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INSTRUCTION MANUAL

Fixed Chamber Baler
SIPMA PS 1510 FARMA
SIPMA PS 1210 CLASSIC
SIPMA PS 1211 FARMA PLUS
SIPMA PS 1221 FARMA PLUS

PKWiU 29.32.33-30.30

ORIGINAL INSTRUCTIONS

PLEASE READ THE INSTRUCTIONS CAREFULLY BEFORE USING THE MACHINE

XIVth Edition – 2016

CE Declaration of Conformity

SIPMA S.A.

ul. Budowlana 26, 20-469 Lublin, POLAND

hereby declare with their sole responsibility that the product:

Fixed Chamber Round Baler

Type / Model:
- ☐ SIPMA PS 1510 FARMA
- ☐ SIPMA PS 1210 CLASSIC
- ☐ SIPMA PS 1211 FARMA PLUS
- ☐ SIPMA PS 1221 FARMA PLUS

Serial No: .....

meets the requirements of

DIRECTIVE 2006/42/EC of the European Parliament and of the Council, dated 17th May 2006, on machinery, and amending Directive 95/16/EC (Official Journal of the European Union L 157, 9.6.2006, p. 24)

The body authorised to draw up technical documentation:

R&D Centre INVENTOR Sp. z o.o. ul. Ciepłownicza 4, 20-469 Lublin, POLAND

The following standards have been adopted to carry out compliance assessment:

PN- EN ISO 12100:2012
PN- EN ISO 4254-11:2012

This declaration is only applicable to the machine in the technical condition as on the date it was launched or commissioned, and it does not cover any parts added by the end user or any other actions further performed on it by the end user.

Director of Sales and Marketing

Lublin, 14th July 2016 **Jarosław Indulski**

WARNING:

The Manufacturer supplies the Machine as a complete set with the Instruction Manual and Warranty Card. The Buyer should check the product and received documents for completeness.

The Machine shall undergo the First Startup Procedure as per the Warranty.
The First Startup Procedure is the basic condition of safe and reliable operation of the Machine.

This Instruction contains information concerning the usage, lubrication, handling and safety recommendations. It describes all the available versions and options, including those which are not part of the standard accessories of the Machine.

Attention User!

The Machine undergoes constant development and for this reason SIPMA S.A. reserves the right to make changes and amendments as deemed appropriate. In any case, it cannot be the basis for requesting modifications of the machines previously supplied to customers.

Machine efficiency depends on many factors connected with the conditions of its operation.

Read these instructions carefully before using the Machine and keep the Instruction Manual at hand during operation. It helps prevent accidents, observe the warranty conditions and maintain the Machine in good working condition.

More information about the operation of this and other machines manufactured by the SIPMA Group and assistance with regard to maintenance support or spare parts catalogue can always be provided by our sales representatives.

Supplier:

(this table is completed by the Supplier when the Machine is sold, providing company name, full name, address and telephone number of the person authorised to maintain contact with the User, and the date of delivery)

We are at your disposal – SIPMA S.A. – LUBLIN
Head Office: Tel.: (48) (081) 744-50-71, Fax: (48) (081) 744-43-56
Marketing Department: Tel.: (48) (081) 441-43-09 or 441-41-14, Fax: (48) (081) 744-09-64
Service Department Tel.: (48) (081) 744-03-23 or 441-46-18, Fax: (48) (081) 744-03-23

After a season of operation of this Product, please complete the validation print included in this Manual and send it to the Manufacturer.

The details concerning the warranty and maintenance can be found in the Warranty Card.

WE HOPE THAT YOU WILL BE SATISFIED WITH OUR PRODUCTS
THE INSTRUCTION MANUAL IS PART OF THE BASIC ACCESSORIES OF THE MACHINE, KEEP IT FOR FUTURE REFERENCE

Contents

1 INTRODUCTION 12

1.1 INTENDED PURPOSE 12

2 SAFETY AND WARNINGS 13

2.1 SAFE WORKING PRACTICES 13

2.2 FIRE REGULATIONS 15

3 DESCRIPTION OF RESIDUAL RISK 17

3.1 DESCRIPTION OF RESIDUAL RISK DURING MACHINE OPERATION AND ITS DAILY MAINTENANCE 17

4 WARNING LABELS 18

5 GENERAL SPECIFICATIONS 24

5.1 INTRODUCTION 24

5.2 MACHINE IDENTIFICATION 24

5.3 CONSTRUCTION OF THE BALER 24

5.4 OPERATING PRINCIPLE OF ROUND BALERS 27

5.5 BALERS WITH MECHANICALLY LOCKED BACK FRAME 27

5.6 OPERATING PRINCIPLE OF THE MECHANICAL LOCK 28

5.7 SIDE COVER SNAP LOCKS 28

6 TECHNICAL AND OPERATIONAL CHARACTERISTICS 29

6.1 DECLARED NOISE EMISSION VALUES 31

7 PREPARATION OF THE MACHINE FOR WORK 32

7.1 ATTACHING THE DRAWBAR OF THE BALER TO THE TRACTOR 32

7.1.1. General requirements 32

7.1.2. Attaching the Baler to the farm implement hitch of the tractor 33

7.1.3. Attaching the Baler to the lower transport hitch 33

7.1.4. Attaching the Baler to the upper transport hitch 33

7.2 DRIVING THE BALER WITH THE ARTICULATED TELESCOPIC SHAFT 34

7.3 CONNECTING AND CHECKING THE HYDRAULIC INSTILLATION 35

7.4 CLOSING AND SECURING THE BACK FRAME 37

7.5 SETTING AND ADJUSTMENT OF THE JAW CLUTCH 38

7.6 CHECKING THE TENSIONING OF THE BALING CHAINS 38

7.7 ADJUSTMENT OF THE DRIVE CHAINS 39

7.8 SIGNALLING SYSTEM AND ELECTRICAL TWINE FEEDING SYSTEM 40

7.8.1. Signalling system 40

7.8.2. Twine (net) feeding electric drive 41

8 PICKUP OPERATION 41

8.1 RAISING AND LOWERING THE PICKUP 41

8.2 SETTING THE WORKING HEIGHT AND SECURING THE PICKUP 42

8.3 SETTING THE FEELER WHEELS AND GRATE 42
8.3.1. Feeler wheels 42
8.3.2. Grate 42
9 COMPACTING BALES 42
9.1 BEGINNING OF ROLLING AND FORMATION OF BALES 42
9.2 WRAPPING BALES AND EJECTION 44
9.2.1. Wrapping bales 44
9.2.2. Ejection of a wrapped bale. 44
10 TWINE WRAPPING UNIT 44
10.1 OPERATING PRINCIPLE 44
10.2 TWINE INSTALLATION 45
10.3 ADJUSTMENT OF THE DENSITY AND WIDTH OF TWINE WRAPPING 46
11 WRAPPING BALES WITH NET 46
11.1 OPERATING PRINCIPLE OF THE WRAPPING UNITS 46
11.2 PREPARING THE BALER FOR WRAPPING BALES WITH NET 48
11.3 INSTALLING THE NET 48
11.4 NET CUTTING TEST 49
11.5 ADJUSTMENT OF THE NUMBER OF BALE NET WRAPS 49
11.6 ADJUSTMENT OF THE FEEDING ROLLER PRESSURE 50
12 INSTRUCTION MANUAL OF THE UNIVERSAL ROUND BALER CONTROLLER 51
12.1 CONTROLLER CHARACTERISTICS 51
12.2 SWITCHING ON AND OFF 51
12.3 PROGRAMMING 52
12.4 DISPLAY FUNCTIONS 53
12.5 OPERATION 53
12.6 RESET 54
12.7 ADDITIONAL INFORMATION 54
12.8 SENSOR STATUS 54
12.9 ERRORS 55
12.10 SENSOR SETPOINTS 55
13 BALER MECHANISMS SAFETY FEATURES 55
13.1 SAFETY MECHANISM OF THE FEEDER ROLLER DRIVE 55
13.2 SAFETY MECHANISM OF THE FORK FEEDER AND PICKUP DRIVE 56
13.3 SAFETY MECHANISM OF THE ROLLERS AND DRIVE CYLINDERS 56
14 CLOGGAGE REMOVAL 56
15 GREASING MAINTENANCE AND STORAGE OF THE BALERS 57
15.1 GREASING OF THE BALERS 57
15.2 CENTRAL CHAIN GREASING 60

15.3 MAINTENANCE AND STORAGE OF THE BALERS 62
15.3.1. Removal of the road wheels 62
16 COUPLING THE BALER WITH A WRAPPING MACHINE 63
17 CAUSES FOR MACHINE FAULTS AND THE METHODS FOR THEIR REMOVAL 66
18 DELIVERY, COMPLETION, TRANSPORTATION AND STARTUP OF THE BALERS 69
18.1 UNLOADING AND COMPLETION OF THE BALERS 69
18.2 TRANSPORT 69
18.2.1. External transport 69
18.2.2. Internal transport 69
18.3 FIRST STARTUP 70
19 SPARE PARTS AND ACCESSORIES 71
19.1 BASIC EQUIPMENT 71
19.2 ACCESSORIES SUPPLIED UPON REQUEST 71
19.3 SPARE PARTS 71
19.4 DISASSEMBLY AND TREATMENT OF WORN PARTS 72
20 ADDITIONAL INFORMATION 72
20.1 TIGHTENING TORQUES OF THREADED CONNECTIONS 72
20.2 WIRING DIAGRAM OF THE BALER 73
21 INDEX 74
22 WARRANTY 75
22.1 INFORMATION ABOUT THE SERVICE CENTRES AND POST-WARRANTY REPAIRS 75
23 WARRANTY CARD 76
24 GENERAL WARRANTY PROCEDURES 77
25 WARRANTY REPARIS RECORDS 78
26 STARTUP CHECKLIST 83
27 PRODUCT VALIDATION 84

List of Figures

FIG. 1. INFORMATION PICTOGRAM 18
FIG. 2. WARNING PICTOGRAM 18
FIG. 3. WARNING PICTOGRAM 18
FIG. 4. WARNING PICTOGRAM 18
FIG. 5. WARNING PICTOGRAM 19
FIG. 6. WARNING PICTOGRAM 19
FIG. 7. WARNING PICTOGRAM 19
FIG. 8. WARNING PICTOGRAM 19
FIG. 9. WARNING PICTOGRAM 19
FIG. 10. WARNING PICTOGRAM 19
FIG. 11. WARNING PICTOGRAM 19
FIG. 12. WARNING PICTOGRAM 19
FIG. 13. ATTACH LOADING HOOKS HERE. 20
FIG. 14. PLACES TO BE GREASED WITH SOLID LUBRICANT. 20
FIG. 15. PLACES TO BE GREASED WITH OIL. 20
FIG. 16. WRAPPING UNIT WHEEL LABEL. 20
FIG. 17. TWINE INFORMATION LABEL. 20
FIG. 18. LABEL – ADJUSTMENT OF TWINE BALE BIDING DENSITY. 20
FIG. 19. NET INSTALLATION DIAGRAM LABEL. 20
FIG. 20. TWINE INSTALLATION DIAGRAM LABEL. 20
FIG. 21. PICKUP CONTROL – BACK FRAME LABEL. 20
FIG. 22. BALER DRIVING PATH LABEL. 20
FIG. 23. TENSIONING OF THE DRIVE CHAIN SPRING LABEL. 21
FIG. 24. INFORMATION PICTOGRAM 21
FIG. 25. INFORMATION PICTOGRAM 21
FIG. 26. INFORMATION PICTOGRAM 21
FIG. 27. PICTOGRAMS VISIBLE ON THE FRONT RIGHT SIDE OF THE BALER. 21
FIG. 28. PICTOGRAMS VISIBLE ON THE FRONT LEFT SIDE OF THE BALER. 22
FIG. 29. PICTOGRAMS AND LABELS VISIBLE ON THE FRONT OF THE MACHINE ON THE UPPER FRONT COVER. 22
FIG. 30. PICTOGRAMS AND LABELS VISIBLE ON THE REAR LEFT SIDE. 22
FIG. 31. PICTOGRAMS AND LABELS VISIBLE ON THE REAR RIGHT SIDE. 23
FIG. 32. PICTOGRAMS AND LABELS VISIBLE ON THE RIGHT SIDE OF THE BALER (UNDER THE COVERS). 23
FIG. 33. PICTOGRAMS AND LABELS VISIBLE ON THE LEFT SIDE OF THE BALER (UNDER THE COVERS). 23
FIG. 34. VIEW OF THE NAMEPLATE AND THE SERIAL NUMBER OF THE BALER. 24
FIG. 35. ROUND BALERS SIPMA PS 1510 FARMA, SIPMA PS 1210 CLASSIC, VIEW FROM THE RIGHT (WITHOUT COVERS). 25
FIG. 36. ROUND BALERS SIPMA PS 1510 FARMA, SIPMA PS 1210 CLASSIC, VIEW FROM THE LEFT (WITHOUT COVERS). 26
FIG. 37. DIAGRAM OF THE ROUND BALER DRIVES WITH CHAIN BALING CHAMBER 26
FIG. 38. ROUND BALER WITH MECHANICALLY LOCKED BACK FRAME, VIEW FROM THE RIGHTS 27
FIG. 39. TRANSPORT EYE ON THE BALER. 32
FIG. 40 SUPPORT IN PARKING POSITION FIG. 41 SUPPORT IN TRANSPORT POSITION 33
FIG. 42. ATTACHING THE BALER TO THE FARM IMPLEMENT HITCH 33
FIG. 43. ATTACHING THE BALER TO THE LOWER TRANSPORT HITCH 33
FIG. 44 ATTACHING THE BALER TO THE UPPER TRANSPORT HITCH 34
FIG. 45. ARTICULATED TELESCOPIC SHAFT WITH FLANGE COUPLING 35
FIG. 46. HYDRAULIC INSTALLATION OF THE BALER 36
FIG. 47. HYDRAULIC VALVE DIAGRAM 37
FIG. 48. SECURING THE BACK FRAME 37
FIG. 49. SETTING AND ADJUSTMENT OF THE BALING CHAIN DRIVE JAW CLUTCH 38
FIG. 50. ADJUSTMENT OF THE BALING CHAINS 38
FIG. 51. ADJUSTMENT OF THE MAIN DRIVE CHAIN 39
FIG. 52. ADJUSTMENT OF THE ROLLER DRIVE CHAIN 39
FIG. 53. ADJUSTMENT OF THE PICKUP DRIVE AND SCREW FEEDER CHAIN (LEFT SIDE) 40
FIG. 54. ADJUSTMENT OF THE SCREW FEEDER DRIVE CHAIN (RIGHT SIDE) 40
FIG. 55. SIGNALLING SYSTEM 41
FIG. 56. SETTING AND ADJUSTMENT OF THE PICKUP 42
FIG. STAGES OF BALE FORMATION 43
FIG. 58 MATERIAL FEEDING IN THE LAST STAGE OF FORMATION 44
FIG. 59. TWINE BALE WRAPPING UNIT 46
FIG. 61. NET GUIDING 49
FIG. 62. THE METHOD FOR INSTALLING THE NET 49
FIG. 63. ADJUSTMENT OF NUMBER OF WRAPS 50
FIG. 64. ADJUSTMENT OF THE FEEDING ROLLER PRESSURE 50
FIG. 65. SETTING THE DISTANCE OF THE BACK FRAME SENSOR 55
FIG. 66. SETTING THE DISTANCE OF THE NET ROLL SENSOR 55
FIG. 67. SAFETY MECHANISMS OF THE FEEDER ROLLERS, RIGHT SIDE 56
FIG. 68. SAFETY MECHANISMS OF THE FORK FEEDER AND THE PICKUP, LEFT SIDE OF THE BALER 56
FIG 69. CLUSTERED GREASING POINTS, LEFT SIDE 57

Fig 70. Clustered greasing points, right side **57**
Fig. 71. Greasing points of the feeder yoke (view from the bottom of the machine) **57**
Fig. 72. Greasing points (right side) **59**
Fig. 73. Greasing points (left side) **59**
Fig. 74. Intersecting axis gear **59**
Fig. 75. Central chain greasing system diagram (Based on SIPMA PS 1221 FARMA PLUS) **61**
Fig. 76. Points where a lift is positioned while disassembling the wheels **62**
Fig. 77. Nut tightening sequence **62**
Fig. 78. Bale ejection while working with a wrapping machine **64**
Figl 79. Attaching coupling elements to the wrapping machine **64**
Fig. 80. Attaching coupling elements to the wrapping machine **64**
Fig. 81. Coupling the Baler with a wrapping machine **65**
Fig. 82. Coupling the Baler with a wrapping machine **65**
Fig. 83. Wiring diagram of the Round Balers **73**

1 Introduction

Before using the Machine, it is absolutely necessary for the User to read these Instructions and work safety rules. Additionally, the User should be familiar with the conditions proper and safe operation included in the "Safety and Warnings" section. Failure to observe rules of proper operation may cause an accident or malfunction of the machinery.

The Manufacturer supplies the Machine as a complete set with the Instruction Manual, Warranty Card and spare parts listed in the section titled "Accessories and Spare Parts." Upon receipt, check the numbers specified in the received documents for compliance with the Baler number specified on the nameplate and the frame.

The Warranty is valid after completion of the First Startup Procedure. The First Startup and maintenance during the warranty period are carried out by the authorised representatives of the Dealer or the Manufacturer. The details concerning the First Startup, warranty and maintenance can be found in the Warranty Card. The responsibility for reading the Instruction Manual thoroughly lies with the User.

The Manufacturer does not allow making any unauthorised modifications to the Balers. Suggestions concerning changes and improvements should be submitted and agreed upon with the Design Department or the Manufacturer's Service Centre. Making any modifications without the Manufacturer's approval shall release the Manufacturer from liability for the consequences of these modifications and results in the loss of warranty. The User shall bear full responsibility for the consequences of self-made repairs and modifications of the equipment.

Balers may only be used for the purpose specified in the section titled "Intended Purpose." Usage and maintenance of the Machine contrary to the instructions of the Manual releases the Manufacturer from liability for the consequences of improper use and results in the loss of warranty.

In the event of any doubts or misunderstanding regarding the information related to usage of the Machine contained in this Instruction Manual, please refer to the Supplier or the Manufacturer's service centre and request a full explanation.

1.1 Intended Purpose

Balers are designed solely for agricultural work, for picking up straw materials (post-harvest straw of 4 cereal types and rapeseed), and post-harvest maize residue, hay raked into heaps as well as wilted green fodder).

WARNING:
Picking up and baling other materials than specified above is permitted only after obtaining the consent of the manufacturer.

Usage according to the intended purpose also includes occasional transport between fields and on roads. The Balers are intended for working with agricultural tractors with sufficient power, equipped with a functioning drawbar hitch and PTO (see Table 1).

Using the Baler for other purposes than originally specified shall be understood as use contrary to the intended purpose. Observance and strict compliance with the conditions concerning Machine operation, maintenance and repairs in accordance with the Manufacturer's requirements is an integral part of the requirement for usage in compliance with the intended use.

The Manufacturer does not assume responsibility for any damage or loss resulting from using the Machine contrary to the intended purpose as described above, and in the case of using the Machine with the application of agents improving ensilage (due to their corrosive impact on the Machine components). This reservation also applies to random events which are beyond the User's influence (e.g. damage resulting from random contaminations, especially mechanical, such as rocks, in the picked up material). The sole responsibility for misuse of the Machine lies with the owner of the Machine and/or the Operator of the Machine.

2 Safety and Warnings

Safety must always be of prime importance during operation of the Machine, therefore it is essential that the Users strictly observe the detailed rules concerning safe operation provided below:

2.1 Safe Working Practices

The Machine may only be operated and maintained by adults who are familiar with the contents of the Instruction Manual and the following general safe working practices.

Operator and tractor

- The Machine may be operated and prepared for work only by adults (persons over 18 years of age) with a licence for driving tractors.
- It is recommended that the Machine is operated by a single Operator, trained with respect to the applicable occupational health and safety, fire protection and traffic regulations.
- The Operator must be informed with regard to correct operation and safe use of the Baler during the First Startup.
- **The tractor driver is responsible for securing the tractor with attached Machine against being accidentally started by unauthorised persons, and especially by children.**
- **Operation of the machine by people under the influence of alcohol and other intoxicants is also prohibited.**
- The tractor should be equipped with a driver's cabin.

coupling and operation

WARNING:
Before starting work with the Machine, make sure that no people or animals are present inside the baling chamber.

- Before putting the Baler into use, **the Operator is required to read and fully understand the contents of this Manual**, with particular attention to the work safety requirements provided below and fire regulations.
- The above requirements also apply to the people carrying out repairs of the Baler.
- It is prohibited to wear unbuttoned, loose clothing with dangling or protruding parts which may be trapped in moving parts of the machine, especially the articulated telescopic shaft.
- Before using the Baler, it is mandatory to check its technical condition, paying particular attention to coupling and securing the drawbar on the tractor, the technical condition of the drive shaft, and the completeness, housing tightness, and operation of the electrical installation.
- It is prohibited to use the Baler with a faulty electrical installation.
- It is prohibited to use the Baler without the protective covers of the operating mechanisms. Working with the Baler with damaged or open protective covers is also prohibited.
- Before connecting the Machine to the tractor, check if the Baler is on a flat surface – **coupling the machine on sloping surfaces is prohibited**.
- Exercise caution while coupling the Baler to the tractor. While driving the tractor in reverse towards the Machine, the space between the reversing tractor and the Machine must be clear of any people.
- Do not enter the space between the Machine and the tractor before the unit is secured against rolling away by engaging the tractor's parking brake or securing the road wheels with chocks, and before it is secured against starting by unauthorised persons.
- **Before starting the Machine, make sure that you know how to stop the Baler and the tractor in the event of urgent necessity!**
- No unauthorised persons, especially children, are permitted to be present near a machine during its operation or when it is undergoing repairs.
- It is prohibited to start the machine when it is not coupled with a tractor.
- Before starting the machine and during its operation, the User must make sure that no unauthorised persons (especially children) or animals are present in the hazard zone (in particular around the Baler and the tractor, by the drive shaft and the pickup, and next to and behind the Baler). Particular attention should be paid during hydraulic opening and closing of the back frame.
- **During operation and transport of the Machine, the Operator is prohibited from leaving the driver's seat without immobilising the tractor, removing the key from the ignition and securing the machine against being started by unauthorised persons.**
- Do not operate the Baler on slopes exceeding 12%.
- **Transporting people and cargo on the Machine and the tractor is prohibited.**
- Stepping onto the Machine during its operation is strictly prohibited. It is prohibited to climb onto the Machine.
- The Operator is required to warn about their intention to activate the drive shaft and open the back frame with a sound signal.

- Exercise caution while installing the twine for wrapping bales to prevent injuring your hand with the blade for cutting the twine.
- Exercise caution while installing the net or checking the correctness of operation of the bale net wrapping mechanism. During repairs and adjustments, the lever with the blade for net cutting **must be additionally locked using a wooden block inserted between the blade and counter blade**. **It is recommended to use protective gloves due to the serious risk of injury.**
- Exercise caution while detaching the Baler from the tractor. The Baler must be positioned on a hardened surface and its wheels must be secured with chocks against rolling away. This condition must also be fulfilled during repairs and adjustment of the Baler.
- The Machine's operation should be controlled only from the driver's seat.
- It is prohibited to control the Baler from outside the tractor.

WARNING:
The Machine must not be operated under conditions other than those provided. Fields and meadows must be cleared of any rocks, tree branches and hard objects which may damage the machine.

hydraulics

- The Machine is equipped with a hydraulic installation. Before starting work it is necessary to check its proper operation.
- The ends of the hydraulic installation of the Machine must be connected and disconnected after resetting the pressure on the tractor and machine. The Baler's hydraulic installation (especially during trials) should be activated with exceptional precautions.
- Extreme pressures are present in the hydraulic system and the oil may be extremely hot. Use appropriate protective measures while checking leaks (e.g. cardboard protection) to avoid the risk of injury. In the event of skin penetration there is a risk of infection – contact your doctor immediately.
- Do not conduct any works on the hydraulic installation if you do not have practical knowledge in this regard and certainty concerning your skills. These operations should be entrusted to specialists.
- Hydraulic hoses should be replaced after 5 years taking into account the date of purchase of the Machine. The year of manufacture is specified on the hydraulic hose (marking QX – where the X stands for the year of manufacture).

driving on public roads

- During transport on public roads, it is important to exercise extreme caution (in particular while driving downhill and turning) and comply with the traffic regulations in force in the particular country.
- Check the operation and condition of the Baler's lights and make sure that they are compatible with the tractor lights. A triangular identification emblem must be attached to the hook on the back frame of the Baler.
- **Transport on public roads without the required lighting and warning signs is prohibited.** During transport, the feeler wheels of the wide pickup must be disassembled. The pickup should be raised to the transport position and suspended on chains.
- The Baler, especially with a bale, acts as ballast and changes the method of driving, as well as the turning and braking capabilities of the tractor. Make sure that steering and braking are not restricted. Do not disregard the machine's inertia – take it into account while turning, decelerating and stopping. Remember that the reactions of a Machine containing a bale can affect the path of the vehicle.
- Never turn sharply. Never disengage the clutch or shift to neutral on sloped surfaces.
- For the duration of transport on roads, deactivate the electronic controller (if provided) and oil supply.
- A tractor with the Baler attached cannot move faster than 25 km/h. In densely populated areas the transport speed should be lower.
- **During transport on public roads it is not allowed to transport rolled bales in the Baling chamber.**
- **It is prohibited to transport or leave the Baler with the back frame open.**

shaft

- Particular attention should be paid to the technical condition and proper mounting and securing of the articulated telescopic shaft driving the Machine, and especially its to its protective casings.
- It is permitted only to work with an articulated telescopic shaft which bears CE marking, in good working condition and with undamaged protective casings.
- **It is prohibited to work with a shaft which has damaged protective casings or with the casings missing. It is also prohibited to use shafts with different parameters than those specified in this Instruction Manual.** It is mandatory to secure the casings against turning using a chain.
- It is only allowed to use shafts provided for by the Machine Manufacturer.

service and maintenance

- Before any service or maintenance operations on the Machine, its hydraulic system and the tractor engine must be switched off, the key must be removed from the ignition and the machine unit must be secured against rolling away by engaging the parking brake and against being started by unauthorised persons.
- To increase the safety during service operations, additionally detach the articulated telescopic shaft from the

tractor.

- **It is prohibited to carry out any maintenance, adjustment and repairs on the Machine with the drive switched on and the tractor engine running.**
- **During any adjustment, repair or inspection works, the person carrying out the operations is responsible for securing the tractor and the engine against being started by unauthorised persons, and especially by children.**
- No unauthorised persons, especially children, are permitted to be present near the Machine when it is undergoing repairs.
- During any maintenance operations (cleaning, inspections, repairs), the raised back frame must be secured with the hydraulic actuators using the mechanical lock and pins on both sides of the Baler. Please remember about unlocking the safety mechanism before lowering the frame to the lowered position.
- Only the appropriate tools and equipment in good working condition may be used for conducting repairs and adjustment operations according to their intended functions.
- All tensioned elements (springs) and elements accumulating energy (gas springs) are very dangerous. Exercise extreme caution in the area of their operation.
- Exercise caution while inspecting the lever activating the net cutting blade due to the its percussive operation resulting from spring tension.
- Worn or damaged elements of the operating unit should be immediately replaced with new original spare parts.
- Regularly check the tyre pressure. Excessive pressure can cause breakage (risk of explosion). The recommended pressures are shown in Table 1.
- The assembly of the wheels and tyres requires extensive professional knowledge and using the appropriate assembly tools. While working on the wheels, the Baler should be securely positioned and secured against rolling away (chocks placed under the wheels).
- Clogging and contamination inside the Baler should be removed only using the hook included in the Baler accessories, with the drive shaft and tractor engine switched off.
- Replacement of shear bolts in the couplings should be carried out only with the tractor engine switched off. Rotate the chain sprocket using the special key in the direction of the normal operation in order to align the holes in the chain sprockets and hubs. **After replacing the bolts, immediately remove the key – starting the machine with the key still on the roller is not allowed.**
- Greasing should be carried out in accordance with the greasing instructions.

other

- In the event of injury, the wound must me immediately washed and disinfected with hydrogen peroxide, since contamination of the wound may cause an infection posing a threat to life and health.

2.2 Fire Regulations

Balers are machines which usually operate under conditions of extreme fire hazard (picking up dry, flammable materials at high temperatures). For this reason, particular attention must be paid to observing fire regulations while operating the Machine.

- The tractor should be equipped with a large fire extinguisher in good working condition before use.
- Before starting work, the Baler should be greased in accordance with the greasing schedule and then started and inspected in order to check if the moving parts of the Baler (in particular in the feeder rollers and the feeding fork) rub against the frame. Before going into the field, all the detected causes of rubbing (excessive heating) between the mechanisms inside the Baler must be removed.
- During short breaks in the operation of the Baler, the heating of bearing housings in the drive system must be checked. Heating of the bearing housings above 60□C is inadmissible. Baler operation under such circumstances must be stopped until the causes for excessive heating of the bearings are removed.
- During breaks in the operation of the Baler it must be checked whether the picked up material accumulates in large quantities especially around the feeder rollers. The picked up material, especially if wet, causing friction against the rollers, must be removed only with the use of the hook included in the Baler accessories.
- Always disconnect power supply before working on the electrical and control installation .
- It is prohibited to smoke or use open fire in the vicinity of a running Machine.
- It is prohibited to operate a Machine with damaged electrical insulation and bare ends of electrical cables.
- Repairs, in particular welding, may only be carried out after prior thorough removal of residues of the picked up material. Before starting welding work, the electrical and hydraulic lines, the bearings and plastic sleeve housings must be secured against excessive heating, and it is absolutely necessary to disconnect the hydraulic installation, electrical installation and the controller from the tractor.

