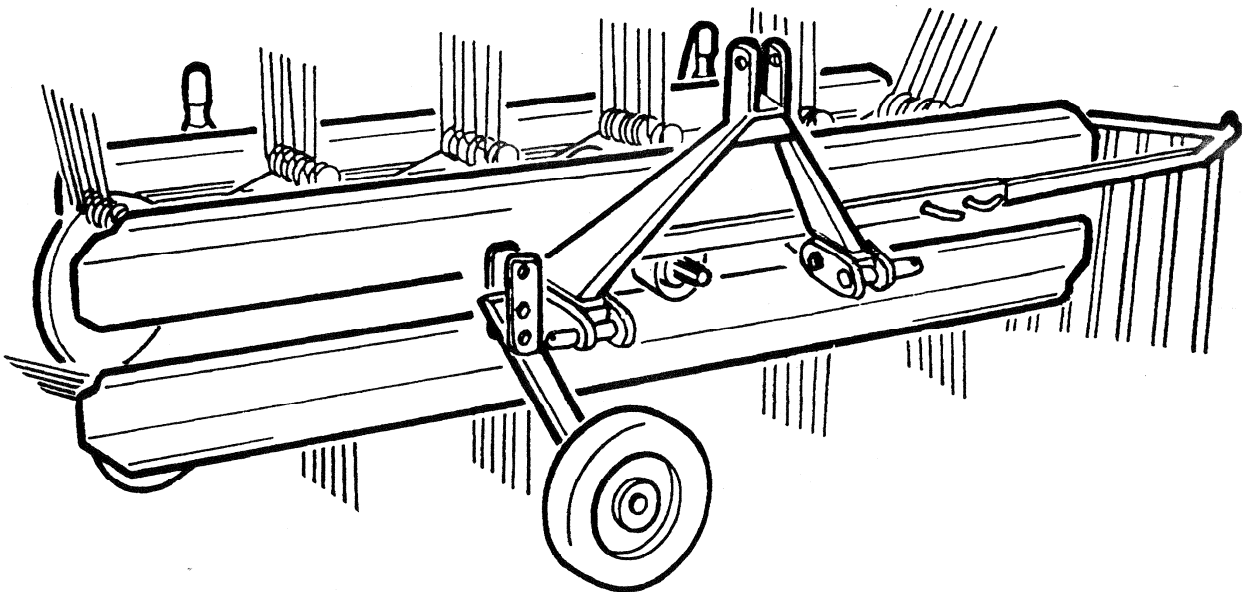


AGRICULTURAL MACHINERY

**sitrex**®  
Spa

## USE AND MAINTENANCE SPARE PARTS LIST



# BELT RAKE

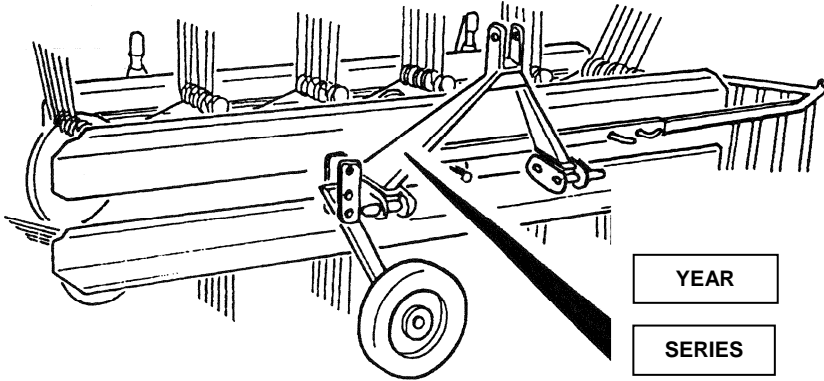
# GS 160/190/220



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<b>INTRODUCTORY INFORMATION</b>		
<p><b>1.1 DELIVERY LETTER</b></p> <p><i>Our belt Rakes have been manufactured in compliance with the EEC Directive 89/392 and its amendments.</i></p> <p><i>There will, therefore, be no danger for the operator if it used according to the instructions in this handbook, with the training given by the Manufacturer's technician, provided that the safety devices are kept in good working condition.</i></p> <p><i>This letter is to certify receipt of the machine: that the safety devices work efficiently; that this handbook has been delivered with the machine and that the operator is responsible for following the instructions step by step.</i></p> <p><i>The Manufacturer takes no responsibility for any modifications made to the machine, any tampering or any operations whatsoever which do not comply with what is written in this handbook, in the Manufacturer's regulations or in any other documents, and which may cause damage to the safety and health of people, animals or objects near the machine.</i></p> <p><i>The Manufacturer hopes you will be able to use all the functions of his belt Rakes.</i></p> <p><i>Please remember, however, that: all the technical specifications refer to the standard machine (see part 3). The drawings and any other document delivered together with the machine are the property of the Manufacturer, who reserves all the rights to them, and who wishes to remind you that they may not be divulged to third parties without his written approval.</i></p> <p><i>Any reproduction whatsoever, even partial, of the texts and the illustrations is severely forbidden.</i></p>		
		<p><b>Machine</b></p> <p style="text-align: center;"><b>BELT RAKE MODEL.....</b></p> <hr/> <p><b>Registration N°</b></p> <hr/> <p><b>Stamp</b></p> <hr/> <p><b>Date</b> <span style="float: right;"><b>Signature</b></span></p>

## INTRODUCTORY INFORMATION



## 1.2 MACHINE IDENTIFICATION AND NUMBER OF INSTRUCTION HANDBOOK

### 1.2.1

*For any communication with the Manufacturer or with his assistance centres concerning the belt rake, please always quote the registration number and machine type.*

### 1.2.2

*The number of this handbook is written on the cover.*

*Note down the number in a safe place in case you lose the handbook lost, so you will be able to request another copy.*

