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AGRICULTURAL TANDEM MONOCOQUE TRAILER/DUMPER

T679

OPERATION MANUAL
SPARE PART LIST

Edition II
Narew 2005

PRONAR Sp. z o.o.

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T679

OPERATION MANUAL

Identification of the machine

Symbol /Type:	T679
KTM Symbol:	1026-634-848-006
Serial:	.....

The serial is stamped on the type plate and on the front beam of trailer's frame. The type plate is riveted to the load-carrying body.

In the course of purchase check conformity of the serial stamped on the trailer with the serial given in the warranty card, in purchase documents and in the operation manual.

The hydraulic system is filled with HL32 hydraulic oil.

Quality Inspection Sign.....

The manual and the spare parts list are valid together with the Annex No. ..... dated on ..... .

The Manufacturer reserves the right to introduce modifications of technical data, operational parameters and design for the purpose of improved quality, operational safety simplified operation.

Remarks and notices about design and operation of the trailer should be submitted to the manufacturer. This information allows us to evaluate objectively manufactured machines and will be used as hints for further modernisation.

CAUTION!

The operation & maintenance manual is the substantial equipment of the trailer.

The user should read carefully the manual before operation and observe all recommendations given in the manual. This will ensure safe maintenance and failure-free operation of the machine.

The machine has been designed in accordance with generally recognised standards, documents and currently binding legal regulations.

CONTENTS

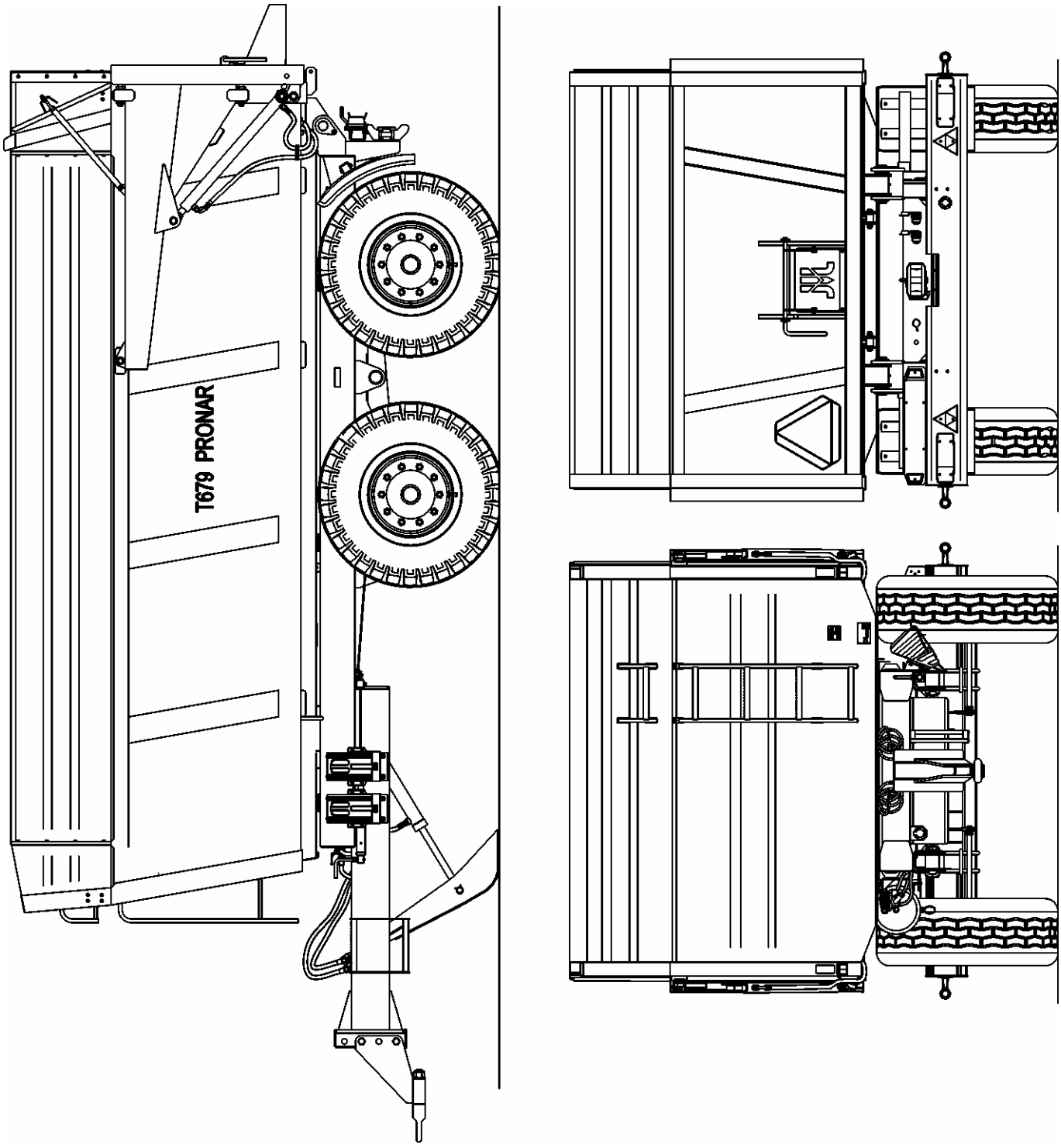


Fig. 1 Trailer T679

1 INTRODUCTION

1.1 GENERAL INFORMATION

The manual describes basic rules of safe operation & maintenance of the agricultural trailer. If information contained within the manual will be not comprehensible for the user please do not hesitate to contact your dealer or directly the manufacturer.

Especially important are information and recommendation marked in the text by bold characters or preceded by the word “CAUTION”.

Information, descriptions of danger and precautions as well as commands and orders concerning safe operations are marked with following sign:

and mentioned in the chapter „Safe operation ".

1.2 APPLICATION OF THE TRAILER

The trailer is designed for transportation of agricultural produce as well as loose and volume materials within farm limits and on public roads.

Brake, lighting and signalling systems fulfil all requirements of traffic regulations.

The trailer is adapted for coupling with agricultural tractors fitted with external hydraulic system and a hook for single-axle trailers.

CAUTION!

The trailer must not be used contrary to its proper application and especially:

- **for transporting of persons & animals,**
- **for transporting of loose, unprotected toxic materials if there is the possibility of environment contamination,**
- **for transporting of machinery & devices, which location of gravity centre may influence negatively on trailer’s stability,**
- **for transporting of loads, which may cause unequal load or overload of axles,**
- **for transporting of non-fastened loads, which may change their location on the trailer’s platform during drive.**

2 OPERATIONAL SAFETY

- The user should read carefully the manual before operation and observe all recommendations given in the manual during operation.
- If information contained within the manual will be not comprehensible for the user please do not hesitate to contact your dealer, who also provides repair & service or directly the manufacturer.
- Careless and improper operation & maintenance of the trailer as well as lack of observation of recommendations given in present manual may endanger human health and life.
- Lack of observation of safe use rules may endanger health of operators and third persons.
- There is the risk of residual danger, thus application of safe operation rules should be the basic principle of trailer's use.
- Persons unauthorised for driving agricultural tractors including children and drunken persons have no right to use the trailer.
- It is prohibited to use the trailer contrary to its purposes. User, who utilise the trailer in other than prescribed manner, takes all responsibility for all consequences resulting from trailer's use.
- Any unauthorised modification absolves the PRONAR Narew from responsibility for resulting damage or health detriment.
- Prior to each trailer's use check its technical condition, especially coupling system, drive system, brakes and signalling lights.
- Check trailer's hydraulic system frequently; any oil leakage is inadmissible.
- Take special care while coupling trailer with tractor.
- For coupling with tractor use only hooks for single-axle trailers. Check safety device.
- In the course of coupling no one is allowed to stand between trailer and tractor.
- Climbing on the trailer is allowed only if the trailer is completely stopped and tractor's engine is off; the trailer should be also braked with hand brake.
- Disconnection of the trailer while the load crate is lifted with the telescope cylinder is prohibited. Take special care while disconnecting the trailer.
- Disconnected trailer should be braked. If the trailer stands on a slope or an elevation it should be protected additionally with wedges or other blunt-edged objects placed under wheels.
- The load should be placed uniformly on the load crate surface.

- Admissible load must not be exceeded.
- Driving with lifted load crate and transporting of people & animals is prohibited.
- No one is allowed to stand in the vicinity of lifted load crate and unloaded material.
- Keep safe distance from electric lines while lifting the load crate.
- If any operation failure or damage occurs, stop operation of the trailer and repair the damage.
- Maintenance & repair of the trailer with loaded and/or lifted load crate without proper support of the crate is prohibited.
- During trailer's operation use protection gloves and proper tools.
- All maintenance & repair works should be performed with observation of safety regulations. In the case of wound wash and disinfect wounded place immediately. In the case of serious injuries consult a physician.
- The trailer is marked with information / signalling stickers as described in the table 1 below. The user should take care of legibility and cleanliness of inscriptions & warnings for all time of trailer's operation. In the case of damage or destruction replace missing stickers with new ones – available at your dealer or manufacturer.

Table 1. Information & warning stickers

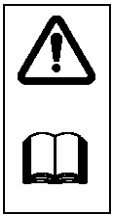
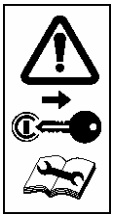
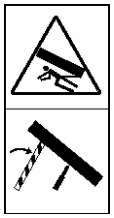
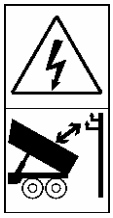
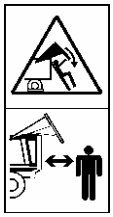
Safety sign or text	Explanation	Location
	Read operation manual	Front wall
	Prior to maintenance & repair stop the engine and remove the ignition key	Front wall
	Prior to maintenance & repair secure the load crate	Right & left wall

Tabela 1. Information & warning stickers, continued

Safety sign or text	Explanation	Location
	Take special precautions while operating near to energetic lines	Right & left wall
	Take special precautions while opening / closing the rear flap	Right & left wall
1 2	Switching over of circuits of tilt hydraulic systems for 1st and 2nd trailer	Cut-off valve
Ładowność: Z nadstawami 12000 kg Bez nadstaw 12500 kg	Loading capacity: With superstructures 12.000 kg Without superstructures 12.500 kg	Wall right and left
22 kN	Minimum vertical load of tractor's hitch	Draught bar
280 kPa	Tyre pressure 550/45-22.5	Above wheels, right & left wall
550 kPa	Tyre pressure 385/65-22.5	Above wheels, right & left wall

2.1 PRINCIPLES OF USE OF PUBLIC ROADS

- While driving public roads observe traffic regulations.
- Trailer's overload may cause its damage and endanger traffic safety.
- Do not exceed the maximum speed of 30 kph. Match the speed to traffic conditions.
- The trailer can work on slopes up to 8°. Lift the load crate on level ground only.
- It is prohibited to leave unsecured trailer. Always activate the parking brake.
- While driving public roads the trailer should be equipped with certified or approved warning reflecting triangle.

Rear wall should be equipped with a triangular plate for slowly moving vehicles, if the trailer is the last vehicle in a set (Fig. 1).

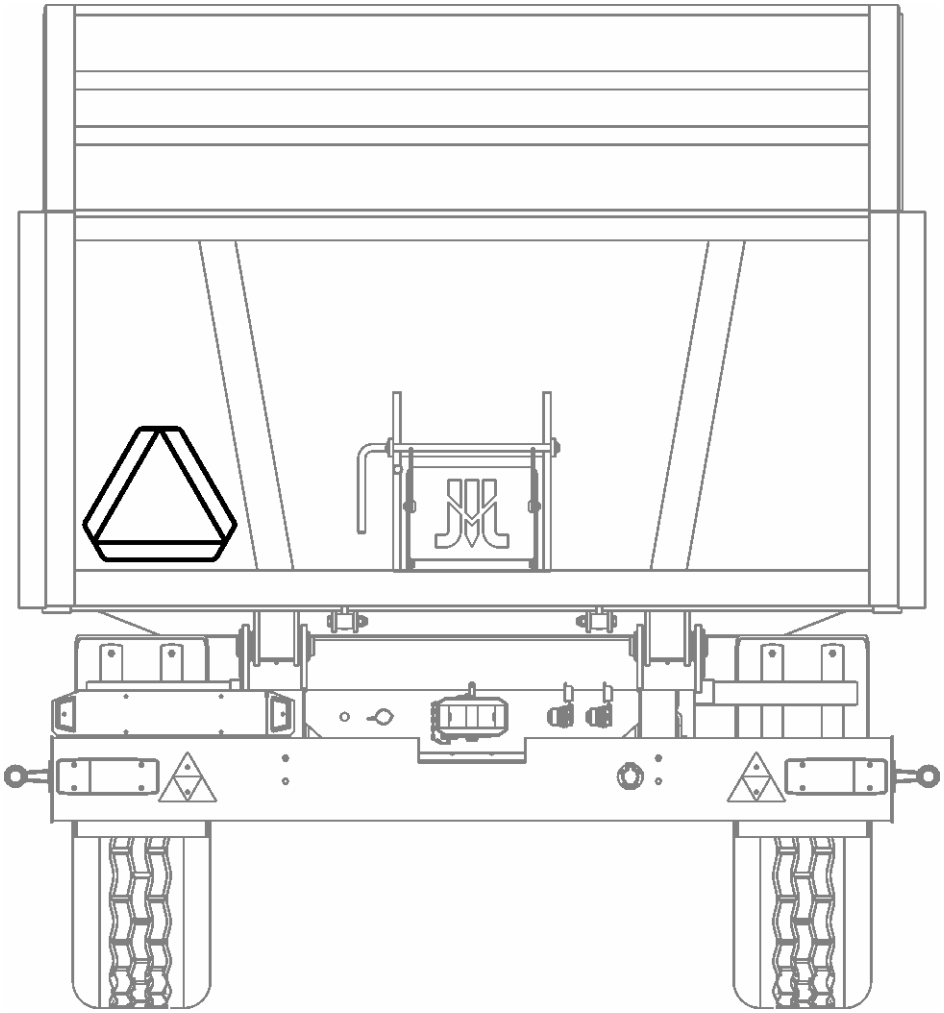


Fig. 2 Location of a triangular plate for slowly moving vehicle.

It is prohibited to leave unsecured trailer. Always activate the parking brake.

3 ADDITIONAL INFORMATION

3.1 TRAILER EQUIPMENT

Trailer equipment consists of:

- operation & maintenance manual + spare parts catalogue - 1
- warranty card - 1
- connection conductor - 1
- load crate support - 1

For user's order the trailer may be equipped additionally with:

- warning reflecting triangle
- triangular plate for slowly moving vehicles

3.2 WARRANTY CONDITIONS

"PRONAR" Sp. z o.o. guarantees efficient operation of the trailer if utilised according to technical & operation conditions described in the manual.

Failures detected within warranty period will be removed by the Warranty Service within no longer than 14 working days from the date of delivery to a repair station or within any other agreed period.

Normally wearing parts i.e. tyres, brake linings as well as mechanical damage, damage resulted from improper use, adjustment or maintenance are not subject of warranty.

Detailed warranty conditions are mentioned in the warranty card supplied together with the newly purchased trailer.

CAUTION!

Demand your dealer to fill the warranty card and complaint coupons exactly and completely. Lack of e.g. sale date or dealer's stamp may render your possible complaint void.

3.3 DELIVERY

The trailer is delivered for sale fully assembled and requires no package. Packed are only: the manual, the connection conductor and – if ordered – the warning triangle.

The trailer is supplied to the user with a truck or the user can take by himself with his own tractor.

CAUTION!

If the user takes the trailer by him he should read present manual and observe all recommendations given in the manual. In the case of transportation with a truck the trailer is fastened on the load crate according to generally recognised safety rules. The truck driver should take special precautions while transporting the trailer, because the gravity centre of the loaded truck is shifted upwards.

3.4 DISPOSAL OF THE TRAILER

If the user decides to dispose the trailer, the complete trailer should be delivered to local scrapyard. Parts removed in the course of e.g. repair should be supplied to a recycling firm.

The certificate from the scrapyard should be submitted while unregistering the trailer.

4 OPERATIONAL INFORMATION

4.1 TECHNICAL DATA

Table 2. Basic technical data

No.	Data	Unit	T679 with various tyre variants	
			385/65 22.5 18PR	550/45 22.5 16PR
1	Overall length	mm	6259	6259
2	Overall width	mm	2550	2550
3	Overall height w/o superstructures	mm	2244	2244
4	Overall height with superstructures	mm	2866	2866
5	Wheel base	mm	1860	1860
6	Load crate internal dimensions:			
	- length (lower/upper)	mm	4340/4650	4340/4650
	- width (front / rear)	mm	2368/2418	2368/2418
	- height w/o superstructures	mm	1000	1000
	- height with superstructures	mm	1580	1580
7	Load volume (with superstructures)	m^3	10,3	10,3
8	Load surface	m^2	10	10
9	Load surface height above ground	mm	1244	1244
10	Empty weight w/o superstructures	kg	3500	3500
11	Empty weight with superstructures	kg	4000	4000
12	Admissible load w/o superstructures	kg	12500	12500
13	Admissible load with superstructures	kg	12000	12000
14	Load crate tilt angle	(°)	50	50
15	Tyre pressure	kPa	550	280
16	Rated voltage	V	12	12
17	Admissible speed	km/h	30	30
18	Hydraulic oil capacity	l	18	18

Table 3. Tyres – technical data

Tyre dimensions (+ PR number)	Load index & speed symbol	Tread	Wheel band	Rolling radius [mm]	Load [kg] at speed [kph]			Used pressure [kPa]	Notes
					30	40	inna		
385/65 22.5 18RPR	160F	Y1	11.75x22.5	497	6000	5400		550	Guma Bolechowo
550/45 22.5 16PR	159A8	648	16x22.5	475		4375		280	BKT

4.2 STRUCTURE AND OPERATIONAL PRINCIPLE

4.2.1 Undercarriage

Fig. 3 Undercarriage.

1 – lower frame, 2 – hydraulic cylinder, 3 – draught bar, 4 – load crate, 5 - axle., 6 – hydraulic support

Trailer's undercarriage consists of parts shown on the Fig. 3. The lower frame (1) is a welded structure made of steel profiles. The main carrying elements are two stringers connected each to other with cross-bars. The middle part is fitted with a seat for hydraulic cylinder (2). In the rear part of the frame there is the drive unit of tandem type and its suspension and elements of rear lighting assembly. The suspension consists of two parabolic suspension springs connected together with help of a rocker. The whole is connected with help of bolts. Two axles are fastened to the suspension.

The axles (5) are made of a square rod with pivots on either end; on pivots are mounted conical bearings and on bearings – wheel hubs. The wheels are of single type, fitted with shoe brakes actuated with brake cams.

4.2.2 Load crate

Fig. 4 Load crate elements.

1 – load crate, 2 – side superstructures, 3 – rear superstructure, 4 – front superstructure, 5 – rear flap, 6 – chute flap

4.2.3 Hydraulic tilting system

The hydraulic tilting system is designed for automated unloading of the trailer through raising of the rear flap and tilting of the load crate backwards. The hydraulic system is supplied with oil from tractor's hydraulic system. Tilting of the load crate is controlled with the distributor of tractor's external hydraulic system.

- Circuit **1** - for supplying of trailer's hydraulic cylinder
- Circuit **2** - for supplying of second trailer's cylinder if two trailers are coupled with the tractor.

Both circuits are operated with the control valve 2 (fig. 5). The valve lever can be set in two positions:

- **1** - first trailer's tilting system open
- **2** - second trailer's tilting system open

The circuit for raising / lowering the load crate consists of hydraulic conduits, hydraulic cylinder, control valve, cut-off valve and control cable for the cut-off valve.

The purpose of the cable is to cut-off the flow of hydraulic oil to the cylinder (1) through switch-over of the cut-off valve (8) if maximum tilt angle is exceeded. The hydraulic system diagram is shown on the fig. 5.

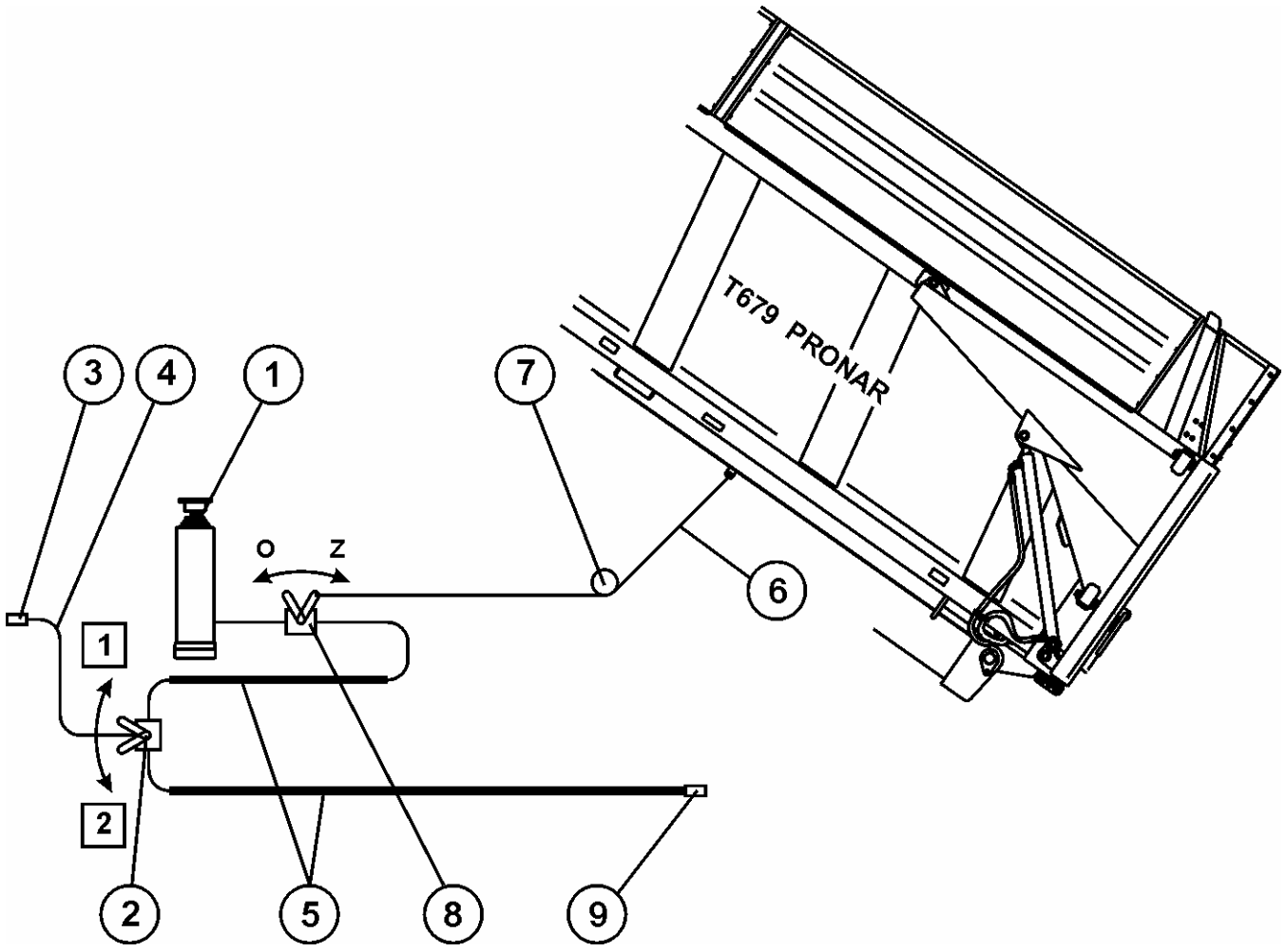


Fig. 5 Load crate tilt hydraulic system.

1 – hydraulic cylinder, 2 – cut-off valve, 3 – connection valve plug, 4 – flexible conduits, 5 - rigid hydraulic conduits, 7 – cut-off valve control cable, 7 - roller, 8 – cut-off valve, 9 – connection socket

CAUTION!

The cut-off valve 8 (Fig. 5) reduces load crate tilting angle. The length of the cable is adjusted by the manufacturer and must not be readjusted by the user.

4.2.4 Hydraulic system for raising of rear flap

The circuit for raising / lowering the rear flap consists of two double-action hydraulic cylinders and hydraulic conduits. When the system works, cylinders control operation of locking hooks. When the rear flap is closing, locking hooks lock it (pos. (a), fig. 6). The system is supplied with oil from tractor's hydraulic system.

CAUTION!

When the rear flap is lowered the locking hook must lock completely the locking bolt of the rear flap (3) (fig. 6).

