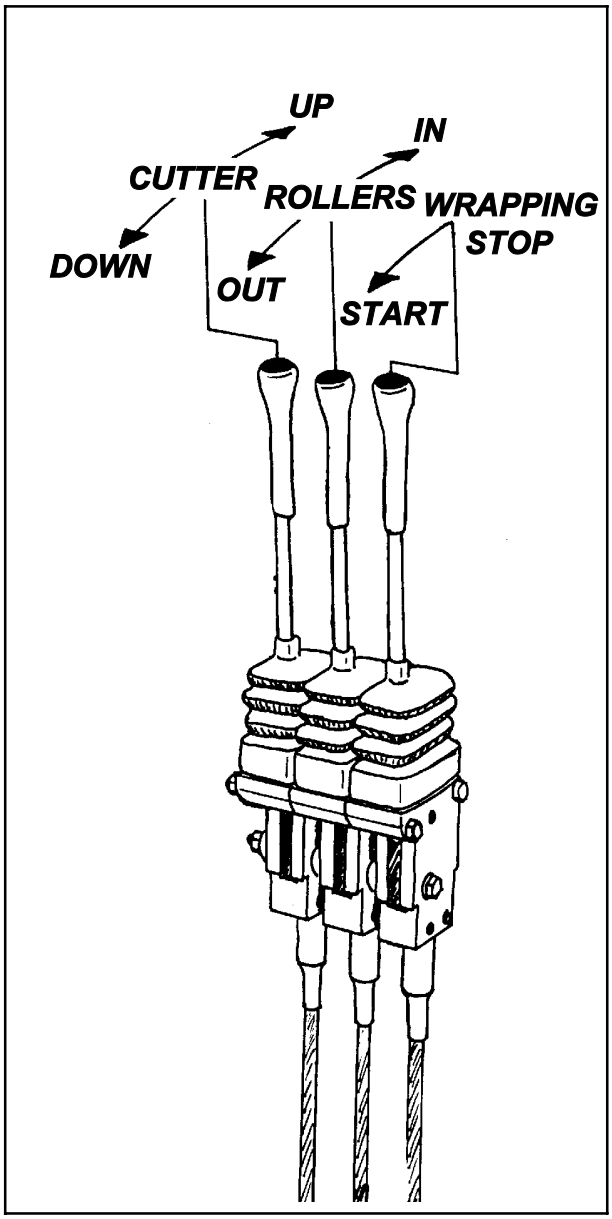


Fig. 7-1

*** Emergency stop: see chapter 1.0**

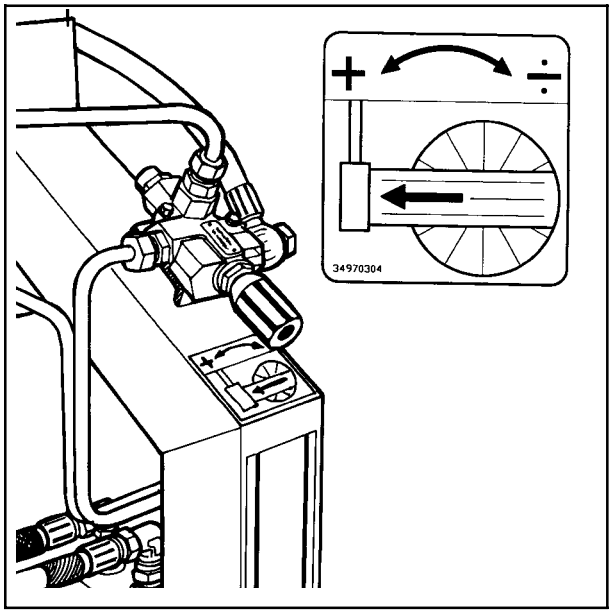


Fig. 8-1

8.0 SPEED-SETTING OF THE WRAPPING ARM.

8.1 Start the tractor and let it run at approx. 1000 revolutions per minute. Lift the machine clear of the ground.
The oil flow to the machine is adjusted by two control valves on the machines' "shoulders".

8.2 The control valve on the "shoulder" where the hydraulic hoses come in to the machine, is for adjustment of the wrapping arm speed. (See fig. 8-1).

8.3 Adjust the wrapping arm speed to approx. 22 revolutions per minute. (Just below three seconds per revolution.) The adjustment is carried out by turning the wheel on the control valve. Turning **clockwise REDUCES** the speed and turning **counterclockwise INCREASES** the speed.
It is recommended not to wrap with higher speed than 22 revolutions per minute, because then the plastic film will "catch" more air, and this air do not reach to evacuate from the bale. The result is bad fodder.

OBS! Max. allowed wrapping arm speed is 27 revolutions per minute.

REMEMBER!
Increased speed of tractor engine do not increase the wrapping speed, it only increases the oil flow into the system and by that also the temperature in the hydraulic system.