WARNING:
Any maintenance and servicing operations may only be carried out when the Machine is empty, immobilised and secured against rolling away and starting up accidentally, with the tractor engine switched off.

3 Description of residual risk

The Machine was manufactured with the application of all the principles which ensure its safe functioning. However, it does not release the Operator from the obligation of exercising extreme caution and observing the principles of safe operation arising from other rules and regulations.

The greatest risk arises from the presence of bystanders, especially children, and animals near the hazard zone of the Machine during operation. The risk increases when insufficient attention is paid to the warning labels!

It is particularly dangerous to:
- be present in the Machine's area of operation,
- carry out maintenance operations with the Machine running,
- leave the Baler with the back frame open and unsecured,
- remove clogging from the pickup with the Machine running.

The risks are reduced to a minimum if the Instruction Manual and safety rules are followed.

3.1 Description of residual risk during Machine operation and its daily maintenance

The following principles should be observed:
- read the Instruction Manual carefully,
- unauthorised persons should keep away from a running Machine,
- keep children away from a running Machine,
- use the Machine only in accordance with its intended purpose,
- only the Operator may operate the Machine (thoroughly read the Instruction Manual and the safety regulations),
- inspections and repairs must be carried out by qualified personnel,
- the Machine must be secured during repairs and daily maintenance; it prevents endangering the User,
- do not enter the baling chamber,
- do not manually remove clogging from the pickup,
- keep away from the articulated telescopic shaft and the pickup when the drive is switched on,
- before proceeding to remove clogging from the machine, opening the covers, before each stop, maintenance, servicing or repairs, it is absolutely necessary to switch off the machine drive, switch off the tractor engine and remove the key from the ignition.

The residual risk may be reduced to a minimum when the guidelines of the Instruction Manual are observed fully.

WARNING:
Residual risk exists in the case of failure to sufficiently familiarise yourself with the described prohibitions, recommendations and guidelines!

4 Warning labels

The Baler is contains all the necessary safety equipment, but due to the reasons of functionality, not all the hazardous areas could be covered, therefore the particularly dangerous zones of the machine are marked with yellow warning pictograms (drawings).

The User must be thoroughly familiarised with the meaning of the particular pictograms described below, must avoid all the signalled threats and strictly observe all the recommendations. During operation, particular attention should be paid to the parts of the machine containing these markings.

The meaning of the pictograms placed on the Machine is explained below:

WARNING:
The warning labels must be readable at all times. In the event of loss of legibility, damage or replacement of the part on which they are located, they should be immediately replaced or added. Original labels may be purchased at sales outlets of SIPMA SA as spare parts.

FIG. 1. INFORMATION PICTOGRAM

It is necessary to familiarize yourself with the contents of the Instruction Manual before operating the Machine.

FIG. 2. WARNING PICTOGRAM

It is necessary to familiarize yourself with the contents of the Instruction Manual before operating the Machine and during repairs; remove the key from the ignition during any repairs; it is prohibited to enter the space between the tractor and the Machine, it is prohibited to operate the machine on slopes exceeding 12°, hydraulic instillation under high pressure, it is necessary to be familiar with the Instruction Manual while working on it.

FIG. 3. WARNING PICTOGRAM

Danger of arms and/or legs being pulled into the pickup. Do not reach into the area above the pickup with the engine running and the drive shaft switched on.

FIG. 4. WARNING PICTOGRAM

Warning of the danger of hands being pulled in by the screw feeder. Do not reach into feeder area with the engine running and the drive shaft switched on.

FIG. 5. WARNING PICTOGRAM

Danger of crushing by the opening back frame. Do not stand in near the back frame when it is opened with the engine running.

FIG. 6. WARNING PICTOGRAM

Danger of crushing by an ejected bale. Do not stand in the bale ejection area with the tractor engine running while bales are unloaded.

FIG. 7. WARNING PICTOGRAM

Danger of crushing by the falling back frame. Do not enter under the raised back frame with the tractor engine running and before it is securely blocked.

FIG. 8. WARNING PICTOGRAM

It is prohibited to stay in the vicinity of a running or repaired Machine.

FIG. 9. WARNING PICTOGRAM

Danger of crushing. It is necessary to block the raised back frame using the lock on the hydraulic actuator.

FIG. 10. WARNING PICTOGRAM

Danger or hands or fingers being pulled in by the rotating rollers. Do not reach into chains area, do not open or disassemble the covers with the engine running and the drive shaft switched on.

FIG. 11. WARNING PICTOGRAM

Danger of injury to the fingers or hands. Exercise caution while handling the mechanism for wrapping bales with twine and net.

FIG. 12. WARNING PICTOGRAM

Danger or hands or fingers being pulled in by the rotating rollers. Exercise caution while installing the twine and net for wrapping bales. Twine and net should be installed only with the tractor and shaft switched off.

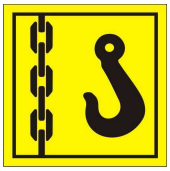


FIG. 13. ATTACH LOADING HOOKS HERE.

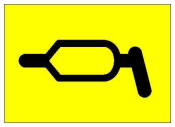


FIG. 14. PLACES TO BE GREASED WITH SOLID LUBRICANT.

FIG. 15. PLACES TO BE GREASED WITH OIL.

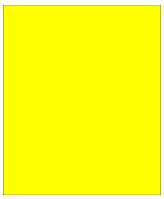


FIG. 16. WRAPPING UNIT WHEEL LABEL.

SZNUREK DO WIĄZANIA TYING TWINE SPAGO PER LEGATURA FICELLE DE LIAGE CUERDA POR ATADO	
SIZAL SISAL TWINE SISAL FICELLE EN SISAL SISAL	TEX 4600-6700 (300-450 ft/lb) 200-300 m./kg
POLIPROPYLEN ROUGH PLASTIC TWINE SINTETICO RAGNATO FICELLE PLASIQUE RECHE SINTETICO RAIDO	TEX 2600-3300 (450-600 ft/lb) 300-400 m./kg

FIG. 17. TWINE INFORMATION LABEL.

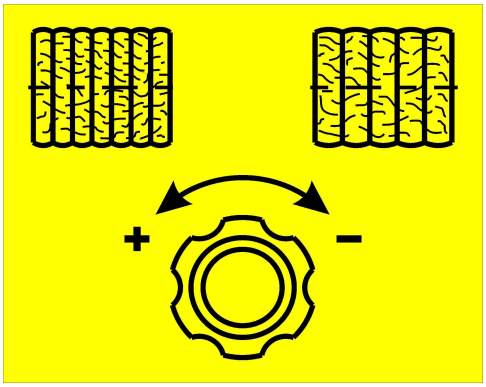


FIG. 18. LABEL – ADJUSTMENT OF TWINE BALE BIDING DENSITY.

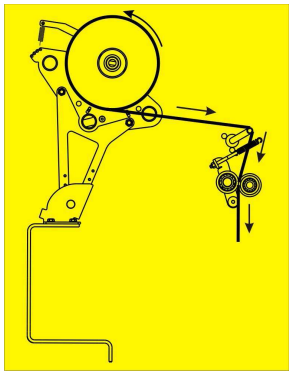


FIG. 19. NET INSTALLATION DIAGRAM LABEL.

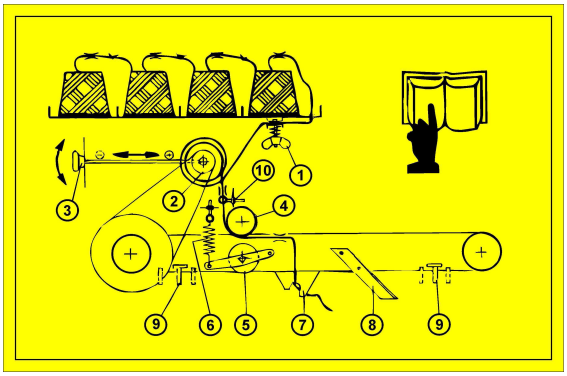


FIG. 20. TWINE INSTALLATION DIAGRAM LABEL.

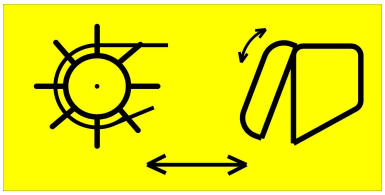


FIG. 21. PICKUP CONTROL – BACK FRAME LABEL.

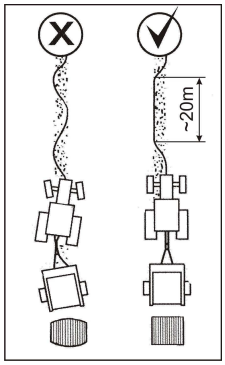


FIG. 22. BALER DRIVING PATH LABEL.

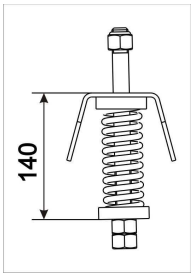


FIG. 23. TENSIONING OF THE DRIVE CHAIN SPRING LABEL.

UWAGA !
PRZY WŁĄCZONYM NAPĘDZIE PRASY:
- BARDZO NIEBEZPIECZNE JEST ZBLIŻANIE SIĘ DO PODBIERACZA
- ZABRANIA SIĘ USUWANIA MATERIAŁU Z ZAPCHANEGO PODBIERACZA
- ZABRANIA SIĘ PRZEPROWADZANIA WSZELKICH CZYNNOŚCI OBSŁUGOWYCH, REGULACYJNYCH I NAPRAWCZYCH PRZY OTWARTYCH BOCZNYCH OSŁONACH

FIG. 24. INFORMATION PICTOGRAM

WARNING:
WITH THE BALER DRIVE ON:
- IT IS VERY DANGEROUS TO STAND OR WALK NEAR THE PICKUP
- IT IS PROHIBITED TO REMOVE MATERIAL CLOGGING FROM THE PICKUP
- IT IS PROHIBITED TO CARYY OUT ANY MAINTENANCE, ADJUSTMENT OR REPAIRS OPERATIONS WITH THE SIDE COVERS OPEN

FIG. 25. INFORMATION PICTOGRAM

WYŁĄCZYĆ NAPĘD PRASY NA OSTRYCH ZAKRĘTACH

FIG. 26. INFORMATION PICTOGRAM

SHUT OFF THE BALER DRIVE ON SHARP TURNS

The appearance of the Baler may differ from what is shown in the pictures depending on the version of the Machine and the structural modification implemented in the meantime. Please focus on the placement of pictograms and labels, which is identical in all the types of Bales to which this Instruction Manual applies.

The pictures below show the placement of warning pictograms and information labels on the Balers described in this Instruction Manual.

FIG. 27. PICTOGRAMS VISIBLE ON THE FRONT RIGHT SIDE OF THE BALER.

1 - pictogram - keep away when the machine is running,
2 - information pictogram,
3 - pictogram - danger of hands being pulled in,
4 - pictogram - pickup
5 - pictogram - pickup screw feeder.

FIG. 28. PICTOGRAMS VISIBLE ON THE FRONT LEFT SIDE OF THE BALER.

1 - pictogram - pickup screw feeder.
2 - pictogram - pickup
3 - information pictogram,
4 - pictogram - reminder about the obligation to read the Instruction Manual,
5 - keep away when the machine is running,
6 - pictogram - danger of hand injury,
7 - information pictogram,
8 - information pictogram,
9 - information pictogram,
10 - shaft rotation.

FIG. 29. PICTOGRAMS AND LABELS VISIBLE ON THE FRONT OF THE MACHINE ON THE UPPER FRONT COVER.

1 - twine installation diagram,
2 - twine type information,
3 - net installation diagram.

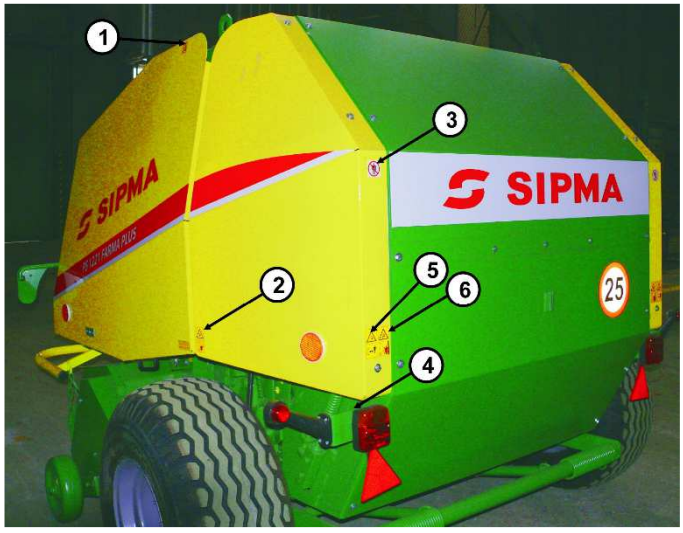


FIG. 30. PICTOGRAMS AND LABELS VISIBLE ON THE REAR LEFT SIDE.

1 - pictogram - bale loading,
2 - pictogram - frame closing,
3 - pictogram - keep away when the machine is running,
4 - pictogram - tensioning of baling chains (under the cover),
5 - pictogram - ejected bale,
6 - pictogram - frame opening.

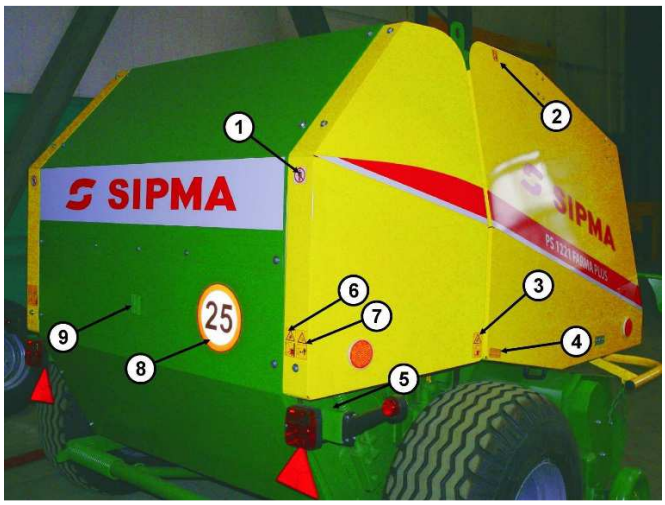


FIG. 31. PICTOGRAMS AND LABELS VISIBLE ON THE REAR RIGHT SIDE.

1 - pictogram - keep away when the machine is running,

2 - pictogram - bale loading,
3 - pictogram - frame closing,
4 - pictogram - tyre pressure,
5 - pictogram - tensioning of baling chains (under the cover),
6 - pictogram - frame opening.
7 - pictogram - ejected bale,
8 - pictogram - maximum transport speed marking,
9 - warning triangle (from the tractor).

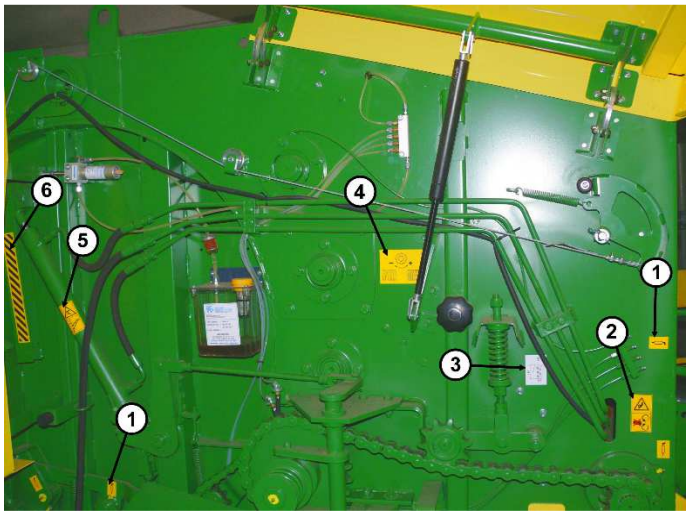


FIG. 32. PICTOGRAMS AND LABELS VISIBLE ON THE RIGHT SIDE OF THE BALER (UNDER THE COVERS).

1 - pictogram - oil lubrication,
2 - pictogram - drive chains,
3 - pictogram - spring tension,
4 - pictogram - adjustment of twine bale biding density,
5 - pictogram - cylinder lock,
6 - pictogram - cylinder lock marking,

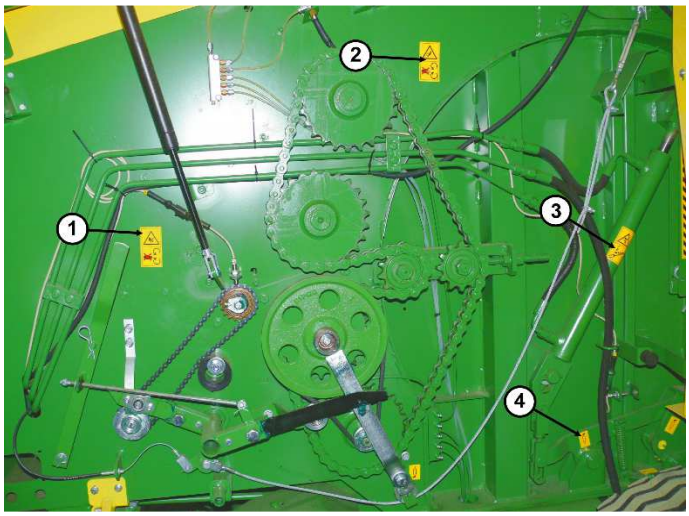


FIG. 33. PICTOGRAMS AND LABELS VISIBLE ON THE LEFT SIDE OF THE BALER (UNDER THE COVERS).

1 - pictogram - danger of hand injury (in Balers with net),
2 - pictogram - drive chains,
3-5 - pictogram - cylinder lock,
4 - pictogram - grease lubrication,

5 General Specifications

5.1 Introduction

Round Balers are single axle trailed machines cooperating with tractors of more than 40 kW (68 HP) power with a type 1 power output shaft (6 grooves, 540 rpm) and at least two output terminals of the external hydraulic system. They are fixed chamber baling machines with a chain or roller/chain baling chamber with two supporting rollers placed in the feeder. The technical and operational details of all the Baler models are given later in this Manual (see Technical and Operational Characteristics). The information provided in this Instruction Manual applies to all the models (size and type of chamber) of Balers , except the fragments where a particular Baler model (size and type of chamber) is specified.

All the Baler models (upon request) can also be fitted with a net wrapping mechanism and additional equipment facilitating maintenance and operation. The list of additional accessories is given at the end of the Manual.

Round Balers are basic machines with regard to technology for picking up straw, hay and green fodder using the rolling method, which allow full automation of loading, transport, stacking and handling of wrapped bales. By using a round Baler, the User can collect crop field material quickly, reduce the storage-related losses, and reduce the twine or net consumption. Balers are designed for picking up from heaps with a width of up to 1.4 m, or from heaps with a width of up to 2.0 m – in the case of the Balers with wide pickup. The picked up material is compacted by the SIPMA PS 1510 FARMA Baler into round bales a width of 1.2 m and a diameter of 1.5 m, while the SIPMA PS 1210 CLASSIC, SIPMA PS 1211 FARMA PLUS, SIPMA PS 1221 and FARMA PLUS Balers – into round bales with a width of 1.2 m and a diameter of 1.2 m

Some of the versions of the Balers are equipped with mechanical back frame lock described in section 5.5.

After forming, the bales are bound with twine (without tying a knot) or with net and unloaded in the field. Balers can also pick up green fodder with a moisture content of 40-60% for silage.

5.2 Machine Identification

The type and serial number of each Baler is stamped on the machine body on the right side of the front bar (see Fig. 34). Close by there is a nameplate with the name and address of the Manufacturer, and the serial number of the Baler in accordance with the number stamped on the body of the Baler and the number given in the Warranty Card.

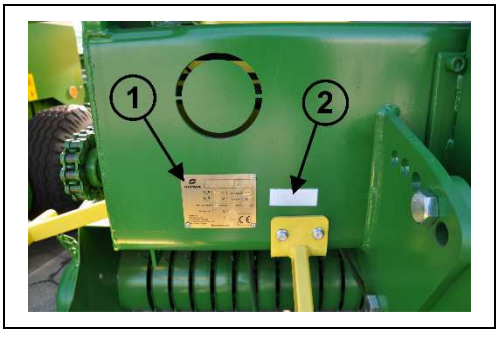


FIG. 34. VIEW OF THE NAMEPLATE AND THE SERIAL NUMBER OF THE BALER.

1 - nameplate,
2 - serial number on the Machine body

5.3 Construction of the Baler

A general diagram of the Round Balers is shown in Fig. 35 and Fig. 36.

The main frame (1) and the back frame mounted on it on hinges (2) constitute the body of the Baler, which together with the feeder rollers constitutes the fixed baling chamber. Opening and closing of the back frame is achieved by means of hydraulic actuators placed symmetrically on both sides, powered by the tractor's hydraulic installation.

In the Balers with hydraulic back frame lock, the appropriate degree of material compacting is controlled by the hydraulic system with a control valve (ZP-3-00) and a pressure gauge located in the front of the Baler on the right side of the bar.

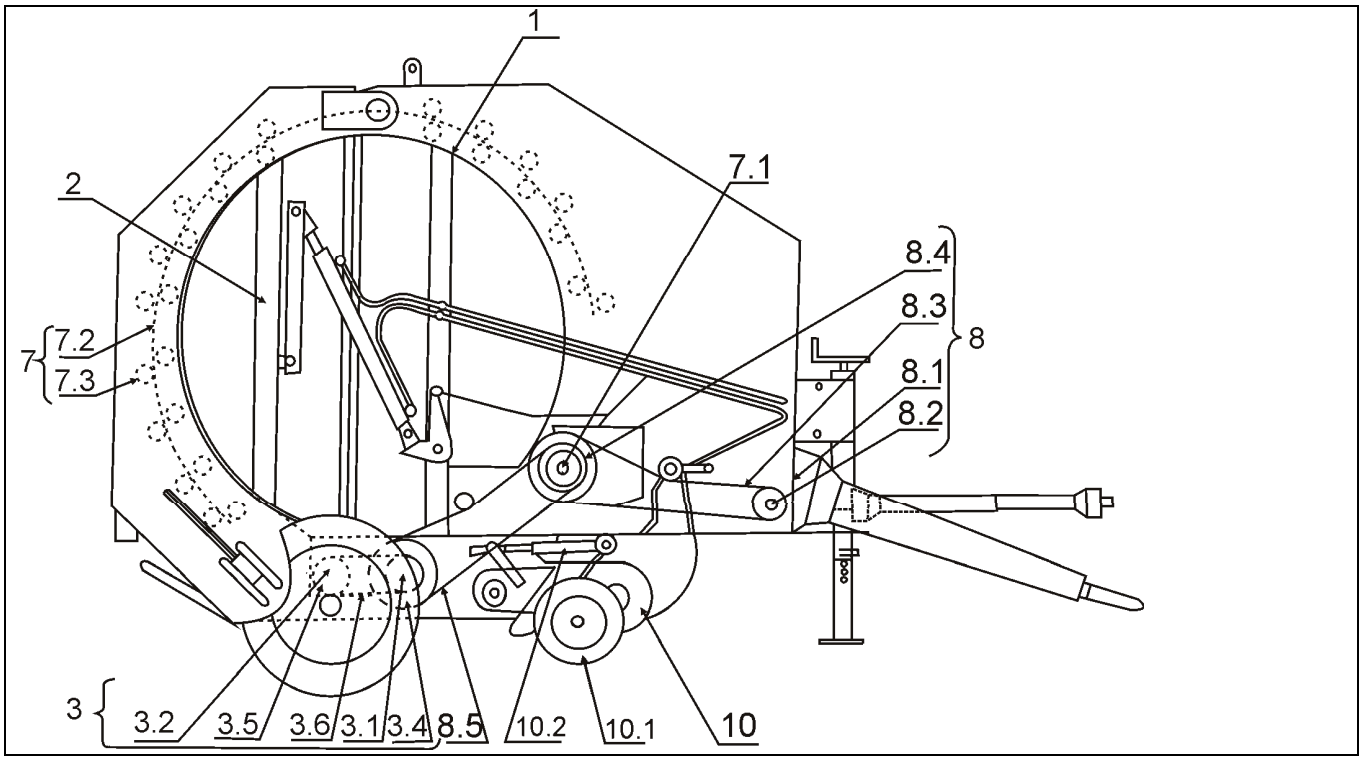


FIG. 35. ROUND BALERS SIPMA PS 1510 FARMA, SIPMA PS 1210 CLASSIC, VIEW FROM THE RIGHT (WITHOUT COVERS).

1 - main frame,
2 - back frame,
3 - feeder:
3.1 - roller 1 (front),
3.2 - roller 2 (back),
3.4 - hub 1 (right),
3.5 - hub 2 (back),
3.6 - roller chain 2,
7 - baling unit:
7.1 - baling chain drive roller,
7.2 - baling chains,
7.3 - transverse rollers,
8 - drive assembly:
8.1 - intersecting axis gear,
8.2 - output shaft of the gear,
8.3 - drive chain (main),
8.4 - jaw clutch hub,
8.5 - feeder drive chain,
10 - pickup:
10.1 - feeler wheel,
10.2 - pickup cylinder.

In the Balers with mechanical lock the degree of compaction is shown by the tilt indicator placed on the front right side of the Machine. These Balers do not have a pressure gauge and the control valve ZP-3-00 is replaced by control valve ZP-9-00.

WARNING:
Replacing the above mentioned valves is strictly prohibited due to the high risk of causing structural damage to the Machine. Any claims submitted to the Manufacturer resulting from the installation of improper valves will not be accepted.

A drawbar (11) for coupling the Machine with a tractor is attached to the front part of the main frame (1). The lower part of the Baler includes the fork feeder (3) with rollers (3.1 and 3.2) and the feeding fork (3.3). Half-axles with road wheels (4) are attached to the feeder (3). The support (5) is mounted in the front of the main frame (1) of the Baler to the front bar.

The pickup (10) is located in the lower front part of the Baler. The Balers are equipped with pickups with a working width of 1.4 m, while the Balers marked with "/1" are equipped with pickups with working width of 2.0 m. The pickup feeler wheel (10.1) is used for tracing the terrain under the Machine (10.1) Two feeler wheels are used with the wide version of the pickup. The pickup is lifted using hydraulic actuators (10.2). The baling chamber (7) consists of rolling chains (7.2) with transverse rollers (7.3) and bearings on both ends. Chains together with the installed rollers form the "ladder."

Additionally, SIPMA PS 1221 FARMA PLUS is equipped with three "closing" rollers in the front part of the baling chamber, which are driven by a releasable jaw clutch using the chain on the left side of the Baler; this chain together with the rollers drives the main baling chain encircling the rear part of the baling chamber.

WARNING:
After 10 hours of operation from wheel installation, the nuts need to be checked for proper tightness and tightened again if necessary.

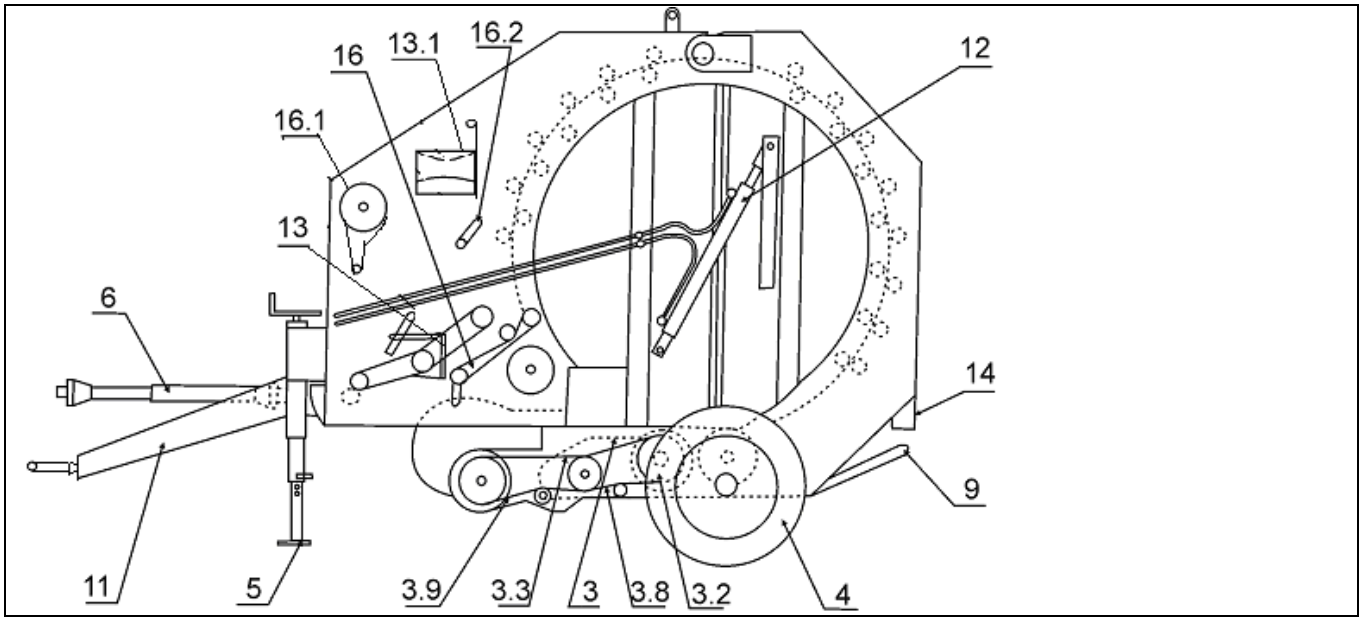


FIG. 36. ROUND BALERS SIPMA PS 1510 FARMA, SIPMA PS 1210 CLASSIC, VIEW FROM THE LEFT (WITHOUT COVERS).