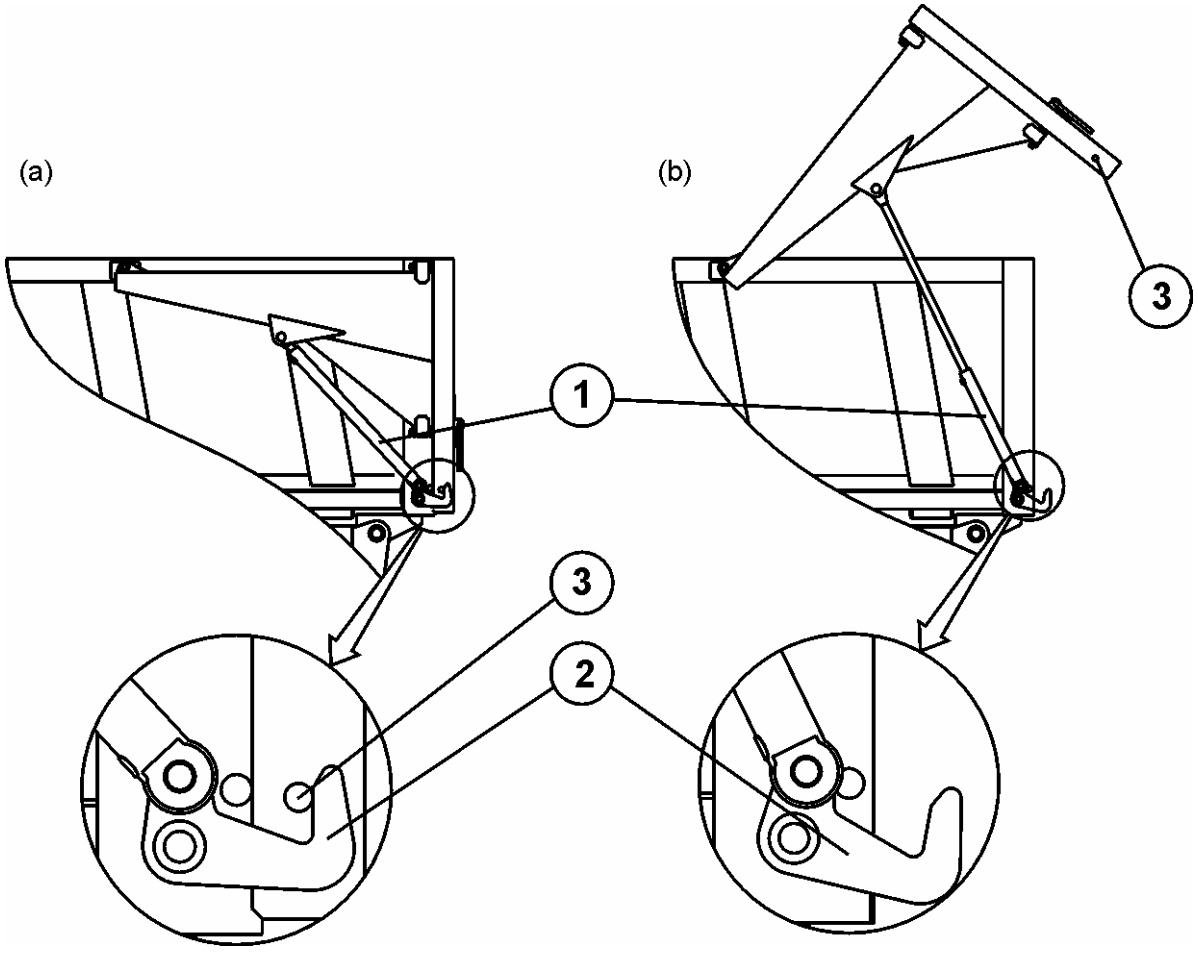


Fig. 6 Operation of the rear flap.

1 – double-action hydraulic cylinder, 2 – locking hook, 3 – rear flap locking bolt

4.2.5 Braking system

The trailer is fitted with a braking system, which consists of:

- pneumatically controlled operational brake
- manually operated (crank-operated) parking brake

The operational brake (pneumatic) is actuated from driver's seat with a brake pedal. In the case of disconnection from tractor's pneumatic system of the brake is actuated automatically.

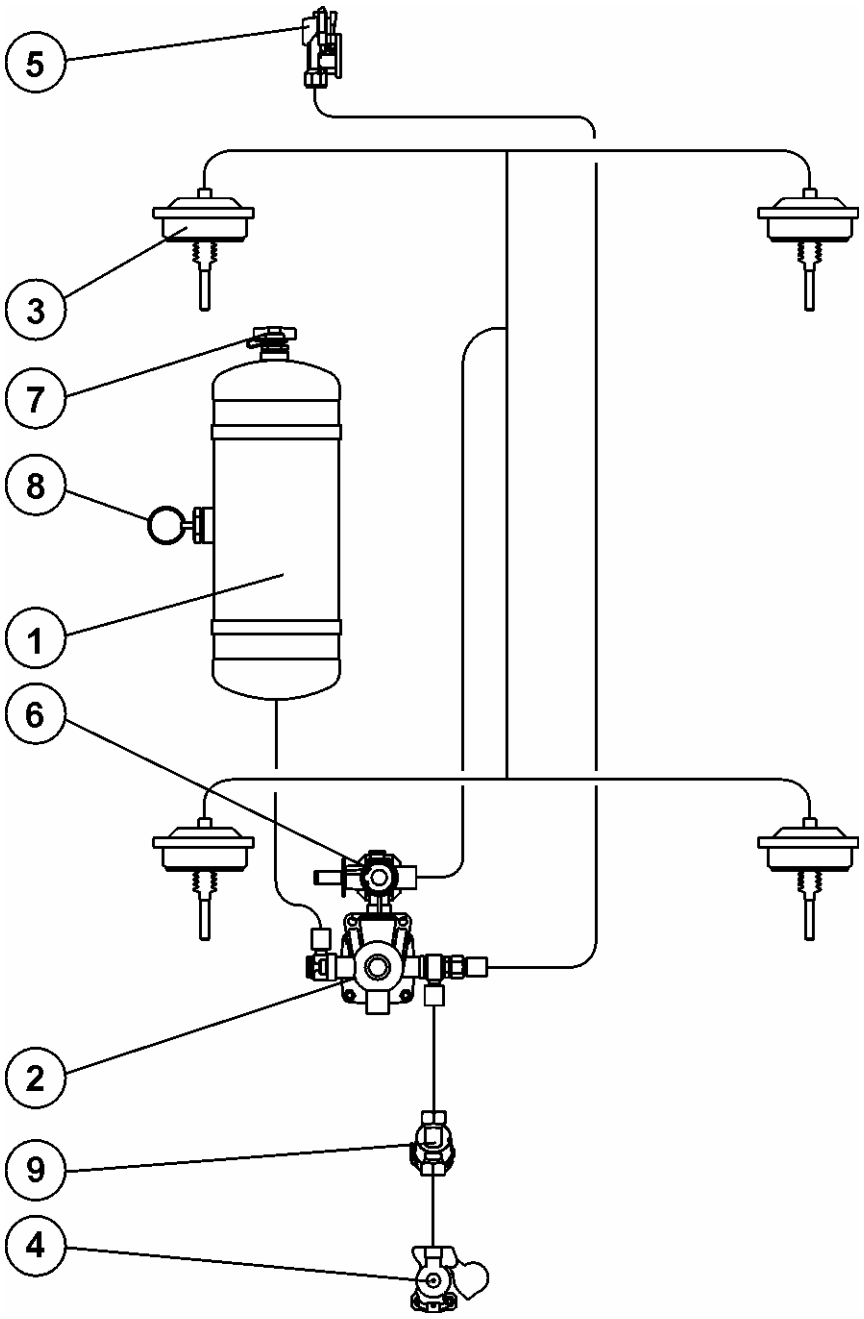


Fig. 7 Single-conduit pneumatic braking system with three-stage braking force controller.

1 – air reservoir, 2 – control valve, 3 – pneumatic cylinder, 4 – conduit connector, 5 – conduit connector for 2nd trailer, 6 – three-stage braking force controller, 7 – air reservoir inspection connector, 8 – drain valve, 9 – air filter

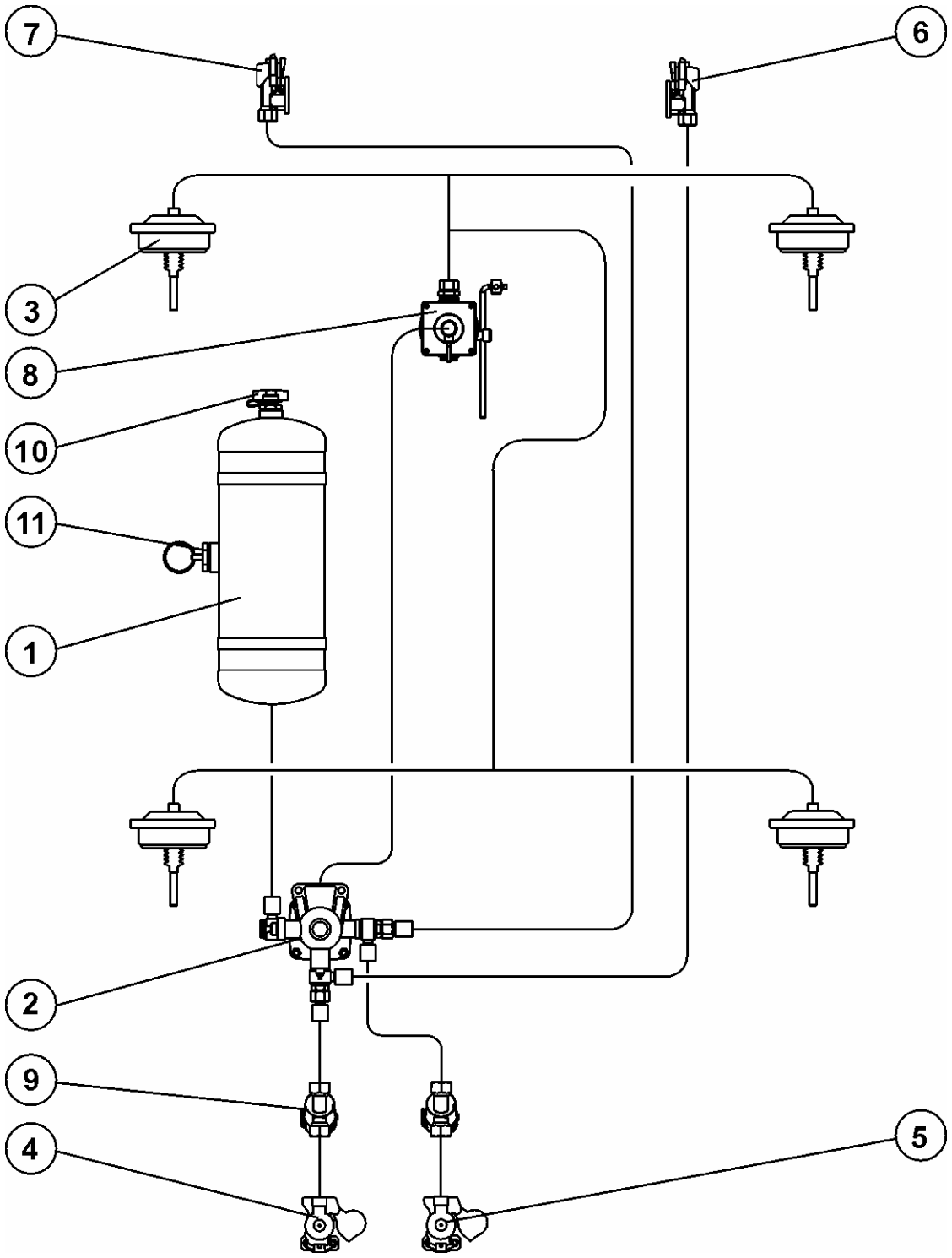


Fig. 8 Double-conduit pneumatic braking system with automated braking force controller.

1 – air reservoir, 2 – control valve, 3 – pneumatic cylinder, 4 – connector (yellow) of the control conduit for coupling with the tractor, 5 – connector (red) of the supply conduit for coupling with the tractor, 6 – connector (yellow) of the control conduit for coupling with second trailer, 7 – connector (red) of the supply conduit for coupling with second trailer, 8 – automated braking force controller, 9 – air filter, 10 – air reservoir inspection connector, 11- drain valve

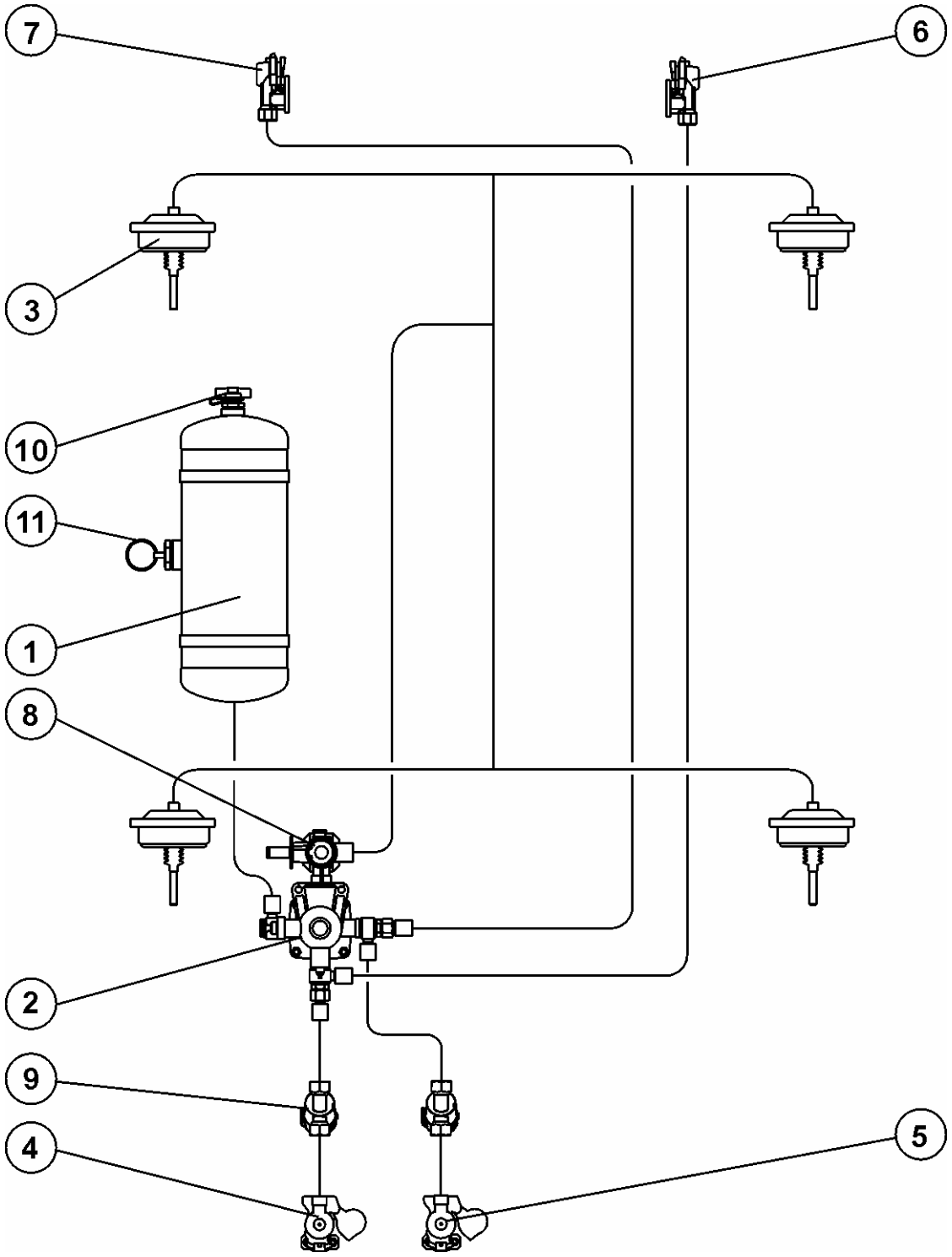


Fig. 9 Double-conduit pneumatic braking system with three-stage braking force controller.

1 – air reservoir, 2 – control valve, 3 – pneumatic cylinder, 4 – connector (yellow) of the control conduit for coupling with the tractor, 5 – connector (red) of the supply conduit for coupling with the tractor, 6 – connector (yellow) of the control conduit for coupling with second trailer, 7 – connector (red) of the supply conduit for coupling with second trailer, 8 – three-stage braking force controller, 9 – air filter, 10 – air reservoir inspection connector, 11- drain valve

4.2.6 Wiring, lighting, signalling

The wiring is adapted for power supply with 12 V DC. Trailer and tractor electrical systems should be connected together with suitable connection conductor.

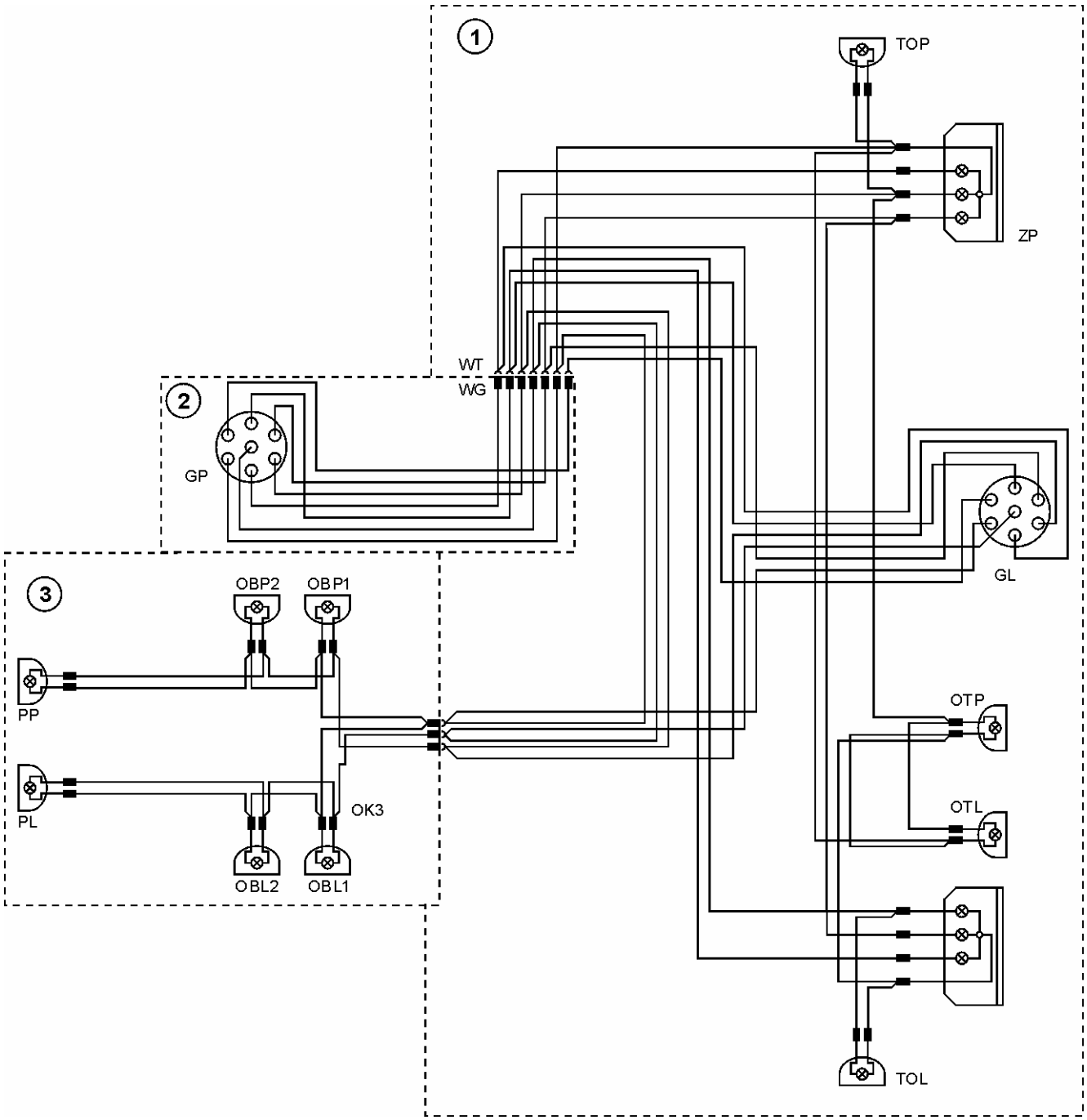


Fig. 10 Wiring diagram.

PP (PL) - right (left) front position light, ZP (ZL) – rear compact lamp right (left), OTP (OTL) – panel lighting lamp right (left), GP (GT) – front (rear) seven-pin socket, TOP (TOL) – rear contour lamp right (left), OBP (OBL) – side contour lamp right (left), 1 – rear bundle, 2 – central bundle, 3 – front bundle

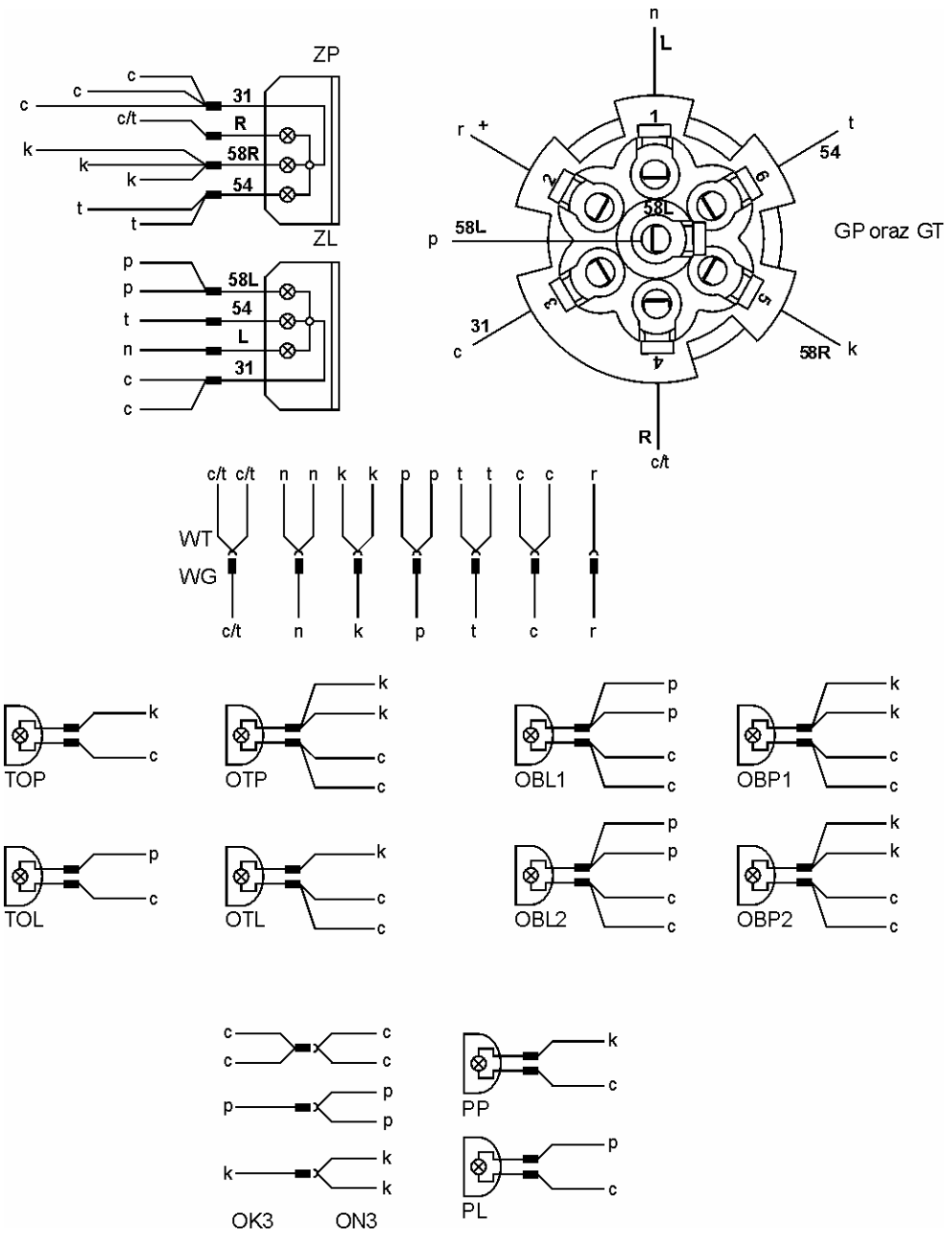


Fig. 11 Connection of conductors.

Conductor colours

p – orange, c – black, k – red, r – rose, n – blue, c/t – black-green, t - green,

31 – frame, R (L) – right (left) blinker, 58R (58L) – right (left) position lamp, 54 - „STOP", „+" – power supply +12V DC

4.3 TRAILER OPERATION PRINCIPLES

4.3.1 Coupling with tractor

Prior to coupling with tractor check if the trailer is braked with the parking brake. The tractor should be fitted with a tow hook, which is able to carry min. 22 kN (2200 kg) vertical load.

To couple trailer with tractor it is necessary to perform following operations:

- Position the draught bar eye on suitable level.
- Precise adjustment of the draught bar can be achieved with help of the hydraulic support. For this purpose draw back the tractor and connect the hydraulic support conduit to the tractor; then open the support securing valve and position the draught bar eye.
- Draw back the tractor, couple the draught bar eye with the upper tow coupling on the tractor and check its fastening.
- Raise the support
- Connect electrical, hydraulic (tilt + rear flap) and brake conduits to the tractor.
- Unlock the trailer parking brake.

CAUTION!

In the course of coupling no-one except of operator is allowed to stand between trailer and tractor.

4.3.2 Preparation for work

During preparation for work it is necessary to check following items:

- **condition of tyres and tyre pressure**
- **fastening of nuts fixing wheels and hitch rod**
- **condition of other screw connections**
- **function of lighting & signalling systems**
- **function of braking system**
- **function of hydraulic tilting system**

4.3.3 Loading the load crate.

It is allowed to load the crate only if the trailer is coupled with a tractor and stands on the level ground. The load should be arranged uniformly on the entire load crate floor, if possible.

It is recommended to use a crane, a loader or a conveyor for loading. Prior to loading check if the chute of the rear flap is closed.

In the case of objects, which put pressure in a few points only use thick boards as separators. Table 4 contains admissible loading heights of various materials. **The table shows clearly that – in many cases – it is impossible to use the entire loading volume without exceeding the admissible load.** It is important not to overload the trailer during loading.

Lightweight materials of great volume may be loaded above wall height but the load should be properly secured from falling down and polluting the road.

