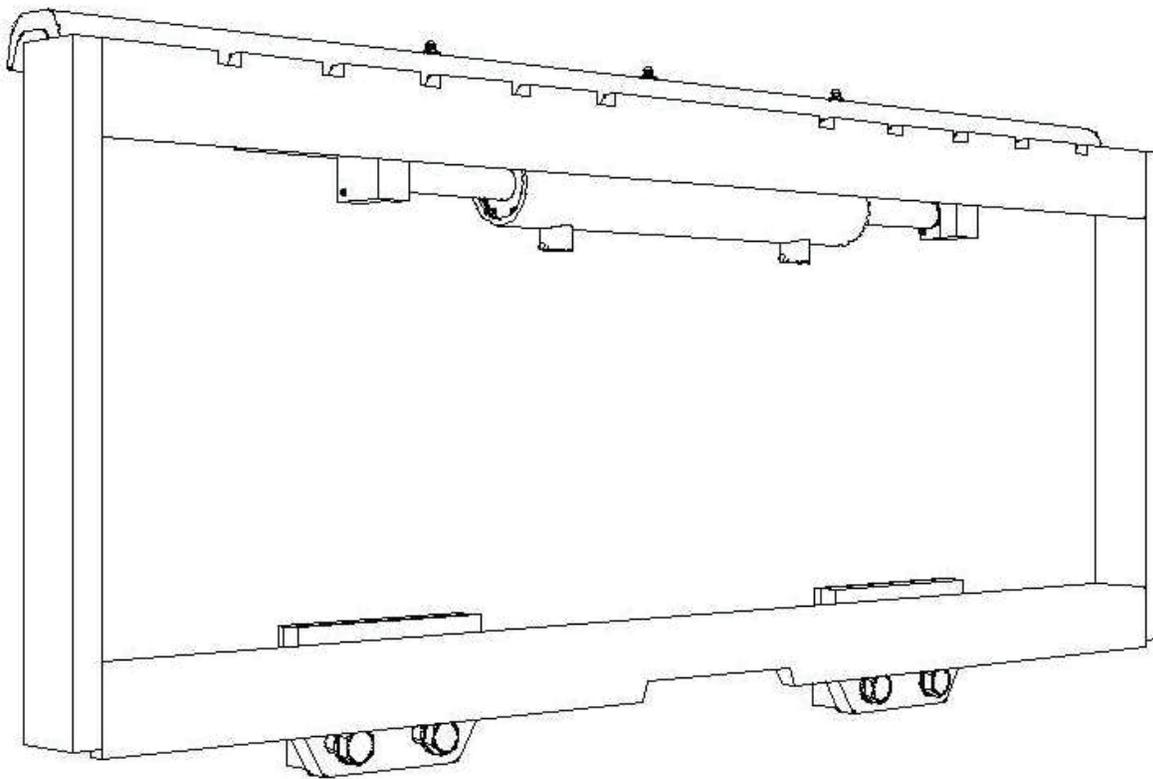


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# Operating Instructions

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LIFT TRUCK ATTACHMENTS

## Side Shifters

**Note:** Carefully read the manual before use

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## Preface

This manual provides you with all the information necessary for the use and maintenance of your equipment. Its efficiency and lasting wear depends on effective maintenance and the care taken in its use. TVH and your dealer are at your disposal to provide any information regarding operation and they also provide original spares to ensure perfect adaptation in the event of replacement.

Before leaving the production factory, this specific model has been subjected to test to ensure maximum reliability.

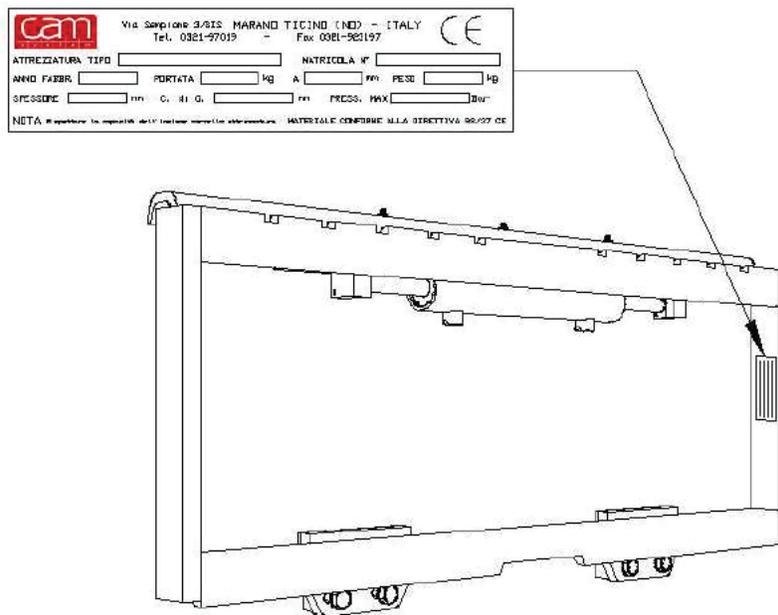
Check to ensure that the equipment has not been subjected to structural damage that may injure its functionality and safety.

The technical information provided in this manual are property of TVH and are confidential in nature: therefore even partial diffusion or reproduction of this manual is prohibited.

All partial or total reproduction of the written matter, organization, paging, symbols of the text and illustrations contained in this manual is prohibited by law.

The subject matter of this manual is that specifically required by the "CEE 2006/42/CE NORME EN 1726 Machine Directive" and subsequent amendments.

In all communication with the manufacturer or dealer always mention the information indicated on the identification plate.



The residual capacity of the equipment-lift truck must be certified by the lift truck constructor.