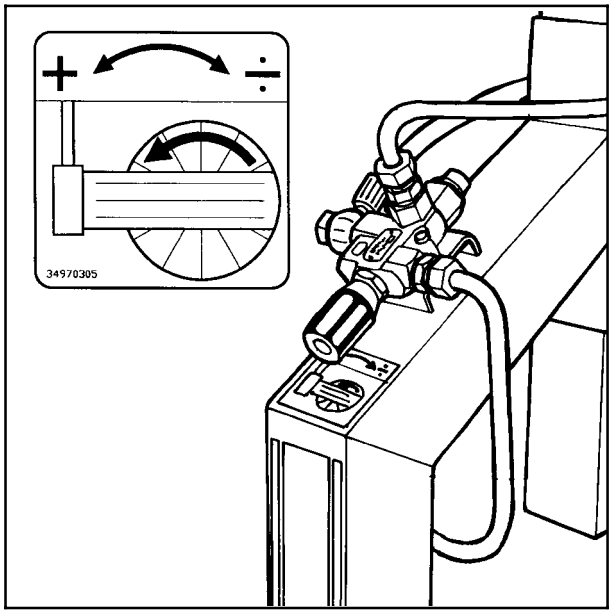


Fig. 9-1

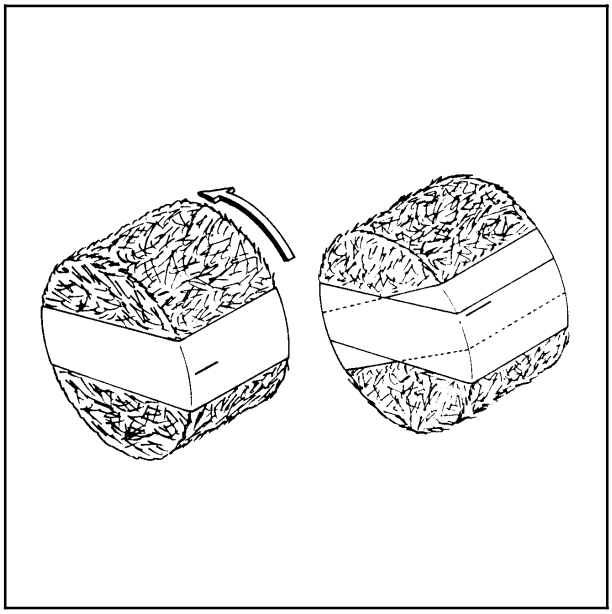


Fig. 9-2

9.0 ADJUSTING THE OVERLAP.

9.1 WRAPPING ARM SPEED.

Load a bale on to the machine. To be able to adjust correct overlap, you have to leave the tractor cab while wrapping. Check that the wrapping arm has a speed of approx. 22 revolutions per minute. If not, adjust this by turning the control valve for wrapping arm speed. (See chapter 8.3). When the wrapping arm speed is OK, you can set the overlap.

9.2 OVERLAPPING.

Use a black marker to mark a line on the middle of the film wrapped on the bale. Adjust the control valve for roller speed, (see fig. 9-1), so that the marker line is just covered. Approx. 52-53% is the ideal overlap. (See fig. 9-2).

This adjustment can be kept as long as you wrap bales with approx. same diameter. When changing bale size, control the overlap.

10.0 OPERATION INSTRUCTION.

We shall now go through a complete wrapping process, from loading to storage place, and explain the practical use of Auto Wrap 1200 M.

10.1 LOADING.

Pick a bale to wrap. Increase the opening between the rollers as much as possible. Lower the machine almost to the ground. **Do not lower the machine all the way down to the ground.** Drive in under the bale. Close the rollers until they begin to lift the bale. Lift the machine and the bale approx. 4"-6", (10-15 cm), above the ground. Close the rollers completely. **The rollers must not under any circumstances hit the ground while closing.** The reason why the rollers shall not hit the ground is that this will increase the wearing on the gears and the bearings of the rollers.

10.2 HEIGHT ADJUSTMENT OF TOWER / PRESTRETCHER.

The tower is adjustable up or down after the bale size. It has three fixed adjustments. The tower and the wrapping arm with prestretcher are rather heavy, so it is recommended to use a tackle or the front loader to lift it. Tighten the properly after adjustment. The prestretcher has to be adjusted so that the plastic film is always hitting the middle of the bale. If you use a 500 mm film on a 750 mm prestretcher, the height of the film roll can also be adjusted with the two distance sleeves. (See chapter 6.6).

10.3 START.

Remember that the plastic film end has to be locked in the U-shaped slot before starting the wrapping. When the plastic film end is in the slot, pull the START-lever. Try to start the wrapping arm gently to avoid damage of the film. When the wrapping arm has done a couple of revolutions, lift the cutter-arm a little, just enough to release the film end. If the cutter is opened too much it will damage the film.

10.4 OVERLAP.

Control that the overlap is correct. If not, see chapter 9.0.

10.5 HOW MANY LAYERS OF PLASTIC FILM?

When the bale is completely covered with film, read the counter that displays the number of revolutions done by the wrapping arm. This number has to be multiplied by 2 or 3, depending on how many layers of film you want to have.

* **4 layers - multiply by 2.**
* **6 layers - multiply by 3.**

As long as you wrap bales with the same diameter, you can stop at the same number every time.

10.6 STOP.

When the required number of revolutions is obtained, open the cutter, and the wrapping arm is stopped when the film is turning against the cutter arm. The wrapping arm is now in correct position for the next wrapping cycles. Close the cutter, and the film is held tight in the U-formed slot and perforated. The bale is now completely wrapped and ready for stacking. (Remember to reset the counter).

10.7 STORAGE PLACE.

At the storage place the bales should be placed systematically. Start at the right-hand side, and stack to the left. The machine is lowered, but not all the way down to the ground. **The rollers must not hit the ground.** Operate the lever for rollers out, and the bale will rest on the ground. Drive the tractor carefully away from the bale. Try to avoid touching the bale with the rollers. The plastic film will now tear off by the perforation at the cutter. Place the next bale to the left of the first one so that the loose film end on the last ball will be locked. Then you do not have to leave the tractor cab to fasten the loose film end. To be sure we recommend that you check that the film ends are securely fastened, and eventually fasten them a little bit better when you have stacked the bales.
If the machine is front mounted, the bales can be staked upon each other. (See more in chapter 3.0).