Table 4. Loading height

Type of material	Loading height [m]
wet gravel, wet soil, clinker, stone	0,58
cement, dry gravel, soil, brick	0,76
manure, full brick, mineral fertiliser	1,26
rye, potatoes, maize, rape, wheat	1,55
barley, oats, peat, coke	1,58

CAUTION!

It is prohibited to exceed the admissible trailer load. Overload may endanger traffic safety and damage the trailer.

4.3.4 Transport

- While driving public roads observe traffic regulations.
- Do not exceed the maximum admissible speed. Adjust the speed to traffic conditions.
- The trailer can work on slopes up to 8°.
- While driving public roads the trailer should be equipped with certified or approved warning reflecting triangle.

Rear wall should be equipped with a triangular plate for slowly moving vehicles (if the trailer is the last vehicle in a set).

4.3.5 Principles of use of tyres

- During assembly/disassembly of tyres protect he trailer against accidental movements.
- Repair/replacement of tyres should be performed by trained personnel and with proper tools.
- After each installation of a wheel tighten nuts after first 10 working hours and then check their tightening every 50 working hours.
- Regularly check the tyre pressure and keep the pressure value according to the manual (especially after longer standstills).

- Tyre pressure should be checked during all-day intensive work. Take into consideration the fact that the temperature increase can raise the pressure even by 1 bar. In the case of such raise of temperature and pressure reduce the load or the speed.
- Never reduce the pressure through deflating, if the pressure increase was the result of temperature increase.
- Protect valves with proper caps to avoid penetration of impurities.
- Do not exceed the maximum speed.
- During all-day working cycle make a one-hour pause at noon.
- Use 30-minute pauses after each 75 km or 150 minutes of drive, depending on what happens first.

Avoid holes, quick and variable manoeuvres and high speed during turns.

4.3.6 Unloading of the load crate

Unloading is performed through tilting the load crate backwards.

CAUTION!

It is prohibited to raise loaded crate if the flap is closed.

Automated unloading should be executed as follows:

- Place the trailer on flat ground, brake the tractor and the trailer with the parking brake. During unloading the tractor should be positioned as for drive forward.
- Open the rear flap with help of hydraulic cylinders.
- Tilt the load crate by raising it with the hydraulic cylinder.

CAUTION!

- **It is allowed to tilt the load crate only when the trailer stands on hard, flat ground.**
- **During unloading no-one is allowed to stand in the vicinity of tilted load crate.**
- **It is allowed to tilt the load crate only if the trailer is coupled with a tractor.**
  - **It is prohibited to tilt the load crate during violent wind gusts.**

The rear wall is fitted with a chute, which opening can be adjusted resulting in slot of various width. This enables adjustment of output of unloaded loose materials e.g. mineral fertilisers or cereal. To open the chute, first loose the nut of the securing clamp. Having unloaded the trailer lower the load crate.

- Lower the load crate.

- Close the rear flap by controlling relevant circuit from the tractor. Closing / opening the flap is realised with 2 double-action hydraulic cylinders (pos. 1 fig. 5). The rear flap closing should be realised until the flap becomes locked with locking hooks (pos. 2 fig. 6).

CAUTION!

- **Take special precautions while closing the rear flap because, otherwise resulting injuries may cause serious health detriment or – in certain cases - death.**
- **Take special precautions while closing flap chute to avoid crushing fingers.**
- **Do not move and/or drive with the load crate in upper position.**

4.3.7 Uncoupling from the tractor.

To uncouple the trailer perform following actions:

- Stop the tractor and the trailer with the parking brake.
- With help of the hydraulic support place the trailer at proper height and secure with the support securing valve.
- Disconnect electric, hydraulic and brake conduits; protect their ends against dirt.
- Uncouple the draught bar conductor from the tractor's towing hook and drive away with the tractor.

4.3.8 Failures and defects.

Frequently appearing failures & defects and troubleshooting are given in the chapter "MAINTENANCE".

5 MAINTENANCE

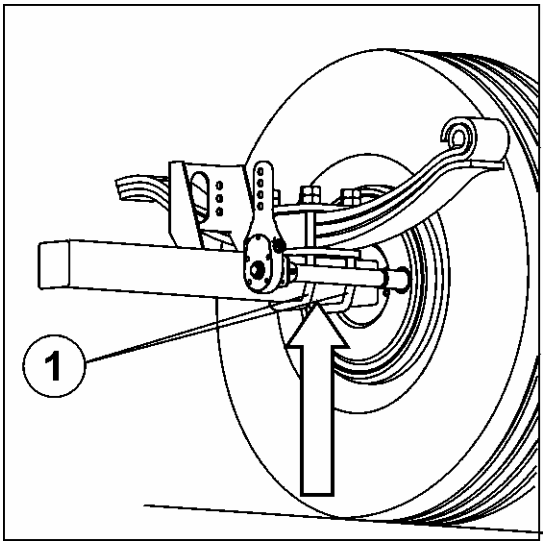
CAUTION!

- **If any operation failure or damage occurs, stop operation of the trailer and repair the damage/ remove the failure.**
- **Maintenance & repair of the trailer with loaded and/or lifted load crate without proper support of the crate is prohibited.**
- **All maintenance & repair works should be performed with observation of safety regulations. In the case of wound wash and disinfect wounded place immediately. In the case of serious injuries consult a physician.**
- **If it is necessary to maintain the trailer with lifted load crate (e.g. replacement of the telescope cylinder) commission a specialised workshop to make repair.**

5.1 ADJUSTMENT OF WHEEL BEARINGS

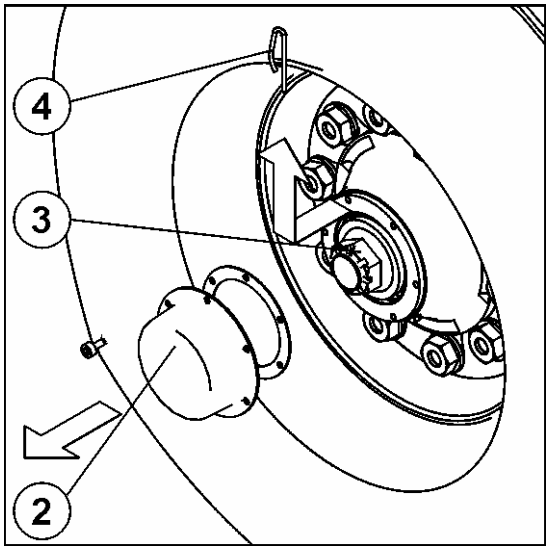
After first 500 km and after every next 1500-2000 km check and – if necessary – adjust play of wheel bearings.

Scheme (1)



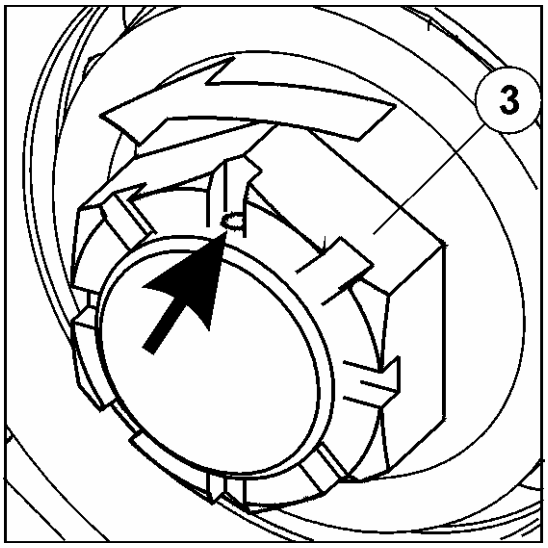
Couple the trailer with a tractor, brake the tractor, place locking wedges under trailer wheels and raise each wheel with suitable hoist. Place the hoist between bail screws (1), which fasten the suspension spring to the axle. Check play of bearings.

Scheme (2)



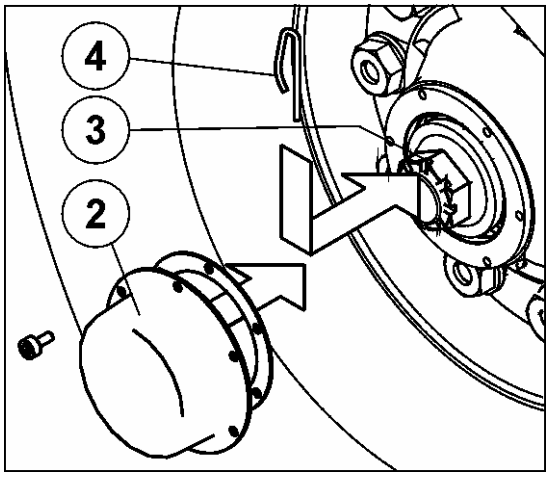
If the play is excessive, dismount the hub cover (2) and remove the cotter pin (4) of the crown nut (3).

Scheme (3)



While turning the wheel screw the crown nut tight until the wheel stops. Unscrew the nut by 1/3 of turn until the next cotter pin groove will be aligned with the opening in the pivot.

Scheme (4)



Secure the nut (3) with the cotter pin (4) and mount the hub cover (2). The wheel should turn smooth, without stops and perceptible resistance, which do not result from rubbing between brake shoes and the drum.

5.2 ADJUSTMENT OF BRAKES

The brakes should be adjusted if:

- excessive play between shoe and drum appears due to wear of brake shoes; braking efficiency falls down
- brakes operate uneven and not simultaneously.

If brakes are adjusted properly braking of both wheels should take place in the same moment.

Adjustment of brakes consists in adjustment of position of the brake cam arm (1) (Fig. 11) in relation to the cam shaft (2). For this purpose loose the nut (4) and change position of the arm on the multi-groove end of the shaft (2) towards proper direction i.e.:

- backward – if the brake brakes to late
- forward – if the brake brakes to soon

Perform adjustment separately for each wheel. After proper brake adjustment cam arms should form the angle of 90° in relation to pneumatic cylinder push rod whilst the braking power is greatest. Parking brake should be adjusted if the brake cable is excessively stretched or if cable clamps are loosened. Cable length should be matched so that by fully loosened parking and working brakes the cable would be loose and hang down by 1 ÷ 2 cm.

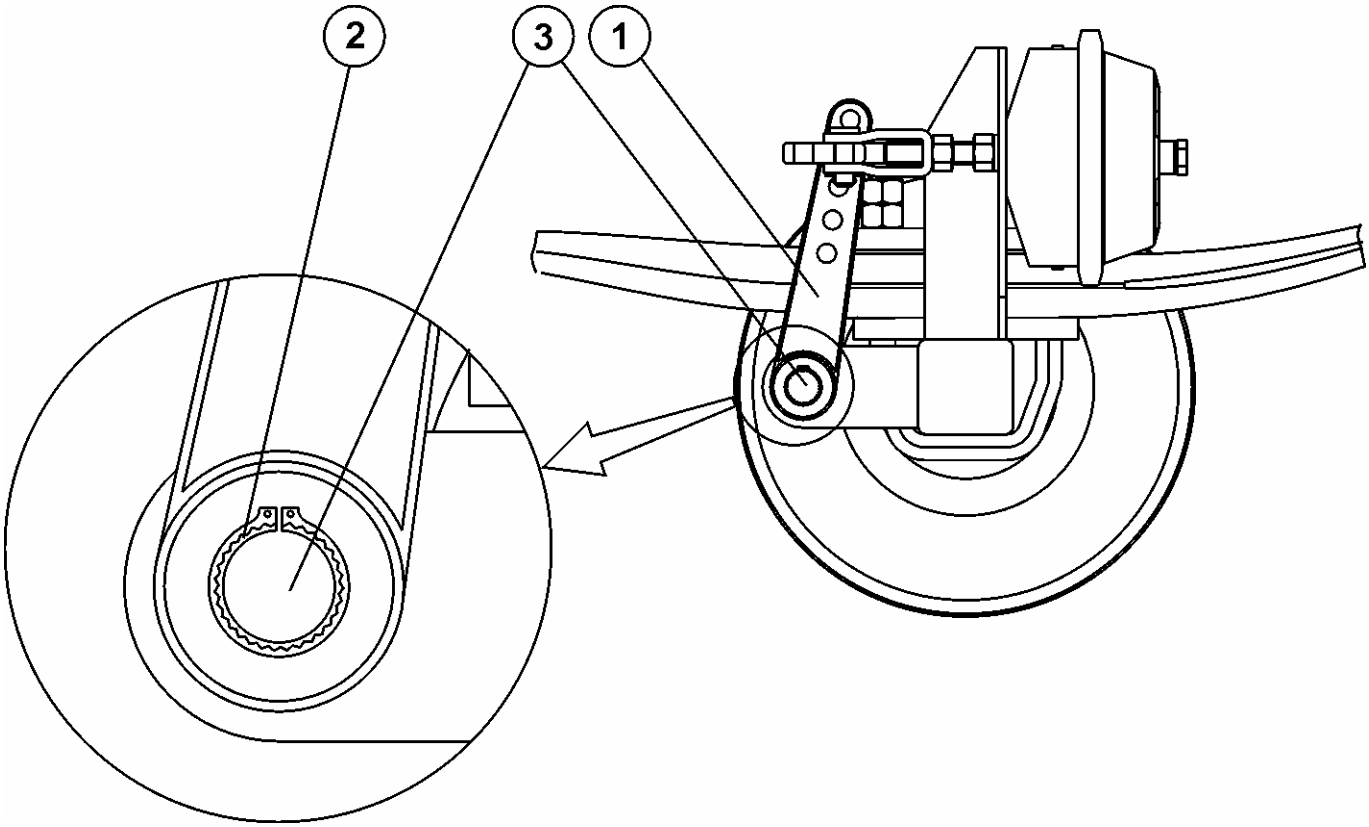


Fig. 12 Brake adjustment elements.

1 - brake cam arm, 2 – securing ring, 3 – brake cam shaft

CAUTION!

With properly adjusted brakes the braking force should be not lower than values given in the Table 5.

Table 5. Braking force

Trailer type	Main brake braking force (kN)	Parking brake braking force (kN)
T679	48	28,8

Difference between left and right wheel braking forces must not exceed 30% with assumption that the “100%” means the greater force.

CAUTION!

The trailer braking power is the sum of braking forces of both wheels.

5.3 MAINTENANCE OF PNEUMATIC SYSTEM

In the scope of maintenance operations it is necessary to perform inspection of pneumatic system tightness, especially at all connections. Tightness test should be executed with system pressure rated at ca. 600 kPa (6,0 kg/cm2).

If conduits, sealing or other elements of the system are damaged, air will get out in points of damage with typical hiss or – in the case of small leakage – in the form of small air bubbles. Small leakage can be detected with soap water or washing agent. Damaged sealing or conduits replace with new ones. If the reason of leakage is the damaged pneumatic cylinder – regenerate it.

Periodically remove condensed water from the air tank. For this purpose pull out the drain valve arbour located in the upper part of the tank. Compressed air will push the water out. After loosening the mandrel the valve should close automatically and stop airflow from the tank.

Once a year just before the winter unscrew the drain valve and clean it from accumulated dirt.

5.4 MAINTENANCE OF HYDRAULIC SYSTEM

It is necessary to take as the principle that the oil in the trailer hydraulic system and the oil in the external tractor hydraulic system is of the same type. Application of different oil types is prohibited.

New trailers are filled with HL32 hydraulic oil.

The hydraulic system of the trailer should be absolutely tight. Test of tightness consists in coupling of the trailer with a tractor, activation of the hydraulic cylinder and keeping it in its maximally pulled out position for 30 s.

If oil leaks at connections of hydraulic conduits, screw the connection tightly; if leakage persists – replace the conduit or the connector with a new one. If oil leaks between connections, replace the damaged conduit. Each mechanical damage requires replacement of damaged element.

If the body of the hydraulic cylinder is polluted with oil check the reason of leakage.

While the cylinders are entirely pulled out check all sealings. Small leakage of “sweating off” type are admissible; if drops of oil are observed – stop the operation and repair the failure.

CAUTION!

Operation of the trailer with leaky tilting hydraulic system is prohibited.
It is prohibited to operate a trailer with lengthened (in relation to manufacturer’s adjustment) rope controlling the cut-off valve (8) (Fig. 4, “Hydraulic system of the load crate tilting system”).

CAUTION!

Condition of the hydraulic system should be checked all time during trailer’s operation.

If the hydraulic systems is used very intensively (great number of tilts) replace hydraulic conduits every 4 years..

5.5 LUBRICATION

The trailer should be lubricated in points shown on fig. 10, and described in the Table 6 „Lubrication points of the trailer”.

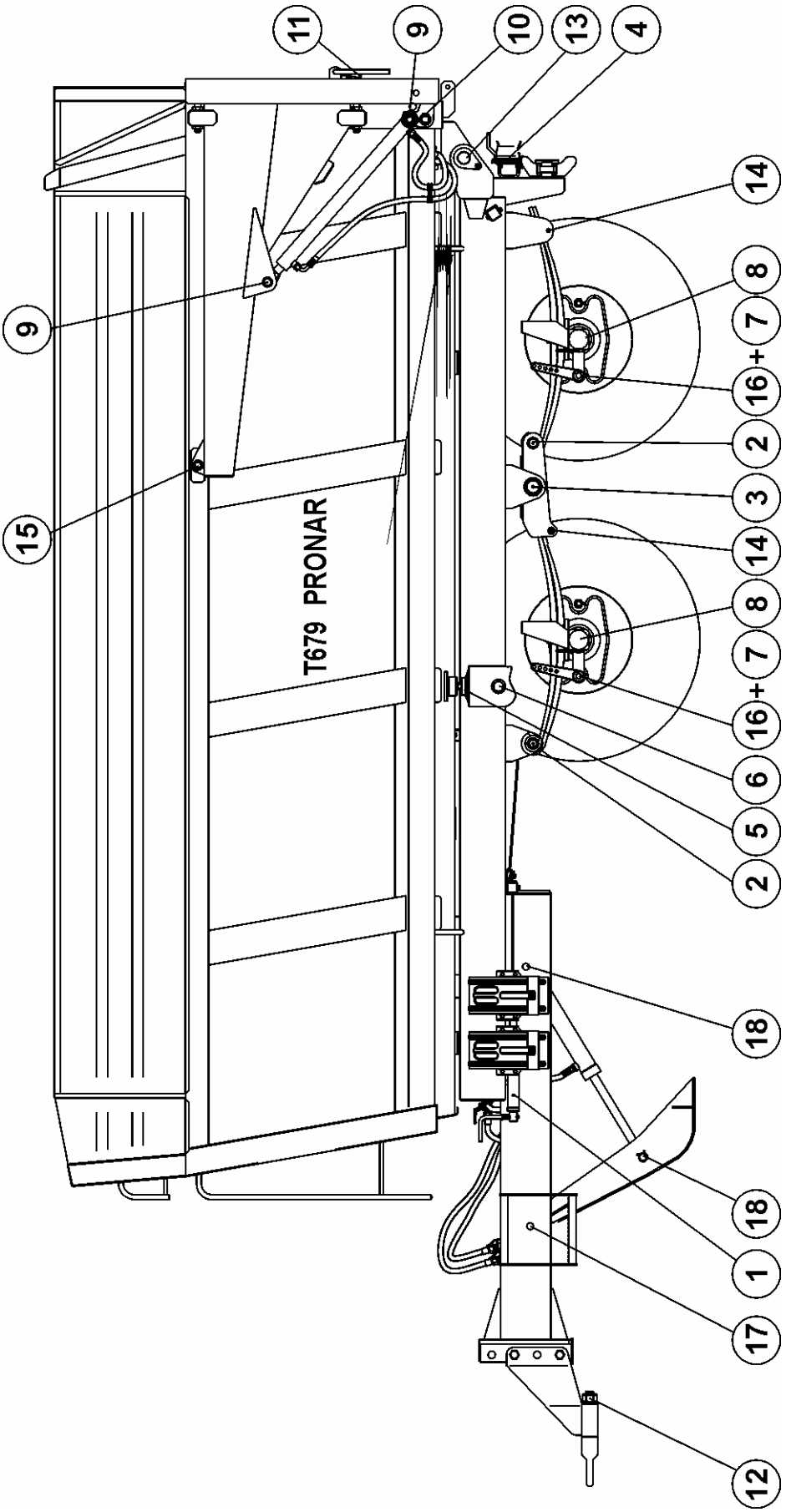


Fig. 13 Trailer lubrication points.

Table 6. Trailer lubrication points

No. at fig.	Lubrication point	Number of points	Grease type	Frequency & method of lubrication
1	Parking brake screw	1	solid	every 3-4 months
2	Suspension spring bolt	4	solid	once a month cover with grease
3	Rocker bolt	2	solid	once a month cover with grease
4	Rear coupling gear	1	solid	every 3-4 months
5	Upper ball articulation of the cylinder	1	solid	every 6 months
6	Bolts of mounting of the hydraulic cylinder	2	solid	every 6 months cover bolts with fresh grease
7	Cam shaft sleeves	8	solid	every 6 months
8	Wheel bearings	4	solid	replace grease every 2 years
9	Rear flap cylinder bearings	4	solid	every 3-4 months
10	Locking hook bolts	2	solid	every 3-4 months
11	Chute guide	2	solid	every 3-4 months cover with very thin layer of grease
12	Draught bar rotary pull rod	1	solid	every 3-4 months
13	Tilt sleeves	2	solid	every 3-4 months
14	Suspension spring slide surfaces	4	solid	once a month
15	Flap bolts	4	solid	every 3-4 months
16	Brake lever adjustment screws	4	solid	every 6 months
17	Support bolt	1	solid	every 6 months
18	Support cylinder bearings	2	solid	every 6 months

5.6 ASSEMBLY / DISASSEMBLY OF SUPERSTRUCTURES

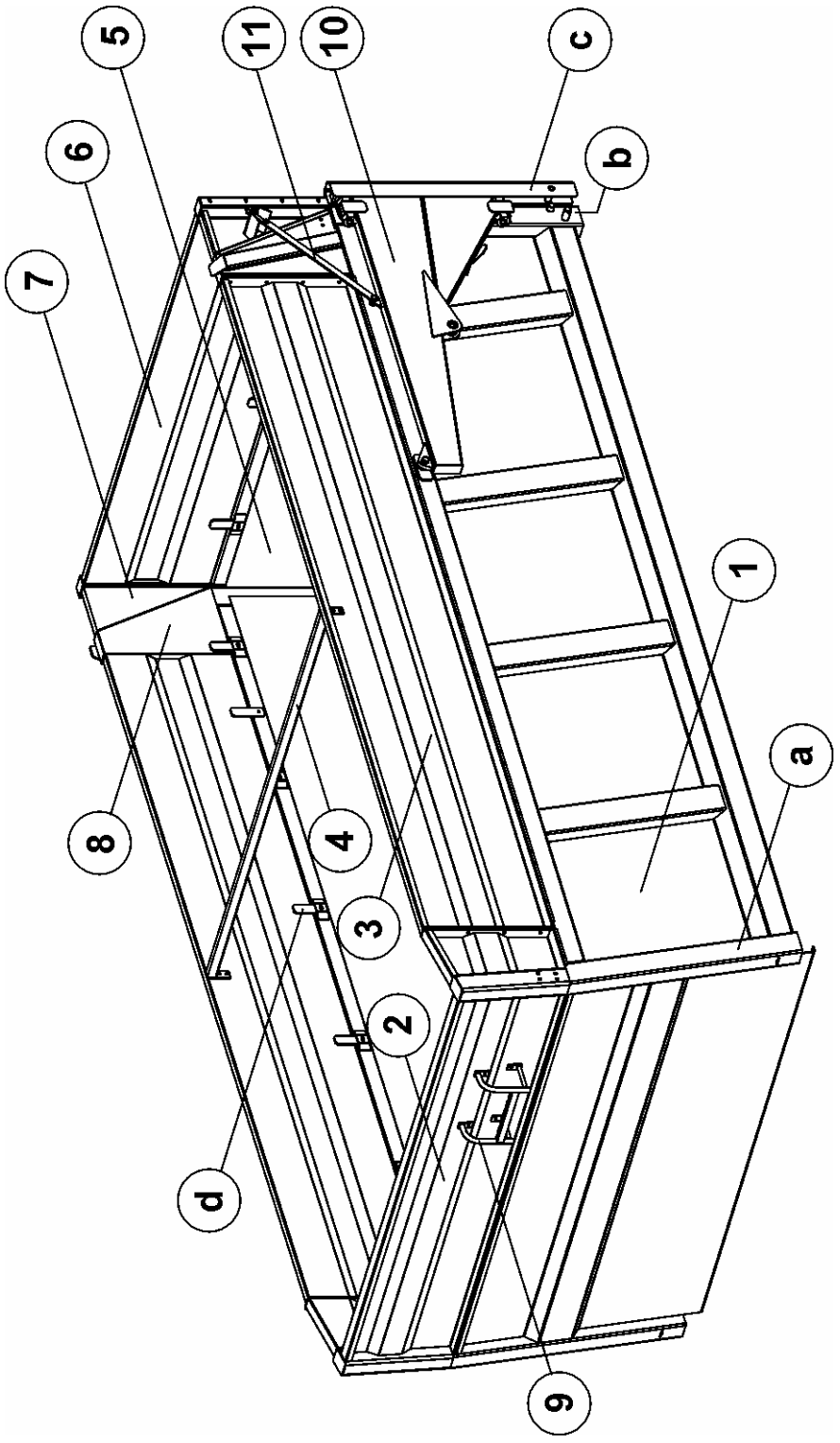
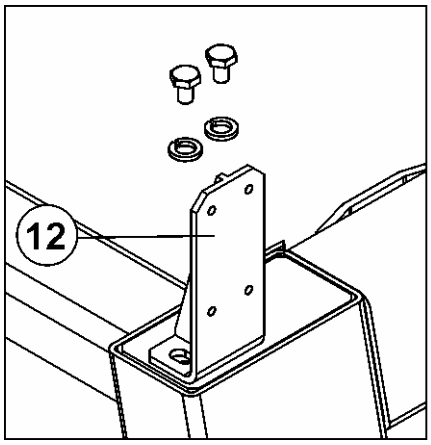


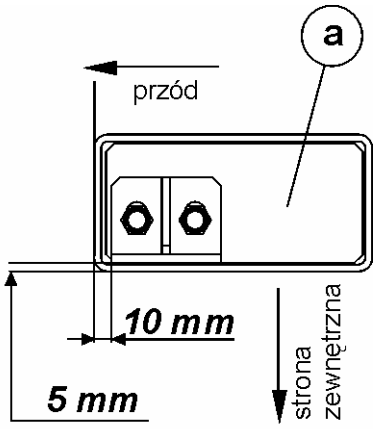
Fig. 14 Load crate + set of superstructures.

