

ROTARY TEDDERS

RT615 & RT685H

Operation & Parts Manual

Publication 514

February 2007



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Amendments

February 2007

Original Issue

EC DECLARATION OF CONFORMITY

Conforming to EEC Directive 89/392/EEC

We,

TWOSE OF TIVERTON LIMITED,
6 Chinon Court, Lower Moor Way,
Tiverton Business Park, Tiverton, Devon, EX16 6SS.

Declare under our sole responsibility that:

The product (*type*) Tractor Mounted Rotary Tedder

Product Code RT615H, RT685H

Serial No. & Date Type

Manufactured by the above company/*

.....
(insert business name and full address if not stated above)*

Complies with the required provisions of the Directive 89/392/EEC, and AMD 91/368/EEC, AMD 93/44/EEC, AMD 93/63/EEC and conforms with European Norm. BS EN 292.

Part 1: 1991 – Safety of Machinery – Terminology, methodology.

Part 2: 1991 – Safety of Machinery – Technical Specifications.

and other national standards associated with its design and construction as listed in the Technical File.

Signed 
on behalf of TWOSE of TIVERTON LIMITED *Responsible Person*

Chief Design Engineer February 2007
Status *Date*

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TECHNICAL DATA

Type	RT615 Model	RT685 Model
Number of rotors	6	6
Diameter of rotors	1.3m	1.5m
Number of tines / rotors	5 / 6	6
Angle of tines	16 - 20 Degrees	14 - 18 Degrees
Working capacity	6.2 ha/h	7 ha/h
Working width	6.0m	6.8m
Transport width	2.8m	2.95m
Width of the machine	6.3m	7.3m
Height	3.0m	3.6m
Length	1.9m	2.0m
Working speed up to	12 km/h	12 km/h
Weight	755 kg	790 kg
Necessary tractor power	44 kW / 20PS	44 kW / 20PS
PTO shaft speed	450-540 rpm	450-540 rpm
Rotor speed at 540 rpm PTO	194 rpm	175 rpm
Tyres	16x6.50-8	16x6.50-8
Frame	Adjustable	Adjustable
Hitch frame 3 point flexible	Pull type	Pull type
Lifting to transport position	Hydraulic	Hydraulic
PTO Shaft:		
Length between the joints (pull type hitch)	1010 mm	1350 mm
Safety coupling	900 Nm	1020 Nm

MACHINE RECORD PLATE

Information on the plate includes Machine Type, Serial Number and Weight. The machine type and serial number must always be quoted in all correspondence and when ordering parts.

DESCRIPTION

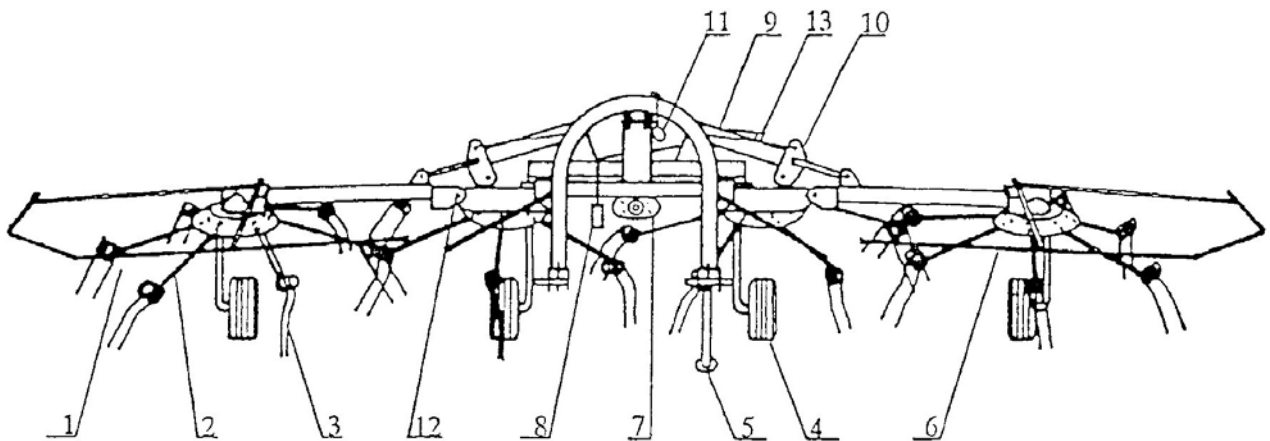
The RT615 & RT685 Rotary Tedders are specifically designed for forage tedding and spreading by means of rotating spring tines attached to rotors. Forward angled rotors contra-rotate against each other thus allowing the spring tines to gently rake, collect, turn and lay the forage behind the machine. Gentle airing and even scattering and tedding accelerates the drying process and reduces losses that result from plant crumbling. The need for extended drying time and dependency on spells of good weather is reduced to preserve valuable nourishing substances.

The tedder is constructed with support wheels so that the height of each rotor remains constant to the working surface; this allows the tedder to collect the forage cleanly and consistently in spite of its large working width and permits efficient operation on sloping or rough terrain. The spring tines are made of high quality steel and fixed in a manner that enables spring flexibility.

The machine can be attached to any type of tractor that has three point linkage and hydraulic connections. It machine is driven by a 'cardan' PTO shaft.

Setting the tedder into working or transport position is a simple and fast operation by means of hydraulic rams operated from the tractor cab. Work with the tedder is simple, safe and straight-forward.

GENERAL ARRANGEMENT



1. Side rotor
2. Spring tine arm
3. Spring tine
4. Support wheel
5. Jack stand
6. Protection rail
7. Protection of the P.T.O. shaft
8. Hydraulic tube
9. Hydraulic cylinder
10. Rotor hold/for transport position
11. Pull rope
12. Gear joint
13. Lifting and lowering speed adjusting screw

TEDDER WORK DEMONSTRATION

1. Scattering of cut grass
2. Swath scattering
3. Tedding
4. Tedding or scattering in side position

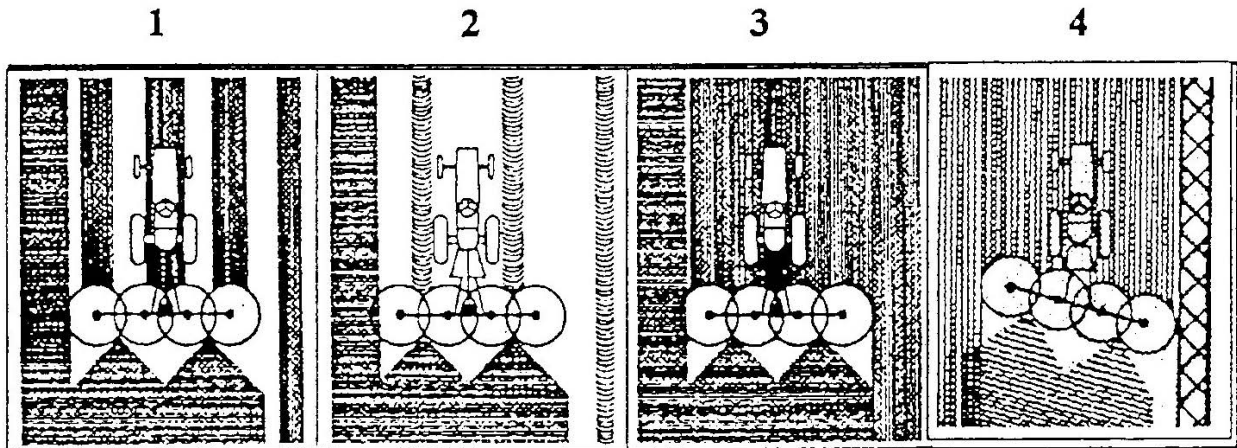

























Fig. 1

SAFETY INFORMATION

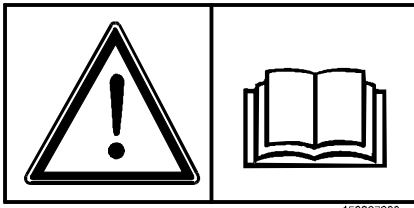
In the interest of safety it is important that great care is adopted at all times during the attachment, transportation, operation and maintenance of this machine. Both the owner and the operator of the machine should read and understand the following section to ensure the safety of themselves and all other persons who enter into the close proximity of these machines.

-  In addition to the instructions stated here always abide by general safety and accident regulations.
-  Safety and warning decals placed on the machine give important instructions for safe work - take them into consideration for your safety and the safety of others.
-  While driving on public roads always abide by traffic signs and road regulations.
-  Familiarise yourself with the controls and functions of the machine and practice them in a safe location before attempting to start work.
-  Never approach this machine whilst it is working or running – switch off the machine and wait until it has stopped fully before approaching.
-  Do not wear loose fitting clothes in the vicinity of this machine - clothes should fit tight to the user's body.
-  Check no one is near to, or on, the machine before attempting to start or transport it. Ensure your visibility is kept clear at all times.
-  Never permit anyone to ride on this machine.
-  Implements should always be attached according to the manufacturer's instructions and fastened correctly to the prescribed devices using the correct components.
-  When disconnecting the machine from the tractor select a firm level site and use the support leg.
-  Take care when connecting or disconnecting the implement to the tractor – keep onlookers at a safe distance.
-  Ensure controls for the machine are positioned such that the machine cannot accidentally be started during transport.
-  For transportation on the road, prepare and secure the machine according to the manufacturer's instructions.
-  Never leave the driver seat whilst the tractor or the machine is running.

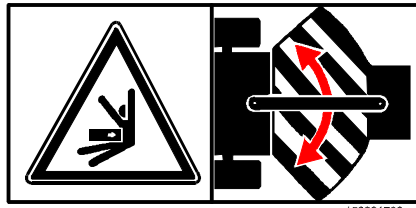
-  Always adjust the driving speed to suit the driving conditions. Avoid fast turning when driving uphill, downhill or across a slope. Braking performance and turning ability will be affected when implements are connected or mounted to the tractor - allow extra time for turning and braking.
-  Never attempt to operate a machine without its safety devices fitted or incorrectly secured.
-  Ensure all bystanders are kept at a safe distance from a moving or working machine.
-  Even when the machine is unattached some hydraulic or mechanical components on the machine are able to be rotated or moved by hand and are therefore capable of causing injury to fingers or hands due to trapping. Wherever possible secure these components during storage to prevent accidental injuries.
-  Always place the machine in a safe position before leaving the tractor - lower the implement completely, switch off the engine and remove the ignition key.
-  Never permit anyone between the machine and the tractor whilst either is working or when the machine is in a raised position.
-  Only use machines on a tractor that is capable of taking its weight - use weights or ballast as required ensuring stability of the unit.
-  Be aware at all times of the width, height and length of any machinery you are operating – especially when transporting on the public highway or near obstructions.
-  Ensure the work area is clear of obstructions before starting work – clear stones, wire, glass or any other dangerous objects from the work site before attempting to start work.

Although the information given here covers a wide range of safety subjects it is impossible to predict every eventuality that can occur under differing circumstances whilst operating this machine. No advice given here can replace 'good common sense' and 'total awareness' at all times but will go a long way towards the safe use of your Twose machine.

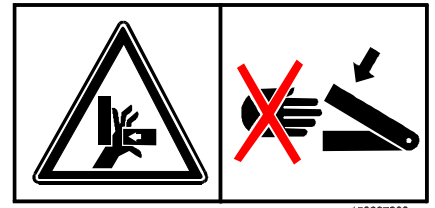
Safety Decals



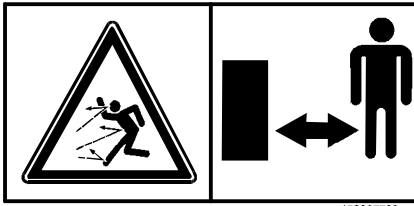
1.



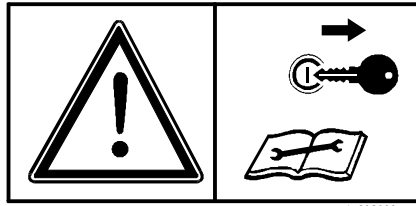
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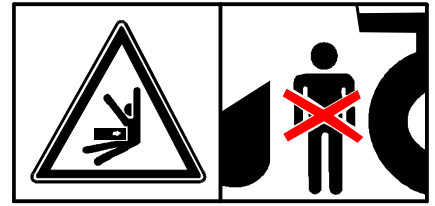
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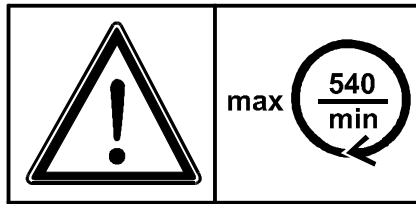
5.



6.



7.



8.

1. Read and observe the operator's manual.
2. Stay clear of articulation area while engine is running.
3. Never reach into the crushing danger area if risk of components moving.
4. Stay clear while engine is running.
5. Shut off engine and remove key before performing maintenance or repair work.
6. Stay clear of danger area between front attachment and machine.
7. Stay clear of swinging area of implements.
8. Maximum RPM and direction of rotation.

OPERATING THE MACHINE

When connecting the tedder on the tractor for the first time, check the length of the PTO shaft according to the PTO shaft manufacturer's manual. Use only PTO shafts with a built-in safety coupling.

Once the tedder has been attached to the 3 point linkage of the tractor do not forget to lift and secure the jack stand.

To place the machine into the working position it must be first lowered to the ground on the tractors linkage, pull the cord to release the transport locks and lower the outer wings on the hydraulic rams. The speed at which these rams operate can be altered by means of adjustment screws located on the ram cylinders – *it is advisable to keep the operating speed of the rams to a minimum in order to avoid damage.*

Before you start work remember pull out the transport safety pin on the top of the hitch frame to allow the tedder can follow the ground contours. *Refer to Fig. 2 below.*

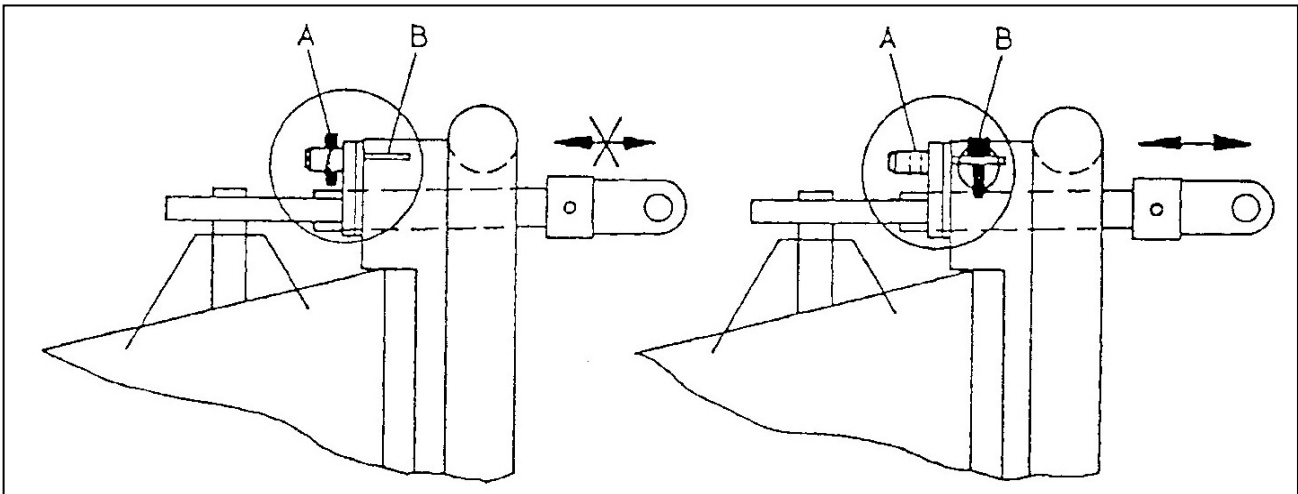


Fig. 2

When the tedder is in the working position the safety pin should be located in position 'B', when the tedder is in the transport position the safety pin should be located in position 'A'. Failure to observe the correct pin location may result in damage to the wheels and/or machine.

The tedders have a pivoting headstock enabling the machines to work either to the left or to the right. Stabilisers are fitted between the bow and the mainframe to combat sideways swinging during operation – for correct operation ensure the stabilisers are tightened.

When working in one of the side positions, the tedder throws the forage on one side only. You can tedd or scatter near fences, fields or ditches as the forage can be turned away from the obstacle.

The wheels are 'fixed' in one of three work positions during operation - the wheel position selected will dictate the working position of the machine, flexibility is retained by the pivoting headstock. The wheel positions available are:

- A – Straight,
- B – Right
- C – Left.

See Fig.3 on following page for illustrations of wheel positions.