## Manual Information

The present manual is to be considered an integral part of the device and must accompany the same until such time as it is demolished. In the event of loss or damage, request a new manual from the manufacturing company.

This manual contains machine information, safety precautions, instructions on installation, transport, function and maintenance.

Certain illustrations of the manual may show parts or accessories that are different to your own.

Thoroughly read the manual and keep it on hand.

In the event of any problems with either the equipment or the manual, contact TVH for the latest information available.

The manual, complete with all enclosures must accompany the equipment in the event of re-sale.

The manual has been divided into sections to simplify reading. Each section is identified by a symbol.



### **Informative section**

This section provides general information on the equipment.



### **Safety section**

This section lists all the possibly base precautions in order to guarantee safety. It also provides the text of the labels that are applied to the equipment.



### **Installation section**

The installation section indicates all the operations to be undertaken by the client to ensure that the equipment is operational. In the specific case of the mounting of the rotating plates on the lift truck.



### **Function section**

This section provides information for the operators in order to correctly carry out of the work procedure.

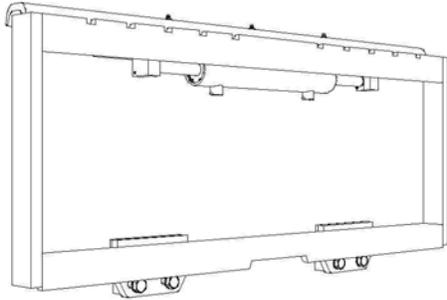


### **Maintenance section**

The maintenance section is an equipment care guide. This section indicated the equipment lubrication points. Maintenance frequency indications are also provided.



## Information on the lateral side shifter



The lateral side shifters can be divided into 4 classes:

- Class 1
- Class 2
- Class 3
- Class 4

The models in Class 1, Class 2, Class 3 with capacity of 2200 lbs (1000 kg), 5500 lbs (2500 kg) and 7700 lbs (3500 kg) to 20" (500 mm) are supplied with two single bottom sliding pads.

The models in Class 3 and Class 4 with capacity of 11000 lbs (5000 kg) and 14000 lbs (6500 kg) are supplied with two double bottom sliding pads.

The models in Class 4 with a capacity of 17000 lbs (8000 kg) are supplied with double or triple rollers, depending on the length of the shift.

### Lift Truck requirements

Recommended working pressure:	2300 psi (160 bar) - Maximum: 3000 psi (210 bar)
Recommended oil flow:	8 l/min (2 GPM) for TRF112-225-335
	14 l/min (4 GPM) for TRF350
	20 l/min (5 GPM) for TRF465-480
	25 l/min (6,5 GPM) for TRF4120

### Proposed use

The side-shifter have been designed and constructed to be fitted and used only in conjunction with a lift truck, making the lateral movement of the forks to facilitate the handling of the load.

### Operator position

The operator will control the side shifter from the lift truck driver's seat.

### Disposal



In the event of the scrapping of the equipment it must be disposed of it in adequate dumps in compliance with current regulations. Collect any exhaust oils in special collection centers. Before proceeding with scrapping, it is necessary to separate the rubber or plastic parts from the rest of the material. Parts exclusively made of plastic, aluminum, steel material may be recycled if collected by the special disposal centers.



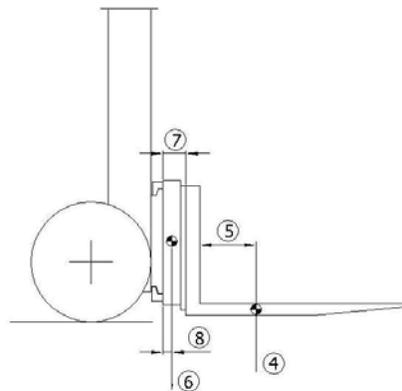
## Data for EEC certification of the truck/equipment unit

The lift truck constructor will certify the truck/equipment unit applying a plate to the lift truck indicating the residual capacity of the unit.

### Equipment identification plate

	Via. Sempione 3/BIS MARANO TICINO (NO) - ITALY Tel. 0321-97019 - Fax 0321-923197						
ATTREZZATURA TIPO <input type="text"/>	<b>1</b>	MATRICOLA N° <input type="text"/>	<b>2</b>				
ANNO FABBR. <input type="text"/>	<b>3</b>	PORTATA <input type="text"/> kg	<b>4</b>	A <input type="text"/> mm	<b>5</b>	PESO <input type="text"/> kg	<b>6</b>
SPESSORE <input type="text"/> mm	<b>7</b>	C. di G. <input type="text"/> mm	<b>8</b>	PRESS. MAX <input type="text"/> Bar	<b>9</b>		
NOTA Rispettare la capacità dell'insieme carrello attrezzatura. MATERIALE CONFORME ALLA DIRETTIVA 98/37 CE							

- 1 Equipment name
- 2 Serial no.
- 3 Year of construction
- 4 Equipment capacity
- 5 Center of gravity of the load to which the equipment capacity refers
- 6 Equipment weight
- 7 Equipment thickness from the fork-carrier plate of the load support carriage
- 8 Equipment center of gravity
- 9 Maximum pressure on equipment entry





## **Safety Information**

Failure to comply with the basic safety norms of precautions may lead to accidents during operation, maintenance or repair of the equipment. It is often possible to avoid accidents by recognizing potentially dangerous situations before they occur. The operator must be away of potential dangers and possess the training, competence and the equipment necessary to correctly carry out his work.

Improper use of the equipment during operation or maintenance may be damaging and cause serious accidents.