1 – load crate, 2 – front superstructure, 3 – side superstructure, 4 – connecting bar, 5 – rear flap, 6 – rear superstructure, 7- rear superstructure section (left, right), 8 – rear post (left, right), 9 - superstructure ladder, 10 – flap wing (left, right), 12 – string, 13 – superstructure brackets (invisible on the drawing)

a – load crate left front post, b – load crate left rear post, c – flap left post, d – fastening grips

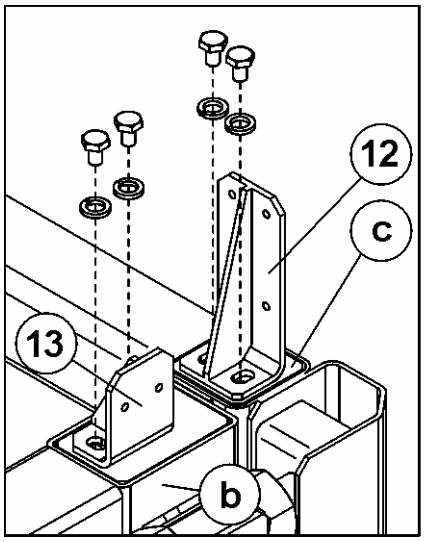
Scheme (1)

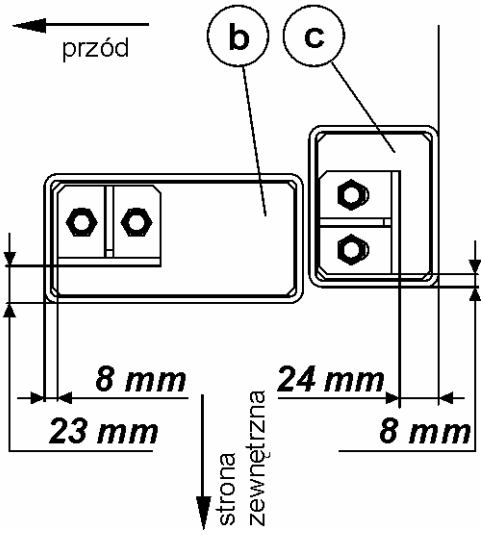




First screw superstructure brackets (12, 13) to the load crate posts and to the flap. While performing this action pay special attention to keeping proper dimensions as shown on schemes. The scheme (1) shows fastening of the bracket to the front left post of the load crate (a). The right bracket should be installed on the front right post of the load crate in the same way.

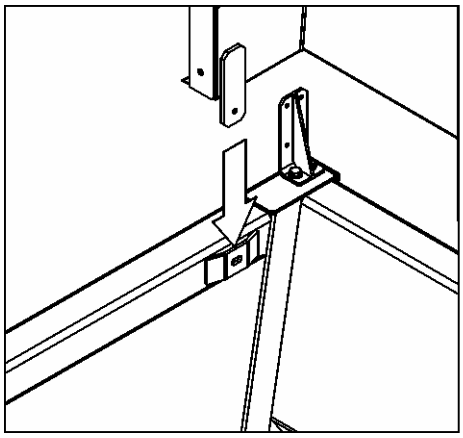
Scheme (2)

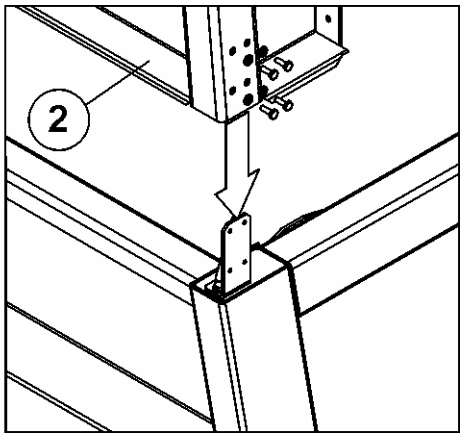




Install the superstructure brackets (13) on the rear posts of the load crate and brackets (12) on the flap side posts.

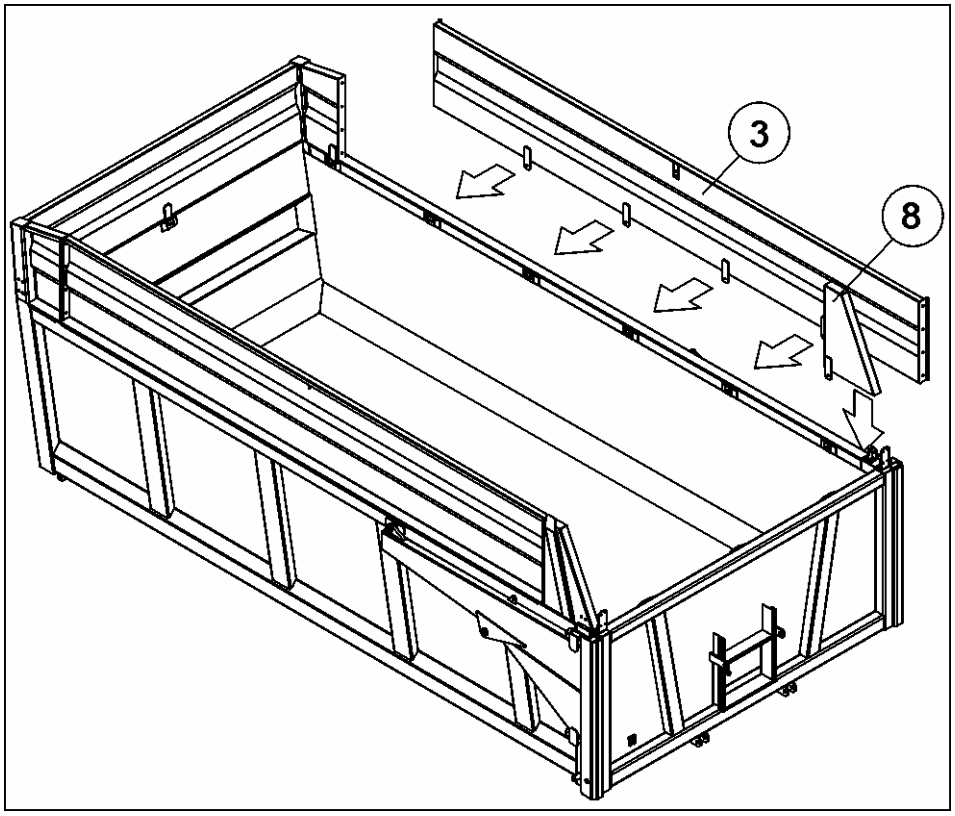
Scheme (3)





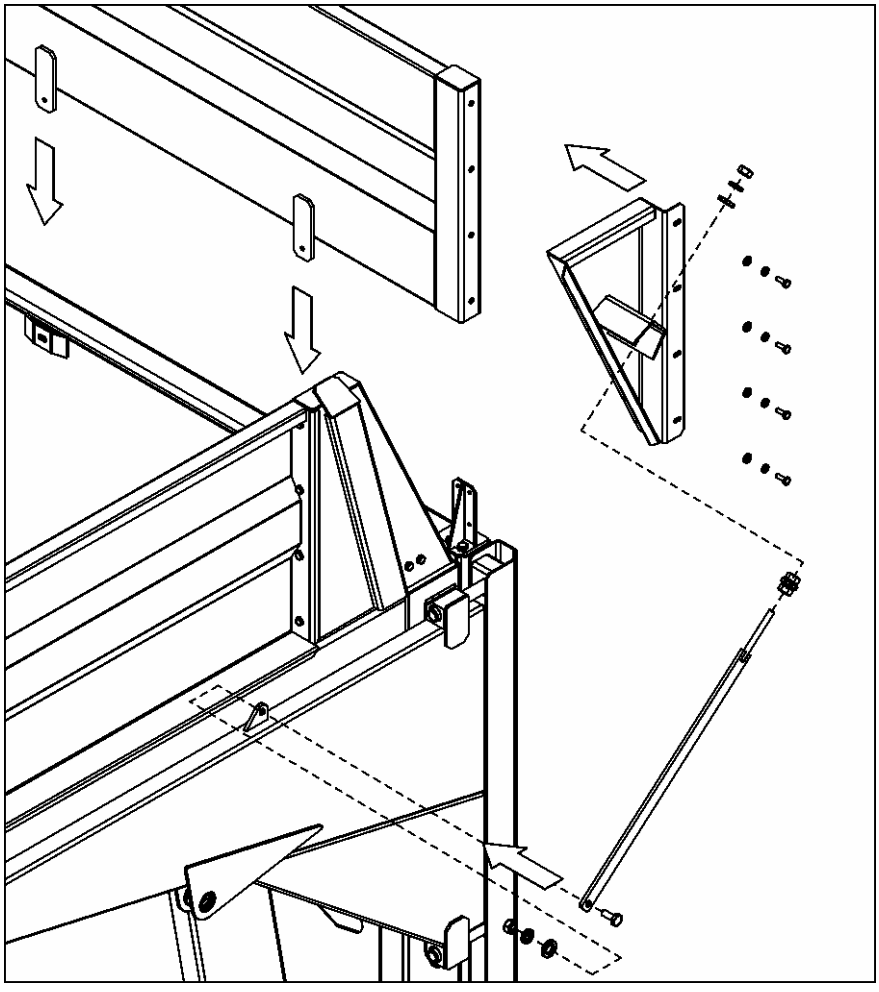
Install the front superstructure (2). Openings in the superstructure posts should agree with bracket openings. Arms (d), which fasten the superstructure to the load crate, should be put into relevant fastening grips welded to the load crate.

Scheme (4)



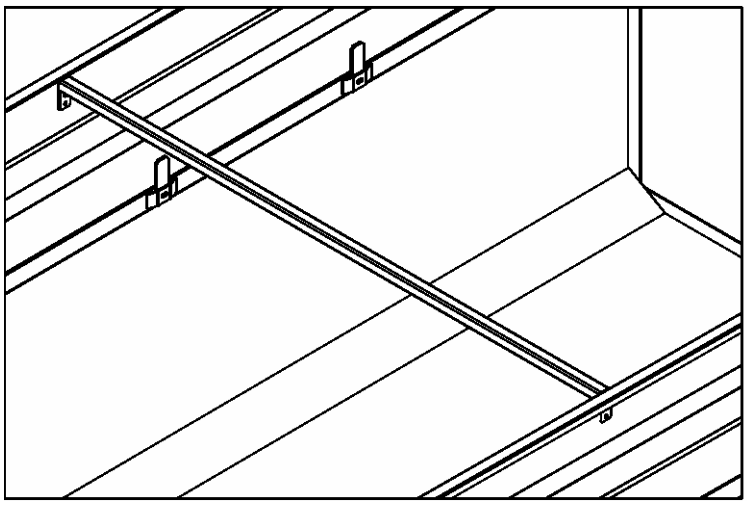
Install both front side superstructures (3), by putting them into relevant grips (marked with arrows on the scheme (4)). Screw side superstructures (3) to the front superstructure (2). Install rear superstructure posts: left (9) and right on superstructure brackets (13).

Scheme (5)



Fasten the rear flap superstructure (7) to the flap (6) with brackets (13). Screw the rear superstructure sections (8), left and right, to the rear superstructure posts (8). Stiffen the entire structure with two strings (12) on both sides of the load crate. The strings (12) should be screwed to the left & right flap wings and side sections (8) of the rear superstructure.

Scheme (6)



Having installed the superstructures, screw the connection beam (5) to side posts (4). Screw all superstructures (2), (3a), (3b), (7) and posts (4), (5), (6) to the load crate. Finally, fasten the ladder (10) to the front superstructure.

Detailed list of screwed connections is given in the spare parts catalogue. Description of structural elements on assembly schemes refers to the fig. 15 “Load crate + set of superstructures”.

Disassembly of superstructures should be performed in opposite order.

CAUTION!

Assembly and disassembly of superstructures and frame should be performed with help of suitable platforms, ladders or ramp. Said appliances should protect the operator against falling down. The operation should be carried out by at least two operators. Take special precautions.

CAUTION!

Lower edges of superstructure posts should agree with upper edges of the load crate (fig. 14, „Inspection of correct superstructure installation.”). Otherwise, the flap operation gear and superstructures may be damaged while opening / closing the flap.

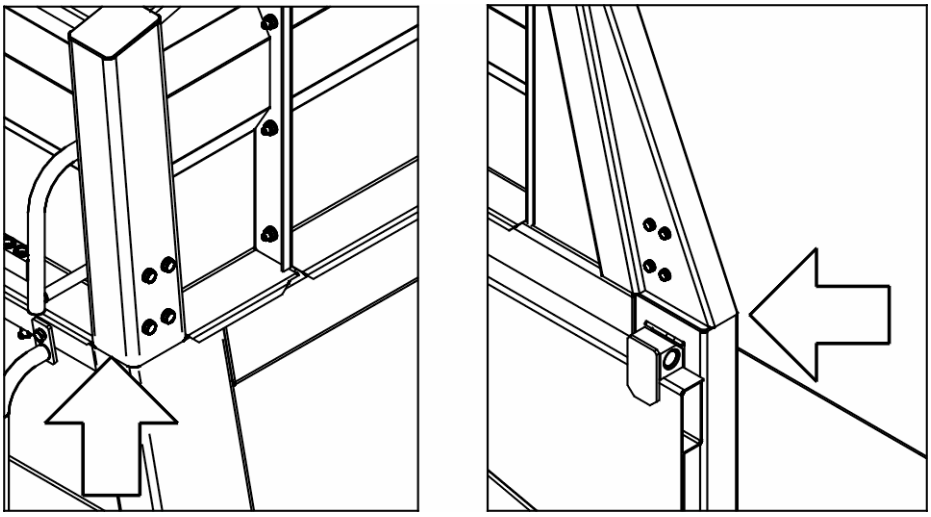


Fig. 15 Inspection of correct superstructure installation.

5.7 MAINTENANCE OF SUSPENSION SPRINGS

Maintenance of suspension springs consists in periodical lubrication in points given in the Table 6 and current inspection of condition of suspension spring leafs.

Surface between spring leaves should be secured with penetrating anticorrosive/lubricating agent . Avoid accumulation of dried mud layer on suspension springs.

5.8 STORAGE & PRESERVATION

After work clean the trailer and wash with water stream. If the varnish coat is damaged, clean such place from rust and dust, degrease, and paint of the same colour and uniform layer thickness. If damaged places will not be painted immediately, cover them with thin layer of grease or anticorrosion agent.

It is recommended to store the trailer in a closed or roofed storage. If the trailer is stored outdoor for long period protect it from atmospheric influence, especially from agents causing corrosion and ageing of tyres.

AGRICULTURAL MONOCOQUE TANDEM TRAILER / DUMPER

T679

SPARE PARTS CATALOGUE

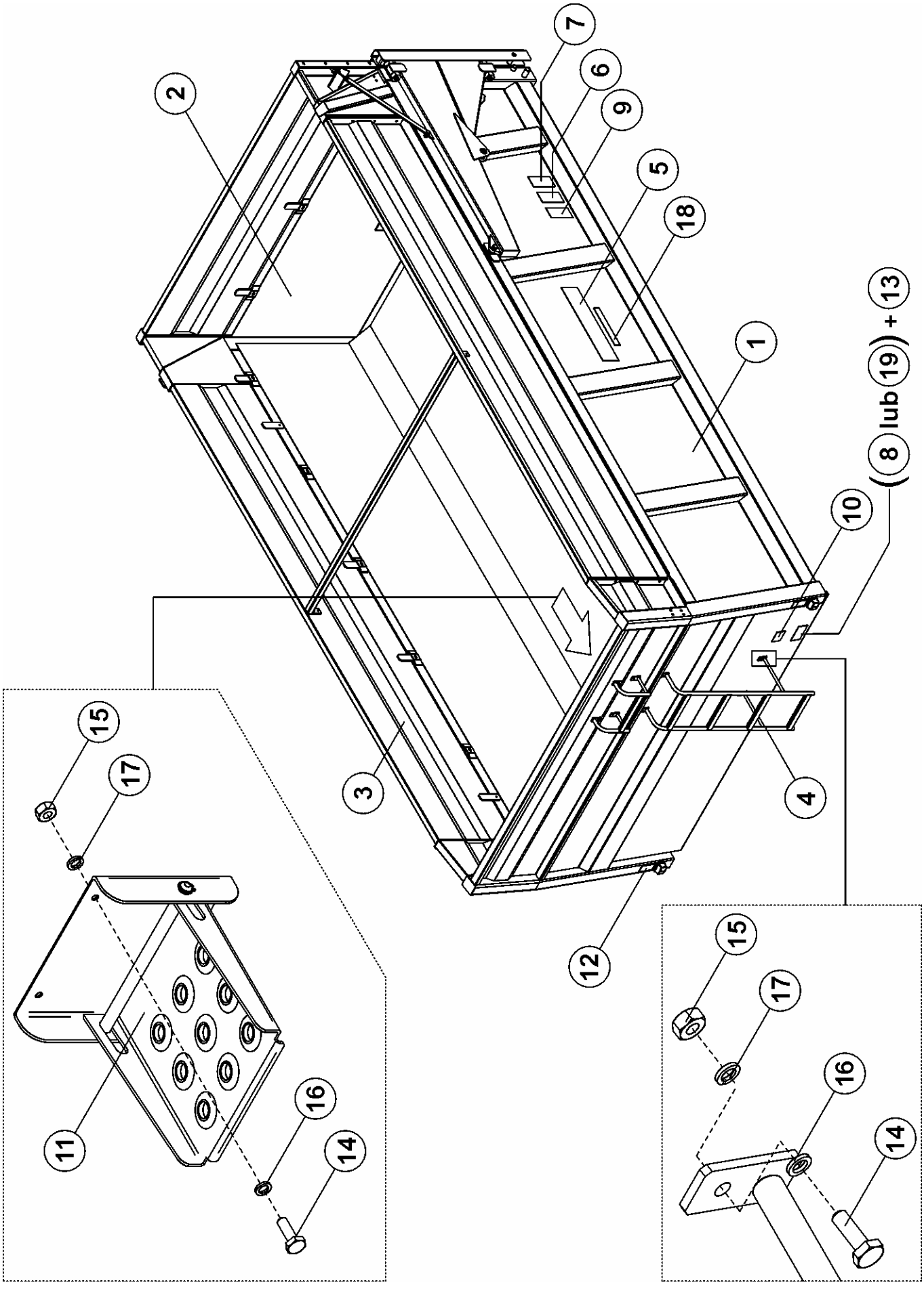


Fig. 16 Load crate, complete

Assembly		Drawings No.	QUANTITY T679		
Load crate, complete		**16**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	LOAD CRATE	64RPN-02.00.000	1	1	1
2	REAR FLAP, CPL.	64RPN-03.00.000	1	1	1
3	SET OF SUPERSTRUCTURES 580	64RPN-19.00.000	1	1	1
4	LADDER I	64RPN-00.00.200	1	1	1
5	STICKER T679	64RPN-00.00.005	2	2	2
6	WARNING STICKER I	58RPN-00.00.012	2	2	2
7	WARNING STICKER II	58RPN-00.00.013	2	2	2
8	TYPE PLATE	37RPN-00.00.009	-	1	-
9	WARNING STICKER III	58RPN-00.00.020	2	2	2
10	INFORMATION STICKER	58RPN-00.00.014	1	1	1
11	SIDE STEP	EB 20-010 Zn	3	3	3
12	RECTANG. REFLEX STICKER, WHITE	DOB35	2	2	2
13	RIVET P Al./Fe 3x8	PN-83/M-82971	-	4	4
14	SCREW M8x25-8.8-B-Fe/Zn5	PN-85/M-82105	16	16	16
15	NUT M8-5-B-Fe/Zn5	PN-86/M-82144	16	16	16
16	WASHER 8.4-Fe/Zn5	PN-78/M-82005	16	16	16
17	SPRING WASHER Z8.2-Fe/Zn5	PN-90/M-82008	16	16	16
18	STICKER „Capacity 12000 kg”	64RPN-00.00.009	-	-	2
19	TYPE PLATE I	29RPN-00.00.025	-	-	1

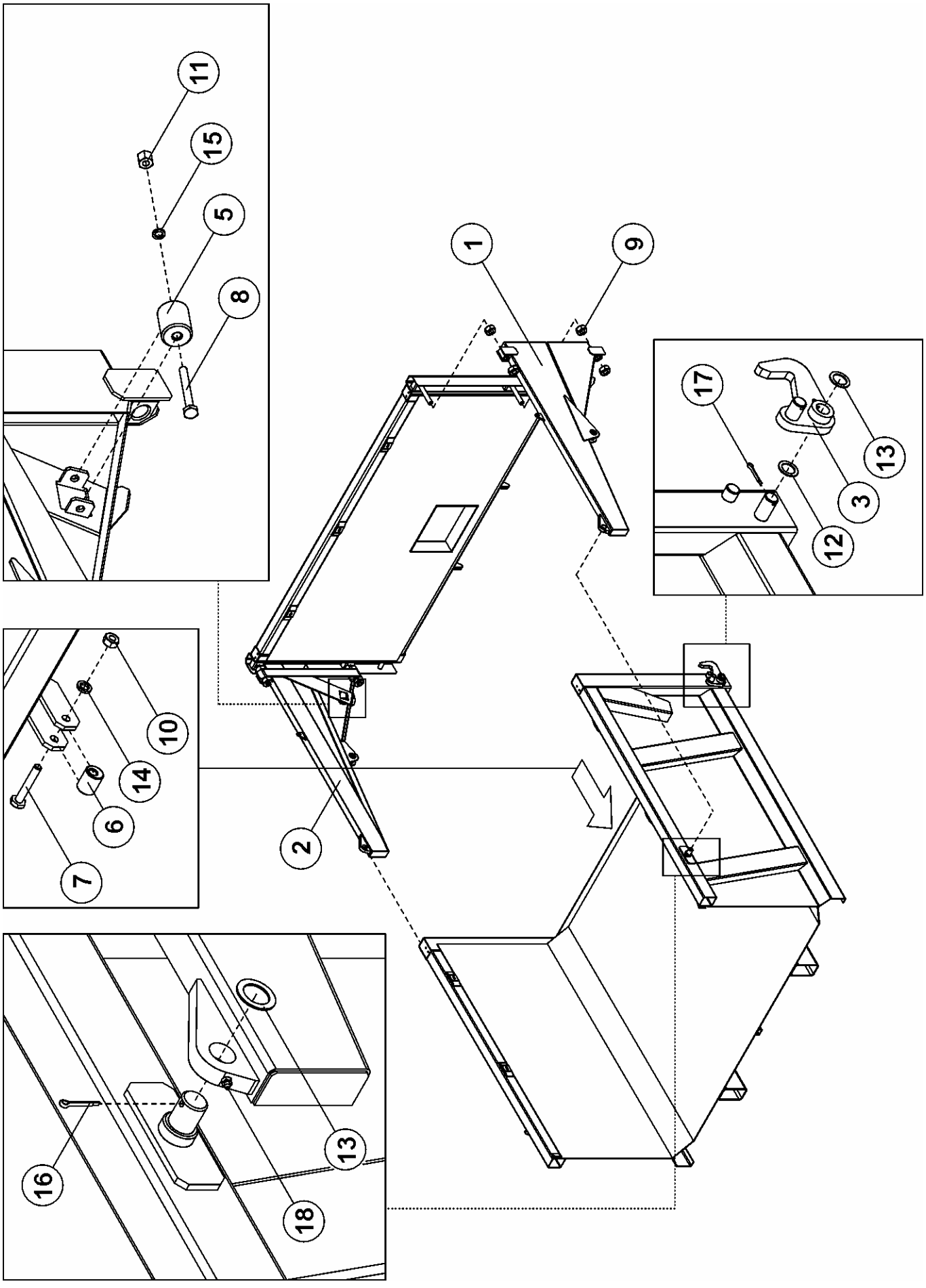


Fig. 17 Rear flap fastening

Assembly	Drawings No.	QUANTITY T679		
Rear flap fastening	**17**			

NO.	PART	DRAWING NO. (STANDARD)	D	DK	PL
1	WING LEFT	64RPN–04.01.000	1	1	1
2	WING RIGHT	64RPN–05.01.000	1	1	1
3	HOOK LEFT	58RPN–00.00.200	1	1	1
4	HOOK RIGHT	58RPN–00.00.300	1	1	1
5	WING ROLLER	58RPN–05.00.001	2	2	2
6	FLAP LOCK SLEEVE	64RPN–00.00.001	2	2	2
7	SCREW M16x100–8.8–B–Fe/Zn5	PN-85/M-82101	2	2	2
8	SCREW M12x100–5.8–B–Fe/Zn5	PN-85/M-82101	2	2	2
9	NUT M27x2–05–B–Fe/Zn5	PN-86/M-82153	8	8	8
10	NUT M16–8–B–Fe/Zn5	PN-78/M-82175	2	2	2
11	NUT M12-5–B–Fe/Zn5	PN-78/M-82175	2	2	2
12	HOOK WASHER	58RPN–00.00.008	2	2	2
13	WASHER 30 Fe/Zn5	PN-90/M-82004	4	4	4
14	WASHER 17 Fe/Zn5	PN-78/M-82005	4	4	4
15	WASHER 13 Fe/Zn5	PN-78/M-82005	4	4	4
16	COTTER PIN S-Zn 6.3x45	PN-76/M-82001	2	2	2
17	NIPPLE M6	PN-76/M-86002	4	4	4