Wheel Positions

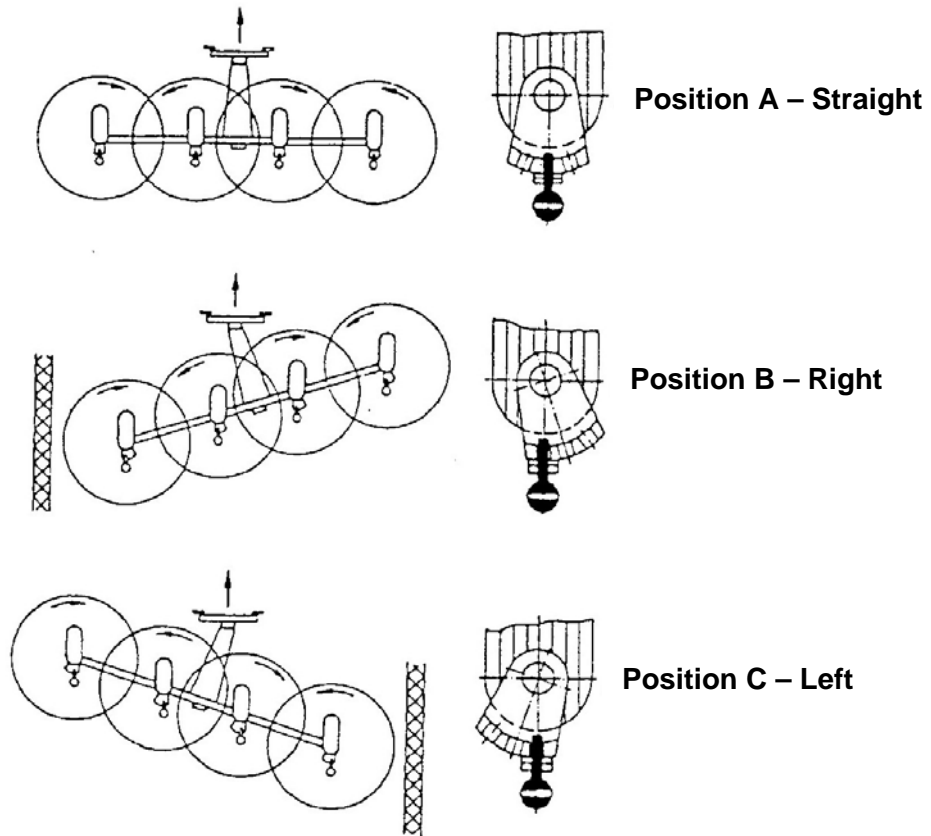


Fig. 3

In cases where there is little grass, begin tedding and scattering in the middle of the meadow in the side position to gather the forage together - see Fig. 4 below.

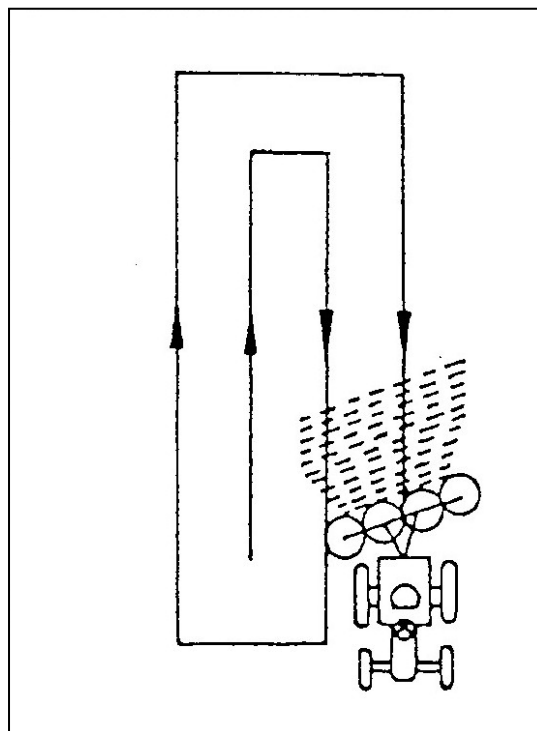


Fig. 4

Rotor Height

The rotor height can be adjusted in order to achieve the required clearance of the spring tines from the ground, adjustment is made with the upper tractor link - *ensure during work that the spring tines do not 'break' the surface of the ground as this may cause damage to the machine and also contaminate the forage with soil.*

Rotor Angle

The rotor angle can be adjusted to any one of three positions, the angle choices are 16°, 18° & 20° for RT615 models and 14°, 16° & 18° for RT685 models – angle setting is determined and selected by the choice of hole in the wheel axle fixing bracket the attachment bolt is located in. *Refer to Fig. 5 below.* The standard and most commonly used position is the centre hole position 'A' which gives a rotor angle of 18° for RT615 models and 16° for RT685 models. For large quantities of forage where more intensive scattering is required the rotor angle should be increased by selecting hole position 'B', alternatively, for lesser quantities of forage the rotor angle can be decreased by selection of hole position 'C'.

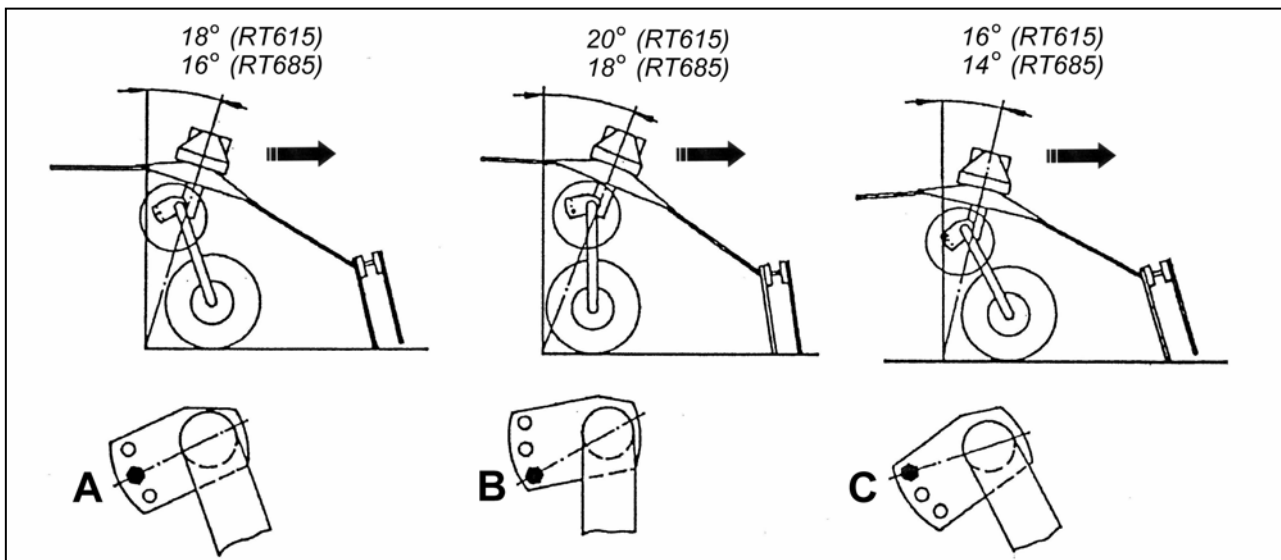


Fig. 5

CAUTION:

If your model of tedder is of the type that permits the outer rotors to be folded inwards for transport, the following must be observed before attempting the folding procedure:

- Release the bolts of the outer wheels, so that the wheels are freely movable and can be fixed into transport position.
- When folding the machine to the inward position rotate the tines slightly to ensure ample space for the tines to clear the hitch holder.
- Never attempt to power or operate the machine in the transport position – the machine must only be used in the work position when all the rotors are in the lowered position.

MAINTENANCE AND LUBRICATING

The maintenance of the tedder is not exacting but the following instructions should be applied in order to prolong the life of your machine.

DANGER

Never attempt to carry out any maintenance or lubrication whilst the machine is running – switch off the tractor's engine and pocket the key before proceeding.

- Check, and tighten (if required), all nuts, bolts and fixing after the first few hours of work and at regular intervals thereafter.
- Check daily (before and after operation) that the spring tines and their holders are securely fastened. Ensure inclined to the correct angle – see *Fig. 7 on following page.*
- Lubricate the PTO shaft as per stated in the manufacturer's handbook.
- Lubricate rotor drives using LIS 2 grease (or equivalent) every 10-15 working hours.
- Lubricate bolts on side rotor joints and double PTO shaft joints. The side rotors propulsion gears should be lubricated every 8 working hours.
- Gearbox use EP-O semi liquid grease and should be filled up to the stopper – check levels on a regular basis and top up as required.
- The rotor gear boxes must be lubricated every 10 to 15 working hours.

Refer to diagram below (*Fig. 6*) for the location and frequency of the machines lubrication points.

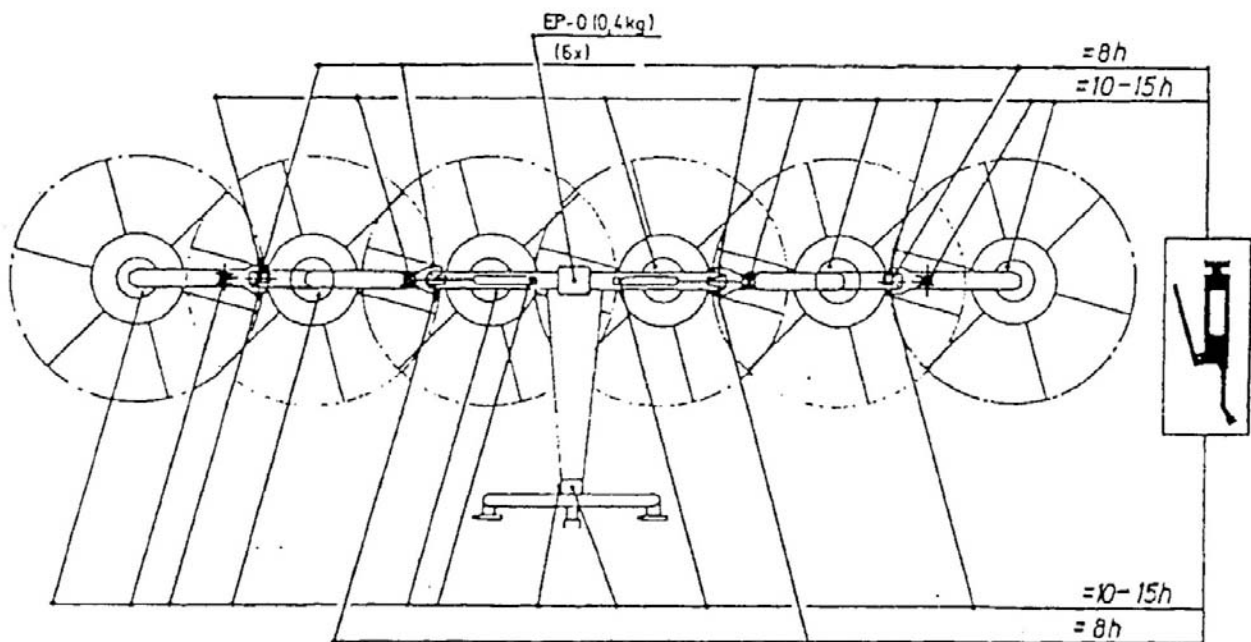


Fig. 6

- Regularly check the tyre pressure, the pressure should be 2 bars.
- Lubricate all flexible points on the machine. Sealed bearings where fitted are lubricated for life and therefore will not require any additional lubrication.
- When fitting the hitch frame on the tedder's housing, fully tighten the M16x30 bolt and for extra security bend up the extending edges of the tab washers against the bolt head – see Fig. 8.

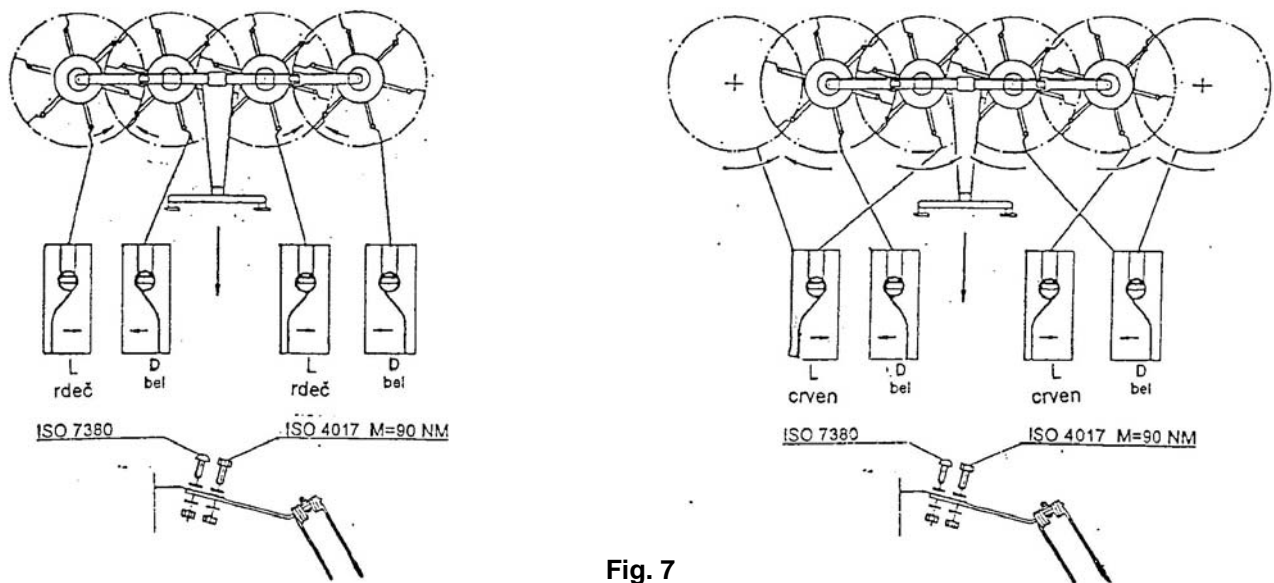


Fig. 7

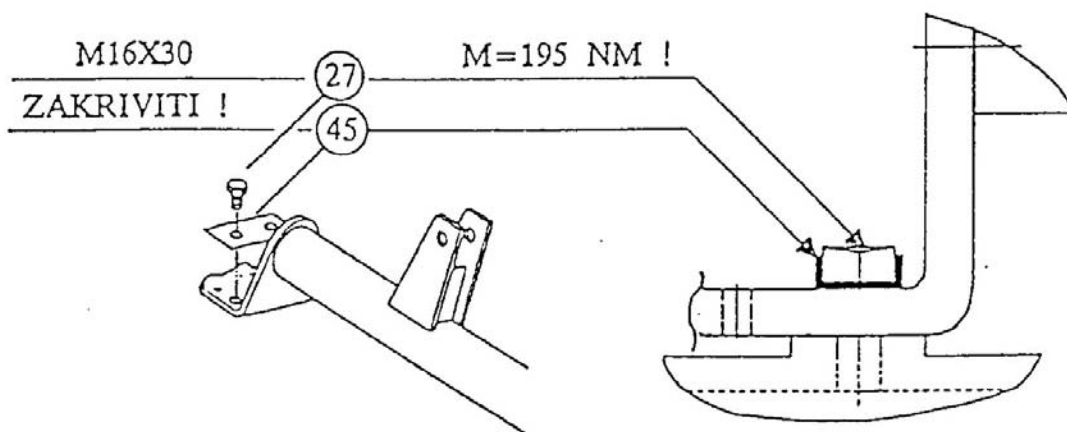


Fig. 8

PERIODIC ATTENTION

A thorough check and overhaul is necessary for the tedder every year. The tedder should be overhauled from time to time during the year to see if lubricating or maintenance is needed.

Overhaul consists of:

- Cone drives examination.
- Examination of the hydraulic safety mechanism for transport.
- Spring tines adjustment.
- Examination of PTO shaft protections.
- Lubrication according to the instructions for maintenance and lubrication.

STORAGE

The machine should be stored on a firm level site in a safe, clean and dry location where it is protected from the elements. It is advisable that prior to storage of the tedder at the end of the season that the machine be lubricated thoroughly and the opportunity taken to check the machine for worn or damaged parts - replacements can then be ordered and fitted so that the machine is ready for the next seasons work.

Parts Section

For best performance...

USE ONLY GENUINE TWOSE SERVICE PARTS

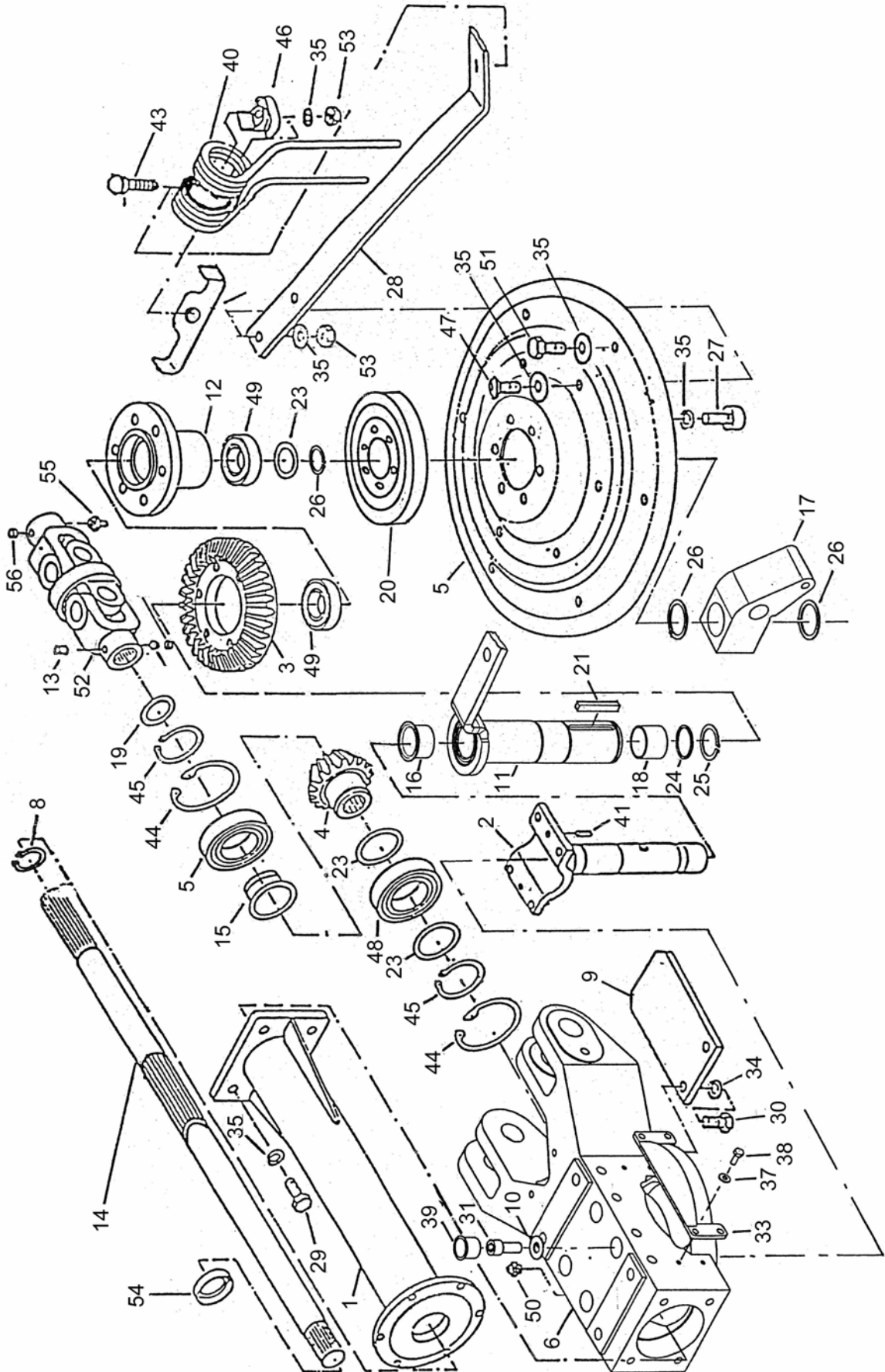
To be assured of the latest design improvements purchase your 'Genuine Replacements' from the Original Equipment Manufacturer through your local Dealer or Stockist.