### **DESCRIPTION**

*Complete Machine  
Instruction handbook*

## 1.3 GENERAL NOTES ON DELIVERY

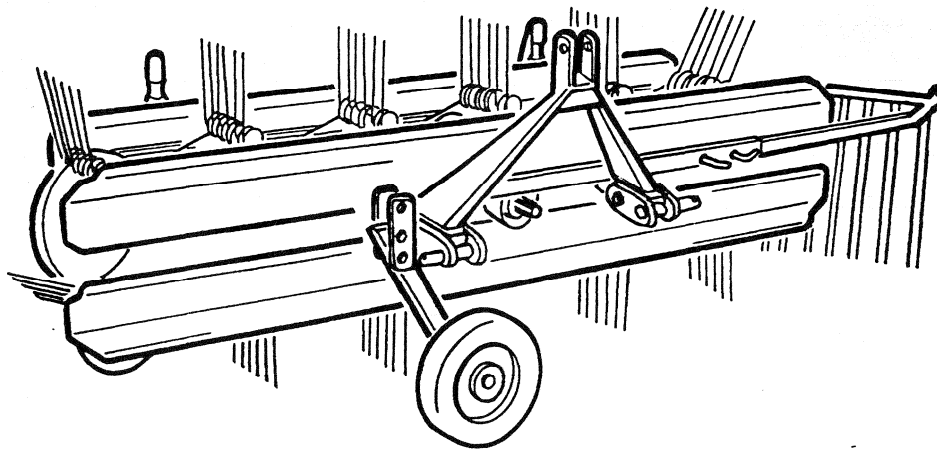
*The machine, its parts and/or accessories may be shipped in containers or packaged in packing cases overseas). In any case check that:*

- 1 – Packaging is intact;*
- 2- The supply corresponds to the order specifications (see accompanying transport document or packing list);*
- 3- The machine or the accessories are undamaged.*

*If there is any damage or any parts are missing, immediately communicate all details and/or with photos to the following:*

*The Manufacturer or his area representatives,  
The forwarder or his insurance company*

## **INTRODUCTORY INFORMATION**



### **1.4 MACHINE DESCRIPTION**

*The belt hay tedder in the "G" series is a machine for the preparation and harvesting of forage.*

*It consists of a load-bearing frame made of welded steel sections and a double belt on which some spring supports are fixed to drag the forage.*






*It has two wheels with two levers to keep the machine level during operations.*






*This series of machines may be used with several different types of tractor with a three-point hydraulic lift.*

*It is attached to the tractor by means of the three-point connection which firmly holds the two machines together and makes work safe.*

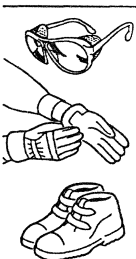
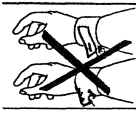


*Movement is transmitted by the power take-off, via a propeller shaft to the rake drive unit and then to the belt.*

*The belt rotates at a distance of approximately 1-2 cm above ground level and enables forage to be raked, turned, loosened and aired.*

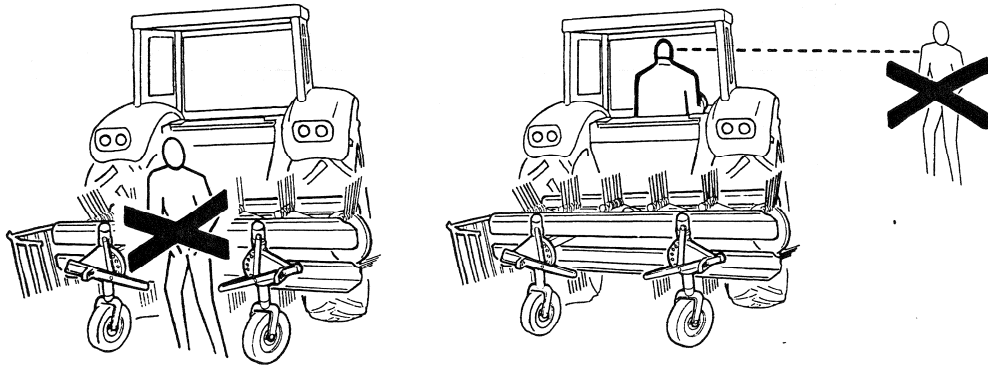
<p><b>2 SAFETY REGULATIONS</b></p> <p><i>As you read this instruction and maintenance handbook, you will find certain symbols, some of which you will also find on the machine itself. All of them have a precise meaning.</i></p> <p><b>CONVENTIONAL SYMBOLS AND THEIR DEFINITIONS</b></p> <p><b>2.1 WARNING GENERAL DANGER</b> <i>This shows the person concerned that the operation described could cause physical damage if not carried out according to the safety norms.</i></p> <p><b>2.2 NOTE</b> <i>This shows the person concerned that this information is of particular importance.</i></p> <p><b>2.3 WARNING</b> <i>This shows the person concerned that, if this information is not observed, people could be slightly injured or the machine could be damaged.</i></p> <p><b>2.4 OPERATOR OR MACHINE DRIVER</b> <i>This shows that a qualified person with specific skills is needed, as the operations are completely manual and therefore the machine driver's training and skill are needed in order to obtain the best results from the machine.</i></p> <p><b>The operator is, therefore, severely forbidden to carry out the operations which are described as the responsibility of the maintenance technician.</b></p> <p><b>2.5 MECHANICAL MAINTENANCE TECHNICIAN</b> <i>A qualified technician capable of operating the machine under normal conditions and of working on the mechanical parts in order to carry out adjustments, maintenance operations and any necessary repairs.</i></p> <p><b>2.6 ADVICE</b> <i>We refer to a work method which has been experimented in our factory, even though we know full well that each operator will develop his own personal way of working.</i></p>	    	
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<b>SAFETY PRECAUTIONS</b>		
<p><b>2.7</b> <b>PERSONAL PROTECTION</b> <i>If the symbols on the right are displayed, the operator must wear these personal protective items as there is a risk of injury.</i></p>		
<p><b>2.8</b> <b>EXCEPTIONAL OPERATIONS</b> <i>A request must be made to the Manufacturer for any maintenance operations marked with the symbol on the right.</i></p>		
<p><b>2.9</b> <i>Before installing the machine, the customer must ensure that the installation site is sufficiently flat, does not slope and has been technologically prepared for the machine.</i></p>		
<p><b>2.10</b> <i>The personnel in charge of handling the machine and the equipment must always wear working gloves and protective shoes.</i></p>		
<p><b>2.11</b> <i>In order to place the machine on the floor once packaging has been removed, please refer to the chapter on transport and positioning (part 4). Never, in any case, raise it by its wheels or by its shaft. Use the dead axle with adequate load-bearing ropes (see technical specifications part 3) and raise the machine no more than 30 centimetres from the ground (unless there are any obstacles) and handle very slowly.</i></p>		
<p><b>2.12</b> <b>ZERO "0" EXERTING FORCE</b> <b>ISOLATION OF THE MACHINE FROM ITS ENERGY SOURCES</b> <i>Before carrying out any cleaning or lubrication operation, the machine exerting force must be turned to zero i.e. detach the machine completely from the tractor.</i></p>		
<p><b>2.13</b> <i>Although the manufacturer has done everything possible to avoid any danger, risks still exist of being crushed or cut in the area of the propeller shaft and teeth. If you work in this area, pay the maximum attention.</i></p>		