WING LEFT, CPL. **64RPN-04.00.000**
WING RIGHT, CPL. **64RPN-05.00.000**

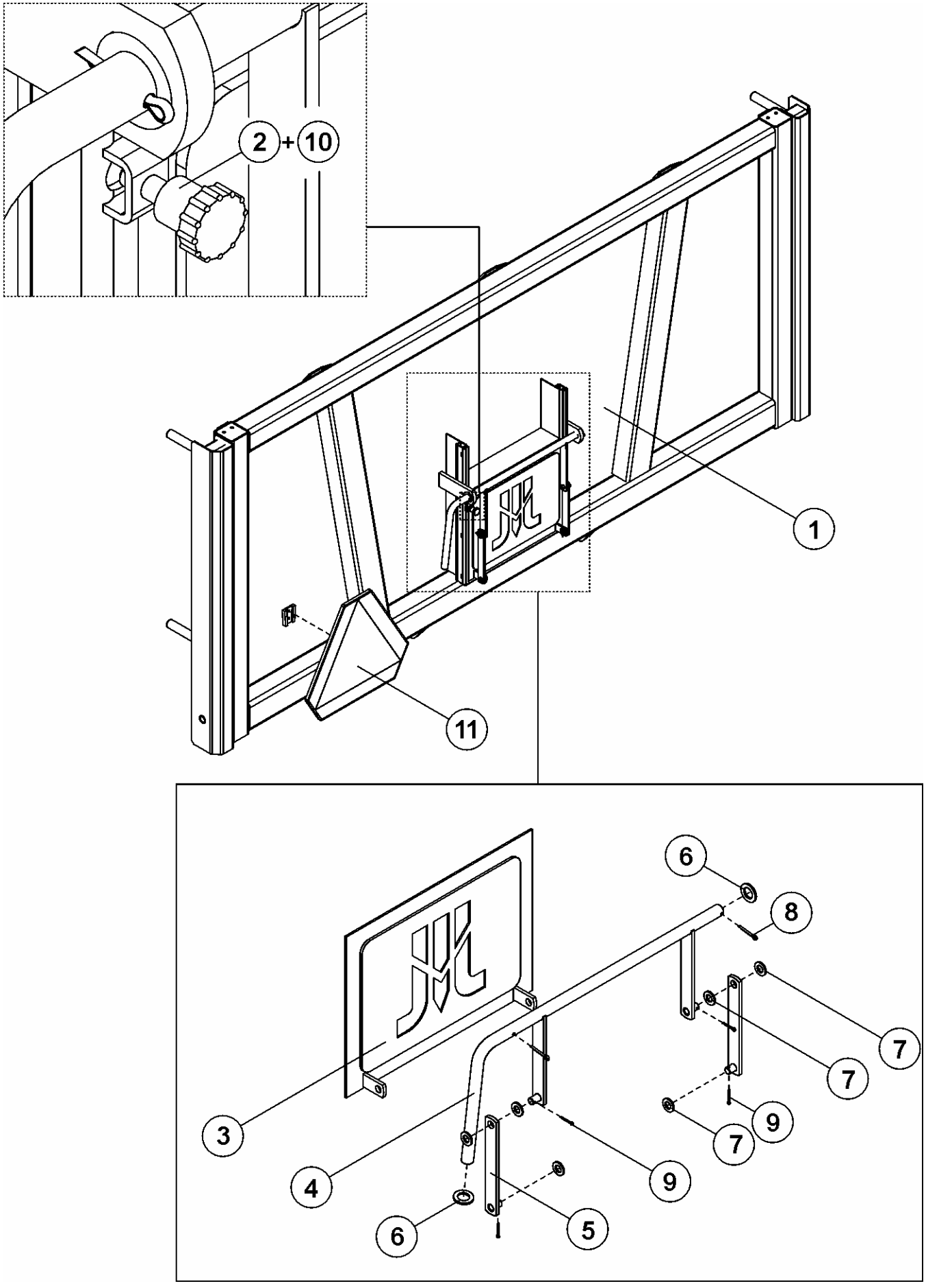


Fig. 18 Rear flap, complete

Assembly **Rear flap, complete**		Drawings No. **18**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	REAR FLAP	64RPN-03.01.000	1	1	1
2	FASTENING SCREW	29RPN-06.01.104	1	1	1
3	FLAP, CPL.	29RPN-06.02.000	1	1	1
4	LEVER	29RPN-06.03.000	1	1	1
5	PULL ROD	29RPN-06.04.000	2	2	2
6	WASHER 21 Fe/Zn5	PN-78/M-82005	2	2	2
7	WASHER 13 Fe/Zn5	PN-78/M-82005	6	6	6
8	COTTER PIN S-Zn 5x28	PN-76/M-82001	2	2	2
9	COTTER PIN S-Zn 3.2x16	PN-76/M-82001	4	4	4
10	SPRING PIN Xx10 Fe/Zn5	PN-89/M-85023	1	1	1
11	PLATE FOR SLOWLY MOVING VEHICLES		1 ⊗	1 ⊗	1 ⊗

⊗ - SPECIAL EQUIPMENT, FOR SEPARATE ORDER

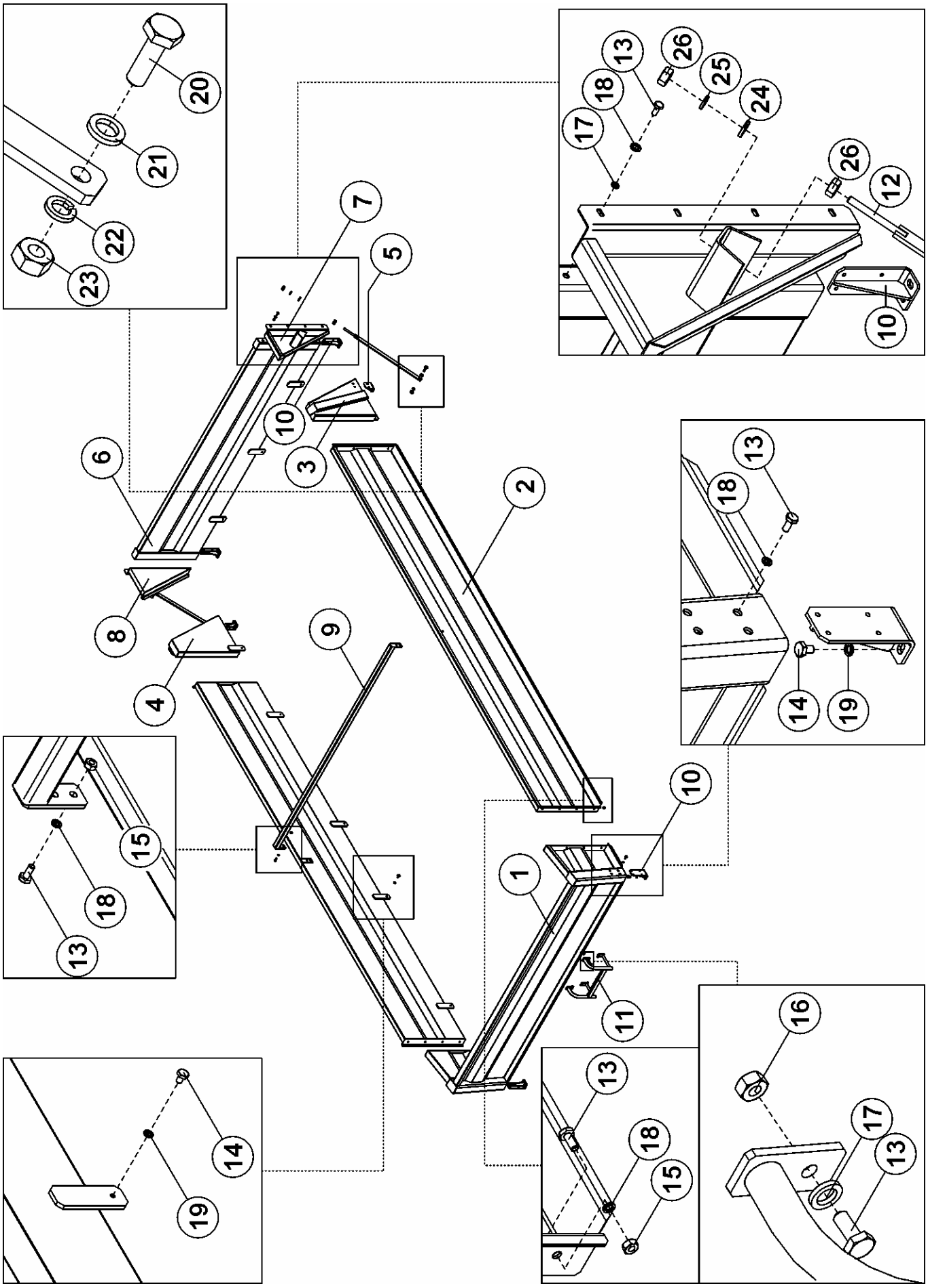


Fig. 19 Set of superstructures 580

Assembly		Drawings No.	QUANTITY T679		
Set of superstructures 580		**19**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	SUPERSTRUCTURE, FRONT 580	64RPN-19.01.000	1	1	1
2	SUPERSTRUCTURE, SIDE 580	64RPN-19.02.000	2	2	2
3	POST, REAR LEFT 580	64RPN-19.03.000	1	1	1
4	POST, REAR RIGHT 580	64RPN-19.04.000	1	1	1
5	SUPERSTRUCTURE BRACKET	64RPN-19.00.100	2	2	2
6	FLAP SUPERSTRUCTURE 580	58RPN-10.03.000	1	1	1
7	PROFILE, REAR LEFT 580	58RPN-10.07.000	1	1	1
8	PROFILE, REAR RIGHT 580	58RPN-10.08.000	1	1	1
9	CONNECTING BAR	58RPN-10.00.100	1	1	1
10	SUPERSTRUCTURE BRACKET	58RPN-10.00.200	4	4	4
11	SUPERSTRUCTURE LADDER 580	58RPN-10.00.300	1	1	1
12	PULL ROD, CPL.	58RPN-10.00.400	2	2	2
13	SCREW M8x20-8.8-B-Fe/Zn5	PN-85/M-82105	52	52	52
14	SCREW M10x16-8.8-B-Fe/Zn5	PN-85/M-82105	28	28	28
15	NUT M8-8-Fe/Zn5	PN-86/M-82144	12	12	12
16	SELF-LOCKING NUT R M8-5-B-Fe/Zn5	PN-85/M-82175	4	4	4
17	WASHER 8.4 Fe/Zn5	PN-78/M-82005	16	16	16
18	SPRING WASHER Z8.2 Fe/Zn5	PN-77/M-82008	40	40	40
19	SPRING WASHER Z10.2 Fe/Zn5	PN-77/M-82008	28	28	28
20	SCREW M12x35-8.8-B-Fe/Zn5	PN-85/M-82105	2	2	2
21	WASHER 13 Fe/Zn5	PN-78/M-82005	2	2	2
22	SPRING WASHER Z12.2 Fe/Zn5	PN-77/M-82008	2	2	2
23	NUT M12-8-B-Fe/Zn5	PN-86/M-82144	2	2	2
24	WASHER 17 Fe/Zn5	PN-78/M-82005	2	2	2
25	SPRING WASHER Z16.3 Fe/Zn5	PN-77/M-82008	2	2	2
26	NUT M16-8-B-Fe/Zn5	PN-86/M-82144	4	4	4

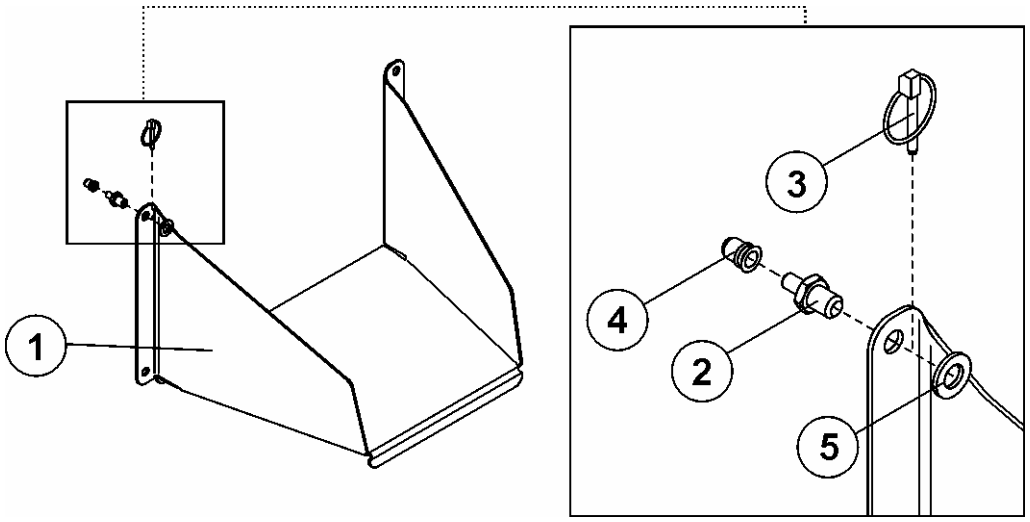


Fig. 20 Chute, cpl.

Assembly **Chute, cpl. ⊗**		Drawings No. **20**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	CHUTE	58RPN-00.08.001	1	1	1
2	CHUTE SCREW	58RPN-00.08.002	4	4	4
3	PIN S.3545		4	4	4
4	KNURLED RIVET-NUT M8		4	4	4
5	WASHER 13 Fe/Zn5	PN-78/M-82005	4	4	4
CHUTE, CPL.		**58RPN-00.08.000**			

⊗ - SPECIAL EQUIPMENT, FOR SEPARATE ORDER

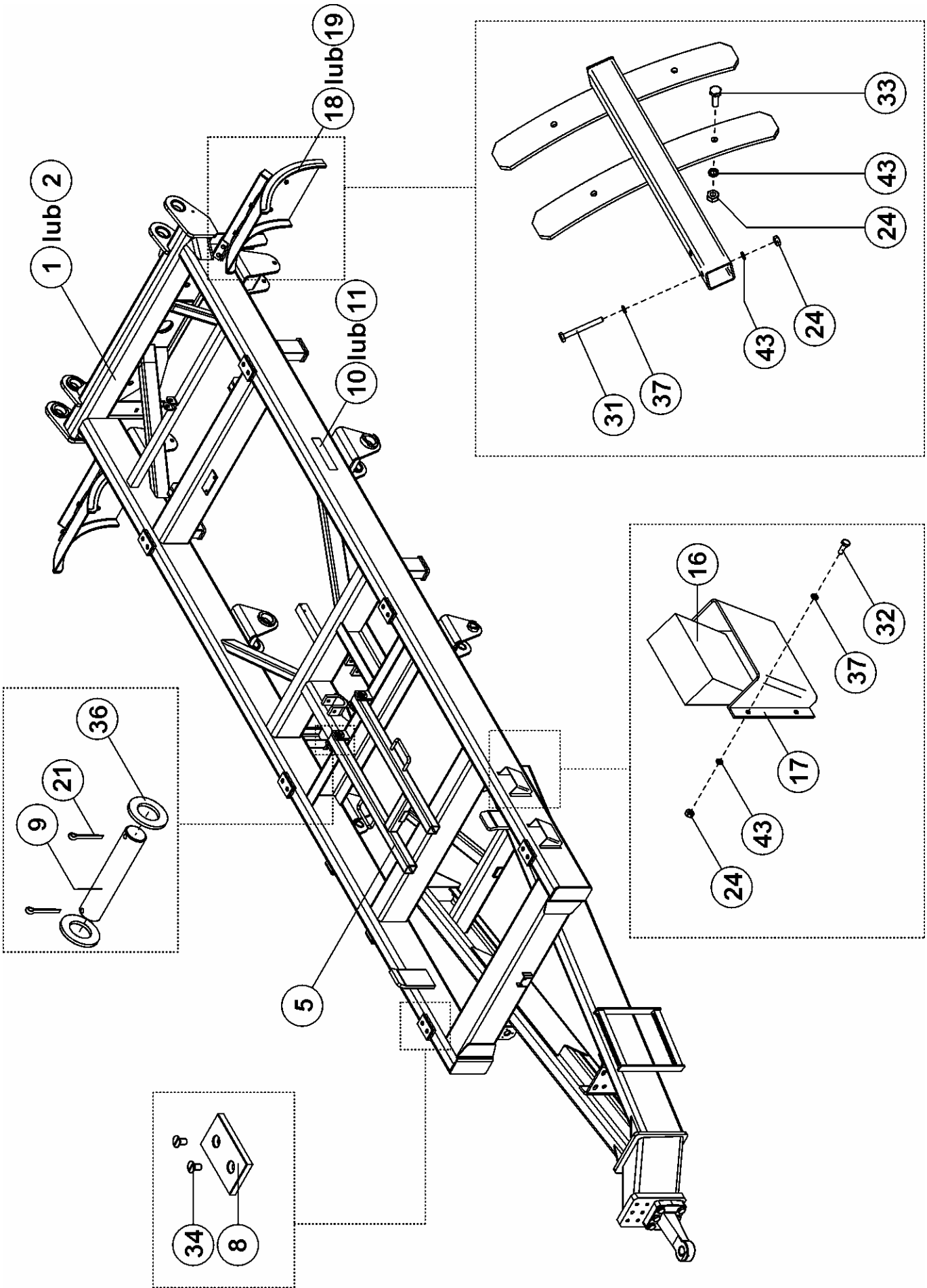


Fig. 21 Undercarriage

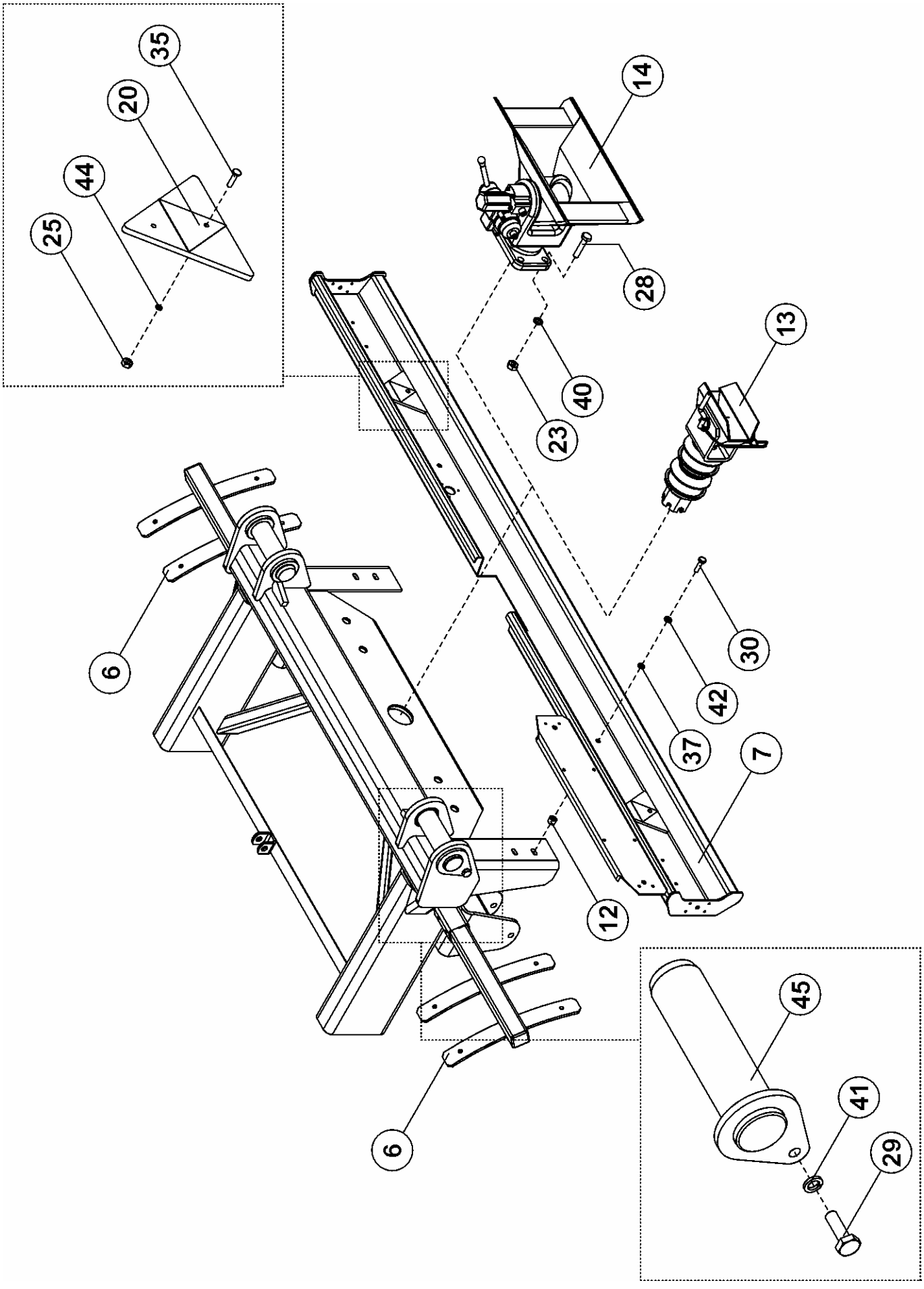


Fig. 22 Undercarriage, continued

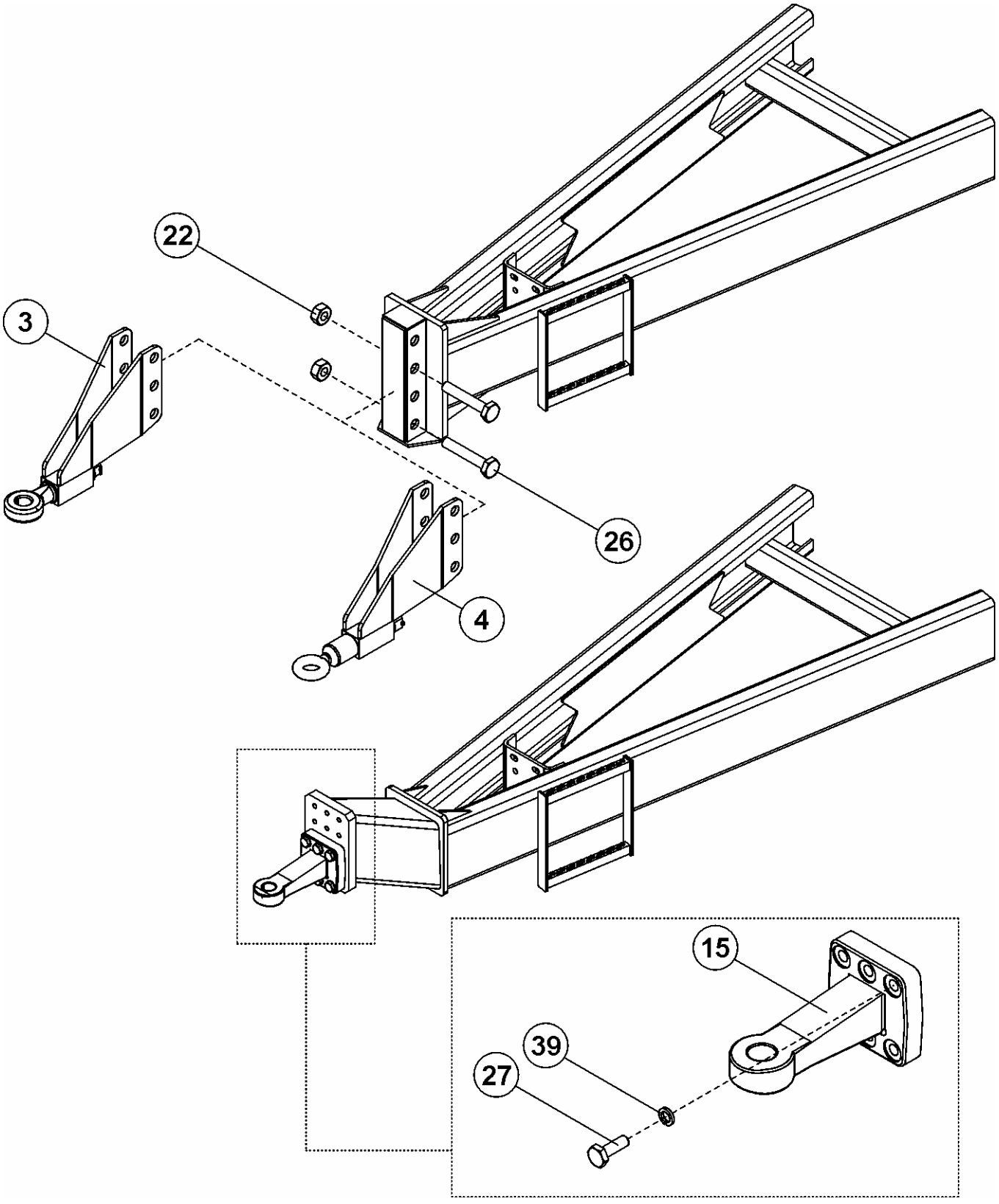


Fig. 23 Undercarriage, continued

Assembly		Drawings No.	QUANTITY T679		
Undercarriage		**21, 22, 23**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	LOWER FRAME	64RPN-01.00.000	1	-	-
2	LOWER FRAME	64RPN-01.00.000-1	-	1	1
3	ROTARY DRAUGHT BAR	45RPN-03.00.000	-	1	-
4	DRAUGHT BAR (PL)	45RPN-04.00.000	-	-	1
5	LOAD CRATE SUPPORT	64RPN-00.00.300	1	1	1
6	MUDGUARD ARM, CPL.	64RPN-00.04.000	2	2	2
7	LIGHTING BAR	67RPN-00.00.03.00	1	1	1
8	SHOCK ABSORBER	64RPN-00.00.004	6	6	6
9	SUPPORT BOLT	29RPN-00.00.009	2	2	2
10	STICKER „800 kPa” (1)	58RPN-00.00.033	2	2	2
11	STICKER „300 kPa” (2)	64RPN-00.00.006	2	2	2
12	LIGHTING BAR DISTANCER	29RPN-10.00.001	4	4	4
13	REAR COUPLING	45RPN-23.00.000	1 ⊗	1 ⊗	1 ⊗
14	AUTOMATIC COUPLING „Rockinger”	R0400A3600	1 ⊗	1 ⊗	1 ⊗
15	PULL ROD, Art. 30904, „Rima”	DIN 11026	1	-	-
16	WHEEL WEDGE Al-Ko	244374, typ UK46ST	2	2	2
17	WEDGE POCKET Al-Ko	244377, typ HA46ST	2	2	2
18	MUDGUARD (2)	64RPN-00.00.007	2 ⊗	2 ⊗	2 ⊗
19	MUDGUARD II (1)	58RPN-00.00.016	2	2	2
20	REFLEX TRIANGLE DOB		2	2	2
21	COTTER PIN S-Zn 4x32	PN-76/M-82001	4	4	4
22	NUT M30-5-B-Fe/Zn5	PN-85/M-82175	-	2	2
23	NUT M14-5-B-Fe/Zn5 (3)	PN-86/M-82144	4 ⊗	4 ⊗	4 ⊗
24	NUT M8-5-B-Fe/Zn5	PN-86/M-82144	20	20	20
25	NUT M5-5-B-Fe/Zn5	PN-86.M-82144	4	4	4
26	SCREW M30x180-10.9-B-Fe/Zn5	PN-85/M-82101	-	2	2
27	SCREW M16x50-10.9-B-Fe/Zn5	PN-85/M-82105	6	-	-
28	SCREW M14x70-8.8-B-Fe/Zn5 (3)	PN-85/M-82101	4 ⊗	4 ⊗	4 ⊗
29	SCREW M12x30-8.8-B-Fe/Zn5	PN-85/M-82105	2	2	2
30	SCREW M10x40-8.8-B-Fe/Zn	PN-85/M-82105	4	4	4
31	SCREW M8x75-8.8-B-Fe/Zn5	PN-85/M-82101	4	4	4
32	SCREW M8x25-8.8-B-Fe/Zn5	PN-85/M-82105	8	8	8
33	SCREW M8x25-5.8-B-Fe/Zn5	PN-85/M-82406	8	8	8
34	SCREW M8x16-8.8-B-Fe/Zn5	DIN 7991	12	12	12
35	SCREW M5x20-4.8-B-Fe/Zn5	PN-85/M-82215	4	4	4
36	WASHER 21 Fe/Zn5	PN-78/M-82005	4	4	4
37	WASHER 10.5 Fe/Zn5	PN-78/M-82005	4	4	4
38	WASHER 8.4 Fe/Zn5	PN-78/M-82005	8	8	8