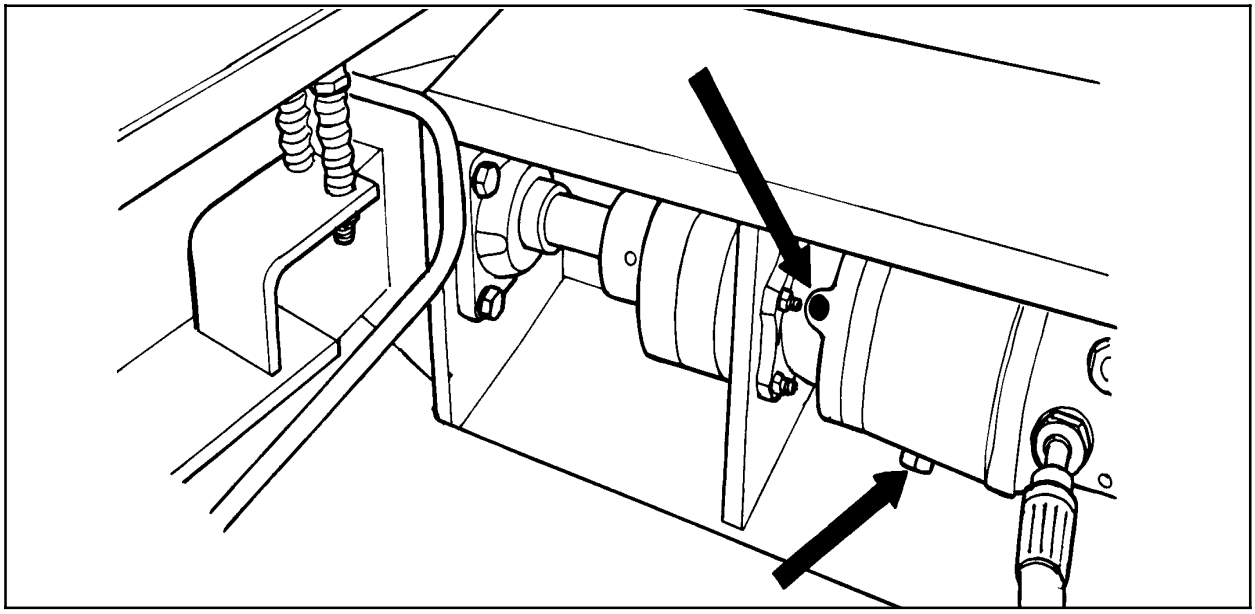


Fig. 12-1

12.0 PERIODIC MAINTENANCE.

12.1 BEARINGS.

All ball-bearings are packed with grease, and do not need any more maintenance.

12.2 PRESTRETCHER.

If the machine is in daily use, the guiding sleeves at the prestretcher should be oiled once a week or when needed. Sprockets and bearings on the prestretcher should also be oiled when needed.

12.3 CUTTER / FILM HOLDER.

The cutter / film holder is preadjusted from the factory and does not need further adjustments. By replacement of some spares it is necessary to adjust it. The springs for the U-shaped slot shall be adjusted so that they are almost completely squeezed together when the cutter-arm is all down.

12.4 GEAR OIL.

The oil in the gearbox for the rollers must be exchanged after the first 100 working hours, and thereby every 2000 hours or at least once a year. Clean up the gear inside with a suitable cleaner. Fill in new oil, the oil amount is approx. 0,5 litre. EP-gear oil in viscosity-group VG 150, (ISO 3448), or a similar type must be used. See list for confirmed oils. (Fig.12-1 shows plugs for filling and tapping).

TYPE OF OIL	+5° C / +40° C IV 95 min. (VG 150, ISO 3448)
AGIP	Blasia 150
ARAL	Degol BG 150
BP MACH	GR XP 150
CASTROL	Alpha SP 150
CHEVRON	Non leaded gear compound 150
ELF	Reductelf SP 150
ESSO	Spartan EP 150
I.P.	Mellana 150
MOBIL	Mobilgear 629
SHELL	Omala oil 150
TOTAL	Carter EP 150

12.5 OIL LEVEL INSPECTION.

The oil level must be checked monthly. If necessary, add oil of the same type.

12.6 NYLON RAILS.

The nylon rails on the telescope frame have to be cleaned and lubricated with oil. **DO NOT USE GREASE!** Soil and sand will easily stick to the grease, and then wear out the nylon rail much faster. Underneath the telescope frame there is a roller that must be greased regularly.

12.7 ADJUSTMENT OF CONTROL WIRES.

After some time of operation the control wires will loose their tension and cannot move the hydraulic slide valve into the correct position. The wires can be adjusted at the end of the valves. Loosen the screws, turn the wire-cables in a suitable direction to eliminate the slack occurred. Tighten the screws again.

NB! Make sure that the wires do not have any sharp bends, cause this will prevent the movement of the wires.

12.8 CLEANING.

The machine should be cleaned and oiled regularly and by the end of the wrapping season.

NB! When using a steamer, you need to be careful with the electric equipment.
Keep the counter protected from rain or water.

12.9 HYDRAULIC CYLINDERS.

Make sure that all hydraulic cylinders are closed when storing the machine.

12.10 QUICK COUPLERS.

Be painstaking by keeping the quick couplers clean and apply the dust caps after use.

12.11 STORAGE.

The machine should be parked on a dry place during the closed season.

12.12 SKIDDING RINGS.

Skidding rings and brushes for the emergency stop* have to be cleaned up regularly. Use alcohol or electric contact spray. If necessary, rub off the rings with a fine rubbing paper. (See also chapter 5.8).