<b>SAFETY PRECAUTIONS</b>		
<p><b>2.14</b> If any problem should occur during precision adjustment or during the productive cycle, immediately switch off the tractor engine.</p> <p><b>IN ADDITION</b> Read part 8 on “How to stop the machine”, which lists all the ways in which to stop the machine under any circumstances.</p> <p><b>2.15</b> Machine adjustment and maintenance must only be carried out by a trained Mechanical Maintenance worker, who knows the safety precautions and the contents of this handbook.</p> <p><b>2.16</b> Do not voluntarily damage or tamper with the safety diagrams and do not remove or hide the warning labels. IF THEY SHOULD DETERIORATE OR IF THEY SHOULD BECOME ILLEGIBLE, IMMEDIATELY REQUEST A NEW LABEL.</p> <p><b>2.17</b> Adjustment, cleaning and maintenance operations must always be carried out by the same maintenance worker, NEVER BY MORE THAN ONE PERSON. Protective goggles, gloves to protect from cuts and protective shoes must always be available and the maintenance worker must wear them whenever necessary.</p> <p>In addition he must:</p> <ul style="list-style-type: none"> <li>- wear work overalls with close-fitting cuffs.</li> <li>- tie back long hair</li> <li>- never under any circumstance wear loose and/or torn objects and/or clothing (e.g. necklaces, watches, rings, bracelets, scarves, neck-scarves, ties etc.).</li> </ul> <p><b>2.18</b> In order to replace the equipment, always use a hoist (see the equipment rating plate data). In addition, always wear gloves and protective shoes.</p> <p><b>2.19</b> If the machine has to be moved, please refer to the chapter on handling (part 4), and to the chapter on lubrication (part 10).</p> <p><b>2.20</b> Temporary repairs to begin work are severely forbidden.</p> <p><b>2.21</b> Never rest or sit on any part of the machine, either during the productive cycle, or in an emergency or when the exerting force is ZERO.</p>	   	

## SAFETY PRECAUTIONS



### 2.22

The correct position in which the operator should sit during the productive cycle is always at the tractor wheel, as from this position, he can not only observe the entire productive cycle, but he can also see if any person is within range of the machine at the same time.

### 2.23

Remember to reset all the safety devices and replace and/or close their protective casing after every cleaning, lubrication, adjustment and maintenance operation.

### 2.24

When maintenance or repairs are finished, before starting the machine, check that no tools, cloths or other materials have been left in the various compartments containing moving parts or near any moving parts.

### 2.25

At the end of the work cycle it is severely forbidden to leave the machine, equipment and parts in potentially dangerous conditions.

### 2.26

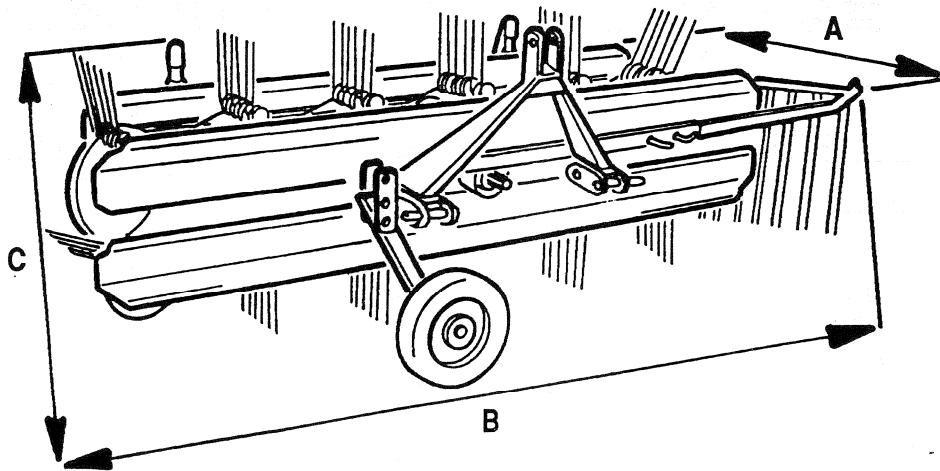
If you should decide to replace worn and/or broken parts, only use original spare parts.

### 2.27

During installation of the propeller shaft, the operator must carry out the correct attachment procedure and he must make sure that it is firmly fastened to the belt rake.