3 - feeder:
3.3 - feeder fork,
3.7 - hub 3 (right),
3.8 - feeder fork drive chain,
3.9 - pickup drive chain,
4 - road wheels with half-axles,
5 - telescopic support,
6 - articulated telescopic shaft (drive shaft),
9 - bale chute,
11 - drawbar,
12 - hydraulic installation,
13 - twine wrapping unit,
13.1 - twine container,
14 - electrical installation,
16 - net wrapping unit,
16.1 - net container,
16.2 - distribution bar.

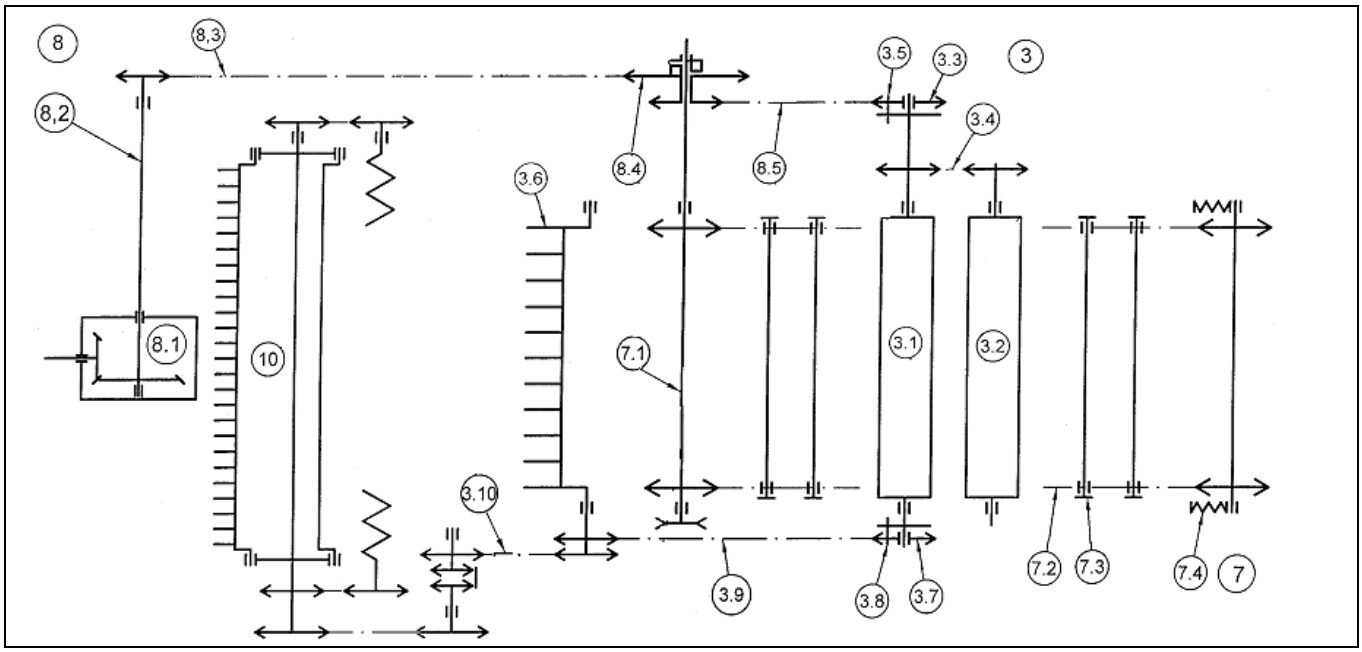


FIG. 37. DIAGRAM OF THE ROUND BALER DRIVES WITH CHAIN BALING CHAMBER

3 - feeder:
3.1 - roller 1 (front),
3.2 - roller 2 (back),
3.3 - hub 1 (right),
3.4 - roller chain 2,
3.5 - M8x45-8.8 securing screws
3.6 - feeder fork,
3.7 - hub 3 (left),
3.8 - M8x45-8.8 securing screws,
3.9 - fork feeder chain,
3.10 - pickup drive chain,
7 - baling unit:
7.1 - drive shaft,
7.2 - baling chains,
7.3 - baling chain rollers,
7.4 - tensioning mechanism,
8 - drive assembly:
8.1 - intersecting axis gear,
8.2 - output shaft of the gear,
8.3 - main drive chain,
8.4 - jaw clutch hub,

8.5 - feeder drive chain, *10 - pickup.*

5.4 Operating principle of Round Balers

After the Baler is started, the gathered material is picked up by the pickup (10) and fed via the feeding fork (3.3) into the baling chamber. In the baling chamber the material is compacted and rolled into a bale by the baling chains which are constantly in motion (7.2) with transverse rollers (7.3). After the baling chamber (12) is filled with material, the pressure inside this chamber increases causing the back frame to tilt, which is indicated by the pressure gauge or the tilt indicator (depending on the version of the Baler), and by a visual and sound signal at the control panel. After that, activate the mechanism for wrapping the bale with twine (13) or net (16) and stop feeding the material into the baling chamber. After the wrapping process is complete, open the back frame (2) hydraulically (from the tractor), and then the wrapped bale will be ejected from the back of the Baler. Then the back frame should be lowered and closed hydraulically in the initial position – after that, the controller will stop signalling that the chamber is open.

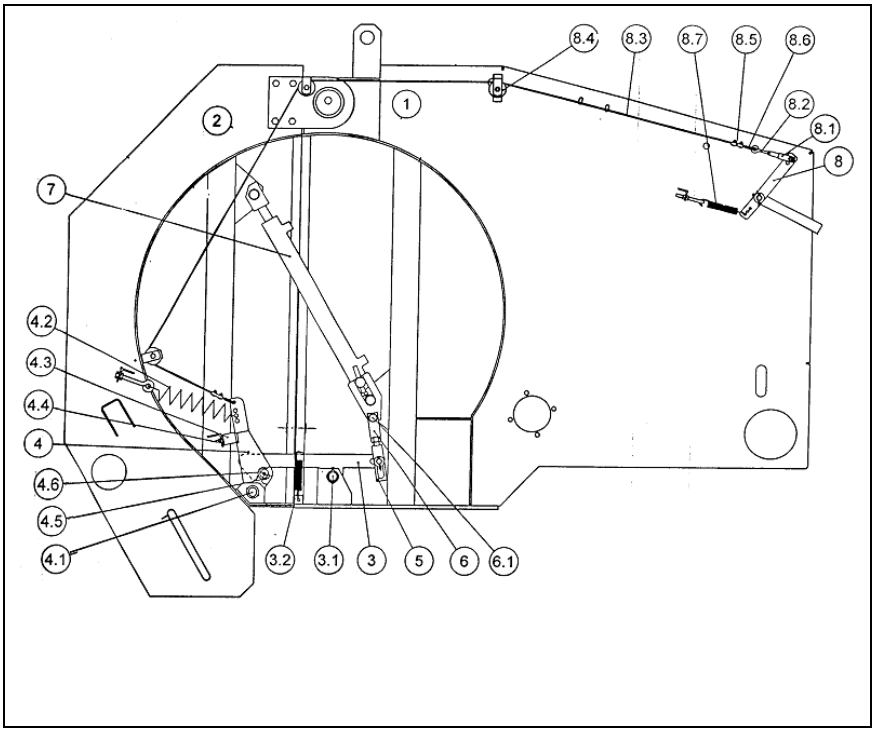
5.5 Balers with mechanically locked back frame

Round Balers can be equipped with a mechanical lock of the back frame (Fig. 38) instead of a hydraulic lock. The back frame (2) in the version with mechanical lock is secured in the working (lowered) position symmetrically from the right and the left side by the arms of the lock (3) mounted pivotally on pins (3.1) on the main frame (1). Pivotal levers (4) tightened with springs (4.2) are installed on the body of the back frame (2). Lever bodies (4) contain rollers (4.5) mounted on pins (4.6).

The back frame is blocked when the arms (3) hitch against the rollers (4.6). The lock arms (3) on both sides of the Baler are controlled via hydraulic cylinders (right and left) (7) by means of the forks (5) and (6).

The chamber filling indicator (8) is installed on the right side of the main frame (1). The indicator is linked to the lever (4) via the fork (8.1), adjusting screw (8.2) and steel cable (8.3) and it is tightened by the spring (8.7).

Due to the fact that the Balers equipped with mechanical lock do not have a pressure gauge in the hydraulic system, all the comments and recommendations concerning the pressure gauge provided in this Instruction Manual do not apply to this version of the Baler.



1 - main frame,
2 - back frame,
3 - lock arm:
3.1 - arm pin,
3.2 - spring,
4 - lever,
4.1 - lever pin,
4.2 - spring,
4.3 - shock absorbing buffer,

4.4 - 7x30x3 washer (accessory),
4.5 - roller,
4.6 - roller pin,
5 - adjusting fork,
6 - welded fork,
6.1 - pin,
7 – hydraulic cylinders (right and left),
8 - chamber filling indicator,
8.1 - fork,
8.2 - eye screw,
8.3 - steel cable,
8.4 - disc,
8.5 - cable clamp,
8.6 - thimble,
8.7 - spring.

FIG. 38. ROUND BALER WITH MECHANICALLY LOCKED BACK FRAME, VIEW FROM THE RIGHTS

5.6 Operating principle of the mechanical lock

Compaction of the material fed to the baling chamber causes a slight tilting of the back frame (2). This is caused by the arms (3) pressuring the rollers (4.5) installed in the levers (4), and this in turn causes the levers (4) to tilt as well. The springs (4.2) balance the forces causing the back frame (2) to open. The tilting of the lever (4) causes the chamber filling indicator (8), operated by the steel cable (8.3) to rotate. The indicator is visible from the Operator's position and moves along the scale from green, through yellow to red. The process of bale wrapping and ejection should be initiated after the appropriate degree of compaction is reached, when the indicator is in the middle of the red part of the scale. Tilting of the back frame will also be signalled on the controller. In the initial phase of bale ejection the hydraulic oil supplied to the cylinders (7) under pressure causes the piston rods to slide out and move downwards in elongated holder recesses. This motion causes downward movement of the forks (5) and (6) and tilting of the arms (3), and afterwards, disengagement of the lock and opening of the back frame (2).

While the back frame (2) is closing, firstly the frame is lowered, and then the hydraulic cylinders (7) slide in and their holders move upwards, which causes the arms (3) to set to the working position. In this way, the back frame lock is engaged. The ZP-9-00 control valve installed in the hydraulic system maintains, via the actuators, the position of the back frame lock latches and allows them to be unlocked in the early stage of bale formation.

The second function of this valve is to protect against excessive opening of the back frame at the moment of unlocking the latches after lock setpoints are exceeded in an uncontrolled way. The back frame stops in its position shortly after the latches are released, which allows the Operator of the Baler to effectively carry out emergency bale wrapping procedure.

If the Operator does not finish the bale formation process in due time, the material fed into the baling chamber will cause an increase of the forces causing the opening of the back frame (2), which will open up a little bit more, which in turn will cause further tilting of the lever (4). The rollers (4.5) will roll on the vertical planes of the arms (3), and after the critical point is crossed, the lock will disengage and the back frame will open. This mechanism is intended to secure the Baler against overloading. In such a situation, the indicator (8) falls down, notifying the Operator about the fact that the permissible degree of bale compaction has been exceeded and it is necessary to initiate the emergency bale wrapping and ejection procedure.

A detailed description of material pickup, baling and unloading processes can be found later in this Manual.

5.7 Side cover snap locks

The front covers (right and left) have snap locks which prevent the covers from being manually opened – they may only be opened by using a tool – rotating the lock pin clockwise, e.g. with a screwdriver.

In order to close the covers, they need to be released free in the last phase of closing, or pressed if necessary, so that the locks engage (the lock pins automatically snap in to the guide sleeves and prevent against self-opening; an audible click of the latch spring can be heard).

WARNING:
Before starting the machine, it is absolutely necessary to close the covers. Working with the covers open is prohibited.

6 Technical and Operational Characteristics

The following table shows the technical and operational characteristics of particular Baler models referred to in this manual.

Table 1 Technical and Operational Characteristics

Baler Model	SIPMA PS 1510 FARMA	SIPMA PS 1210 CLASSIC	SIPMA PS 1211 FARMA PLUS	SIPMA PS 1221 FARMA PLUS
Dimensions [m]				
Overall length (incl. drawbar)	3.60	3.30	3.30	3.30
Width	2.40	2.40	2.40	2.40
Height	2.40	2.20	2.20	2.20
Kerb weight (basic version with drive shaft) [kg]				
	2200	1950		2080
Mobility characteristics				
Working speed [km/h]	Up to 10			
Transport speed [km/h]	Up to 25			
Required tractor power [kW] (HP)	40 (55)			50 (69)
PTO rotational speed [rpm]	540			
Pressure on the tractor hitch [kN]	max. 2.5			
Operational characteristics				
Dimensions of the rolled bales [m]				
Diameter	1.5	1.2		
Width	1.2			
Approximate weight of the bales [kg]				
Straw	up to	up to		up to
Dry hay	up to	up to		up to
Semi-dry hay	up to	up to		up to
Width of picked up material [m]	2.0			
Moisture content of the picked up				
Straw, dry hay	up to 25			
Semi-dry hay (green	up to 60			
Efficiency W_{04} [ha/h] (during working shifts)	up to 1.8	up to 1.5		

Baler Model	SIPMA PS 1510 FARMA	SIPMA PS 1210 CLASSIC	SIPMA PS 1211 FARMA PLUS	SIPMA PS 1221 FARMA PLUS
Type of twines used	Round polypropylene twines: Tex 2000 (marked “500” m/kg) (only for gathering dry hay and straw); Tex 2500 (marked “400” m/kg) and thicker (e.g. Tex 3000 - marked “330” m/kg) for baling wet hay (for silage) or sisal twine Tex 4600 (marked “220” m/kg)			
Twine consumption [rm/bale] (with 12 to 16 wraps)	56-75	45-60		
Type of wrapping net used	Special net made of plastic designed for Round Balers, maximum carcass width 1260 mm, inner carcass diameter 75 mm, maximum reel diameter 295 mm			
Net consumption [rm/bale] (with 2 to 4 wraps)	9-18	7-15		
Number of	One (trained tractor driver)			
Baler unit characteristics				
Chassis				
Tyre dimensions	11.5/80-15.3 10PR		400/60-15,.5 14PR	
Tyre pressure [MPa]	0.34		0.35	
Wheel base [m]	2.10			
Transport ground clearance [m]	0.25			
Drive unit				
From tractor	Articulated telescopic shaft 60960/602.K600/4, 540Nm, 540 rpm			
Shaft overload protection	Flange coupling with M8x55-8.8 securing screw 1 pcs (fully threaded)			
Main intersecting axis gear with GL-4 gear oil, transmission ratio 1:1.16 (releasing)	PK-01M			MB-01M
Baling mechanism coupling	Jaw, directional clutch			
Pickup				
Design type	Drum, four beam			
Working height (beam) [m]	1.8			
Number of feeler wheels	2			

Baler Model	SIPMA PS 1510 FARMA	SIPMA PS 1210 CLASSIC	SIPMA PS 1211 FARMA PLUS	SIPMA PS 1221 FARMA PLUS
Feeder				
Design type	Single fork feeder the yoke mechanism			
Baling unit				
Baling chamber design type	Chain type			Cylinder/chain type
Baling chain	CA-650-2”-160 ogn.	CA-650-2”-128 ogn.		CA-650/1-2”-104 ogn.
Number of cylinders in the baling	None			3 pcs
Hydraulic installation				
Number of back frame cylinders	2 (stroke 565 mm)	2 (stroke 400 mm)		
Oil pressure indicator	25 MPa pressure gauge		none	
Electrical installation				
Power supply	12 V from the tractor’s installation (7-pin socket and working cigarette lighter)			
Lighting	2 front positional lamps E 92 D (P5W bulbs) 2 rear light assembly LT-70 (P21W bulbs, stop light and turn signals, C5W bulbs, position light) 2 front/back clearance lamp assembly W21.3ż (P5W bulbs)			
Light reflectors	Rear: warning triangles, Front: white reflectors, Sides: orange reflectors			

Table 2 Recommended pressure for different types of tyres

Tyre type	11.5/80-15.3	400/60-15.5 14 PR
Pressure [MPa]	0.34	0.35

6.1 Declared noise emission values

The measurements of the sound pressure level at the Operator’s work station (the tractor cabin) were made according to **PN-EN ISO 4254-1:2009/AC: 2010 Agricultural Machinery - Safety - Part 1: General Requirements**, using the **PN-EN ISO 11201:2012** standard with the Machine drive switched on, without load. The microphone was placed according to **PN-EN ISO 4254-1:2009/AC:2010**.

The level of continuous equivalent sound pressure on the Operator’s seat (in the tractor cabin) L(A) is:
Tractor only: **71.2 dB (A)**
Tractor + Machine **70,2 dB (A)**

7 Preparation of the machine for work

WARNING:
Before using the Machine, it is absolutely necessary for the User to read these Instructions and work safety rules. It is recommended that the Baler should be operated by a single, qualified Operator.

The maintenance and inspection operations described section 7 (preparation of the machine for work), section 0 (pickup operation), section 10 and 11 (bale wrapping with twine or net) and in section 15.1 (greasing - Table 4) should be performed and checked by the User on a daily basis (before going into the field).

WARNING:
Before operating the SIPMA PS 1211 FARMA PLUS and SIPMA PS 1221 FARMA PLUS, it is absolutely necessary for the User to remove the transport eyes on both sides of the Machine under the line of the covers. (Fig. 39).

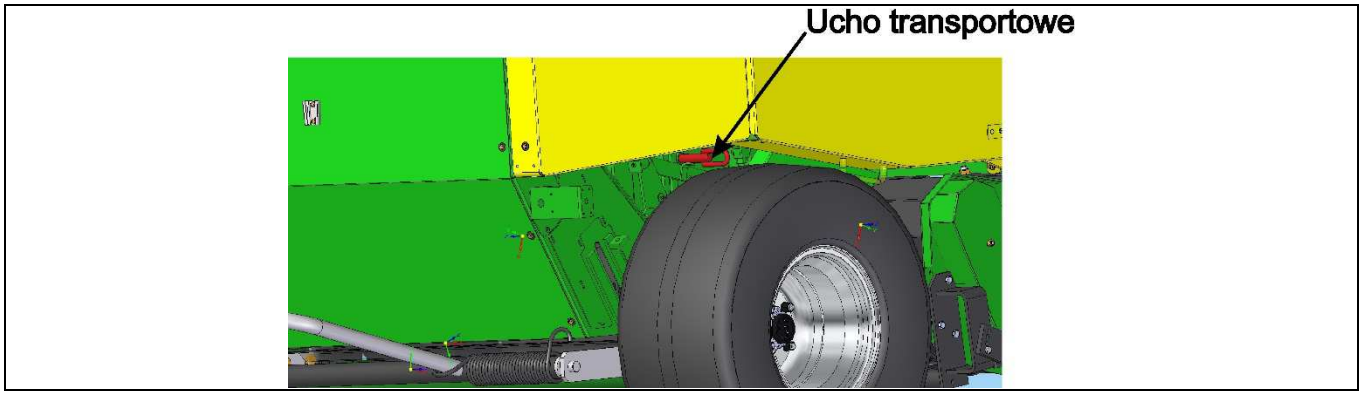


FIG. 39. TRANSPORT EYE ON THE BALER.

7.1 Attaching the Drawbar of the Baler to the Tractor

WARNING:
Remember to check the condition and completeness of the bearings on the baling chain rollers at least once per day, in particular before starting work – using the Baler with damaged bearings may cause irreversible damage to the frame!

7.1.1. General requirements

The following conditions must be fulfilled while attaching the Baler to the tractor:

- the tractor hitch may not be damaged,
- the Baler should be positioned horizontally relative to the ground. It can be adjusted using the telescopic support attached to the Baler frame,
- the drawbar hitch (with the Baler parked horizontally) should be on the height of the tractor hitch. If it is necessary to re-set the drawbar hitch to a different position, change drawbar mounting to the Baler frame (M20x50-8.8-B screws) and level the drawbar hitch (M20x150-8.8-B screw - tightening torque min. 410 Nm),
- after coupling with the tractor, the Baler drawbar must be additionally secured with a safety chain attached to the transport hitch (or other fixed part) of the tractor. It is absolutely necessary to check if the drawbar hitch is secured against accidental unscrewing by inserting the pin into the nut,
- after coupling the Machine with the tractor, it is necessary to check if the support of the Machine is in the safe transport position,
- it is recommended to demount all the lowest parts of the tractor suspension, within the scope permitted by the documentation of the tractor, in order to facilitate attachment of the Baler and make picking up material easier.

Before proceeding to attaching the Baler to the tractor, the drawbar hitch should be set at a height which allows the Baler to be attached to the lower transport hitch (or the farm implement hitch). To do so, the Baler's drawbar hitch

must be lowered (or raised) by rotating the crank (3) of the support (1) (see Fig. 40). After attaching the Baler to the tractor, the drawbar support should be set to transport position (Fig. 41). To do so, the support should be raised a little by rotating the crank in order to relieve it and then remove the pin and bolt (2). Insert the lower part of the support (1) into the upper part until the openings are aligned, and then, in this upper position, insert the bolt into the aligned opening and necessarily secure it with a pin.

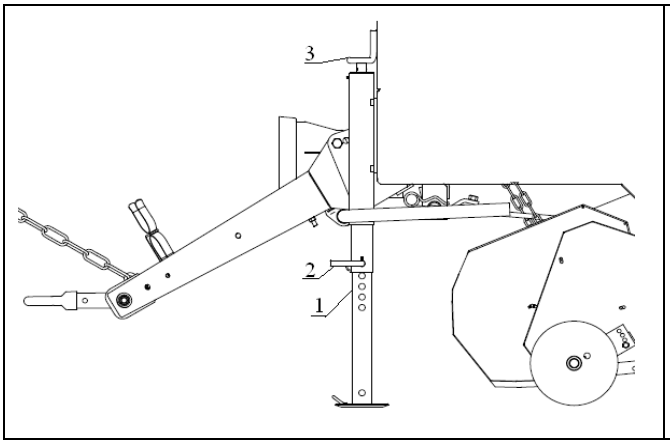


FIG. 40 SUPPORT IN PARKING POSITION

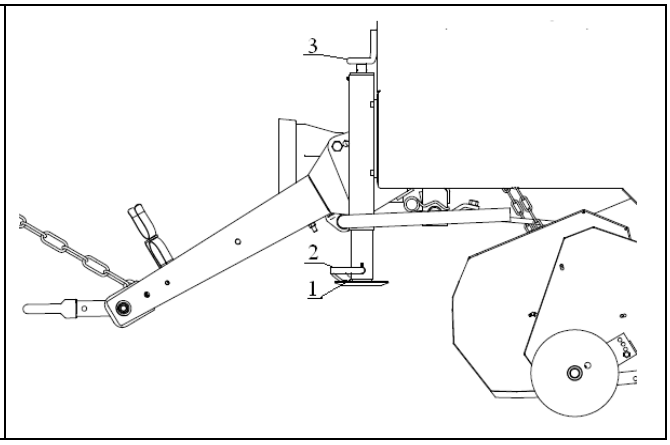


FIG. 41 SUPPORT IN TRANSPORT POSITION

7.1.2. Attaching the Baler to the farm implement hitch of the tractor

The following description refers to Fig. 42.

The Balers should be attached to the farm implement hitch of the tractor (1) using the bolt (3) provided with the tractor's accessories. The bolt must be secured against detachment with a spring pin (from below) and a locking pawl (from above). The length of the drawbar and the articulated telescopic shaft is matched to this type of coupling. The attachment point of the drawbar hitch (2) to the farm implement hitch (1) of the tractor should be in the axis of symmetry (centre) of the tractor:

- within the distance of 400 mm from the front of the power take-off shaft of the tractor,
- and at the height of 250 mm from the ground surface.

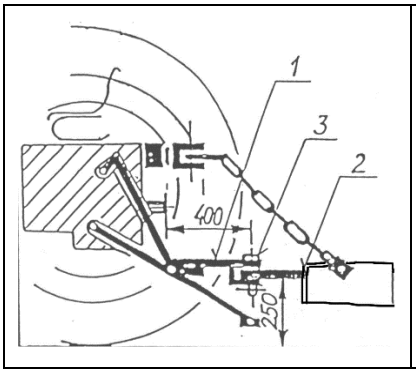


FIG. 42. ATTACHING THE BALER TO THE FARM IMPLEMENT HITCH

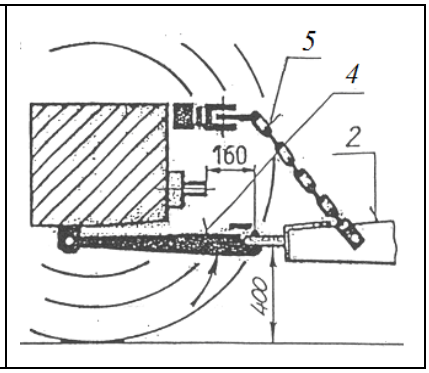


FIG. 43. ATTACHING THE BALER TO THE LOWER TRANSPORT HITCH

1 - farm implement hitch,
2 - drawbar of the Baler,
3 – bolt with safety mechanism,
4 – lower transport hitch,
5 - safety chain.

7.1.3. Attaching the Baler to the lower transport hitch

The following description refers to Fig. 43.

There is a possibility to attach the Baler to the tractor to the lower transport hitch (1). For this type of coupling (used mainly in Western Europe), it is recommended to use an extended drawbar (provided upon request). The lower transport hitch must be in good technical condition to make sure that the Baler is firmly attached. The attachment point of the drawbar hitch (2) to the lower transport hitch (1) of the tractor should be in the axis of symmetry (centre) of the tractor:

- within the distance of 160 mm from the front of the power take-off shaft of the tractor,
- and at the height of 400 mm from the ground surface.

7.1.4. Attaching the Baler to the upper transport hitch

Using a movable (adjustable) drawbar allows coupling the Baler both to the farm implement hitch, as well as the upper transport hitch of the tractor (Fig. 44). Particular attention should be paid to the drive shaft. It is also necessary to make sure that the tractor can turn safely on headlands, ensuring that a safe distance between the drawbar and the casings of the telescopic shaft (approximately 50 mm) is maintained.

After re-setting the drawbar, the screw connections (4) and (5) must be tightened to the correct torque (section 19.1).

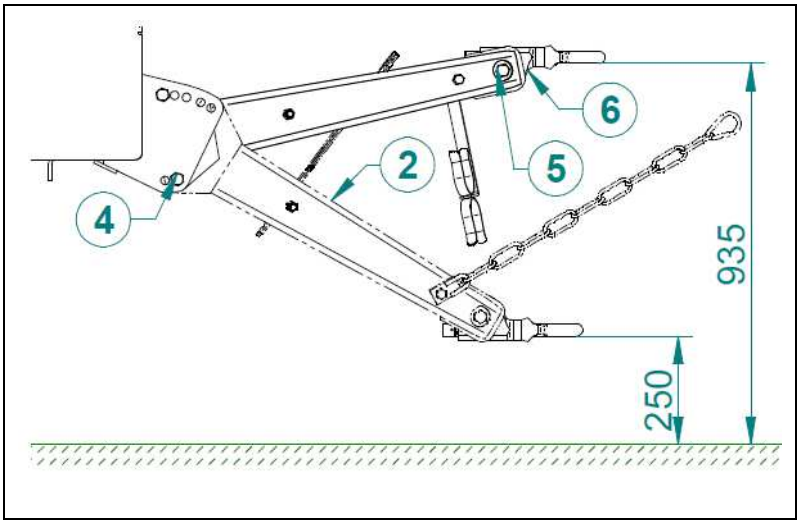


FIG. 44 ATTACHING THE BALER TO THE UPPER TRANSPORT HITCH

2 - adjustable drawbar of the Baler,
4 - M20X50 screw with self-locking nut,
5 - M20X150 screw with self-locking nut,
6 - socket

7.2 Driving the Baler with the articulated telescopic shaft

The drive from the tractor to the Baler should be transmitted via a fully operational **articulated telescopic shaft 540 Nm, 540 rpm, in half casings, with flange coupling with a M8x55-8.8 shear bolt (fully threaded) - Fig. 45.**

The drive shaft should be adapted for mounting on the end of the tractor's power take-off (PTO) shaft and the end of the power input shaft of the Machine, type 1 (6 grooves, 540 rpm) with snap locks. The flange coupling should be located on the shaft from the side of the Baler. In the event of shearing after the Baler is overloaded, the securing screw must be replaced with a new one with identical durability characteristics, provided with accessories of the shaft.

