Dry Grain Bagger

R9 - **model**

Operator's Manual

<u>IMPORTANT:</u> Before attempting machine operation, read this manual's instructions carefully.

The manual contains instructions that may vary in accordance with user experience, climate, grain type, tractor weight, and other conditions.

January, 2009 | 1st Edition | R-9169

INDEX

Warranty terms

01

Unit: **Dry Grain Bagger**
Model: **R-9**
RICHIGER MAQUINARIAS S.A, located in Avellaneda 661, Sunchales, Santa Fe province, Argentina, warrants its product **R-9 Dry Grain Bagger,** from defects in materials and workmanship under normal operating conditions and proper application, in accordance with the specifications for operation as described by the manufacturer, for the period of 600 hours or 365 days, whichever occurs first, from date of delivery to buyer.

Limitations on Warranty

This warranty is expressly in lieu of any other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose.
Buyer's sole and exclusive remedy under this warranty shall be limited to the repair, replacement or exchange of warranted parts at our option, F.O.B. our factory, or designated service center, agent or representative. If the agent or representative grants any warranty greater in scope or time period or labor allowance than that detailed herein, RICHIGER MAQUINARIAS S.A shall not be liable beyond the herein stated limitations.
Equipment and accessories not of our manufacture are not covered by this warranty. Any claim with regards to defective aforementioned equipment and accessories shall be submitted by RICHIGER MAQUINARIAS S.A to the original manufacturers for analysis and subsequent non-approval or approval of repair, replacement or exchange, at their option.
No special, incidental, consequential or other damages or contingent liabilities including, but not limited to, loss of life, personal injury, loss of crops, loss due to fire or water damage, loss of business or business income, down time costs and trade or other commercial loss arising out of the failure of product. The term product and products as used in this warranty designates the whole finished unit in its entirety, i.e. the complete assembled machine, and/or all and every individual component, part, equipment and accessory that forms said complete assembled machine.
Normal wear and tear associated with use is expressly excluded from this warranty.
No products shall be returned without prior authorization from RICHIGER MAQUINARIAS S.A.
Buyers and their agents shall prepay all transportation charges for the return of such products to RICHIGER MAQUINARIAS S.A or designated service center. There will be no acceptance of any charges for labor and/or parts incidental to the removal and remounting of product repaired or replaced under this warranty.
This warranty does not cover conditions over which RICHIGER MAQUINARIAS S.A has no control including, without limitation, contamination, pressures in excess of the recommended maximum, products damaged or subject to accident, abuse or misuse after shipment from factory, products altered and repaired by anyone other than RICHIGER MAQUINARIAS S.A factory personnel or representative or source approved by RICHIGER MAQUINARIAS S.A in writing prior to commencement of said work.
The first buyer is responsible for proof of delivery date of product for the purpose of establishing warranty time of validity. Warranty can continue for new user should the product be resold by the first buyer during valid period of warranty, only if this situation is reported in writing, with enclosed documentation as proof of purchase. Warranty will not be applicable if series number or other identification markers are erased, obliterated or otherwise altered.

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The following are types of failures which are not attributable to defects in materials and/or workmanship and which are not considered by RICHIGER MAQUINARIAS S.A as part of the warranty extended hereunder. This listing is by way of example and is not intended to be exhaustive:

1) Product suffered damages attributable to accident, abuse, neglect or ignorance.
2) Product was not used in accordance with manufacturer's recommendations.
3) Product did not receive required maintenance.
4) Failure ensued after replacement of original parts without express consent of RICHIGER MAQUINARIAS S.A, or modifications that in RICHIGER MAQUINARIAS S.A's judgment may have affected performance, safety and/or dependability parameters.
5) Product was used in a manner or for a purpose for which it was not designed or intended to be used.
6) Incorrect mounting of external gears, pulleys.
7) Stripped splines or keyways on drive shafts.
8) Damage due to deterioration during periods of storage by the purchaser prior to operation.
9) Damage of any kind from erosive or corrosive action of any gases or liquids handled by the machinery.
10) Lack of or incorrect type of hydraulic fluid, lubricant, oil and/or grease.
11) Contamination of hydraulic fluid.
12) Operating beyond recommended maximum speeds, pressures and temperatures.
13) Repairs or disassembly by unauthorized personnel.
14) Misalignment of drive shafts, gears, sprockets and power driven elements.
15) Damage due to voltage spikes, static discharge, electrical storms, physical abuse, externally controlled device failure and improper fusing.

Buyer inspection and acceptance

Within 15 days after delivery to or receipt by the buyer of the product, the buyer shall inform the seller in writing if product is found defective or short in any respect. Failure to so inform the seller or any use by buyer of product shall constitute conclusive evidence that the seller satisfactorily performed and the buyer waives any right to reject the product thereafter

This Operator's manual for Richiger's R-9 model bagger should be thoroughly studied and understood for safe and efficient use of the machine. Keep it near at hand for consultation and ensure that anyone who uses the machine reads it before he operates it for the first time.

Information and machine specifications quoted here are valid for date of publication and may vary in time.

READ THIS MANUAL CAREFULLY. Pay special attention to the following symbols and safety decals that you will find on the bagger.

DANGER

Indicates one of the most serious potential hazards. Death or serious injury will occur.

WARNING

Indicates a hazard less serious than one indicated by a DANGER decal. Death or serious injury could occur.

CAUTION

Reminds operators of a safety instruction and identifies a hazard less serious than one indicated by a WARNING decal. Minor or moderate injury may occur.

IMPORTANT

Offers reminders or supplementary information.

03 Purpose

Richiger's R-9 bagger is a machine specifically designed for one basic purpose: storing all types of dry, clean grain inside bags. Alternatively, products such as fertilizers that run freely and flow in a way similar than grain does can be also be stored in bags. However, it is a machine designed for specific, not multiple applications. Caution is recommended and utilization of the machine with materials out of its specific range of use will be considered inappropriate.
This manual also contains information about adequate preparation of the ground, correct layout of bags and other considerations that should be taken into account when using *Richiger's* dry grain bagger.

04 General Features

Heavy duty frame

Solid structural frame has been designed to stand up to the toughest working and transport conditions for many years of trouble-free operation.

Braking system

Brake pads placed over each tire exert pressure through hydraulic cylinders powered by a manual hydraulic pump. Left and right wheel braking circuits are monitored with individual pressure gauges and once desired pressure is set, valves maintain it constant. This precise control of braking action
contributes to the overall efficiency of the bagging operation.

Compression auger

The screw is mounted on self aligning roller bearings that absorb axial effort. The constant pushing of grain under pressure subjects the auger to a fair amount of wear, so the flighting is made of thick 8 mm. steel plate. The auger is located in topmost position on the machine to achieve better filling of the bag and its horizontal layout ensures minimum breakage of grain.

Drive shaft transmission

Transmission works through chain driven reduction gears for positive non-slip action. It works with a PTO standard speed of 540 RPM, reduced to half that speed at the compression auger to prevent grain damage. Excessive auger speed could also generate centrifugal forces that slow down the bagging process**.**

Drawbar

Heavy duty drawbar built of structural steel tubing allows hydraulic and mechanical height regulation. The hydraulic cylinder controls the machine's working angle and the drawbar coupler adapts to different tractors.

Supporting rail

The hoist assembly slides on a supporting rail and is controlled from the ground so the operator does not risk accidentally falling from the machine. Since the rail is not connected to the grain hopper, the latter can be removed for loading with specially adapted auger or conveyor systems.

Electric hoist

It is driven by the tractor's 12V battery and allows the operator to raise the bag via remote control without physical exertion.

Grain hopper

Generous length and width simplify the loading of grain, with less maneuvering required from self-unloading grain carts. Two hopper covers that can be opened and closed from the ground serve the double purpose of increasing reception area and preventing the entrance of rain water.

A tarpaulin that unfolds when the hopper covers are opened protects from the wind and helps contain the material that is being loaded.

Hood

Hood shape is optimized to form a tall bag that will hold more bushels of grain. Standard 9 ft. bags are used on Richiger's R-9 model bagger.

Introduction

This operator's manual has been prepared with the latest information available. Read it through before using the bagger.
The terms “left” and “right” when mentioned in the manual in relation to the machine are used from the operator's point of view, seated in the tractor facing forward.
All information used in the manual was updated at the time of printing, but changes carried out in factory could show some differences between pictures, illustrations and data depicted here and the actual product. The manufacturer reserves the right to modify the models described in this user's manual without prior notice.

WARNING

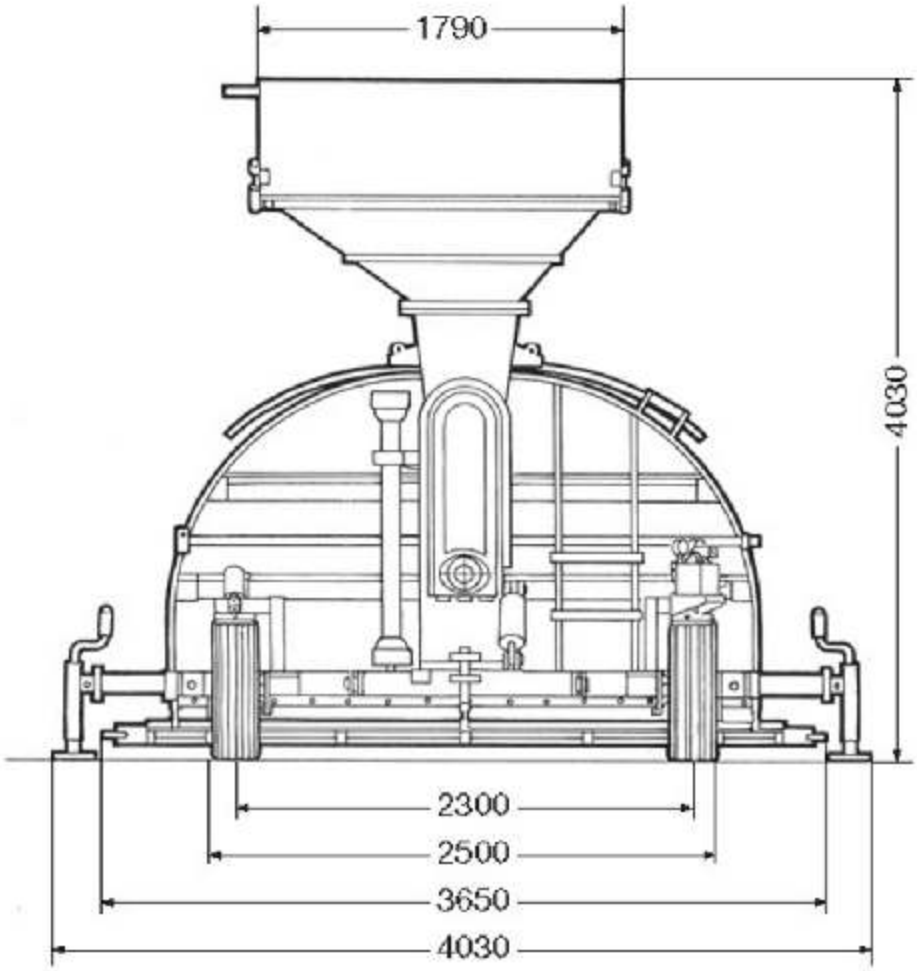
Some of the pictures in this manual show the machine with protective covers and shields removed in order to show a feature more clearly. Do not operate the bagger if any of the protective covers is missing.

Serial number and operator's manual

Serial number and machine model is important information pertaining to your machine. This information is required when ordering spare parts. The identifying tag is located on the front, lower left section of the machine.

The canister with the manual is located inside the pillar on the left

Filling tunnel	Shape: Flattened bell shape for better grain storage. Bag diameter & length: 9 ft. (2.75 m.) x 200 ft. (60 m.) or 250 ft. (75 m.)
Bag setting up	Bag holding cradle is raised with a 12 V. electric hoist that slides along a supporting rail. Operator can work safely from the ground.
Materials suitable for storage	All kinds of dry grains. Can also handle free flowing or pelletized materials such as fertilizers and stock feed.
Transport system	No additional transport equipment required.
Height adjustment	By means of a hydraulic cylinder. Height adjustable tongue hitch.
Drawbar	Folding design for transport by truck or trailer.
Tractor	Minimum power requirement: 45 HP. PTO speed (max.): 540 RPM.
Drive shaft	Fully covered with plastic shield for operator safety. Low shaft to gearbox input angle.
Braking system	Manual hydraulic pump and independently controlled cylinders that act upon brake pads.
Hopper	Ample dimensions for extra grain loading capacity. Hinged covers for rain protection.
Compression screw	340 mm. diameter compression screw w/ 8 mm. thick flighting. Work capacity: 250 tons/hour.
Bag fastening system	By means of a rope harness that encircles bag and hood.
Tires	Radial 215/75 x 15, inflation pressure 45 lbs.
Weight	1,100 kg.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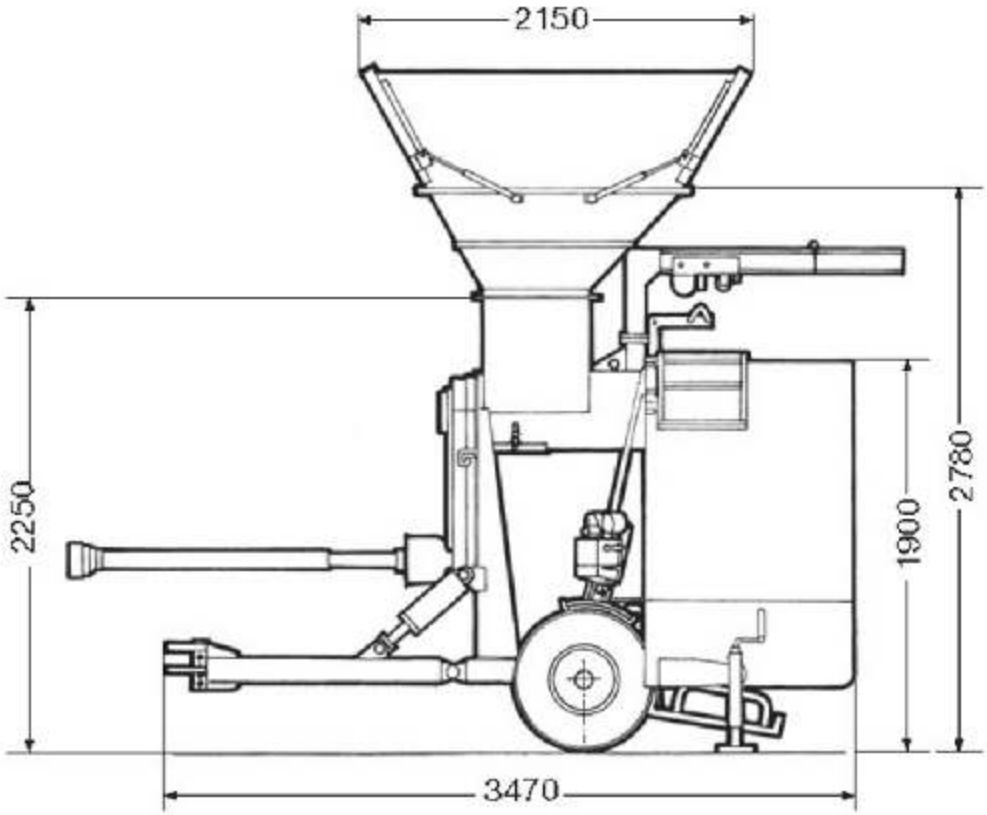
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Basic precautions

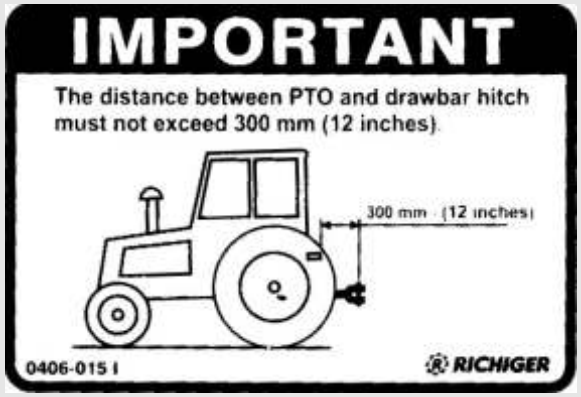
It is important, in order to avoid accidents involving oneself or others, to be familiar with this machine. Study the location and operation of all controls. *Survey the controls in a safe area before actually operating in the field.*
Safety guidelines presented here are not a substitute for security codes, insurance company constraints or traffic regulations. Make sure your machine is equipped with the elements required in your country for towing or travel on roads.
As an operator, you can prevent mishaps by following correct safety procedures and insisting that people that work with you follow them too.