*** Emergency stop: see chapter 1.0**

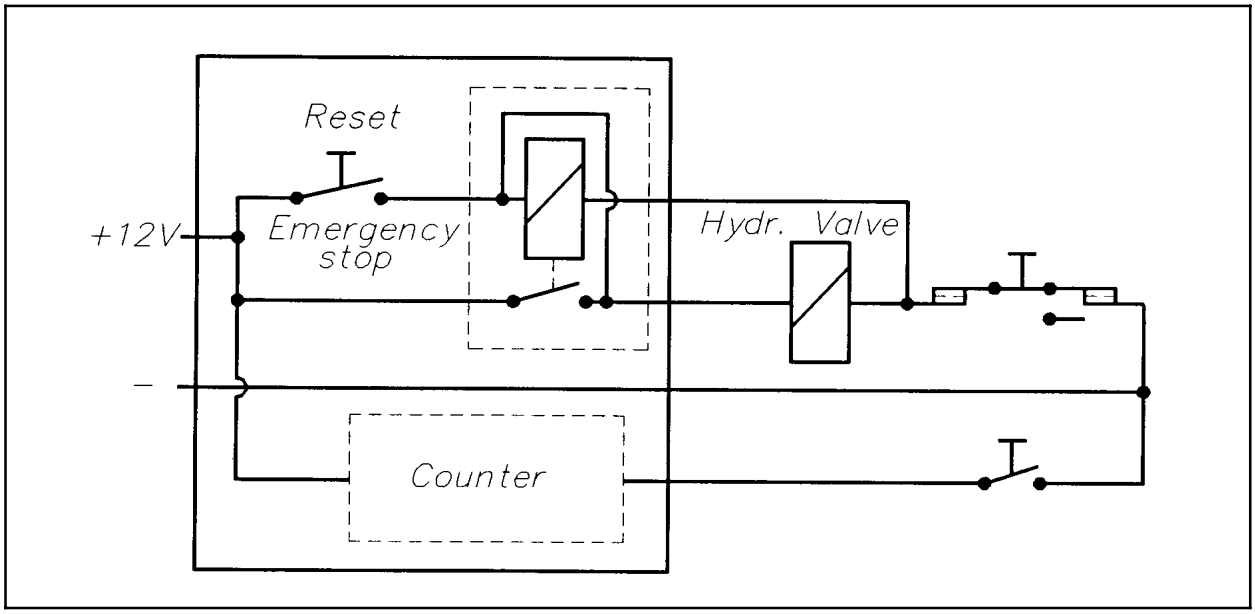


Fig. 13-1

13.0 ELECTRIC CIRCUT.

13.1 COUPLEFORM.

The electric system is limited to the counter-unit with cables, an electric hydraulic-valve, a revolution counter switch and an emergency-stop switch. (See fig. 13-1).

*** Emergency stop: see chapter 1.0**

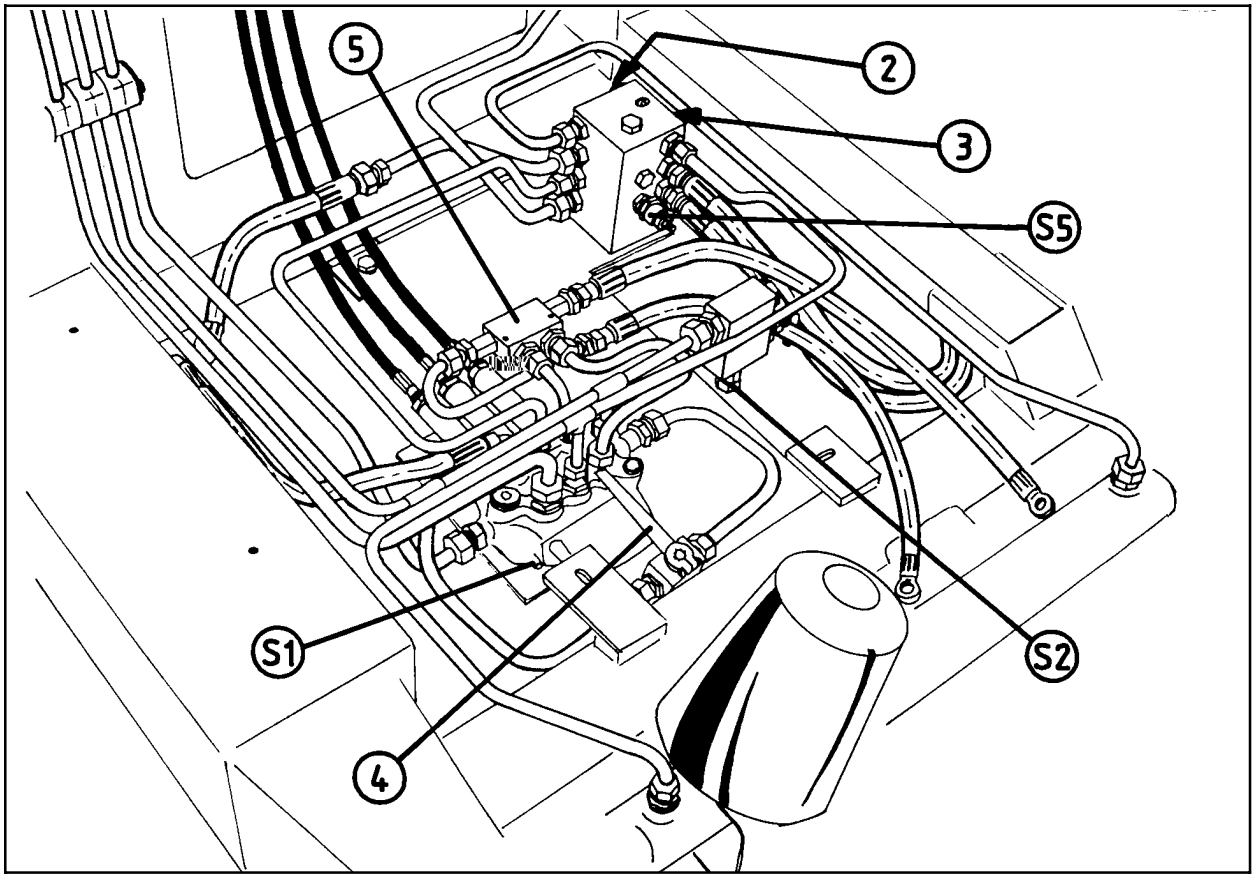


Fig. 14-1

14.0 DESCRIPTION OF HYDRAULICS.

AUTO-WRAP 1200 M is driven from the hydraulic system of the tractor. The hydraulics of the AUTO-WRAP machine can easily be switched from "Open Centre" to "Closed Centre" hydraulic system.