After the articulated telescopic shaft is attached to the tractor and the Baler, the distance between the joints should be 1.0÷1.1 m. The minimum telescoping length (inserting the splined shaft into the ribbed sleeve) should be 250 mm. It should also be checked if the articulated shaft can be retracted (shortened) by a minimum of 250 mm. This length is necessary to ensure that the tractor can turn safely on headlands.

Each time before the Baler is attached to a different tractor (which can have a different drawbar hitch placement), it is mandatory to check the correctness of the selected length of the drive shaft with respect to the tractor by following the procedure described below:

- attach the Baler drawbar to the tractor as per section 7.1, mount the drive shaft as described above,
- mark (in pencil) the location of the end of the outer shaft casing on the inner casing,
- demount the shaft, extend to the marked spot and check:
- the minimum length of telescoping, i.e. if the shaft can be further extended (lengthened) by a minimum of 250 mm before it is completely detached;
- safe retracting of the shaft, i.e. if the shaft can be further shortened by a minimum of 250 mm before it reaches the marked spot.

WARNING:
The articulated telescopic shaft may be used for driving the Baler only after the above specified basic requirements are fulfilled and provided that it is in good technical condition and has complete and undamaged safety casings.

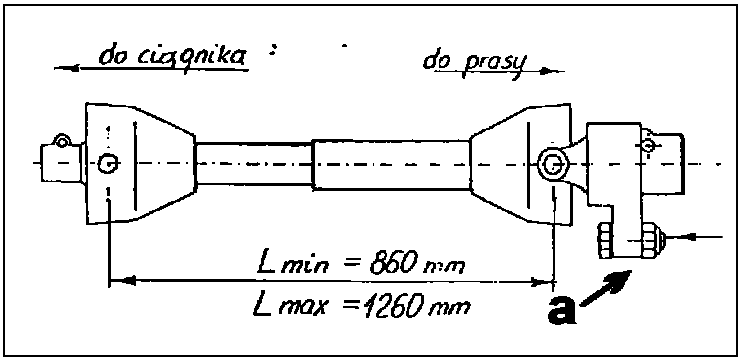


FIG. 45. ARTICULATED TELESCOPIC SHAFT WITH FLANGE COUPLING

a - M8x55-8.8-B securing screw (fully threaded) with M8 self-locking nut (with a plastic liner).

Original	Translation
do ciągnika	to tractor
do prasy	to baler

WARNING:
The articulated shaft driving the Baler is the most dangerous place of the machine.
Using an unchecked or damaged telescopic shaft without casings is prohibited and may cause a dangerous accident.
It is prohibited to stand in the zone between the tractor and the Baler, especially while the tractor is running and the articulated shaft is on.
Any operations on the articulated telescopic shaft must be carried out in compliance with the guidelines provided in its instruction manual.

7.3 Connecting and checking the hydraulic instillation

The Machine is equipped with a three-line hydraulic installation (Fig. 46).

Connecting and checking the operation of the hydraulic installation of the Baler should be carried out with extreme caution (especially while opening and closing the back frame) and with the PTO shaft of the tractor switched off.

WARNING:
While connecting the hydraulic hoses, the hydraulic instillation of the Machine and the tractor must be de-pressurised and hose plugs must be cleaned of any dirt.

Hydraulic hoses should be replaced after 5 years taking into account their date of manufacture. The year of manufacture is specified on the hydraulic hose (marking QX – where the X stands for the year of manufacture).

While working with a tractor with two independent hydraulic sections, the RT distributor should be set in position B (back frame) and lines 1 and 2 should be connected to the sockets of the external two-directional hydraulic circuit of the tractor. Line 3 should be connected with the socket of the separate section, which will allow for independent control of the pickup.

While working with a tractor with a unidirectional hydraulic section: quick release couplings of hydraulic lines 1 and 2 (Fig. 46) should be connected to the sockets of the external two-directional hydraulic circuit of the tractor. The RT distributor lever should be set to the “back frame” position – towards the Baler valve (1) - see label - Fig. 21. Then pressure to the external hydraulic system (to the Baler) should be enabled using the lever of the tractor’s hydraulic distributor. The back frame should start to go up. If the back frame does not start to go up, then the hydraulic distributor lever on the tractor should be switched to the opposite position (or the hydraulic line coupling to the tractor’s hydraulic sockets should be changed).

WARNING:
The hydraulic installation during operation is filled with very hot oil under high pressure, this oil may be very dangerous in the case of an emergency (i.e. leak). Hydraulic installation checks after repairs should always be carried out using a screen (e.g. a cardboard or thick paperboard sheet).

The distributor may be switched to the pickup position only if the **baling chamber is empty**. After setting the pickup in the right position, the distributor should be set to the opposite position (back frame actuators) and the back frame

must be closed down.

WARNING:
Setting the RT distributor to the pickup position and controlling its position with the baling chamber filled up will cause the chamber locks to open and will make further work impossible (picking up material or twine/net wrapping).

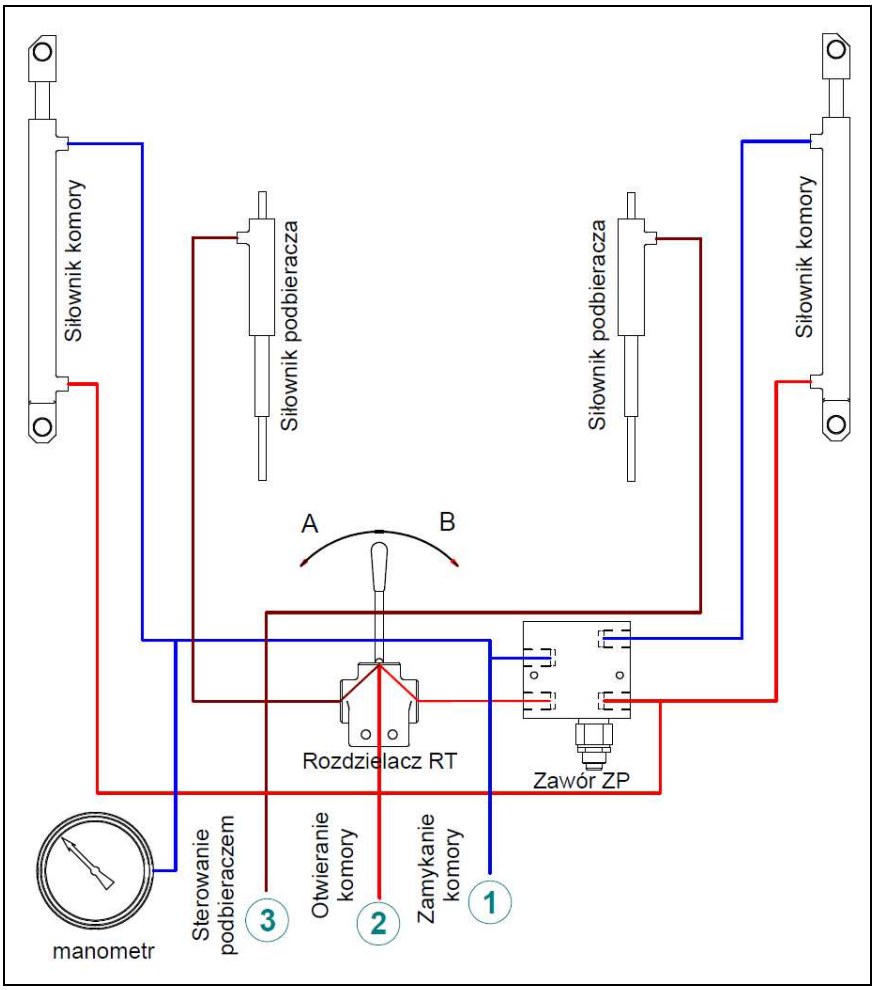
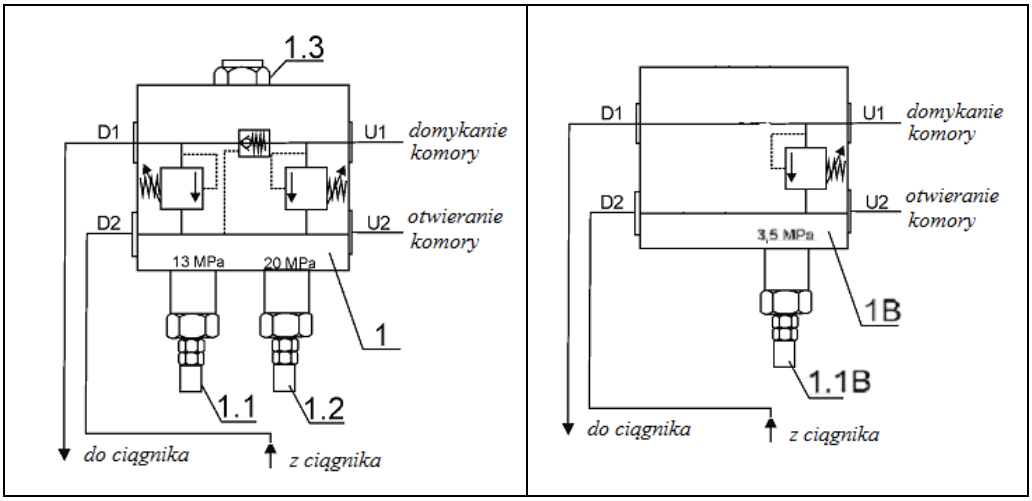


FIG. 46. HYDRAULIC INSTALLATION OF THE BALER

Original	Translation	Original	Translation
Siłownik komory	Chamber actuator	Sterowanie podbieraczem	Pickup control
Siłownik podbieracza	Pickup actuator	Otwieranie komory	Chamber opening
Rozdzielacz RT	RT distributor	Zamykanie komory	Chamber closing
Zawór ZP	ZP valve	manometr	Pressure gauge

Please Note: The Balers with hydraulic lock are equipped with the ZP-3-00 valve and a pressure gauge, while the Balers mechanical lock have the ZP-9-00 valve and do not have a pressure gauge. Valve factory setpoints [MPa]:
- ZP-3-00: 13+2 and 20+2;
- ZP-9-00: 3.5±0.5.



1 - ZP-3-00 hydraulic valve,
1B - ZP-9-00 hydraulic valve,
1.1 – control valve 13 MPa,
1.2 – control valve 20 MPa,
1.1B – control valve 3.5 MPa,
1.3 - return valve,

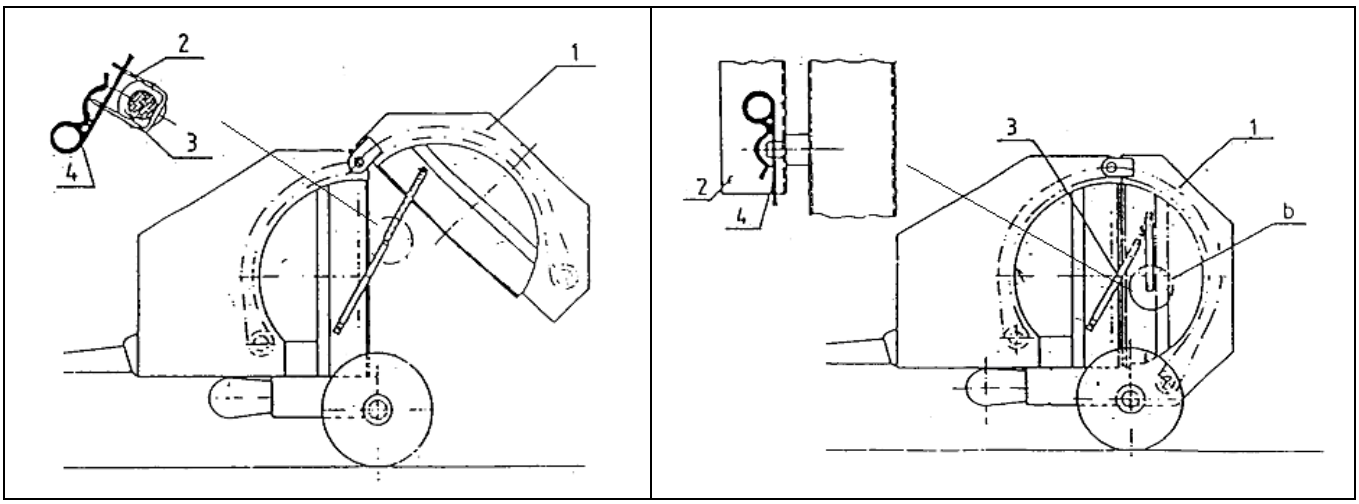
a) in the Balers with hydraulic lock b) in the Balers with mechanical lock

FIG. 47. HYDRAULIC VALVE DIAGRAM

7.4 Closing and securing the back frame

The frame is closed after pressure is given in the hydraulic installation in the direction of its closing (opposite to opening) – Fig. 46, i.e. after setting the hydraulic distributor of the tractor in the opposite position. In the Balers with hydraulic lock of the back frame, the pressure shown on the pressure gauge after the back frame is closed should be at least 13 MPa (130 bar) and within 3 minutes it should not decrease below 10 MPa (the pressure gauge indicator should remain in the green area). The operation of the hydraulic installation should be checked by raising and lowering the back frame several times repeatedly.

WARNING:
After cleaning the Baler and during adjustment and repairs, the raised back frame (1) must be secured against falling down using the clamping rings (2) on both sides of the Machine by the hydraulic cylinders (3). The clamping rings (2) should be placed on the piston rods of the extended cylinders (3) and secured with pins (4). While conducting maintenance or repairs, remember to unblock the clamping rings and secure them on the bolts before lowering the back frame. If you try to lower the back frame with the cylinders secured, they may be damaged in the process, and in the case of trying to lower the back frame with only one side secured, the it may even cause a permanent back frame deformation and damage of the Baler.



a) back frame open and secured a) back frame closed

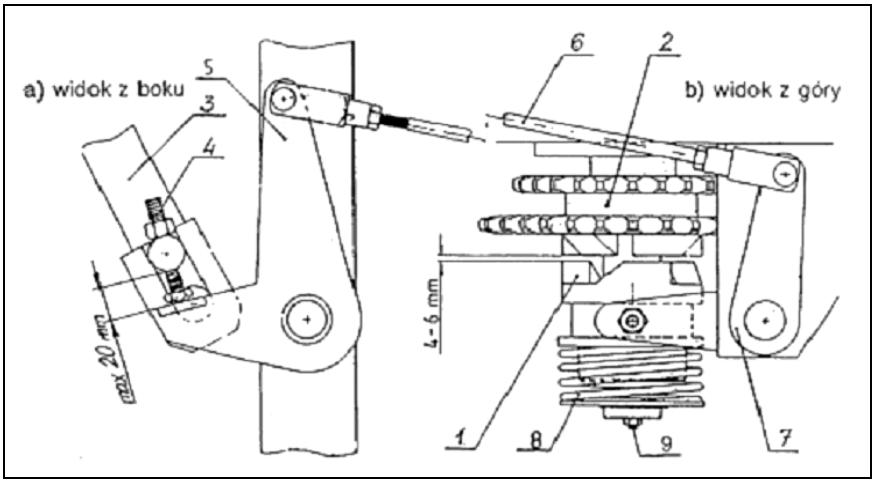
FIG. 48. SECURING THE BACK FRAME

1 - back frame, 2 - clamping ring, 3 - cylinder, 4 - pin

7.5 Setting and adjustment of the jaw clutch

When the Baler is started, check if during the opening of the back frame the jaw clutch responsible for power transmission to the baling chains is fully disengaged (Fig. 49). The disc (1) of the coupling should be ejected from the hub (2) to a distance of 4÷6 mm, which allows the drive to be fully disengaged in any conditions. Disengagement of the clutch occurs at the beginning of the hydraulic lifting of the back frame via a special adjusting screw (4) mounted on the right cylinder bolt (3), and then the lever (5), the rod (6) and the fork of the disengaging arm (7). The clutch is automatically re-engaged by means of the spiral return spring (8) after the back frame is closed and after the Baler drive is switched on. With the clutch engaged, the clutch disc should abut on the bearing surface of the hub.

The distance between the disc (1) and the hub (2) of the clutch is adjusted using the rod (4). Extending the rod reduces the clearance between the discs and vice versa. The special screw (4) may be unscrewed to 20 mm max. and should be secured with a lock nut. Remember about greasing the clutch disc (1) on a daily basis with solid lubricant using the grease fitting accessible from the outside (9).



1 - clutch disc,
2- clutch hub,
3 - right hydraulic cylinder,
4 - M12 adjusting screw,
5 - lever,
6 - rod,
7 - disengaging arm,
8 - spring,
9 - grease fitting

FIG. 49. SETTING AND ADJUSTMENT OF THE BALING CHAIN DRIVE JAW CLUTCH

7.6 Checking the tensioning of the baling chains

With the back frame (1) closed, the distance between the plate of the baling chain tensioning casing (2) and the end of the stop screw (3) should be 5÷10 mm (identical on both sides of the Baler) – Fig. 50. This distance is adjusted using the screw with lock nut. The correct clearance protects the baling chains against damage during material compaction. The baling chains are tensioned by means of the spring (4) using the special screw (5) with lock nut (6). The height of the spring should be adjusted on both sides of the Baler at 320 mm.

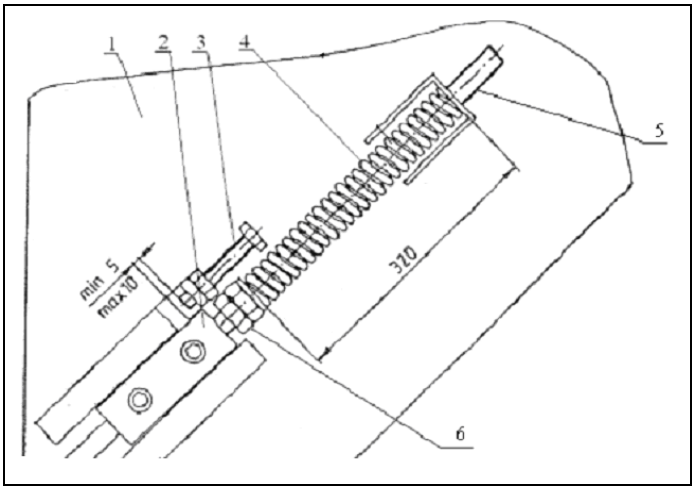


FIG. 50. ADJUSTMENT OF THE BALING CHAINS

1 - back frame,
2 - tensioning casing,
3 - stop screw,
4 - spring,
5 - special screw,
6 - lock nut

7.7 Adjustment of the drive chains

The main drive (8.3) and the feeder roller drive (8.5) are located on the right side of the Machine (Fig. 37). The tensioning of the main drive chain is executed during operation by the active tensioner, which needs to be adjusted to achieve the distance indicated in Fig. 51. The tensioner spring should not be excessively tensioned (height lower than 140 mm), since it causes quicker wear of the chain gear elements resulting from self-load.
The roller drive (only in SIPMA PS 1221 FARMA PLUS) is located on the right side of the Machine). Adjustment of chain tensioning is executed using the passive tensioner via the nut (5) after loosening the nuts (3) and (4) (Fig. 52). After adjustment, the nuts need to be tightened again.
The adjustment of the pickup and screw feeder drive should be done after the covers have been taken off. The adjustment should be in accordance with Fig. 53 and Fig. 54 by loosening, rotating and then re-tightening the plastic slides.

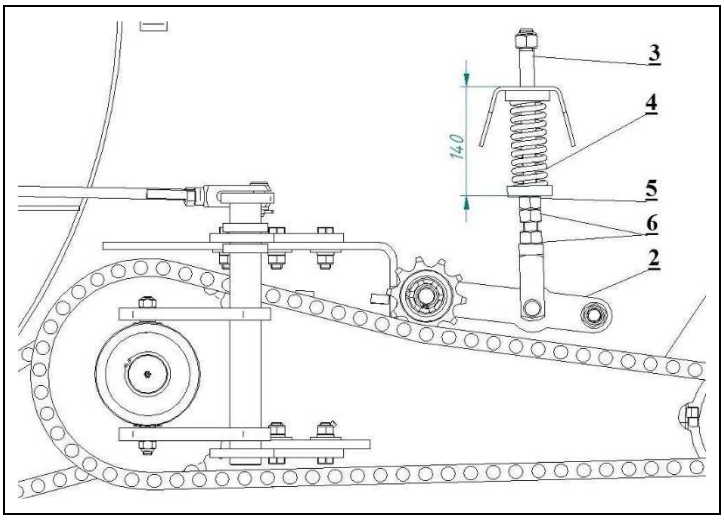


FIG. 51. ADJUSTMENT OF THE MAIN DRIVE CHAIN

1 - main drive chain,
2 - tensioning arm,
3 - threaded rod,
4 - spring,
5 - adjusting nut,
6 - lock nut

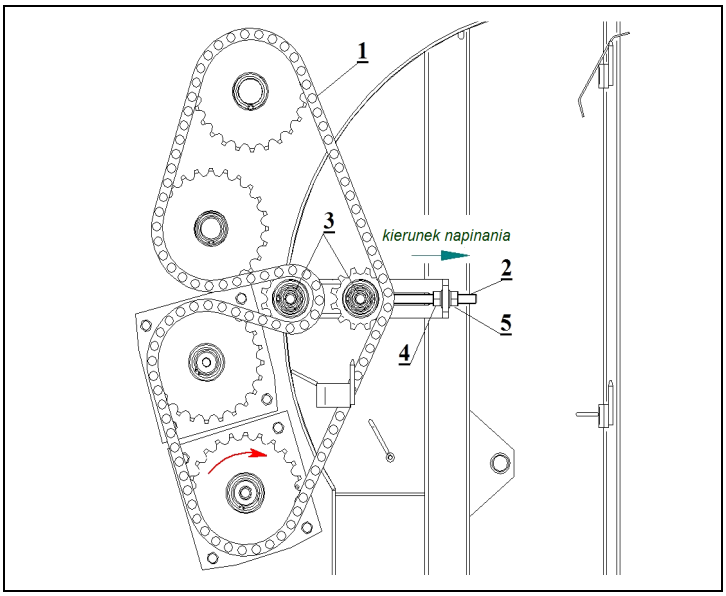


FIG. 52. ADJUSTMENT OF THE ROLLER DRIVE CHAIN

1 - drive chain,
2 - threaded rod,
3 - tightening nuts,
4 - lock nut,
5 - adjusting nut,

Original	Translation
Kierunek napinania	Direction of tensioning

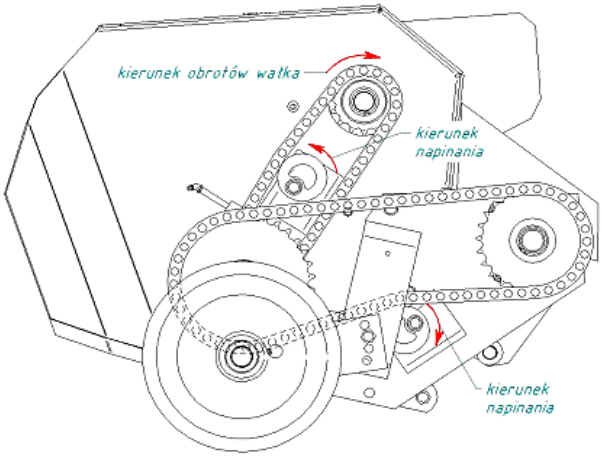


FIG. 53. ADJUSTMENT OF THE PICKUP DRIVE AND SCREW FEEDER CHAIN (LEFT SIDE)

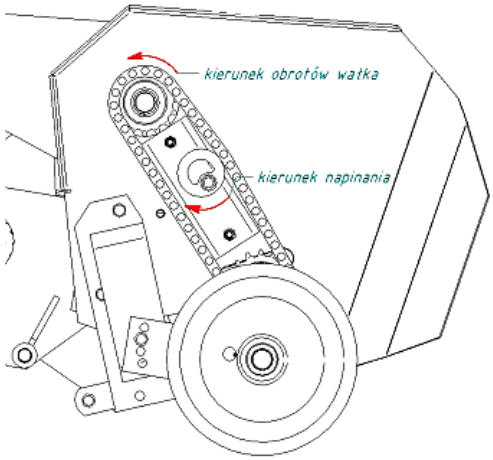


FIG. 54. ADJUSTMENT OF THE SCREW FEEDER DRIVE CHAIN (RIGHT SIDE)

Original	Translation	Original	Translation
Kierunek obrotów wałka	Direction of roller rotation	Kierunek napinania	Direction of tensioning

7.8 Signalling system and electrical twine feeding system

7.8.1. Signalling system

The signalling system installed in the Machine consists of (Fig. 55):

- the universal controller (2), controlling the electromagnetic coupling (4) and collecting information about chamber opening from the sensor (5) and on net feeding from the sensor (6);
- the sensors with connecting elements;
- the wires with connecting elements.
-

The controller needs to be placed in the tractor cabin in a clearly visible and easily accessible location.

Round Balers are equipped with a universal controller monitoring the basic functions of the wrapping units. A detailed description of universal controller operation is contained in section 12.

The cable linking the controller with the Machine should be routed in a manner which allows the risk of damage during operation to be minimised.

After work is finished for a longer time or the winter season, it is recommended to disconnect the controller from the Machine at the connector (3) and store it in a dry, airy place away from high temperatures and high electromagnetic radiation (transformers, etc.).

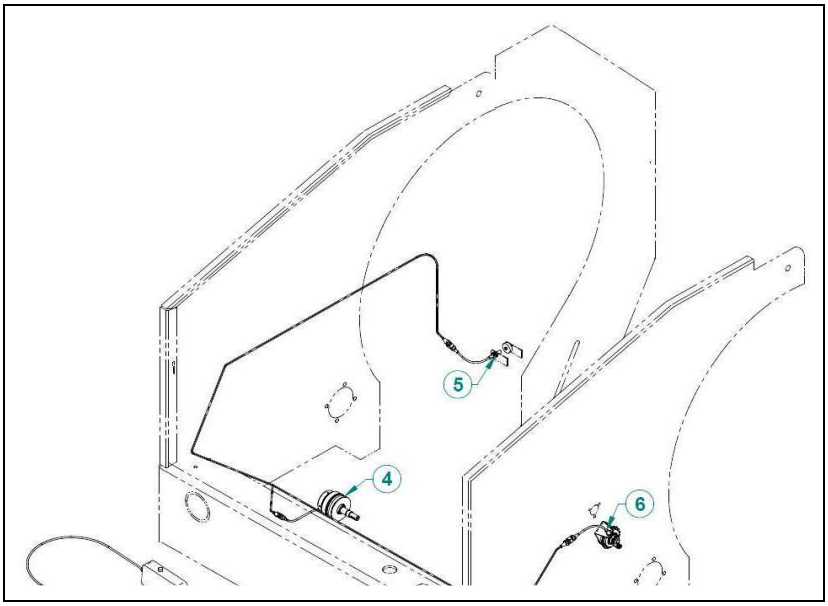


FIG. 55. SIGNALLING SYSTEM

1 - power plug,
2 - universal controller,
3 - connector,
4- electromagnetic coupling,
5 - chamber opening sensor,
6 - net feeding sensor

7.8.2. Twine (net) feeding electric drive

In order to make Baler operation easier, twine (or net) feeding for bale wrapping can be executed by the electromagnetic coupling. Power supply and control of the coupling is then combined into a single circuit with together with the signalling system. The electromagnetic coupling is installed on the right of the front bar of the wrapping unit. After switching on the power supply, the coupling drives the roller with the twine feeding wheel (Fig. 59 - no. 4). The electric twine feeding drive also provides the net feeding function via the drive roller (Fig. 60 - no. 28) in Balers equipped with a net wrapping unit.

A detailed description of twine (net) feeding can be found later in this Manual. The methods of working with the universal Baler controller is described in section 12.

8 Pickup operation

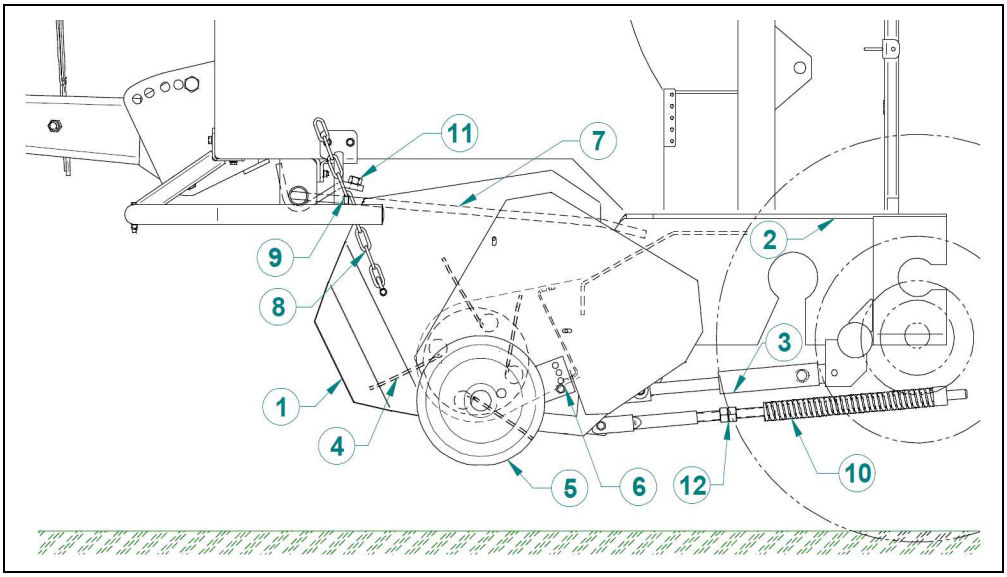
8.1 Raising and lowering the pickup

A view of the pickup with its components is shown in Fig. 56.