Always quote:

- *Machine Type*
- *Serial Number*
- *Part Number*

Design Improvements may have altered some of the parts listed in this manual – The latest part will always be supplied when it is interchangeable with an earlier one.

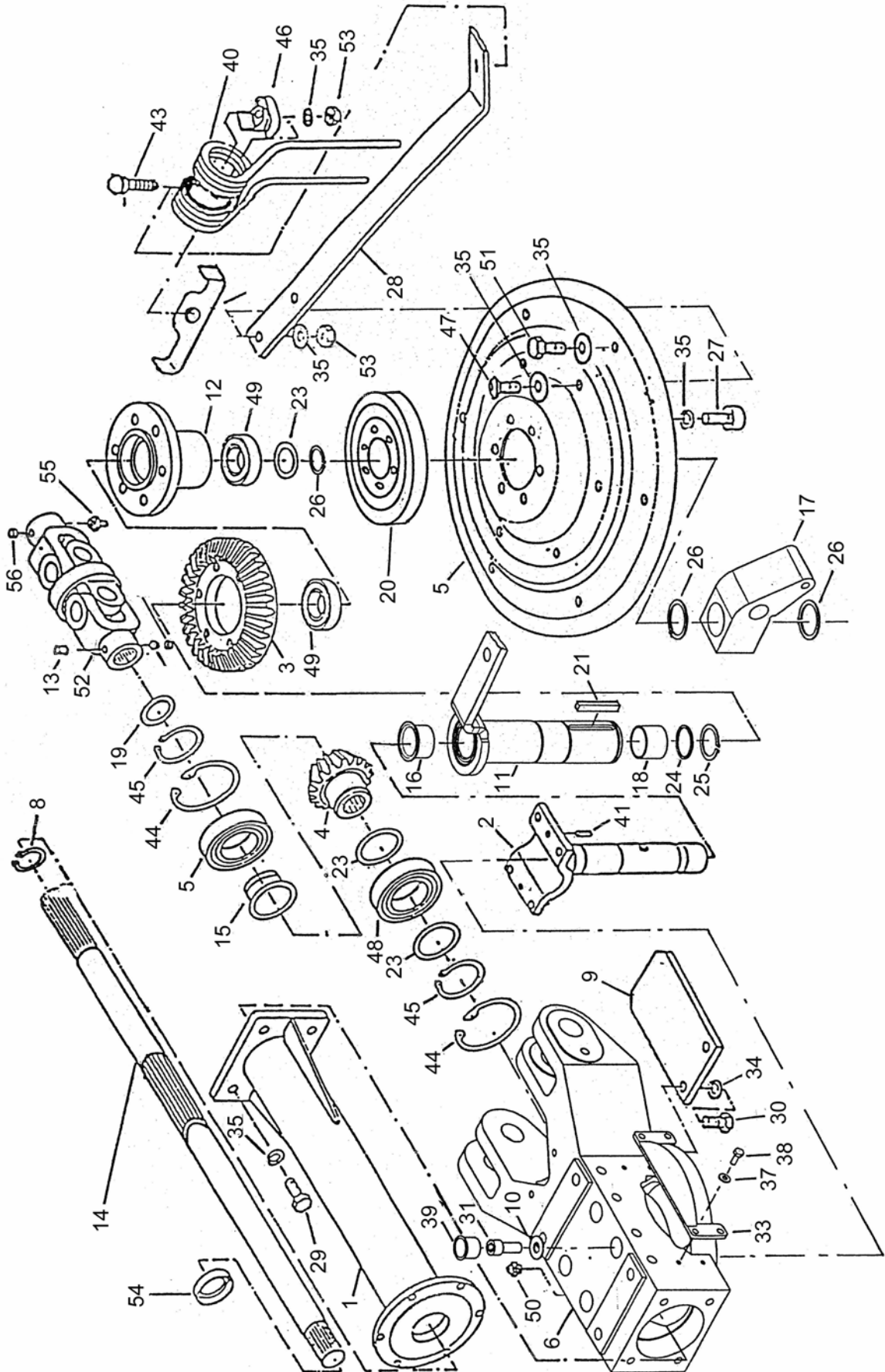
RT615 & RT685 - DRIVE ASSEMBLY (1)



REF.	QTY.	PART No.	DESCRIPTION
RT615 & RT685 - DRIVE ASSEMBLY (1)			
1	1	1021302	TUBE - L/H (RT615 Models)
	1	1021304	TUBE - R/H (RT615 Models)
	1	1022142	TUBE - L/H (RT685 Models)
	1	1022143	TUBE - R/H (RT685 Models)
2	2	1022312	AXLE
3	2	1022313	BEVEL GEAR
4	2	1022314	BEVEL GEAR
5	2	1022456	ROTOR PLATE (RT615 Models)
	2	1022315	ROTOR PLATE (RT685 Models)
6	1	1022316	HOUSING 1
7	1	1022317	HOUSING 2
8	2	1021080	CIRCLIP
9	2	1022146	PLATE
10	8	1022337	WASHER
11	2	1022318	STEERING TUBE
12	2	1022319	FLANGE
13	2	1022173	PLUG
14	1	1022457	SHAFT - L/H (RT615 Models)
	1	1021286	SHAFT - R/H (RT615 Models)
	1	1022320	SHAFT - L/H (RT685 Models)
	1	1022321	SHAFT - R/H (RT685 Models)
15	2	1022322	SLEEVE
16	2	1022323	SLEEVE
17	2	1022324	WHEEL HOLDER
18	2	1022325	SLEEVE
19	2	1021511	SHIM SET
20	2	1022154	PROTECTION PLATE
21	2	1022326	KEY
22	2	1021179	NUT
23	6	1021703	SHIM SET
24	2	1021618	SHIM
25	2	1021080	CIRCLIP
26	6	1022170	CIRCLIP
27	12	1022327	SCREW
28	10	1021303	SPRING TINE HOLDER (RT615 Models)
	12	1022328	SPRING TINE HOLDER (RT685 Models)
29	8	1022329	SCREW
30	4	1022158	SCREW
31	8	1022330	SCREW
32	2	1022160	SCREW
33	2	1022331	PROTECTION BRUSH
34	4	1022162	WASHER
35	80	1021100	WASHER
36	8	1022332	WASHER

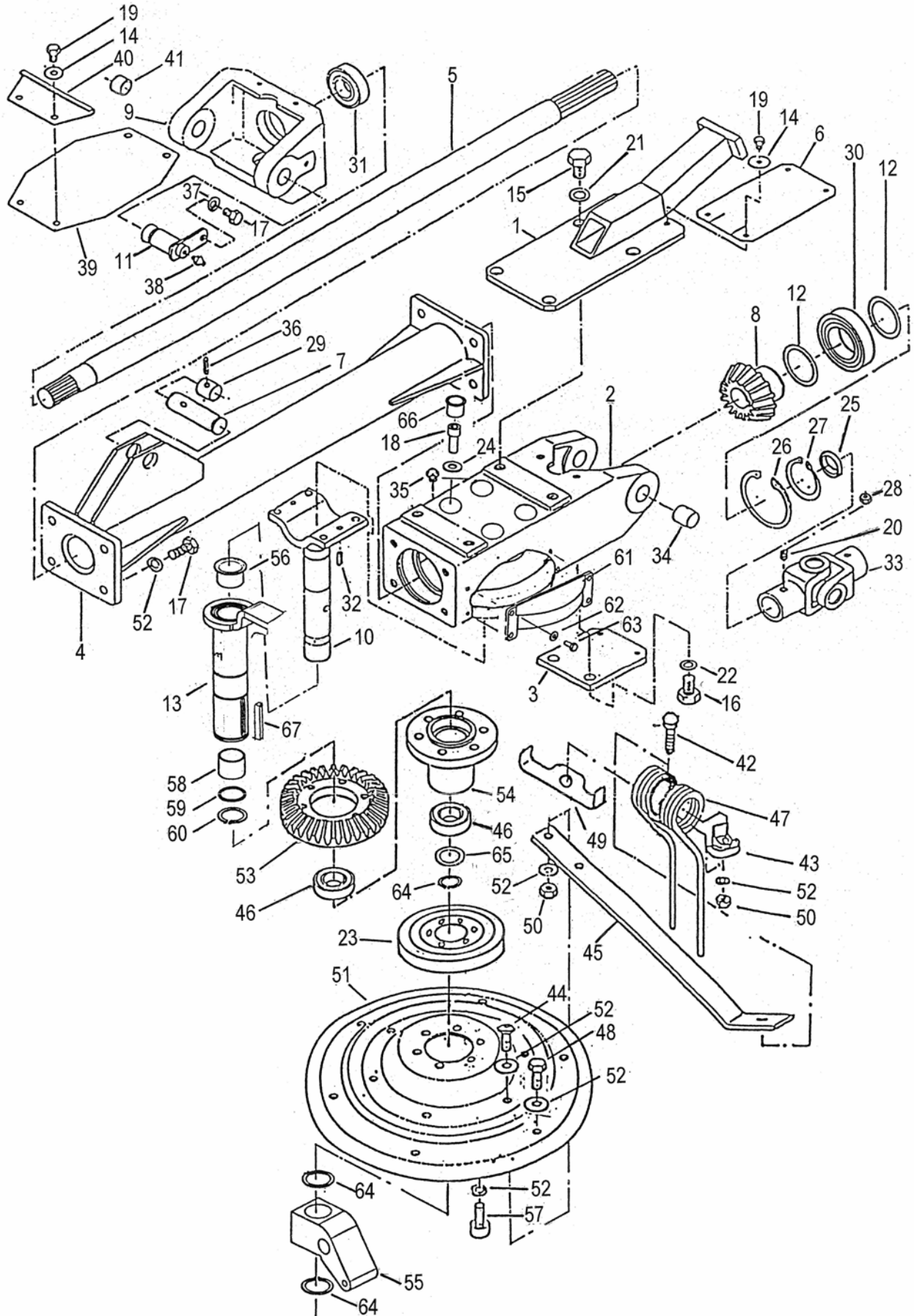
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RT615 & RT685 - DRIVE ASSEMBLY (1) - Continued



REF.	QTY.	PART No.	DESCRIPTION
			RT615 & RT685 - DRIVE ASSEMBLY (1)
37	8	1022333	WASHER
38	8	1021803	SCREW
39	8	1022334	PLUG INNER
40	5	1021274	SPRING TINE - L/H (<i>RT615 Models</i>)
	5	1021273	SPRING TINE - R/H (<i>RT615 Models</i>)
	6	1021274	SPRING TINE - L/H (<i>RT685 Models</i>)
	6	1021273	SPRING TINE - R/H (<i>RT685 Models</i>)
41	4	1022167	ROLL PIN
42	12	1021272	SPRING TINE PROTECTION
43	12	1021955	SCREW
44	4	1022169	CIRCLIP
45	4	1022170	CIRCLIP
46	10	1021270	SPRING TINE SEATING (<i>RT615 Models</i>)
	12	1021270	SPRING TINE SEATING (<i>RT685 Models</i>)
47	12	1021787	SCREW
48	4	1021253	BEARING
49	4	1022193	BEARING
50	2	1021222	NIPPLE
51	12	1021990	SCREW
52	2	1021257	DOUBLE JOINT
53	36	1021178	NUT
54	1	1022335	SEAL
	1	1022336	SEAL
55	2	1021063	NIPPLE
56	2	1022172	PLUG

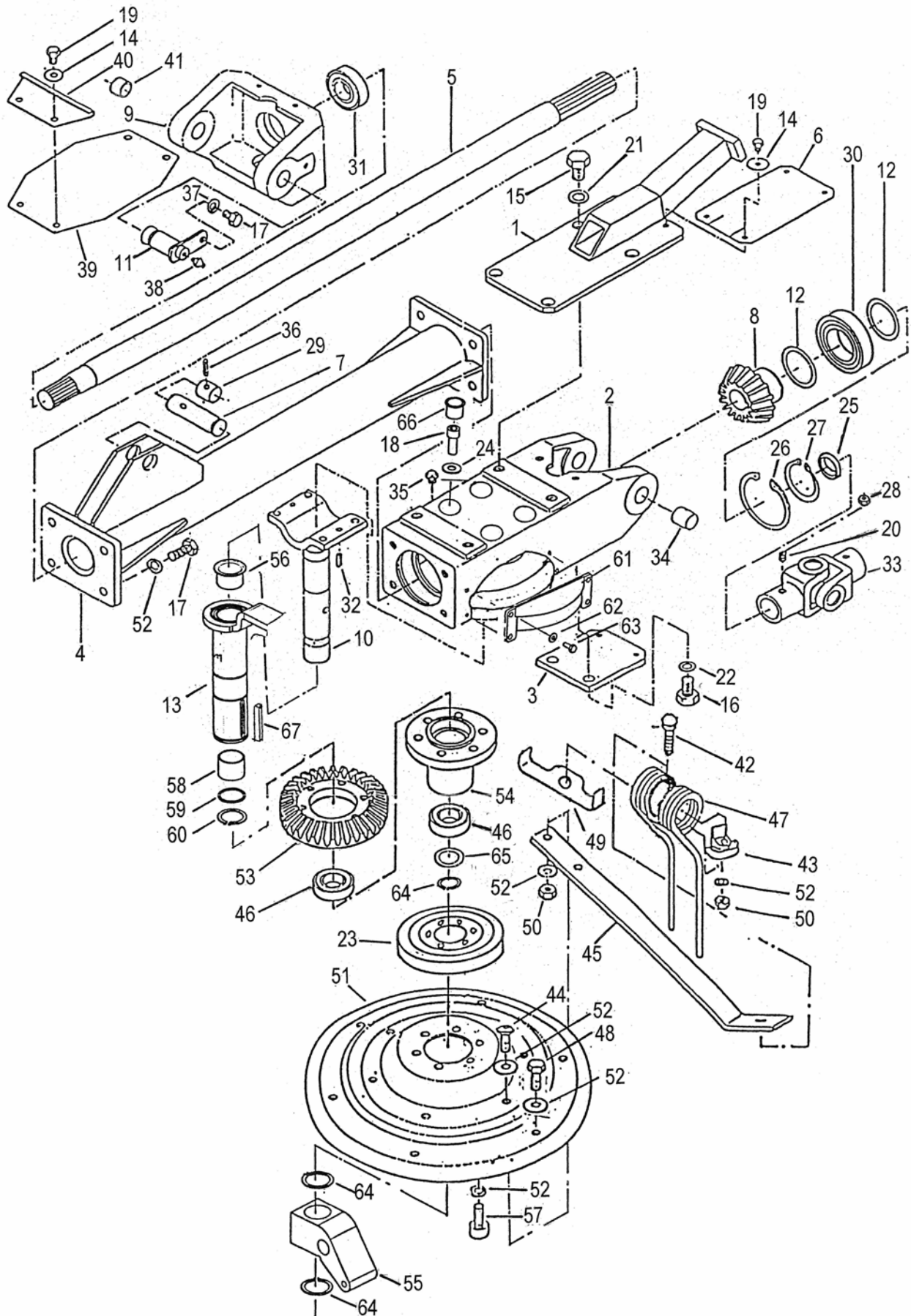
RT615 & RT685 - DRIVE ASSEMBLY (2)



REF.	QTY.	PART No.	DESCRIPTION
			RT615 & RT685 - DRIVE ASSEMBLY (2)
1	2	1022338	LIFTING LIMITER
2	1	1022339	GEARBOX HOUSING - R/H
	1	1022340	GEARBOX HOUSING - L/H
3	2	1022341	LIMITER PLATE
4	2	1021305	TUBE MIDDLE (<i>RT615 Models</i>)
	2	1022342	TUBE MIDDLE (<i>RT685 Models</i>)
5	2	1021287	SHAFT (<i>RT615 Models</i>)
	2	1022343	SHAFT (<i>RT685 Models</i>)
6	2	1022344	DUST PROTECTION
7	2	1022345	PIN
8	2	1021266	BEVEL GEAR
9	2	1022346	FORKS
10	2	1022312	AXLE
11	4	1022178	PIN
12	4	1021703	WASHER SET
13	2	1022318	STEERING TUBE
14	16	1022036	WASHER
15	8	1021641	SCREW
16	4	1022158	SCREW
17	20	1022329	SCREW
18	8	1022330	SCREW
19	16	1022182	SCREW
20	2	1022160	SCREW
21	8	1022217	WASHER
22	4	1022162	WASHER
23	2	1022154	PROTECTION
24	8	1022332	WASHER
25	2	1022347	SLEEVE
26	2	1022169	CIRCLIP
27	2	1022170	CIRCLIP
28	2	1021179	NUT
29	2	1022348	SLEEVE
30	2	1021253	BEARING
31	2	1021250	BEARING
32	4	1022167	LINCH PIN
33	2	1022349	CARDAN JOINT
34	4	1021108	SLEEVE
35	2	1021222	NIPPLE
36	2	1022350	LINCH PIN
37	4	1021100	WASHER
38	4	1021063	NIPPLE
39	2	1022297	DUST PROTECTION
40	2	1022181	PLATE
41	4	1022183	SLEEVE
42	12	1021955	SCREW
43	12	1021270	SPRING TINE HOLDER