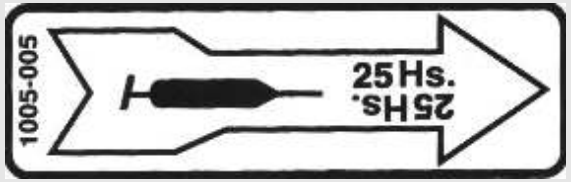
- **Make sure all people are safely positioned before starting tractor's motor and engaging PTO.**
- **Whenever the bagger is working, tractor should not be left unattended so that PTO shaft can be stopped in the event of an unforeseen situation.**
- **Disconnect hydraulic hoses and drive shaft when performing maintenance chores on the machine.**
- **Keep grain bagger clean and sheltered when not in use. This diminishes risk of deterioration and eventual failure.**
- **Make sure there is a fire extinguisher on board the tractor and that date has not expired.**
- **Decals with safety indications and warnings should be strictly heeded, kept in good condition and replaced if necessary.**
- **When doing maintenance work use appropriate personal protection equipment (gloves, head and eye protection gear).**
- **Keep hands, feet and clothes well away from moving parts.**
- **Never stand in front of the wheels when disengaging brakes as the bagger can start forward unexpectedly due to grain pressure inside the bag. This sudden movement can seriously imperil anyone in the machine's path.**
- **Drive with caution when traveling with the bagger on public roads.**
- **Before operating the machine read operator manual carefully and in full, and keep it handy for consultation.**

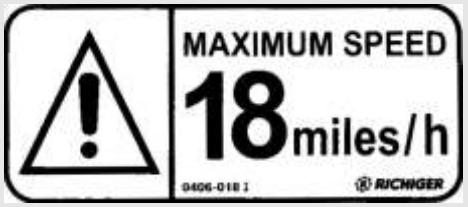
Before towing the machine check the following point by point:

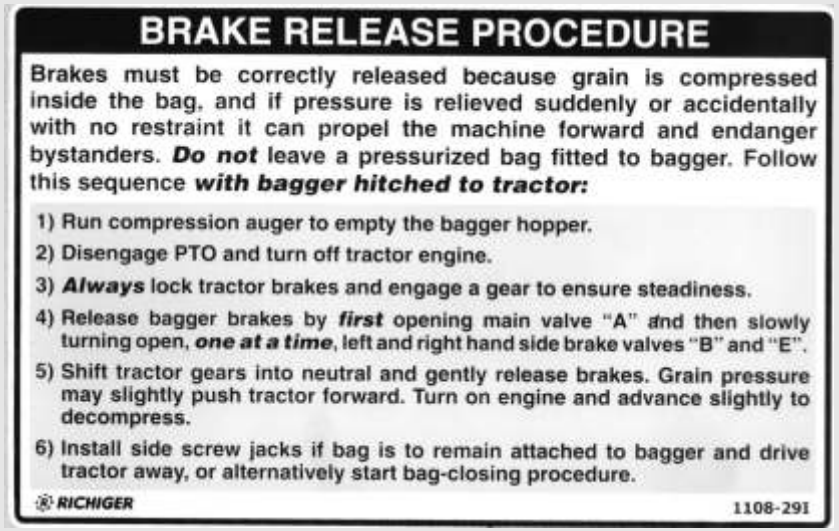
- **Drawbar hitch pin and retaining clip must be properly secured.**
- **Attach safety chains between vehicle's hitch and tractor drawbar for added security on the road.**
- **Verify tire pressures (45 lbs. standard for work) and if wheel bolts, as well as wheel spindle end bolts, are properly tightened.**
- **The bagger's rear end must be raised as high as possible for best road clearance, i.e., hydraulic cylinder must be completely closed and hoses depressurized.**
- **Hydraulic hoses and hoist's remote control cables should be adequately secured in place.**
- **Hopper covers must be closed and the long pole or handle locked in place on the frame.**
- **Brakes should be completely released and pads not in contact with the tires.**
- **Drive shaft should be properly secured in its vertical transport position.**
- **Bag supporting cradle should be correctly fastened with its spring clasps.**
- **Bag supporting tray must be held up securely against the frame with its turnbuckle chains.**

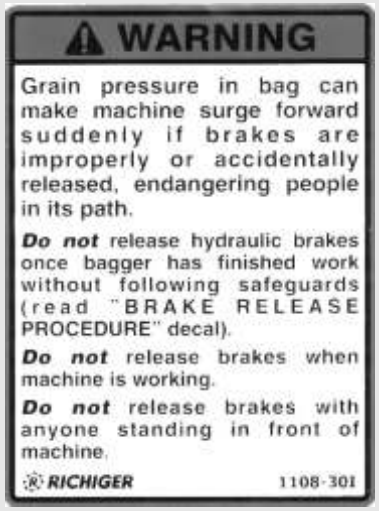
The position of safety decals on the bagger is shown in illustration Nº 12 of the parts list section at the end of this manual. All indications imparted should be followed conscientiously. Keep decals in good condition and replace them if torn or missing. Following is a listing of R-9 decals:











General indications before actual work

08

Tractor

The tractor used with the R-9 bagger should have no less than 45 HP. Hydraulic circuit can be either open loop or closed loop.

The PTO drive shaft should not exceed a 360 millimeter (14") length, measured from end of PTO stub shaft to drawbar hitch pin (Fig. 1) This is to ensure adequate torque transference between the two sections of the drive shaft.

A 12V electric hoist is used to raise and place bag in position on the tunnel hood, so the tractor's battery should provide that voltage.

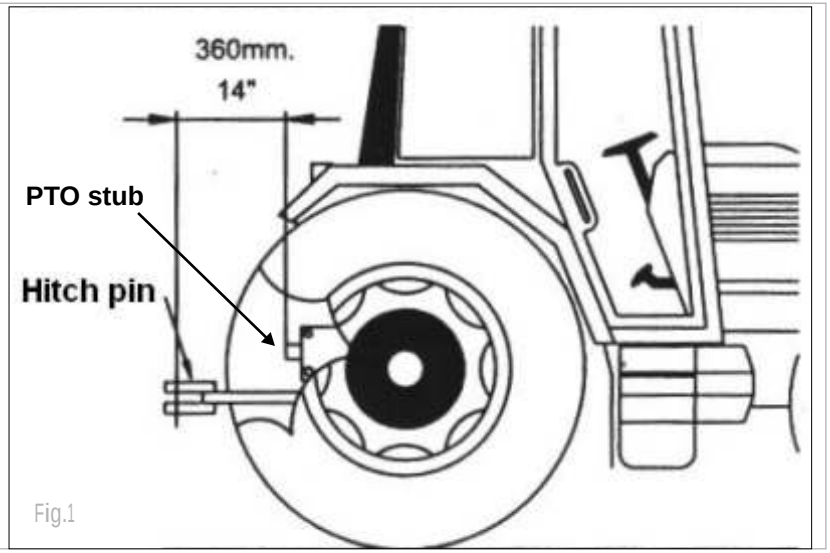


Fig.1

Hitch pin “A” should be 30 to 32 mm. (1 3/16” to 1 1/4”) in diameter and have its corresponding retaining clip “B” (Fig. 2). A spacer should be placed between hitch tongue and drawbar to prevent vertical rocking motion.

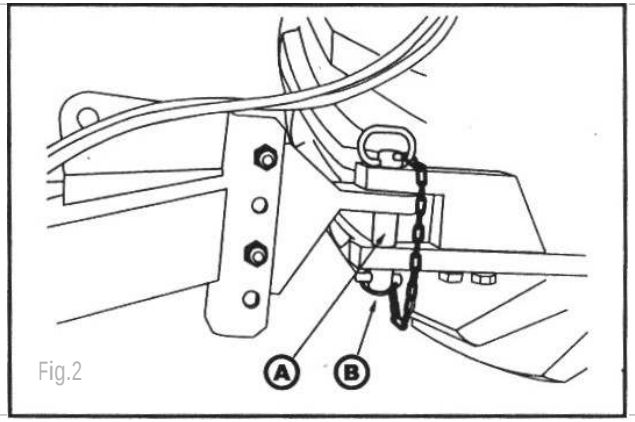


Fig.2

The hydraulic cylinder is used to set the machine's inclination angle and working height. Hoses connect to tractor hydraulic system through 1/2” NPT quick couplings (Fig. 3, “A”).

Before connecting hoses to tractor: stop tractor engine and depressurize hydraulic circuit by moving control lever in both directions. Remove female plugs (Fig. 3, “B”) and wipe clean coupling ends before connecting.

Before disconnecting hoses from tractor: stop tractor engine and depressurize hydraulic circuit by moving control lever in both directions. Pull out quick connect couplings and cover ends with plugs.

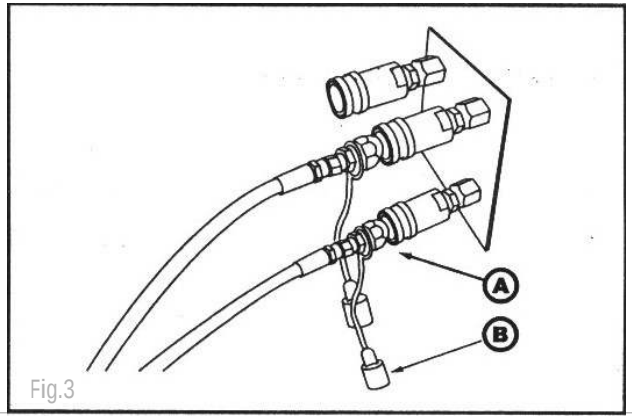


Fig.3

CAUTION

After connecting the hoses, check that they are not left too short that the bagger cannot maneuver without pulling at them, nor too long that there is risk of them snagging a machine part.

The correct working position of the machine is with rear section (i.e., the tunnel section) pointing slightly down. Normally if the machine is leveled horizontally before work begins, the weight of the incoming grain will tend to slightly push down the rear end. Correct incline can be set with hydraulic cylinder and by repositioning the R-9 bagger's hitch tongue, but it should not be modified once machine has begun work because the enormous weight of grain filling the tunnel makes it virtually unmovable. Using the cylinder at that stage could cause mechanical damage.

Make sure that the correct extremity (i.e., the square bar) of the drive shaft is connected to the tractor's PTO. This is clearly indicated on the shaft itself.

CAUTION

The PTO drive shaft demands that the operator be attentive and use maximum caution around it.
Make sure that protection shieds installed on tractor and shaft do not interfere with each other or with normal shaft movement during work.
Verify there is no excessive angle disparity between connection points: drive shaft should be as horizontal as possible.

Check maximum and minimum lengths of shaft when open and closed.
Read following instructions to adjust length:

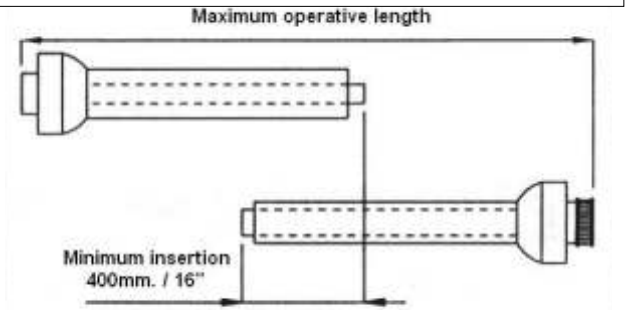


Fig.4

- Disassemble shaft into its male and female component halves.
- With bagger hitched to tractor and square bar telescoping section (male half) connected to PTO, place round tube section (female half) alongside and verify that there are at least 400 mm. (16”) of square bar that will insert (Fig. 4).
- This maximum allowable length should not be exceeded because torsion effort could damage the shaft, or even worse, the sections could come loose.
- Also check that drive shaft is not left so short that adjoining sections could make contact.
- Apply grease to sliding parts.
- When connecting yokes to tractor and bagger, ensure that they lock properly.
- The protection shields have chains attached to their ends so that they can be secured and be prevented from rotating simultaneously with drive shaft. Check that they turn freely before chaining them down.

DANGER

A flailing drive shaft that has come loose at one end and is connected to a live PTO poses mortal danger to operator and bystanders, and can badly damage equipment at the very least.
To avoid this possibility ensure that:

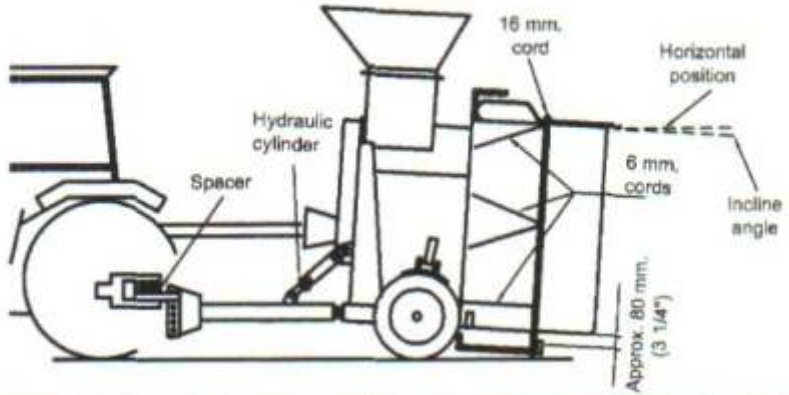
a) Enough length of square shaft is inserted in adjoining female section
b) Quick release yokes are securely locked to splined stubs on tractor and bagger
c) Regular maintenance is carried out and U-joints are replaced if necessary

These are located on the bagger as shown in illustration Nº 12 of the parts list section at the end of this manual.

SET-UP & OPERATION GUIDELINES

1) Check tire pressures: (R-9 - 45 lbs. / R-10 - 60 lbs.)
2) Install bag on tunnel, pull out plastic folds and seal the end.
3) Fasten rope harness: 16 mm. main cord and 6mm. secondary cords.
4) Gap between lower part of hood and front edge of tray should be around 80 mm. (3 ¼").
5) Tilt the rear end slightly downward with the hydraulic cylinder and do not modify until operation has finished.
6) Use spacer bushings to prevent hitch movement.
7) Check that tractor brakes are *always* off and that advance is in a straight line.
8) Operating hydraulic brakes:
   - Stretch values suggested by bag manufacturer should dictate braking pressures applied to wheels.
   - Initial braking pressure should be around 150 PSI for both wheels.
   - Advance about 2 meters and increase pressure to around 600 PSI in both wheels. This could vary depending on tractor or grain; e.g. less pressure may be required with a heavier tractor.

VALUES SUGGESTED ARE MEANT AS GUIDELINES AND CAN BE MODIFIED IN ACCORDANCE WITH OPERATOR EXPERIENCE AND GRAIN CONDITION.



HYDRAULIC BRAKE OPERATION

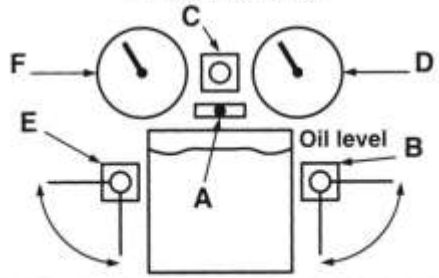
TO INCREASE PRESSURE

1) Close main valve "A".
2) Open valve "B" completely, operate pump lever "C" until gauge "D" shows desired pressure and close valve.
3) Repeat procedure with valve "E" and pressure gauge "F".

TO DECREASE PRESSURE

1) Open main valve "A".
2) Slowly open valve "B" partially, and as soon as gauge "D" shows desired pressure close valve.
3) Repeat procedure with valve "E" and pressure gauge "F".
4) Close main valve "A".

Make sure both pressure gauges are set to the same pressure and check oil level.



RICHIGER 1108-31I

Choosing and preparing the ground

It is important, as a first step in achieving good conservation of stored grain, to plan ahead and make preparations taking into account the following guidelines:

- Ground should be compact, so that tires of tractor and machine have a good grip.
- Ground should be elevated, not subject to flooding, and with no trees.
- Ground should be flat with no potholes, puddles or mud that can cause erratic braking action.
- Ground should be free of weeds and stubble that can damage the bag and kept that way by using herbicides.
- If the ground has a slight slope it is better to operate with tractor climbing the slope as this will favor better compaction of grain at lower end of the bag.
- Ground should be level across the width of the bag because this ensures an even distribution of grain to both left and right sides. Gradient plus gravity can result in excessive bag stretch on one side due to disproportionate weight distribution.
- If possible, the area in use should be fenced in if there is a presence of animals that could damage the bags.
- The area should be kept free of rodents and burrowers.
- The ideal orientation for bags is North/South because of more uniform exposure to solar radiation as the day advances.

IMPORTANT

Before laying down the bags, it is important to decide surface distribution of bags and corridors.
Width of passageways between bags is important because it must permit circulation of self unloading carts, trucks, tractors and grain extraction equipment. The actual surface taken up by each bag depends on factors such as type of grain being bagged, degree of bag stretch and temperature. A bag done in cool weather will tend to flatten and sag at the sides to some extent when temperatures soar. As a reference value, a minimum of 5 meters (17 ft.) separation distance between rows of bags is recommended (Fig. 5).

Fig. 5

As previously mentioned, the best orientation for bags is the North/South axis because both sides of the bag get exposed to similar amounts of solar radiation during the day.

With an East/West orientation there will be a tendency for heat to build up more readily on the exposed side of the bag. This effect is more conspicuous in locations that are farther away from the equator; in the Northern hemisphere sun will shine on the flank of bag facing South, and in hot summer days this could cause overstretching and even fissure of plastic film.

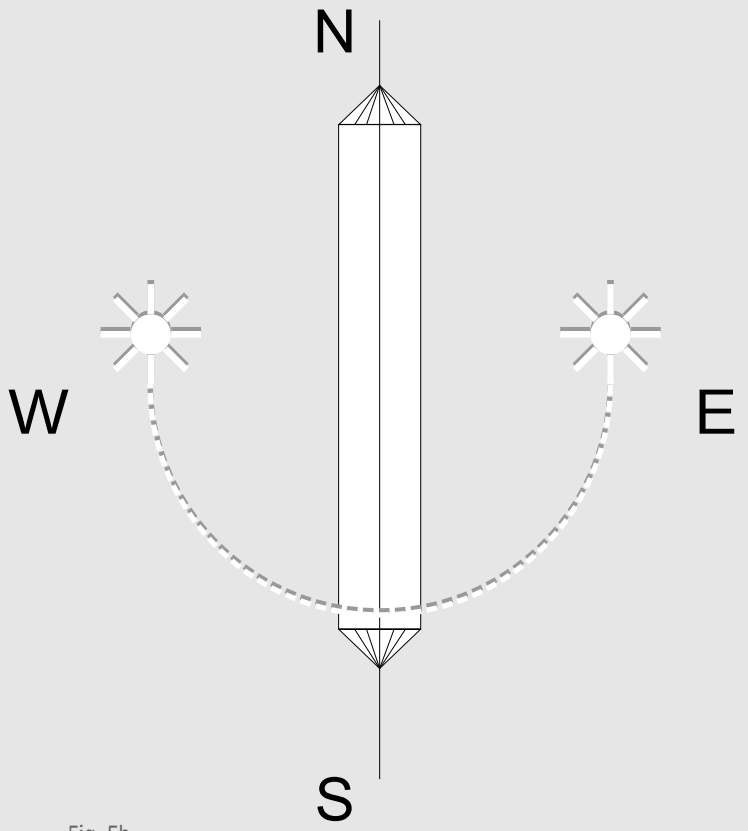


Fig. 5b

1 Bagger is shown being towed by truck (Figs. 6 & 7). This should always be done with hydraulic cylinder completely closed as this raises the rear section and gives maximum road clearance.


Fig. 6


Fig. 7

2 A screw jack is stored in horizontal position at the back of the machine, in the lower tunnel section (Fig. 8). Fit upright in square socket and turn handle to prop up the rear end (Fig. 9).


Fig. 8


Fig. 9

3 Remove second screw jack from drawbar and place upright in socket (Figs. 10 & 11). Give handle a few turns to prop up the front of the machine, remove hitch pin and unhitch from towing vehicle.


Fig. 10


Fig. 11

4

Move tractor in and hitch to bagger. If necessary introduce a spacer bushing between drawbar and tongue to avoid vertical rocking motion (Figs. 12 & 13).


Fig. 12


Fig. 13

5

Unbolt and remove drive shaft from its vertical storage position on bagger. Connect square bar section to tractor's PTO stub and round tube section to bagger's splined stub. Make sure both ends are locked fast as a loose, flailing shaft poses mortal danger. Check that drive shaft plastic shields turn freely and secure the chains at both ends to fixed points on the machine (Figs. 14, 15 & 16).


Fig. 14


Fig. 15


Fig. 16

6

Connect cylinder hoses to tractor's hydraulic system (Fig. 17)


Fig. 17

7

The R-9 bagger is equipped with two supporting brackets stowed on the machine (Fig. 18). They are now inserted in the rectangular slots at the sides of the tunnel. One of the brackets is left hand side and the other is right hand side. As a rule of thumb to ensure correct positioning make sure that chain sections attached to them hang down as shown in photo (Fig. 19). These short lengths of chain are part of quick-hitch mechanisms installed on the ends of the supporting brackets and are used to raise the tray and keep correct tray clearance during work.