The pickup (1) is installed on the feeder frame (2) of the Baler in a pivotable fashion, which allows its height to be adjusted using the plunger hydraulic cylinder (3) controlled from the cabin.

In tractors with only two controllable hydraulic connectors, before raising or lowering the pickup, the hydraulic distributor lever must be set to the “pickup” position (label - Fig. 21) and then pressure must be supplied from the tractor.

In the case of working with three hydraulic connectors, the distributor lever should be constantly in the B position (back frame). The pickup is raised after pressure is supplied from the tractor to the line (3) (Fig. 46). After setting the pressure lever in the tractor to middle (neutral position), the pickup falls down to the lower position under its own weight.



1 - pickup,
2 - feeder frame,
3 - plunger cylinder,
4 - elastic fingers,
5 - feeler wheel,
6 - adjusting screw,
7 - pickup grate,
8 - safety chain.
9 - arrester hook,
10 - relief spring,
11 - buffer adjusting screw of the grate,
12 - relief spring adjusting nuts

FIG. 56. SETTING AND ADJUSTMENT OF THE PICKUP

8.2 Setting the working height and securing the pickup

The working height of the pickup should be set hydraulically on level ground before starting to pick up material. The pickup (1) should be set so that its elastic fingers (4) slightly comb through the stubble field while collecting straw. While collecting dry and semi-dry hay, the pickup fingers (4) should not touch the ground. The pickup should be set in a higher position with a higher stubble field or while picking up larger material, and with greater terrain unevenness. After setting the working height, the pickup should be secured against falling down using the chain (8), locking its appropriate eye on the hook (9) on the side of the Baler.

After the picking up procedure is complete (before transporting on roads), the pickup (1) must be raised to the upper position and secured against falling down using the chain (8) locked on the hook (9) of the frame (similarly to the working position). In the Balers equipped with wide pickup, the chains for securing the working and transport height are on both sides of the pickup.

8.3 Setting the feeler wheels and grate

8.3.1. Feeler wheels

After setting the working height of the pickup (1), set the position of the feeler wheel (5) relative to the pickup using the screws (6) in order to ensure terrain tracing and protect the elastic fingers (4) against overload. In the Balers equipped with wide pickup, the feeler wheels are on both sides of the pickup.

8.3.2. Grate

The grate bars (7) should freely fall down on the material fed by the pickup to the fork feeder. To set the upper limit position of the grate, use the buffer adjusting screws on both sides of the grate pipe. When collecting larger, in particular long material, the grate must be set so that the tips of the bars can be raised to a higher position. When collecting finer, dry material it is recommended to restrict the raising height of the grate bars. In the upper position, the grate bars may not rub against the baling chain rollers or, in the case of SIPMA PS 1221 FARMA PLUS, against the baling cylinder.

9 Compacting bales

9.1 Beginning of rolling and formation of bales

The particular stages of bale formation are shown in Fig. 57.

After preparing the Baler for picking up material and installing the twine (or net) in accordance with the description included in section 10.2 (or 11.3), activate the controller (if the Baler has one) and the tractor's PTO drive, and start picking up material. Balers should be operated at a steady speed of the power take-off, which should be 540 rpm. The given engine speed should be maintained at all times during the formation of the bales.

The PTO drive should not be switched off if there is material in the Baler, especially in the final stage of bale formation and while it is being wrapped and unloaded. Switching off the drive may result in inability to re-start it.

WARNING:
While picking up material, it is necessary to avoid sharp turns which result in uneven transmission of motor rotation to the mechanisms of the Baler. While turning on headlands, it is recommended to switch off the articulated shaft drive and hydraulically raise the pickup from the tractor cabin.

The speed of a tractor with the Baler attached should be adjusted to the amount of material being picked up and the terrain conditions. The material cannot accumulate under the pickup while gathering. In practice, the vehicle speed should not exceed 8 kmh. While picking up material, it is necessary to avoid sharp turns which result in uneven transmission of motor rotation to the mechanisms of the Baler. While turning on headlands, it is recommended to switch off the articulated shaft drive and hydraulically raise the pickup from the tractor cabin.

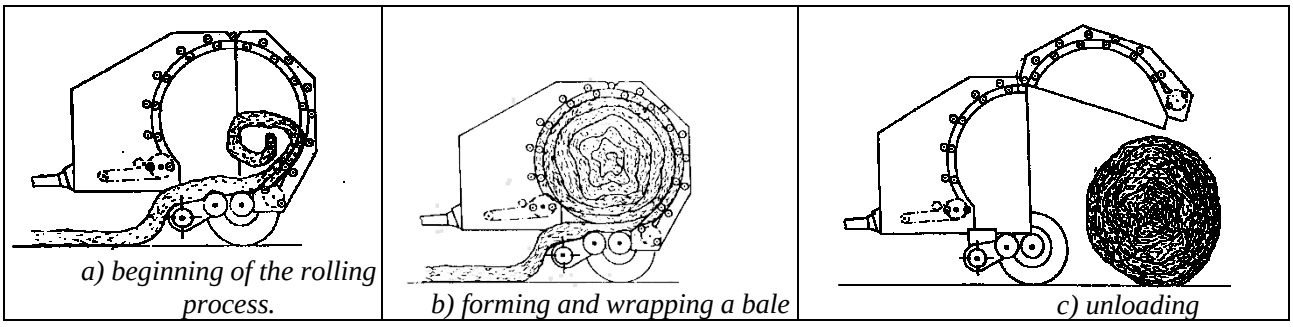
In the first stage of bale rolling (Fig. 57 a) the material collected by the pickup and fed by the fork feeder will be loosely filling the baling chamber. As more of the material is being fed, the constantly rotating rollers and moving baling belts with transverse rollers and feeder rollers will cause the material accumulated inside the rolling chamber to rotate. More material fed to the chamber will cause the rolled bale to be compacted inwards.

The increased material compaction in the baling chamber (Fig. 57 b) will cause an increase of pressure in the baling chamber, which is visible on the pressure gauge or the tilt indicator, depending on the type of the Baler. The indicator will go from the green area towards the red area.

Feeding very wet material into the baling chamber, especially semi-dry hay and green fodder should be finished when pressure reaches approx. 16 MPa (beginning of the red area on the indicator), while picking up of dry material should be finished when pressure in the hydraulic installation reaches approx. 18 MPa (the middle of the red area).

WARNING:
Overloading of the baling chamber should be avoided. Constant overload of the Baler may shorten its operational life and even lead to damage.

In the case of the Balers equipped with a chamber filling indicator, the driver is notified by a visual and sound signal about the necessity to stop picking up material and start the bale wrapping process.



a) beginning of the rolling process. *b) forming and wrapping a bale* *c) unloading*

FIG. STAGES OF BALE FORMATION

At the final stage of bale formation, especially while picking up from a narrow or uneven swath or collecting low crops, the operator should drive the tractor in a manner which ensures that the material fills the rolling chamber evenly on both sides of the Baler (the material should be picked up in an alternating fashion, changing from the right side to the left side of the pickup, see Fig. 58). A higher degree of material compaction and a more uniform shape of the bale can be achieved by slowing down during the final stage of bale rolling. Uneven feeding of material (in particular large amounts) at the final stage will result in an uneven bale, while the indication that the rolling chamber is full will be activated too early.

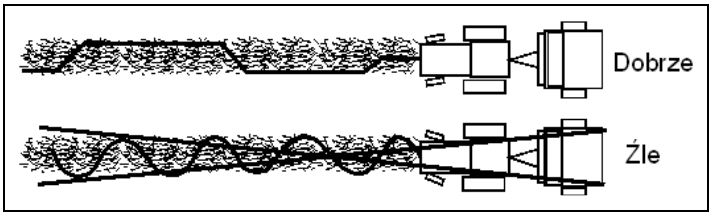


FIG. 58 MATERIAL FEEDING IN THE LAST STAGE OF FORMATION

9.2 Wrapping bales and ejection

9.2.1. Wrapping bales

After bale formation is complete, i.e. after the appropriate pressure in the baling chamber is reached (in the case of the Balers with baling chamber filling indicator - after the visual and sound signal) the mechanism for wrapping the bale with twine (or net) should be initiated. For this purpose, pull the cable in the tractor cabin (without stopping) or press the appropriate button on the controller panel, so that the twine (or net) will get into the chamber and will be wrapped around the bale. As soon as the net or twine is captured by the bale (in average conditions - about approx. 5 s), a noticeable increase of rotational speed of the twine variator pulley or net rotational speed will occur. At that moment, stop feeding new material (stop the tractor without shutting down the PTO drive), release the pull cable or button and reduce the engine speed to approx. 1500 rpm. From that moment, the process of wrapping the bale with twine (net) and its cutting is executed automatically. The twine wrapping time is up to 1 minute and it strictly depends on the engine speed and the set wrapping density.

Conclusion of bale wrapping and cutting the twine is indicated by the pulley marked with stripes of the twine wrapping unit, which stops. After the conclusion of net wrapping, a characteristic sound of the blade cutting the net can be heard and the net carcass will also stop rotating. The methods of installing the twine and the net can be found in sections 10 and 11.

9.2.2. Ejection of a wrapped bale.

Bale ejection is shown in Fig. 57 c. When the process of bale wrapping (with twine or net) is complete, make sure that there are no bystanders behind the frame and activate the hydraulic lift of the back frame with the engine speed reduced to approximately 1500 rpm. The baling chains will stop moving and, with the back frame raised to the upper position, the constantly rotating feeder rollers will unload the bale from the baling chamber While unloading, the twine (or net) wrapping of the bale will be additionally tightened due to the expansion of the compressed material.

A bale unloaded on level terrains should roll away sufficiently to allow the back frame to be closed before a new bale formation process is started, and the back chute bar should automatically go up after the bale has rolled away to secure the back frame of the Baler from damage while closing.

In the case of the Balers rolling bales with a diameter of 1.5 m, make sure that the unloaded bale rolls away to a safe distance from the Baler. If the bale does not roll away to a distance allowing safe closing of the frame, then the frame can be closed after driving forwards 1÷2 m away from the bale. While gathering material on uneven terrain, it is recommended to position all the Balers uphill before unloading bales so that they can be easily ejected and roll away, while in hilly terrain, it must be done across the slope. Uncontrolled rolling away of a fast moving bale causes a serious risk of accident.

WARNING:
At the final stage of bale formation, it is prohibited to switch off the Baler drive to avoid overload upon the next restart.

10 Twine wrapping unit

10.1 Operating principle

A diagram of the twine wrapping unit is shown in Fig. 59.

WARNING:
The line controlling the wrapping units must be routed to the tractor cabin in a manner which rules out accidental activation in all transport and working positions.

The bale wrapping unit is activated by pulling the cable from the tractor cabin for a few moments (approx. 5 seconds) so that the lever with the roll tightens the V belt transmitting power to the wheel (4) feeding the twine. The fed twine, crossing the guide (7) eye, is introduced with the picked up material to the baling chamber and wrapped around the bale. From that moment, the rotating bale will automatically pull in the twine encircling the variator (2) pulley. The rotation of the variator pulley forced by the twine will cause the twine guide (7) to move and its distribution on the entire width of the baling chamber.

After the wrapping cycle is initiated, the guide (7) with the twine will initially move to the right side of the Baler up to the stopper (9a), and then to the left side, wrapping the twine on the entire width of the bale up to the left stopper (9b). The loosely installed blade (8) will move upwards as the twine moves to the left. After wrapping the bale on the left side, the guide will move to the right and will move the twine under the blade, as a result of which the twine will be automatically cut. At the same time, drive to the twine feeder will be disengaged and the wrapping cycle will be completed. The length of the cut end of the twine is enough for starting the next bale wrapping cycle.

In the case of the balers with electrical activation of twine feeding, the operation of pulling the cable was replaced by pressing a button on the universal controller in the tractor cabin (see section 7.7.2), which analogically causes the electromagnetic coupling to engage and the power to be transmitted to the wheel (4).

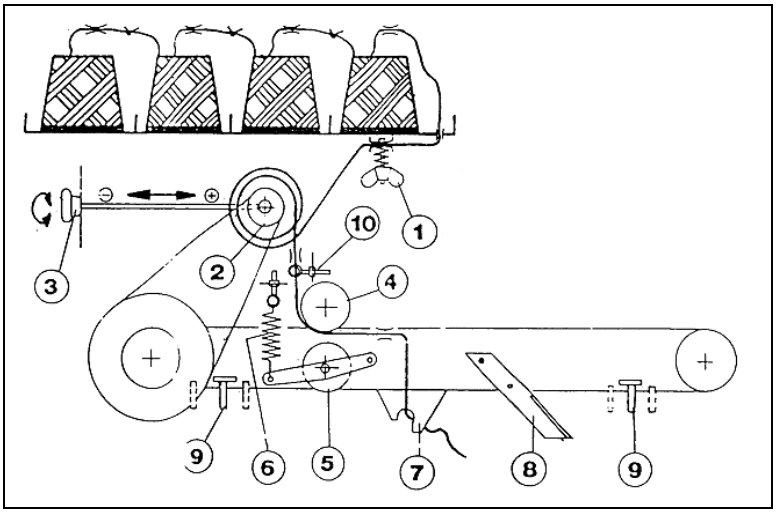
10.2 Twine installation

WARNING:
The operations related to twine installation and adjustment of the wrapping unit may only be conducted when the tractor engine is switched off, the key is removed from the ignition, and the tractor and the Machine are secured against uncontrolled rolling away by engaging the parking brake. After the maintenance and adjustment is complete, make sure that all the covers are properly closed.

Before starting work, place inside the container (4) balls of twine compliant with the requirements provided in the operating characteristics and the label on the Baler. While being pulled from the middle of the ball upwards, the twine must be untwisted. Ends of the twine need to be combined in the container so that the inner end of the first ball is connected to the end taken out of the second ball, and threaded through the rear guiding eyelet in the container. The tied knot should be as small as possible, well compressed and excessively long ends. The next balls of twine can be installed analogically.

The end of the twine taken out of the first ball should be threaded through the guide and the eyelet in the container and the stopper (1) (Fig. 59). Then the twine needs to be wrapped twice around the wheel with the variator groove (2) as shown in the figure and the label on the Baler. The twine must be from the wheel with the groove from the upside and threaded through the guiding eyelet (10) and moved between the feeding (knurling) wheel (5) and the pressure wheel (5) in the backwards direction through the guiding eyelet.

The end of the twine should be stretched beyond the last guiding eyelet for about 20 cm towards the guide (7). After each subsequent wrapping of a bale, the end of the twine will be automatically cut to the required length.
During operation, blade sharpness and its freedom of tilting upwards should be checked. Each time after installing new twine, set the guide (7) in the vicinity of the cutting blade so that while unwinding the twine the guide moves from the centre towards the right side of the Baler.



1 - twine stopper,
2 - variator pulley,
3 - wrapping density adjustment,
4 - wheel feeding the twine,
5 - pressure wheel,
6 - roll pressure adjustment,
7 - twine guide,
8 - blade for cutting the twine,
9 - wrapping width stopper,
10 - eye bolt

FIG. 59. TWINE BALE WRAPPING UNIT

10.3 Adjustment of the density and width of twine wrapping

The density of twine wrapping may be adjusted with the variator knob (3) on the right side of the Baler (under the Cover). When the knob is turned counter clockwise (the adjusting screw is being unscrewed) the density (number of wraps) of the twine on the bale is increased, while turning clockwise the number of wraps is decreased. A notification about twine wrapping density adjustment is provided on the label near the knob. Higher density is recommended for collecting shorter material with higher moisture content and while using a thinner twine.

The bale wrapping width (the distance of the cut wrapping from the frontal plane of the bale) may be adjusted using the switches (9) on both sides of the wrapping unit frame. After setting the stoppers towards the centre of the Baler, the outermost twine wrapping will be more towards the centre of the bale and vice versa.
It is recommended to place the stoppers on both sides of the Baler in identical position.

11 Wrapping bales with net

Note: the net bale wrapping unit is only installed upon special request.

Upon the Customer's request, the Manufacturer provides Round Balers with installed and checked bale net wrapping mechanisms. This mechanism may also be installed on the Baler by a qualified service centre of the Manufacturer or Supplier.

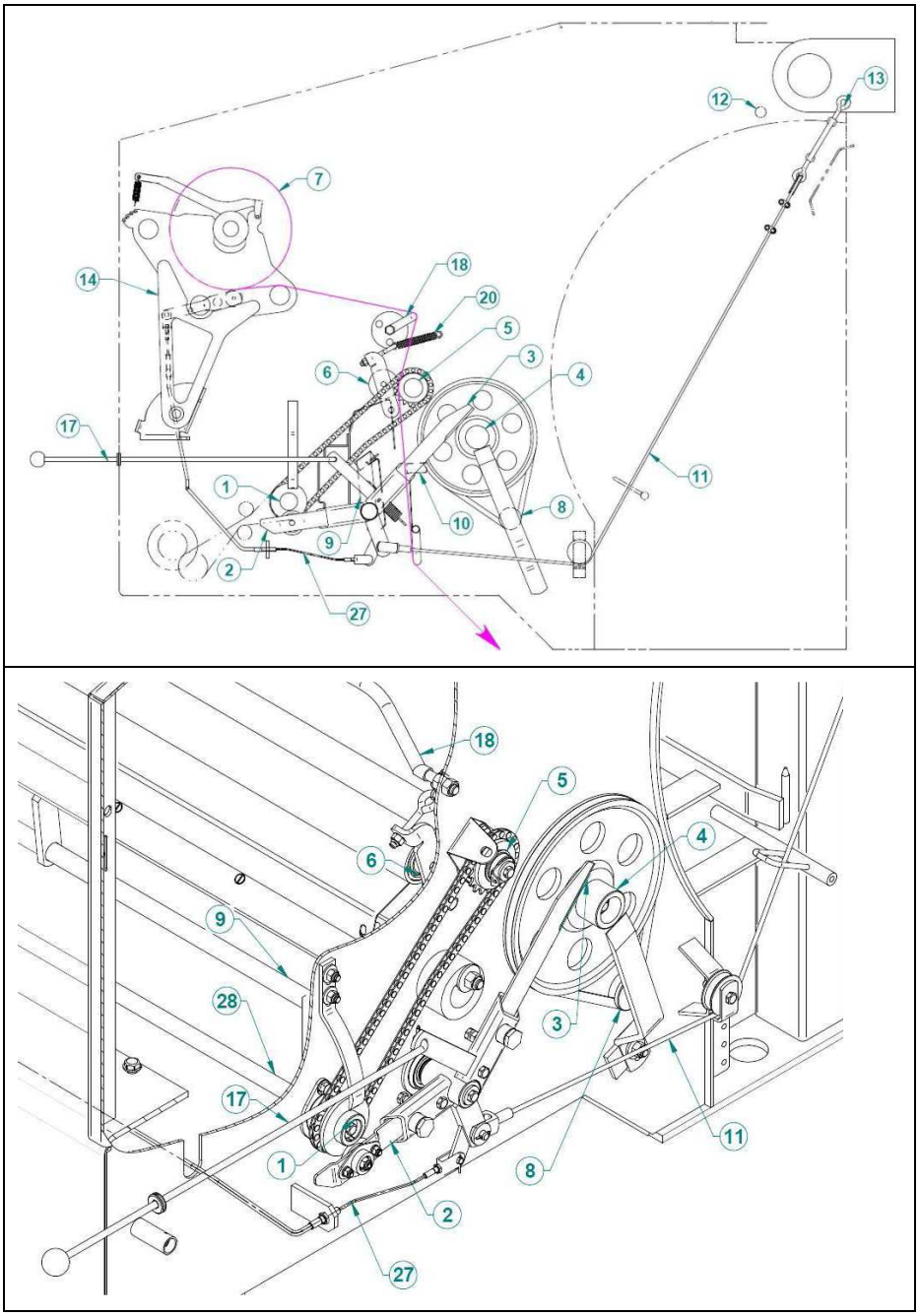
It is prohibited to install the bale net wrapping unit on your own due to the associated difficulties, the level of complexity of the mechanisms and the particularly dangerous situations during assembly and initial adjustment.

Self-assembly of the bale net wrapping unit may cause faulty operation of the Baler, which may not constitute a basis for any claims against the Dealer or Manufacturer.

11.1 Operating principle of the wrapping units

A view of the net wrapping units is shown in Fig. 60.

Initiation of the bale net wrapping mechanism occurs in the same way as with the twine wrapping unit. After pulling the cable in the tractor cabin, the lever with the roll tensions the V belt transmitting power to the control hub (1) via the roller (18). When using the electric drive, press the button activating the coupling which transmits power to the roller and control hub (1). The rotating hub causes the locking lever (2) to move down from its outer thread and falling down of the control lever (3) to the outer thread of the mounting (4). The distance of the control lever (3) blade from the mounting thread (4) in the neutral position should be at least 5 mm.



1- control hub,
2 - locking lever,
3 - control lever
4 - threaded mounting,
5 - rubberised roller,
6 - pressure roller,
7 - pressure roller,
8 - lower cylinder,
9 - support with the blade,
10 - counter blade,
11 - cable,
12 - front pin,
13 - back pin,
14 - net container,
17 - activating lever,
18 - distribution bar,
27 - net stopping control line,
18 - roller

Fig. 60 **CONSTRUCTION OF THE BALE NET WRAPPING MECHANISM**

Simultaneously from the rotating control hub (1) power is transmitted using a chain to the rubberised roller (5), which together with the pressure roller (6) will be feeding the net (7) for wrapping the bale downward to the pickup, to the fed material and along with it, further on to the bale. The rotating bale captures the net along with the material still being fed and the wrapping process will begin (there will be a noticeable increase in the speed of drawing the net from the container). The time between the activation of the wrapping mechanism and the start of automatic net wrapping of the bale is in 5 seconds in average conditions. After that time, the cable activating the net wrapping drive needs to be released (in the case of the Balers with electric drive - release the button activating the motor) and feeding of material into the baling chamber needs to be stopped (stop the tractor without disconnecting the PTO drive). Afterwards the bale wrapping and net cutting will be carried out automatically.

The number of net bale wraps (size A - Fig. 63) is measured by the control lever (3), which slips from the thread of the rotating mounting (4). The mounting with the pulley is continuously powered by the lower cylinder (8). After the control lever (3) slips off completely from the mounting thread (4), it falls down sharply. The tensioned springs of the blade (9) and support cause the blade to hit against counter blade (10) and cut the net along its entire width.

After the bale is ejected, the opened back frame will cause via the cable (11) the return of the locking (2) and controlling lever (3) and the support with the blade (9) to the initial position.
Thereby the bale wrapping cycle is finished and the counter registers the next bale. Cable length should be checked

periodically (11).
In the case of ineffective cutting or net feeding, it is necessary to manually simulate “chamber opening” using the activating lever (17), manually cause the locking lever to return and restart the net wrapping unit.

11.2 Preparing the Baler for wrapping bales with net

Before starting a Baler with the net wrapping unit, it is necessary to (Fig 60):

a) replace the end of the steel cable (11) controlling the levers of the bale wrapping mechanism on the left side of the Baler from the front pin (12) to the back pin (13) and secure it with a washer and a pin. Please remember to replace the end of the cable (11) back to the front pin (12) after switching to twine wrapping
b) check the length of the control cable (11). With the back frame fully open, the blade of the locking lever (2) should be 4 mm away from the control hub (1) threading. In SIPMA PS 1221 FARMA PLUS, make sure that this distance does not exceed 6 mm, since it may cause damage of the blade support control components
c) The lever (2) should be resting slightly (from the front) against the hub disc (1). Adjustment of the control cable (11) length is carried out using the turnbuckle installed on its end, which need to be countered after adjustment
d) Please remember to check the proper installation of the locking lever (2) on the control hub (1) before proceeding to wrap bales with net. The lever (2) may be placed on the hub (1) by lifting the back frame of the Baler to the raised position or by manually pulling the lever (17). After baling more bales, this activity is carried out automatically at the moment of bale ejection.
e) Install the net (Fig. 61 and Fig 62), carry out a cutting test and adjust the number of wraps (Fig. 63).

11.3 Installing the net

WARNING:
The operations related to net installation and adjustment of the wrapping unit may only be conducted when the tractor engine is switched off, the key is removed from the ignition, and the tractor and the Machine are secured against uncontrolled rolling away by engaging the parking brake. After the maintenance and adjustment is complete, make sure that all the covers are properly closed.

Before proceeding to installation of the net, check if the blade with support (9) is in the initial position, i.e. if the locking lever (2) is on the control hub (1) (see section 11.2 b). Moreover, the control lever (3) should be over the mounting (4) at a distance of at least 5 mm.

If twine was used before wrapping bales with net is started, remove its end from the feeding wheels (from the twine feeding mechanism) (Fig. 59). Balls of twine may remain in the twine container. Similarly, while switching to bale wrapping with twine, the end of the net should be removed from the feeding rollers (5, 6) (Fig. 60) and the roller needs to be wound into the roll . Net roll may remain in the net container.

WARNING:
Net installation and cutting test must be carried out with particular caution due to sharp, percussive blade and control levers, and due to the heavy weight of the net roll. Dragging the net near the blade and counter blade should be done only using the hook provided with the Baler.

WARNING:
Attention User: A net roll weighs over 30 kg – if necessary, make sure that another person is available for help while handling the roll.

A diagram of a Baler with net wrapping unit is shown in Fig. 60, while a diagram of net guiding and installation - Fig. 61 and Fig. 62 respectively.

Remove and secure the container lock (21) and tilt the net container (14) forwards. After this, unlock the spring (22) used for adjusting then braking force (this adjustment is made by hitching the spring on the appropriate tooth of the container side sheet – it should be checked periodically if the bale is braked correctly) and tilt the arm on which the spring is located backwards as far as possible, moving forward the brake disc with pipe (23). Additionally, remove the bearing (24) from the pipe. Then insert into the roll of net (7) (rotating it in the direction as allowed by the pickup springs) the brake disc with pipe (23) up to the stop, re-assemble the bearings (24). Thus prepared net roll needs to be placed in the container (14), inserting the opening behind the brake disc and the bearing (3) into the openings in the

side sheet of the container and secure with the lever (6) and the spring (7). Secure the pipe with a spring (22). The end of the net should be placed through the net distribution bar (18) and inserted evenly (extended to its full width) between the pair of feed rollers (5). The angular position of the bar is a decisive factor regarding the efficiency of net distribution along the entire width of the bale. In such a case, the angle of the bar should be individually adjusted (by countering the nuts in the relevant bar positions) in order to achieve the best net wrapping effect. Periodically check the (27) tensioning so that the net brake disc (23) Fig. 62 is unrestricted in the parking position (the roll can be rotated by hand). The clearance between the brake disc (23) and the brake pads (25) should be approx. 1 mm.

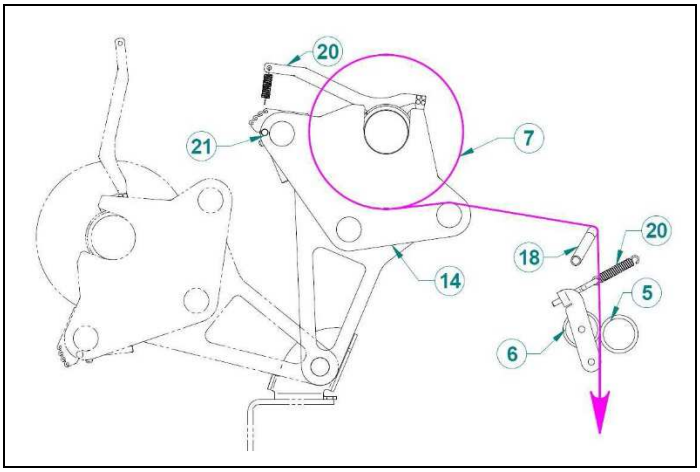


FIG. 61. NET GUIDING

5 - rubberised roller,
6 - pressure roller,
7 - pressure roller,
14 - net container,
18 - net distribution bar,
20 - roller pressure spring,
21 - container lock,
22 - spring arm (adjustment of braking force),
23 - brake disc with pipe,
24 - bearing,
25 - brake pads,

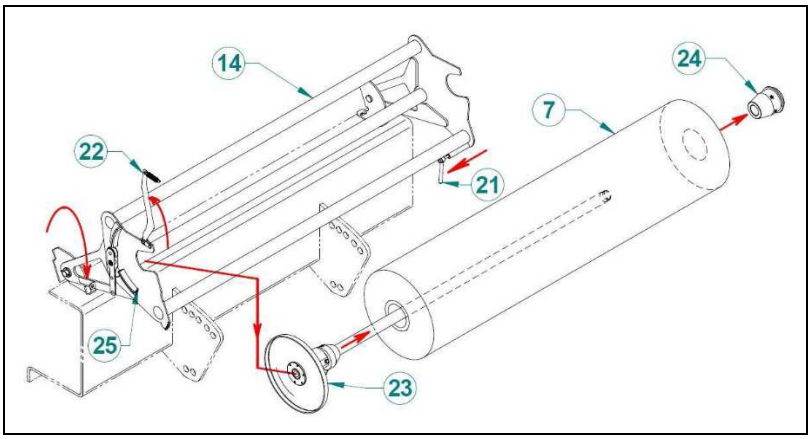


FIG. 62. THE METHOD FOR INSTALLING THE NET

11.4 Net cutting test

After the net is installed, in particular in new Balers or after longer breaks in operation, a cutting test must be carried out. For this purpose, after installing the net and dragging it below the counter blade, and after checking the setpoints of the net wrapping unit mechanisms as per 11.2, start the wrapping drive at low drive shaft speed and exercising particular caution. After approx. 0.5 min, the net cutting blade should hit the counter blade and cut the net evenly along its entire width. Net cutting should be considered successful if the there are several single uncut threads, which are easily torn off from the net which remains in the Baler.