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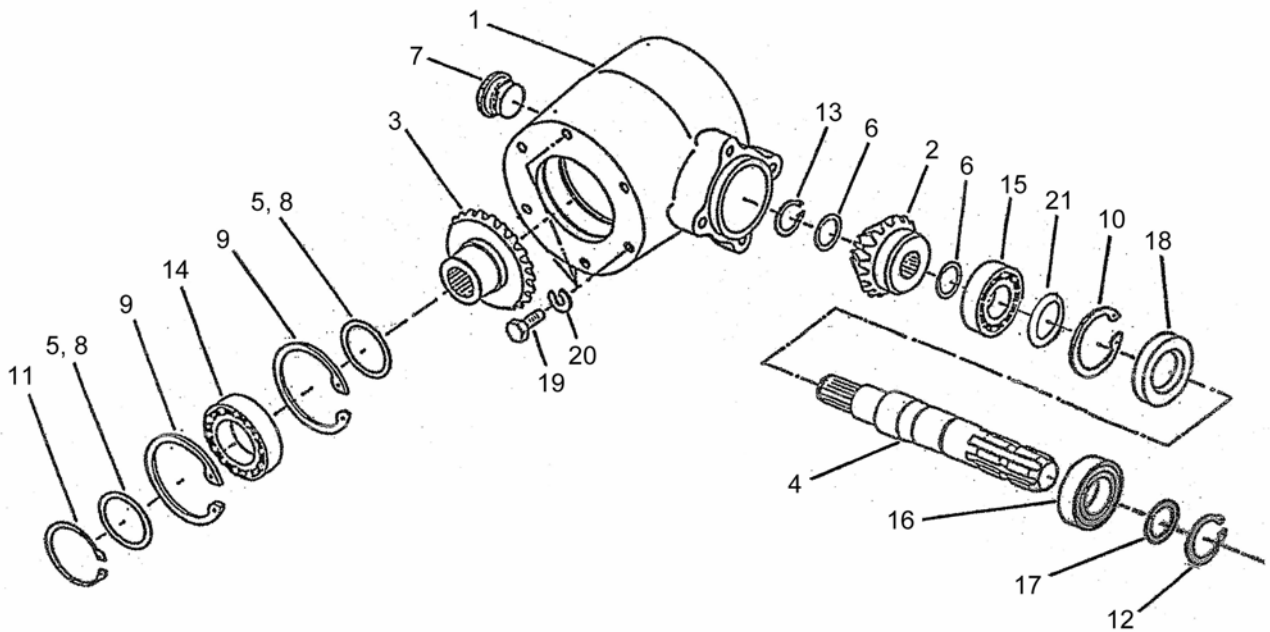
RT615 & RT685 - DRIVE ASSEMBLY (2) - Continued



REF.	QTY.	PART No.	DESCRIPTION
			RT615 & RT685 - DRIVE ASSEMBLY (2)
44	12	1021787	SCREW
45	10	1022328	SPRING TINE ARM (<i>RT615 Models</i>)
	12	1022328	SPRING TINE ARM (<i>RT685 Models</i>)
46	4	1022193	BEARING
47	5	1021273	SPRING TINE - R/H (<i>RT615 Models</i>)
	5	1021274	SPRING TINE - L/H (<i>RT615 Models</i>)
	6	1021273	SPRING TINE - R/H (<i>RT685 Models</i>)
	6	1021274	SPRING TINE - L/H (<i>RT685 Models</i>)
48	12	1021990	SCREW
49	12	1021272	SAFETY CLAMP
50	36	1021178	NUT
51	2	1022456	ROTOR PLATE (<i>RT615 Models</i>)
	2	1022315	ROTOR PLATE (<i>RT685 Models</i>)
52	88	1021100	WASHER
53	2	1022313	BEVEL GEAR
54	2	1022319	HUB
55	2	1022324	WHEEL HOLDER
56	2	1022323	SLEEVE
57	12	1022327	SCREW
58	2	1022325	SLEEVE
59	2	1021618	WASHER
60	2	1021080	CIRCLIP
61	2	1022331	PROTECTION BRUSH
62	8	1022333	WASHER
63	8	1021803	SCREW
64	6	1022170	CIRCLIP
65	2	1021703	WASHER SET
66	8	1022334	PLASTIC PLUG
67	1	1022326	KEY

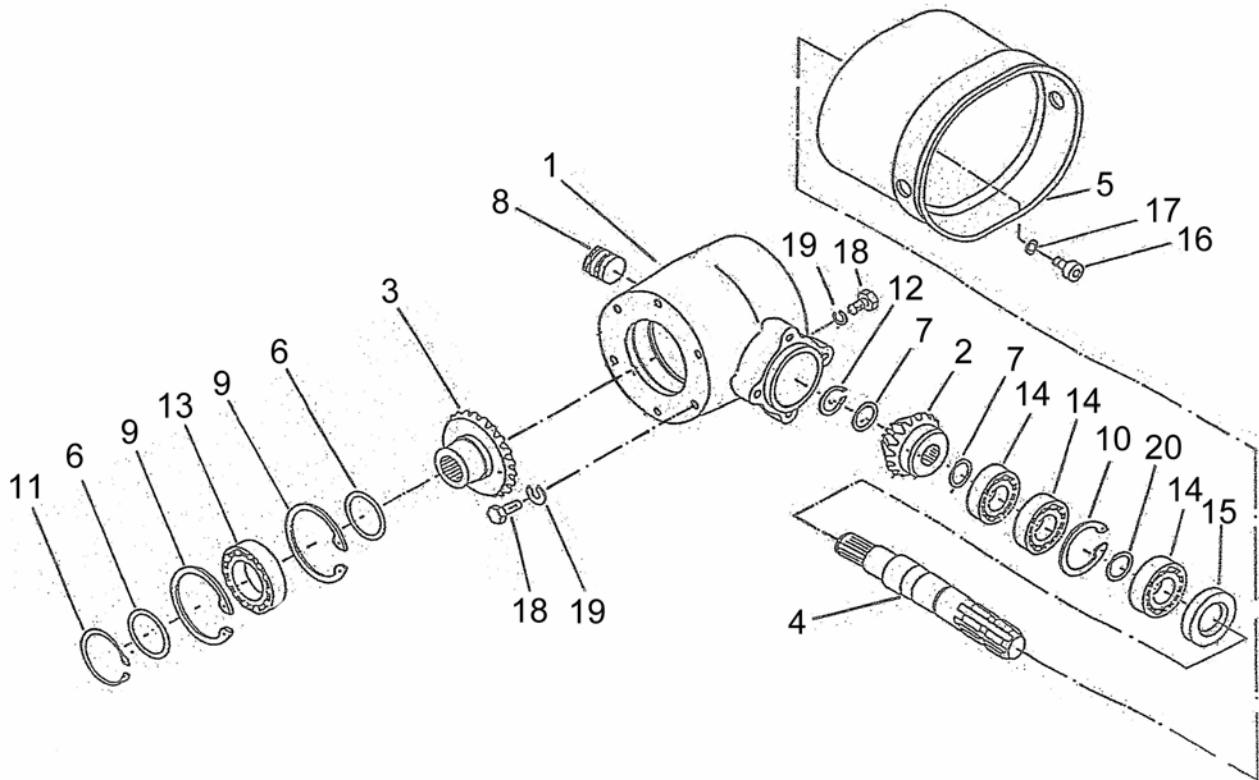
REF.	QTY.	PART No.	DESCRIPTION
			RT615 & RT685 - DRIVE ASSEMBLY 3
1	2	1021306	TUBE (<i>RT615 Models</i>)
	2	1022351	TUBE (<i>RT685 Models</i>)
2	2	1022352	AXLE
3	2	1021288	OUTER SHAFT (<i>RT615 Models</i>)
	2	1022353	OUTER SHAFT (<i>RT685 Models</i>)
4	2	1022354	FORKS
5	2	1021285	ROTOR PLATE (<i>RT615 Models</i>)
	2	1022144	ROTOR PLATE (<i>RT685 Models</i>)
6	2	1021266	BEVEL GEAR
7	2	1022355	GEARBOX HOUSING
8	2	1021260	BEVEL GEAR
9	4	1021703	WASHER SET
10	2	1022356	HUB CASTING
11	20	1022157	SCREW
12	2	1022357	STEERING LEVER
13	2	1022358	SLEEVE
14	2	1022359	WHEEL HOLDER
15	2	1021166	LINCH PIN
16	2	1022154	PROTECTION
17	2	1022169	CIRCLIP
18	2	1022170	CIRCLIP
19	2	1021062	CIRCLIP
20	2	1021253	BEARING
21	2	1021250	BEARING
22	2	1022360	LINCH PIN
23	4	1022361	PIN
24	12	1022156	SCREW
25	10	1021303	SPRING TINE ARM (<i>RT615 Models</i>)
	12	1022328	SPRING TINE ARM (<i>RT685 Models</i>)
26	2	1022362	O RING GASKET
27	2	1022180	PIN
28	2	1022165	LINCH PIN
29	2	1022168	LINCH PIN
30	12	1021955	SCREW
31	4	1021097	SCREW
32	92	1021100	WASHER
33	5	1021274	SPRING TINE - L/H (<i>RT615 Models</i>)
	6	1021274	SPRING TINE - L/H (<i>RT685 Models</i>)
	5	1021273	SPRING TINE - R/H (<i>RT615 Models</i>)
	6	1021273	SPRING TINE - R/H (<i>RT685 Models</i>)
34	12	1021272	SAFETY CLAMP
35	4	1021154	LINCH PIN
36	2	1021222	NIPPLE
37	12	1021270	TINE PAD
38	12	1021787	SCREW
39	4	1022193	BEARING
40	12	1021990	SCREW
41	36	1021178	NUT

RT615 - GEARBOX ASSEMBLY



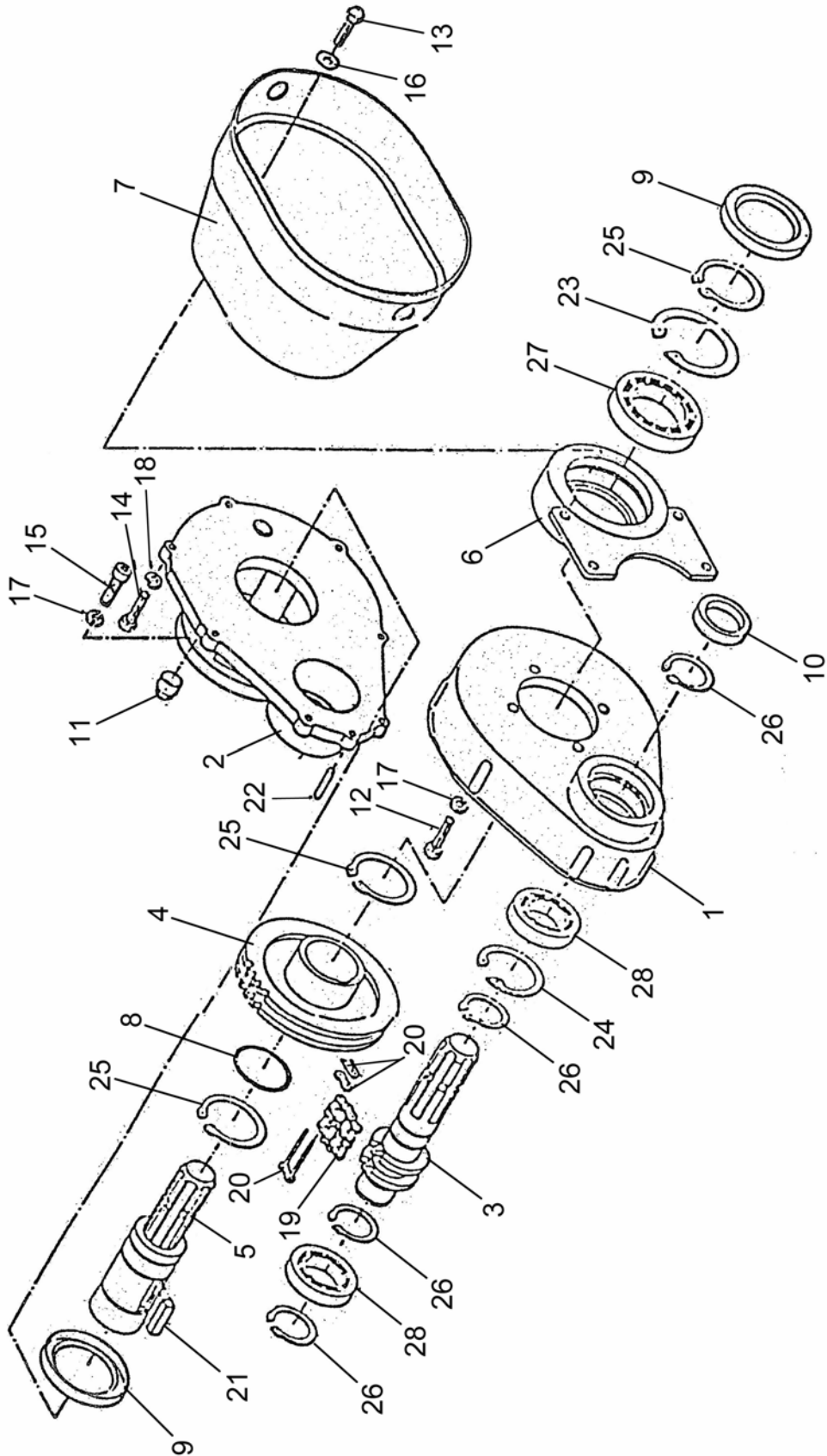
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - GEARBOX ASSEMBLY
	1	1022197	GEARBOX COMPLETE
1	1	1022184	GEARBOX HOUSING
2	1	1021300	CONE GEAR
3	1	1022458	CONE GEAR
4	1	1022185	SHAFT
5	2	1022187	SPACING RING
6	1	1021511	SPACING RING
7	1	1022188	PLUG
8	2	1022189	SPACING RING
9	1	1021972	CIRCLIP
10	1	1021701	CIRCLIP
11	1	1022130	CIRCLIP
12	1	1021080	CIRCLIP
13	2	1021162	CIRCLIP
14	1	1022191	BEARING
15	1	1022459	TAPERED BEARING
16	1	1022193	BEARING
17	1	1022369	WASHER
18	1	1022194	OIL SEAL
19	8	1022196	SCREW
20	8	1022163	WASHER
21	1	1022190	WASHER

RT685 - GEARBOX ASSEMBLY



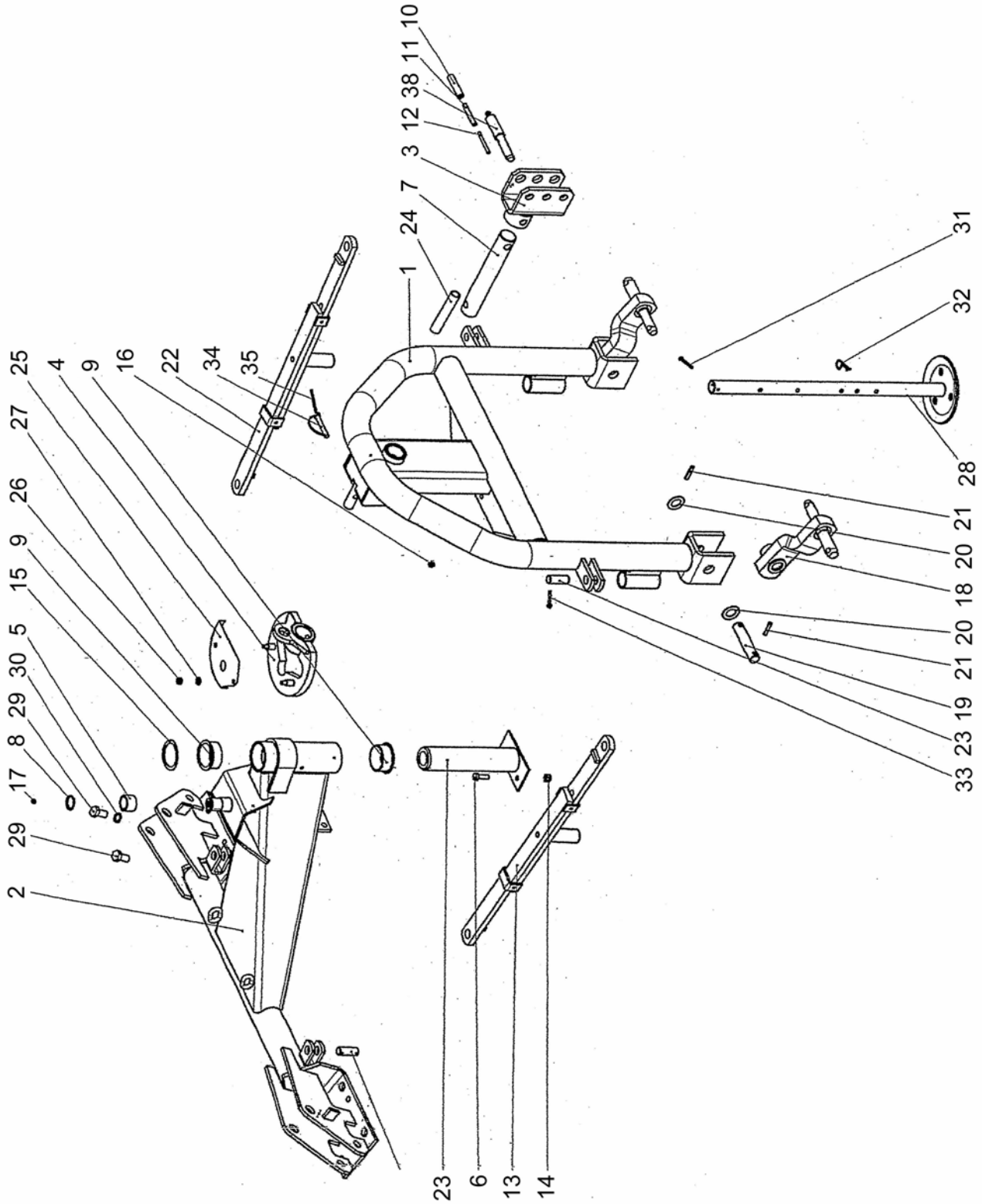
REF.	QTY.	PART No.	DESCRIPTION
	1	1022378	RT685 - GEARBOX ASSEMBLY GEARBOX COMPLETE
1	1	1022364	GEARBOX HOUSING
2	1	1022365	PINION
3	1	1022366	PINION
4	1	1022367	SHAFT
5	1	1022368	PTO SHAFT PROTECTION
6	2	1021703	WASHER SET
7	2	1022369	WASHER SET
8	1	1022370	SCREW
9	1	1022371	CIRCLIP
10	1	1021930	CIRCLIP
11	1	1022170	CIRCLIP
12	1	1022372	CIRCLIP
13	1	1022373	BEARING
14	3	1022374	BEARING
15	1	1022375	OIL SEAL
16	4	1021765	SCREW
17	4	1021070	WASHER
18	8	1022376	SCREW
19	8	1021100	WASHER
20	1	1022377	SLEEVE