Do not use the equipment or undertake maintenance until all the instructions have been read and understood.

The safety precautions and warnings are indicated in the manual and on the equipment by means of visual messages. Failure to pay attention to these danger messages, may jeopardize the safety of the operator with serious consequences for the same and for other people.

The safety messages are displayed with the following symbols:



**The IMPORTANT messages are displayed before procedures which, if not observed, may cause damage to the operator.**



**The WARNING messages are displayed before messages which, if not observed, may cause damage to the equipment.**

TVH cannot envisage each possible circumstance that may result in danger. Therefore the warnings given in this publication and which appear on the equipment are not exhaustive. In the event that equipment, procedures, work methods or working techniques are used that are not specifically advised by TVH, it is necessary to make sure that there is no danger to the operator or other people.

The information, specifications and illustrations in this publication are based on the information available at the time of preparation.



**As well as the safety regulations described in this section please take note of all the information provided in the manual of the lift truck onto which the clamps are to be mounted.**



## Safety Precautions



TVH cannot under any circumstances be made responsible for accidents or damages resulting from the use of the equipment by inadequately trained personnel or if inappropriate use has been made of the same, as well as the, even partial, non-observance of the safety norms and the intervention procedures contained in the present manual and in that of the lift truck.

Before using the equipment carefully read the use and maintenance manual. Should certain parts not be clear consult the constructor.

NOT INTENDED FOR USE IN AREAS AT RISK OF EXPLOSION AND FIRE

Do not wear flapping garments or with belts, cuffs, large sleeves, do not wear scarves, shirts or anything else that may get caught up in the moving parts.

In the event of injury caused by oil escape under pressure, immediately seek medical assistance.

The equipment is complete with warning plate; disposal and non-respect of these plates may result in serious injury.

In the event of non-envisaged workmanship or intervention, or following a procedure different to that indicated in the manuals, consult TVH before proceeding in order to ascertain its feasibility.

Before undertaking any maintenance or other operations on the equipment, switch off the lift truck, pull the hand brake and remove the key from the panel.

Use tools and equipment suited to the work to be undertaken. Do not rest any tools or equipment on any part of the machine.

Do not use the side shifter for any other purposes than those that have been intended.

Do not use the truck unless in perfect working order.



Do not use the truck to transport people.

Do not exceed the maximum capacity as indicated on the identification plate.

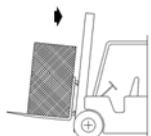
Do not undertake maneuvers whilst the truck is moving.

Do not leave the truck unguarded without having firstly lowered the load to the ground, pulled the hand brake and switched off the motor.



Standing under the load is severely forbidden.

Never pass the arm through the upright. Remain inside the driver's cabin. Approach ramps or climbs backwards. Driving downhill with the load in front reduces load stability.



Lift the load to be transported 8" (200mm) from the ground and do not proceed without having traversed backward. Transportation of non-permitted material is forbidden.



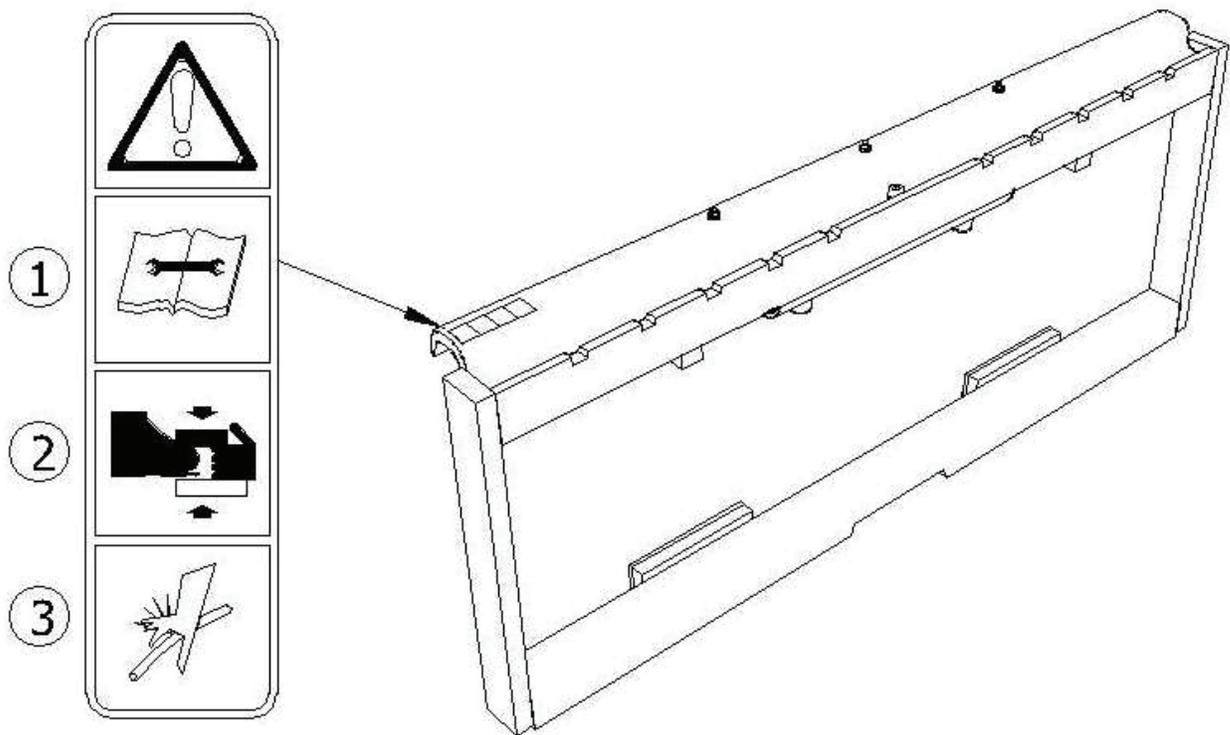
## Safety plates and symbols

Self-adhesive stickers with safety symbols and/or messages are applied to the equipment. These pages explain their precise location and the nature of the danger.