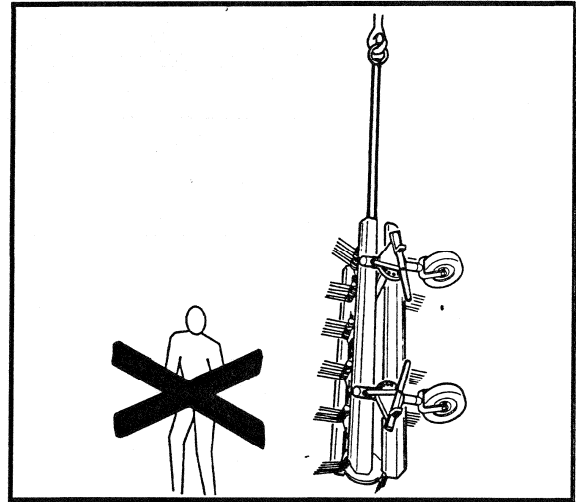
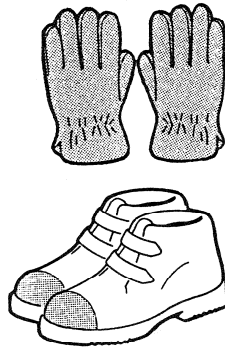
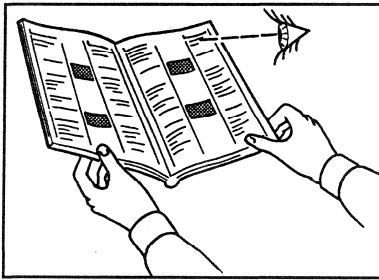
### 2.28

When the machine come to the end of its working life, do not throw it away in the environment. Contact iron disposal agencies or the manufacturer directly, who will give you instructions. In any case, before you hand over the machine, fasten the moving parts and handle as described in the chapter on transport and handling (part 4).



### 3 TECHNICAL SPECIFICATIONS

<b>MODEL</b>	<b>GS 160</b>			<b>GS 190</b>			<b>GS 220</b>		
	<i>A</i>	<i>B</i>	<i>C</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>A</i>	<i>B</i>	<i>C</i>
<i>Overall dimensions cm.</i>	130x190x115			130x230x115			130x270x115		
<i>Weight kg.</i>	175			215			245		
<i>Required power Hp</i>	30			35			40		
<i>Number of revs</i>	540			540			540		
<i>Working width cm.</i>	135			165			195		
<i>Number of combs</i>	9			11			13		
<i>Propeller shaft Hp</i>	10			10			10		
<i>Pneumatic tyres Atm</i>	2.2			2.2			2.2		
<i>Noise level Db</i>	<70			<70			<70		



#### 4 TRANSPORT AND INSTALLATION

##### 4.1

Personnel in charge of handling the belt Rake must have read and understood the safety precautions at the beginning of this handbook.

##### 4.2

#### **WARNING - DANGER OF CRUSHING AND ABRASIONS**

Personnel must wear working gloves and protective shoes in order to handle the belt rake.

##### 4.3

#### **WARNING – DANGER OF COLLISION**

Before handling, the operator must make sure that there are no people, objects or animals within range of the machine.

##### 4.4

Use an adequate load-bearing cable crane to handle the belt Rake (see “Technical Specifications” part 3).

##### 4.5

Hook it on to the dead axle and raise the machine very gently to a maximum height of 30 cm. above ground level (unless there are any obstacles).

##### 4.6

#### **WARNING – DANGER OF OVERTURNING**

The operator must make sure that the ground does not slope.



## **TRANSPORT AND INSTALLATION**

4.7

*Place the rake on the ground behind the tractor.*

4.8

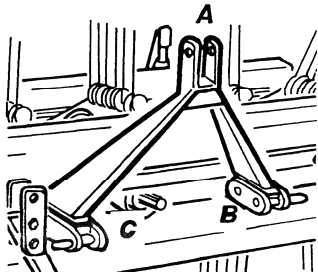
*Now proceed to install the belt Rake.*

### **WARNING - DANGER OF INJURY FROM SHEARS.**

*During installation of the belt Rake, the tractor must be switched off and it is strictly forbidden to work with the engine switched on.*

4.9

*Remove the central pin, insert the tractor draw-bar into the third point of the rake (A).*



4.10

*Insert the coupler to block the lower hydraulic lift arms (B-C) together with the stabilisers in order to avoid lateral oscillation during work.*

4.11

*At this stage, make sure you have a propeller shaft available.*

4.12

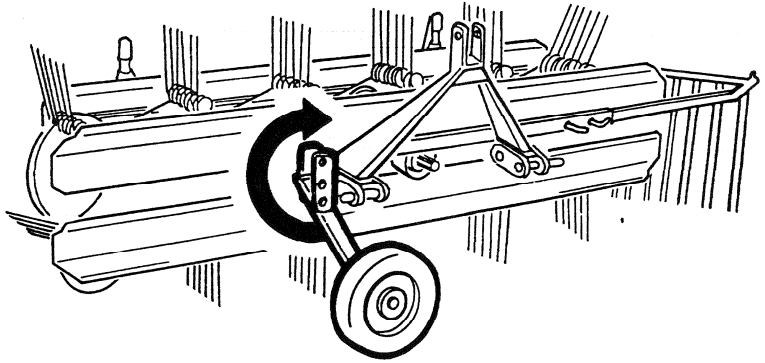
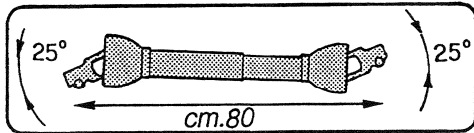
*Switch on the tractor engine and use the tractor's own hydraulic lift to move the rake feed shaft and the outlet shaft of the tractor power take-off horizontally as close as possible.*

4.13

*Switch off the tractor engine.*



## TRANSPORT AND INSTALLATION



### 4.14

Make sure that the propeller shaft complies with the safety directives of the sector. Installation of a propeller shaft which is not marked EC is forbidden, because this could cause **DANGER OF DEATH** to the people within its range.

### 4.15

Follow the instructions of the manufacturer of the propeller shaft and its protective device in order to insert the shaft and its protection first on to the tractor shaft, and then on to the Rake shaft. Take great care to check that the work angle does not exceed 25°.