RT685 – GEARBOX ASSEMBLY



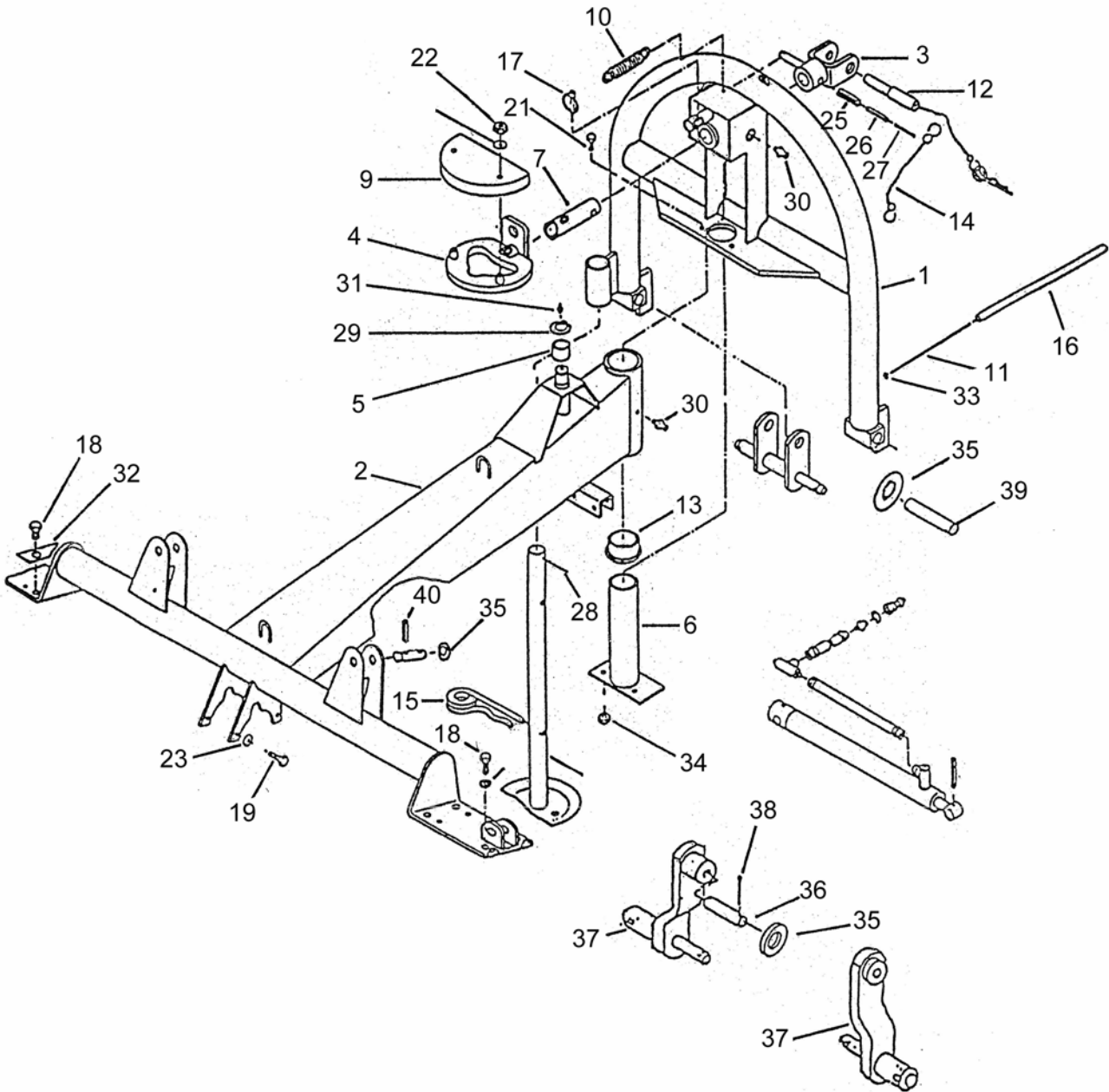
REF.	QTY.	PART No.	DESCRIPTION
			RT685 - GEARBOX ASSEMBLY
1	1	1022245	GEARBOX HOUSING
2	1	1022246	COVER
3	1	1022247	SHAFT AND SPROCKET
4	1	1022248	SPROCKET
5	1	1022249	SHAFT
6	1	1022250	RING
7	1	1022251	PTO SHAFT PROTECTION
8	1	1022252	DISTANCE RING
9	2	1022253	SEAL RING
10	1	1022254	SEAL RING
11	1	1022255	SCREW
12	4	1022118	SCREW
13	4	1022256	SCREW
14	7	1022257	SCREW
15	4	1022258	SCREW
16	4	1021997	WASHER
17	8	1021866	WASHER
18	7	1022259	WASHER
19	1	1022260	CHAIN
20	1	1022261	LOCKING LINK
21	1	1022262	COTTER
22	1	1021591	PIN
23	1	1021930	CIRCLIP
24	1	1021701	CIRCLIP
25	3	1022170	CIRCLIP
26	4	1021080	CIRCLIP
27	1	1022263	BEARING
28	2	1022264	BEARING

RT615 – MAIN FRAME ASSEMBLY



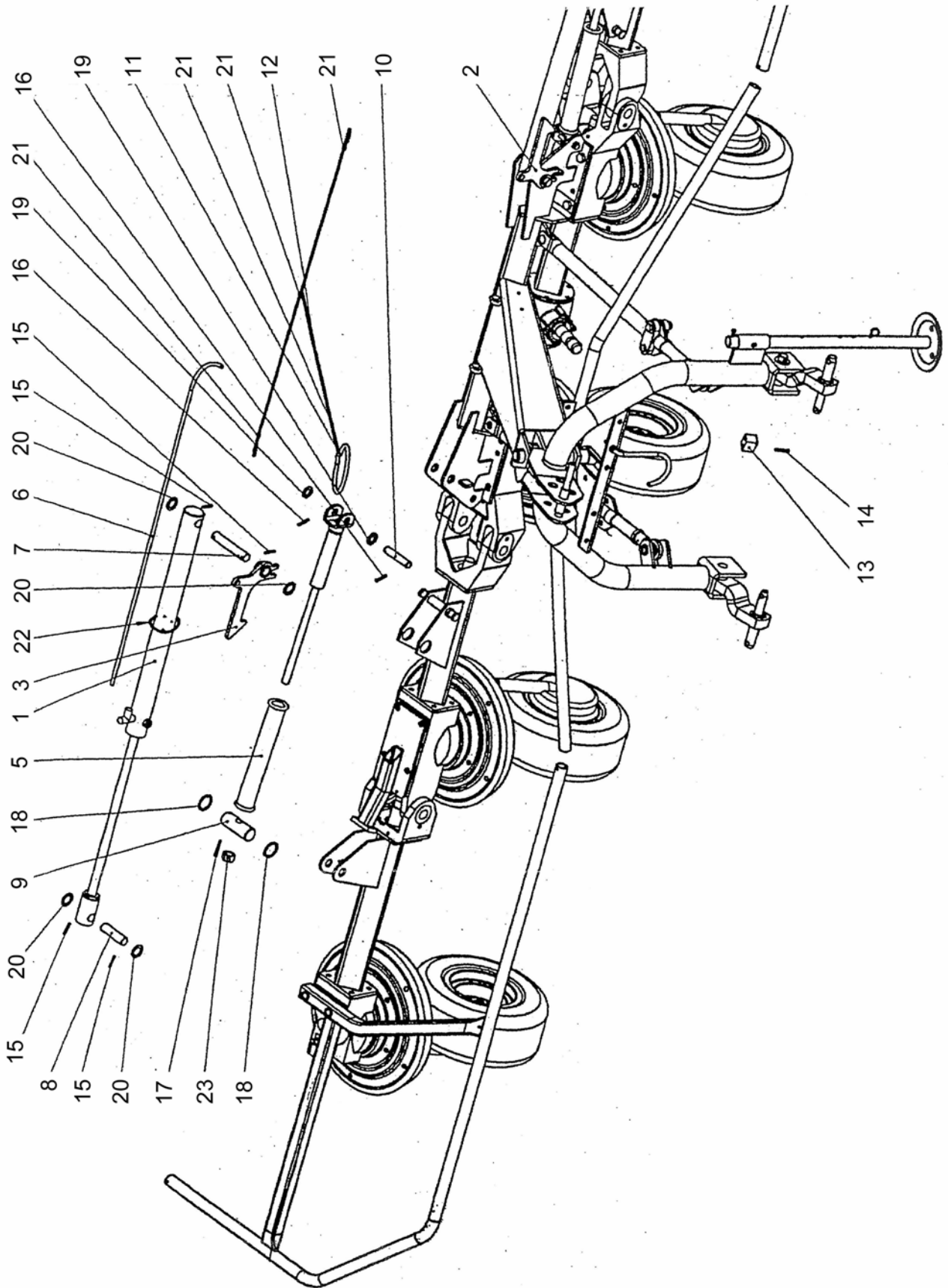
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - MAIN FRAME
1	1	1021281	HEADSTOCK
2	1	1021307	SUPPORT
3	1	1022460	STRAP
4	1	1021278	GUIDE PLATE
5	1	1022209	SLEEVE
6	1	1021276	SHAFT
7	1	1022210	PIN
8	1	1021062	CIRCLIP
9	2	1021608	SLEEVE - PLASTIC
10	2	1021075	TENSION PIN
11	2	1021076	TENSION PIN
12	2	1021077	TENSION PIN
13	2	1021933	SCREW
14	2	1021829	NUT
15	2	1021104	WASHER
16	2	1021064	LUBRICATOR
17	1	1021063	LUBRICATOR
18	2	1021203	PIN
19	2	1021058	PIN
20	4	1021057	WASHER
21	4	1021059	TENSION PIN
22	2	1022461	STABILISER
23	4	1022392	PIN
24	1	1021074	SPRING
25	1	1021069	COVER
26	2	1021173	NUT
27	2	1021070	WASHER
28	2	1021277	JACK STAND
29	8	1022292	SCREW
30	8	1021072	WASHER
31	2	1021079	COTTER PIN
32	2	1022213	WIRE SAFETY CLAMP
33	8	1021240	COTTER PIN
34	1	1021060	LINCH PIN
35	1	1021081	PLASTIC STRING
36	1	1022212	BOLT & SPRING CLIP

RT685 – MAIN FRAME ASSEMBLY



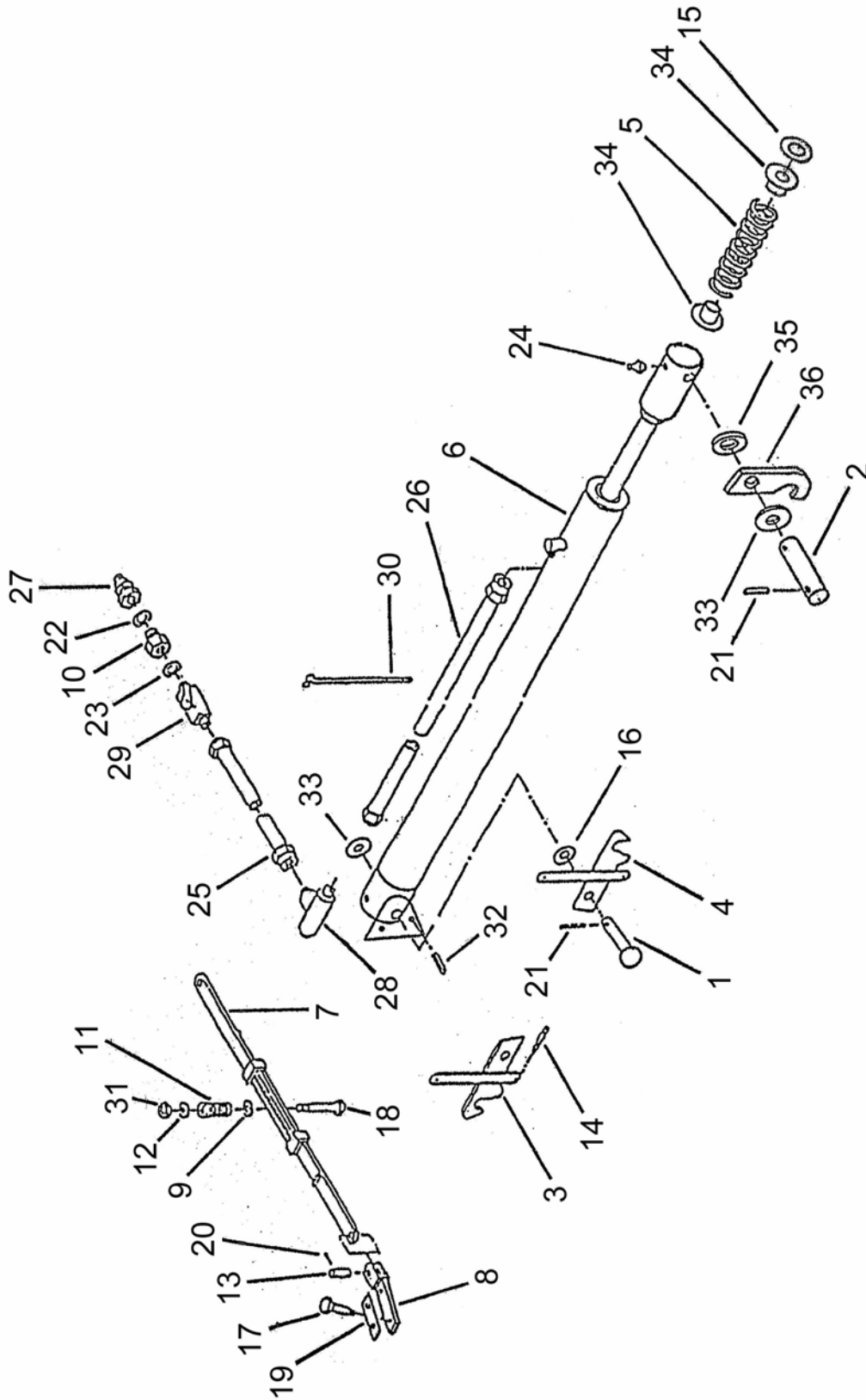
REF.	QTY.	PART No.	DESCRIPTION
			RT685 - MAIN FRAME
1	1	1022379	BOW
2	1	1022380	HOLDER
3	1	1022208	EYE
4	1	1021278	CURVE
5	1	1022209	SLEEVE
6	1	1021276	BOLT
7	1	1022210	BOLT
8	2	1021277	SUPPORT LEG
9	1	1021069	PROTECTION
10	1	1021074	SPRING
11	1	1022211	STRING
12	1	1022212	BOLT
13	2	1021608	SLEEVE
14	4	1021856	STRING
15	2	1022213	WIRE SAFETY CLAMP
16	1	1021863	TUBE
17	1	1021060	SAFETY PIN
18	8	1021214	SCREW
19	2	1022381	SCREW
20	2	1022382	SCREW
21	2	1021933	SCREW
22	2	1021239	NUT
23	4	1021100	WASHER
24	2	1021070	WASHER
25	2	1021075	PIN
26	2	1021076	PIN
27	2	1021077	PIN
28	2	1021079	PIN
29	1	1021062	CIRCLIP
30	2	1021064	NIPPLE
31	1	1021063	NIPPLE
32	2	1022218	PROTECTION PLATE
33	4	1022492	CLIP
34	2	1021829	NUT
35	8	1021057	WASHER
36	2	1021058	BOLT
37	2	1021203	BOLT
38	4	1021059	PIN
39	2	1021058	BOLT
40	4	1022350	PIN