14.1 "OPEN CENTRE" HYDRAULIC.

Most tractors have an oil pump which gives a certain quantity per revolution. Then the crane handle, (pos. 4, fig.14-1), has to be set in open position. (See chapter 4.7). If no other function is activated, the oil flows from the tractor, through the main valve block and back to the tank. When one of the levers is operated, the open flow circuit will be closed and simultaneously the oil goes to the current function.

"CLOSED CENTRE" HYDRAULIC.

For tractors with variable oil pump, like John Deere, the crane handle must be closed.(Pos.4, fig.14-1) Then the oil can only come into the main valve block by operating one of the functions.

14.2 Pos. 5, fig. 14-1 is a piloted non-return valve that shall prevent the oil-pressure to "leak out" of the cylinder that holds the cutter closed.

14.3 The hydraulic system is equipped with a safety valve, (S1), which is preset to 185 bar. It opens for the oil circuit to tank if max. pressure is exceeded. This valve is attached to the main valve block. See fig. 14-1.

14.4 There is also a safety valve, (S2), on the return side in the main block. It works like an "emergency outlet valve", and lets the oil out on the ground if the return line should be blocked up. This valve is preset to 105 bar, and the valve's mission is to prevent that it by an accident can come high pressure into the return side of the wrapping arm motor.

14.5 The valve block on fig.14-1 has three valves:

- **a)** Safety valve, (S5), which protects the roller motor against too large difference between oil pressure input and outlet.
- **b)** Piloted non-return valve which opens when operating rollers out.
- **c)** Non-return valve which prevents oil from flowing to the rotating arm when width of the rollers is operated.

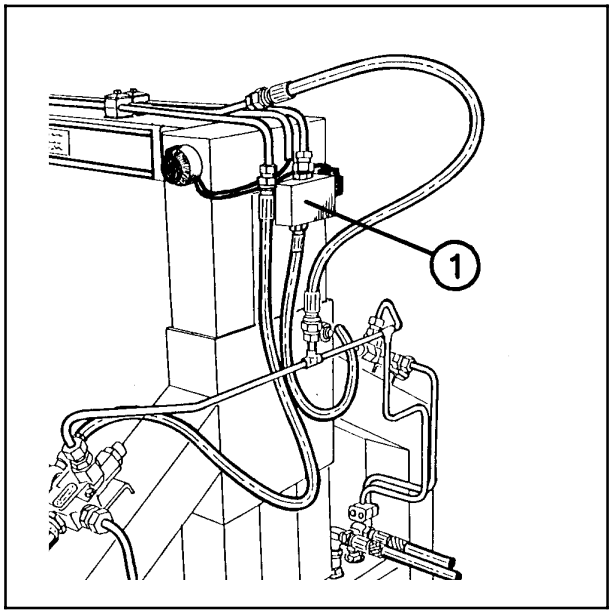


Fig. 14-2

14.6 EMERGENCY STOP* VALVE.

On the back side of the machines' tower there is an electric operated hydraulic valve that closes the oil flow to the wrapping arm motor when the emergency stop* is activated. (Pos. 1, fig. 14-2).

After the emergency stop* has been activated, it has to be reset by pressing the button on the counter-unit. (See also chapter 5.0).

14.7 All three oil motors on the machine are serial-connected. At first the oil runs through the wrapping arm motor, then to the control valve for roller-speed, through each of the roller motors and returns to tank.

14.8 When" rollers out" is operated the oil flows from the minus-side of the width cylinder and through the roller motor before it goes back to the valve block. When "rollers in" is operated, the oil flows the opposite way.

*** Emergency stop: see chapter 1.0**

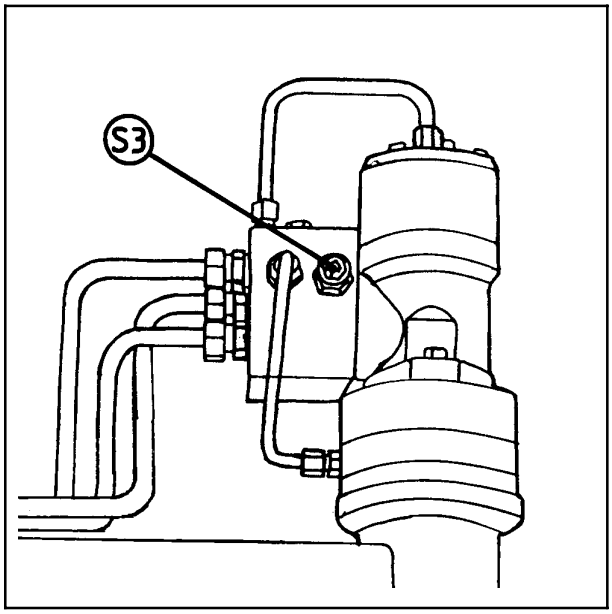


Fig. 14-3

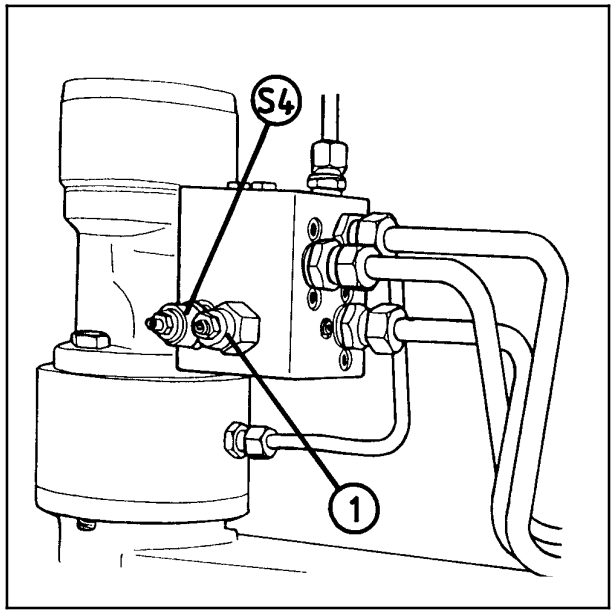


Fig. 14-4

14.9 WRAPPING ARM VALVE BLOCK.

The wrapping arm valve block is attached to the wrapping arm motor, and includes 4 valves.