### **IMPORTANT!**

**Make sure that all the safety messages are legible. Clean using a cloth, soap and water. Do not use solvents, nafta or petrol. Replace damaged stickers asking the constructor for new ones. If the part to be replaced bears a sticker, ensure that a new sticker is applied to the new part.**



- ① **Important:** carefully read the manual before using the equipment and undertaking the maintenance operations.
- ② **Important:** Risk of limb crushing.
- ③ **Important:** pressurized liquids.

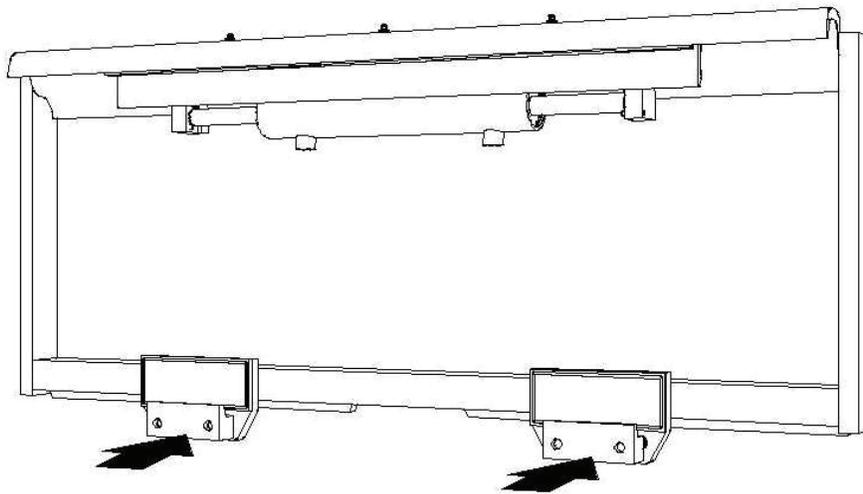


## Installation

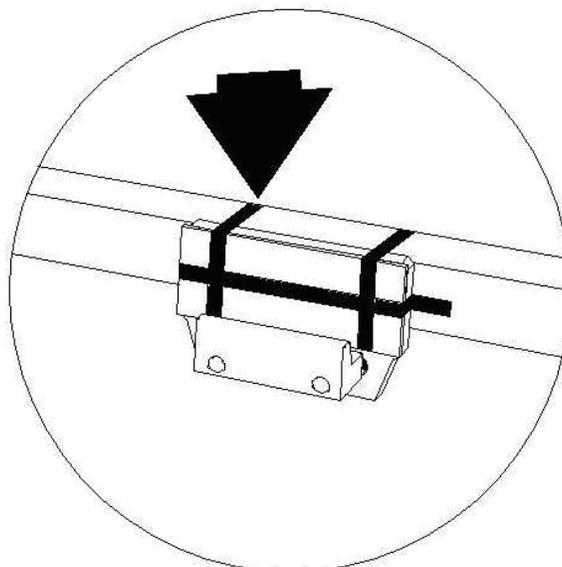
The equipment functions according to the technical parameters envisaged providing that it is correctly mounted on the lift truck.

Before installing a careful visual check must be made in order to make sure that no damage has occurred during the transportation and handling stage. In the event that one or more components are found to be damaged it is necessary to notify TVH, and agree on the measures to be taken.

- Remove both the two bottom hooks with their screws, bolts and washers.



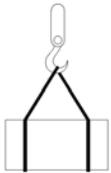
- Set free the sliding pads.





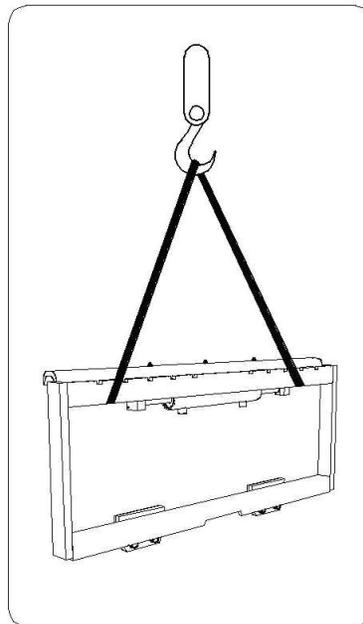
**IMPORTANT!**

Before lifting the equipment make sure that the lifting device (ropes, cables, hooks, etc) are adequate for the weight of the equipment (see identification label).

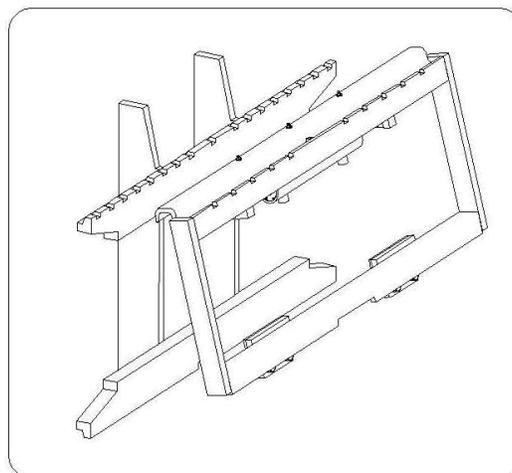


**Check the stability of the equipment before lifting.**

- Harness and lift the side shifter as indicated in the figure.