RT615 – HYDRAULIC RAM & FITTINGS ASSEMBLY



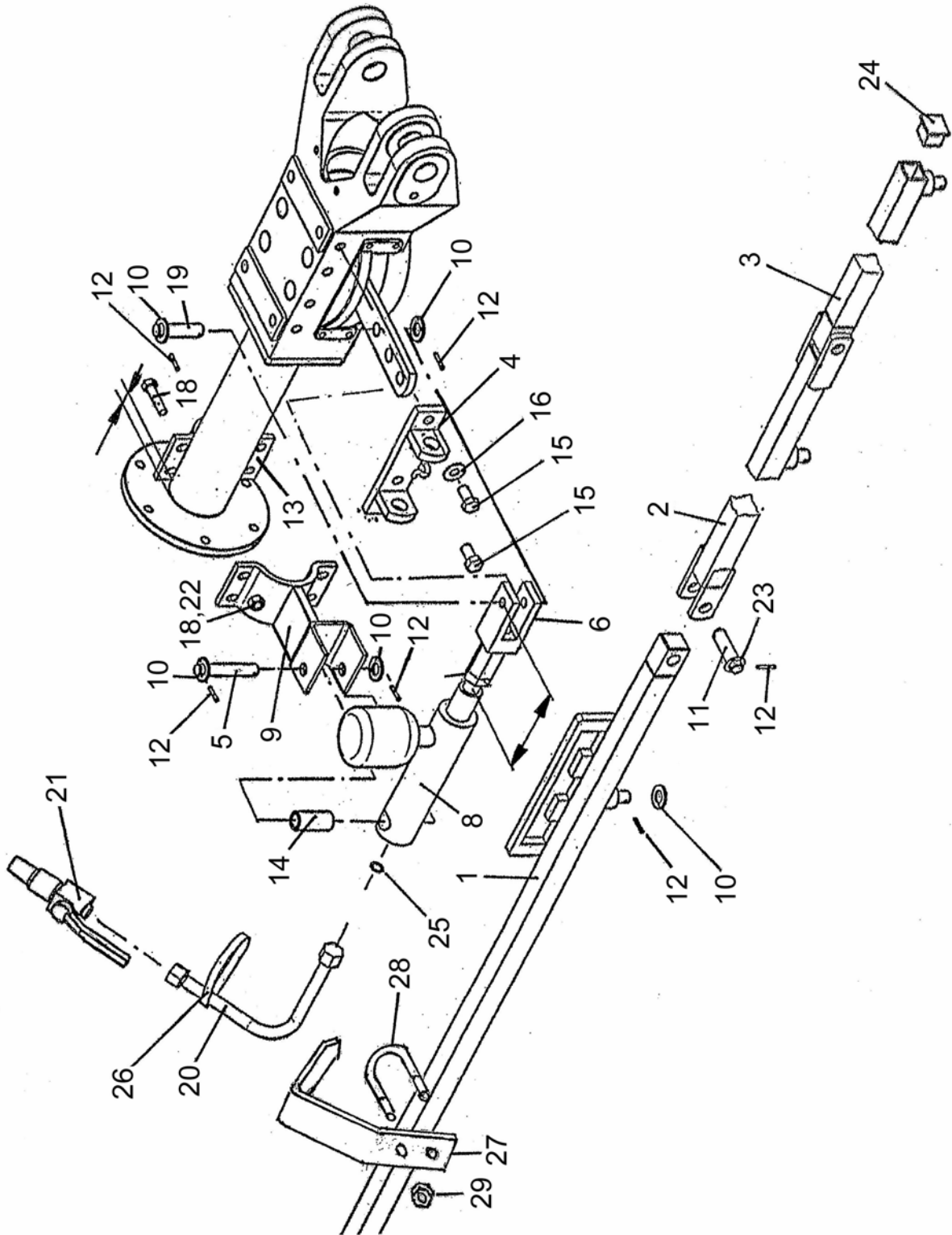
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - HYDRAULIC RAM & FITTINGS
1	2	1021282	HYDRAULIC CYLINDER
2	1	1021293	HOOK - L/H
3	1	1022462	HOOK - R/H
4	2	1021294	SPRING GUIDE
5	2	1021284	SPRING
6	1	1022463	TUBE SET (HIGH PRESSURE)
7	2	1021295	PIN
8	2	1021296	PIN
9	2	1021297	PIN
10	2	1022464	PIN
11	1	1021863	HOSE
12	1	1022465	ROPE
13	2	1022291	CLAMP
14	4	1022290	SCREW
15	8	1022350	TENSION PIN
16	4	1022222	TENSION PIN
17	4	1022466	TENSION PIN
18	4	1022467	WASHER
19	4	1021181	WASHER
20	8	1021906	WASHER
21	4	1022422	CLAMP
22	2	1022468	BINDING CLIP
23	2	1022469	NUT

RT685 – HYDRAULIC RAM & FITTINGS ASSEMBLY



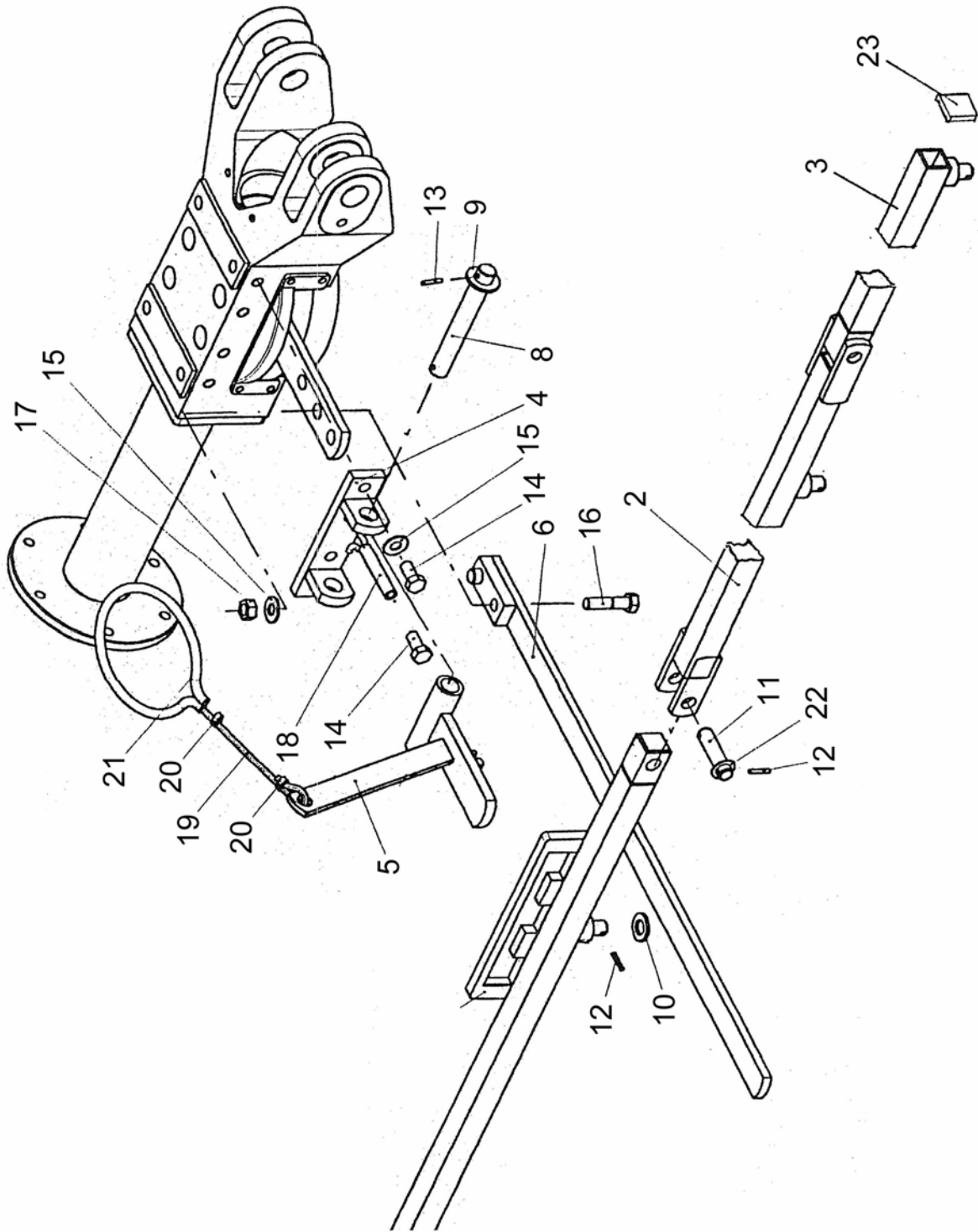
REF.	QTY.	PART No.	DESCRIPTION
			RT685 - HYDRAULIC RAM & FITTINGS
1	2	1022383	BOLT
2	2	1022384	BOLT
3	1	1022385	HOOK - LEFT
4	1	1022386	HOOK - RIGHT
5	2	1022387	SPRING
6	2	1022388	HYDRAULIC CYLINDER
7	2	1022389	SHOCK ABSORBER
8	2	1022390	HOLDER
9	2	1021186	WASHER
10	1	1022391	CONNECTION
11	2	1021184	SPRING
12	2	1021187	WASHER
13	4	1022392	BOLT
14	2	1021862	SPRING
15	2	1022393	WASHER
16	2	1021686	WASHER
17	4	1022394	SCREW
18	2	1021185	SCREW
19	2	1022218	PROTECTION PLATE
20	8	1021240	COTTER
21	6	1022350	PIN
22	1	1021741	WASHER
23	1	1022395	WASHER
24	4	1021064	NIPPLE
25	1	1022396	TUBE
26	2	1022397	TUBE
27	1	1021742	CLAMP
28	1	1022221	CONNECTOR TAP
29	1	1022398	PIN
30	4	1021963	STRING
31	2	1022399	NUT
32	4	1022491	PIN
33	6	1021057	WASHER
34	4	1022400	SLEEVE
35	4	1022401	SLEEVE
36	4	1022402	HOOK

RT615 – STEERING ASSEMBLY



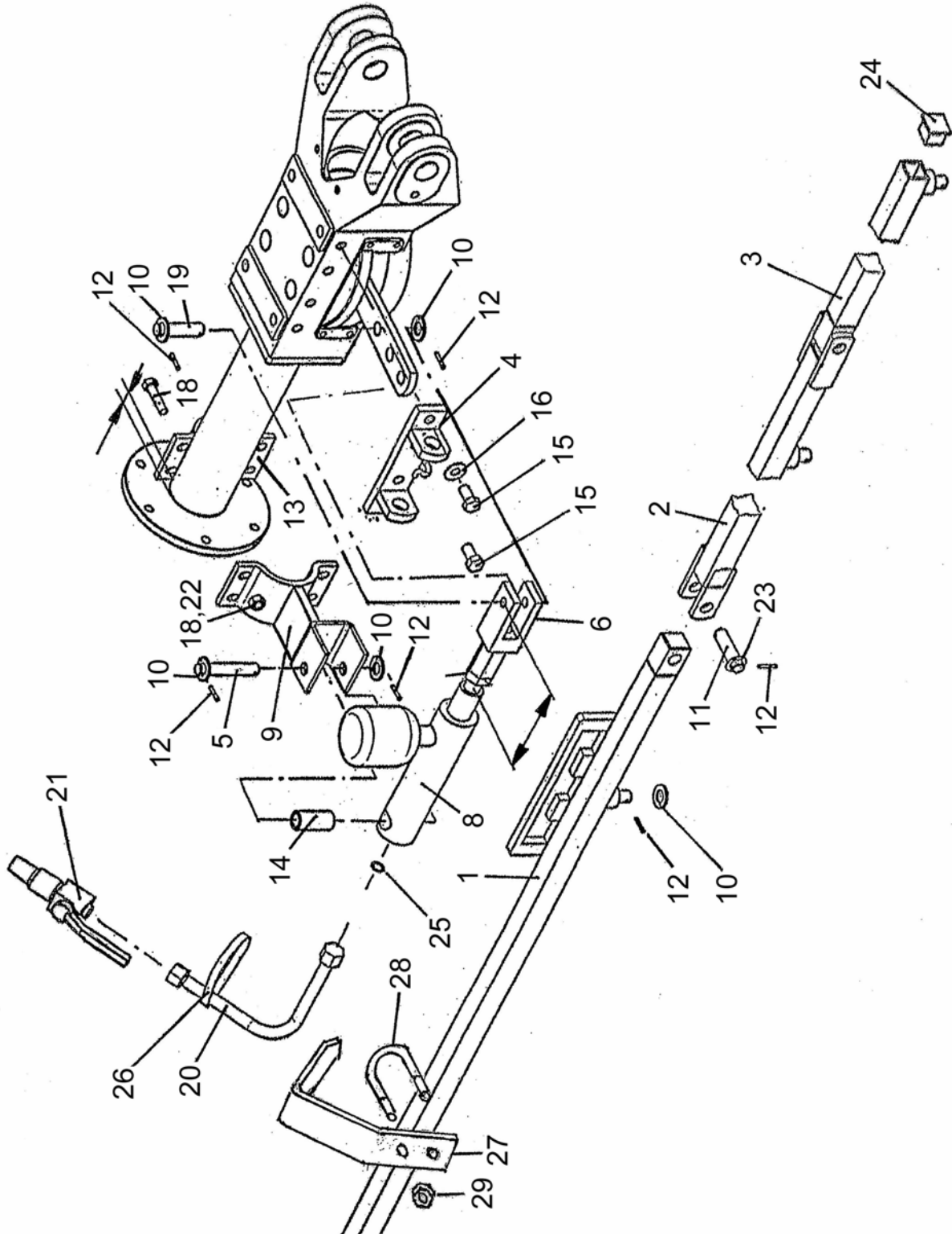
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - STEERING ASSEMBLY
1	1	1022470	STEERING ROD 1
2	2	1022471	STEERING ROD 2
3	2	1022472	STEERING ROD 3
4	1	1022406	HOLDER
5	1	1022426	PIN
6	1	1022473	FORK
7	1	1022428	NUT
8	1	1022429	STEERING CYLINDER
9	1	1022430	STEERING CYLINDER HOLDER
10	10	1021153	WASHER
11	4	1022413	PIN
12	18	1022414	TENSION PIN
13	1	1022431	CLIP
14	1	1022432	SLEEVE
15	4	1022225	SCREW
16	2	1022417	WASHER
17	4	1022433	SCREW
18	4	1021829	NUT
19	1	1022413	PIN
20	1	1022434	TUBE
21	1	1022398	TAP
22	4	1021629	WASHER
23	8	1022424	WASHER
24	2	1022425	PLUG
25	1	1022435	PACKING
26	2	1021963	CLIP
27	1	1022474	INDICATOR
28	1	1022475	CLAMP
29	2	1022476	NUT

RT685 – STEERING ASSEMBLY (1)



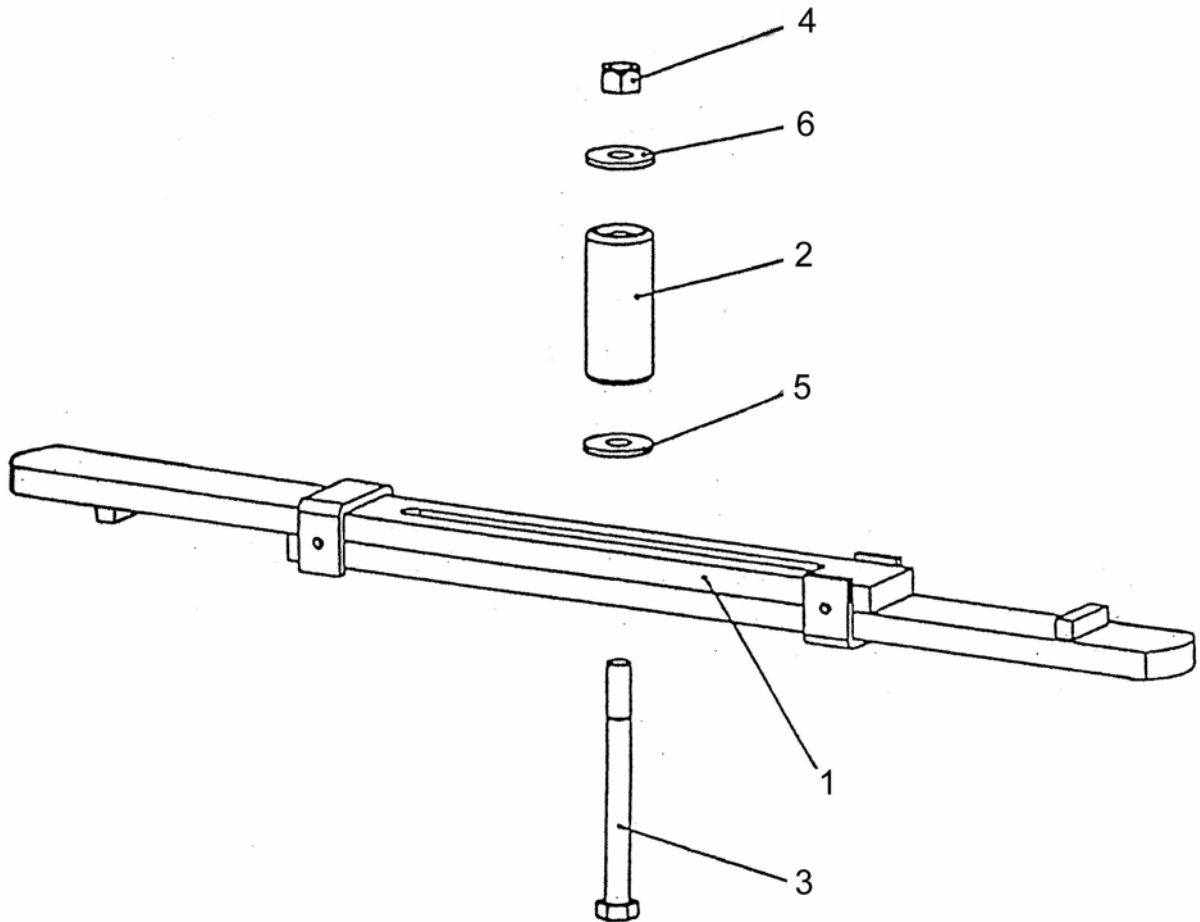
REF.	QTY.	PART No.	DESCRIPTION
			RT685 - STEERING ASSEMBLY (1)
1	1	1022403	STEERING ROD 1
2	2	1022404	STEERING ROD 2
3	2	1022405	STEERING ROD 3
4	1	1022406	HOLDER
5	1	1022407	LIMITER
6	1	1022408	STEERING HANDLE
7	4	1022409	PROTECTION BRUSH
8	1	1022410	PIN
9	2	1022411	WASHER
10	6	1022412	WASHER
11	4	1022413	PIN
12	14	1022414	TENSION PIN
13	2	1022415	TENSION PIN
14	4	1022416	SCREW
15	3	1022417	WASHER
16	1	1022418	SCREW
17	1	1022419	NUT
18	1	1022420	SPRING
19	1	1022421	STRING
20	1	1022422	CLAMP
21	1	1022423	PLASTIC HOSE
22	8	1022424	WASHER
23	2	1022425	PLASTIC PLUG