When the wrapping arm starts, the oil pressure also goes to the brake so it is released. But we want a little delay here to prevent a too hard stop when the brake goes on. This is obtained by the mounting of a nozzle inside the fitting to the brake.

a) **Non return valve.**
It shall prevent the oil of going back to the control valve for wrapping arm speed. It is placed inside the block, and can only be reached by removing the whole block from the motor.

b) **Safety valve on the minus side.** (S3, fig. 14-3).
This valve limits the max. torque of the wrapping arm. The valve lets the additional oil over to the motors' outlet side. It is adjusted so that the pull force on the far end of the arm is approx. 35 KP.

c) **Safety valve on the plus side.** (S4, fig. 14-4).
This valve shall provide a gradual stop of the wrapping arm and prevent accumulation of pressure on the motor's outlet side when the arm stops. The valve lets the oil flow from the outlet side of the motor to the input side.

d) **Holding valve.** (Pos. 1, fig. 14-4).
This valve regulates the oil flow on the outlet side to be able to hold a constant input pressure to the wrapping arm motor. This makes the motor go smooth, and the brake is not activated even if the wrapping arm rotates easy "downwards". (If the machine is in an oblique position while wrapping).

15.0 CHECK POINTS BEFORE TROUBLE SHOOTING.

In this chapter we have some general check points that have to be examined first if something is wrong with the machine. In chapter 17.0 we have a more detailed trouble shooting.
There are three basic assumptions that have to be fulfilled if the machine shall function properly:

1. The oil pressure from tractor should be 180 bar.
2. The return flow of oil has to be as free as possible, max. 10 bar counter pressure.
3. Enough electric power to the emergency stop* function.

15.1 OIL PRESSURE.

In order to control that the oil pressure into the machine is high enough, there has to be applied a gauge to the oil pressure hose, for example on the quick coupler.
If the pressure is less than 180 bar, there will be less power for the functions. The first place you trace this is at the ROLLERS OUT / IN.

OIL AMOUNT.
The oil amount that the tractor delivers must be **minimum 15 liters/minute,** but it is recommended that it is 25 liters/minute. (Max. allowed oil amount is 40 liters/minute).
REMEMBER! Large oil amount = Valves get hot. (Small oiltank = insufficient cooling).

15.2 COUNTER PRESSURE.

The counter pressure can be too high. With high counter pressure the machines' function's will get less power. High counter pressure means also that you need more power to operate the valves.
MAX. ALLOWED COUNTER PRESSURE IS 10 BAR.
If you are in doubt about the counter pressure, arrange a "free return" directly to the tank.

If the counter pressure goes over 105 bar, the emergency stop* valve, (S2), will open and let the oil out on the ground through the outlet tube. (See chapter 14.4).

15.3 ELECTRIC POWER.

It is important to check that the emergency stop* function gets enough electric power. Do the two points in the display light up? (See chapter 5.4 and 5.5).
If not, the machine cannot be started.

Is the battery voltage high enough?
If the voltage falls below 9 volts, the emergency stop* valve will not be able to open for the oil flow to the wrapping arm.

Are the cables correctly connected to the battery?
Follow directions in chapter 4.4 and 13.0.

Is the connection between battery cable and counter box OK?
Clean off the poles and check that the plug comes correct in place.

Is the connection between counter box and machine OK?
Change contacts if any doubt about the condition.

Is the fuse on the battery cable OK?

PLEASE CONTACT YOUR DEALER IF YOU ARE IN DOUBT OF ANYTHING.
(Remember always to give your dealer the serialnumber and productionyear of your machine when contacting dealer and when ordering spare parts).