Assembly **Undercarriage**		Drawings No. **21, 22, 23**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
39	SPRING WASHER Z16.3 Fe/Zn5	PN-90/M-82008	6	-	-
40	SPRING WASHER Z14.2 Fe/Zn5	PN-90/M-82008	4 ⊗	4 ⊗	4 ⊗
41	SPRING WASHER Z12.2 Fe/Zn5	PN-90/M-82008	2	2	2
42	SPRING WASHER Z10.2 Fe/Zn5	PN-90/M-82008	4	4	4
43	SPRING WASHER Z8.2 Fe/Zn5	PN-90/M-82008	20	20	20
44	SPRING WASHER Z5.1 Fe/Zn5	PN-77/M-82008	4	4	4
45	LOAD CRATE TILT BOLT	58RPN-00.05.000	2	2	2

⊗ - SPECIAL EQUIPMENT, FOR SEPARATE ORDER

(1) – TOGETHER WITH: WHEEL, CPL. 64RPN-00.07.000 (385/65R22,5 18PR)

(2) – TOGETHER WITH: WHEEL, CPL. 64RPN-00.10.000 (550/45-22,5 16PR)

(3) – TOGETHER WITH: AUTOMATIC COUPLING „Rockinger”, CAT No.: R0400A3600

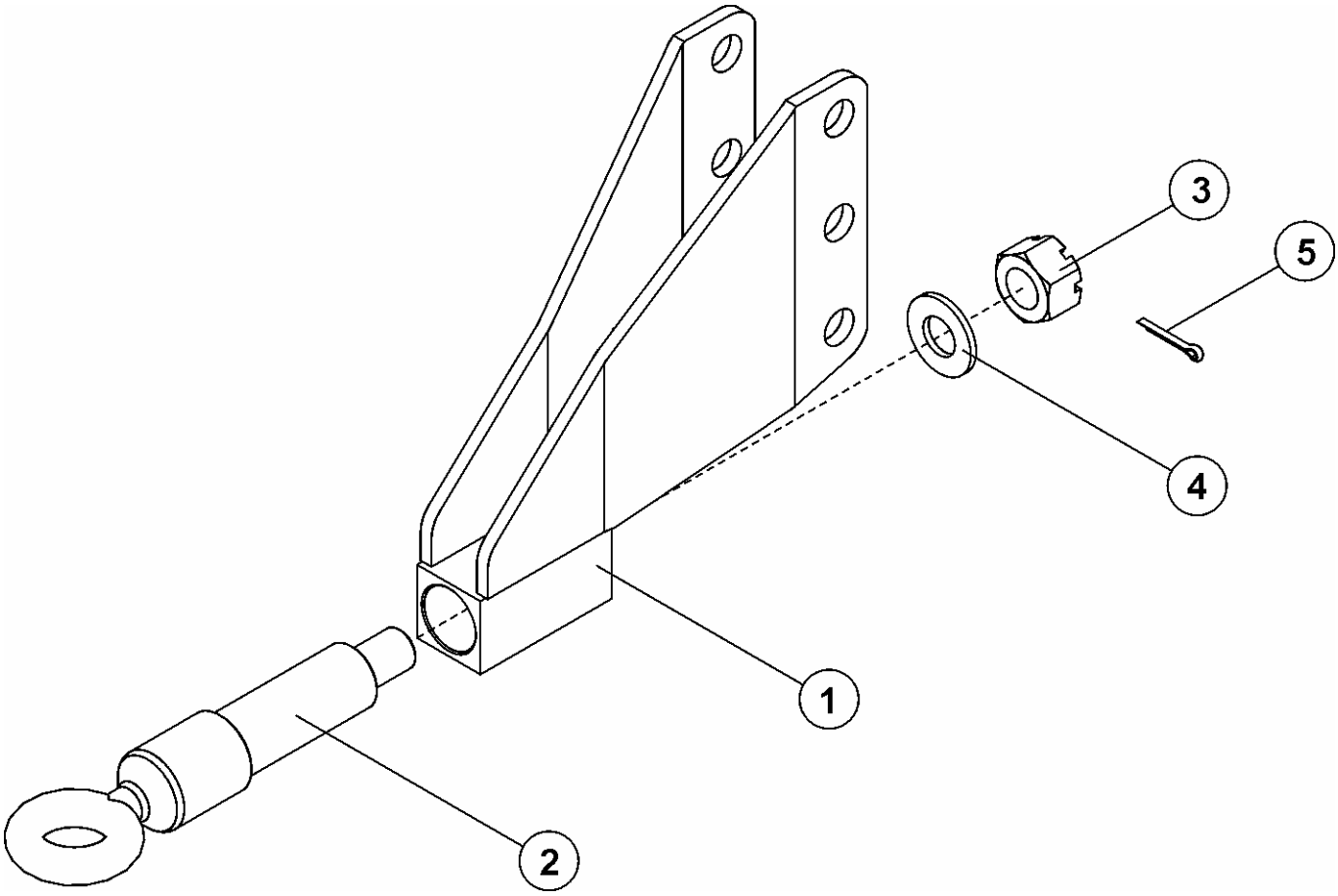


Fig. 24 Rotary draught bar

Assembly **Rotary draught bar**		Drawings No. **24**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
ROTARY DRAUGHT BAR, CPL		**45RPN-03.00.000**			
1	BODY	45RPN-03.01.000	1		
2	ROTARY PULL ROD	37RPN-18.00.001	1		
3	CASTELLATED NUT ZM36x3-6-B	PN-86/M-82148	1		
4	WASHER	37RPN-18.00.002	1		
5	COTTER PIN S-Zn 6.3x71	PN-76/M-82001	1		
ROTARY DRAUGHT BAR, CPL		**45RPN-04.00.000**			
1	BODY	45RPN-04.01.000			1
2	ROTARY PULL ROD	45RPN-04.00.001			1
3	CASTELLATED NUT ZM36x3-6-B	PN-86/M-82148			1
4	WASHER	37RPN-18.00.002			1
5	COTTER PIN S-Zn 6.3x71	PN-76/M-82001			1

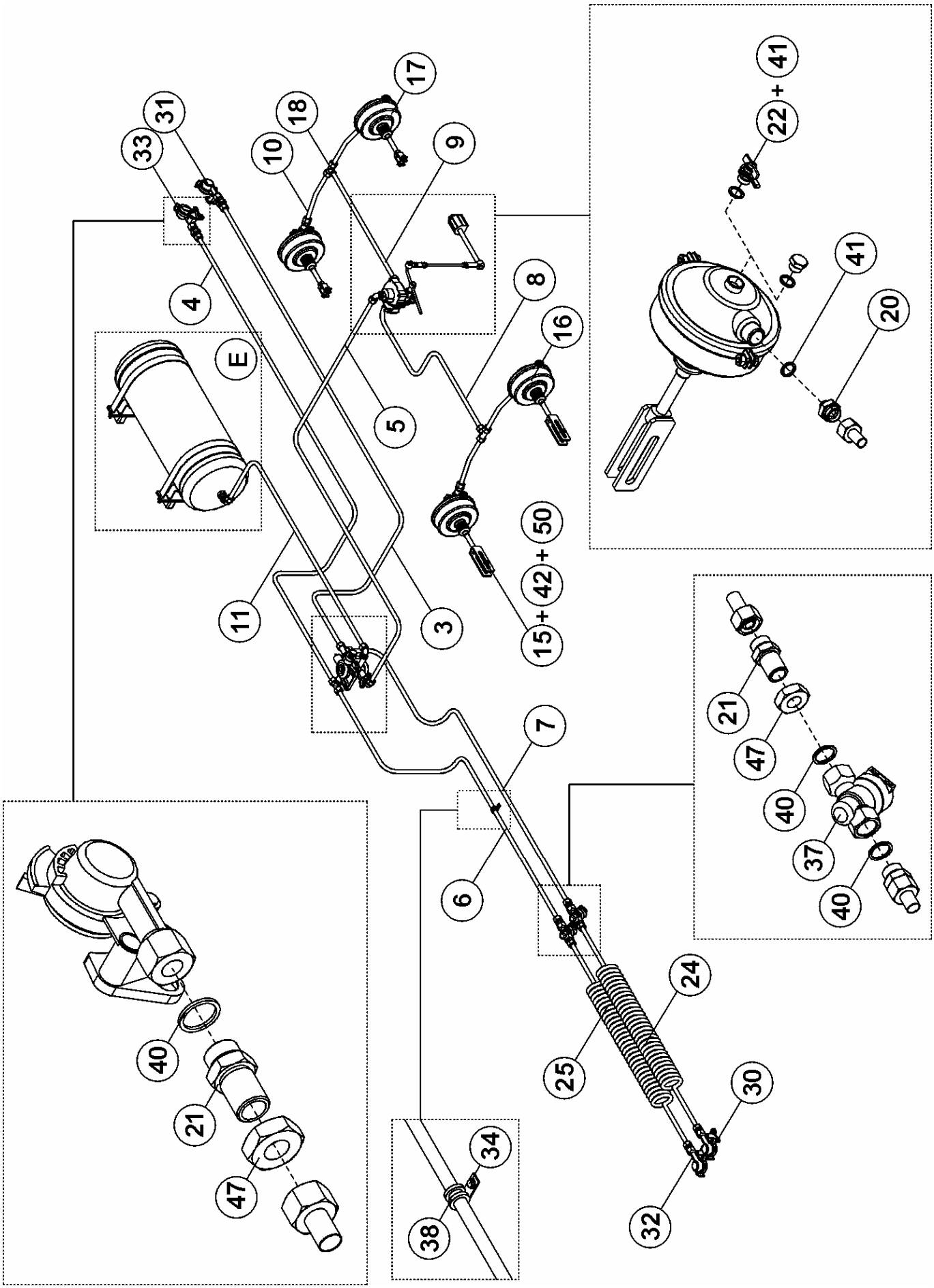


Fig. 25 Double-conduit pneumatic brake system w/automated controller

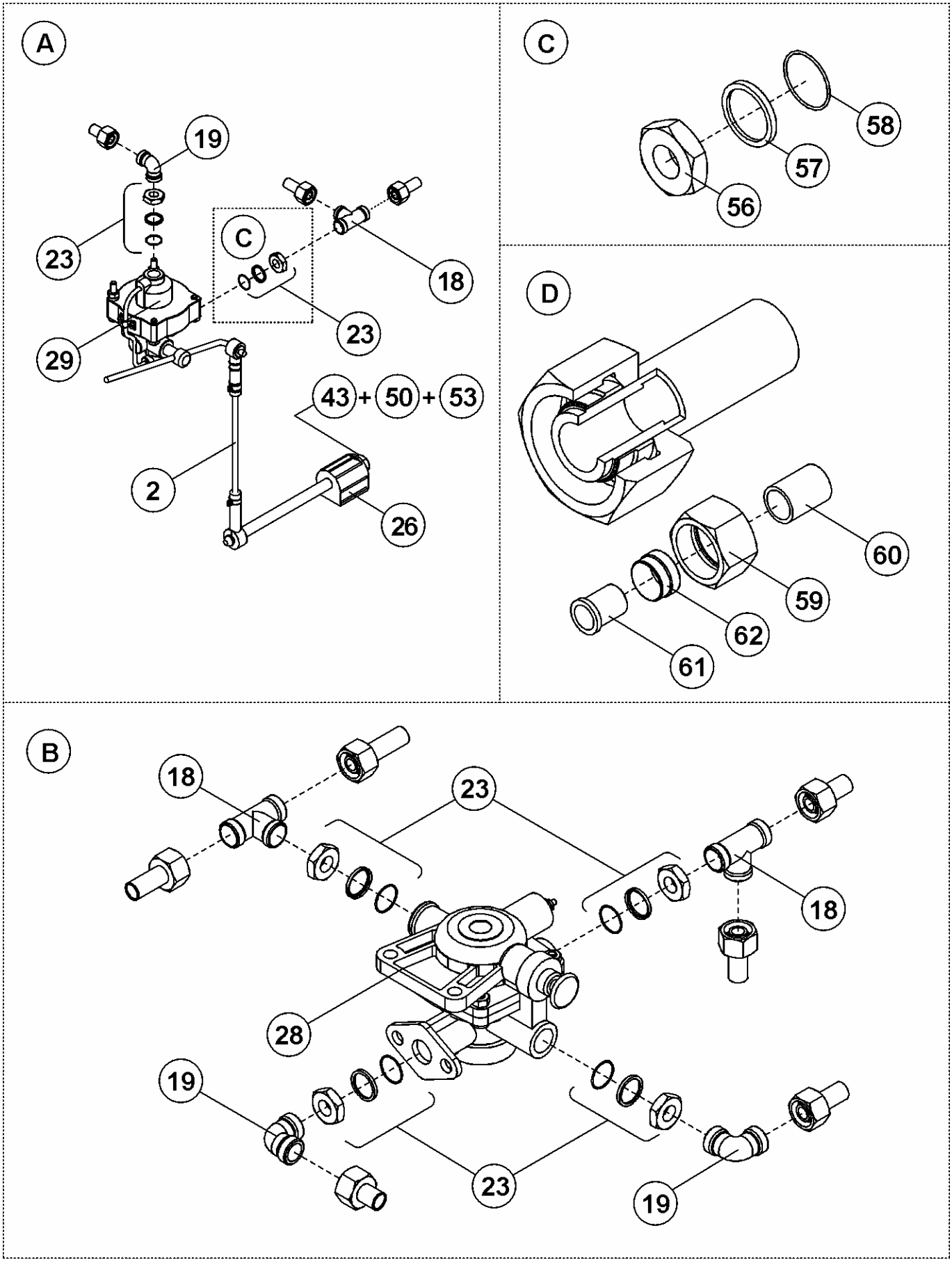


Fig. 26 Double-conduit pneumatic brake system w/automated controller, continued

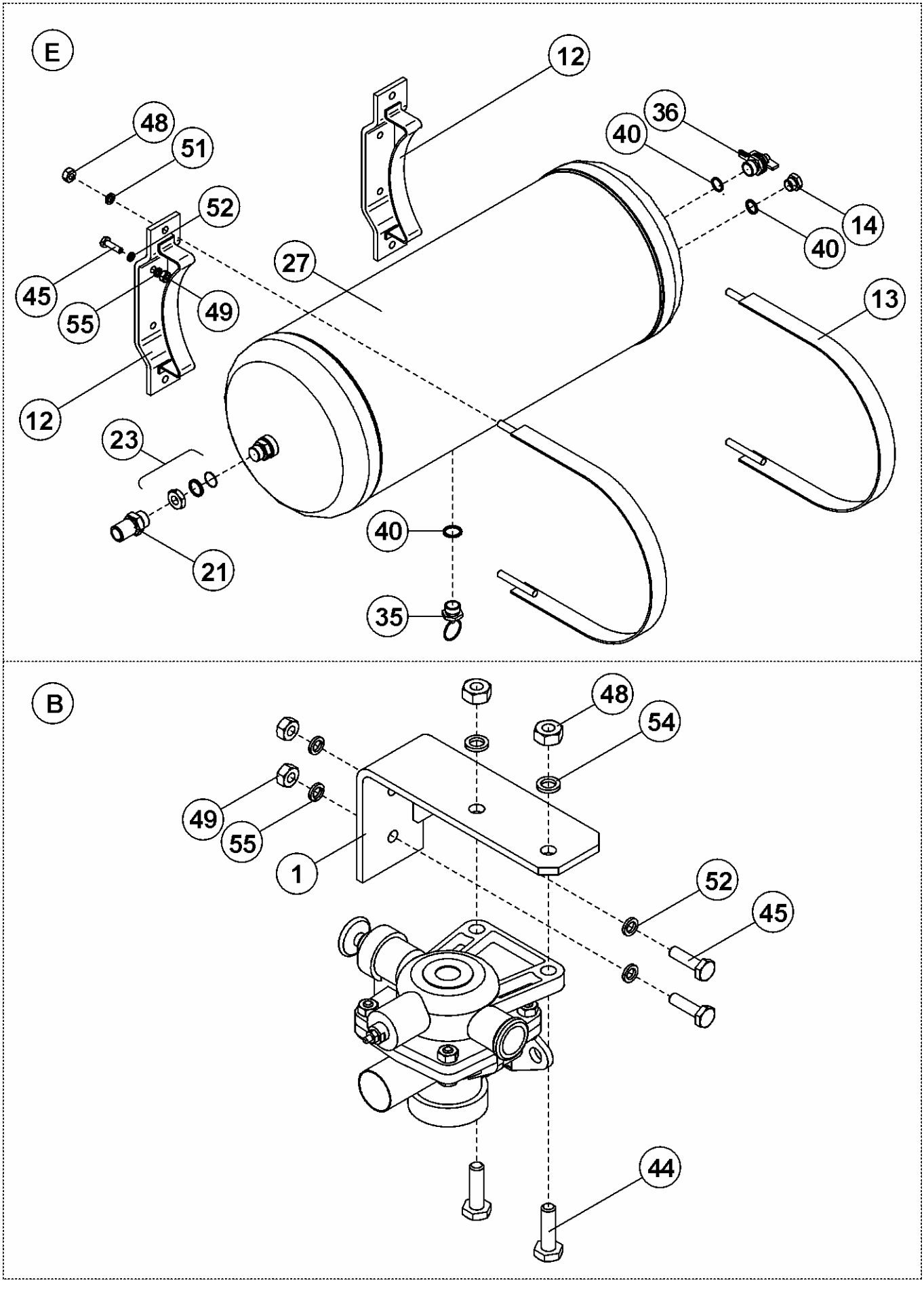


Fig. 27 Double-conduit pneumatic brake system w/automated controller, continued

Assembly		Drawings No.	QUANTITY T679		
Double-conduit pneumatic brake system w/automated controller		**25, 26, 27**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	VALVE CONSOLE, CPL.	67RPN-00.00.04.00	1		
2	ROD	64RPN-15.00.001	1		
3	CONDUIT BŁH W-W 5200	64RPN-15.01.000	1		
4	CONDUIT BŁH W-W 3800	64RPN-15.02.000	1		
5	CONDUIT BŁH W-W 3300	64RPN-15.03.000	1		
6	CONDUIT BŁH W-W 1550	64RPN-15.04.000	1		
7	CONDUIT BŁH W-W 1300	64RPN-15.05.000	1		
8	CONDUIT BŁH W-W 1100	64RPN-15.06.000	1		
9	CONDUIT BŁH W-W 900	64RPN-15.07.000	1		
10	CONDUIT BŁH W-W 700	64RPN-15.08.000	4		
11	CONDUIT BŁH W-W 400	64RPN-15.09.000	1		
12	AIR TANK CONSOLE, CPL.	64RPN-15.00.100	2		
13	AIR TANK BAND	45RPN-00.13.000	2		
14	PLUG	29RPN-11.00.002	1		
15	WASHER	29RPN-11.00.004	2		
16	CYLINDER 20'' „WABCO”	423 000 534 2	2		
17	CYLINDER 20'' „WABCO”	423 000 535 2	2		
18	T-CONNECTOR	BŁH 063 309 066	5		
19	ELBOW CONNECTOR	BŁH 063 206 054	3		
20	CONNECTOR, STRAIGHT		4		
21	CONNECTOR, STRAIGHT LONG	BŁH 063 130 047	5		
22	INSPECTION CONNECTOR M16x1.5	BŁH 333 200 108	2		
23	SEALING KIT M22x1.5		7		
24	SPIRAL HOSE 12x1.5/4500/2xM22x1.5 YELL.		1		
25	SPIRAL HOSE 12x1.5/4500/2xM22x1.5 RED		1		
26	ELASTIC CONNECTOR	86.10.014.0	1		
27	AIR TANK	585 000 000	1		
28	CONTROL VALVE	44.12.010.0	1		
29	BRAKING FORCE CONTROLLER	61.20.015.0	1		
30	CONDUIT CONNECTION	87.10.030.0	1		
31	CONDUIT CONNECTION	87.15.030.0	1		
32	CONDUIT CONNECTION	87.10.020.0	1		
33	CONDUIT CONNECTION	87.15.020.0	1		
34	SELF-TAPPING SCREW ∅5.5x19	DIN-7504-K	11		
35	DRAIN VALVE	83.10.012.0	1		
36	INSPECTION CONNECTOR M22x1.5	88.10.011.0	1		
37	FILTER	81.01.010.0	2		
38	RIBENCLIP BAND 16		13		
39	CONNECTOR CONSOLE	ART. 331000 FLIEGL	2		
40	COPPER WASHER 27/22/2		11		

Assembly **Double-conduit pneumatic brake system w/automated controller**		Drawings No. **25, 26, 27**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
41	COPPER WASHER 22/17/2		6		
42	COTTER PIN S-Zn 3.2x25	PN-76/M-82001	2		
43	SCREW M12x25-5.8-B-Fe/Zn5	PN-85/M-82105	1		
44	SCREW M10x35-5.8-B-Fe/Zn5	PN-85/M-82105	2		
45	SCREW M8x35-5.8-B-Fe/Zn5	PN-85/M-82105	6		
46	SCREW M8x25-5.8-B-Fe/Zn5	PN-85/M-82105	4		
47	NUT M22x1.5-5-B-Fe/Zn5	PN-86/M-82153	4		
48	NUT M10-5-B-Fe/Zn5	PN-86/M-82144	6		
49	NUT M8-5-B-Fe/Zn5	PN-86/M-82144	8		
50	WASHER 13 Fe/Zn5	PN-78/M-82005	3		
51	WASHER 10.5 Fe/Zn5	PN-78/M-82005	2		
52	WASHER 8.4 Fe/Zn5	PN-78/M-82005	12		
53	SPRING WASHER Z12.2 Fe/Zn5	PN-77/M-82008	1		
54	SPRING WASHER Z10.2 Fe/Zn5	PN-77/M-82008	6		
55	SPRING WASHER Z8.2 Fe/Zn5	PN-77/M-82008	12		
	Sealing kit elements (pos. 23) (for one kit)				
56	COUNTER-NUT M22x1.5		1		
57	RING 063.000.139		1		
58	O-RING 93H		1		
	BŁH conduit elements (for one set)				
59	NUT M22x1.5	BŁH 063.000.006	2		
60	CONDUIT TEKALAN PA12 15x1.5 L=.....⊗	DIN 74324	1		
61	STRENGTHENING SLEEVE ∅12x17		1		
62	CUTTING RING ∅15.2	BŁH 063.00.005	2		

⊗ - CAUTION! WHILE ORDERING THE CONDUIT DEFINE ITS LENGTH L (POS. 3 - 11)