RT685 – STEERING ASSEMBLY (2)



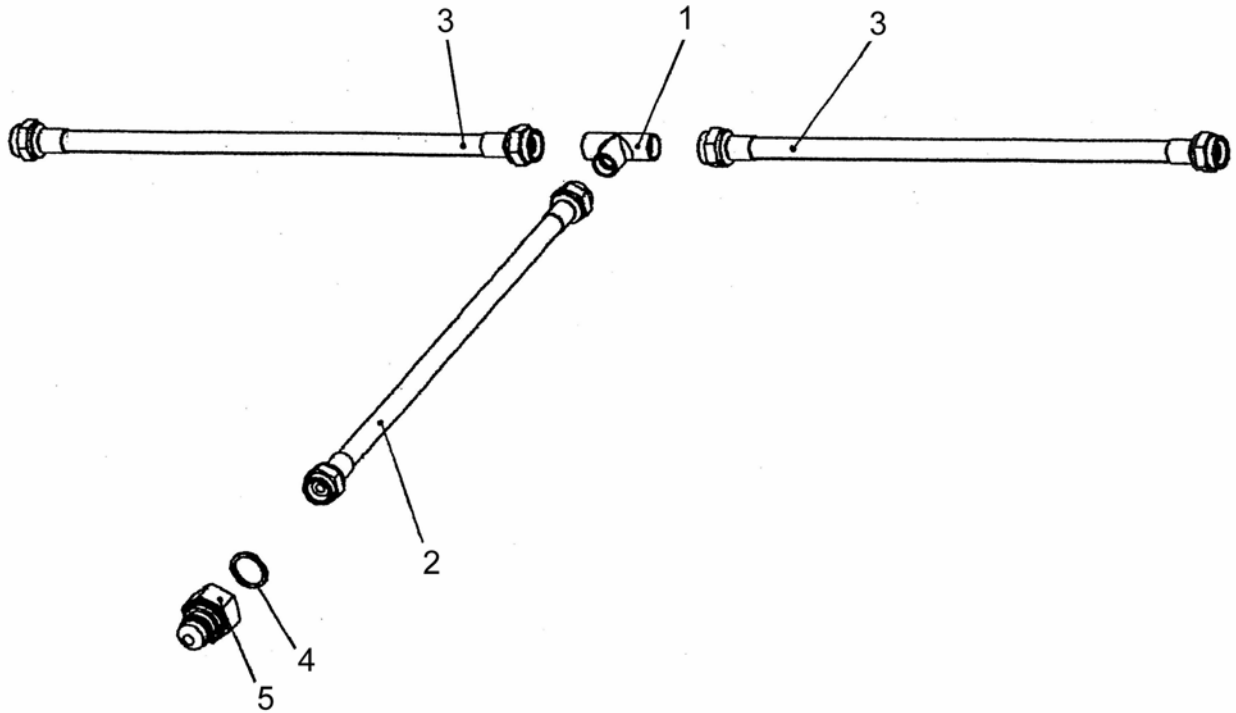
REF.	QTY.	PART No.	DESCRIPTION
			RT685 - STEERING ASSEMBLY (2)
1	1	1022403	STEERING ROD 1
2	2	1022404	STEERING ROD 2
3	2	1022405	STEERING ROD 3
4	1	1022406	HOLDER
5	1	1022426	PIN
6	1	1022427	FORK
7	1	1022428	NUT
8	1	1022429	STEERING CYLINDER
9	1	1022430	STEERING CYLINDER HOLDER
10	10	1022412	WASHER
11	4	1022413	PIN
12	18	1022414	TENSION PIN
13	1	1022431	CLIP
14	1	1022432	SLEEVE
15	4	1022416	SCREW
16	2	1022417	WASHER
17	4	1022433	SCREW
18	4	1021829	NUT
19	1	1022413	PIN
20	1	1022434	TUBE
21	1	1022398	TAP
22	4	1021629	WASHER
23	8	1022424	WASHER
24	2	1022425	PLASTIC PLUG
25	1	1022435	PACKING
26	2	1021963	CLIP

RT615 – SHOCK ABSORBER ASSEMBLY



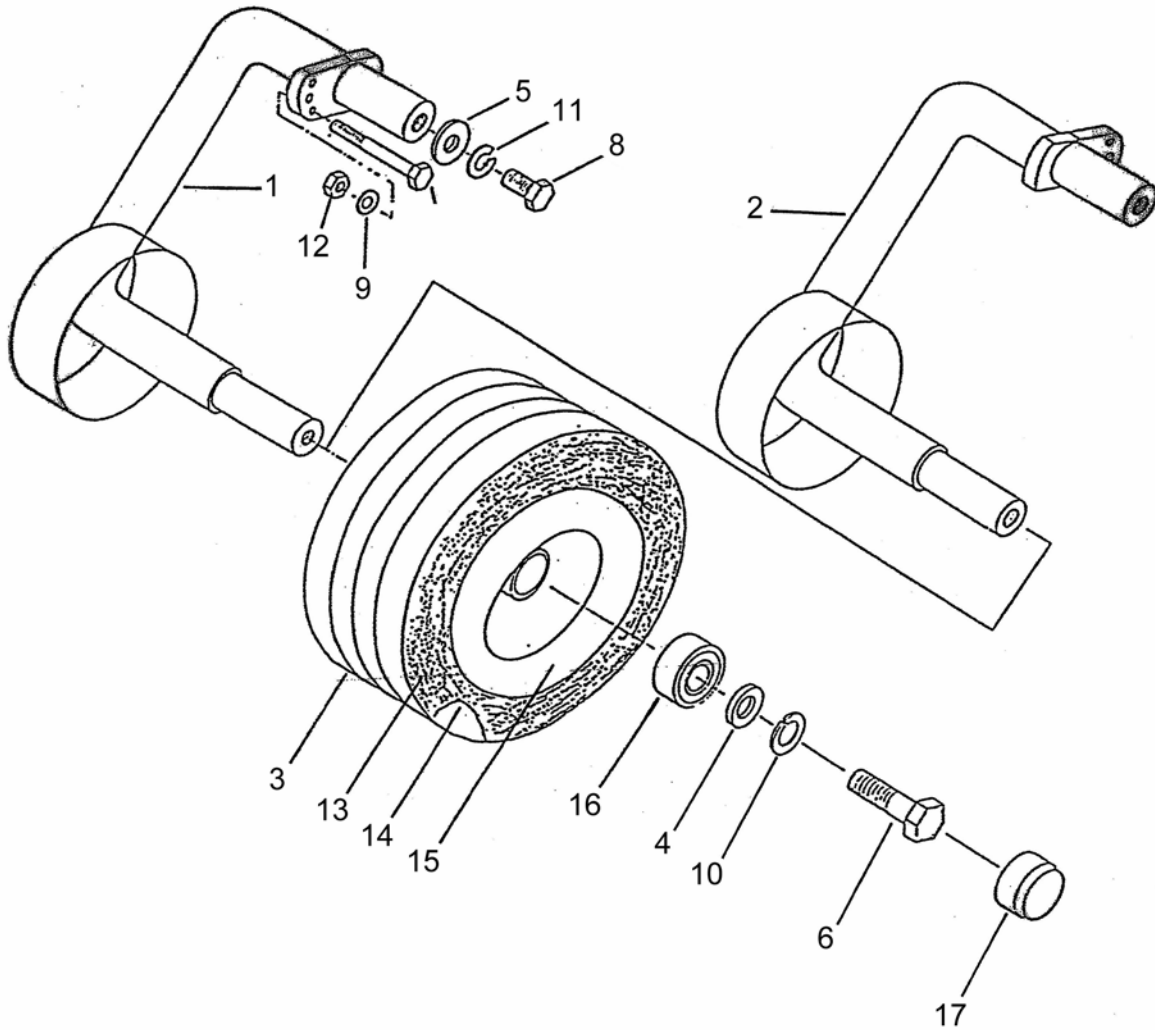
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - SHOCK ABSORBER ASSEMBLY
1	1	1021280	SHOCK ABSORBER
2	1	1021184	SPRING
3	1	1021185	SCREW
4	1	1021178	NUT
5	1	1021186	WASHER
6	1	1021187	WASHER

RT615 – HYDRAULIC PIPING



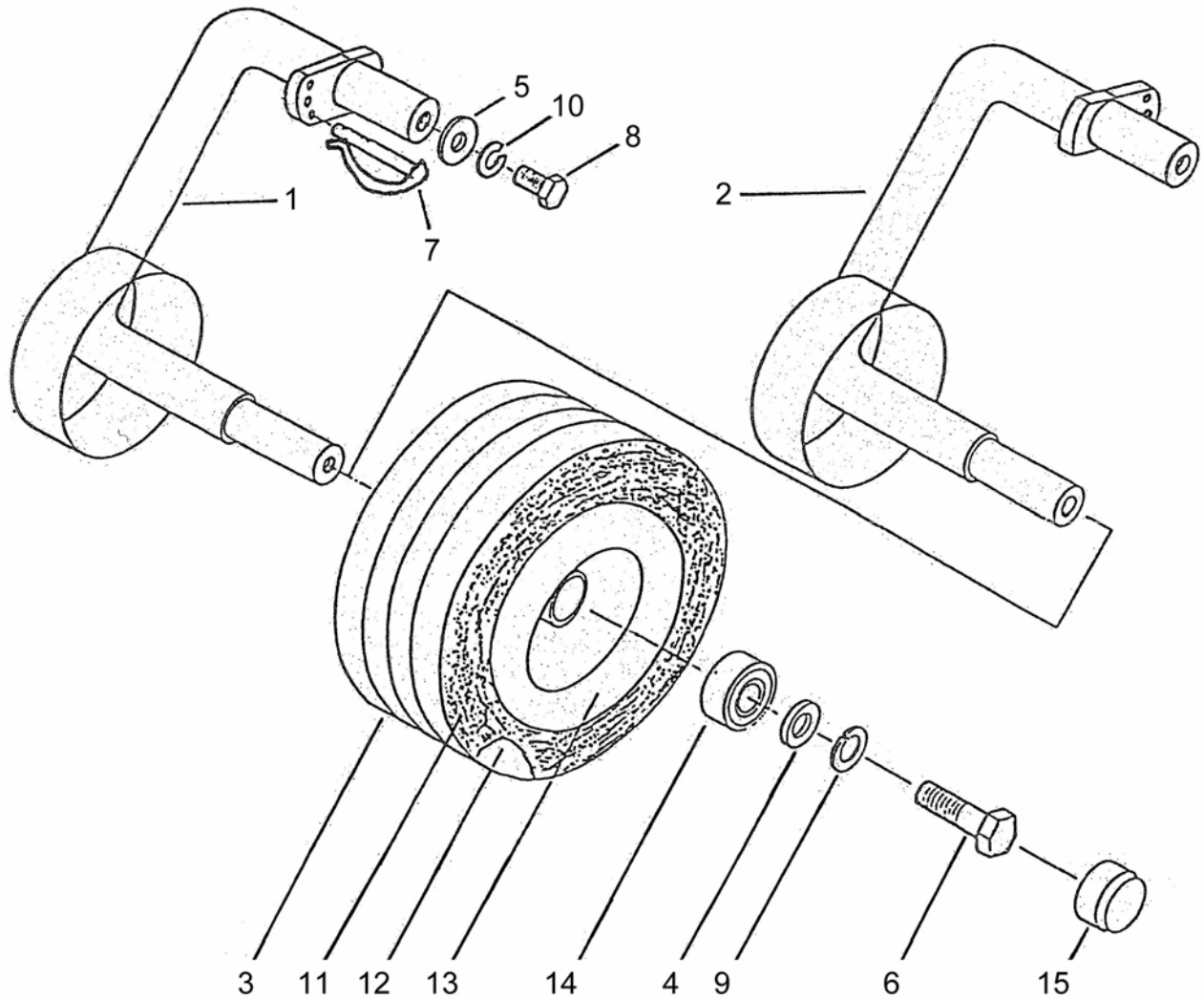
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - HYDRAULIC PIPING
1	1	1022221	CONNECTOR
2	1	1021275	TUBE
3	2	1022397	TUBE
4	1	1021741	WASHER
5	1	1021742	PLUG

RT615 – AXLE ASSEMBLY



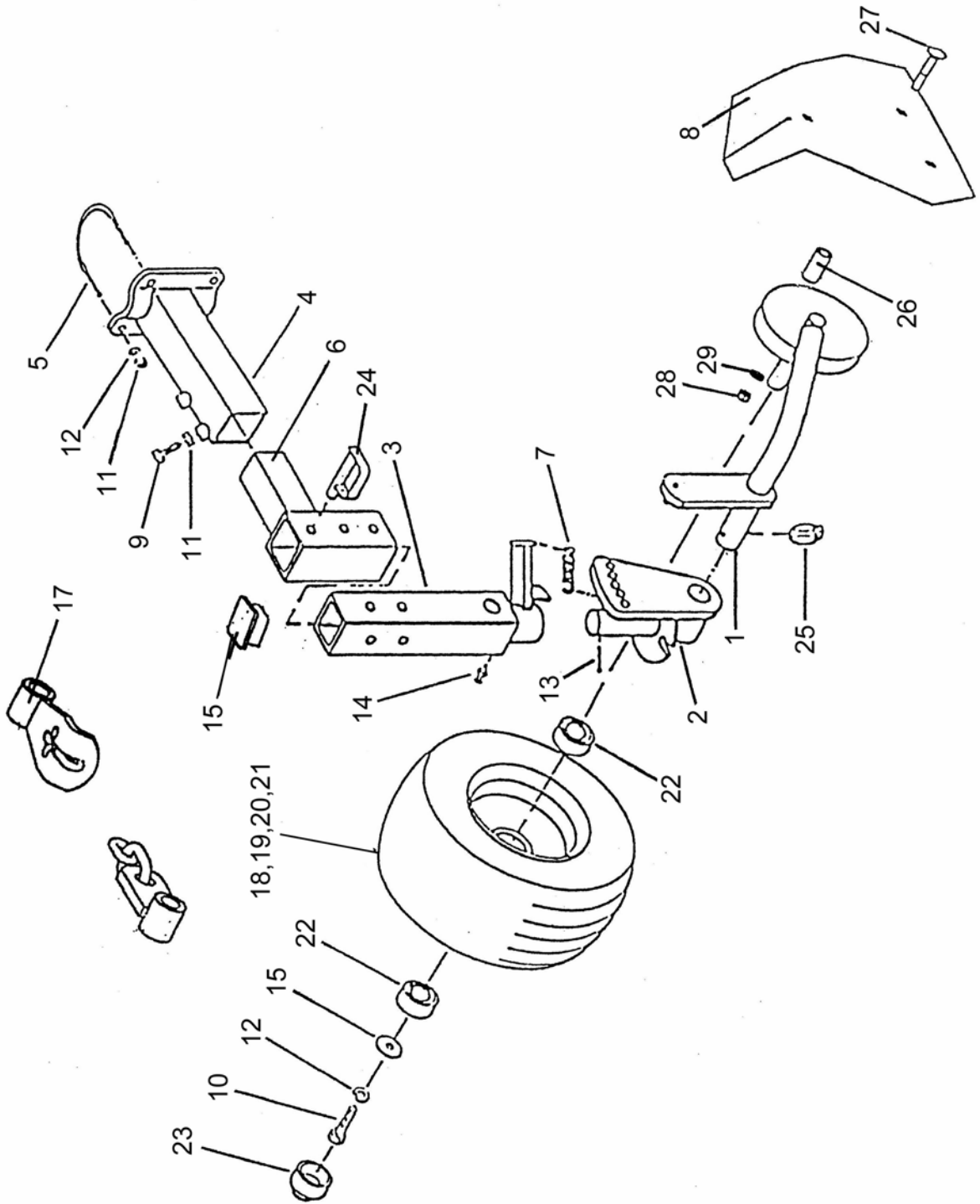
REF.	QTY.	PART No.	DESCRIPTION
RT615 - AXLE ASSEMBLY			
1	3	1021289	AXLE - R/H
2	3	1021290	AXLE - L/H
3	6	1021024	WHEEL CPL.
4	6	1021187	WASHER
5	6	1022139	WASHER
6	6	1022225	SCREW
7	6	1021733	SCREW
8	6	1021641	SCREW
9	6	1021067	WASHER
10	6	1021806	WASHER
11	6	1022217	WASHER
12	6	1021829	NUT
13	6	1022438	TYRE
14	6	1022439	TUBE
15	6	1022440	RIM
16	12	1021002	BEARING
17	6	1021237	COVER