*** Emergency stop: see chapter 1.0**

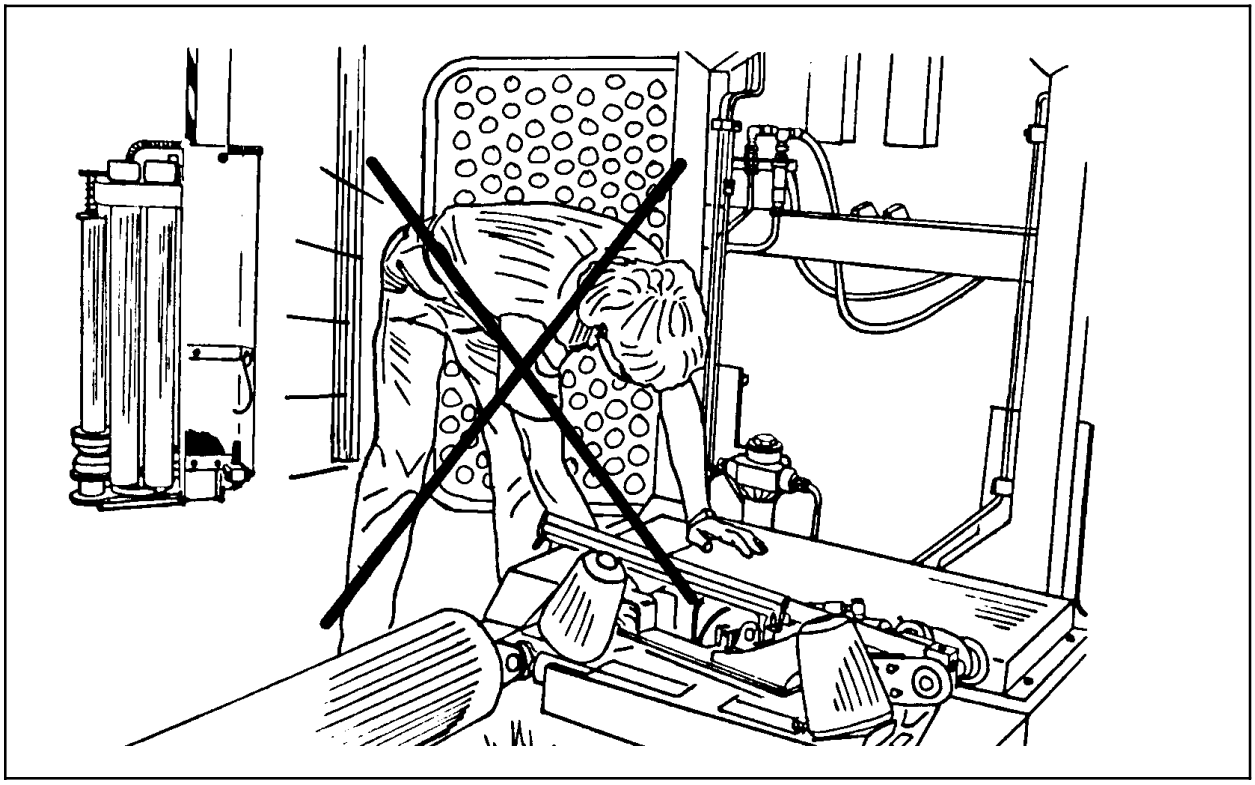


Fig. 16-1 BEWARE OF MOVING PARTS WHEN TESTING THE MACHINE.

16.0 PROCEDURE OF TROUBLE SHOOTING.

16.1 EMERGENCY STOP*.

The emergency stop* is constructed so that the electric circuit must be closed to be able to start the machine. As soon as it's broken, the machine will stop. This is shown on the counter-units' display by two points lighting up. (See chapter 5.0).
When the emergency stop* is activated, there shall be measured 4 volts over the emergency stop*-switch.

16.2 EMERGENCY STOP* VALVE.

When you shall check if the emergency stop* valve gets electric power, you do this in the following way:

1. Unscrew the nut that holds the solenoid.

2. The solenoid is easy to move without electric power.

3. When the emergency stop* arm is in correct position, and the reset button on the counter box is pressed, there shall be electric power to the solenoid. If the solenoid gets power, it will be difficult to move, it "sticks". This is the best and easiest way to check if the emergency stop* valve gets electric power. Another way is to hold a screwdriver o.e. up to the magnet. If it "sticks", the solenoid gets electric power.

The power supply to the valve can also be measured with a voltmeter, but then the contact must be connected to the solenoid, so it is using power.
To have reliable functions, the voltage should not be lower than 11,5 volts, even if the magnet valve usually works with a little lower voltage.

*** Emergency stop: see chapter 1.0**

17.0 TROUBLE SHOOTING.

17.1 THE MACHINE DOES NOT FUNCTION.

a) Even if the gauge shows enough pressure there is no reaction in the machine. The reason could be that one, (or both), of the quick-couplers does not open for the oil.
Change quick couplers.

b) The counter pressure could be too high.
Max. allowed counter pressure is 10 bar. (See chapter 15.2).

c) Make sure that the crane handle is turned into correct position. (See chapter 4.7).

(Disturbances of this type, a, b or c, are most likely in the first days that the machine is in use).

17.2 CUTTER, WRAPPING ARM OR ROLLERS WIDTH DOES NOT FUNCTION.

The reason might be that the wires has loosen their tension, and has to be tensioned. (See chapter 12.7).

17.3 THE CUTTER WILL NOT HOLD THE FILM.

The pressure is falling and the springs start to lift the cutter. (See chapter 14.2).

17.4 THE WRAPPING ARM WILL NOT ROTATE.

a) The bolt that secure the wrapping arm during transport has to be removed so that the wrapping arm can move free.

b) The safety valve, (S3), can be leak, so that the oil is passing by the wrapping arm motor. (Fig. 14-3). Dismantle and try out if the sliding shaft can move freely.

c) The control valve, (fig. 8-1), can be blocked. Dismantle and try out if the valve works normally.
Do not use sharp tools.

d) Check if the oil motor is working.
Ask your dealer for advice BEFORE you make the problems bigger and repairing more difficult.

e) If the emergency stop* has been activated, the reset-button on the counter-unit has to be pressed before the machine can be started again. (See chap. 5.0).

Some possible trouble with the emergency stop*:

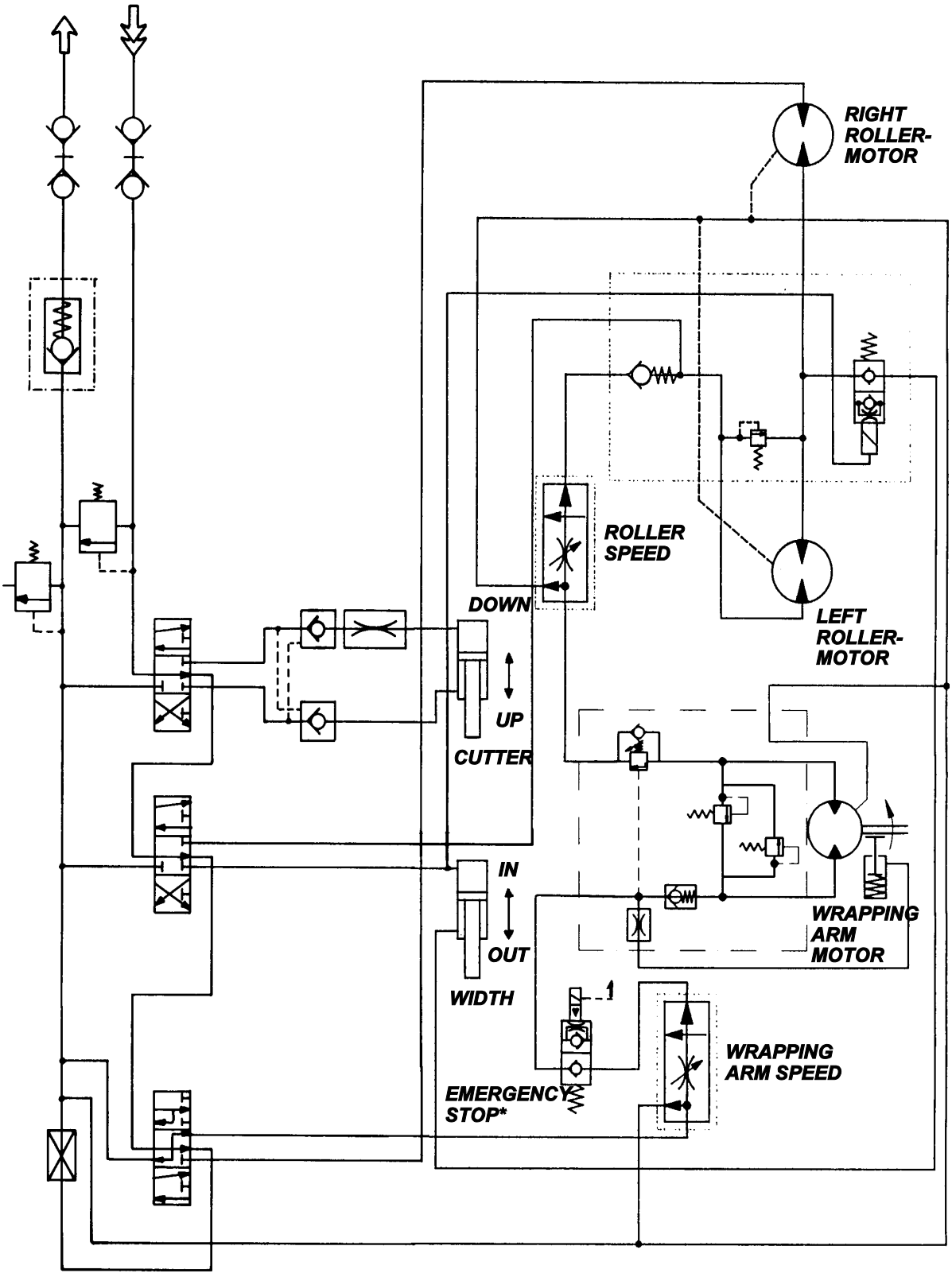
1. **Bad contact of the skidding rings.**
   Rub it carefully with fine rubbing paper.

2. **The release hoop is out of position.**
   Defect return spring or fragments in the fastening bracket.

3. **The switch is defect.**
   Replace.

*** Emergency stop: see chapter 1.0**

HYDRAULIC CHART, AUTO WRAP 1200 M



*** Emergency stop: see chapter 1.0**

19.0 WARRANTY TERMS.

19.1 TELLEFSDAL A.S. warrantees the NORSE AUTO WRAP 1200 M bale wrapping machines for 12 full months from the date of purchase.

19.2 During the warranty period TELLEFSDAL A.S will repair, replace or test any parts proved to be defective in material or construction.

19.3 Before comprehensive warranty services are done, the warranty claim has to be agreed upon with TELLEFSDAL A.S.

By approval of warranty claims TELLEFSDAL A.S covers all repair costs.

Freight costs and all personal travel costs are normally the responsibility of the dealer.

Before repairing the machine locally the terms of compensation have to be agreed upon between the buyer and the manufacturer.

Compensation for defective parts corresponds to the current spare parts price-list, minus normal discount.

If the warranty claim should be rejected, TELLEFSDAL A.S is not responsible for expenses incurred.

19.4 All claims **must be presented in written form,** on a fixed NOTICE OF CLAIM, and enclosed a copy of the warranty card, properly filled in. Guarantee claimed parts also have to be enclosed. All return shall be agreed upon before sending, and marked with serial number on the machine and the name and address of the dealer. Freight costs for returned parts have to be payed by the buyer.

19.5 The NORSE warrantee is **NOT** valid if:

A) The warrantee card has not been filled out and a copy is not enclosed with the claim.

B) The user's manual and safety instructions have not been followed.

C) The machine has been misused, abused or carelessly operated.

D) The machine is modified by welding or by attachments of not original parts and pieces. It has been serviced by persons, who are unauthorized by Tellefsdal A.S.

E) The machine is re-programmed to contribute more than what is programmed at the factory. (Max. 27 rpm).

19.6 TELLEFSDAL A.S IS NOT responsible for lost working time or lost revenue that has resulted because of a defect in the machine.

19.7 The buyer can not claim a cancellation the purchase, a price-reduction or any other claims, if TELLEFSDAL A.S, within reasonable time, repairs the machine.

19.8 The buyer is granted credit on warranty claims AFTER approval from TELLEFSDAL A.S. Deductions of credits on current incoices are not accepted without prior agreement.

WARRANTY CARD
NORSE AUTO WRAP

Serial number of machine: _____ **Type:** _____

Serial number of control unit: _____

Production year: _____

Purchase date: _____

WE HAVE READ AND ACCEPT THE CURRENT WARRANTY TERMS.

Importer: _____
Date **Firm** **Signature**

Dealer: _____
Date **Firm** **Signature**

Customer: _____
Name **Address**

_____
Signature

HAVE YOU GOT ENOUGH TRAINING ABOUT THE MACHINE FROM YOUR DEALER? ☐ **YES** ☐ **NO**