An increase of net cutting efficiency can be achieved by sharpening the net cutting blade or by increasing the tension of the springs tensioning the support with the blade.

11.5 Adjustment of the number of bale net wraps

The number of bale net wraps depends on the setpoint of the control lever (3) on the mounting (4) (Fig. 60, Fig. 63). Adjustment is done using the screw with lock nut setting the position of the control lever relative to the mounting. The relation between the number of net wraps and the lever settings is shown in Table 3:

After switching from net wrapping to twine wrapping, the support with blade (9) should be lowered onto the counter blade (10), and the cable (11) hitch should be replaced from the back pin (13) to the front pin (12) to prevent backwards movement of the control lever. While wrapping bales with twine, the mechanism for wrapping bales with net should remain stationary in the above described position.

Table 3 Density of bale wrapping with net

Required number of net wraps	Number of threads on the hub (A)	
	SIPMA PS 1210 CLASSIC SIPMA PS 1211 FARMA PLUS	SIPMA PS 1510 FARMA
Minimum (2 fold)	4 threads (A=12 mm)	5 threads (A=16 mm)
Medium (3 times)	6 threads (A=20 mm)	7 threads (A=24 mm)
Maximum (4-5 times)	8 threads (A=28 mm)	9 threads (A=30 mm)

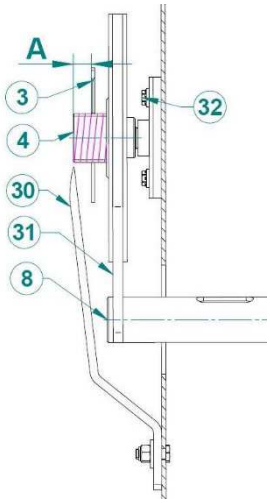


FIG. 63. ADJUSTMENT OF NUMBER OF WRAPS

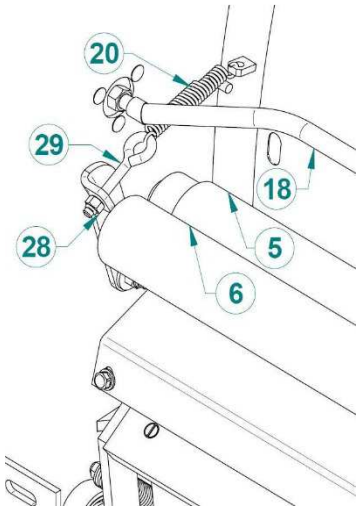


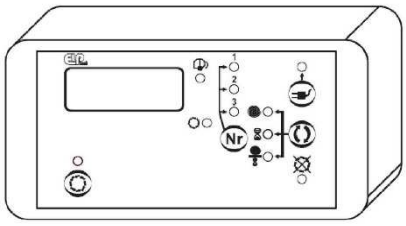
FIG. 64. ADJUSTMENT OF THE FEEDING ROLLER PRESSURE

3 - control lever,
4 - threaded mounting,
5 - rubberised roller,
6 - pressure roller,
8 - lower cylinder,
18 - distribution bar,
20 - roller pressure spring,
28 - tensioning nut,
29 - eye bolt
30 - control lever slide,
31 - V belt,
32 - belt tensioning pressure screw

11.6 Adjustment of the feeding roller pressure

The correct pressure of the feeding rollers guarantees efficient pulling in and distribution of the net. Weak tensioning of the roller springs causes inefficient feeding of the net (especially in the initial phase), while too strong tensioning increases the resistance, making it difficult to rotate the rollers and operate the wrapping mechanism. Adjustment of the roller pressure force is executed by changing spring (3) tensioning.

12 Instruction manual of the universal Round Baler controller



Balers SIPMA PS 1510 FARMA and SIPMA PS 1210 CLASSIC; SIPMA PS 1211 FARMA PLUS may be equipped with a universal controller used for controlling the key operating parameters of the Baler.
The controller should be installed in the cabin using two Velcro fasteners found in the box to make sure that observation and handling is convenient for the Operator. To make the attachment firm, the surface to which the Velcro fasteners are attached should be clean and degreased with gasoline or alcohol.

The 2 electrical connectors to the controller should be correctly positioned and attached to prevent accidental damage and make sure that they do not obstruct the operation, while the cable for connecting to the Machine should not be stretched while negotiating corners and should not touch the tractor's wheels.

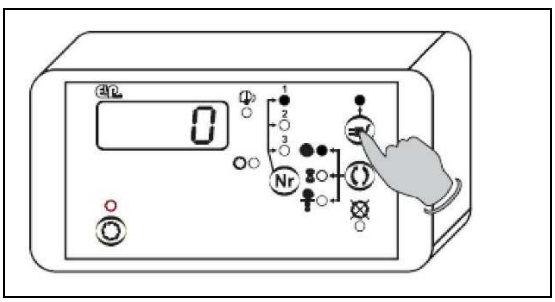
WARNING:
The controller can be connected to the tractor only with a working 12 V electrical installation! The power voltage may not be lower than 10 V!

12.1 Controller characteristics

The controller allows:

1. **Ongoing monitoring of the bale wrapping process**
2. **Measuring the number of compacted bales**
3. **Measuring the devices' working time [h] with an accuracy of 1 min.**
4. **Efficiency measurement [ha/h]**
5. **Measurement of the amount of work on three separate programs (fields)**
   Work on three separate programs should be understood as counting the number of wrapped bales, working time and achieved efficiency. It allows us to e.g. compare the efficiency achieved on three different fields.
6. **Sensor status display**
   Since sensors are the most endangered to suffer from mechanical damage, we have the capability to assess their working condition quickly and remove any possible faults on our own by replacing the damaged sensor, without the need to contact the service centre.
7. **Display the number of bales since installation on the Baler (cannot be erased)**
   It useful for example for calculating the rate of depreciation. Aside from that, it provides valuable information for the equipment Manufacturer.
8. **Display of the serial number and year of manufacture of the Machine**

12.2 Switching on and off



In order to switch the device on, place the plug into the cigarette lighter socket. The LED indicator above the button will light up. Press the button for approx. 1 second.

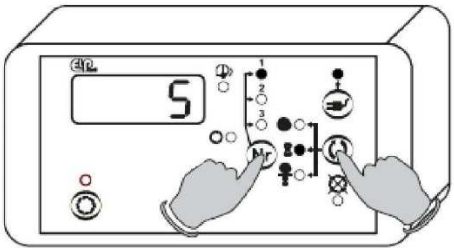
After the device is turned on, the LED (number of bales) and the previously selected program number (**1**, **2** or **3**) will also light up.

In order to switch the controller off, hold the button marked for about 2 seconds.

It is also possible to turn the device on in test mode. To do so, press the button marked and hold. In that time, all LEDs and segments of the display will light up.

WARNING:
If the voltage supplied to the controller is lower than 10 V, then after switching the power on the LED above the button marked will not light up. Check the electrical installation!

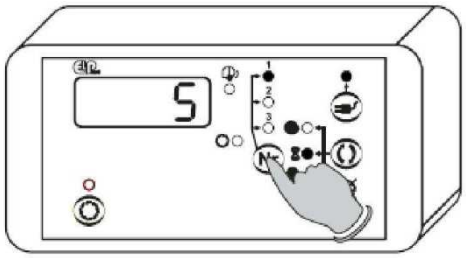
12.3 Programming



Holding the and **Nr** buttons at the same time for about 5 seconds will cause the device to switch to the programming mode *(accessible only directly after switching on)*

Immediately after switching the device on, it is possible to go the programming mode – holding the and **Nr** buttons at the same time for about 5 seconds will cause the device to switch to the programming mode. Then the working time LED will light up and the LED of program **1** will start flashing.

It is possible to program one parameter: minimum cycle time, after which it is possible to add the next bale to the bale counter.



The value is changed by pressing the button marked **Nr**.

Pressing the button marked **Nr** once will cause the device to switch to the editing mode (change of values): the program number LED (**1**, **2** or **3**) will be lit continuously. Pressing the button marked **Nr** increases the value. After the maximum value is exceeded, the minimum value is displayed again, etc.

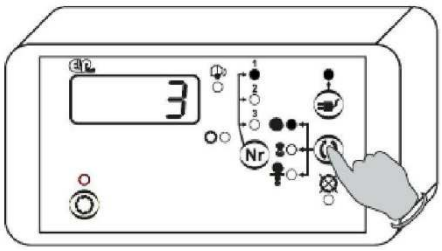
After setting the appropriate value, it is confirmed by pressing . At this moment the program **1** LED will be turned off.

To exit the programming mode, press the buttons and **Nr** simultaneously.

Programming details
Minimum cycle time
It is the minimum time which must pass between bale wrapping cycles.

After ejection of a wrapped bale and closing of the hatch, the bale counter will increase by 1; to prevent accidental increase of the bale counter (closing the distance between the magnet and the hatch sensor while wrapping, e.g. with twine resulting from the constant compaction of the outer bale layer), the next increase of the counter may occur only after the programmed time. It is possible to program values from 5 to 60 seconds, with a 5-second increment; the factory default is 5 seconds.

12.4 Display functions



The information displayed on the numerical segment can be changed only after pressing the button marked .

- number of bales wrapped
- working time
- efficiency

After turning the device on, the display shows the number of bales wrapped; the LED is lit up.

Pressing the button marked again will change the display mode to show the time elapsed since the controller was turned on . Time is displayed with an accuracy of 1 minute. In this mode the LED corresponding to the decimal point on the display flashes every 2 second.

Press the button again to go into the efficiency display mode – number of bales divided by the working time. The LED will light up.

Press the button again to change the display mode to number of bales wrapped, etc...

12.5 Operation

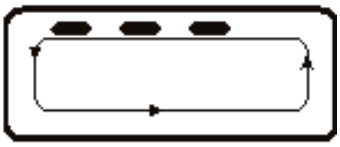
After turning the controller on, the LED, the number of the previously selected program (field) and the number of bales wrapped light up on the display. The LED of the hatch closing sensor should also be lit up; if not, then the hatch needs to be closed. Then you may start picking up swath.

When the chamber is filled up, the display shows the StoP sign and a sound signal lasting 5 seconds will be produced.

Press the button to switch on the net or twine feeding mechanism (*the LED over the button lights up when the button is pressed*); twine or net feeding will be initiated, which is indicated by the flashing LED and a sound signal.

At any moment it is possible to feed the twine again by pressing the button again.

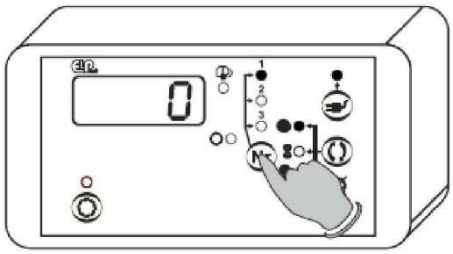
Feeding the net again requires a manual reset of the mechanical system responsible for feeding and measuring the net.



Net wrapping is shown as three elements of the display moving counter clockwise around the edge, as shown in the picture. After cutting the net, the display will show the StoP sign again.

After wrapping is over, open the hatch and eject the bale; then close the hatch. The bale counter is increased by 1.

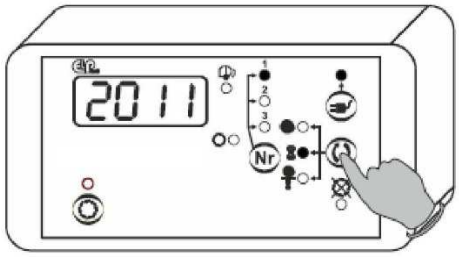
12.6 Reset



Pressing the button marked **Nr** for approx. 5 seconds causes the number of bales, time and efficiency reset in the selected program.

The program number is selected using the button marked **Nr**. The LED corresponding to the number of the program is lit (**1**, **2** or **3**). Holding the button marked for about 5 seconds will result in resetting the number of bales, time and efficiency in the selected program. This is confirmed with an audible signal.

12.7 Additional information



The desired information is selected by pressing and holding the button marked .

- total number of bales
- serial number and year of manufacture
- sensor status

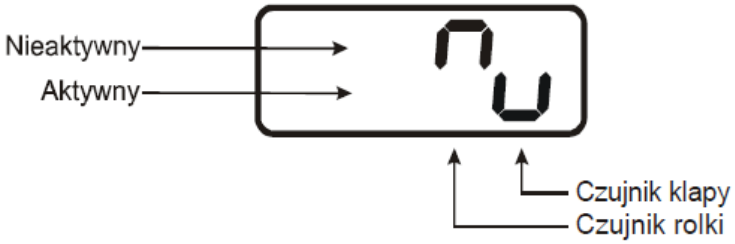
It is possible to display additional information such as total number of bales wrapped since controller installation and the serial number and year of manufacture of the Baler, and the sensor status.

The requested information is selected after pressing .

After selecting the desired option, press and hold the button marked for about 5 seconds. The display will show the requested information.

12.8 Sensor status

Sensor status is shown in the form of symbols on the display. Changing the position from upper to lower reflects the current operation of the sensor.

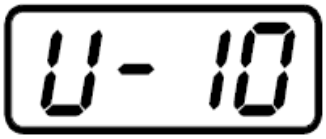


Original	Translation	Original	Translation
Aktywny	Inactive	Czujnik klapy	Hatch sensor
Nieaktywny	Active	Czujnik rolki	Roll sensor

12.9 Errors

The display may show electrical installation emergency warnings or tractor installation supply failure. These are indicated by the drawings below.

Short circuit on the reed sensor power supply. The device must be immediately switched off with any key and the fault must be removed.



The power supply voltage is lower than 10 V.

12.10 Sensor setpoints

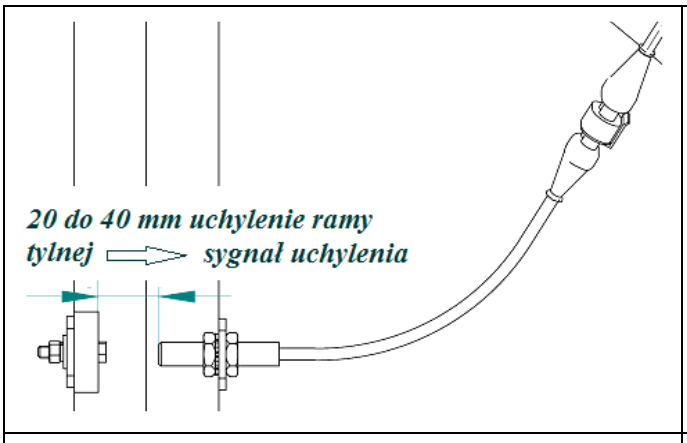


FIG. 65. SETTING THE DISTANCE OF THE BACK FRAME SENSOR

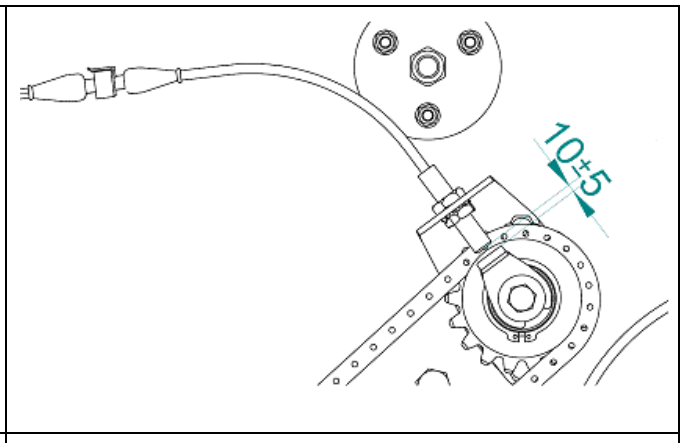


FIG. 66. SETTING THE DISTANCE OF THE NET ROLL SENSOR

Original	Translation	Original	Translation
20 do 40 mm uchylenie ramy tylnej	20 to 40 mm tilting of the back frame	Sygnał uchylenia	Tilting signal

Adjustment of the distance between the sensors and the magnets should be done each time when they are disassembled or replaced.

The sensors are interchangeable between one another and between other SIPMA Machines equipped with control systems made by ELPLANT (e.g. SIPMA OS 7531 MAJA, SIPMA PZ 1832).

WARNING:
In the event of any welding works, due to the risk of over-voltage, it is absolutely necessary to disconnect the controller from the machine at the connector.

13 Baler mechanisms safety features

13.1 Safety mechanism of the feeder roller drive

The rollers (1) and other mechanisms of the feeder and the pickup are protected against overload (Fig. 67) using two M8x40-8.8-B shear bolts (4) with M8 lock nuts, which secure the chain sprocket (2) of the feeder drive to the hub (4) on the right journal of the front roller (1). Bolt shearing may occur with too heavy load of the feeder rollers (overloading the Baler, improper bale ejection, a stone inside the chamber, etc.) Setting the openings in the sprocket

and the hub prior to mounting the bolts is made easier using the key included in the equipment.

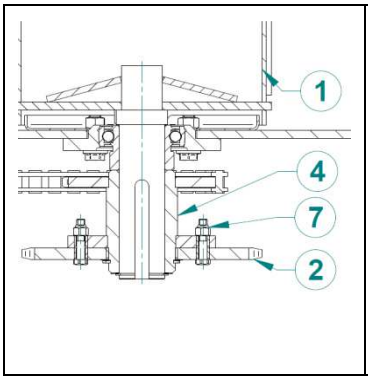


FIG. 67. SAFETY MECHANISMS OF THE FEEDER ROLLERS, RIGHT SIDE

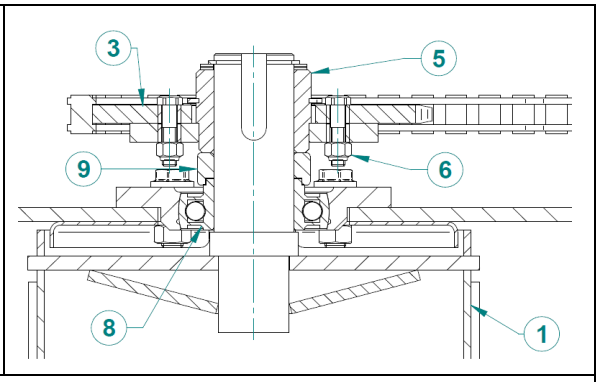


FIG. 68. SAFETY MECHANISMS OF THE FORK FEEDER AND THE PICKUP, LEFT SIDE OF THE BALER

1 - front roller of the feeder,
2 - chain sprocket (1”),
3 - chain sprocket (5/8”)
4 - hub, double hub
5 - single hub,
6 - M8x35-8.8 securing screw with self-locking nut,
7 - M8x40-8.8 securing screw with self-locking nut,
8 - self-aligning bearing,
9 - eccentric cutting ring

13.2 Safety mechanism of the fork feeder and pickup drive

The fork feeder and pickup are protected against overload (fig. 68) using two M8x35-8.8-B shear bolts with M8 lock nuts, which secure the chain sprocket of the feeder drive to the hub on the left journal of the front roller. Bolt shearing may occur with too heavy load on the fork feeder and the pickup (feeding excessive amounts of material, blockage of the Baler’s material feeding path, etc.)

Setting the openings in the sprocket and the hub prior to mounting the bolts is made easier by the same key as for the replacement of the bolts securing the feeder rollers.

13.3 Safety mechanism of the rollers and drive cylinders

Rollers and drive cylinders are attached to the frames using self-aligning bearing and fittings. After starting and checking the Baler mechanisms, in particular in the case of repairs (installation of rollers and cylinders), attention should be paid to proper tensioning and securing of eccentric bearing clamping rings. After the bearing is set on the roller, the eccentric ring should be tightened in accordance with the working rotational direction of the rollers and cylinders, and secured with a screw in a typical way for this type of safety mechanism.

14 Cloggage removal

In the case of a cloggage of the material feeding path to the inside of the chamber (pickup - screw feeders - feeder fork) by the material being fed or foreign objects such as tree branches, rocks, do the following:

- In case of a material cloggage, first of all stop the engine without switching off the PTO and allow the Machine to work without feeding more material. If the cause of the cloggage does not disappear by itself:
- switch off the tractor engine and remove the key from the ignition, and then using the hook provided with the Machine remove the blockage obstructing normal operation of the Machine. Wear protective gloves while cleaning the Machine.

General work safety regulations applicable to the use of mechanized equipment and fire regulations should be observed during operation, daily inspections, repairs and maintenance.

WARNING:
Removing cloggage from working components of the Machine is strictly prohibited.

15 Greasing maintenance and storage of the balers

15.1 Greasing of the Balers

WARNING:
The Baler must be greased with the machine drive and tractor engine switched off! The tractor attached to the machine undergoing the greasing procedure should be secured against the risk of being started by unauthorised persons.

A diagram of the Balers showing the areas to be greased is presented in Fig. 72 and Fig. 73. The greasing points are marked on the Machine with appropriate labels and the greasing fittings are marked yellow.

Balers are equipped with a system of clustered greasing points concerning hard to reach bearings, which is shown in Fig. 69 ad Fig. 70. For structural reasons, it is difficult to reach the moveable yoke of the fork feeder (Fig. 71).

Due to the fact that the compacted materials are intended for animal fodder, it is recommended to use non-adherent biodegradable oils which do not pose a toxicological risk, in particular for the baling chains. In particular, Sinapis-Bio, a mustard-based oil made in Poland, has proven its usefulness in operating conditions.

WARNING:
During intensive operation in difficult field conditions (heavy loads, dustiness, high temperatures, etc.) it is recommended to increase the frequency of greasing the main greasing points twice, especially the drive chains.

Round Balers should be greased in accordance with Table 4.

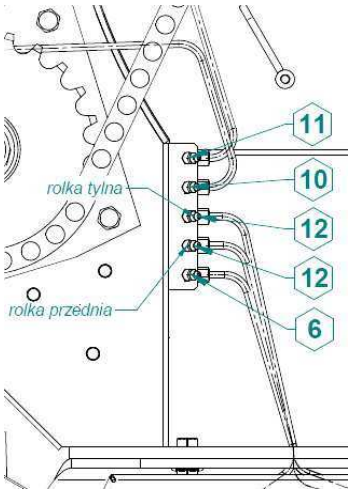


FIG 69. CLUSTERED GREASING POINTS, LEFT SIDE

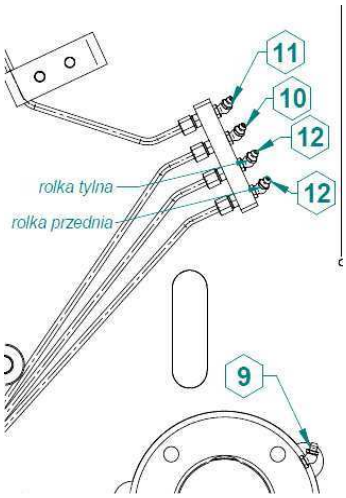


FIG 70. CLUSTERED GREASING POINTS, RIGHT SIDE

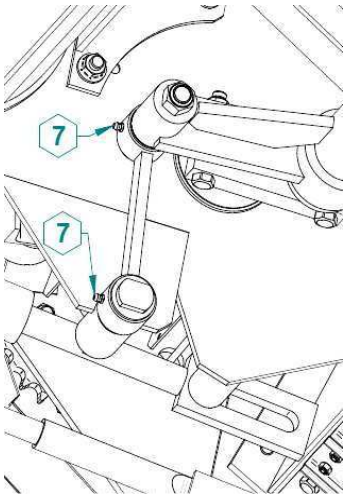


FIG. 71. GREASING POINTS OF THE FEEDER YOKE (VIEW FROM THE BOTTOM OF THE MACHINE)

Table 4. Baler greasing

Point no.	Greasing point	No. of greasing	Type of grease	Greasing frequency
1	Drive chains	2	ŁT 43 grease, or gear oil, or Bio oil	Daily (every 10 hours)
2	The telescopic part of the articulated telescopic shaft	1	ŁT 43 grease	Daily (every 10 hours)
3	Roller, feeder and pickup drive chains	3	ŁT 43 grease or gear oil	Twice a week (every 30 hours)
4	CA650 baling chains	2	Gear oil or Bio oil	Twice a week (every 30 hours)
5	Joints of the drive shaft	2	ŁT 43 grease	Once a week (every 50 hours)
6	Pickup cam plate	1	ŁT 43 grease	Once a week (every 50
7	Feeder yoke	2	ŁT 43 grease	Once a week (every 50
8	Jaw clutch	1	ŁT 43 grease	Once a week (every 50
9	Gear input shaft bearing	1	ŁT 43 grease	Once a week (every 50 hours)
10	Main frame cylinder bearings (SIPMA PS 1221 FARMA PLUS only)	2	ŁT 43 grease	Once a week (every 50 hours)
11	Baling chain drive shaft bearings	2	ŁT 43 grease	Once a week (every 50 hours)
12	Feeder roller bearings	2	ŁT 43 grease	Once a week (every 50
13	Baling chain tensioner guide	2	ŁT 43 grease	Once a week (every 50 hours)
14.	Net wrapping unit control hub threads	2	ŁT 43 grease	Once a week (every 50 hours)
15	Road wheels	2	ŁT 43 grease	Once a month
16	Support screw	2	ŁT 43 grease	Once a month
17	Feeler wheels and pickup suspension	3	ŁT 43 grease	Once a month
18	Jaw clutch control elements	5	Gear oil	Once a month
19	Twine wrapping unit 10B chain	1	Gear oil	Once a month
20	Intersecting axis gear,	1	GL-4 Gear oil	Once a month (level check), replacement once per season
21	Mechanical lock of the back frame with indicator	7	ŁT 43 grease	Once a week (every 50 hours)
22	Drive and baling chains (central lubricating oil reservoir - optional accessory)	1	Gear oil or Bio oil	Daily (refill as needed)

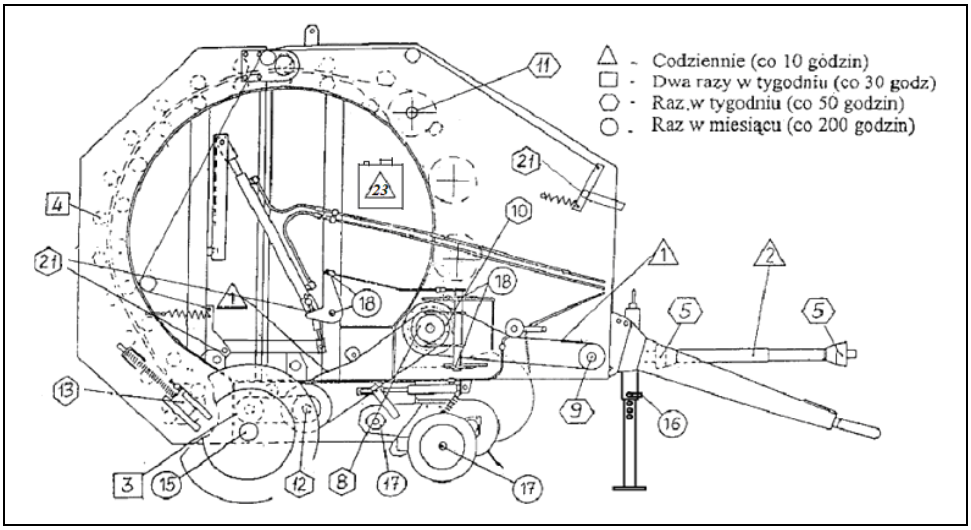


FIG. 72. GREASING POINTS (RIGHT SIDE)

Original	Translation	Original	Translation
Codziennie (co 10 godzin)	Daily (every 10 hours)	Raz w tygodniu (co 50 godz.)	Once a week (every 50 hours)
Dwa razy w tygodniu (co 30 godz.)	Twice a week (every 30 hours)	Raz w miesiącu (co 200 godz.)	Once a month (every 200 hours)

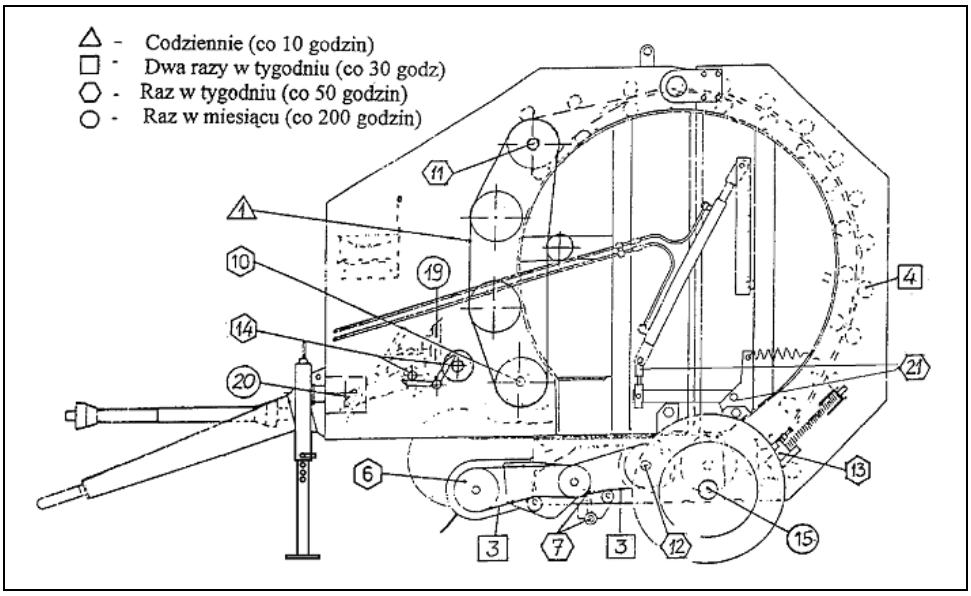


FIG. 73. GREASING POINTS (LEFT SIDE)

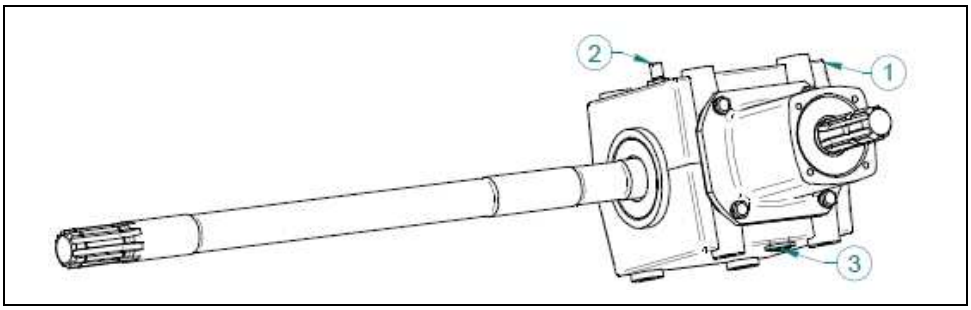


FIG. 74. INTERSECTING AXIS GEAR

1 - transmission,
2 - vent valve,
3 - drain plug

WARNING:
Used gear oil must be removed in accordance with the regulations and it should undergo proper disposal procedure.