RT685 – AXLE ASSEMBLY



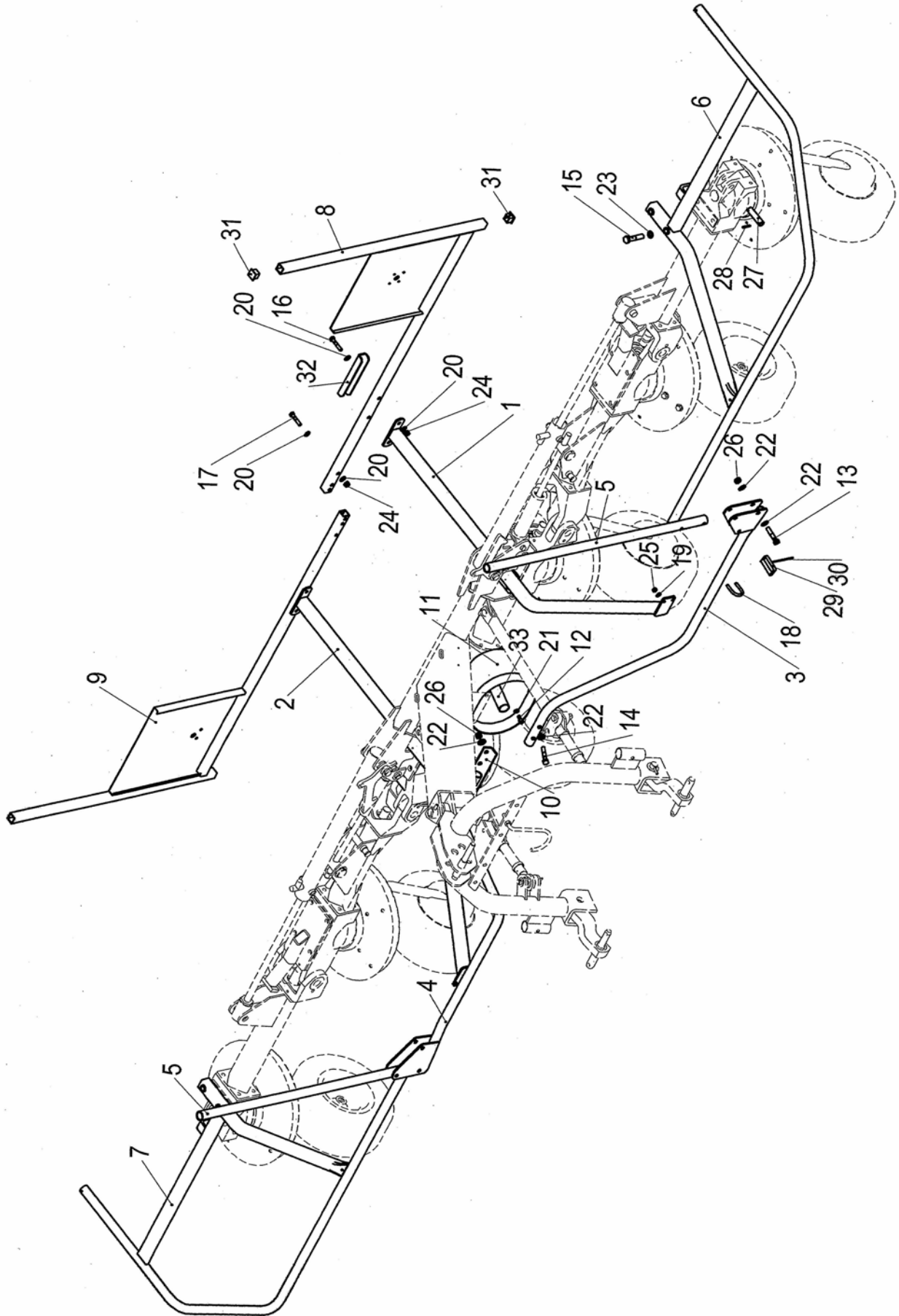
REF.	QTY.	PART No.	DESCRIPTION
RT685 - AXLES ASSEMBLY			
1	3	1022436	AXLE - R/H
2	3	1022437	AXLE - L/H
3	6	1021024	WHEEL CPL.
4	6	1021187	WASHER
5	6	1022139	WASHER
6	6	1022225	SCREW
7	6	1021168	LYNCH PIN
8	6	1021641	SCREW
9	6	1021806	WASHER
10	6	1022217	WASHER
11	6	1022438	TYRE
12	6	1022439	TUBE
13	6	1022440	RIM
14	12	1021002	BEARING
15	6	1021237	COVER

RT615 & RT685 – WHEEL ATTACHMENT



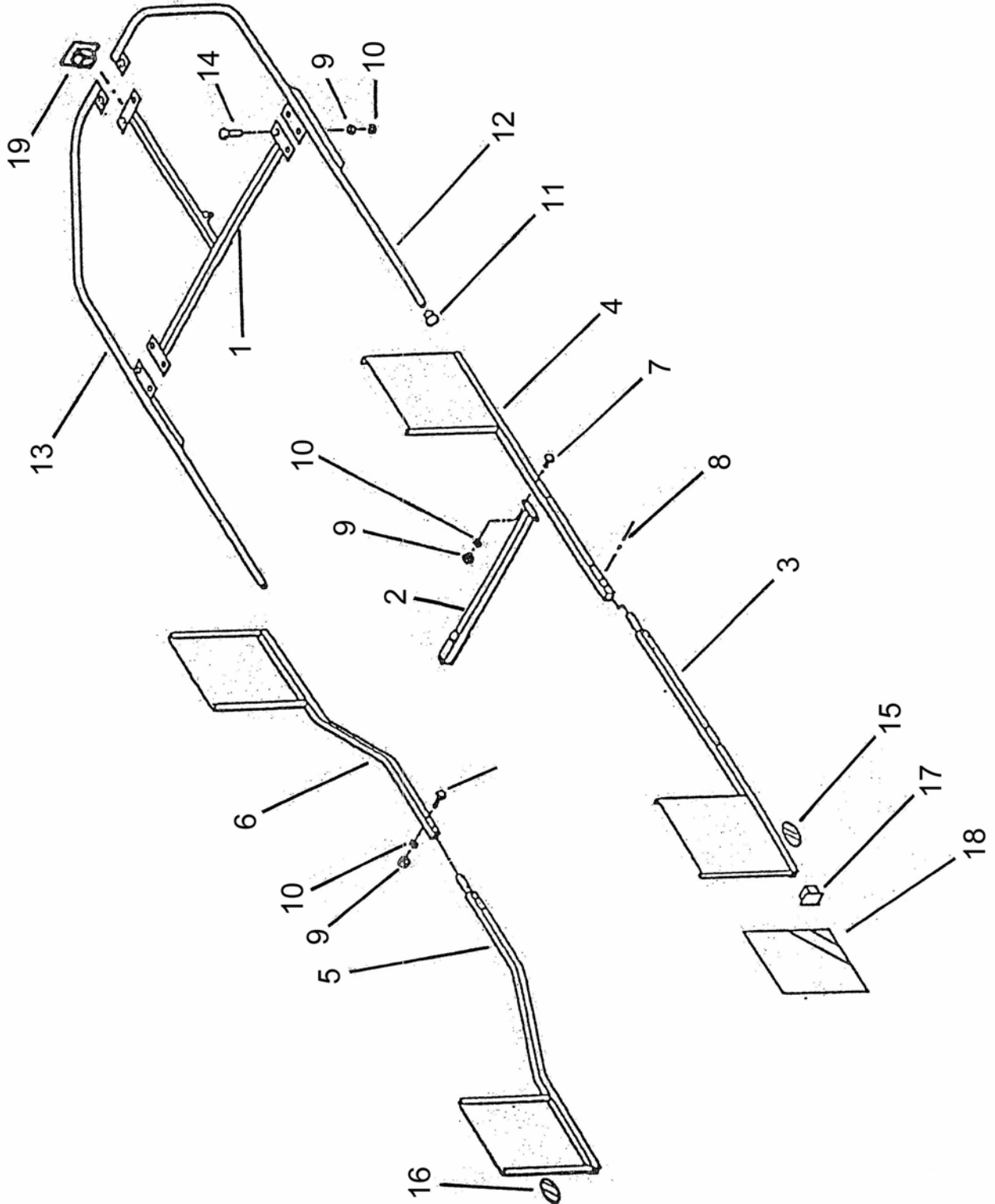
REF.	QTY.	PART No.	DESCRIPTION
			RT615 & RT685 - WHEEL ATTACHMENT
1	1	1022275	WHEEL BOW
2	1	1022276	BRACKET
3	1	1021177	HOLDER
4	1	1021595	TUBE
5	2	1021597	CLAMP
6	1	1022277	HOLDER
7	2	1021171	SPRING
8	1	1022489	PROTECTION
9	2	1022236	SCREW
10	1	1022416	SCREW
11	6	1022419	NUT
12	5	1021806	SPRING WASHER
13	1	1021170	TENSION PIN
14	1	1021064	LUBRICATOR
15	1	1021167	COVER
16	1	1021187	WASHER
17	1	1021599	TOP LINK CHAIN ASSEMBLY
18	1	1021256	WHEEL ASSEMBLY
19	1	1021004	TYRE
20	1	1021005	TUBE
21	1	1022226	RIM
22	2	1021002	BEARING
23	1	1021237	DUST CAP
24	1	1021168	LYNCH PIN
25	1	1021006	LYNCH PIN
26	3	1022490	SLEEVE
27	3	1021762	SCREW
28	3	1021173	NUT
29	3	1021070	WASHER

RT615 – PROTECTION ASSEMBLY



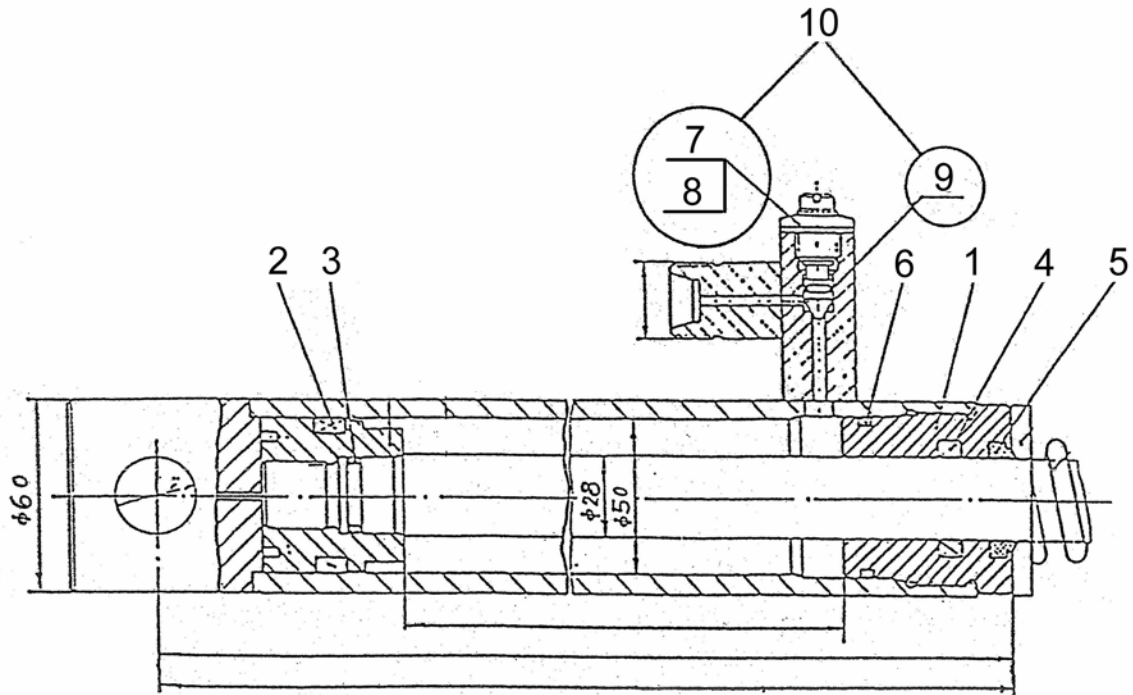
REF.	QTY.	PART No.	DESCRIPTION
			RT615 - PROTECTION ASSEMBLY
1	1	1022477	TUBE
2	1	1022478	TUBE
3	1	1022479	PROTECTION - FRONTSIDE
4	1	1022480	PROTECTION - FRONTSIDE
5	2	1022481	TUBE
6	1	1021291	PROTECTION - LEFT
7	1	1021292	PROTECTION - RIGHT
8	1	1021298	HOLDER - REAR LEFT
9	1	1021299	HOLDER - REAR RIGHT
10	1	1022482	HOLDER
11	1	1022483	PTO SHAFT PROTECTION
12	4	1022195	SCREW
13	2	1022286	SCREW
14	4	1022484	SCREW
15	4	1022485	SCREW
16	4	1022288	SCREW
17	4	1022090	SCREW
18	2	1022486	CLIP
19	4	1021070	WASHER
20	8	1021067	WASHER
21	4	1021629	WASHER
22	12	1022417	WASHER
23	4	1022217	WASHER
24	8	1021829	NUT
25	4	1021173	NUT
26	6	1021178	NUT
27	2	1022180	BOLT
28	2	1021154	TENSION PIN
29	2	1021168	LYNCH PIN
30	2	1021856	PLASTIC STRING
31	4	1022425	PLASTIC CAP
32	1	1022487	U STEEL PROFILE
33	1	1022488	HOLDER

RT685 – PROTECTION ASSEMBLY



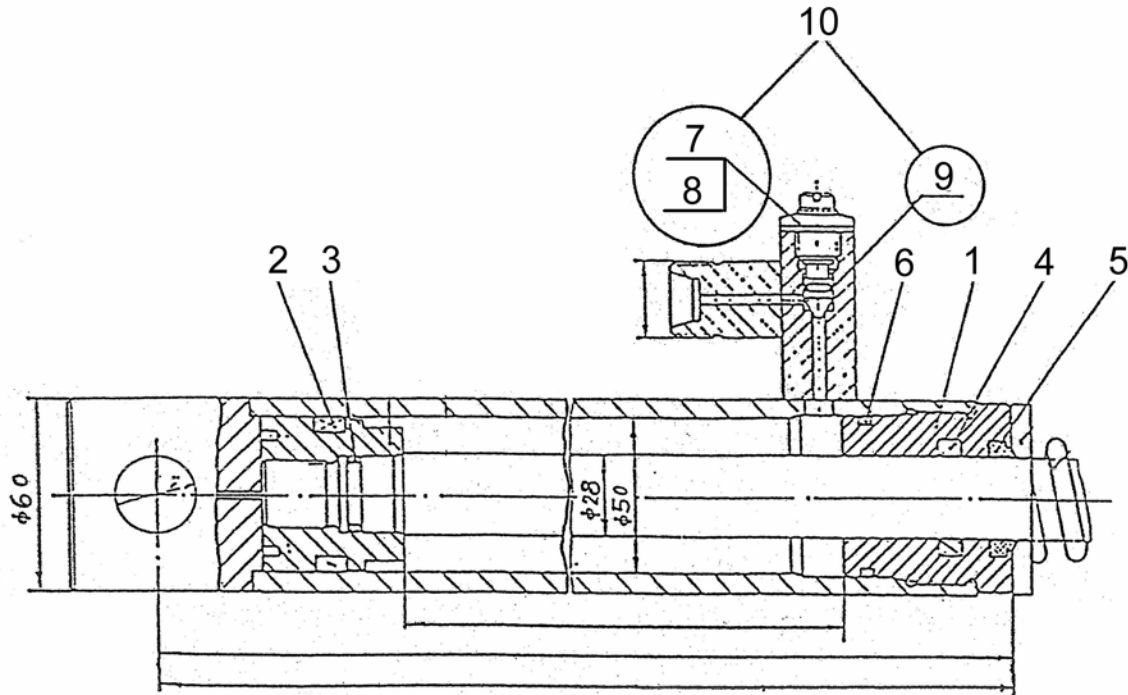
REF.	QTY.	PART No.	DESCRIPTION
			RT685 - PROTECTION ASSEMBLY
1	2	1022441	HOLDER
2	2	1022442	HOLDER
3	1	1022443	HOLDER - REAR LEFT
4	1	1022444	HOLDER - REAR RIGHT
5	1	1022445	HOLDER - FRONT LEFT
6	1	1022446	HOLDER - FRONT RIGHT
7	8	1022285	SCREW
8	4	1022090	SCREW
9	24	1021829	NUT
10	48	1021067	WASHER
11	4	1021781	COVER
12	2	1022447	PROTECTION - RIGHT
13	2	1022448	PROTECTION - LEFT
14	12	1021933	SCREW
15	2	1022283	REFLECTING PLATE - RED
16	2	1022284	REFLECTING PLATE - WHITE
17	4	1022425	COVER
18	4	1022449	STICKER - RED/WHITE
19	2	1022230	COVER

RT615 – RAM ASSEMBLY



REF.	QTY.	PART No.	DESCRIPTION
			RT615 - HYDRAULIC RAM ASSEMBLY
1	1	1021282	RAM COMPLETE
2	1	1022450	SEAL
3	1	1022451	OIL SEAL
4	1	1022452	GUIDER ASSEMBLY
5	1	1022453	SKIMMER
6	1	1022454	OIL SEAL
7	1	1022270	SCREW
8	1	1022271	NUT
9	1	1022272	OIL SEAL
10	1	1022273	ADJUSTMENT SCREW
		1022455	SEAL KIT

RT685 – RAM ASSEMBLY



REF.	QTY.	PART No.	DESCRIPTION
			RT685 - HYDRAULIC RAM ASSEMBLY
1	1	1022388	RAM COMPLETE
2	1	1022450	SEAL
3	1	1022451	OIL SEAL
4	1	1022452	GUIDER ASSEMBLY
5	1	1022453	SKIMMER
6	1	1022454	OIL SEAL
7	1	1022270	SCREW
8	1	1022271	NUT
9	1	1022272	OIL SEAL
10	1	1022273	ADJUSTMENT SCREW
		1022455	SEAL KIT