Fig. 18


Fig. 19

8

Push the brackets into the slots up to the point where the lock pins can be inserted and secured with retaining clips (Figs. 20 & 21).


Fig. 20


Fig. 21

9

Now that bagger is attached to tractor, remove the two screw jacks that prop up front (drawbar) and rear (tunnel) sections of the bagger (Fig. 22) and place them on the outer square sockets of the support brackets, one on the left and the other on the right side of the machine. In order not to interfere with machine movement, they should be placed horizontally (Fig. 23), as the bagger has to be repositioned hydraulically and must be able to shift.


Fig. 22


Fig. 23

10

There is a steel bar about 2 ft. in length stored beneath the hopper and used as a lever. It is now inserted in the quick-hitch mechanism, the R-clip that locks the mechanism in place is removed (Fig. 24) and the lever is pulled down so that the short chain can be hooked to the pin welded to the side of the tray (Fig. 25). Repeat procedure on the other side. Notice in lower right part of Fig. 24 how the tray is being held by the turnbuckle chain used to hold the tray during transport.


Fig. 24


Fig. 25

11

Once the short chain is hooked, the lever is pulled up and R-clip is inserted back, locking the mechanism in place (Fig. 26). Repeat procedure on the other side of the bagger so that the tray is now held by the quick-hitch devices. Now unhook the chain turnbuckles from their bracket supports (Fig. 27). These chains are used to steady the bag tray during transport, i.e., when transporting the machine they hold up the tray against the frame to keep it from moving. Now they are unhooked so they don't interfere with the quick-hitches when the bagger is working.


Fig. 26


Fig. 27

Once the transport chains are unhooked, the quick-hitches (that act as cams) are pulled down with the lever, one at a time, and the tray will come to rest on the ground. Leave the tray on the ground as it will be easier afterwards to fit the bag over it.

CAUTION

There is no need for the operator to climb on the machine - and risk a fall - at any time when installing the bag. The following instructions show how the whole procedure is carried out with operator standing on the ground.

12

Connect the hoist's main cable crocodile clips to the 12V battery terminals or to the tractor's 12V electrical outlet (Fig. 28). The remote control power cable is plugged into the female socket attached to the bagger (Fig. 29). Hook the hoist cable's D-shackle to the bag cradle should it be unfastened at this point.

Fig. 28


Fig. 29

13

The bag supporting cradle, which is held in place with spring clasps on each side (Fig. 30) and a central pin (Fig. 31), is unfastened from the hood.


Fig. 30


Fig. 31

14

A long metal pole about three meters long is stowed in the bagger. On one of its ends there is a short length of pipe (used to open the hopper covers) (Fig. 32) and on the other end there is a ring. The ring end of the pole is now passed through a pin welded to the front section of the supporting rail (folded back for transport) in order to pull and unfold it (Fig. 33).


Fig. 32


Fig. 33

15

With the same end of the pole, the hoist (mounted on a cart or trolley that runs along the rail) is hooked (Fig. 34) and pulled to the front with cradle attached (Fig. 35).


Fig. 34


Fig. 35

16

Using the remote control, the cradle is lowered to the ground (Figs. 36 & 37).


Fig. 36


Fig. 37

1

The vehicle with the bag should back up against the machine and the box containing it lowered to the ground (Fig. 38). The cardboard box indicates correct orientation of the bag. The box is opened and the bag extended full length next to the cradle (Fig. 39).


Fig. 38


Fig. 39

2

The bag is grasped from the inside and the upper section placed upon the cradle (Fig. 40). At this stage, the dozen or more straps that bind the plastic should remain uncut so as not to disarray the folds. The cradle is then raised by remote control (Fig. 41).


Fig. 40


Fig. 41

NOTE:

The bag should be grasped from its inner part when being placed on the cradle, with white layer facing outside and black layer facing inside. Check that the bag is correctly oriented by tugging at the top white layer; it must unfold outward, away from tractor and machine.

3

When at mid-height, stop hoisting and check that the stretch control markings are positioned correctly at the sides of the bag, below the cradle and perpendicular to the ground (Fig. 42). This will later permit inspection of the bag areas subject to the higher pressures during filling procedure. Then continue raising the cradle until it clears the hood by a few centimeters (Fig.43).


Fig. 42

Fig. 43

4

If the hydraulic cylinder is closed partially, this will lower the bagger's front end and help ease the bag into position. When installing the bag, the tray should be left touching the ground as indicated before. This makes it easier to fit the bottom part of the bag over the tray. Using the long pole, cradle and bag are pushed back along the rail as far as the cart will travel (Fig. 44). Plastic folds are arranged around the hood and over the tray (Figs. 45 & 46). Then the steel cable is slackened so that the bag cradle comes to rest in its original position over the hood, where it is secured once again with spring clasps and pin. Finally, the straps that hold the folds together are cut all along the bag perimeter (Fig. 47).


Fig. 44


Fig. 45


Fig. 46


Fig. 47

5

Operate hydraulic controls once again and open the cylinder until the rear part of the bagger, i.e., the tunnel opening, points to the ground. The machine is now slightly tilted backward at an angle of about 10 degrees (Fig. 48). The tilt is important in that it helps prevent the backflow of grain into the plastic folds past the retaining rope (16 mm. cord), but the pitch of the angle itself is not crucial. Test what works best for you with the type of grain being bagged, but do not attempt to vary the angle during work or when the tunnel is filled with grain while attached to the bag.

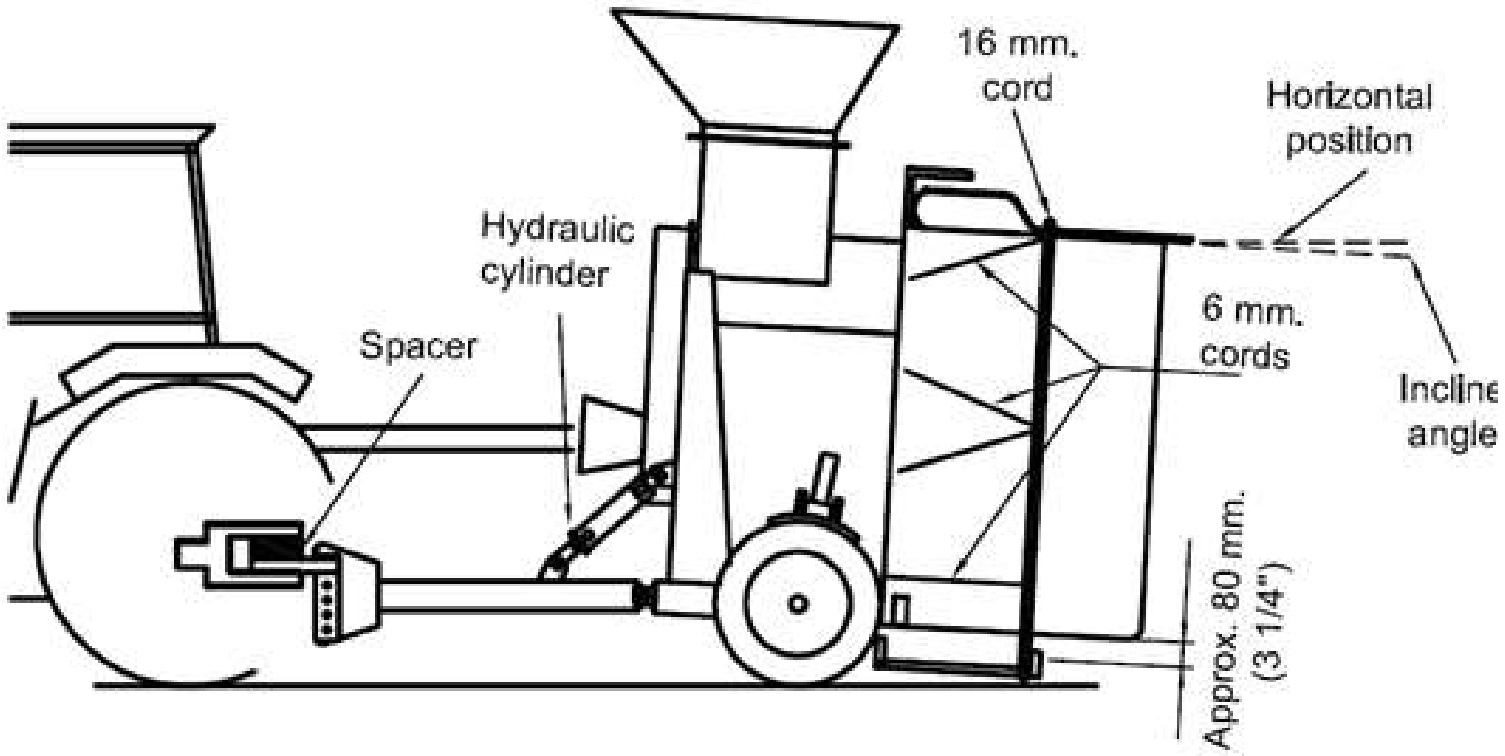


Fig. 48

6

Now raise both left and right quick-hitch mechanisms with the steel bar lever to raise the tray into working position (Fig. 49). Check that the gap between the top of the leading edge of the tray and the bottom part of the hood is about 80 millimeters (approx. 3 ¼") (Fig. 48). This gap can be best observed from the side of the machine. If clearance varies substantially from 80 millimeters, it can be reset by shortening or lengthening the quick-hitch short chains. As with tilt angle, an exact gap value is not critical. Verify that the bottom of the bag is neatly arranged upon the tray and if creases have formed there. The bag usually fits loosely around the hood's perimeter, and the excess material may form a line of creases or ripples in the bottom section of bag. Bundle any excess of material in the middle of the tray, so that the layers of plastic are smooth and crease-free at the outer edges of the tray.

Fig. 49

7

Taking hold of the outermost fold, pull out plastic sheet from all around tunnel and tray to a uniform length of about 3 meters, being careful not to disarray the folds (Fig. 50). Go into the bag and check that the folds have remained well stacked on the tray (Fig. 51).


Fig. 50


Fig. 51

8

Smoothen the plastic and lay the end of the bag completely flat on the ground (Figs. 52 & 53).


Fig. 52


Fig. 53

1

Initial shutting of bag can be accomplished in several ways. It can be sealed with plastic strips that are crimped tight with a special tool. Alternatively, the method described here is one of the safest and is especially recommended. Use 1” x 2” or thicker/wider boards (up to 2” x 4”) that are approximately four meters long (Fig. 54). Place the plastic around a board (from top to bottom as shown below), and turn round the board a few times till the sheet is tightly wrapped. Once it is well wrapped, two boards are placed above and below the first one. Then all three of them are nailed or screwed together with nails/screws separated by about 300 or 400 millimeters, and then tucked under the bag. The boards can be recovered later and used repeatedly. This method has the advantage of the ready availability of materials required and is efficient because a shorter length of plastic is needed to close the bag. Also, the bag extremity remains wide and flat when closed with boards that are rigid and this allows the unloader to advance practically to the end of the bag when extracting grain.

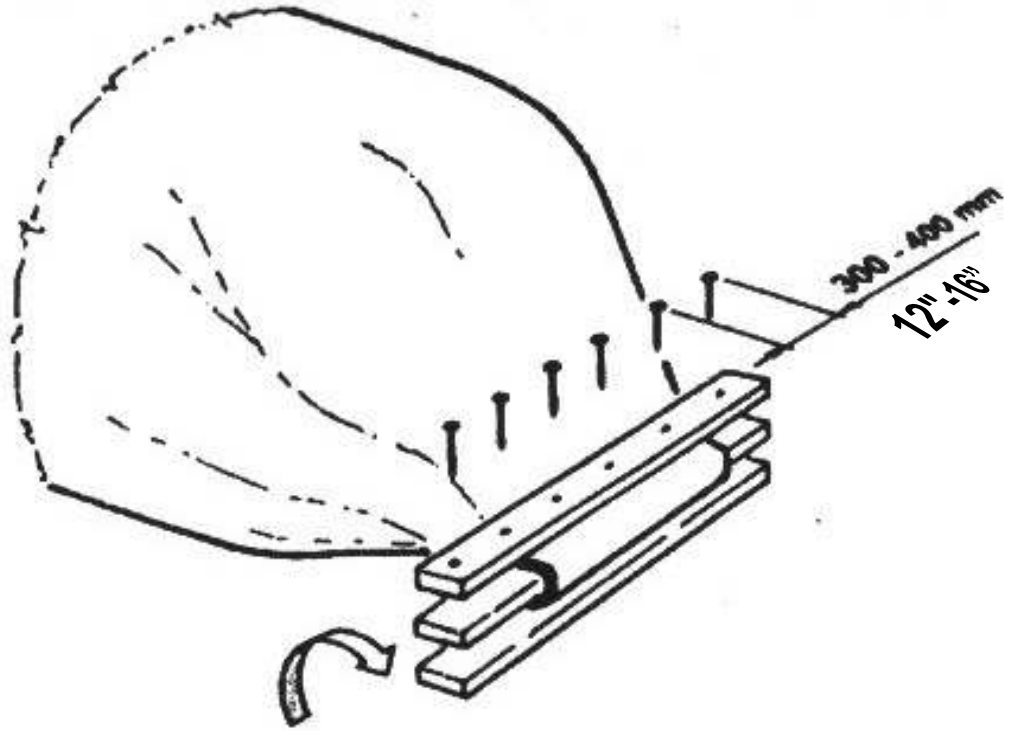


Fig. 54

IMPORTANT

It is crucial that the heads of the nails used to tack the boards together are flush with the wood surface and that the length of the nails be calculated accurately enough that their points can penetrate the third board but not go through the other side. Otherwise they will puncture the plastic when the boards are turned round and not form a water-resistant seal.

2

A rope harness is used to keep the bag in position during the filling operation. Beginning from either the left or the right side of the machine, the main cord is first secured to one of the two cleats welded to the sides of the tray (Fig. 55). The free end of the cord is passed from *bottom to top* through the 1” diameter hole located close to the lateral edge of the tray (there is a similar hole on the other side of the tray). The cord is then passed to the other side of the bagger over the tunnel hood (Fig. 56), then threaded through the other tray hole from *top to bottom* and finally tied firmly to the remaining cleat. The cord should be fastened sufficiently tight because this prevents backflow of grain that can work its way past the rope and into the folds. Three secondary cords are used to prevent the main cord from being pulled out with the plastic folds. They are passed behind the main cord (Fig. 57). Two cords go on the sides and the third goes on the upper part of the hood, attached by hooks to rings especially welded to the tunnel for that purpose (Fig. 58).


Fig. 55

Fig. 56


Fig. 5


Fig. 58

IMPORTANT

The main cord must encircle the hood *in front of*, but *not over* the folds and the cradle that holds them. The cord is tightened next to the folds to confine them to the back of the hood and ensure that they slide out one at a time as they are pulled out.

1

Using the tube end of the steel pole, the hopper covers are thrown open; the one on the tractor's side is the first to be opened (Fig. 59). Before beginning work, check that the trapdoor located under the compression auger tube is closed (Fig. 60). When open, it allows seepage of rainwater that may collect.

Fig. 59


Fig. 60

IMPORTANT

For optimum brake performance, it is important that tire pressure be set to 45 lbs. and that the ground be firm and level, without holes, mud or other obstacles.
Braking pressure is determined by the degree of stretching experienced by the bag. Limits are determined by each bag manufacturer and their recommendation should be followed to avoid overstretch and problems associated with it.
Before beginning work, check that wheels are inflated to 45 lbs.

2

Set initial brake pressure to 150 PSI on both wheels. Shift tractor gears to neutral, engage PTO and increase RPM progressively. As soon as the PTO starts turning, the self unloading grain wagon (standing to the right of the bagger) should begin delivering grain (Fig. 61). Depending on the tons of material per minute being processed by the bagger, the PTO can be operated at less than maximum speed of 540 RPM to prevent wear of the compression auger.


Fig. 61

3

When approximately two meters of bag have been filled, braking action should be reinforced. Increase the pressure to about 600 PSI. This is not to be taken as an absolute value, as several variables come into play such as tractor weight, type of grain and terrain conditions. The more force applied to the brakes, the heavier the load applied by the compression auger to the incoming grain and the higher the pressure of grain packed inside the bag. The wheels of the bagger must grip the ground and turn, not slide. If this happens, brake pressure should be diminished to the point where proper wheel traction is restored, even if grain gets less packed inside the bag. Bag manufacturers print stretch mark indicators at regular intervals along the length of the bag that are measured with a ruler to establish actual degree of distension (Fig. 62). This monitoring provides the feedback necessary to adjust the brakes and stay within safe pressure limits. Should it be necessary to increase or decrease braking action, it should be done by small increments to avoid a sudden discontinuity of grain pressure within the bag.

Fig. 62

4

Check periodically that the tractor is progressing in a straight line. Since it is being pushed forward by the advancing bag, it may tend to veer somewhat and if this happens the steering wheel should be corrected. The object is to achieve a bag that is as straight as possible because this will simplify extraction of grain at a later date.

1

The short steel bar lever stowed on the machine is inserted in the pump's slot (Figs. 63 & 64). Although brakes can be set for both wheels simultaneously, procedure is best carried out for each wheel individually, starting with either left or right side.

Fig. 63

Fig. 64

2

Close main valve “A” completely by turning it clockwise. Then open side valve “B” (left side valve in the photo). The valve is completely open when in horizontal position, parallel to oil flow path (Fig. 65).

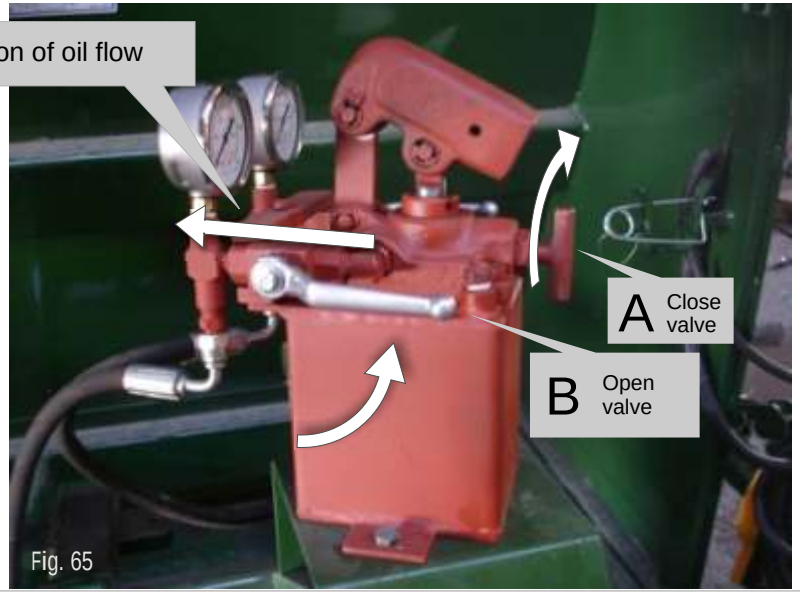


Fig. 65

3

Pump repeatedly with lever “C” until gauge “D” (corresponding to left side wheel in the photo) shows desired pressure (Fig. 66).
Then close valve “B” by turning it 90° down (Fig. 67).
For remaining wheel, repeat procedure using matching side valve and pressure gauge, always keeping main valve “A” closed.