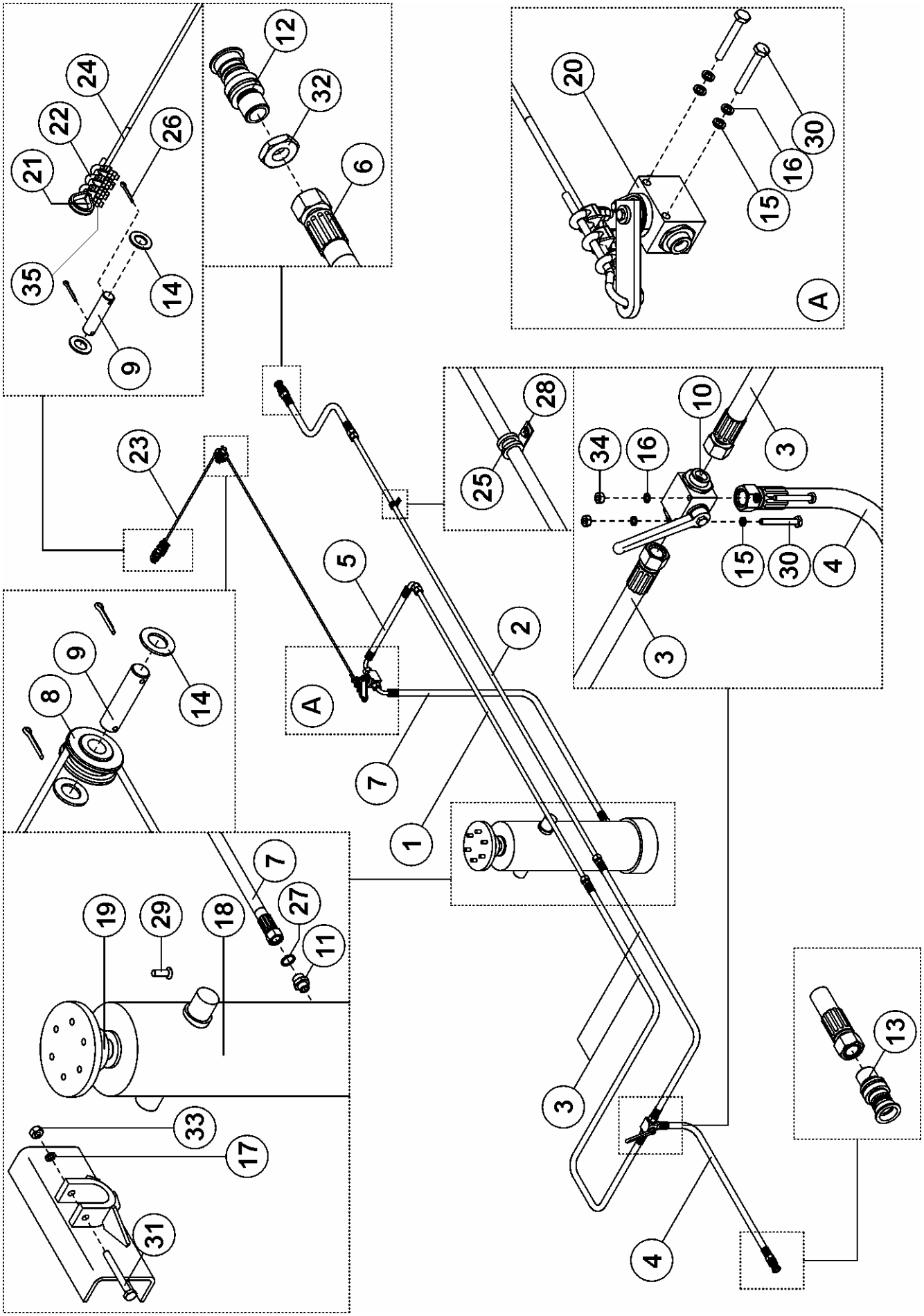


Fig. 28 Hydraulic tilting system

Assembly **Hydraulic tilting system**		Drawings No. **28**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	TUBE I, CPL.	64RPN-12.01.000	1	1	1
2	TUBE II, CPL.	64RPN-11.01.000	1	1	1
3	CONDUIT DN13 H17.8 H4.13 1300	58RPN-14.06.000	2	2	2
4	CONDUIT DN13 H2.12 H2.12 2500	45RPN-12.07.000	1	1	1
5	CONDUIT DN13 H17.8 H4.13 350	45RPN-12.06.000	1	1	1
6	CONDUIT DN13 H2.12 H4.13 450	45RPN-12.13.000	1	1	1
7	CONDUIT DN13 H17.8 H2.12 750	29RPN-13.02.000	1	1	1
8	CABLE WHEEL	29RPN-13.00.001	1	1	1
9	WHEEL AXLE	29RPN-13.00.002	2	2	2
10	HYDRAULIC 3-WAY VALVE	29RPN-13.00.003	1	1	1
11	CONNECTOR BODY	12RPN-18.00.002	1	1	1
12	QUICK-RELEASE CONN.– SOCKET ISO 12.5	SZ12-G06L	1	1	1
13	QUICK-RELEASE CONN. – PLUG ISO 12.5	SZ12-W06	1	1	1
14	WASHER 17 Fe/Zn5	PN-78/M-82005	4	4	4
15	WASHER 6.4 Fe/Zn5	PN-78/M-82005	4	4	4
16	SPRING WASHER Z6.1 Fe/Zn5	PN-77/M-82008	4	4	4
17	SPRING WASHER Z12.2 Fe/Zn5	PN-77/M-82008	2	2	2
18	TELESCOPIC CYLINDER	CT-S122-75/5/1980	1	1	1
19	BALL BEARING 55	ŁK-S01-55/0.00	1	1	1
20	CUT-OFF VALVE PISTER	HBKH-15L-DN13	1	1	1
21	THIMBLE A6 OC.	PN-66/M-80247	1	1	1
22	U-CLAMP 6.5 OC.	PN-73/M-82001	6	6	6
23	CABLE ∅6 6x19+P+p L=1920		1	1	1
24	HEAT SHRINKAGE TUBE PBF 12/6 30	BN-89/C-89209	2	2	2
25	RIBENCLIP BAND 16		5	5	5
26	COTTER PIN S-Zn 4x32	PN-76/M-82001	4	4	4
27	COPPER WASHER		1	1	1
28	SELF-TAPPING SCREW ∅5.5x19	DIN 7504-K	2	2	2
29	SCREW M12x25-8.8-B-Fe/Zn5	DIN 7991	6	6	6
30	SCREW M6x45-5.8-B-Fe/Zn5	PN-85/M-82101	4	4	4
31	SCREW M12x110-8.8-B-Fe/Zn5	PN-85/M-82101	2	2	2
32	NUT M22x1.5-04-B-Fe/Zn5	PN-86/M-82153	1	1	1
33	NUT M12-5-B-Fe/Zn5	PN-86/M-82144	2	2	2
34	NUT M6-5-B-Fe/Zn5	PN-86/M-82144	2	2	2
35	NUT M5-5-B-Fe/Zn5	PN-86/M-82144	12	12	12

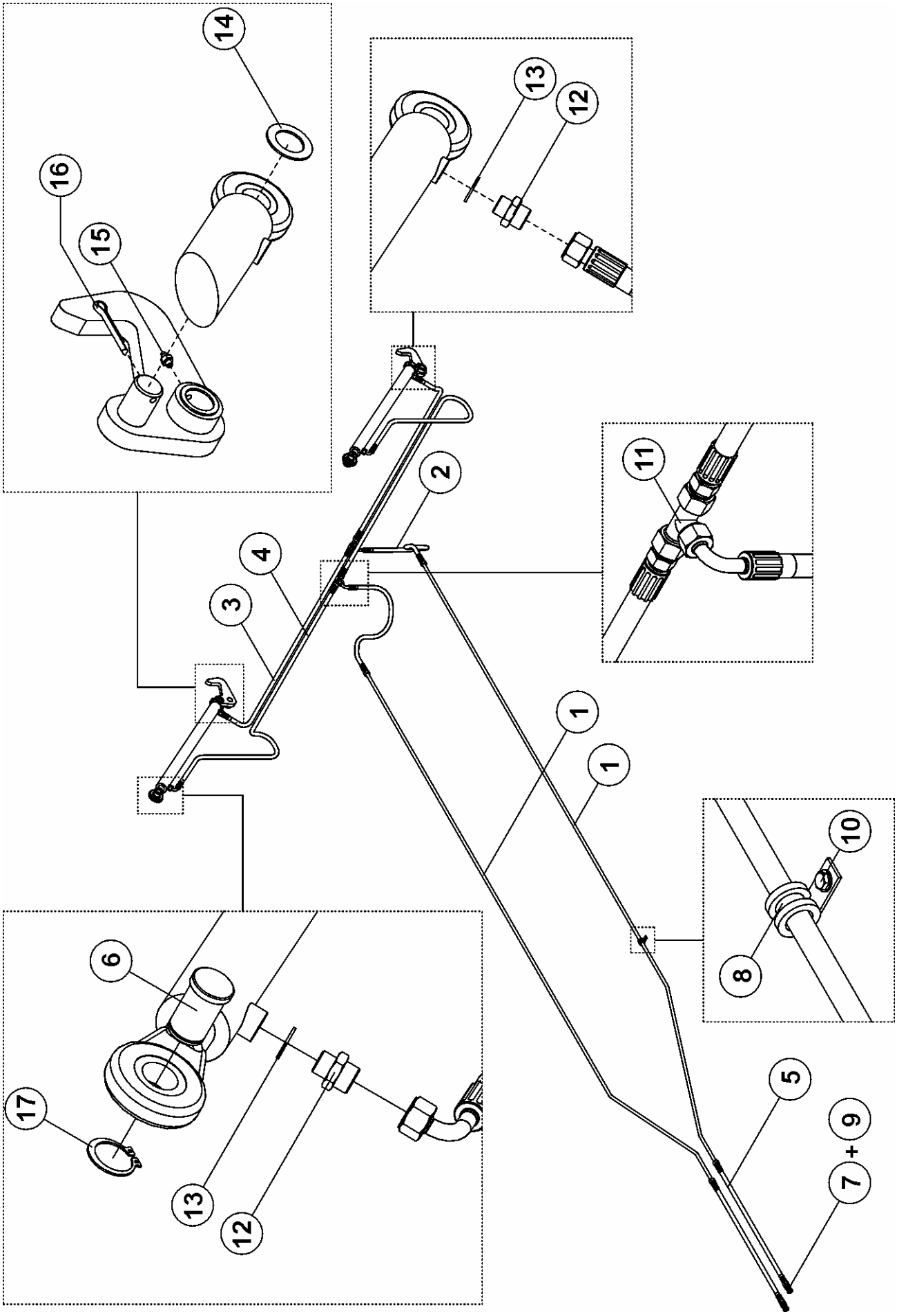


Fig. 29 Flap hydraulic system

Assembly **Flap hydraulic system**		Drawings No. **29**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	TUBE I, CPL.	64RPN-11.01.000	2	2	2
2	CONDUIT DN13 H17.8 H4.13 800	58RPN-14.04.000	2	2	2
3	CONDUIT DN13 H2.12 H4.13 700	58RPN-14.05.000	2	2	2
4	CONDUIT DN13 H17.8 H4.13 1300	58RPN-14.06.000	2	2	2
5	WASHER	58RPN-14,00,001	2	2	2
6	CONDUIT DN13 H2.12 H4.13 3700	53RPN-14.05.000	2	2	2
7	PLASTIC BAND CLAMP 4.5x360		2	2	2
8	QUICK-RELEASE CONN. – PLUG ISO 12.5	SZ12-W06L	2	2	2
9	RIBENCLIP BAND 22		4	4	4
10	CYLINDER 50sj36A/700m5b16	33RPN-04.08.00.00	2	2	2
11	T-CONNECTOR BODY 1613	PN-66/M-73147	2	2	2
12	RIBENCLIP BAND 16		14	14	14
13	SELF-TAPPING SCREW ∅5.5x19	DIN 7504-K	12	12	12
14	RETAINING RING Z30	PN-81/M-85111	2	2	2
15	WASHER 30 Fe/Zn5	PN-90/M-82004	2	2	2
16	COTTER PIN S-Zn 6.3x45	PN-76/M-82001	2	2	2

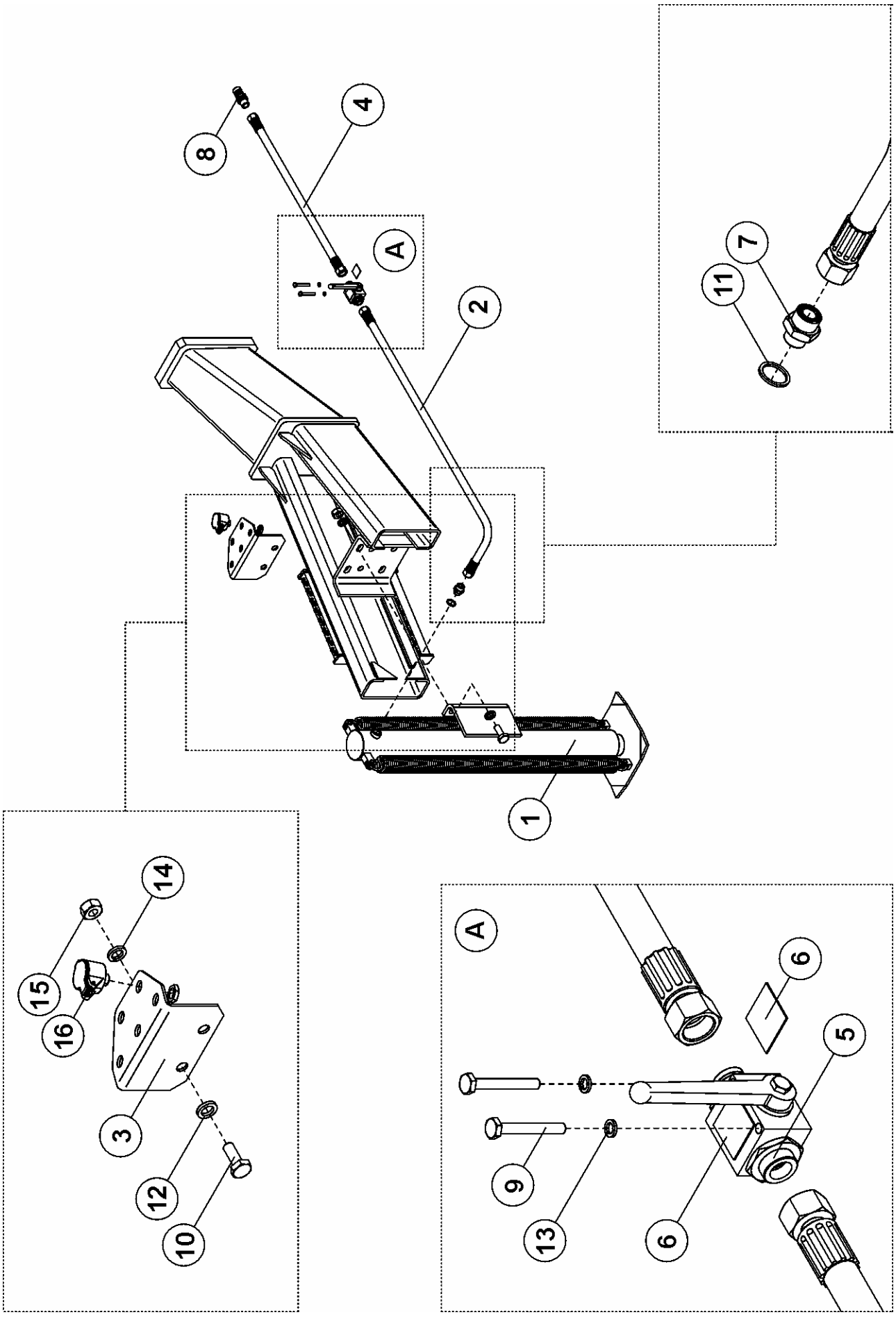


Fig. 30 Straight support hydraulic system ⊗

Assembly		Drawings No.	QUANTITY T679		
Straight support hydraulic system ⊗		**30**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	HYDRAULIC SUPPORT, STRAIGHT, CPL.	64RPN-17.01.000	1	1	1
2	CONDUIT DN13 H17.8 H2.12 350	64RPN-17.02.000	1	1	1
3	SOCKET CONSOLE ISO	64RPN-16.00.001	1	1	1
4	CONDUIT DN13 H2.12 H2.12 1800	58RPN-13.01.000	1	1	1
5	HYDRAULIC VALVE	45RPN-26.00.001	1	1	1
6	STICKER „OPEN/CLOSE”	45RPN-26.00.002	1	1	1
7	CONNECTOR BODY	12RPN-18.00.002	1	1	1
8	QUICK-RELEASE CONN. – PLUG ISO 12.5	SZ12-W06	1	1	1
9	SCREW M6x50-5.8-b-Fe/Zn5	PN-85/M-82101	2	2	2
10	SCREW M16x45-8.8-b-Fe/Zn	PN-85/M-82105	4	4	4
11	COPPER WASHER 27/22/2		1	1	1
12	WASHER 17 Fe/Zn5	PN-78/M-82005	4	4	4
13	SPRING WASHER Z6.1 Fe/Zn5	PN-77/M-82008	2	2	2
14	SPRING WASHER Z16.3 Fe/Zn5	PN-76/M-82008	4	4	4
15	NUT M16-5-B-Fe/Zn5	PN-86/M-82144	4	4	4
16	SOCKET ISO	ART. NR 920025	5	5	5

⊗ - SPECIAL EQUIPMENT, FOR SEPARATE ORDER

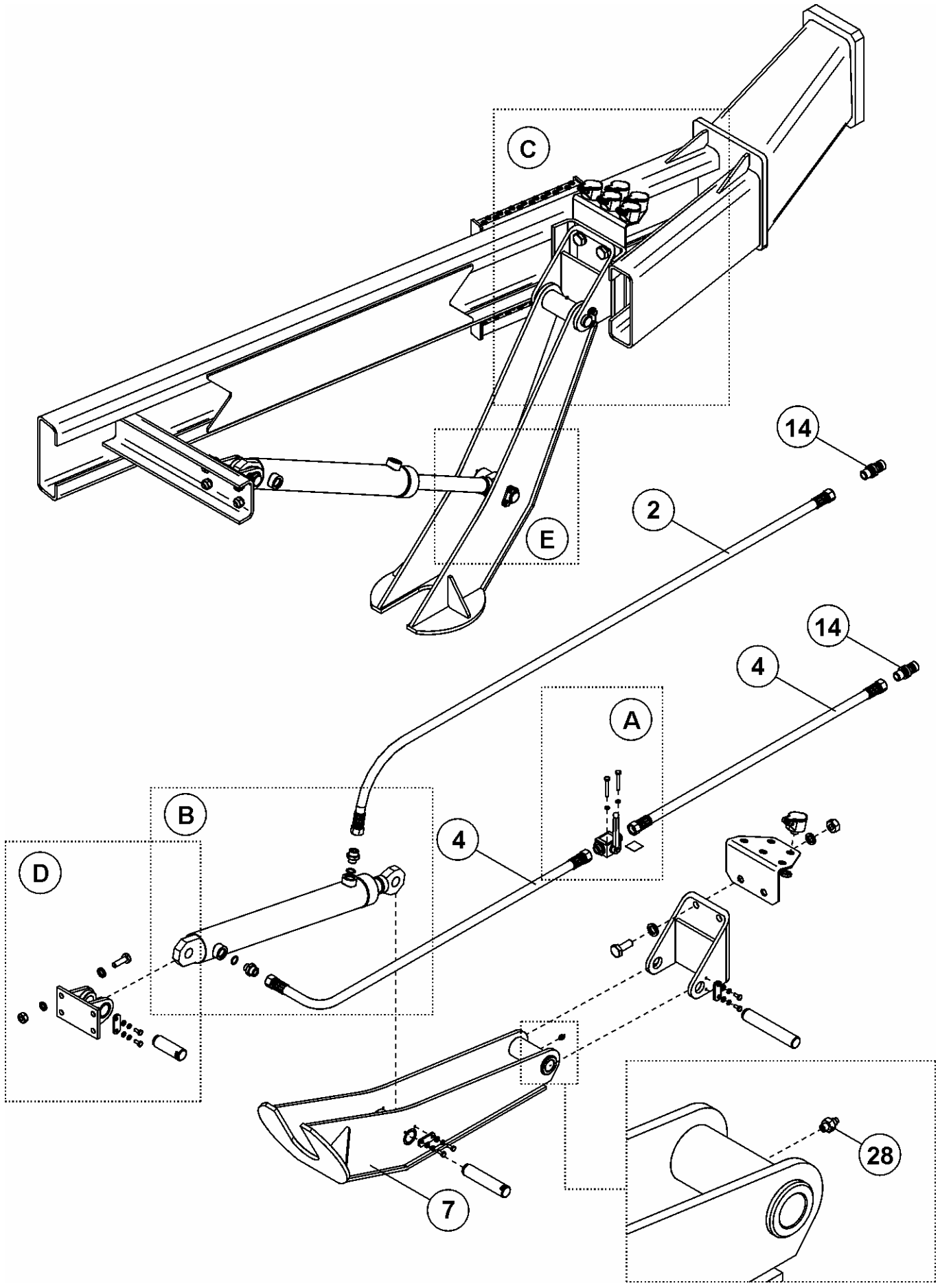


Fig. 31 Scissor support hydraulic system

Assembly **Scissor support hydraulic system**		Drawings No. **31, 32**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	REAR FASTENING EYE	64RPN-16.00.200	1	1	1
2	CONDUIT DN13 H2.12 H2.12 2800	64RPN-16.01.000	1	1	1
3	SOCKET CONSOLE ISO	64RPN-16.00.001	1	1	1
4	CONDUIT DN13 H2.12 H2.12 1800	58RPM-13.01.000	2	2	2
5	HYDRAULIC VALVE	45RPN-26.00.001	1	1	1
6	STICKER „OPEN/CLOSE”	45RPN-26.00.002	1	1	1
7	SUPPORT, CPL.	45RPN-47.00.200	1	1	1
8	WASHER I	45RPN-47.00.001	1	1	1
9	WASHER II	45RPN-47.00.002	1	1	1
10	WASHER III	45RPN-47.00.003	1	1	1
11	SECURING PLATE	45RPN-47.00.004	3	3	3
12	CONNECTOR BODY	12RPN-18.00.002	2	2	2
13	CYLINDER 63sj36A/400m3b16	33RPN-05.04.00.00	1	1	1
14	QUICK-RELEASE CONN. – PLUG ISO 12.5	SZ12-W06	2	2	2
15	SEALING RING 19.2x2.4	PN-64/M-73093	2	2	2
16	SCREW M16x45-8.8-B-Fe/Zn5	PN-85/M-82105	4	4	4
17	SCREW M12x35-8.8-B-Fe/Zn5	PN-85/M-82105	4	4	4
18	SCREW M6x50-5.8-B-Fe/Zn5	PN-85/M-82105	4	4	4
19	SCREW M6x16-8.8-B-Fe/Zn5	PN-85/M-82105	6	6	6
20	WASHER 17 Fe/Zn5	PN-78/M-82005	4	4	4
21	WASHER 13 Fe/Zn5	PN-78/M-82005	4	4	4
22	WASHER 6.4 Fe/Zn5	PN-78/M-82005	6	6	6
23	SPRING WASHER Z16.3 Fe/Zn5	PN-77/M-82008	4	4	4
24	SPRING WASHER Z12.2 Fe/Zn5	PN-77/M-82008	4	4	4
25	SPRING WASHER Z6.1 Fe/Zn5	PN-77/M-82008	8	8	8
26	NUT M16-8-B Fe/Zn5	PN-86/M-82144	4	4	4
27	NUT M12-8-B Fe/Zn5	PN-86/M-82144	4	4	4
28	NIPPLE M6	PN-76-M-82002	1	1	1
29	SOCKET ISO	ART. NR 920025	5	5	5
30	FRONT FASTENING EYE	64RPN-16.00.300	1	1	1