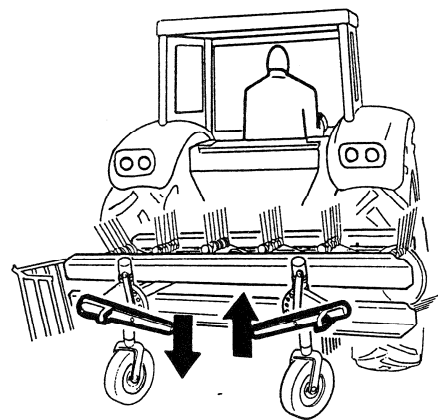
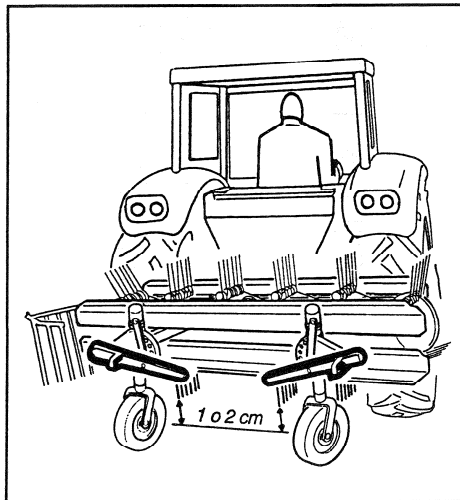
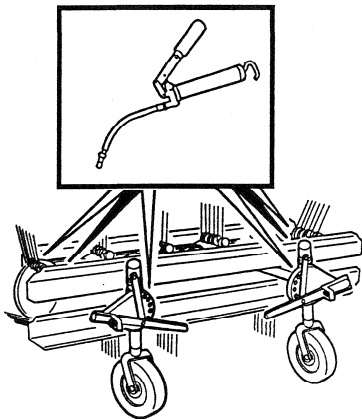
### 4.16

Once the Rake is attached to the tractor, the front wheel must be raised as follows:

- remove the "R"-shaped coupler;
- remove the wheel lock pin;
- turn the front support wheel upwards;
- insert the lock pin;
- then insert the "R"-shaped coupler to fasten the front wheel well.

The machine can be supplied with a drawbar (optional) for easy road transport.





## 5 PRECISION ADJUSTMENT AND START-UP

### WARNING – GENERAL DANGER

Before carrying out these operations, the operator must read and understand the Safety Precautions at the beginning of this handbook (part 2). Make sure that during these operations the tractor engine is switched off, i.e. the exerting force of the machine is zero.

Before starting the machine, proceed as follows;

#### 5.1

Lubricate the following parts:

- idle pulleys,
- rear struts,
- propeller shaft

#### 5.2

Make sure that tyre pressure is 2.2 Atm.

#### 5.3

Check belt tension and if necessary, shorten any stretching.




#### 5.4

Make sure that forage is collected without causing any excessive strain on the machine parts. Adjust the belt springs to approximately 1 or 2 cm. above ground level as follows:  
Lower the three points and use the two rear levers to adjust the distance above ground level.



<p><b>PRECISION ADJUSTMENT AND START-UP</b></p>		
<p><i>Now adjust the hay-guard and position it according to the amount of hay which has to be collected. Then fasten it into position with the special threaded pins.</i></p> <p><i>If you wish to turn, air and loosen, the belt Rake should be inclined as follows:</i></p> <ul style="list-style-type: none"> <li>- <i>completely lower one rear lever</i></li> <li>- <i>completely raise the other rear lever</i></li> <li>- <i>if the hay-guard has been mounted, it should be removed.</i></li> </ul> <p><b>5.5</b> <i>The machine is supplied with a cast iron pulley with two races in case the speed has to be varied according to the quantity of hay.</i></p> <p><b>5.6</b> <i>Before starting work, the tractor driver should make sure that:</i></p> <ul style="list-style-type: none"> <li>- <i>no animals, people or objects are within range of the machine;</i></li> <li>- <i>the ground is not uneven and there are no stones or solid objects which could shoot out from under the machine.</i></li> </ul> <p><b>5.7</b> <i>Whilst working, the operator must constantly make sure that no person or animal comes near the work area.</i></p>		



<p><b>6 HOW TO STOP THE MACHINE</b></p> <p><b>HOW TO STOP AT THE END OF THE DAY</b>  <i>The belt Rake can be stopped simply by switching off the tractor engine.</i></p> <p><b>HOW TO STOP AT THE END OF PRODUCTION</b>  <i>When production has finished, stop the machine:</i></p> <ul style="list-style-type: none"> <li>- <i>by switching off the tractor engine,</i></li> <li>- <i>by removing the three-point attachment from the tractor.</i></li> </ul> <p><b>AN EMERGENCY STOP</b>  <i>In an emergency, immediately switch off the tractor engine.</i></p> <p><b>7 CLEANING</b></p> <p><b>WARNING – GENERAL DANGER</b>  <i>Before carrying out these operations, the operator must read and understand the Safety Precautions at the beginning of this handbook (part 2).</i></p> <p><i>The belt Rake must be cleaned at the end of each working day.</i></p> <p><b>8 LUBRICATION</b></p> <p><b>WARNING – GENERAL DANGER</b>  <i>Before carrying out these operations, the operator must read and understand the Safety Precautions at the beginning of this handbook (part 2).</i></p> <p><i>Lubricating grease must be applied at the end of each working day to the following parts:</i></p> <ul style="list-style-type: none"> <li>- <i>idle pulleys,</i></li> <li>- <i>propeller shaft.</i></li> <li>- <i>rear struts.</i></li> </ul> <p><b>9 MAINTENANCE</b></p> <p><b>WARNING – GENERAL DANGER</b>  <i>Before carrying out these operations, the operator must read and understand the Safety Precautions at the beginning of this handbook (part 2).</i></p> <p><i>The machine has no need of any specific maintenance. Only the following operations should be carried out:</i></p> <ul style="list-style-type: none"> <li>- <i>Every 4 working hours tighten all the nuts and bolts.</i></li> <li>- <i>Every 8 working hours check belt tension and tighten the screws on each pulley group, if necessary.</i></li> </ul>	    	
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10 SPARE PARTS LIST