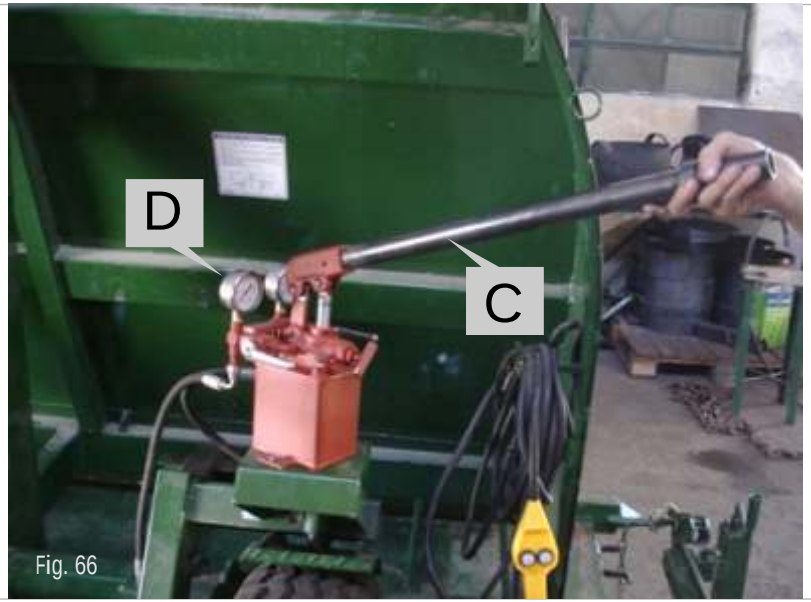


Fig. 66

Lowering brake pressure

4

Open main valve “A” completely by turning it anticlockwise. In a slow and gradual way start opening side valve “B” by rotating it upward. Do not open completely, but watch as gauge indicates diminishing pressure values and close valve “B” by turning it down 90° as soon as target pressure is reached. Repeat procedure for the other wheel.

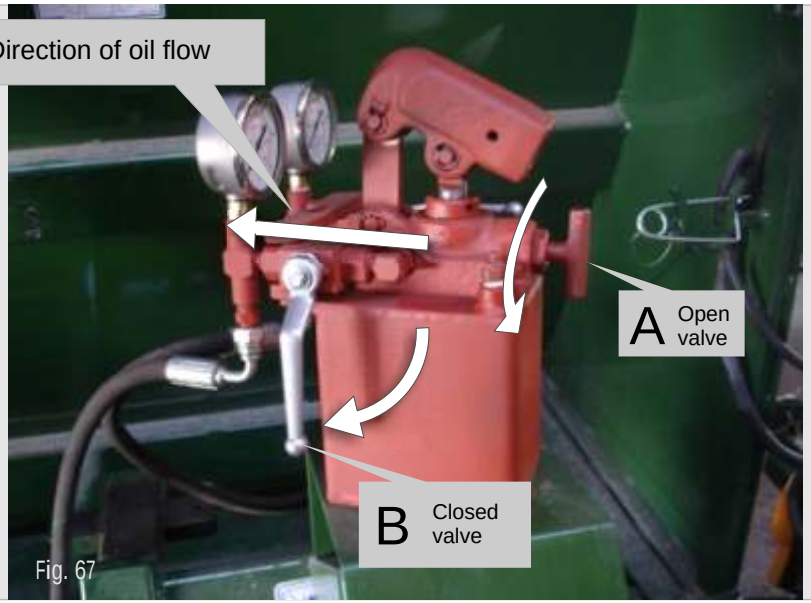


Fig. 67

5 If pressure reduction being sought is exceeded, repeat actions for setting brake pressure anew with instructions provided above.

6 To end procedure, close main valve “A” completely by turning it clockwise. Do not forget this step, as all valves must be in closed position when machine is working.

DANGER

Never execute bagging operation with tractor brakes on or gearbox engaged. If accidentally tractor brakes are left on while work is underway, tremendous pressure will gather inside the bag as grain keeps coming in but the bag doesn't unfold. As a consequence it could burst open and spill contents. But there is also an element of personal danger: if the tractor brakes are released suddenly or gearbox disengaged without due precaution, it could cause the tractor, impelled by the pressure in the bag, to spring forward several feet in an uncontrolled manner and imperil bystanders standing in the way. If it is noticed that the bag is not advancing, engine or PTO should be immediately turned off and the cause investigated. If it originates in tractor brakes or gearbox, tractor should be eased gently forward with brakes applied to decompress bag contents before resuming operation.

1

Bags generally have special markings printed at the sides indicating that there is little plastic left and the operation should conclude, or alternatively few folds are seen to remain on the hood.
Since the standard fold measures 50 centimeters, counting the folds on the hood will give an accurate idea of how much plastic is left. Either because all the plastic has been used, or because the harvest has ended, or because labor is interrupted due to rain, or the bagger is to be towed to some other location, the bag must be detached from the machine and sealed. When for any of these reasons it is decided to finish the bag, delivery of grain should stop and the compression auger continue to turn for a few seconds until there is no grain left inside hopper or auger tube.

Brake release procedure

2

The first step when finishing the bag is the release of the bagger's brakes. Bag contents are compressed when operation finishes, reason for which brakes must be released correctly or the bagger can be propelled forward and endanger the operator. For this reason one must not stand directly in front of the bagger when performing this procedure.
Never leave a bag filled with grain under pressure attached to the bagger, especially when the tractor is driven away and the bagger stands by itself.

To liberate pressure from the bag, follow this sequence *with bagger hitched to tractor:*

a) Run compression auger to empty hopper and auger.
b) Ensure there are no bystanders in the tractor's path.
c) Disengage PTO and shut down tractor engine.
d) Lock tractor brakes or engage a gear to ensure steadiness.
e) Release bagger brakes by first opening main valve “A” and then turning open, one at a time, left and right side brake valves “B” and “E” (refer to instruction decal on page 16 and instructions on setting brakes that begin on page 25). As an extra precaution, don't stand in front of the bagger even though the tractor holds it firm.
f) Climb on tractor and release tractor brakes/put gearbox in neutral. Grain pressure may push tractor forward. Advance a little with tractor to ensure decompression of bag contents, especially if tractor did not move when its brakes were released.

WARNING

Bags with contents under pressure should not be left attached to the bagger because of risk to operator and bystanders if hydraulic brakes are accidentally released.
Never stand directly in front of the bagger when releasing the brakes in case decompression of grain propels the machine forward. *Always* operate brake controls from the bagger's left side standing well away from the path of wheels.

If bag will be left attached to bagger

If the intention is to leave bag attached to bagger without sealing it (and take the tractor away, for example to reinitiate work the following day), install screw jacks in square sockets of supporting brackets (Figs. 68 & 69), unhitch bagger, disconnect hydraulics and PTO shaft, and drive tractor away. Whenever bagger is unhitched from tractor screw jacks must be installed or the weight of grain will topple the bagger toward the rear.


Fig. 68


Fig. 69

If bag will be closed

In most cases closure will be done immediately upon finishing loading, at which point the bag has been filled either partly or entirely. If only part of the bag was filled, tractor and bagger are driven forward some two or three meters, which will leave that length of empty bag trailing behind the bagger (Fig. 70).


Fig. 70

The bag is then cut with a sharp blade around its whole circumference, following the line of the hood (Fig. 71). The length of bag that wasn't used remains folded on the hood, ready to be employed with the next batch of grain to be stored. The 2 or 3 meters that remain will be used to close the bag. In the second case, if all the plastic has been used, the tractor is driven forward so that the last couple of meters left on the hood are released and used to shut the bag.


Fig. 71

Closure of bag **(When finished loading grain or whenever bag is opened to unload part of its contents)**

A deficient closure is to be avoided at all costs because it could either burst open and spill contents, or allow entry of water. If plastic closure strips with crimping tool are used, first flatten the end of the bag from top to bottom to expel the air, then seal the bag with the strip, turn it around a number of times to tighten the plastic sheet and finally tuck it underneath the bag (Fig. 72) Old tires can be placed on top of the sloping end to help keep plastic in place.

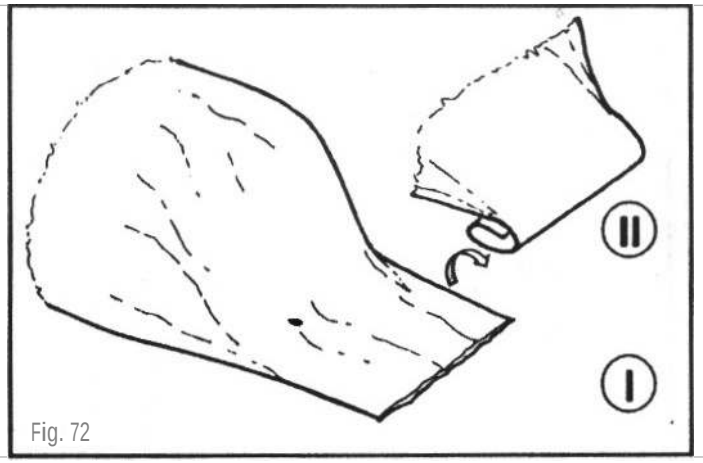


Fig. 72

The method described in the chapter “Initial closure of bag” can also be used to close the last part of the bag. This method has proved its worth when used to seal bags both at their initial and ending stages, and is especially recommended.

NOTE

It is very important when using wooden boards that the plastic sheet be wrapped several times and as tightly as possible around the boards in order to ensure a good, water-resistant seal. It is also important to tuck the boards as securely and as far under the bag as possible to prevent the possibility of the plastic unwrapping. It should be remembered that the bag will probably come in contact with water from rain or snow at some point, and if water does enter the bag then wicker action could spread the moisture farther inside the bag.

Before driving away, shut the hopper covers and completely close the cylinder to get maximum road clearance. If desired, the plastic sheet remaining on the hood can be removed and repacked once again, care being taken that the folds are not disarrayed by tying them with straps or string as in the original presentation.

General considerations about grain conservation

10

Bag stretching limits

- Dry grains in plastic bags mimic the behavior of liquids or molasses due to their tendency to “flow” in containment.
- Since they do not stick together or form clusters, they spread out to the sides of the bag, subjecting the plastic to stress and causing the typical flattened shape observed in bags.
- Round-shaped grain that is clean and dry and has a high specific weight will have an increased propensity to flow. If a particular braking force is used when bagging grain with some or all of these characteristics, deformation or flattening of the bag will be more manifest than if the same braking force is used to bag grain that clings together and doesn't flow well.
- An important consideration is the time of day when work is done because bag stretching behavior changes with ambient temperature. In summer, the bag will stretch more under the sun at noon or in the afternoon than early in the morning.
- Because of these reasons, it is strongly recommended that bag manufacturer stretching limits not be exceeded. Although if stretched beyond normal parameters the bag will most probably hold its own without difficulty, a safety margin must be allowed for. As a standard rule, a 10% increase in length when stretched can be taken as a maximum value not to go beyond.

Moisture levels

In general, the moisture levels that are considered adequate for storage in bags are similar to the levels considered safe for standard silo bins. Keeping grain with higher levels of moisture in bags may cause losses of commercial quality, quantity, nutritional value, and other factors associated with high humidity, risk increasing proportionally to time spent in storage as happens with conventional methods

Risk in relation to grain moisture

Grain	Risk related to grain humidity		
	Low (1)	Medium low	Medium high
Soy, Corn, Wheat (2)	Up to 14%	14 - 16%	Greater than 16%
Sunflower	Up to 11%	11 - 14%	Greater than 14%

Risk in relation to storage time

Grain/Moisture content	Risk related to storage time		
	Low (1)	Medium low	Medium high
Soy,corn,wheat 14%-Sunflower 11%	6 months	12 months	18 months
Soy,corn,wheat 14-16%-Sunflower 11-14%	2 months	6 months	12 months
Soy,corn,wheat over 16%-Sunflower over 14%	1 month	2 months	3 months

(1) For seed grain these values must be lowered by 1 – 2 %

(2) It is not recommended that wheat be stored with a moisture level of more than 14%

Nevertheless, anaerobic conditions inside the bag permit the storage of high moisture grain for short periods of time with less risk than if stored in bins. When high moisture grain is again exposed to air once extracted from the bag, aerobic organisms begin multiplying in great numbers and material can suffer rapid degradation, reason for which grain should be dried as soon as possible after removal from bag and before being traded.

How long will a bag last?

This is an important consideration and should be checked with your bag provider. Sun and high temperatures can break down plastic given enough time, reason for which the outer layer of a bag is white to absorb less infrared radiation and it also contains additives to protect against UVR and delay the degradation process. In consequence, how much a bag can last depends to a great degree on geographic latitude and time of the year in which it is used. As a rule of thumb, and even though bags have far surpassed this span of time with contents in good condition, it is recommended that bags not remain exposed for more than one summer.

Periodic controls

Success in bagging grain is closely related to adequate supervision performed during time of storage. It is important to carry out controls almost daily. Every possible precaution should be taken to maintain integrity of the plastic cover and to repair it if necessary. It should be born in mind that that relatively small tears can cause localized yet important losses through aerobic degradation. In different areas causal agents may vary but most can be prevented or controlled.

Sampling

It is important to periodically take samples in order to control the evolution of stored material. A probe can be used or alternatively two strips of adhesive tape can be taped vertically, superimposed on one another in a section of bag that is relatively under-stretched, and a short slit cut open with a sharp blade for a sample to be extracted. The slit is then patched up with tape provided by bag manufacturer or third parties.

Rodents & wild animals

While filling bags, care should be taken not to spill grain on the ground that can act as an attractant.
Frequent checking, preferably daily, is advisable. Holes should be sealed with thick tape as soon as detected. To discourage entrance to the storage area, it should be kept free of weeds and tall vegetation. Should there be a problem with bigger animals such as deer, electric fences could help.

Hailstorms

If one occurs, bags should be immediately checked for damage sustained. If damage is slight, it can be repaired with appropriate sealing tape. If damage is considerable, the only solution might be repacking the grain in bags once more. The more the bag is stretched, the more potential for harm a hailstorm has

Fire

Winter crop stubble poses the most risk in this department. If storage area borders a stubble field and conditions warrant it, it might be convenient to make a few passes with a disk harrow to minimize risk.

Storing

- Remove and repack the remainder of the plastic bag left on the tunnel, using lengths of string to tie the folds so they do not fall into disarray.
- Wash unit thoroughly (do not direct water under pressure at the bearings).
- Lubricate entire machine after washing.
- Check nuts and volts and tighten if necessary.
- See if decals are in good condition and replace if necessary.
- Relieve pressure of hydraulic and brake circuits.
- Repair or change damaged or worn parts. Use original spares.
- Repaint spots where paint has worn down.
- Keep the machine under shelter in clean and dry surroundings.

After storage

Before the new season:

- Clean dirt and debris that may have accumulated on machine.
- Lubricate as indicated in this manual.
- Check tire pressures.
- Verify that hydraulic and brake circuits are in good order.
- Confirm that machine movements are smooth and there are no rattling sounds.

Before initial operation it is convenient to carry out a lube check up that will also help the operator become familiar with the lubrication points (Fig.73).

- **Clean grease fittings and grease pump every time you apply grease.**
- **Replace any grease fitting that is missing or damaged.**
- **Apply neither too much nor too little grease.**
- **Disconnect PTO while working.**

Lubrication chart

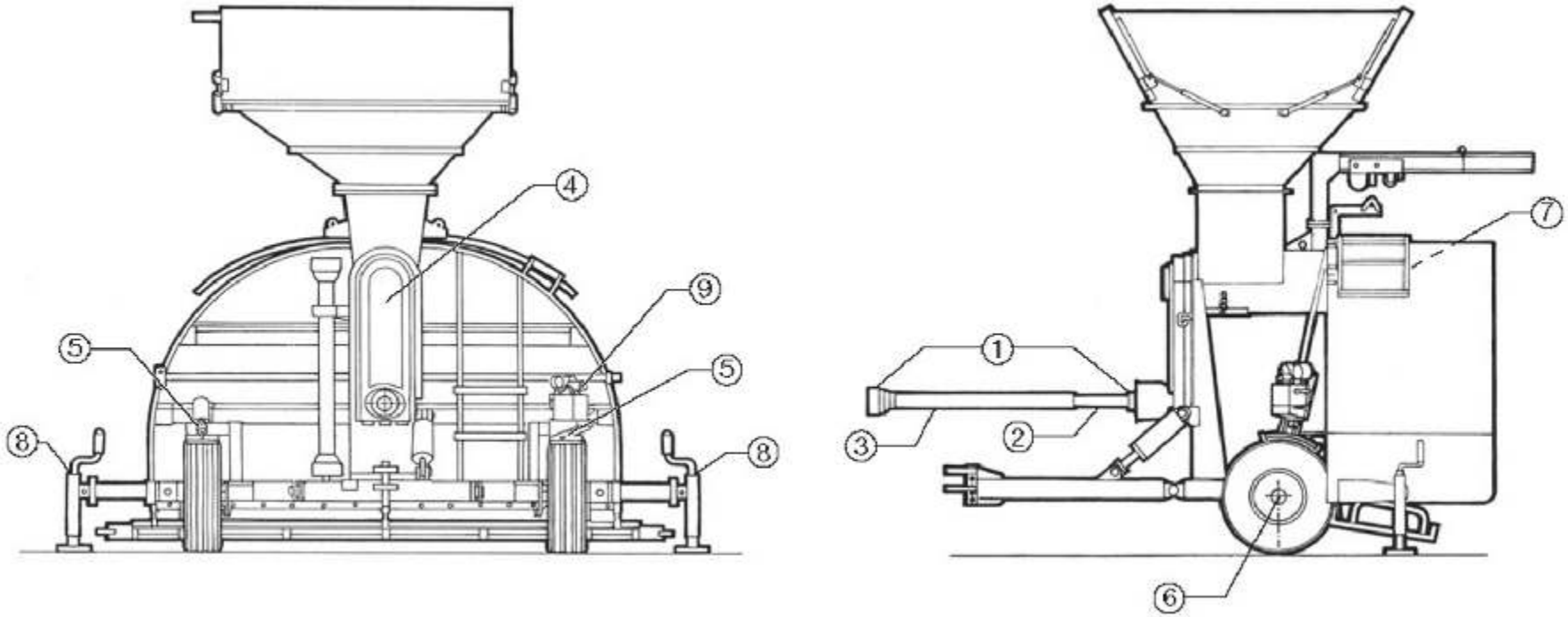
Lube spot	Section	Description	Grease fittings (Quantity)	Lubricant	Lube frequency (hours)
1	Drive shaft	U-joints/yokes	2	Grease	8
2		Telescopic sections	Apply with brush		16
3		Covers	-		16
4	Transmission	Chain & idler sprocket	1	Grease	50
5	Brakes	Brake bushings	4	Grease	50
6	Wheels	Housings	-	Grease	100
7	Auger	Rear bearing block	1	Grease	50
8	Frame	Screw jacks	2	Grease	50
9	Brakes	Brake pump	-	Oil	100(1)

(1) every 100 Hs of use check oil level.
Grease: Lithium EP grease.
Oil: ISO grade 68 hydraulic oil.