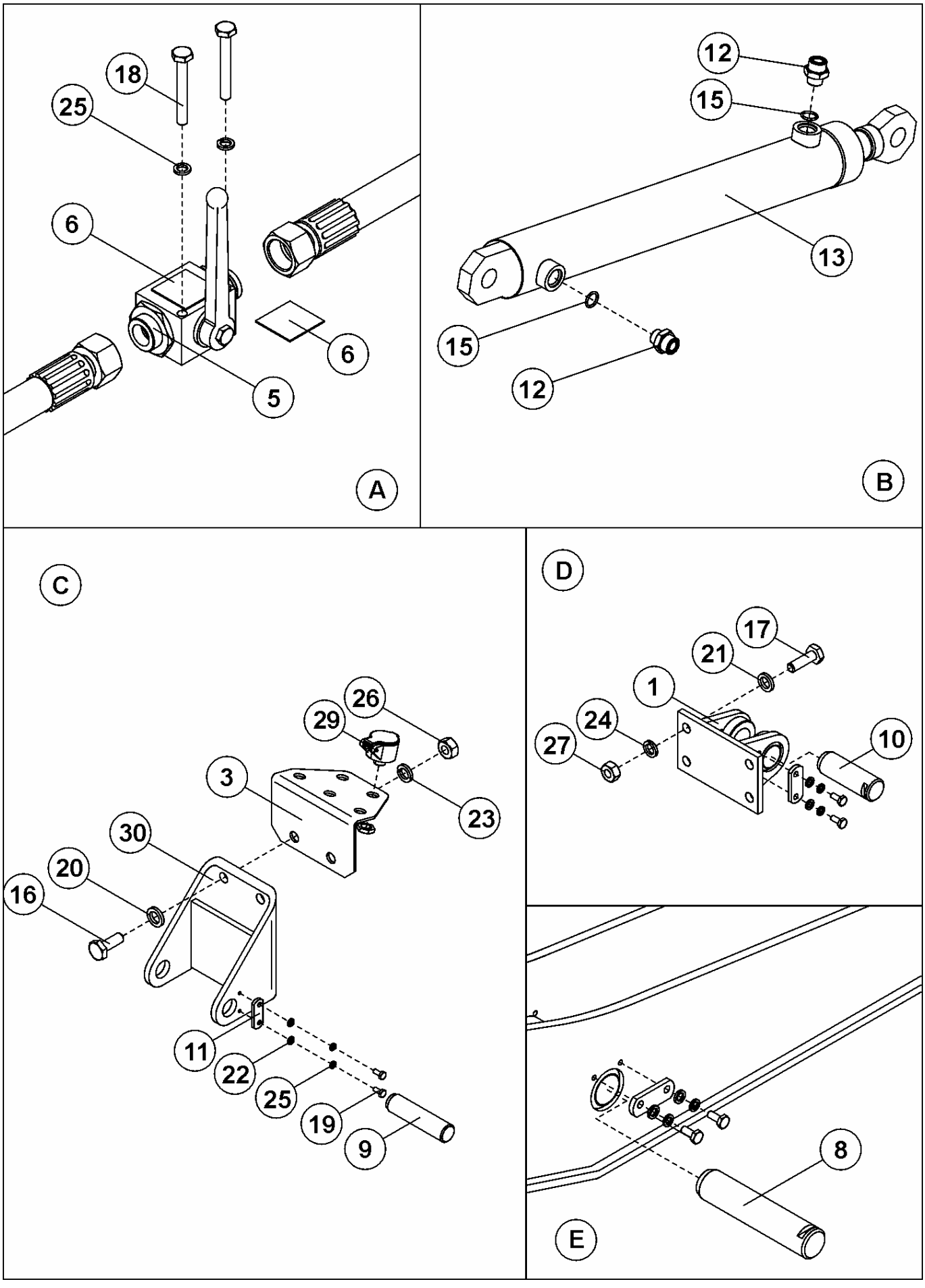


Fig. 32 Scissor support hydraulic system, continued

Assembly **Scissor support hydraulic system**		Drawings No. **31, 32**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	REAR FASTENING EYE	64RPN-16.00.200	1	1	1
2	CONDUIT DN13 H2.12 H2.12 2800	64RPN-16.01.000	1	1	1
3	SOCKET CONSOLE ISO	64RPN-16.00.001	1	1	1
4	CONDUIT DN13 H2.12 H2.12 1800	58RPM-13.01.000	2	2	2
5	HYDRAULIC VALVE	45RPN-26.00.001	1	1	1
6	STICKER „OPEN/CLOSE”	45RPN-26.00.002	1	1	1
7	SUPPORT, CPL.	45RPN-47.00.200	1	1	1
8	WASHER I	45RPN-47.00.001	1	1	1
9	WASHER II	45RPN-47.00.002	1	1	1
10	WASHER III	45RPN-47.00.003	1	1	1
11	SECURING PLATE	45RPN-47.00.004	3	3	3
12	CONNECTOR BODY	12RPN-18.00.002	2	2	2
13	CYLINDER 63sj36A/400m3b16	33RPN-05.04.00.00	1	1	1
14	QUICK-RELEASE CONN. – PLUG ISO 12.5	SZ12-W06	2	2	2
15	SEALING RING 19.2x2.4	PN-64/M-73093	2	2	2
16	SCREW M16x45-8.8-B-Fe/Zn5	PN-85/M-82105	4	4	4
17	SCREW M12x35-8.8-B-Fe/Zn5	PN-85/M-82105	4	4	4
18	SCREW M6x50-5.8-B-Fe/Zn5	PN-85/M-82105	4	4	4
19	SCREW M6x16-8.8-B-Fe/Zn5	PN-85/M-82105	6	6	6
20	WASHER 17 Fe/Zn5	PN-78/M-82005	4	4	4
21	WASHER 13 Fe/Zn5	PN-78/M-82005	4	4	4
22	WASHER 6.4 Fe/Zn5	PN-78/M-82005	6	6	6
23	SPRING WASHER Z16.3 Fe/Zn5	PN-77/M-82008	4	4	4
24	SPRING WASHER Z12.2 Fe/Zn5	PN-77/M-82008	4	4	4
25	SPRING WASHER Z6.1 Fe/Zn5	PN-77/M-82008	8	8	8
26	NUT M16-8-B Fe/Zn5	PN-86/M-82144	4	4	4
27	NUT M12-8-B Fe/Zn5	PN-86/M-82144	4	4	4
28	NIPPLE M6	PN-76-M-82002	1	1	1
29	SOCKET ISO	ART. NR 920025	5	5	5
30	FRONT FASTENING EYE	64RPN-16.00.300	1	1	1

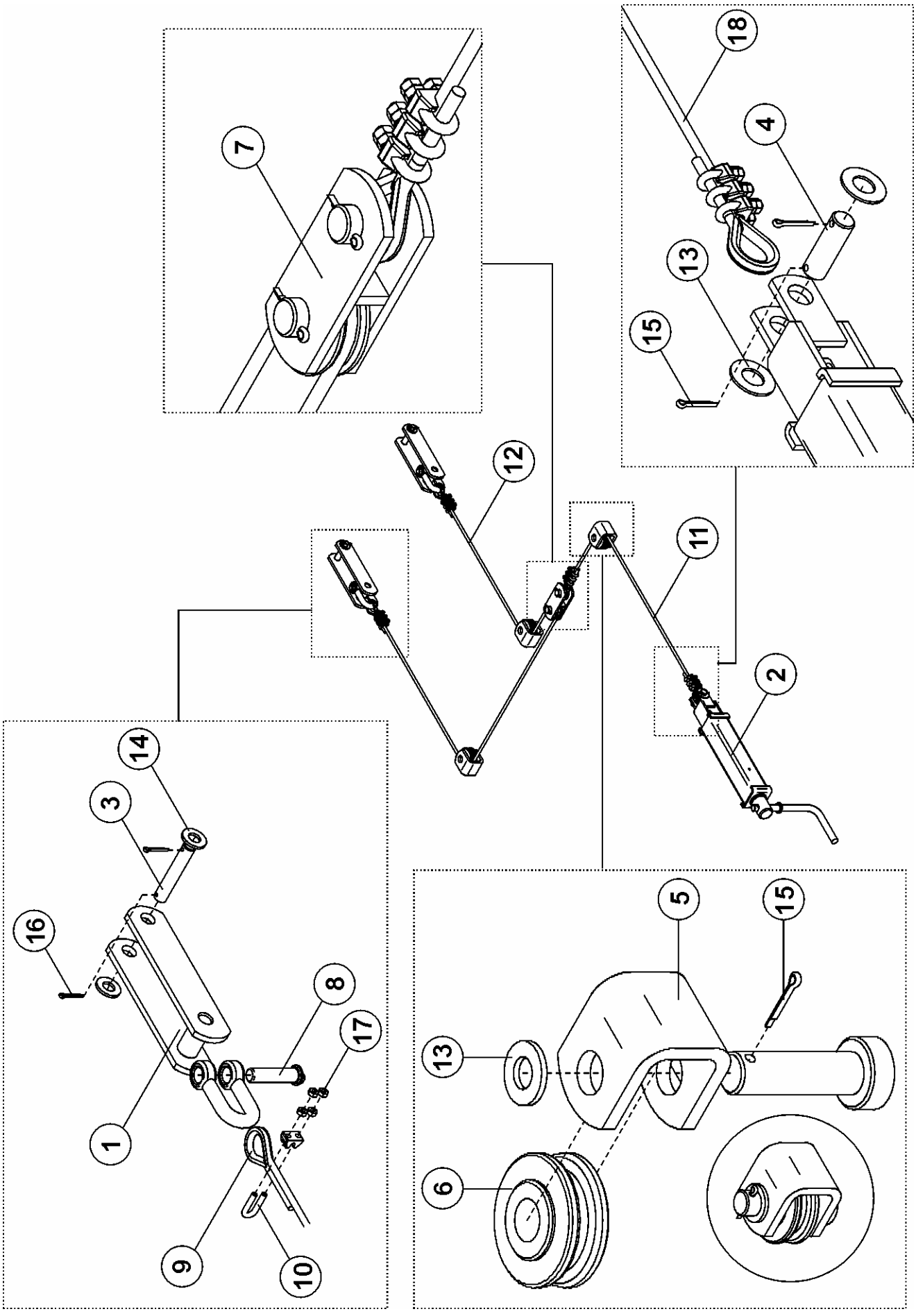


Fig. 33 Parking brake

Assembly		Drawings No.	QUANTITY T679		
Parking brake		**33**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	PARKING BRAKE LEVER	45RPN-22.01.000	2	2	2
2	BRAKE BOLT	45RPN-22.00.002	2	2	2
3	BRAKE PULLEY BLOCK	31RPN-05.01.000	1	1	1
4	CABLE CATCH	29RPN-01.00.018	**3**	3	3
5	BRAKE GEAR	29RPN-12.01.000	1	1	1
6	BOLT	29RPN-12.00.001	1	1	1
7	CABLE WHEEL	29RPN-13.00.001	3	3	3
8	CABLE ∅6 6x19+P+p L=1000		1	1	1
9	CABLE ∅6 6x19+P+p L=2600		1	1	1
10	SCREWED SHACKLE S.2768 „SPAREX”		2	2	2
11	THIMBLE A6 OC.	PN-66/M-80247	4	4	4
12	U-CLAMP 6.5 OC.	PN-73/M-80241	12	12	12
13	WASHER 17 Fe/Zn5	PN-78/M-82005	5	5	5
14	WASHER 13 Fe/Zn5	PN-78/M-82005	4	4	4
15	COTTER PIN S-Zn 4x40	PN-76/M-82001	5	5	5
16	COTTER PIN S-Zn 3.2x25	PN-76/M-82001	4	4	4
17	NUT M5-5-B Fe/Zn5	PN-86/M-82144	24	24	24
18	HEAT SHRINKAGE TUBE PBF 12/6 30	BN-89/C-89209	4	4	4

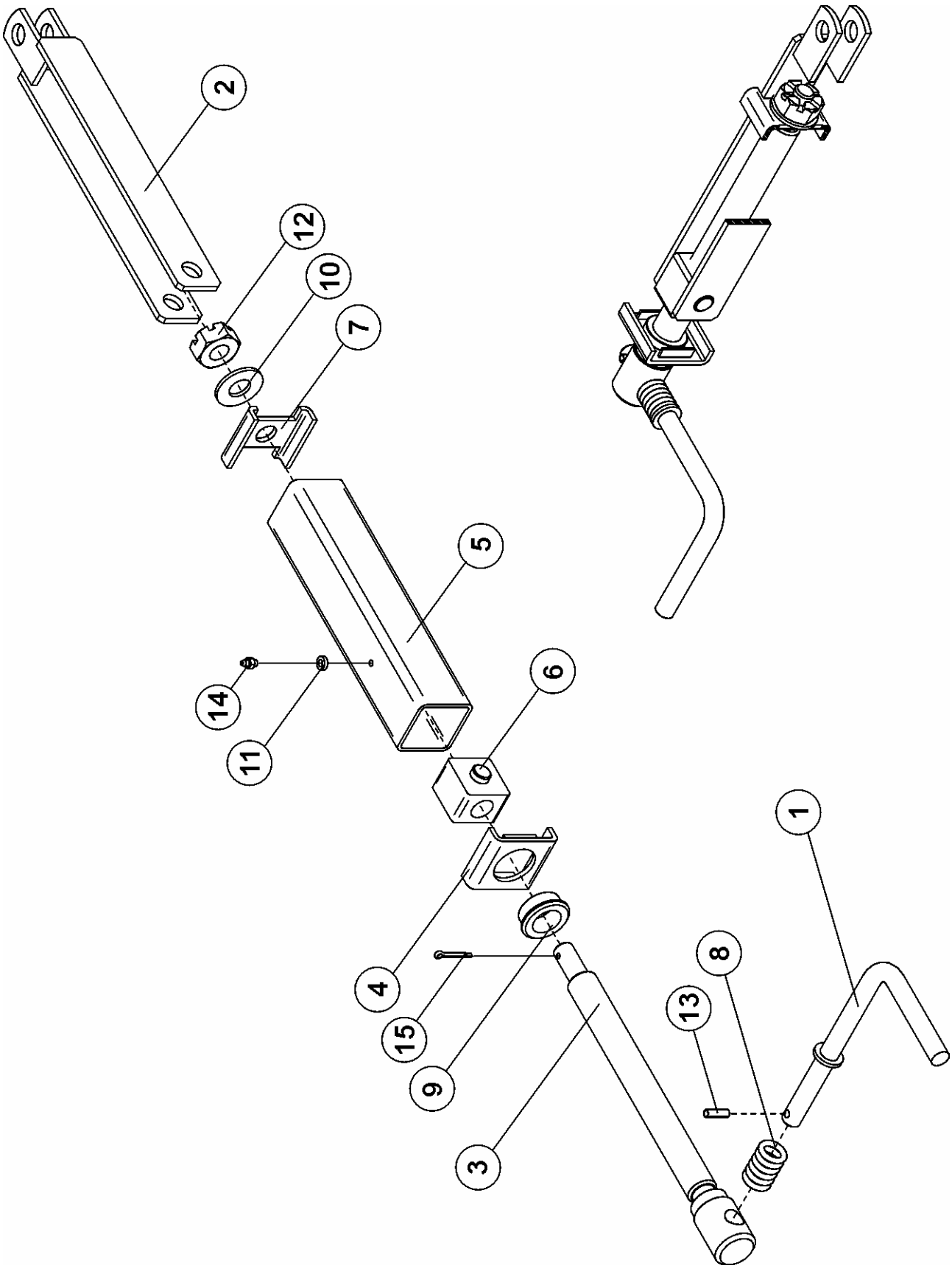


Fig. 34 Brake gear

Assembly **Brake gear**		Drawings No. **34**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	CRANK, CPL	29RPN-12.01.100	**1**	**1**	**1**
2	PULL ROD, CPL.	29RPN-12.01.200	**1**	**1**	**1**
3	SCREW, CPL.	29RPN-12.01.300	**1**	**1**	**1**
4	STOPPER	29RPN-12.01.400	**1**	**1**	**1**
5	BODY	29RPN-12.01.001	1	1	1
6	NUT	29RPN-12.01.002	1	1	1
7	STOPPER	29RPN-12.01.003	1	1	1
8	SPRING	29RPN-12.01.004	1	1	1
9	SLEEVE	29RPN-12.01.005	1	1	1
10	WASHER 17 FE/ZN5	PN-78/M-82005	1	1	1
11	WASHER 6.4 FE/ZN5	PN-78/M-82005	1	1	1
12	CASTELLATED NUT M16-5-C FE/ZN5	PN-86/M-82148	1	1	1
13	SPRING PIN 6x24	PN-89/M-85023	1	1	1
14	NIPPLE M6	PN-76/M-86002	1	1	1
15	COTTER PIN	PN-76/M-82001	1	1	1

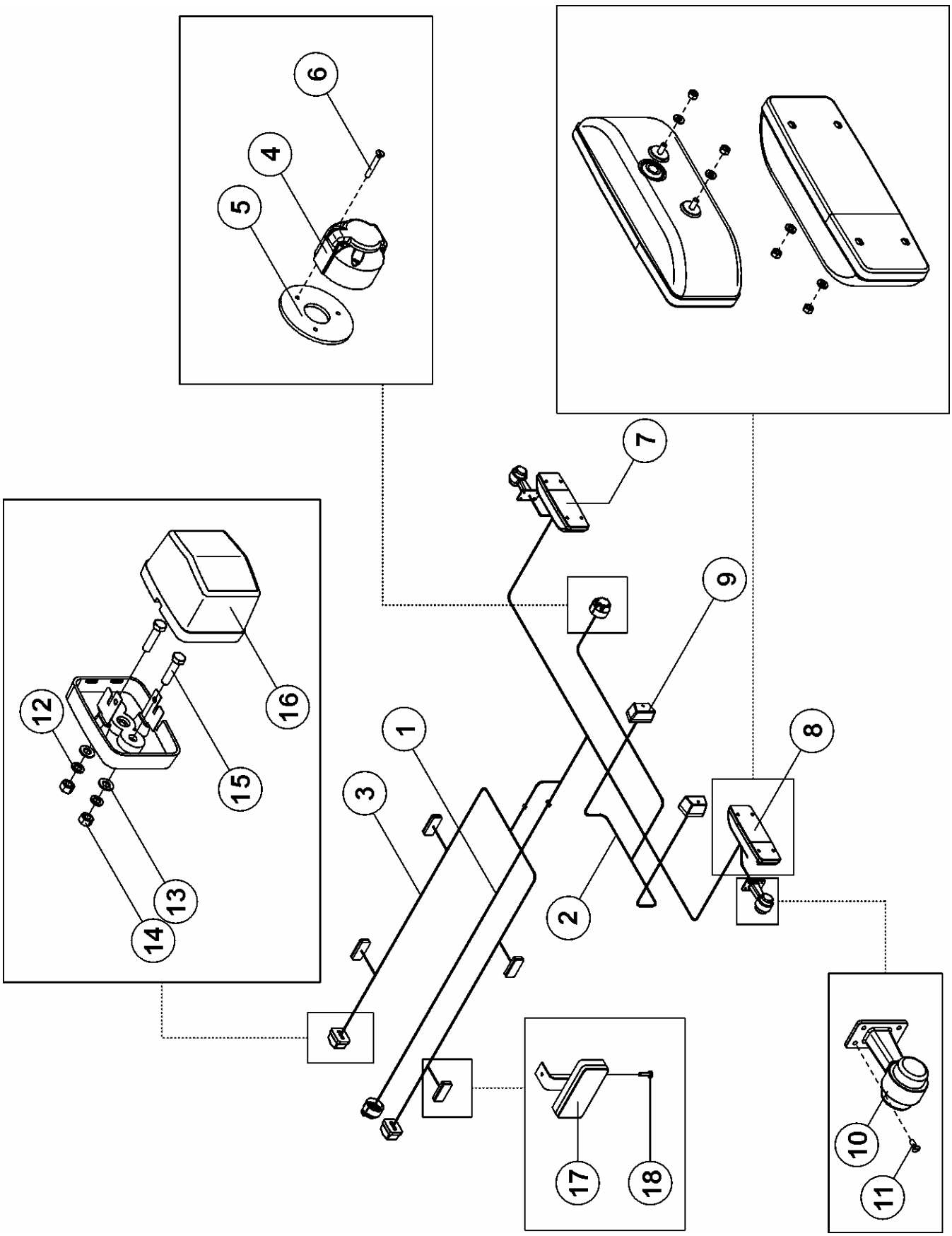


Fig. 35 Wiring

Assembly		Drawings No.	QUANTITY T679		
Wiring		**35**			
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	CENTRAL BUNDLE	64RPN-10.01.00.00	1	1	1
2	REAR BUNDLE	67RPN-10.01.00.00	1	1	1
3	FRONT BUNDLE	64RPN-10.02.00.00	1	1	1
4	SOCKET GN-7 (X7)	8JB001941-002	2	2	2
5	SOCKET WASHER	006004.60	2	2	2
6	SCREW M5x35-5.8 Fe/Zn5	PN/M-82207	6	6	6
7	REAR COMPACT LAMP WE549P	04	1	1	1
8	REAR COMPACT LAMP WE549L	03	1	1	1
9	NUMBER PLATE LAMP LT-120		2	2	2
10	CONTOUR LAMP	127 021 00 00	2	2	2
11	SCREW M5x16-B Fe/Zn5	PN/M-82201	8	8	8
12	SPRING WASHER Z5.1 Fe/Zn9	PN/M-82008	4	4	4
13	WASHER 5.3 Fe/Zn5	PN/M-82005	4	4	4
14	NUT M5-8-Fe/Zn5	PN/M-82144	4	4	4
15	SCREW M5x25-B-5.8 Fe/Zn 5	PN/M-82105	4	4	4
16	FRONT POSITION LAMP L0-110PP		2	2	2
17	SIDE POSITION LAMP W17d	100Z	4	4	4
18	SELF-TAPPING SCREW M5.5x19	DIN 7504-K	8	8	8
	CONNECTION CONDUCTOR	29RPN-10.05.00	1	1	1
	Set of bulbs (for one lamp)				
	REAR COMPACT LAMP RIGHT/LEFT	P21W	1	1	1
		P21/5W	1	1	1
		R5W	1	1	1
	CONTOUR LAMP	R5W	2	2	2
	NUMBER PLATE LAMP. LT - 120	C5W-SV 8.5	1	1	1
	FRONT POSITION LAMP	C5W-SV 8.5	1	1	1

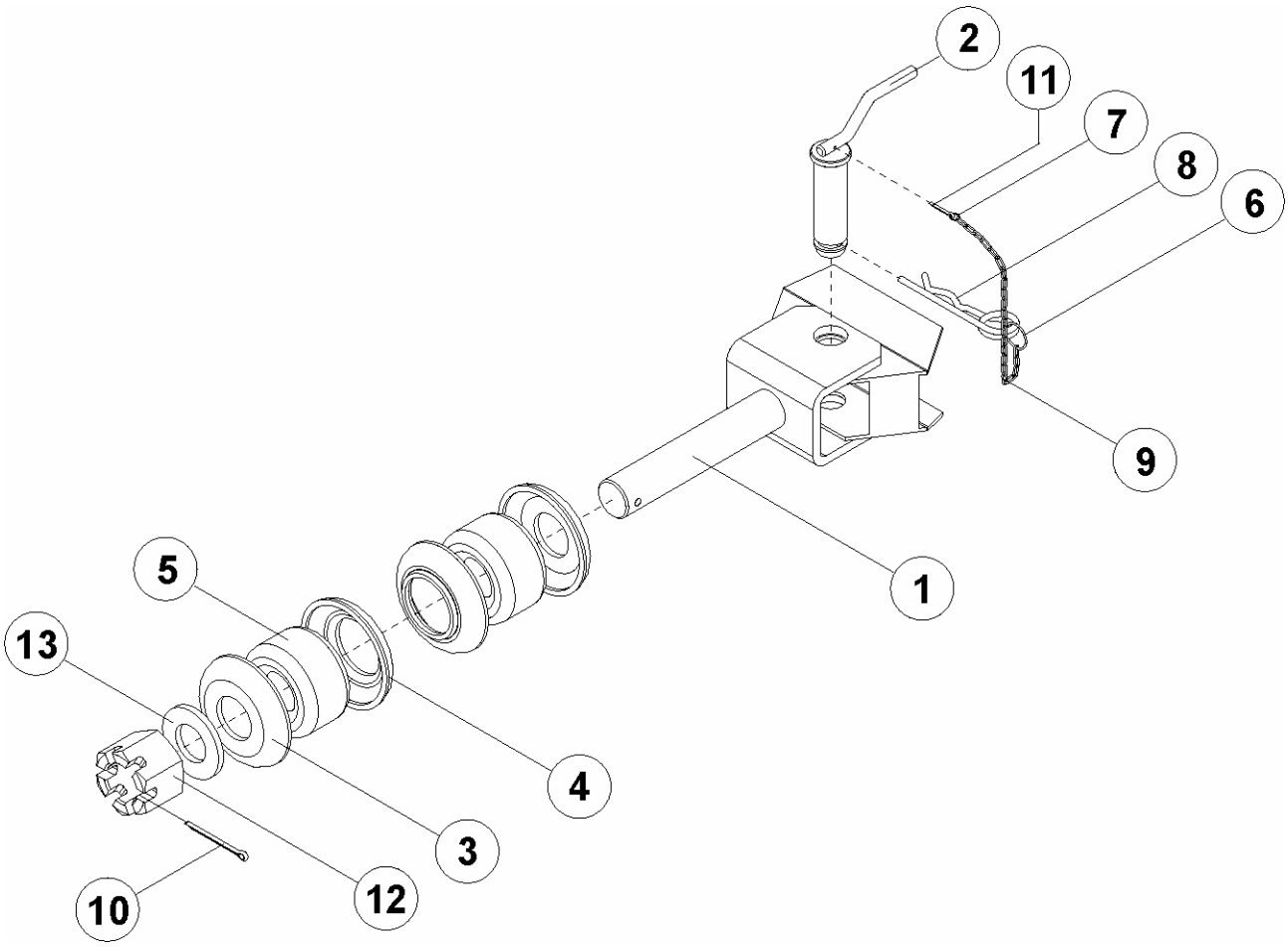


Fig. 36 Rear coupling

Assembly **Rear coupling**		Drawings No. **36**	**QUANTITY T679**		
NO.	**PART**	**DRAWING NO. (STANDARD)**	**D**	**DK**	**PL**
1	BODY	45RPN-23.01.000	1	1	1
2	WASHER, CPL.	29RPN-00.01.200	1	1	1
3	SHOCK ABSORBER SOCKET I	45RPN-23.00.001	2	2	2
4	SHOCK ABSORBER SOCKET II	45RPN-23.00.002	2	2	2
5	SHOCK ABSORBER	45RPN-23.00.003	2	2	2
6	WHEEL I	29RPN-14.06.203	1	1	1
7	WHEEL II	29RPN-14.06.204	1	1	1
8	ELASTIC COTTER PIN 5x110 Fe/Zn5	PN-ISO 7072	1	1	1
9	SANITARY CHAIN		1	1	1
10	COTTER PIN S-Zn 8x80	PN-76/M-82001	1	1	1
11	COTTER PIN S-Zn 3.2x25	PN-76/M-82001	1	1	1
12	CASTELLATED NUT Z M42x2-8-B	PN-86/M-82148	1	1	1
13	WASHER 43 Fe/Zn	PN-78/M-82005	1	1	1