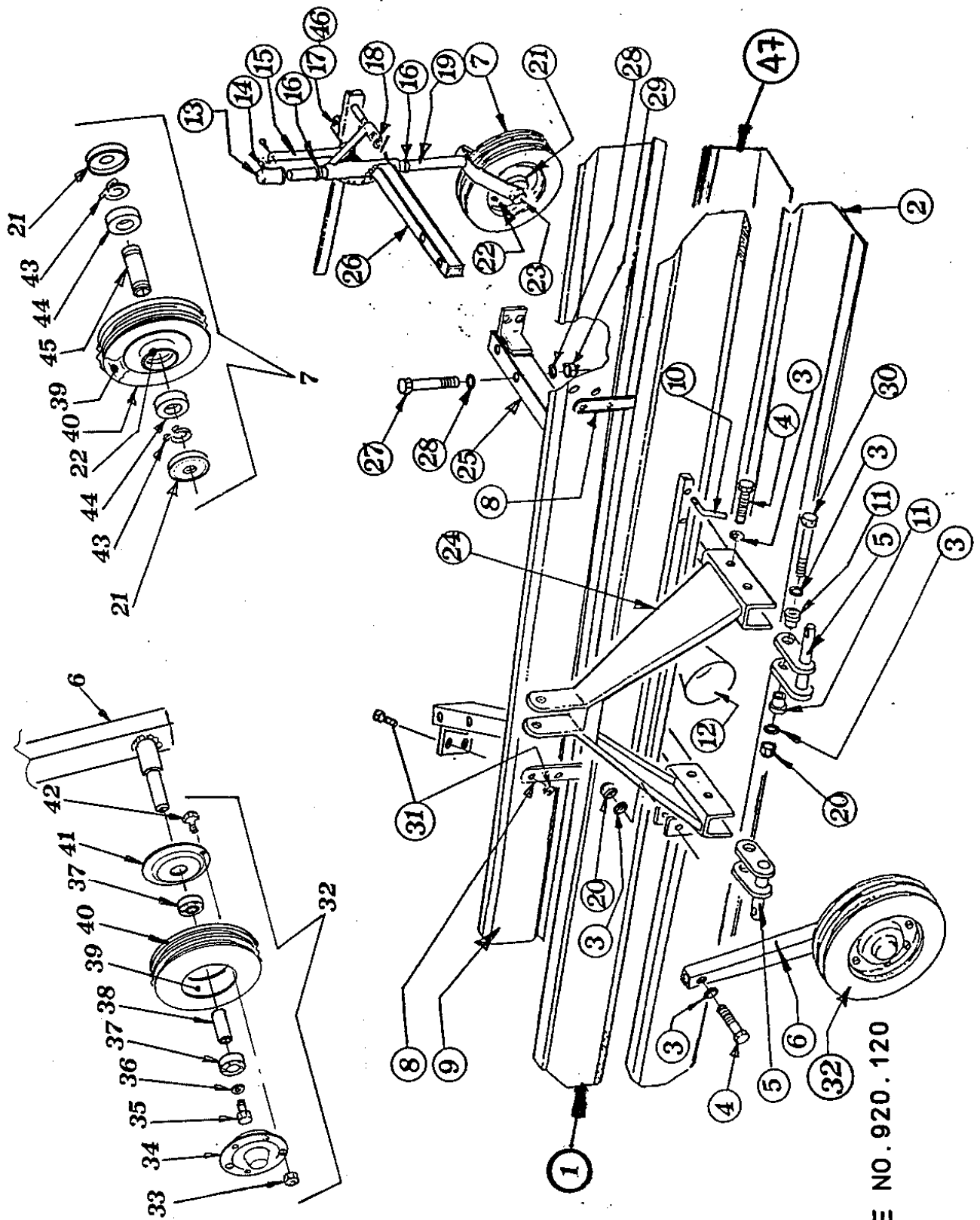


TABLE NO. 920. 120

TABLE NO. 920.120			
GS/160-190-220			
ITEM	PART/NO	DESCRIPTION	NOTE
1	210.779	FRONT CRANKCASE	GS 160
1	210.780	FRONT CRANKCASE	GS 190
1	210.781	FRONT CRANKCASE	GS 220
2	210.782	FRONT LOWER CRANKCASE	GS 160
2	210.783	FRONT LOWER CRANKCASE	GS 190
2	210.784	FRONT LOWER CRANKCASE	GS 220
3	600.188	WASHER	
4	600.737	SCREW	
5	210.785	HITCH	
6	210.786	SUPPORT	
7	600.785	WHEEL	
8	210.787	SUPPORT	
9	210.788	REAR CRANKCASE	GS 160
9	210.789	REAR CRANKCASE	GS 190
9	210.790	REAR CRANKCASE	GS 220
10	210.791	PIN	
11	210.792	BUSH	
12	610.233	PTO GUARD	
13	200.867	FORK BUSHING	
14	200.871	BUSHING	
15	200.870	LEVER ARM	
16	200.872	NYLON BUSHING	
17	200.868LH	LH LEVER, COMPLETE	REAR VIEW
18	200.873	WASHER	
19	200.869	STEM FORK	
20	600.625	NUT	
21	200.879	WHEEL WASHER	
22	600.784	REAR WHEEL RIM	
23	600.783	BOLT	
24	210.793	3RD POINT HITCH	
25	210.794	FRAME	GS 160
25	210.795	FRAME	GS 190
25	210.796	FRAME	GS 220
26	210.797	SUPPORT	
27	610.516	SCREW	
28	600.089	WASHER	
29	600.232	NUT	
30	610.517	SCREW	
31	610.518	BOLT	
32	610.719	WHEEL, ASSY	
33	600.652	NUT	
34	610.722	HALF RIM	
35	600.006	SCREW	
36	600.321	WASHER	
37	610.720	BEARING	
38	220.075	SPACER	
39	620.107	TUBE	
40	620.106	TIRE	
41	610.721	HALF RIM	
42	600.061	SCREW	
43	600.316	SNAP RING	
44	600.602	BEARING	
45	220.076	SPACER	
46	200.868RH	RH LEVER, COMPLETE	REAR VIEW
47	230.815	REAR CRANKCASE, LOWER	GS 160
47	230.816	REAR CRANKCASE, LOWER	GS 190
47	230.384	REAR CRANKCASE, LOWER	GS 220