NOTE

Used oil and lubricants should be disposed of in accordance with local laws and regulations. Contact an authorized distributor to inquire about correct disposal procedure.

Fig. 73



It is important, in order to avoid accidents that affect oneself and others, to be familiar with the operation of agricultural machinery.

Therefore, please follow these guidelines:

1. Allow only people with a working knowledge of the machine, controls and safety rules to operate it.
2. Verify that all safety and instructional decals are in place and in good condition. If they're not, replace them.
3. For machinery that uses the PTO:

   a) Confirm that all protective shields are in place and do not interfere with moving parts. Drive shaft shields should be secured with chains to prevent them from turning.
   b) Follow instructions regarding minimum coupling lengths for drive shaft sections. Disconnection during operation can have dire consequences.
   c) Check correct PTO rpm's indicated for your machine, either 540 or 1,000.

4. Do not tow agricultural machinery with automotive vehicles at high speeds on public roads. They are mostly designed to be towed by tractors on country roads at low speeds of not more than 15 mph.
5. Make sure the total width of machinery you are towing on public roads does not exceed what is legally permitted. Use signaling lights or banners, or travel with a signaling companion vehicle.
6. Do not allow people on machines, either working or in transport.
7. Check that all nuts and bolts are properly tightened.
8. Follow maintenance indications detailed in user's manual.
9. Do not attempt to revise or repair anything if there are moving parts or tractor's engine is running.
10. Hands, feet, hair and loose clothing are especially at risk of being snagged by moving shafts and driveline components. Operator should use adequate shoes and tight fitting clothes, and avoid using rings, watches, chains or other types of jewelry. He should also wear head, eye and ear protection if necessary.
11. In all machines equipped with hydraulic circuits used for elevation or rotation, do not perform maintenance work without ensuring that:
    a) Engine is off.
    b) Nobody has ignition keys to inadvertently turn engine on.
    c) Safety stops are in place
    d) There are supporting stands between machine and ground.
12. Ensure that operator is familiar with fire hazard procedures and proficient with a fire extinguisher.

Following all safety routines involves a high degree of responsibility. Be responsible to yourself and others.

Hand signals have been developed to provide a uniform means of communication between workers on the ground and equipment operators. They are especially useful when noise, distance, or language barriers make voice communication difficult.

There are eleven recognized hand signals found in ASAE Standard S351. They are illustrated here in figures.

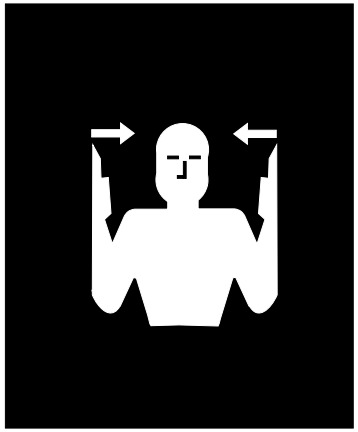


Fig. 1 THIS FAR TO GO.
Put hands in front of face, palms facing each other. Move hands together or farther apart to indicate how far to go.

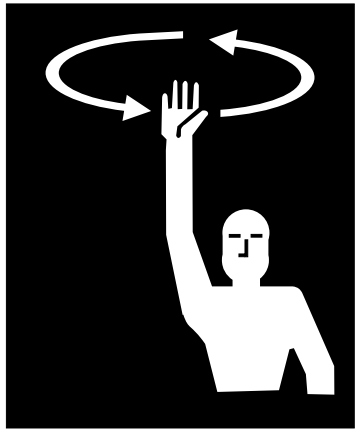


Fig. 2 COME TO ME.
(May mean “Come help me” in an emergency). Raise arm straight up palm to the front and move arm around in a large circle.

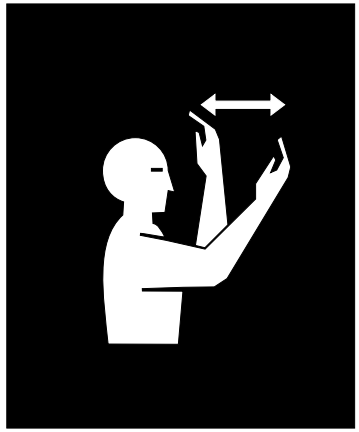


Fig. 3 MOVE TOWARD ME FOLLOW ME.
Look toward person or vehicle you want moved. Hold one hand in front of you, palm facing you, and move your forearm back and forth.

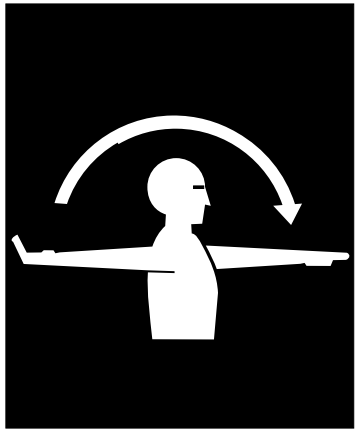


Fig. 4 MOVE OUT TAKE OFF.
Face desired direction of movement. Extend arm straight out behind you, then swing it overhead and forward until it's straight out in front of you.

Fig. 5 STOP.
Raise arm straight up, palm to the front.

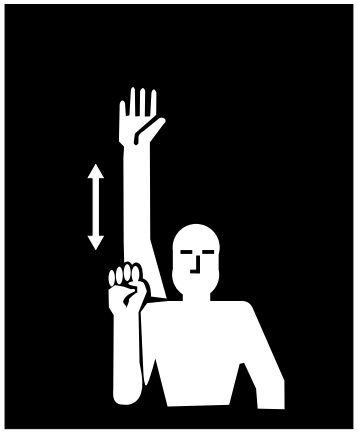


Fig. 6 SPEED IT UP. Clenching your fist, bend your arm so your hand is at shoulder level. Thrust arm rapidly straight up and down several times.

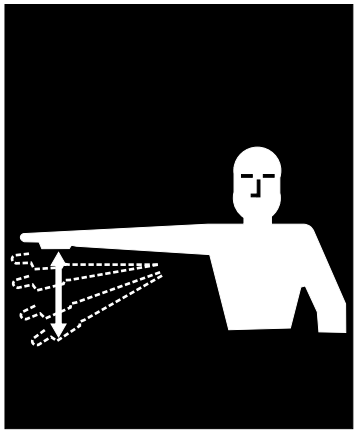


Fig. 7 SLOW IT DOWN. Extend arm straight out to the side palm down. Keeping arm straight, move it up and down several times.

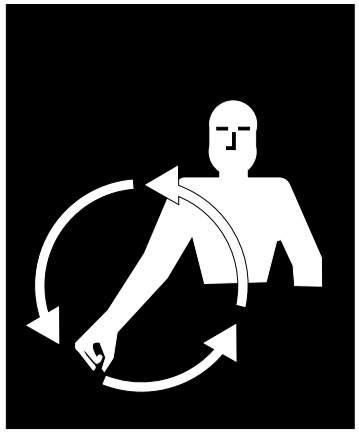


Fig. 8 START THE ENGINE. Move arm in a circle at waist level as though you were cranking an engine.

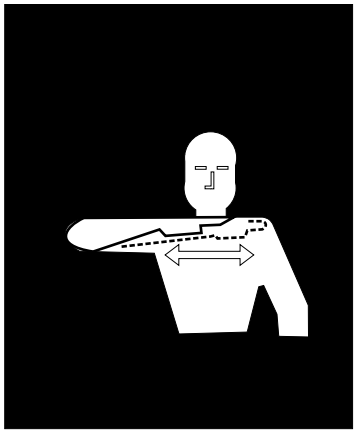


Fig. 9 STOP THE ENGINE. Move your right arm across your neck from left to right in a “throat-cutting” motion.

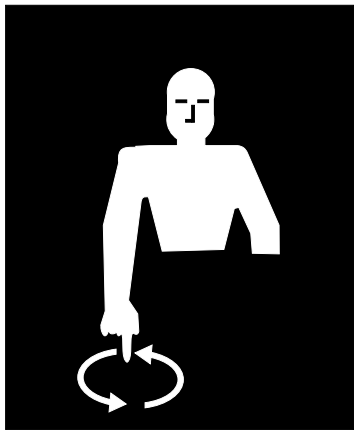


Fig. 10 LOWER EQUIPMENT. Point toward the ground with the forefinger of one hand while moving the hand in a circle.

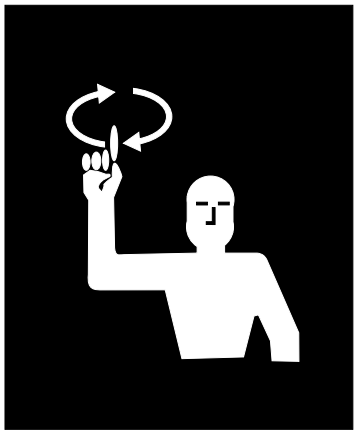


Fig. 11 RAISE EQUIPMENT. Point upward with forefinger, while making a circle at head level with your hand.

WE MEET YOUR PRODUCTION NEEDS

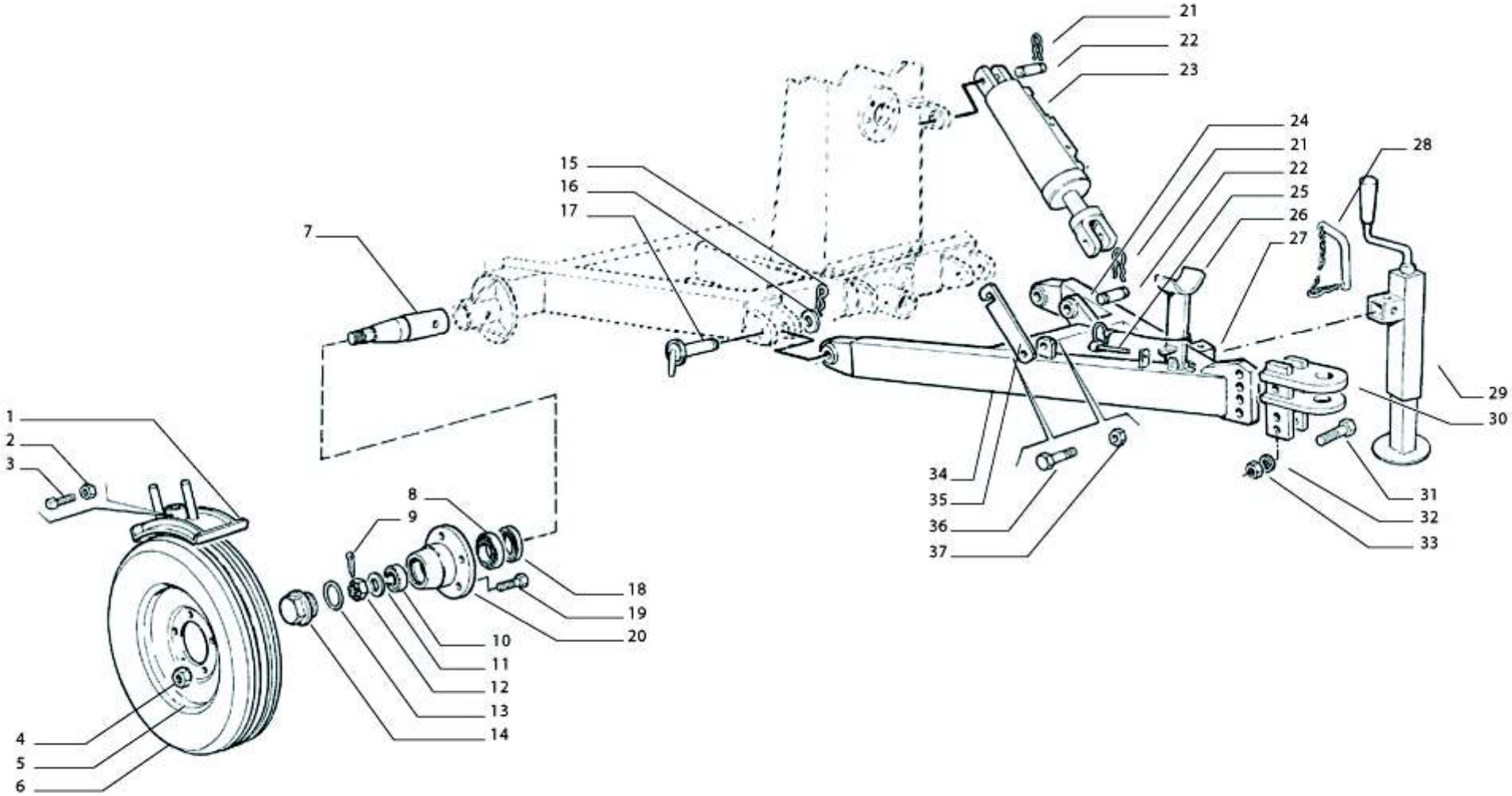


DIAGRAM NBR. 1
DRAWBAR, BRAKES & WHEELS

DIAGRAM NBR. 1 - DRAWBAR, BRAKES & WHEELS

Nº	DESCRIPTION	CODE NBR.
1	Brake pad	EGH96-006
2	Hex. nut gr. 5 BSW 5/16"	MP1331
3	Stud sq. neck 5/16" x 3/4"	MP1410
4	Lug nut 1/2" UNF	MP1361
5	Tire rim 15"	MP1801
6	Tire 215/75 R15	MP1850
7	Axle spindle	R-9003
8	Tapered roller bearing 30208	MP0196
9	Split pin 3 x 40 (mm.)	MP1018
10	Tapered roller bearing 30205	MP0193
11	Flat washer 3/16" OD 38/ ID 20 (mm.)	M-2026
12	Castle nut UNF 3/4"	MP1320
13	O-ring seal	MP2975
14	Hub cap	EGH96-001R
15	R-clip 4 x 100 (mm.)	MP1077
16	Flat washer 3/16" OD 60 / ID 35 (mm.)	AR-486035
17	Pivot pin, drawbar	R-9011C
18	Oil seal 48 x 82 x 8 (mm.)	MP2935
19	Hex. bolt gr. 5 BSW 1/2" x 1 1/2"	MP2133
20	Wheel hub	EX-18009
21	Hair Pin clip 4,5 x 90 (mm.)	MP1094
22	Clevis pin 1" x 95 mm., hydraulic cylinder	R10-R016
23	Hydraulic cylinder 3" x 8" w/safety valve	MP4553
24	Pivot bracket hydraulic cylinder, drawbar	R-9084

Nº	DESCRIPTION	CODE NBR.
25	Hitch pin, rest bracket	MP3209
26	Rest bracket, drive shaft	R-9171
27	Square socket, screw jack	V-0001
28	Hitch pin w/ R-clip, screw jack	EGH96-004
29	Screw jack	MP3084
30	Clevis hitch	R-9140
31	Hex. Bolt gr. 5 BSW 5/8" x 2 1/2"	MP2079
32	Lock washer 5/8"	MP1575
33	Hex. Nut gr. 5 BSW 5/8"	MP1336
34	Drawbar	R-9074
35	Lock bar, drawbar	R-9141
36	Hex. bolt gr. 5. BSW 1/2" x 1 1/4"	MP2042
37	Self locking nut BSW 1/2"	MP1317

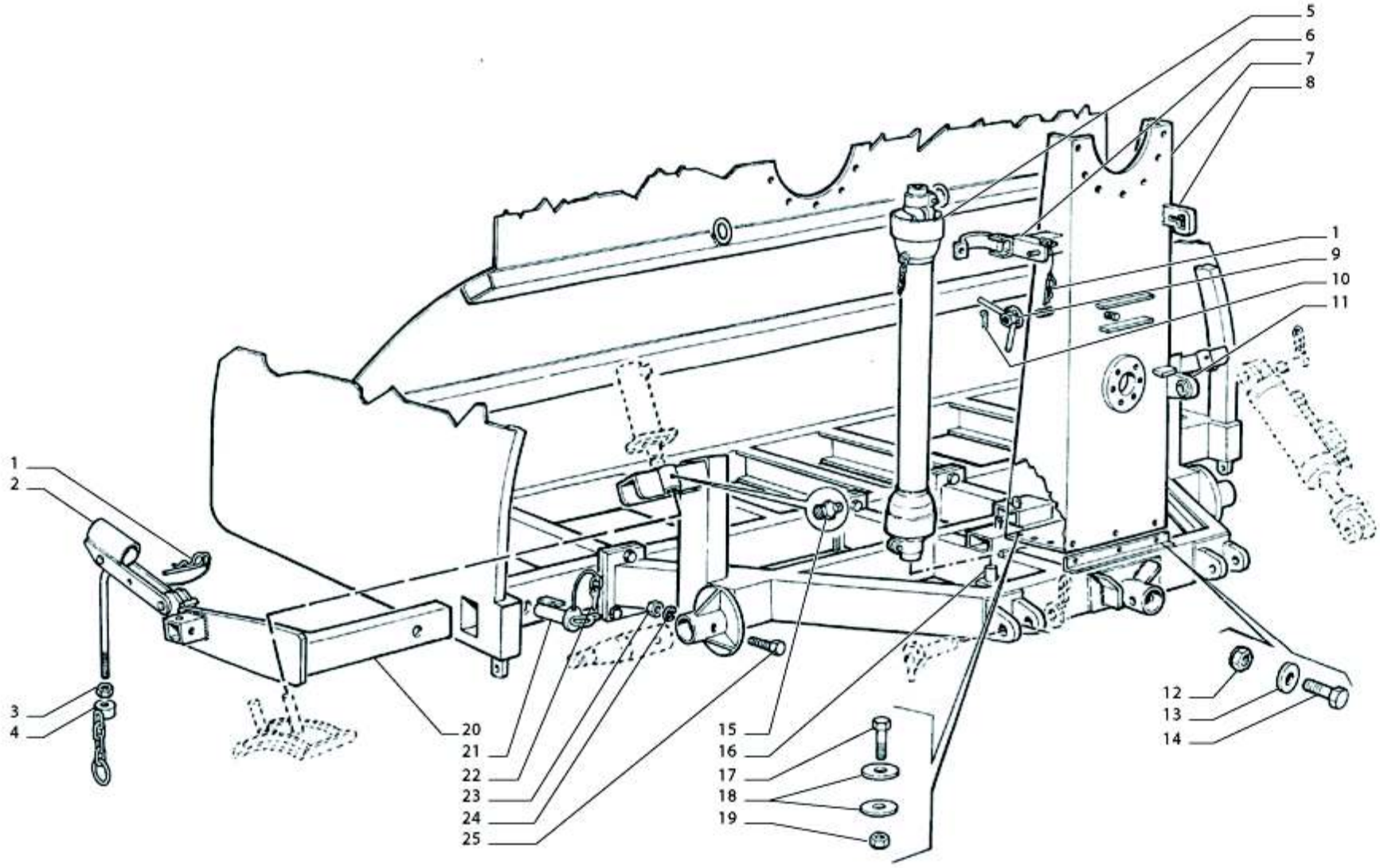


DIAGRAM NBR. 2
FRAME & DRIVE SHAFT

DIAGRAM NBR. 2 - FRAME & DRIVE SHAFT

Nº	DESCRIPTION	CODE NBR.
1	R-clip 4 x 100 (mm.)	MP1077
2	Quick-hitch arm	R9A-025C
3	Hex. nut gr. 5 BSW 1/2"	MP1334
4	Quick-hitch nut & chain	R9A-025D
5	Drive shaft assy., 6 spline both ends, yoke U-joint 30.2 x 92 (mm.), complete	MP0530
6	Support bracket, drive shaft	R6-014
7	Support plate, drive assembly	R-9104
8	Lock, hydraulic cylinder	R9A-010
9	Wing nut BSW 1/2"	R9A-016
10	Split pin 2,5 x 30 (mm.)	MP1008
11	Pivot bracket hydraulic cylinder, frame	R-9085
12	Self-locking nut BSW 3/8"	MP1314
13	Flat washer galvanized 3/8"	MP1517
14	Hex. bolt gr. 5 BSW 3/8" x 1"	MP2046
15	Grease zerk, straight SAE 1/4"	MP1452
16	Support stub, drive shaft	R-9075
17	Hex. bolt gr. 5 BSW 1/2" x 1 1/2"	MP2065
18	Flat washer 3/16" OD 40/ ID 13 (mm.)	AR-484013
19	Self-locking nut BSW 1/2"	MP1317
20	Removable support prop w/quick hitch assy., right side	R-9069D
	Removable support prop w/quick hitch assy., left side	R-9069I
21	Lock pin, removable side support	R-9023
22	R-clip w/ ring	MP3209
23	Self-locking nut BSW 5/8"	MP1342
24	Split lock washer 3/8"	MP1502
25	Hex. bolt gr. 5 BSW 5/8" x 3 1/4"	MP2082