Due to the oil viscosity, it is recommended to carry out the replacement and refilling after operation, when the transmission (1) and the oil have higher temperature.

- Unscrew the vent valve (2) and drain plug (3) and put the oil into a suitable vessel.

- Screw in the drain plug and fill the transmission with approx. 0.9 dm^2 of oil. The oil level should be at the height of 130±5 mm below the edge of the vent valve opening.

15.2 Central chain greasing

The Balers may be equipped with a central chain greasing system (Fig. 75). If the version of the Baler does not include this system, it may be added to the machine upon request.

The main elements of the system are located on the right side of the Machine under the covers. The chains are periodically greased after each bale is formed, after opening and closing of the back frame.

At the moment of closing the back frame, a pusher in the form of a screw (41) pushes against the pump piston (7), which sucks in the oil from the reservoir (8) through the filter (26). When the Baler frame is opened for bale ejection, the spring inside the pump, by moving the piston in the returning direction, presses the oil through the lines and collectors (9) to dispensers (10, 11, 12, 13), which are filled up.

After closing the frame, the pump again sucks in the oil from the reservoir and the pressure on its discharge side disappears, and then, owing to the internal dosage-dispenser system, the oil is pressed from the dispensers to the grease points in the form of brushes (25) or open hoses. These brushes slide along the chains greasing them and at the same time performing the function of a cleaning scraper, which removes the accumulating dirt. In the case of chains with low linear speeds and low loads, it is enough to use the drip greasing system.

All the chains are assigned to specific dispensers, which dose and dispense a strictly defined amount of oil. The pre-arranged volumes and direction of oil flow are stamped on each of the dispensers. The characteristics of oil flow dispensed on the chains can be changed by changing the dispenser. Due the internal leakages resulting from the design of the dispensers, the greasing efficiency may fluctuate when oils with large viscosity differences are used.

The oil in the reservoir (8) should be refilled as needed with regard to the Machine's consumption of oil. The filler bore of the reservoir contains a detachable mesh filter protecting against accidental contamination of the reservoir with medium grade materials. While the reservoir is filled with oil, make sure that dust and water cannot get into the tank. Depending on the intensity of operation, the filter (26) should be replaced once per season (10μm filtration).

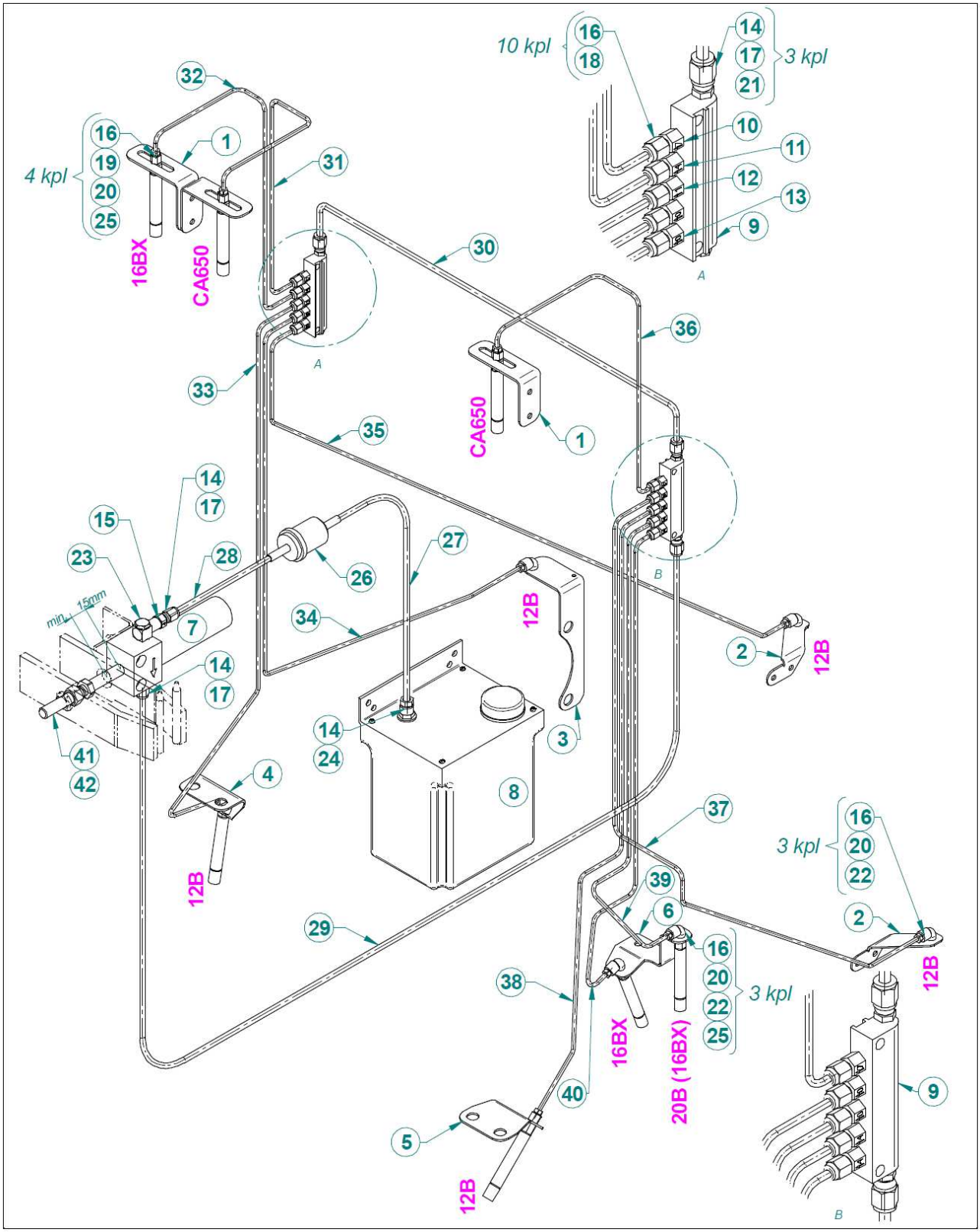
The pump piston stroke should be adjusted so that the amount of oil sucked in by the pump is sufficient to fill all the dispensers, however, the piston when forced inwards to the maximum should protrude from the body at least 15 mm and this value should not be exceeded. Piston stroke is adjusted using the screw pusher (41) after loosening the locking nut. After the stroke is adjusted, re-tighten the locking nut.

Increasing the pump piston stroke does not increase the chain greasing efficiency, and excessive movement of the piston may lead to pump damage.

WARNING:
Increasing the pump stroke where the piston rod forced inwards to the maximum protrudes less than 15 mm is prohibited. Such actions may damage its internal components.

For rolling bales, in particular made of greens and hay, biodegradable oils which do not constitute toxicological threat should be used. In particular, Sinapis-Bio, a mustard-based oil made in Poland, has proven its usefulness in operating conditions.
Mixing bio oils with mineral oils is not recommended.
It is not recommended to leave remains of bio oil in the system after the end of the season; it should be drained entirely and the whole system should be flushed with mineral oil. Doing so allows reducing the risk that the elements of the system will stick together due to oxidisation of bio oil residues.

WARNING:
Using oils with adhesive characteristics for greasing the chains is prohibited since they can cause the elements of the greasing system to stick together, which may cause irreversible damage



Original	Translation
Kpl	Set

FIG. 75. CENTRAL CHAIN GREASING SYSTEM DIAGRAM (BASED ON SIPMA PS 1221 FARMA PLUS)

1÷6 - brackets,
7 - pump,
8 - reservoir,
9 - manifold,
10÷13 - dispensers,
14÷16 - sealing elements,
17÷24 - connecting elements,
25 - brush,
26 - filter,
27÷40 - cables,
41 - driving bolt,
42- lock nut

15.3 Maintenance and storage of the Balers

After the end of a farming season, do the following:

- clean the Baler thoroughly and remove any contamination (in the case of using a pressure washer, do not direct the water flow to the bearings and electrical components of the lighting and control system),
- check the condition of the operating mechanisms,
- verify the parts and carry out any necessary repairs,
- replace worn or damaged parts with new ones,
- damaged paint coatings should be applied again (preserve chafing inside the rolling chamber with solid lubricant) and any possible traces of corrosion should be removed,
- the reservoir of the chain greasing dispenser system (if biodegradable oil was used) and flood it with mineral oil, and afterwards, if possible, flush the system with this oil by lifting and lowering the chamber several times repeatedly.

For the winter season, the Baler should be thoroughly greased in accordance with the greasing table (Table 4) and placed on supports, preferably sheltered from the weather, but away from animal (stables, barns, hen houses) or places where artificial fertilizers are stored.

Do not wipe the grease pouring out of the bearings. Such a layer provides additional protection against moisture.

The articulated telescopic shaft should be extended. Grease the inner pipes and greasing fittings of universal joints.

The condition of the hydraulic lines should be regularly checked. With normal rate of wear and tear, replace the hydraulic lines every 5 years. Damaged or worn lines should be immediately replaced. While replacing the hydraulic lines, please remember to use only those whose quality and technical characteristics are consistent with the guidelines of the Manufacturer of the Machine.

Road Wheels should be secured with chocks and protected against the influence of petroleum materials, and the drawbar of the Baler should be lowered and supported against a wooden block.

It is recommended to disconnect the controller from the Machine at the connector (3) (see Fig. 55) and store it in a dry, airy place away from high temperatures and high electromagnetic radiation (transformers, etc.).

After a storage period, the Baler should be prepared for work in accordance with section 7.

15.3.1. Removal of the road wheels

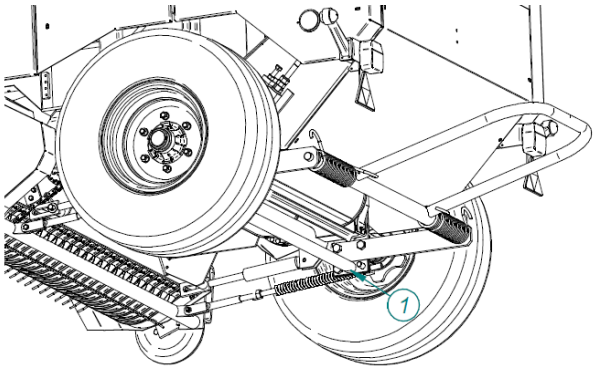


FIG. 76. POINTS WHERE A LIFT IS POSITIONED WHILE DISASSEMBLING THE WHEELS

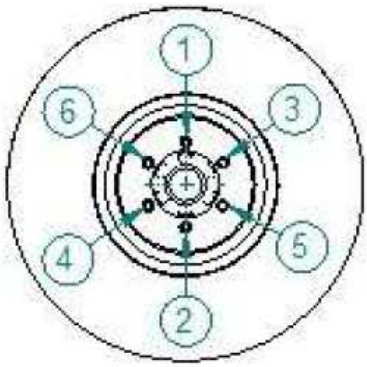


FIG. 77. NUT TIGHTENING SEQUENCE

In the case of a need to replace a road wheel, it is necessary to position the Baler on level, solid ground. Secure the Bale against rolling away by placing chocks under the wheel opposite to the one which is to be removed. Then loosen the wheel nuts with the right sequence, and afterwards lift the Machine using a suitable vehicle lift to a height which allows the wheel to be freely manipulated. The lift needs to be placed under the feeder frame (1), very close to the

wheel. For longer parking periods, a stable trestle must be used.

Mounting of the wheel takes place in the opposite sequence, whereby the tightening of the nuts while the wheel is in the air is initial only, the final tightening with the correct torque (290 Nm) while maintaining the sequence should take place when the Machine is lowered on the ground. The sequence of tightening the nuts should be strictly checked after 10 hours of work after mounting, and in the period of normal operation - every 50 h.

16 Coupling the Baler with a wrapping machine

Balers SIPMA PS 1210 FARMA and SIPMA PS 1211 CLASSIC; SIPMA PS 1221 FARMA PLUS may be equipped with a universal hitch (coupling unit 5279-260-500.00) allowing these Balers to be coupled with the SIPMA OS 7531 MAJA wrapping machine. The coupled Machines should work with a tractor with at least 80 HP and hydraulic pump throughput at least 50l/min.

WARNING:
The coupling unit 5279-260-500.00 is designed for coupling Fixed Chamber Balers SIPMA PS 1210 CLASSIC, SIPMA PS 1211 FARMA PLUS, SIPMA PS 1221 FARMA PLUS with the SIPMA OS 7531 MAJA wrapping machine with bale ejector.

WARNING:
Exercise caution and observe the applicable safety rules while coupling the Baler with the wrapping machine.

WARNING:
Driving on public roads with a set comprising of the Baler + the wrapping machine is prohibited. It is only permitted during work in the field.

WARNING:
The area where the machines are working should be clear of any bystanders.

WARNING:
The minimum turning radius to the right of the baler + wrapping machine is 6 m. Turning with a smaller radius may cause damage of the machines. It is recommended to turn left with such setup.

WARNING:
SIPMA S.A. is not responsible for any damage of any components or any of the machines resulting from coupling the Baler with a wrapping machine other than SIPMA OS 7531 MAJA.

WARNING:
It is absolutely necessary to unload the bales when the baler + wrapping machine are in a straight line (Fig. 78).

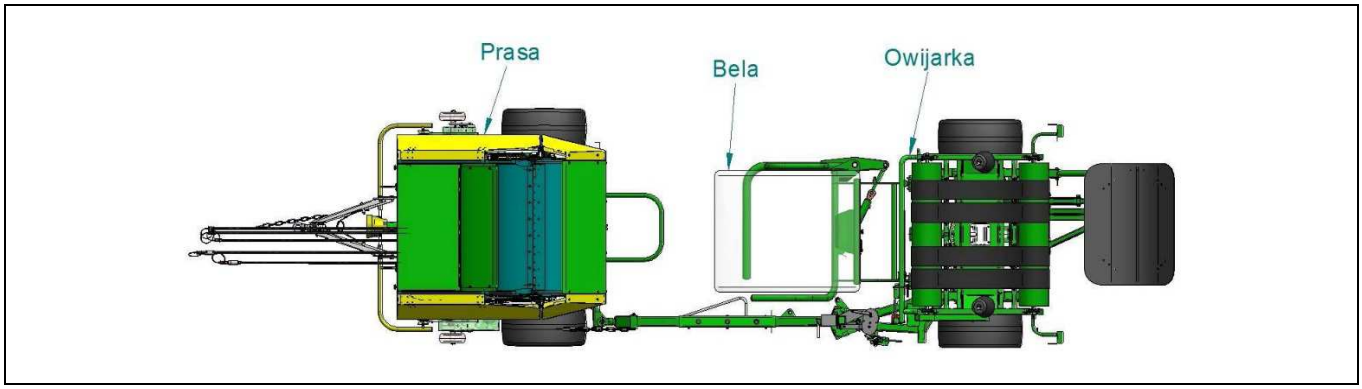


FIG. 78. BALE EJECTION WHILE WORKING WITH A WRAPPING MACHINE.

Original	Translation
Prasa	Baler
Bela	Bale
Owijarka	Wrapping machine

Attaching coupling elements to the bale wrapping machine

a) The wrapping machine drawbar should be set from transport position to the working position, blocking it with a safety bolt in the middle opening. The hitch of the wrapping machine must be set to the upper openings at the same time mounting the chain and camera support with a M16x160 screw and together with that, the rear view camera as shown in Fig. 79.
b) Screw the bale guide to the wrapping machine drawbar using M12x135 screws as shown in Fig. 79.

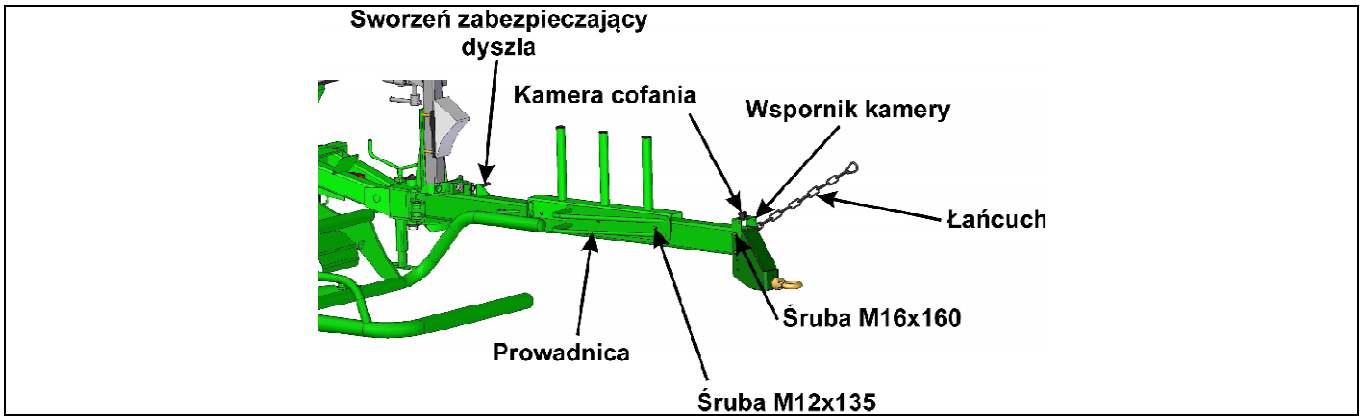


FIG. 79. ATTACHING COUPLING ELEMENTS TO THE WRAPPING MACHINE

Original	Translation	Original	Translation
Sworzeń zabezpieczający dyszla	Drawbar safety bolt	Wspornik kamery	Camera support
Kamera cofania	Rear view camera	Łańcuch	Chain
Śruba M16x160	M16x160 Screw	Prowadnica	Guide
Śruba M12x135	M12x135 Screw		

c) After the support with the rear view camera is installed, screw in the camera shield using M6x16 bolts and remember to insert the camera connectors to the appropriate opening in the camera support, Fig. 80.

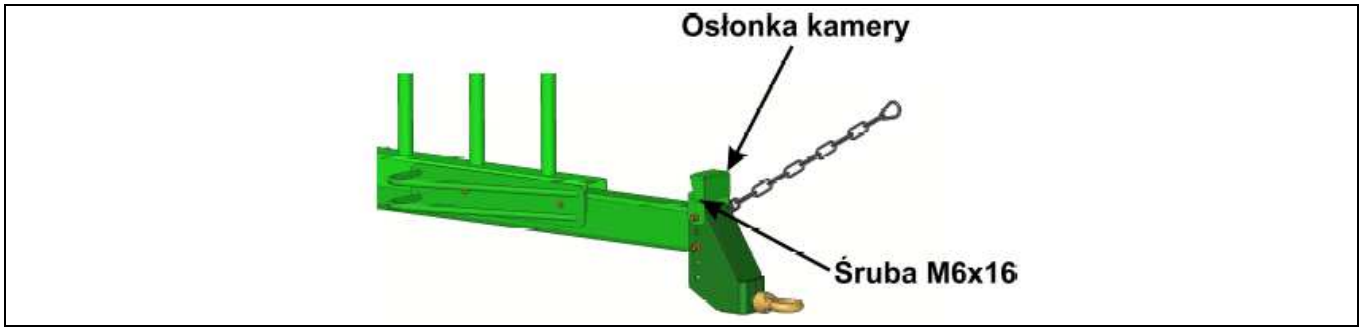


FIG. 80. ATTACHING COUPLING ELEMENTS TO THE WRAPPING MACHINE

Original	Translation	Original	Translation
Osłonka kamery	Camera shield	Śruba M6x16	M6x16 Screw

In order to couple the Baler with the wrapping machine, position the wrapping machine on solid ground and set the drawbar hitch using the support at the height of the Baler hitch. Couple the wrapping machine using the safety bolt with the Baler hitch and then set the wrapping machine support to transport position. The hydraulic connectors of the wrapping machine should be connected to the sockets on the Baler and placed in the connector shields, as shown in Fig. 81. The wrapping machine control cable should be connected to the socket under the left cover of the Baler (Fig. 82). After the hydraulic connectors, route the cable set of the camera. The control and camera cables should be connected to the hydraulic connectors using hose clamps. After connecting the camera, it should be positioned so that the end of the bale chute and the entire wrapping machine are visible.

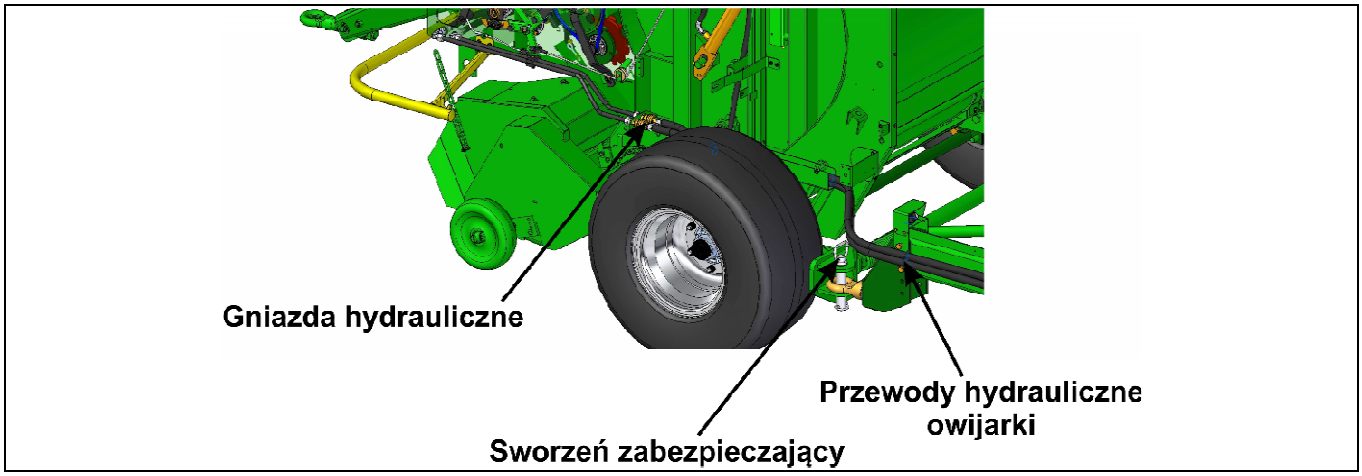


FIG. 81. COUPLING THE BALER WITH A WRAPPING MACHINE

Original	Translation	Original	Translation
Gniazda hydrauliczne	Hydraulic socket	Przewody hydrauliczne owijarki	Wrapping machine hydraulic lines
Sworzeń zabezpieczający	Safety bolt		

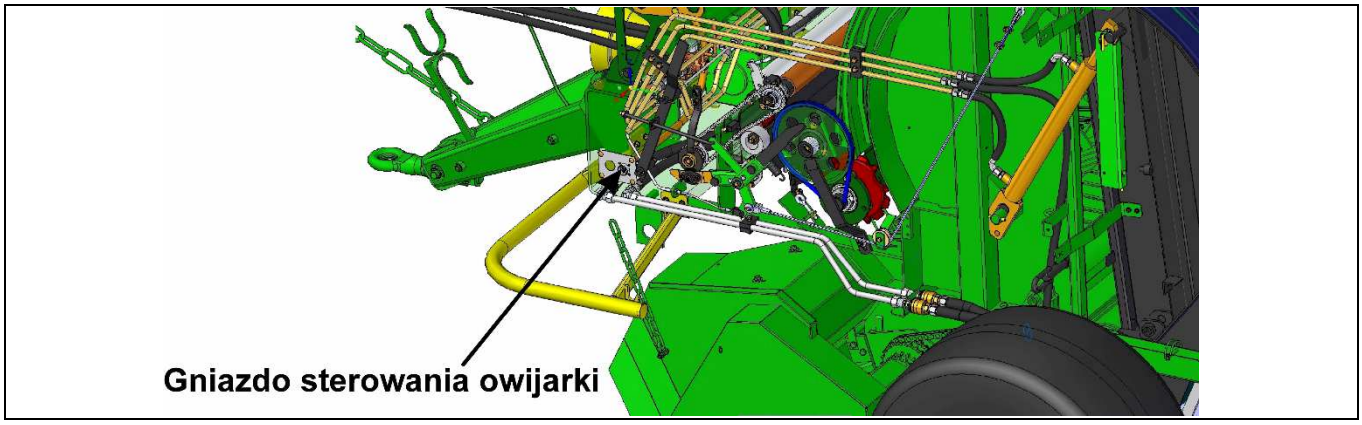


FIG. 82. COUPLING THE BALER WITH A WRAPPING MACHINE

Original	Translation
Gniazdo sterowania owijarki	Wrapping unit control socket

17 Causes for Machine faults and the methods for their removal

The table below describes the possible Machine failures which may occur during operation, their causes and a recommendation for fault removal.

Table 5 Causes for Machine faults and the methods for their removal

No.	Description of the fault	Cause	Removal method
1.	Difficulties with lowering and lifting the pickup.	No pressure in the supply line of the hydraulic installation.	Check if pressure is present in the hydraulic line for raising the pickup (section 8.1).
		Hydraulic distributor lever is not exactly in the rightmost position (applies only to Balers with two hydraulic lines),	Shift the distributor lever exactly into the rightmost position - towards the pressure gauge (section 7.3 and Fig. 46).
		Contaminated or not lubricated moving parts of the suspension.	Clean and grease the moving parts of the suspension (Fig. 56).
		Unregulated relief spring.	Regulate the relief spring (Fig. 56).
2.	The gathered material clogs the pickup and does not enter the rolling chamber.	Too much material getting into the pickup (tractor speed to high with high swath).	Stop the tractor without switching off the PTO and wait until the material is automatically removed or follow the instructions in section 14.
			Lower the tractor speed, especially with high swath (section 9.1).
			Set an appropriate working height of the pickup (section 8.2).
3.	The pickup does not rotate (does not feed the material).	The pickup is overloaded. The M8x35-8.8 securing screws in the fork drive are shorn off.	Replace the M8x35-8.8 securing bolts (2 pcs) on the left side of the Baler in the fork and pickup drive (section 13.2).
4.	The pickup and the lower cylinder do not rotate.	The Baler feeder is overloaded (with slow unloading of bales) The M8x45-8.8 securing screws in the drive are shorn off.	Replace the M8x40-8.8 securing bolts (2 pcs) on the right side of the Baler in the feeder drive (section 13.1).
5.	The baling chains with rollers do not rotate.	The Baler is overloaded. The M8x55-8.8 securing screw of the articulated shaft is shorn off.	Replace the M8x55-8.8 securing screw of the articulated telescopic shaft (section 7.2).
6.	The twine (net) has not been wrapped around the bale.	While feeding the twine (net) the picked up material was not fed into the baling chamber,	Feed material into the baling chamber and at the same time initiate twine feeding (section 9.2).
		The cable activating twine/net feeding (or the electrical button) was pulled too short	Initiate twine feeding (net) feeding again with simultaneous material feeding into the baling chamber (section 9.2).
		The twine (net) was not fed to the picked up material due to the degree of compression of material on the grate.	Clear the space where the twine (net) is fed to the picked up material and to the baling chamber (section 9.2 and 10.2).