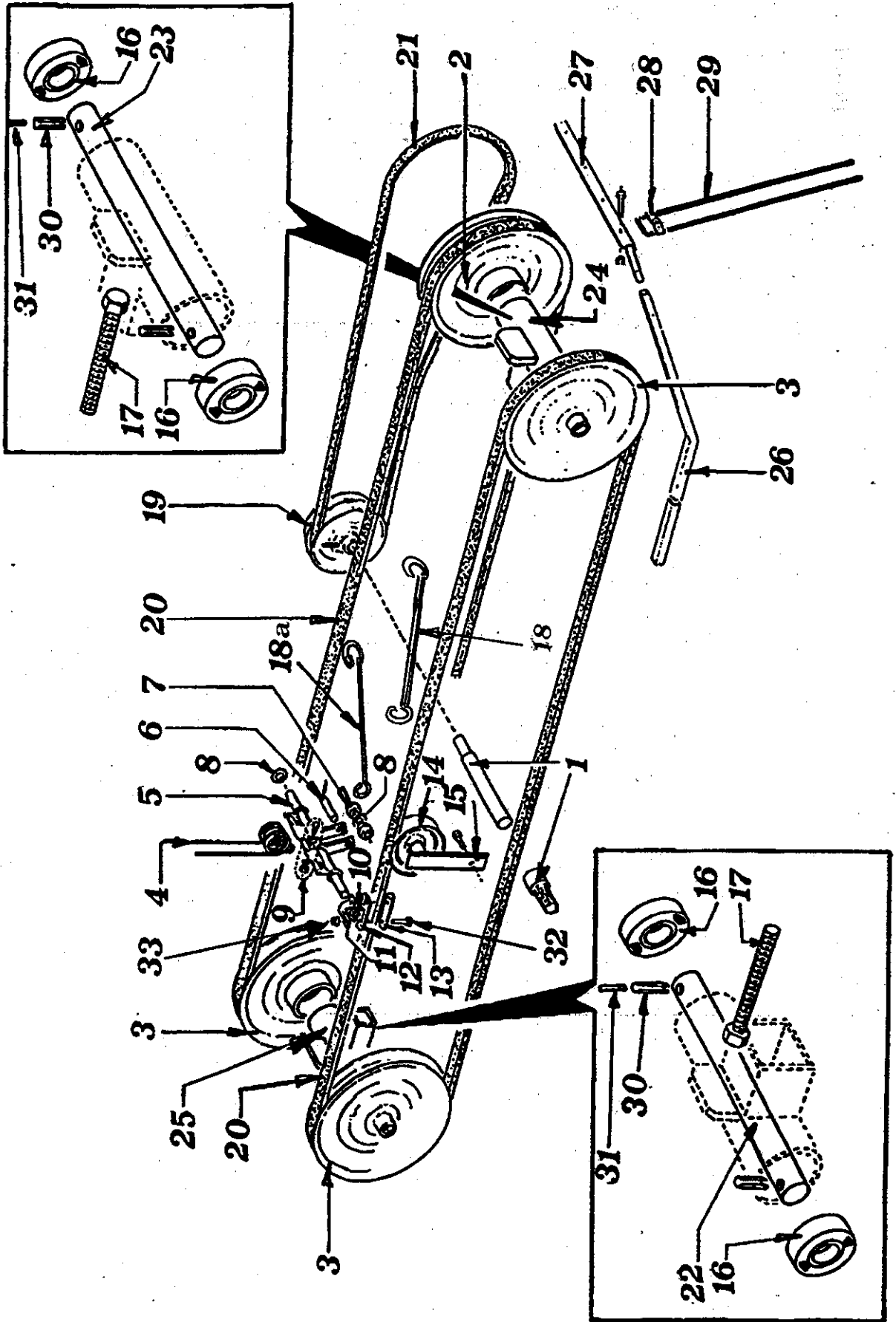
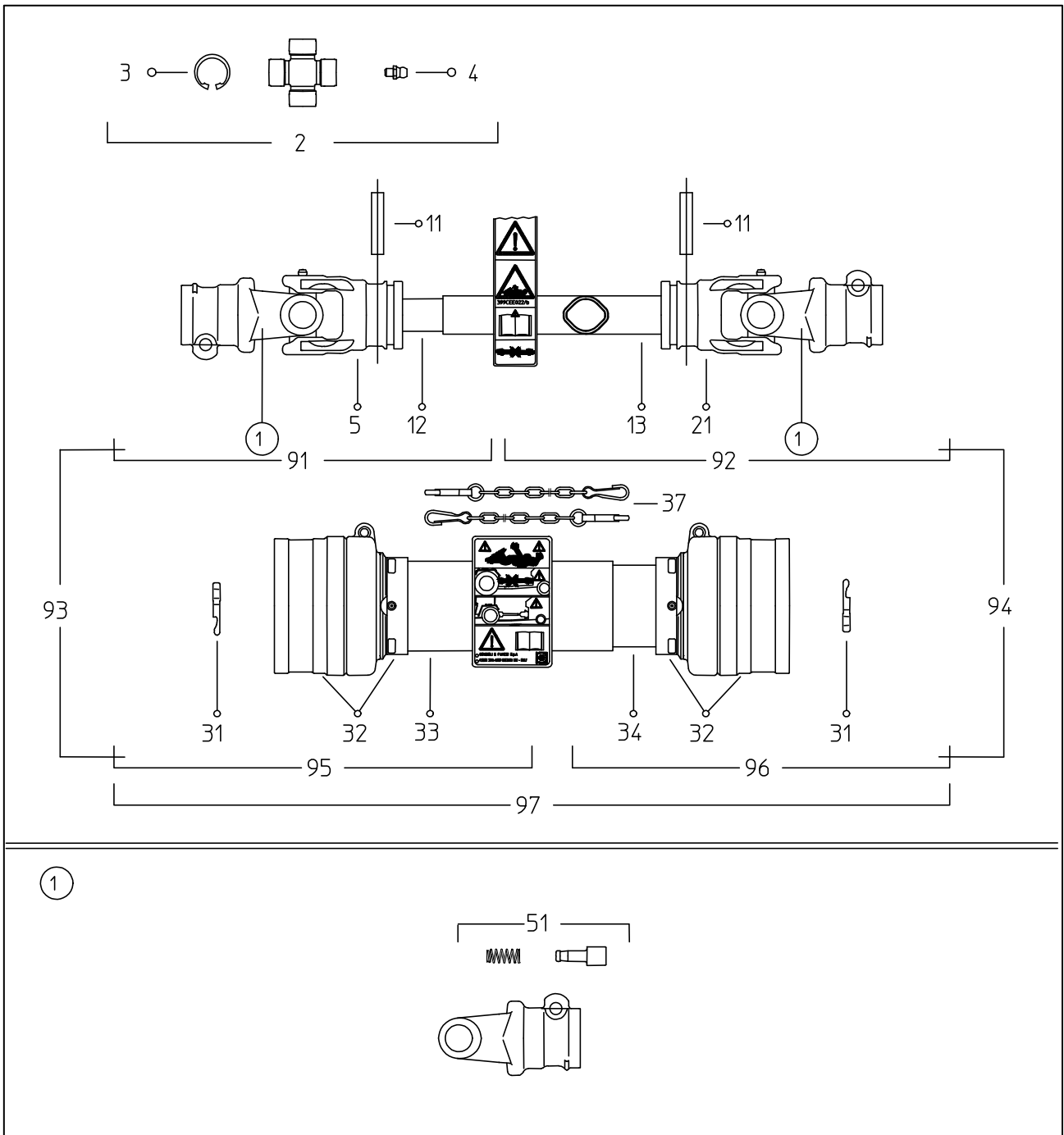
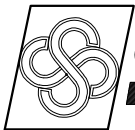