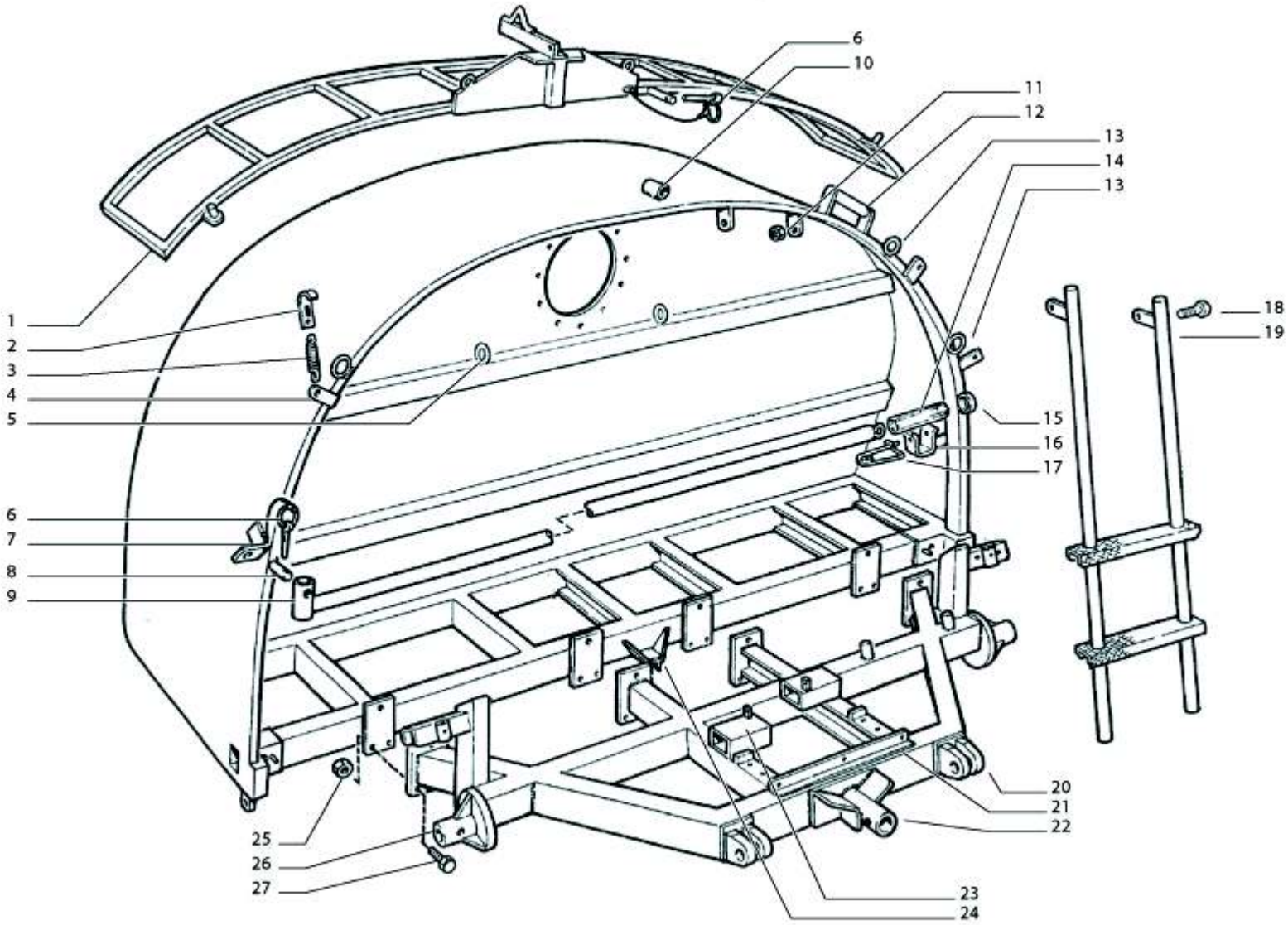


DIAGRAM N° 3
BAG CRADLE & FRAME

DIAGRAM N° 3 - BAG CRADLE & FRAME

Nº	DESCRIPTION	CODE NBR.
1	Cradle	R-9032
2	Cradle catch	R-9059
3	Extension spring 2 x 15 x 100 (mm.)	MP2838
4	Bracket, extension spring	R10-012B
5	Ring, medium	R10-049
6	R-clip w/ ring	MP3209
7	Support bracket, stabilizer chain	R-9153
8	Support pin, long handle	R10-066
9	Long handle, hopper cover	R10-R037
10	Bushing, cradle lock	R10-078
11	Self-locking nut BSW 5/16"	MP1315
12	Handle, frame	R-9170
13	Ring, large	R10-048
14	PVC tubing 200 x 31 x 25 (mm.)	MP4561
15	Support ring, long handle	R10-097
16	Bracket mount, hoist cable	R-9115
17	Pin clip 3,5 x 145 (mm.)	MP1096
18	Hex. bolt gr. 5 BSW 5/16" x 7/8"	MP2061
19	Bolt-on ladder	R-9148
20	Drawbar clevis pin bracket, frame	R-9151
21	Support frame, front plate	R-9016
22	Square socket, transport wheel	R-9073
23	Support bracket, removable side prop	R10-R036
24	Support bracket, bag tray	R-9143
25	Self-locking nut BSW 1/2"	MP1317
26	Bushing, axle spindle	R-9002
27	Hex. bolt gr. 5 BSW 1/2" x 1 1/4"	MP2042

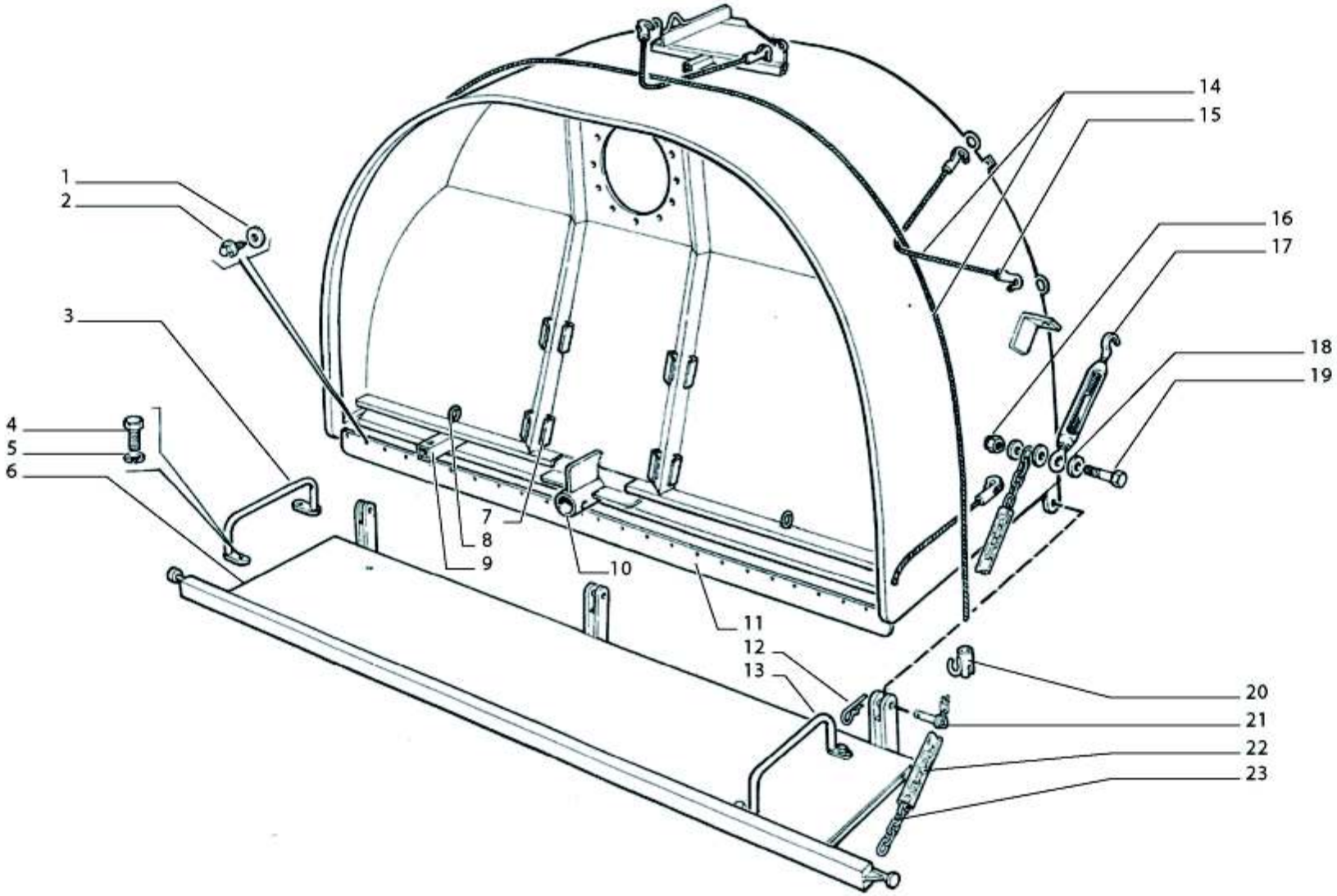


DIAGRAM N° 4
BAG TRAY & CHAIN ATTACHMENTS

DIAGRAM N° 4 - BAG TRAY & CHAIN ATTACHMENTS

Nº	DESCRIPTION	CODE NBR.
1	Flat washer galvanized 1/4"	MP1515
2	Self-tapping screw N° 10 x 1"	MP1599
3	Curved tray handle, left side	R-9040I
4	Hex. bolt gr. 5 BSW 5/16" x 5/8"	MP2196
5	Split lock washer 5/16"	MP1501
6	Bag tray	R-9039
7	Brackets (temporary use for shipping)	R-9130
8	Ring, medium	R10-049
9	Square socket, screw jack	R-9095
10	Square socket, transport wheel	R-9073
11	Rubber apron 2920 x 150 x 5 (mm.)	R-9116
12	R-clip 2,5 x 50 (mm.)	MP1070
13	Curved tray handle, right side	R-9040D
14	Rope harness	R-9063
15	Plastic hook	MP3654
16	Self-locking nut BSW 3/8"	MP1314
17	Turnbuckle 1/2", L-R	MP3661
18	Flat washer galvanized 3/8"	MP1517
19	Hex. bolt gr. 5 BSW 3/8" x 1 1/4"	MP2047
20	Steel hook	E-25056
21	Hinge pin, bag tray	E-25052
22	PVC tubing 850 x 25 x 19 (mm.)	MP3269
23	Stabilizer chain Nbr. 50	MP1250

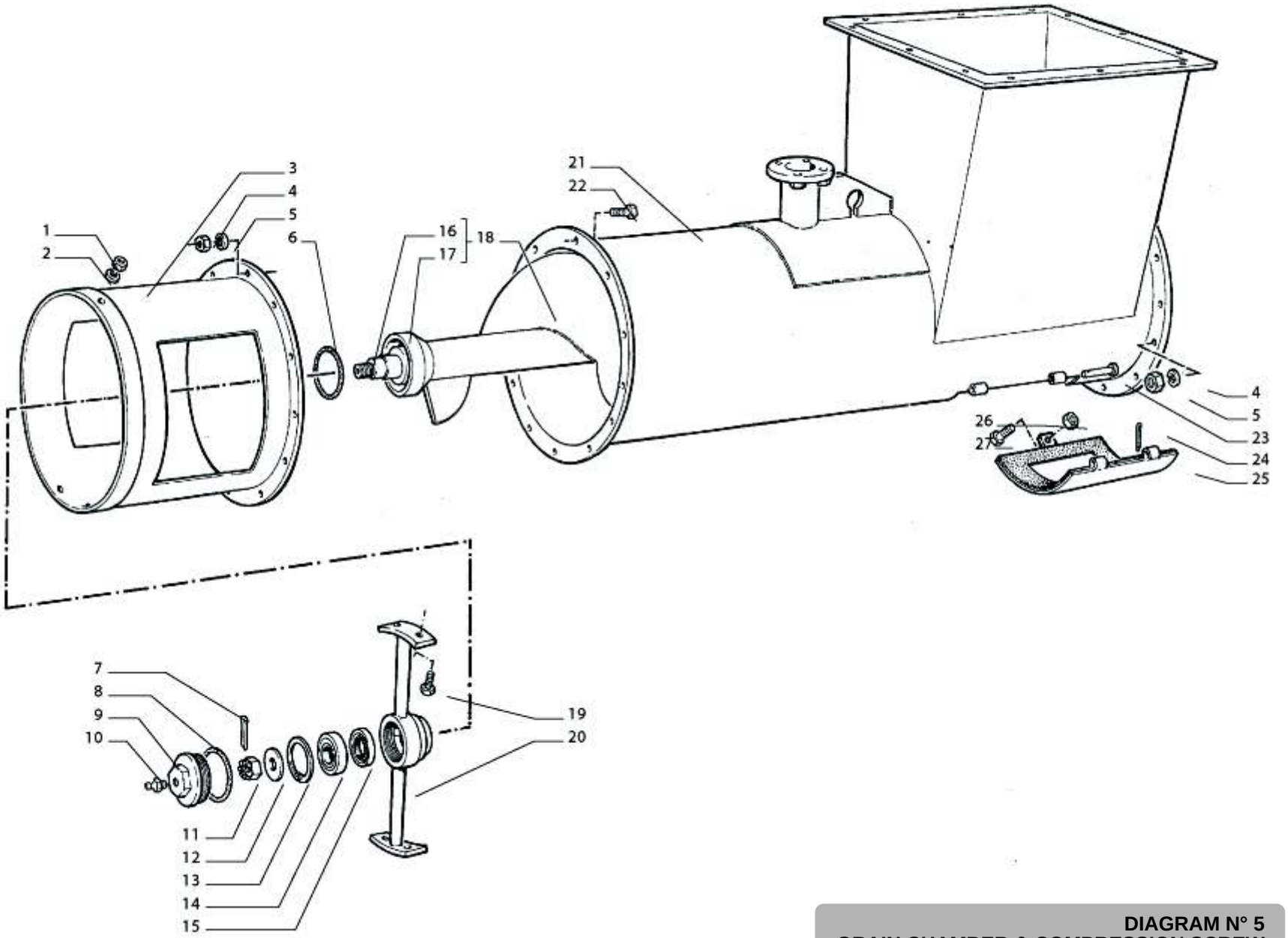


DIAGRAM N° 5
GRAIN CHAMBER & COMPRESSION SCREW

DIAGRAM N° 5 - GRAIN CHAMBER & COMPRESSION SCREW

Nº	DESCRIPTION	CODE NBR.
1	Hex. nut gr. 5 BSW 3/8"	MP1332
2	Lock washer 3/8"	MP1583
3	Flanged jacket, compression screw	R-9043
4	Self-locking nut BSW 3/8"	MP1314
5	Split lock washer 3/8"	MP1502
6	O-ring 83.05 x 72.39 x 5.33 (mm.)	MP2979
7	Split pin 3 x 40 (mm.)	MP1018
8	O-ring 57,31 x 52,07 x 2,62 (mm.)	MP2975
9	Cap, bearing block	R-9071
10	Grease zerk, straight GAS 1/8"	MP1451
11	Castle nut 3/4" UNF	MP1320
12	Flat washer 1/4"	AR-633520
13	Snap ring DIN 472 52/I	MP0841
14	Self-aligning bearing 22205	MP0189
15	Oil seal 32 x 44 x 7 (mm.)	MP2928
16	Short end stub, compression screw	EGH96-026C
17	Dust seal	EGH96-026E
18	Compression screw assy. w/ end stubs	E-25065
19	Round head square neck bolt gr. 5 BSW 3/8" x 1 1/4"	MP2083
20	Bearing block, compression screw	R-9072
21	Flanged housing, compression screw	R-9042
22	Hex. bolt gr. 5 BSW 3/8" x 1 1/4"	MP2047
23	Hinge pin, inspection cover	R-9049
24	Split pin 2 x 20 (mm.)	MP1000
25	Inspection cover	R10-R005
26	Hex. nut gr. 5 BSW 5/16"	MP1331
27	Hex. bolt gr. 5 BSW 5/16" x 7/8"	MP2061