No.	Description of the fault	Cause	Removal method
		Pulling the line starting twine or net feeding (or electronic button) did not cause the medium to fed.	- Check and adjust if needed the tensioning of the V belt of the wrapping drive. - check the operation of the electromagnetic coupling, or remove the cause for lack of power supply, or replace a burnt coupling with a new one. - check, tighten or replace the pressure screw of the sprocket on the main transmission shaft. - replace damaged unilateral net feeding rollers with new ones. - properly adjust the pressure of the net feeding roller (section 11.5).
7	The twine slips to the side of the bale.	Wrongly adjusted twine stoppers.	Adjust the twine stoppers (move towards the centre) (section 10.3).
		The picked up material in the finals stage of bale formation is only fed to the middle part of the bale.	In the final stage of bale formation the picked up material should be supplied evenly along the entire width of the bale (section 9.1). Before starting the wrapping process, rotate the bale several times without supplying material
8	The bale is wrapped with twine too sparsely (too densely).	Lack of bale wrapping density adjustment.	Adjust the wale wrapping density (section 10.3).
9	The bale is not wrapped enough with net (or too much).	Lack of number of net wraps adjustment.	Adjust the number of net wraps (section 11.4).
10	Cut twine (net) is frayed.	The twine (net) blade is dull or damaged.	Sharpen or replace the blade (section 10.1 or net blade section 11.3).
		Improper adjustment of blade tensioning springs.	Adjust spring tensioning.
11	The wrapped bale stops in the baling chamber.	Too much material was supplied for the sides of the bale.	The picked up material should be supplied evenly along the entire width of the bale (section 9.1).
		Bale forming, especially a very wet one, was finished with very high pressure.	Finish bale forming, especially a wet one, with lower pressure (section 9.1).
12	The back frame opens during bale forming.	The back frame is not locked hydraulically or was closed with the pressure too low.	After unloading the bale, the back frame needs to be closed in accordance with the requirements (with a pressure of approx. 13 MPa) (section 7.4).
		The bale forming was finished with the pressure too high (20 MPa).	Finish feeding material to the formed bale with lower pressure (section 9.1).

No.	Description of the fault	Cause	Removal method
		Dirty safety valve (20 MPa) or return valve in the hydraulic installation.	Open and close the back frame repeatedly several times with max. pressure. Clean the return valve. Clean the safety valve (20 MPa) without over-adjustment (section 7.3 and 7.4).
13	The baling chains with rollers do rotate with the back chamber raised.	The jaw clutch does not disengage the drive on the baling chamber chains.	Ensure proper adjustment of the jaw clutch of the baling chain drive (section 7.5).
14	Unable to start the controller.	Improperly connected plug in the socket on the tractor.	Check the connection of the plug, press it if necessary.
		Defective electrical installation of the tractor, too low voltage.	Check the correctness of the electrical installation of the tractor, remove the
		Damaged plug.	Replace the plug.
15	No chamber opening signal.	Damaged chamber opening sensor or sensor cable.	Replace the sensor, repair or replace the cable.
16	No signal indicating net feeding.	Damaged chamber opening sensor or sensor cable.	Replace the sensor, repair or replace the cable.
		Improper adjustment of the distance between the sensor and the magnet.	Adjust the distance property (Fig. 66).
		The net feeder roll does not rotate.	See section 6 in this table.
17	The grease dispenser pump does not cause oil flow.	No oil in the reservoir.	Refill oil.
		Clogged filter.	Replace.
		The suction side of the system is leaking and the pump sucks in air.	Check tightness and replace any damaged elements.
		No pump piston stroke.	Adjust the piston stroke and secure the screw.
		Damaged unilateral valve of the pump.	Replace with a working one.
18	Pump piston does not return after being pushed in.	Faulty pump.	Replace with a new one.
		Clogged dispenser filter.	Unscrew the dispenser, wash in kerosene, replace if needed.
19	Oil is not pressed to the particular dispensers.	Clogged dispenser filter.	Unscrew the dispenser, wash in kerosene, replace if needed.

18 Delivery, completion, transportation and startup of the balers

18.1 Unloading and completion of the Balers

Balers may be delivered by road or rail. Unloading of the Balers from the transport can be performed:
- by pulling the Baler onto a ramp with a tractor and afterwards into storage. While using this method, the drawbar must be installed.
- by lifting the Baler from the transport using an unloading device and placing it on the ground. Two fixed brackets on the upper part of the Baler frame, marked with pictograms, can be used for this purpose. The third attachment point is the drawbar hitch or the supports mounting the drawbar to the frame in the front section of the Baler (see Fig. 30 and Fig. 31).

WARNING:
Loading and unloading of the Balers to or from means of transport may only be conducted with extreme care by authorised employees using technically sound equipment and.

Due to the need of using means of transport, some parts of the Baler may be dismounted for transport. The deliverer is required to prepare and hand over the Balers to the User in complete form, with all parts assembled, and ready to work.

Before handing the Baler to the User, the following parts, which could be dismounted for transport, need to be assembled:
- the drawbar should be attached to the machine frame (see Fig. 27 and 28) using 4 M20x50-8.8-B screws (torque min. 410nm) and self-locking nuts M20-8-B (see catalogue section).
- the following should also be attached to the drawbar with fasteners: drive shaft support, hydraulic line bracket and an additional securing chain (Fig. 27) (see catalogue section).
- the back cover (if it was disassembled) together with the hook for the identification triangle to the back frame of the Baler (Fig. 30) using M8x20-8.8 screws and washers.
- the bale chute should be attached to the Baler chassis. The chute must be installed and adjusted so that it is possible to open and close the back frame freely.
- rear lamps of the electrical installation and warning triangles (Fig. 30, Fig. 31) (if they were dismounted).

And the following must be inspected:
- the operation of the installation should be checked by lighting up all the lights.
- accessories of the Baler – a list of the accessories can be found in section 18.1.
- wheel nut tightening.

18.2 Transport

18.2.1. External transport

Loading the machine onto means of transportation using a crane (on appropriate suspensions). The Baler should be transported in the vertical position. The Baler should be secured against sliding and tipping, and secured to the floor of the vehicle (secured against moving around).

18.2.2. Internal transport

The Baler must be transported on wheels, attached to a tractor in accordance with the requirements of this Instruction Manual.

Before road transport, do the following:

- remove the feeler wheels on both sides of the wide pickup (only in the case of the Balers with wide pickup - see Fig. 56 and section 8.3),
- check drawbar attachment to the tractor and safety (see section 7.1),
- connect the electrical installation to the Baler and check if all the lights are operational,
- install the warning triangle onto the hook on the back cover of the Baler (see Fig. 30).

Traffic laws must be observed during transport on roads. **It is prohibited to transport humans and animals, as well as rolled bales inside the chamber.**

18.3 First Startup

The first startup of the Baler is intended to check the technical condition of the machine, perform a trial run and familiarise the User with the basic principles of correct and safe operation. The First Startup is carried out by the authorised representatives of the Dealer or the Manufacturer.

Additionally, during the First Startup, the User shall receive detailed instructions concerning the operation of the universal Baler controller, along with a demonstration.

WARNING:
Startup of the Baler can only be carried out with extreme caution and in the presence of the interested persons. The first operation test of the Baler should be carried out at minimum tractor engine speed.

The first startup of the machine should include checking its technical condition; it should be prepared for work and an operational trial run should be completed. Particular attention should be paid to:

- proper coupling of the Machine to the tractor,
- checking the correctness of operating mechanisms,
- operation of the bale wrapping mechanisms,
- proper installation of self-aligning bearing safety rings, adjustment of the feeder and twine cutter,
- checking the couplings and adjustment of the drive chain tensioning, operation of the hydraulic installation and jaw clutch,
- familiarisation with the controller operation,
- checking the screw connections in the drive units (tightening torques of each screw provided in the table),
- checking the oil level in the main transmission and greasing of the Machine in accordance with section 15.1,
- proper adjustment of the chamber filling indicator (during operational trials).

After the Manufacturer's operation tests and first startup, Round Balers do not require a special break-in period and can be operated normally from the beginning. However, it is beneficial to start operating new Balers at reduced loads (picking up post-harvest straw or dry hay) in order to run-in the Baler's mechanisms.

There are no special (periodic) technical inspections of the Baler required during the warranty period. Maintenance and adjustment should be carried out during the first startup and subsequently by the User in accordance with the Instruction Manual.

During the operational life, the Baler's mechanisms should be checked and greased on a daily basis (before going into the field). **Before the start of the season and after longer stoppages, these actions (checks) should be performed particularly carefully.**

19 Spare parts and accessories

19.1 Basic equipment

Each Baler is accompanied by the basic equipment listed in the table below.

Table 6 Basic equipment of the Round Balers

No.	No. of drawing or norm	Part name	Quantity
1	5224-100-310.00	Hook set	1
2	5270-100-131.00	Pickup finger	4
3	5276-180-530.00	Key to chain sprockets	1
4	5261-260-107.00	Control cable (only for mechanically controlled wrapping units)	1
5	PN-EN-ISO-4014	M8x35-8.8-B-R3J screw	4
6	PN-EN-ISO-4014	M8x40-8.8-B-R3J screw	2
7	PN-EN-ISO-7040	Self-locking nut M8-8-B-R3J	6
8		Rubber buffer (Balers with mechanical lock)	2
9		Round Baler Instruction Manual and parts catalogue	1
10		Universal Baler controller (for wrapping units controlled electronically)	1

Additionally, round balers sold on the domestic market (and on the export market, if specified so in the order) are equipped with 60960/602.K600/4 articulated telescopic shafts with M8x55-8.8-B-R3J shear screws (fully threaded) according to PN-EN-ISO- 4017.

- M8x55-8.8-B-R3J according to PN-EN-ISO-4017 (fully threaded) - 3 pcs
- M8-8-B-R3J self-locking nuts according to PN-EN-ISO-7040 - 3 pcs

19.2 Accessories supplied upon request

The Manufacturer may also install the following parts interchangeably in the Round Balers (instead of standard equipment):

- extended drawbar (recommended for mounting the Balers to the lower transport hitch),
- rigid rear beam (instead of the tilted bale chute),
- oversized 14x16 tyres (instead of 11.5x15 tyres) to all the Balers (or smaller tyres 10.0x15 - only for SIPMA PS 1211 FARMA PLUS, SIPMA PS 1221 FARMA PLUS),
- special (strengthened) feeder,
- other supplementations and equipment versions subject to the Customer's request (paints, security guards, additional lubrication holes, etc.).

Additionally, upon the Customer's request, the Manufacturer may install the following equipment:

- bale net wrapping unit,
- electrical drive of the bale net or twine wrapping unit (with baling chamber fill indication),
- dispenser greasing of baling and drive chains,
- a complete coupling (5279-260-500.00) which allows coupling with a wrapping machine,
- battery-controller power cable with the following lengths: 2000 mm, 3000 mm, 4000 mm.

19.3 Spare parts

The assembly parts for Round Balers are presented and described in the parts catalogue. These parts can be purchased from the machine supplier or directly from the Manufacturer. Spare parts can be purchased online at: http://sklep.sipma.pl.

The parts catalogue can be obtains from the supplier and is provided upon request of the interested parties. When

ordering replacement parts, please specify the following information:
a) type of machine, serial number and year of manufacture (from the name plate and documents),
b) exact number of drawings (norms) and names of the parts with quantity (from the Parts Catalogue),
c) detailed address of the ordering party.

Information concerning spare parts deliveries and repairs is provided by the supplier of the machine and the Manufacturer's factory service.

Using original spare parts guarantees the quality of the machine.

WARNING:
Hydraulic hoses should be replaced with new ones every 5 years after purchasing the Machine. Full marking of the hoses can be found in the Spare Parts Catalogue.

19.4 Disassembly and treatment of worn parts

During disassembly of the Machine or its worn parts, observe the general safety rules governing the use of mechanised equipment.

Due to the environmental protection requirements, after an operational season of the machine is finished, drain the oil from the hydraulic system and transmission into a vessel and hand it over to a petrol station.

A Machine which is worn and removed from service should be disassembled and segregated in terms of the size and type of material, and then handed over to the waste collection or disposal points.

20 Additional information

20.1 Tightening torques of threaded connections.

Thread size [mm]	Strength class	
	8.8	**10.9**
	Tightening torque [Nm]	
M6	10	15
M8	25	35
M10	50	70
M12	90	120
M16	210	300
M20	410	580
M16x1.5	230	320
M18x1.5	304	441
Sensor nuts	10	-

20.2 Wiring diagram of the Baler

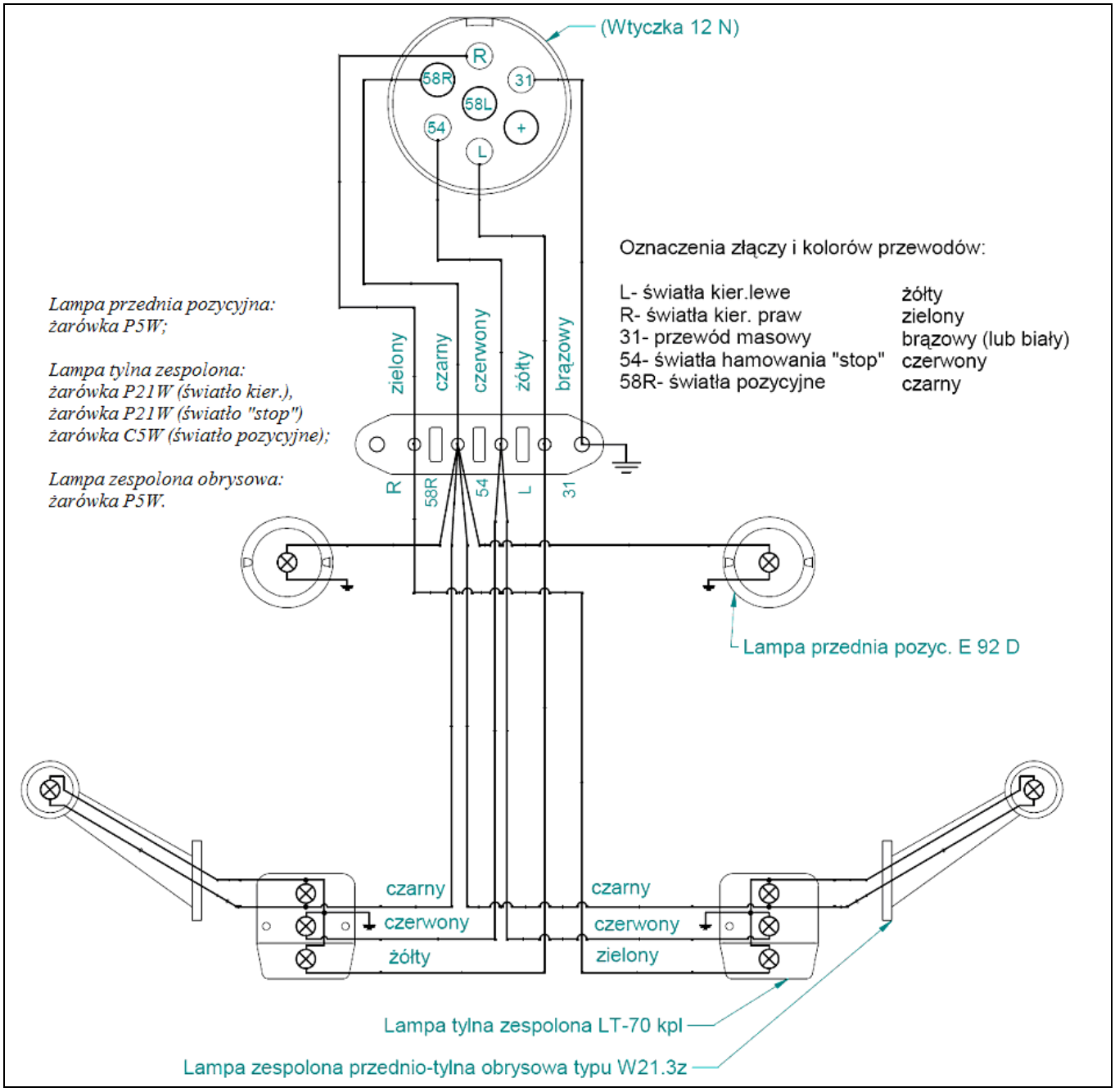


FIG. 83. WIRING DIAGRAM OF THE ROUND BALERS

Original	Translation	Original	Translation
Wtyczka	Plug	Oznaczenia złączy i kolorów przewodów	Connector designations and wiring colours
Lampa przednia pozycyjna	Front positional lamp	L – światła kier. lewe	L - left direction lights
Żarówka P5W	P5W Bulb	R – światła kier. prawe	R - right direction lights
Lampa tylna zespolona	Rear light assembly	31 – przewód masowy	31 - ground cable
Żarówka P5W (światło kier.)	P5W bulbs (directional light)	54 – światła hamowania „stop”	54 - “stop” lamp
Żarówka P5W (światło „stop”)	P5W bulbs (“stop” light)	58R – światła pozycyjne	58R - positional lights
Żarówka C5W (światło pozycyjne)	C5W bulbs (positional light)	Żółty	Yellow
Lampa zespolona obrysowa	Clearance lamp assembly	Zielony	Green
Lampa przednia pozyc. E 92 D	Front positional lamp E 92 D	Brązowy (lub biały)	Brown (or white)
Lampa tylna zespolona LT-70 kpl	LT-70 rear light assembly, set	Czerwony	Red
Lampa zespolona przednio-tylna obrysowa typu W21.3z	W21.3z front-back clearance assembly light	Czarny	Black

21 Index

Articulated 32, 33, 34, 65, 70
Back frame 23, 35, 36, 37, 38, 46
Baler 74
Baling 23, 24, 26, 37, 41, 42, 43, 46, 61, 65, 66, 67, 69, 70
Chains 26, 37, 41, 67
Chamber 23
Checks 34, 37, 69
Chute 68
Closing 36
Compaction 41, 65
Coupling 67
Drawbar 24, 31, 32, 33, 34, 61, 68, 70
Drive 37, 39, 41, 43, 45, 46, 48, 70
Driving speed 41
Feeder 24, 13, 40, 41, 43, 55, 65
Grate 41
Greasing 69, 70
Green fodder 23, 85
Hitch 31, 32, 33, 48, 69, 70
Hook 40, 41
Hydraulic 35
Key 15
Label 23
Lifting 40, 41, 43
Lighting 30
Lights 68
Maintenance 61
Net 13, 22, 23, 26, 31, 42, 43, 45, 46, 47, 48, 57, 66, 70
Pickup 17, 20, 24, 26, 39, 40, 41, 46, 55
Quick release 34
Screws 31, 37, 65, 70
Sensor 54, 67
Setpoint 37, 40, 41
Shaft 33, 34, 41
Signalling 39
Speed 41, 42
Telescopic 34
Twine 13, 18, 21, 23, 39, 40, 41, 42, 43, 44, 45, 47, 65, 66
Unloading 42, 43 54
Valve 36, 67
Wheels 13, 24, 41, 43, 44
Wrapping 26, 46, 46, 70

22 Warranty

The Baler is guaranteed for 24 months from the date of sale.

In order for this Warranty to be valid, the Machine must be used only for its intended purpose and the specific recommendations in this manual must be strictly observed.

It is recommended that all repairs should be performed by authorized service technicians of the Dealer or Manufacturer.

The use of non-original spare parts voids the Warranty. Details of the Warranty are given in the Warranty Card.

WARNING:
Detailed warranty conditions of the Machine are included on the Warranty Card provided with the Machine.

22.1 Information about the Service Centres and post-warranty repairs

A prerequisite maintaining the Warranty is that it is used only as intended and maintained in accordance with the guidelines contained in this manual.

Using non-original parts (made by other manufacturers than SIPMA S.A) and making repairs in repair shops unauthorised by the Manufacturer voids the Warranty.

WARNING:
Both during the Warranty Period and after Warranty, the Manufacturer is not liable for the consequences of unauthorised repairs performed in repair shops unauthorised by the Manufacturer and the use of non-original accessories and parts.

SIPMA S.A.
ul. Budowlana 26
20-469 Lublin, Poland
tel. (+48) 81 74 45 071
www.sipma.pl

Series C No.

23 WARRANTY CARD

NAME OF THE MACHINE: **FIXED CHAMBER BALER** TYPE: SIPMA PS .....
.....

SERIAL NO.: .....

YEAR OF MANUFACTURE: .....

The manufacturer guarantees proper operation and quality of the purchased machine and undertakes to bear the costs of its repairs if faults caused by manufacturing defects are detected during the Warranty Period.

Submitted warranty claims will be considered only if it is deemed that it has been used correctly and in accordance with the Instruction Manual. Warranty claims shall be valid upon presentation of the Warranty Card.

Date of Sale .....
(day, month in words, year – completed by the dealer upon sale)

This Warranty is valid for 24 months from the date of sale.

Warranty service on behalf of the manufacturer is performed by:

Name of the service provider: .....
(completed by the dealer)

Address of the service provider: .....
(completed by the dealer)
.....
.....

.....
(signature and stamp of the dealer)

NOTES FOR THE PURCHASER: The purchaser is required to familiarise themselves with the contents of the Warranty Card and refuse to accept if it is incomplete and has any corrections.

24 GENERAL WARRANTY PROCEDURES

1. The Warranty covers defects and damage resulting from the fault of the manufacturer due to material defects, improper treatment or improper installation.
2. During the warranty period, the Manufacturer or Dealer undertakes the obligation to repair the advertised equipment, covering the costs of spare parts, labour and travel.
3. The Warranty does not cover parts that wear naturally during use. In Round Balers, these parts include: electrical installation bulbs, shear bolts securing the feeder assemblies, the pickup and the articulated telescopic shaft against overloading, pickup fingers 5270-100-131.00, V belts, rubber elements such as bumpers and seals, and consumables such as oils and greases. The Manufacturer of the Balers does not provide Warranty for the road wheels (tyres, rims). Complaints in this regard shall be dealt with by suppliers.
4. Warranty claims shall be submitted by the User directly to the Dealer or the provider of warranty services, specified by the Dealer on the Warranty Card, no later than 14 days from the time of the failure.
5. Warranty repairs which are deemed justified and applicable to a valid Warranty shall be performed without delay, but no later than within 14 days from the date of notification and making the Machine physically available for repairs, unless the User has granted written consent for extending this period.
6. The party entitled to warranty services shall have the right to replacement for a new machine in the event of 4 major failures of the same component or part.
7. Damage to the machine caused by the User’s fault during the warranty period can be removed at the User's expense only by the Manufacturer's representative or persons authorised by them. Only original parts from the Manufacturer must be used for these repairs.
8. To maintain warranty rights for the Machine, the User (Operator) must be trained and hold a valid certificate for safe handling and rules of operation. Training and issuance of certificates is handled by the service centre of the Dealer or the Manufacturer at the First Startup of the machine. **If the Machine is made available to another person, the entitled party is obligated to train that person.**
9. The Warranty shall be invalidated in the following cases:
   a) damage of the Machine as a result of random events or a traffic collision, regardless of the quality and technical condition of the Machine,
   b) making any modifications or design changes in the Machine without written consent of the Manufacturer,
   c) lack of confirmation of having completed the necessary inspections and First Startup in the Warranty Card of the machine, failure to carry out the correct maintenance, greasing or necessary adjustment of the machine in accordance with the recommendations of the Instruction Manual,
   d) lack of proper care and operating the Machine contrary to its intended purpose and the conditions set out in the Instruction Manual, as well as continuing to work with faulty components,
   e) whenever a damaged Machine is not presented for inspection prior to repairs,
   f) performing the repairs by unauthorised service centres (SR) and using non-original spare parts for repairs of the machine,
   g) not allowing the performance of repairs or warranty claim validation, on the part of the User.

I have familiarised myself with the Warranty Conditions.

.....
(Date and signature of the User)

25 WARRANTY REPARIS RECORDS

Repairs Started Calendar date	Repairs Completed Date	Warranty Claim Report Number	Damaged Parts List	Extension or Cancellation of Warranty Date, Signature	Signature and Stamp of the Warrantor

Point of Sale Stamp

Series C No.

WARRANTY CLAIM COUPON
SIPMA S.A. Lublin ul. Budowlana 26

/ send to manufacturer /

Fixed Chamber Baler PS ..... **Serial No.:** .....

Purchased on .....
(Point of Sale – Enter Day, Month and Year)

Warranty Claim Report No. .....

This coupon with both sides completed should be sent to the Manufacturer together with the Warranty Claim Report.

WARNING: Make sure that the Coupon is properly completed.

✂ ———————————————————————

Point of Sale Stamp

Series C No.

WARRANTY CLAIM COUPON
SIPMA S.A. Lublin ul. Budowlana 26

/ send to manufacturer /

Fixed Chamber Baler PS ..... **Serial No.:** .....

Purchased on .....
(Point of Sale – Enter Day, Month and Year)

Warranty Claim Report No. .....

This coupon with both sides completed should be sent to the Manufacturer together with the Warranty Claim Report.

WARNING: Make sure that the Coupon is properly completed.

Additional explanations for the Manufacturer: .....

.....

.....

.....

.....

.....

.....

.....

I accepted fully operational equipment after repairs on .....

.....
User Signature

.....
Date, Stamp and Signature of the Service Centre

Additional explanations for the Manufacturer: .....

.....

.....

.....

.....

.....

.....

.....

I accepted fully operational equipment after repairs on .....

.....
User Signature

.....
Date, Stamp and Signature of the Service Centre

SIPMA S.A.
ul. Budowlana 26
20-469 LUBLIN
tel. (+48) 81 74 45 071
www.sipma.pl

Remains with the Warranty Card as proof acquisition of warranty rights

STARTUP COUPON

…… …… date …… We report that the Round Fixed Chamber Baler SIPMA PS …… serial no. …… was started up on …… in accordance with the checklist overleaf, by mechanic …… SR ……
name SR name

and as fully operational was handed over to the User, who was trained with regard to safe operation and maintenance, for which a relevant certificate was issued.

Stamp and signature of the Warranty Service Provider

Stamp, address and signature of the User

I hereby express my consent to the processing of my personal data for marketing purposes (in accordance with the Act of 29 August 1987 on Protection of Personal Data, Journal of Laws No. 133, Item 883).	……..…… (date, legible signature)

✂ ——————————————————————

SIPMA S.A.
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Stamp, address and signature of the User

I hereby express my consent to the processing of my personal data for marketing purposes (in accordance with the Act of 29 August 1987 on Protection of Personal Data, Journal of Laws No. 133, Item 883).	……..…… (date, legible signature)

26 STARTUP CHECKLIST

The first startup of the machine should include checking its technical condition; it should be prepared for work and an operational trial run should be completed.
Particular attention should be paid to:

- proper installation of details provided in disassembled state,
- checking the correctness of operating mechanisms,
- operation of the bale wrapping mechanisms,
- proper installation of self-aligning bearing safety rings,
- adjustment of the feeder and net/twine cutter,
- appropriate tyre pressure,
- checking the couplings and adjustment of the drive chains,
- gearbox oil level,
- all the points listed in the Instruction Manual should be greased,
- correct operation of all the components and sub-components of the Baler and, if necessary, adjust them in accordance with the Instruction Manual,
-
- checking the screw connections in the drive units,
- correct operation of the hydraulic installation,
- proper adjustment of the installed chamber filling indicators
- training of the User with respect to safe operation and the principles of use of the Baler.

✂ ——————————————————————

ACCOUNTING OF COSTS

Fixed net amount ..... PLN

VAT ..... PLN

TOTAL ..... **PLN**

Road Card No. .....

..... date .....

Signature and stamp of
the Warranty Service
Provider

27 PRODUCT VALIDATION

Product: **Fixed Chamber Round Baler PS** ..... No.:.....
Manufacturer: SIPMA S.A. ul. Budowlana 26 20-469 Lublin.

Operator:
Name /name and surname/ and address of the User: .....
- farm size: up to 100 ha, up to 500 ha, up to 1000 ha, over 1000 ha*
- brand, type and power of the tractor used for working with the Machine - .....
- period of use: start date ....., end date.....

Requirements concerning the workload and usage:

Relevant to the purpose the machine

- Picking up straw - straw collected ..... from ..... ha with moisture content ..... %
- Picking up greens - greens collected ..... from ..... ha with moisture content ..... %

Damage which occurred during work in the season of operation
- ..... - .....
- ..... - .....
- ..... - .....
- ..... - .....
- ..... - .....

General Assessment of the Machine:

– Suitability to the objectives:	☐ High	☐ Average	☐ Low
– Failure rate:	☐ Low	☐ Average	☐ High
– Daily maintenance operations:	☐ Not burdensome	☐ Too time-consuming	☐ Very burdensome
– Attaching to tractors:	☐ Easy	☐ Difficult	☐ Very difficult
– Design aesthetics:	☐ High	☐ Acceptable	☐ Low
– Risks of operation:	☐ Low	☐ Average	☐ High
– Risks to bystanders and the environment:	☐ Low	☐ Average	☐ High

Personal assessment of the product:

.....
.....
.....

Suggestions for changes:

.....
.....
.....

*delete as appropriate

.....
Stamp and signature of the person completing this form

I hereby express my consent to the processing of my personal data for marketing purposes (in

accordance with the Act of 29 August 1987 on Protection of Personal Data, Journal of Laws No. 133, Item 883).

Notes

……
……