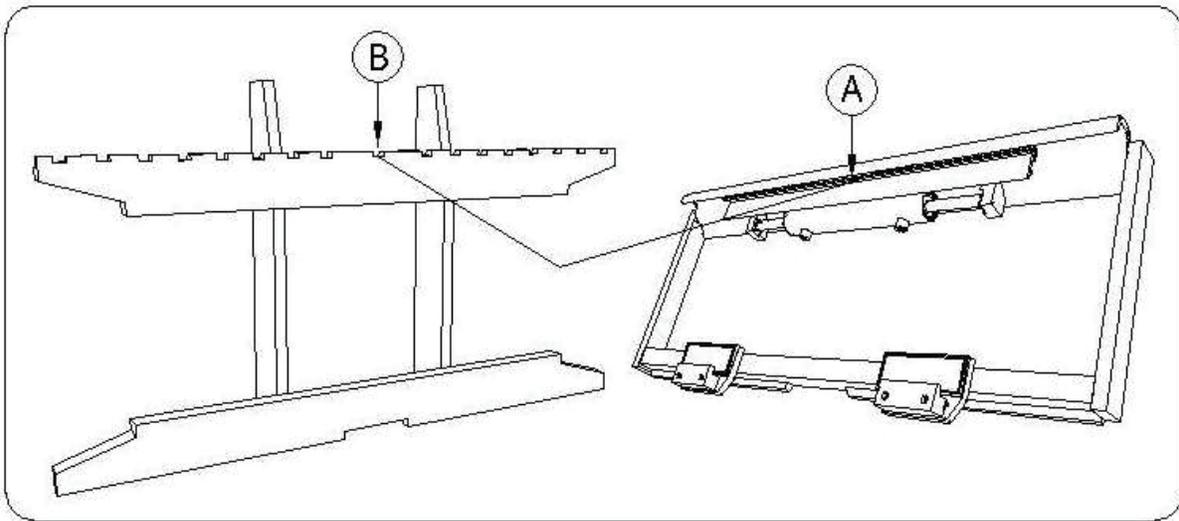


- Place side by side the side shifter to the truck.

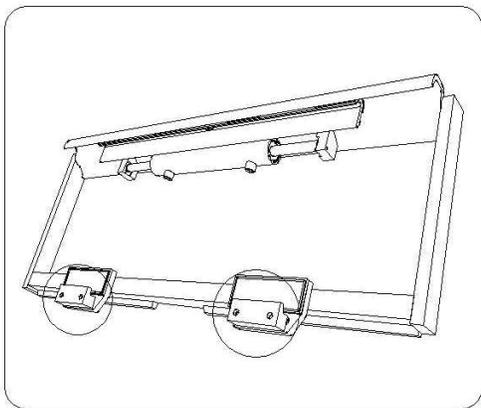




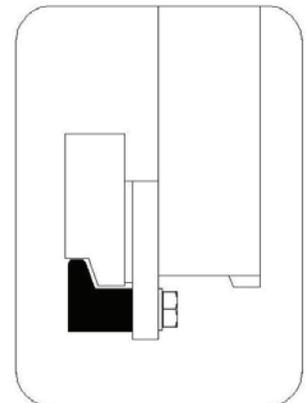
- Insert the side shifter blocking notch A, in the seat B, set aside the truck plate. Center the side shifter on the truck plate.



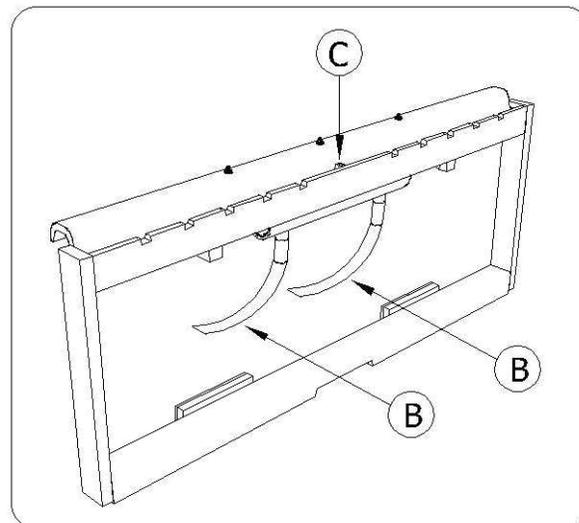
- Lift the side shifter together with the truck plate and set the two bottom hooks, clamping them with their bolts and their plates.



Screw Dimension	Driving Torque	
	Ft. - Lbs.	Nm
M8	19	25
M10	36	48
M12	63	85
M14	96	130
M16	148	200
M20	295	400

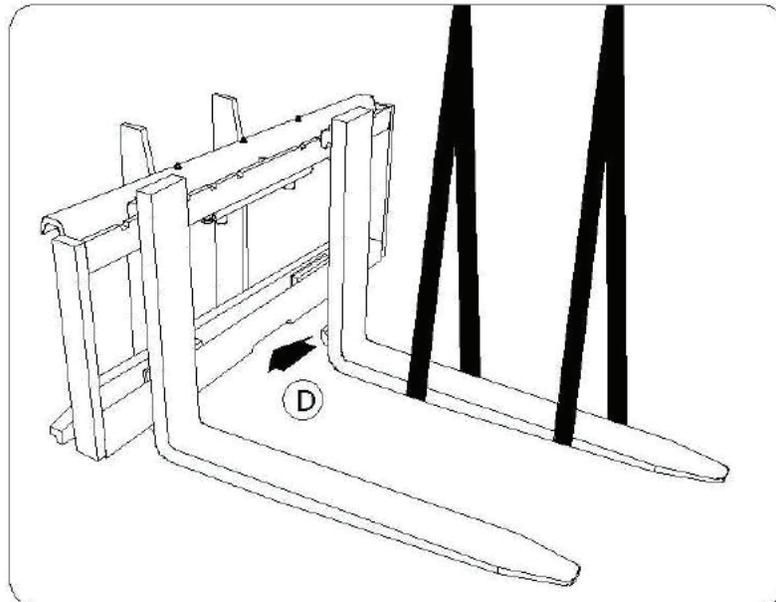


- Connect the two oil tubes B.
- Unscrew and remove the safety screw C.