TABLE NO. 920.121			
GS/160-190-220			
ITEM	PART/NO	DESCRIPTION	NOTE
1	210.798	SHAFT	
2	210.799	PULLEY	
3	210.800	TINE PULLEY	
4	200.892	TINE	
5	200.893	TINE HOLDER	
6	200.894	TIEROD PIN	
7	200.895	NYLON BUSHING	
8	200.896	WASHER	
9	200.897	TINE FIX SCREW	
10	200.898	TINE SUPPORT	
11	200.899	UPPER SUPPORT	
12	200.900	CENTER SUPPORT	
13	200.901	LOWER SUPPORT	
14	200.902	BELT STRETCH.PULLEY	
15	200.903	SUPPORT	
16	600.609	BEARING	
17	610.519	SCREW	
18	200.906/RH	TIEROD	GS 190/220
18	210.807/RH	TIEROD	GS 160
18a	200.906/LH	TIEROD	GS 190/220
18a	210.807/LH	TIEROD	GS 160
19	210.801	PULLEY	
20A	600.786	BELT, COMPLETE	GS 190
20B	600.787	BELT	GS 190
20C	600.788	BELT, COMPLETE	GS 220
20D	600.789	BELT	GS 220
20E	610.508	BELT, COMPLETE	GS 160
20F	610.509	BELT	GS 160
21A	600.790	BELT	GS 190
21B	600.791	BELT	GS 220
21C	610.520	BELT	GS 160
22	210.802	SHORT SHAFT	
23	210.803	LONG SHAFT	
24	210.805	LONG SUPPORT	
25	210.804	SHORT SUPPORT	
26	210.806	RAKE ARM	
27	200.915	RAKE	
28	200.916	TINE HOLDER PLATE	
29	200.917	RAKE TINE	
30	600.584	SPRING PIN	
31	600.585	SPRING PIN	

**11 CARDAN SHAFT 610.458**



<b>CARDAN SHAFT 610.458</b>				
<b>ITEM</b>	<b>PART NO</b>	<b>Q.ty</b>	<b>DESCRIPTION</b>	<b>NOTE</b>
1	610.876	2	QUICK RELEASE YOKE	
2	610.877	2	CROSS JOURNAL SET	
3	610.878	8	ELASTIC RING	
1	610.879	2	GREASE NIPPLE	
5	610.880	1	YOKE FOR INNER HALF SHAFT	
11	610.881	2	SPRING PIN	
12	610.882	1	INNER HALF SHAFT	
13	610.883	1	OUTER HALF SHAFT	
21	610.884	1	YOKE FOR OUTER HALF SHAFT	
31	610.885	6	CLIP	
32	610.886	2	BASIC CONE	
33	610.887	1	OUTER HALF GUARD	
34	610.888	1	INNER HALF GUARD	
37	610.889	2	CHAIN	
51	610.890	2	COMPLETE PUSH BUTTON	
91	610.891	1	YOKE WITH INNER TUBE	
92	610.892	1	YOKE WITH OUTER TUBE	
93	610.893	1	INNER HALF SHAFT -WITH GUARD	
94	610.894	1	OUTER HALF SHAFT -WITH GUARD	
95	610.895	1	OUTER HALF GUARD WITH CONE	
96	610.896	1	INNER HALF GUARD WITH CONE	
97	610.897	1	COMPLETE GUARD	



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