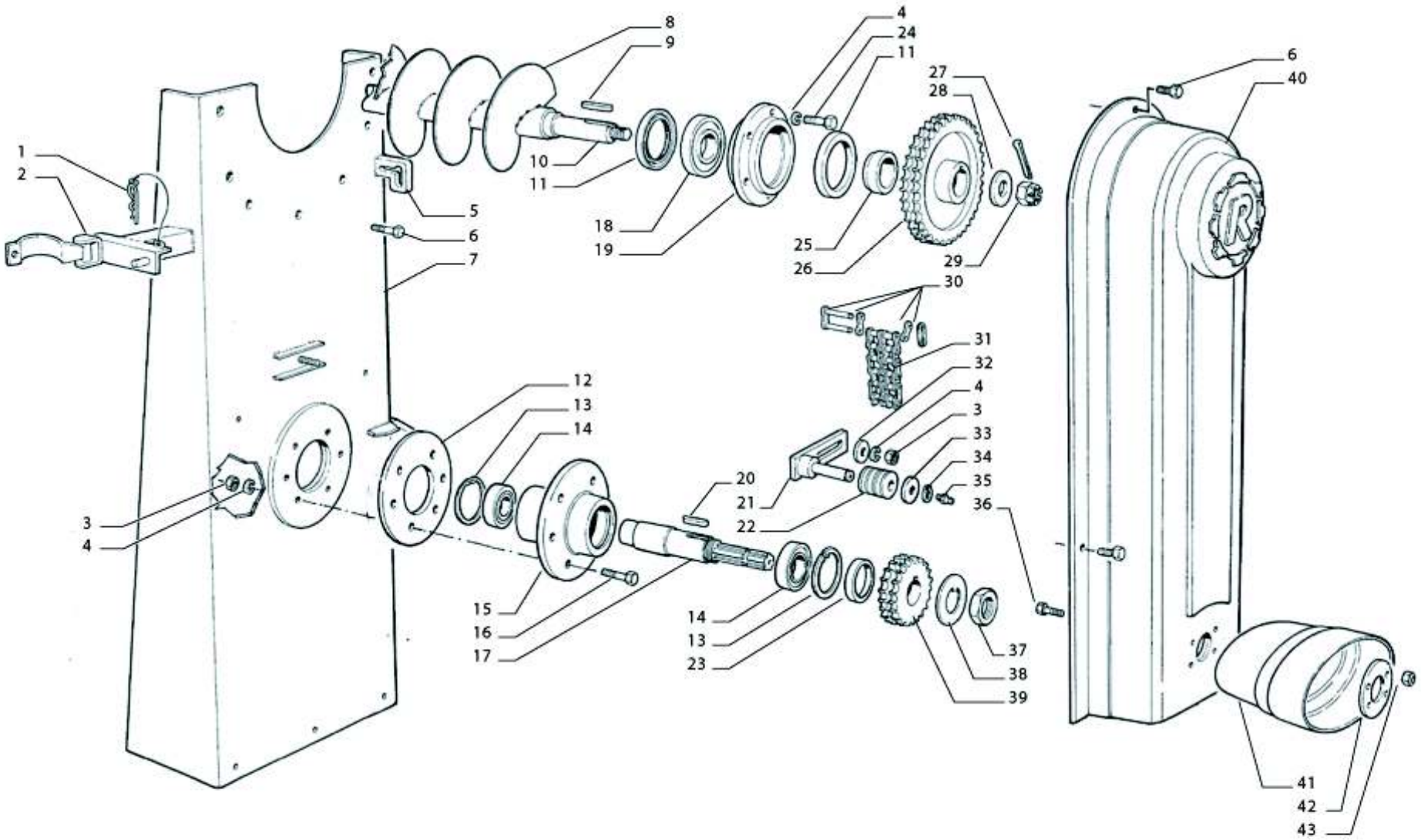


DIAGRAM N° 6
COMPRESSION SCREW DRIVE

DIAGRAM N° 6 - COMPRESSION SCREW DRIVE

Nº	DESCRIPTION	CODE NBR.
1	Double wound R-clip 4 x 100 (mm.)	MP1077
2	Clamp assy., drive shaft	R6-014
3	Hex. nut gr. 5 BSW 1/2"	MP1334
4	Split lock washer 1/2"	MP1504
5	Lock, hydraulic cylinder	R9A-010
6	Hex. bolt gr. 5 BSW 3/8" x 1"	MP2046
7	Front plate, drive assembly	R-9104
8	Compression screw assy. w/ end stubs	E-25065
9	Square key 8 x8 x 60 (mm.)	MP3203
10	Long end stub, compression screw	EGH96-026F
11	Oil seal 60 x 90 x 10 (mm.)	MP2931
12	Flange	R-9041
13	Snap ring DIN 472 75/I	MP0846
14	Ball bearing 6009 2RS	MP0124
15	Splined stub housing	EX9-223
16	Hex. bolt gr. 5 BSW 1/2" x 1 3/4"	MP2066
17	Splined stub w /push-button lock	R-9001
18	Self-aligning bearing 22209	MP0238
19	Bearing cup, bearing 22209	EGH96-035
20	Square key 10 x 10 x 28 (mm.)	MP3206
21	Idler arm	E-25034
22	Plastic bushing	MP0411
23	Spacer bushing	E-25031
24	Hex. bolt gr. 5 BSW 1/2" x 1 1/4"	MP2042
25	Spacer, double sprocket	EGH96-036

Nº	DESCRIPTION	CODE NBR.
26	Double sprocket 38 teeth, ASA 60/2 chain	EGH96-021
27	Split pin 4 x 60 (mm.)	MP1041
28	Flat washer 1/4"	EGH96-025
29	Castle nut UNF 1"	MP1322
30	Connecting link, ASA 60/2 chain	MP1270
31	Double roller chain ASA 60/2	MP1213
32	Flat washer galvanized 1/2"	MP1519
33	Flat washer 3/16"	EGH96-022
34	Snap ring DIN 471 25/A	MP0807
35	Grease zerk, straight SAE 1/4"	MP1452
36	Hex. bolt gr. 5 BSW 5/16" x 3/4"	MP2050
37	Hex. nut, splined stub	E-87-13
38	Washer, splined stub	E-87-12
39	Double sprocket 19 teeth, ASA 60/2 chain	E-25032
40	Chain cover	MP3544
41	Plastic shield, PTO	MP0550
42	Retaining washer, plastic shield	R-9046
43	Self-locking nut BSW 5/16"	MP1315

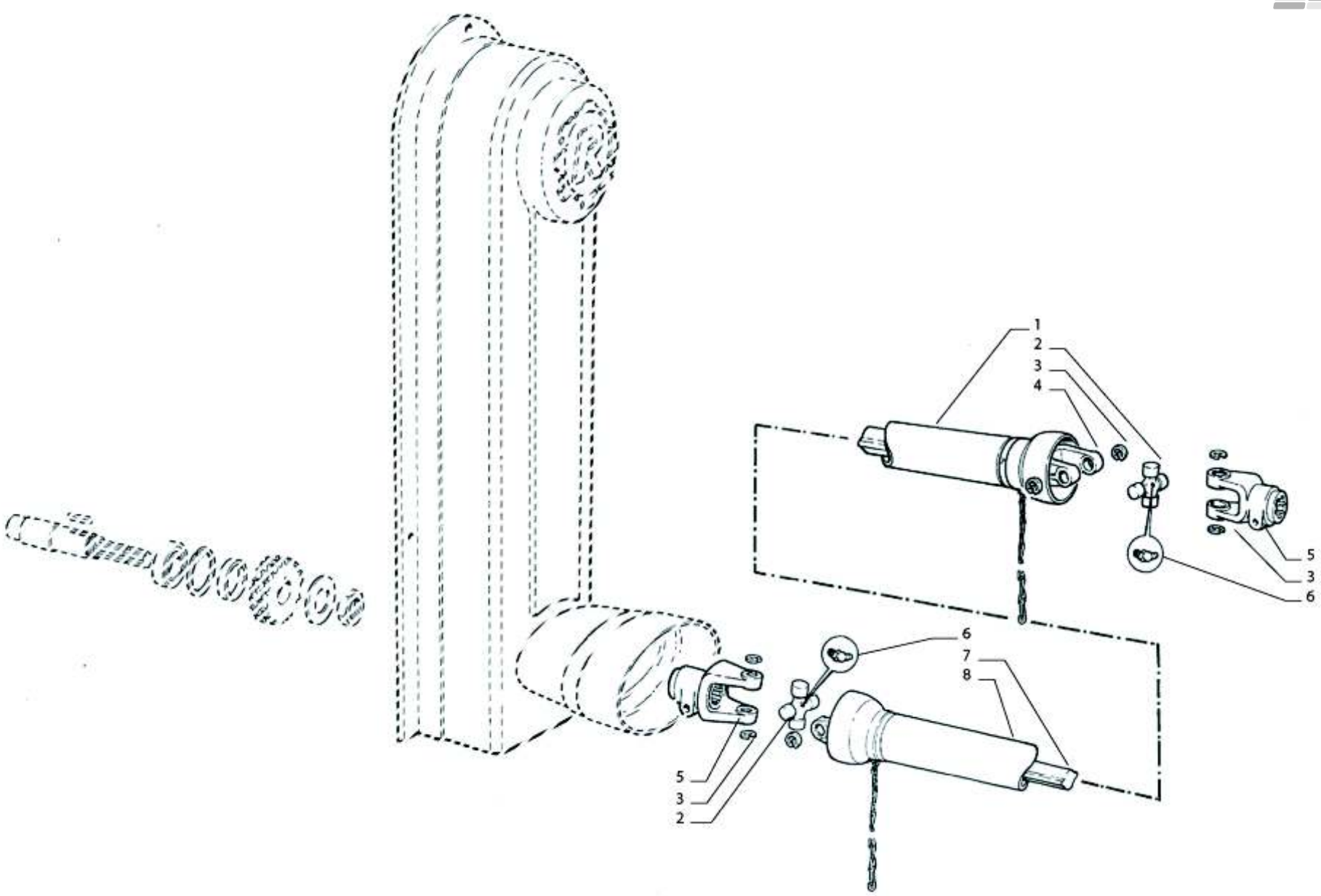


DIAGRAM N° 7
P.T.O. SHAFT

DIAGRAM N° 7 - P.T.O. SHAFT

Nº	DESCRIPTION	CODE NBR.
1	Plastic guard, outer	MP0533
2	Universal joint K-518 (92 mm. x 30.2 mm. cap dia.)	MP0544
3	Snap ring	MP0545
4	Hollow shaft w/ weld yoke x 1000 mm.	V-0002
5	Splined yoke	MP0520
6	Grease zerk, 45° angle SAE 1/4"	MP1456
7	Solid shaft w/ weld yoke x 1000 mm.	V-0003
8	Plastic guard, inner	MP0537

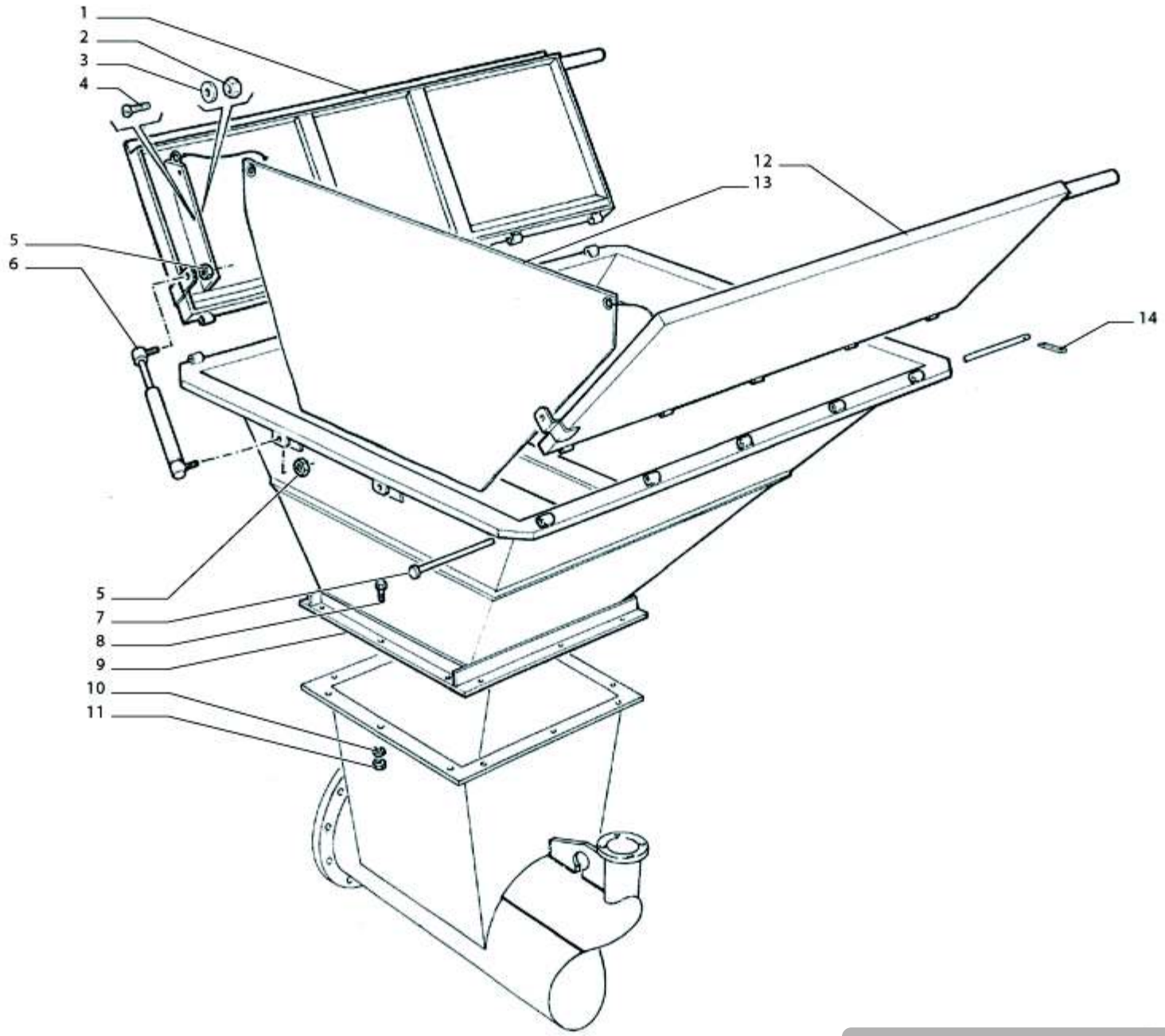


DIAGRAM N° 8
HOPPER

DIAGRAM N° 8 - HOPPER

Nº	DESCRIPTION	CODE NBR.
1	Hopper cover, front	R-9053
2	Self-locking nut BSW 1/4"	MP1329
3	Flat washer galvanized 1/4"	MP1515
4	Trusshead screw BSW galvanized 1/4" x 1/2"	MP1685
5	Self-locking nut M8	V-0004
6	Gas charged shock	MP2850
7	Hinge pin, cover	R-9056
8	Hex. bolt gr. 5 BSW 3/8" x 3/4"	MP2044
9	Hopper	R-9145
10	Lock washer 3/8"	MP1583
11	Hex. nut gr. 5 BSW 3/8"	MP1332
12	Hopper cover, rear	R-9054
13	Side tarp	MP3748
14	Split pin 2 x 20 (mm.)	MP1000

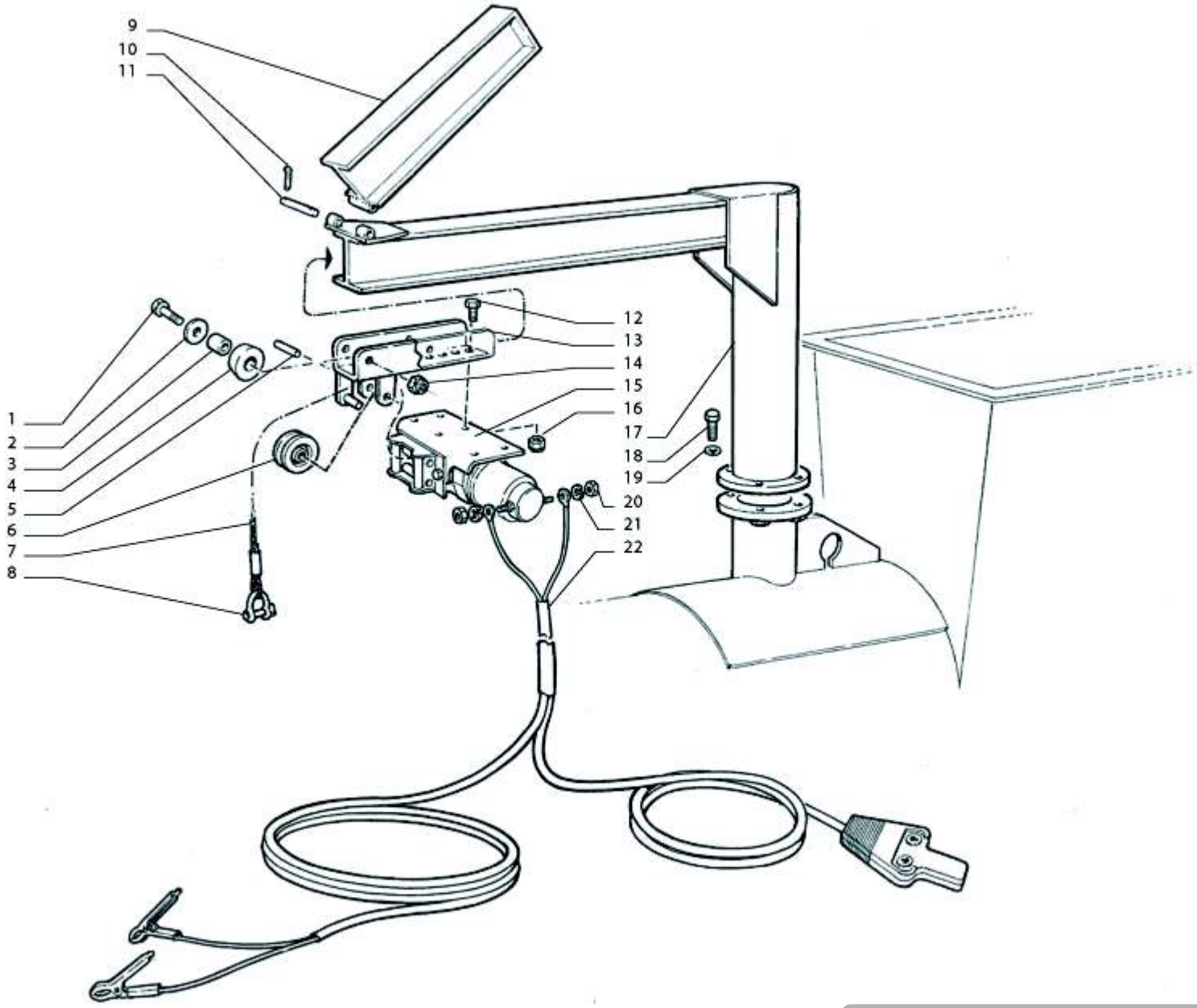


DIAGRAM N° 9
ELECTRIC HOIST

DIAGRAM N° 9 - ELECTRIC HOIST

Nº	DESCRIPTION	CODE NBR.
1	Hex. bolt gr. 5 BSW 3/8" x 1 1/2"	MP2048
2	Split lock washer 3/8"	MP1502
3	Bushing, sliding bracket	E-25042A
4	Tapered bearing	E-25042B
5	Pin, hoist pulley	R10-071
6	Pulley 63 mm. dia.	M-7035
7	Steel cable 6 strand 19 mm. x 4 mt.	MP3681
8	Dee shackle w/ screw pin	MP3786
9	Supporting rail, folding section	R10-R041
10	Split pin, 2 x 20 (mm.)	MP1000
11	Hinge pin, supporting rail	R-9114
12	Hex. bolt gr. 5 BSW 5/16" x 1"	MP2040
13	Sliding bracket, electric hoist	R-9150
14	Self-locking nut BSW 3/8"	MP1314
15	Electric hoist 12V	MP3789
16	Self-locking nut BSW 5/16"	MP1315
17	Supporting rail, fixed section	R-9065
18	Hex. bolt gr. 5 BSW 1/2" x 1 1/4"	MP2042
19	Split lock washer 1/2"	MP1504
20	Hex. nut gr. 5 BSW 1/4"	MP1301
21	Flat washer galvanized 1/4"	MP1515
22	Controls, cables & crocodile clips, electric hoist	V-0005