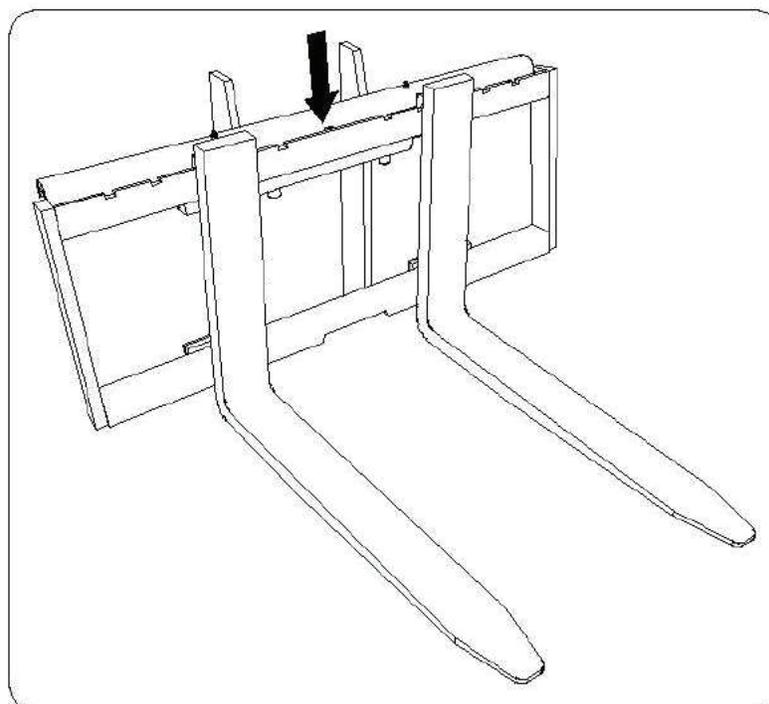




- Lift and insert the first fork in the side shifter central zone D and shift it to the left. Insert the second fork and shift it to the right. Center well the two forks on the side shifter.



**Insert and tighten the safety screw previously removed. This securing feature prevents the accidental spillage of the forks.**





## Load lifting

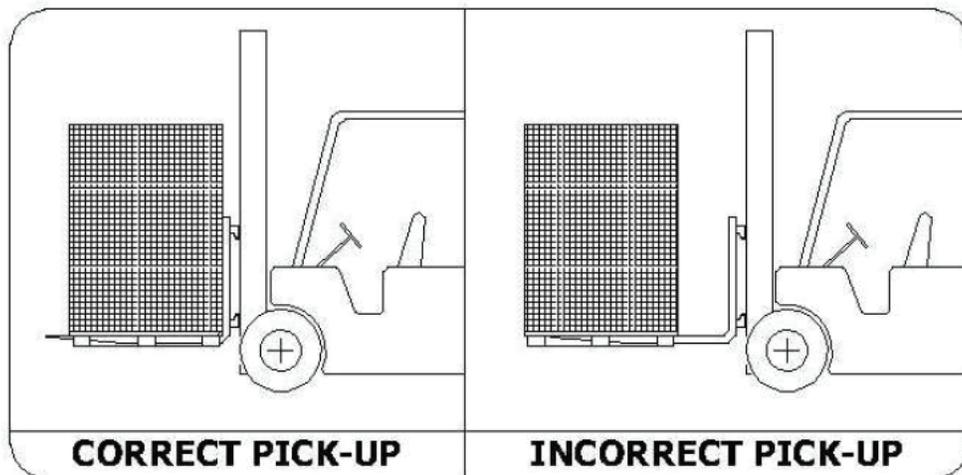
Before starting to work, operate the truck levers in order to find out which lever corresponds to what.

Before lifting a load, operate the forks several times in order to eliminate air from the circuit.

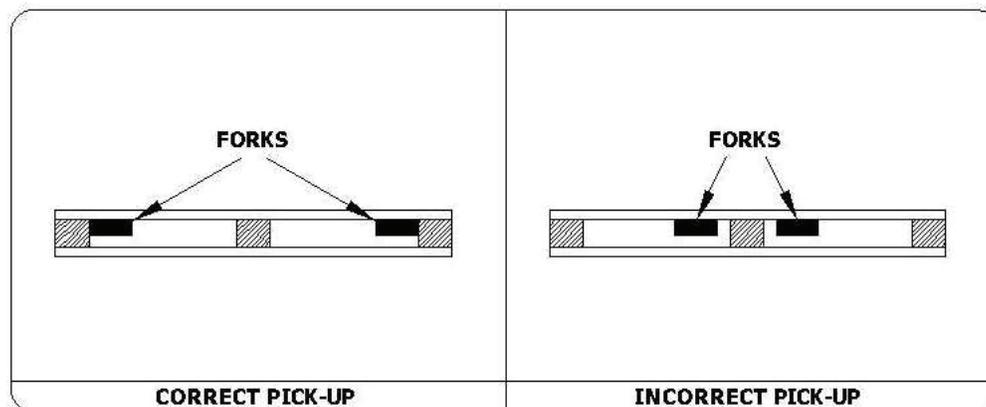


**Before operating the side shifter also carefully read the instructions of the lift truck manual.**

- The load must be fixed against the side shifter body and not towards the tips of the lifting forks.



- The forks must be distanced inside the pallets.



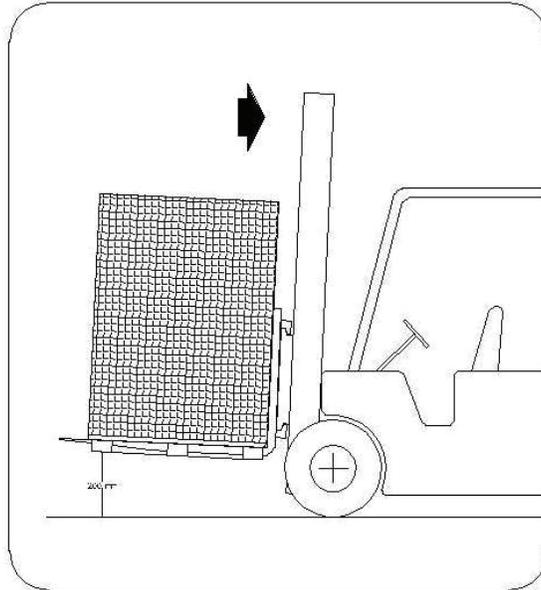
After having lifted the load always position the arms centrally.



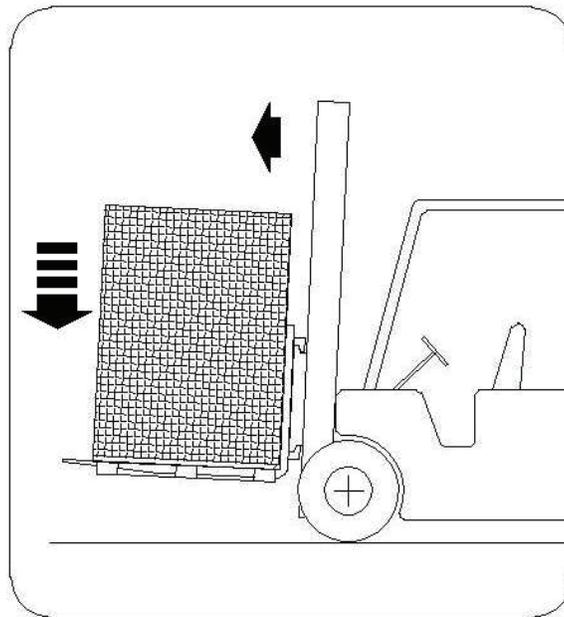
## Load handling

Do not run with non-centered load (tending towards the left or right). Make sure that the loads are not free to move, they may fall and cause accidents.

Do not lift the loads, take into account the height of the working environment.



- When moving with the lift truck, lift the load 8" (200 mm) from the ground and the mast in backwards position.



- To unload, firstly bring the upright to a vertical position and then slowly lower the forks.



**Maintenance**

In the event of problems or if operations are to be undertaken that are not specifically described in this manual consult TVH or the retailer.

Before undertaking maintenance work on the side shifter remove the key from the truck control panel to avoid any accidental movement and operate the levers to eliminate any hydraulic pressure.

For safety reasons arbitrary adaptations or modifications to the equipment are prohibited.

**Daily**

- Check the load retaining potential.
- Check that there is no oil leakage from the pipes, connections or cylinders.

**Weekly**

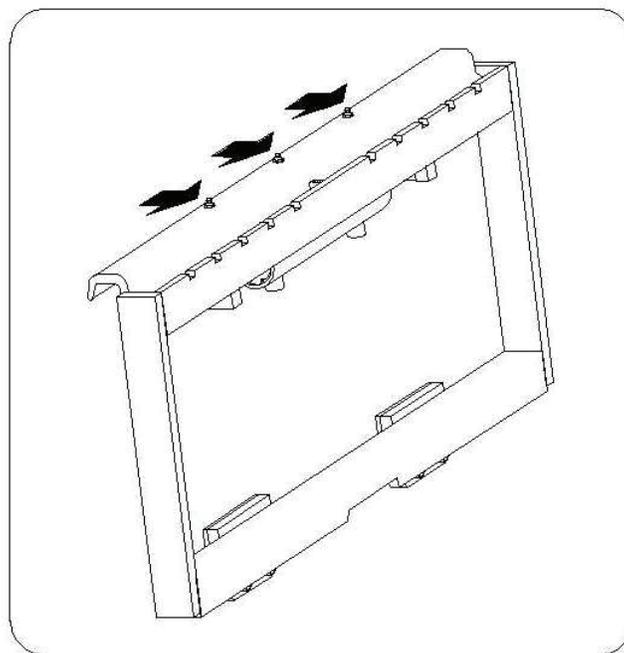
- Check that all the screws are well tightened and check the truck attachment jaws.

**Monthly**

- Perform complete lubrication, grease the three points indicated in the figure below with a special grease.