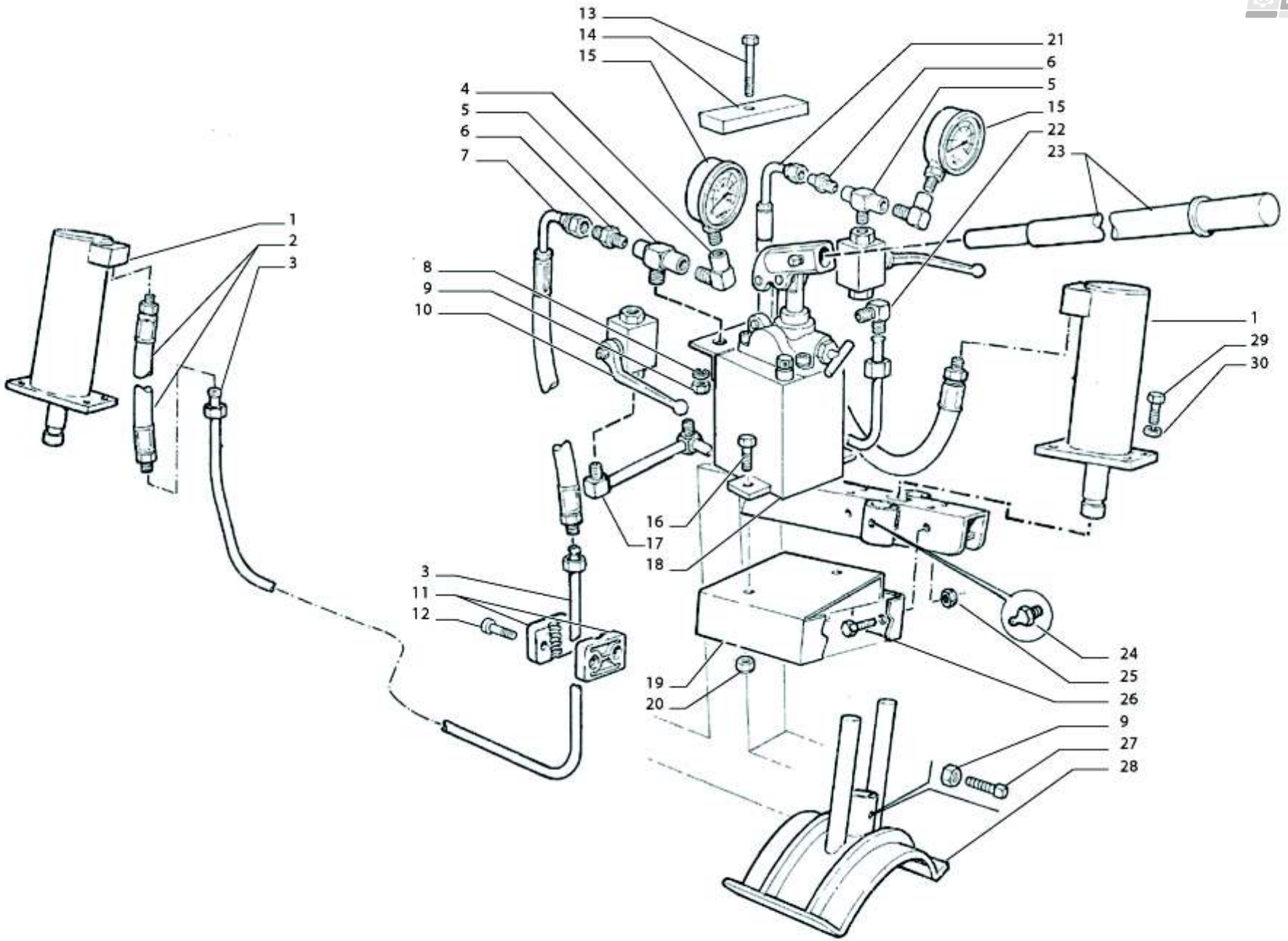


DIAGRAM N° 10
BRAKE HYDRAULIC CIRCUIT

DIAGRAM N° 10 - BRAKE HYDRAULIC CIRCUIT

Nº	DESCRIPTION	CODE NBR.
1	Brake hydraulic cylinder 2"x 45 mm.	MP3299
2	Hydraulic hose 1/4" SAE 100R2 AT x 500 mm., connectors 1/4" male NPT X 9/16" male JIC 37° (1 31-4-4 and 1 342-4-4)	V-0006
3	Hydraulic tubing 3/8" X 1210 mm. & 1160 mm., connectors 9/16" female swivel JIC both ends	V-0007
4	Connector 90° , 1/4" male NPT X 1/4" female NPT (911-4i-4)	V-0017
5	Tee connector 1/4" female NPT X 1/4" female NPT X 1/4" male NPT (1111-4i-4i-4)	V-0018
6	Straight fitting 1/4" male NPT X 9/16" male JIC 37° (741-4-4)	V-0008
7	Hydraulic hose 1/4" SAE 100R2 AT x 500 mm., connectors 9/16" male JIC 37° X 9/16" female 90°swivel JIC 37° (1 342-4-4 and 1 NT-352-4-4)	V-0009
8	Split lock washer 5/16"	MP1501
9	Hex. nut gr. 5 BSW 5/16"	MP1331
10	Spherical valve	V-0019
11	Bracket mount, 3/8" tube	V-0010
12	Allen screw	V-0011
13	Hex. bolt gr. 5 BSW 5/16" x 1 1/2"	V-0020
14	Bracket mount, pressure gauge	V-0021
15	Oil filled pressure gauge	MP4555
16	Hex. bolt gr. 5 BSW 3/8" x 3/4"	MP2044
17	Hydraulic tube 3/8", connectors 1/4" male NPT X 9/16" swivel nut JIC	V-0022
18	Hand operatedl hydraulic pump w/valves & gauges, complete	MP3298
19	Bracket mount, hydraulic pump	R-9172

Nº	DESCRIPTION	CODE NBR.
20	Self-locking nut BSW 3/8"	MP1314
21	Hydraulic hose 1/4" SAE 100R2 AT x 500 mm., connectors 1/4" male NPT X 9/16" female 90°swivel JIC 37° (1 312-4-4 y 1 NT-352-4-4)	V-0012
22	Elbow connector 90°, 1/4" male NPT X 9/16" male JIC 37° (941-4-4)	V-0013
23	Removable lever, hand pump & quick-hitch cam	R-9081
24	Grease zerk, straight SAE 1/4"	MP1452
25	Self-locking nut BSW 1/2"	MP1317
26	Hex. bolt gr. 5 BSW 1/2" x 1 1/4"	MP2042
27	Stud sq. neck 5/16" x 3/4"	MP1410
28	Brake pad	EGH96-006
29	Hex. Bolt gr. 5 BSW 3/8" x 1"	MP2046
30	Split lock washer 3/8"	MP1502

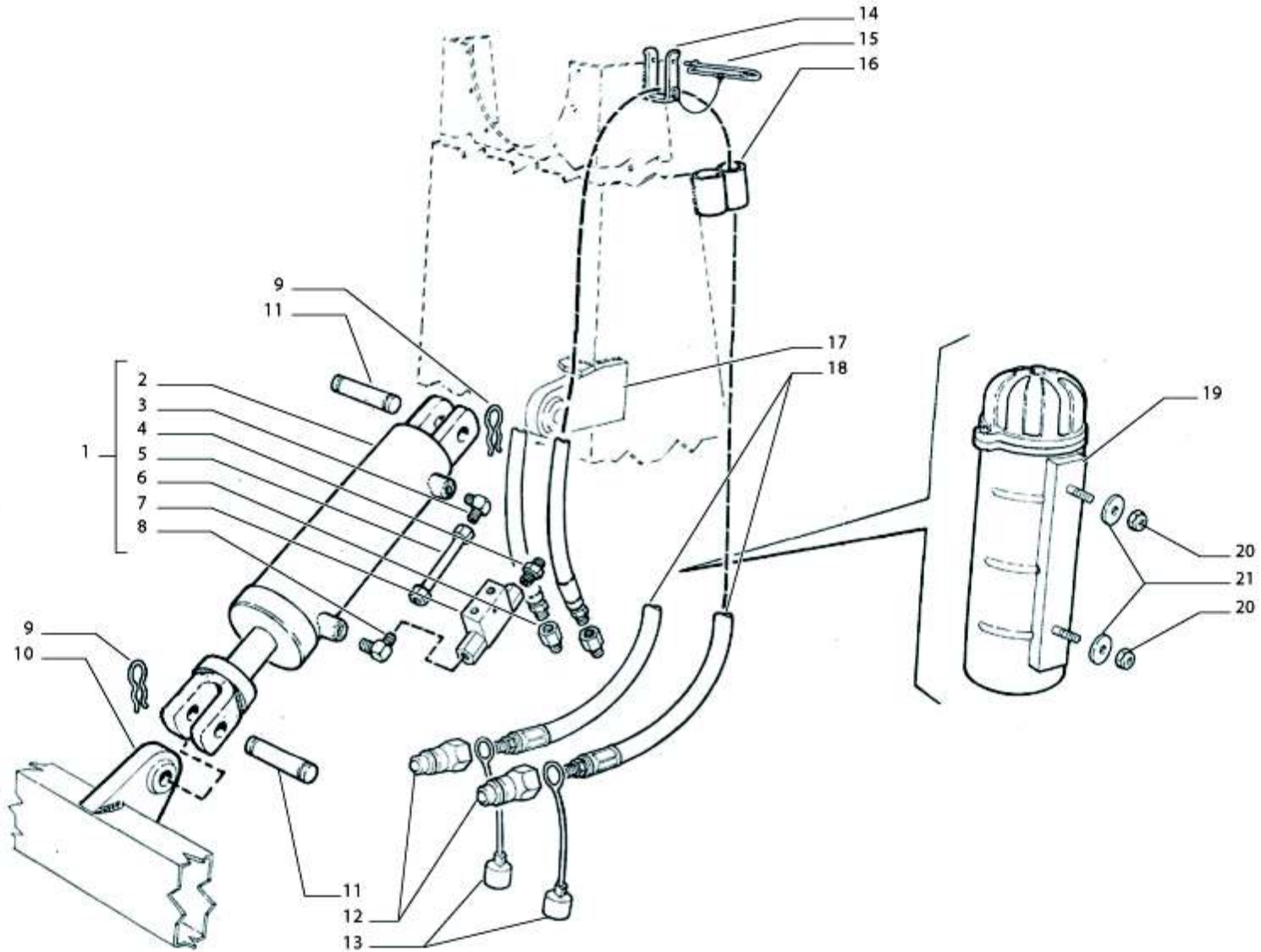


DIAGRAM N° 11
MAIN HYDRAULIC CIRCUIT

DIAGRAM N° 11 - MAIN HYDRAULIC CIRCUIT

1	Hydraulic cylinder assy.	MP4553
2	Hydraulic cylinder 3"x 8"	V-0023
3	Connector 90° w/ tapered thread & ferrule (Elbow 921-4-4)	V-0024
4	Intermediate coupling w/tapered thread & ferrule (Adapter 721-4-4)	V-0025
5	Tube 3/8" x 80 mm.	V-0026
6	Coupling, inner 1/4" NPT X outer 1/4 NPT, with 1.5 mm. restrictor (711-4i-4 C/R 1,5)	V-0027
7	Backflow check valve	V-0028
8	Connector 90°, tapered threads both ends (Elbow 911-4-4)	V-0029
9	Hair Pin clip 4 x 90 (mm.)	MP1094
10	Pivot bracket hydraulic cylinder, drawbar	R-9084
11	Clevis pin 1" x 95 mm., hydraulic cylinder	R10-R016
12	Quick disconnect coupling PNH 1/2" NPT	V-0014
13	Plug	V-0015
14	U-bracket, hose	R-9079
15	Pin clip 3,5 x 145 (mm.)	MP1096
16	Hydraulic hose conduit	EX-18005
17	Pivot bracket hydraulic cylinder, frame	R-9085
18	Hydraulic hose 1/4" SAE 100R2 ATx 2500, connectors male1/4" NPT x 1/2" male NPT	V-0016
19	User's manual canister	MP3546
20	Self-locking nut BSW 3/8"	MP1314
21	Flat washer galvanized 3/8"	MP1517

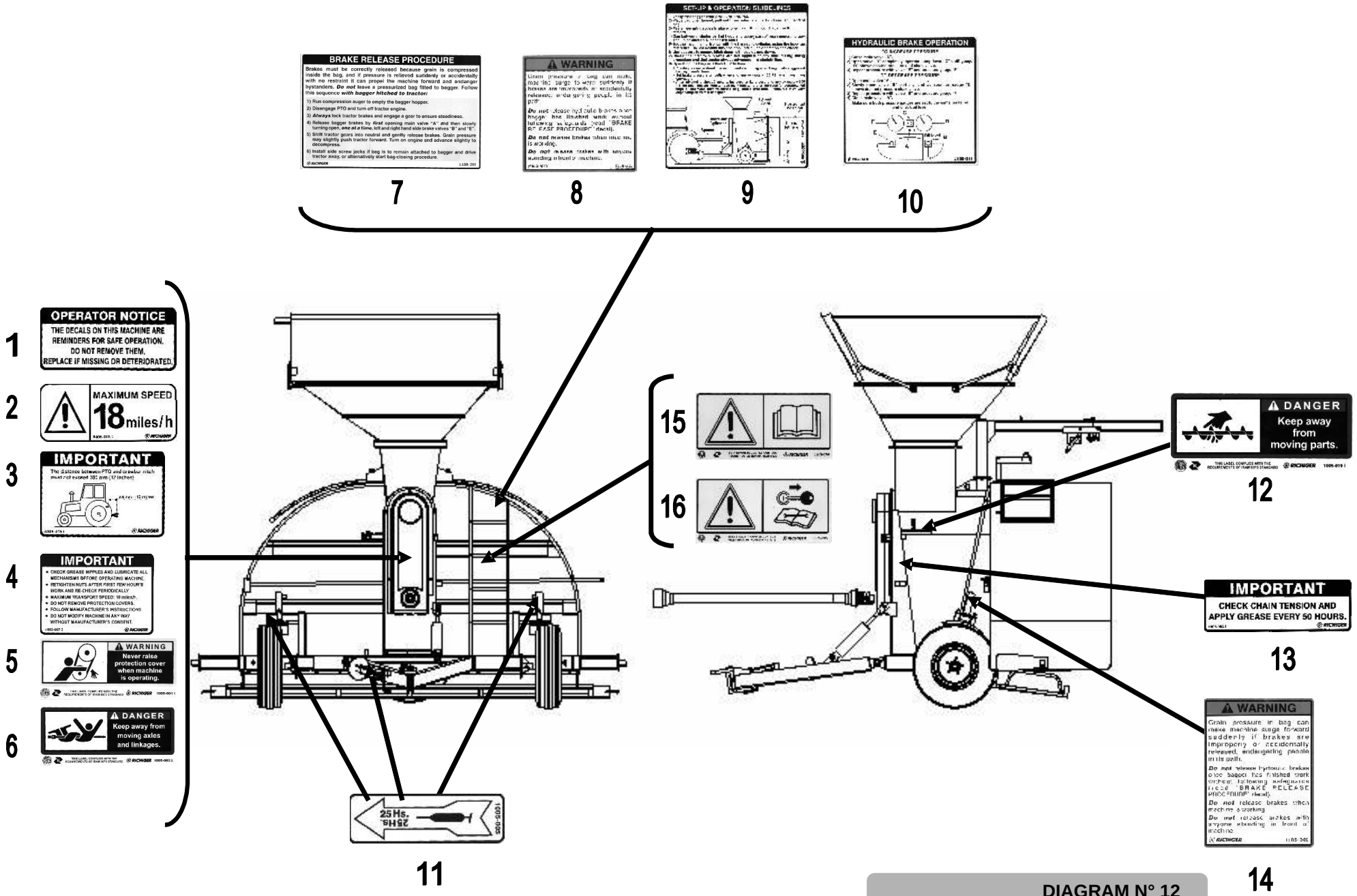


DIAGRAM N° 12
DECALS

DIAGRAM N° 12 - DECALS

Nº	DESCRIPTION	CODE NBR.
1	Decal "Operator notice"	Aviso
2	Decal "Máximum speed 18 miles/h"	0406-018I
3	Decal "Important - Máx. distance"	0406-015I
4	Decal "Important"	1005-007I
5	Decal "Warning"	1005-001I
6	Decal "Danger"	1005-003I
7	Decal "Brake release procedure"	1108-029I
8	Decal "Warning"	1108-032I
9	Decal "Set-up y operations guidelines"	1207-026I
10	Decal "Hydraulic brake operation"	1108-031I
11	Decal "Apply grease"	1005-005
12	Decal "Danger"	1005-019I
13	Decal "Important - Check tensión and apply grease"	1005-004I
14	Decal "Warning"	1108-030I
15	Decal "Consult user's manual"	0309-034
16	Decal "Consult user's manual and turn off engine"	0309-035