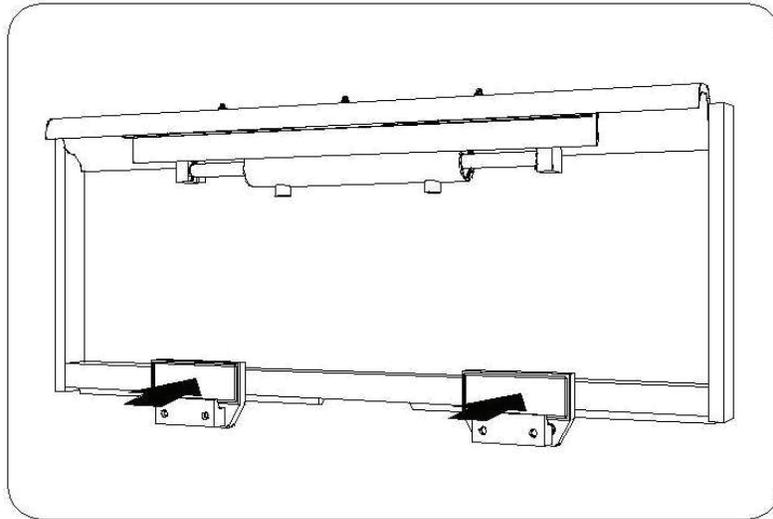


Do not use grease containing molybdenum bi-sulphide for lubrication.

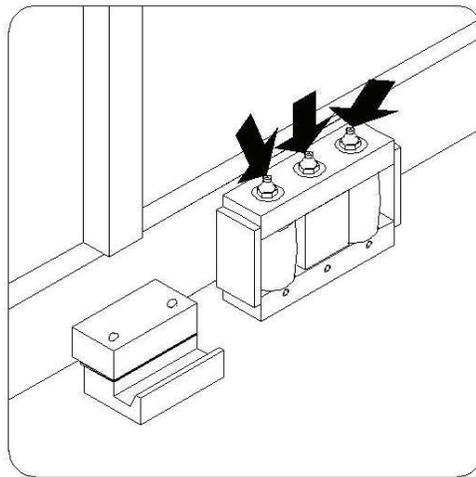




- Grease the area of translation (sliding blocks).

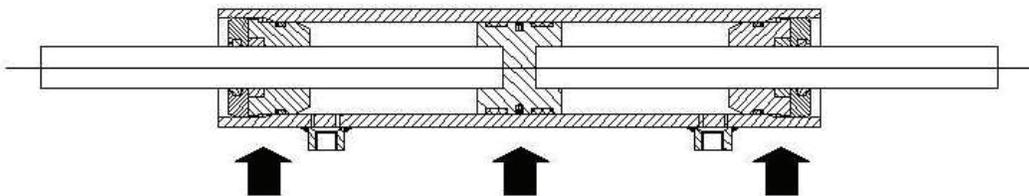


- For models with FEM 4 rollers lower fat, with appropriate grease, the points indicated in the figure.



**Every 200 hours**

- Check the wear of the packing seals and replace if necessary.

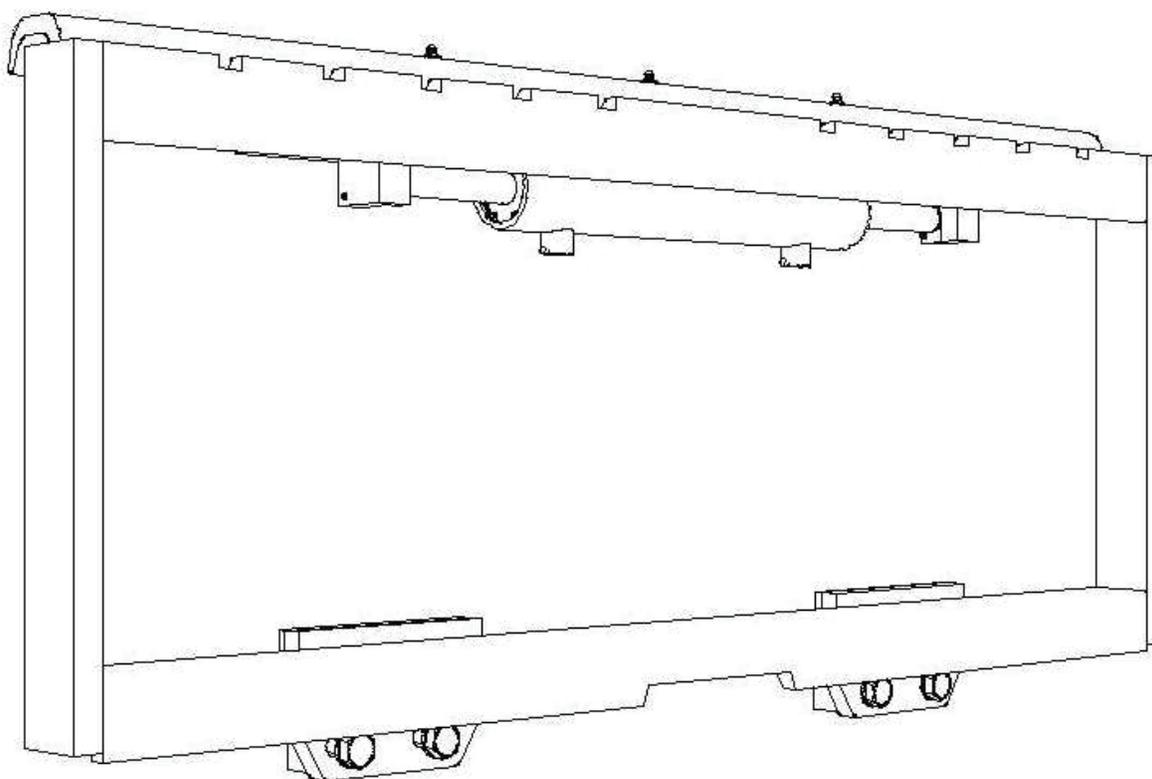




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# Spare Parts List

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## TRF Side Shifters

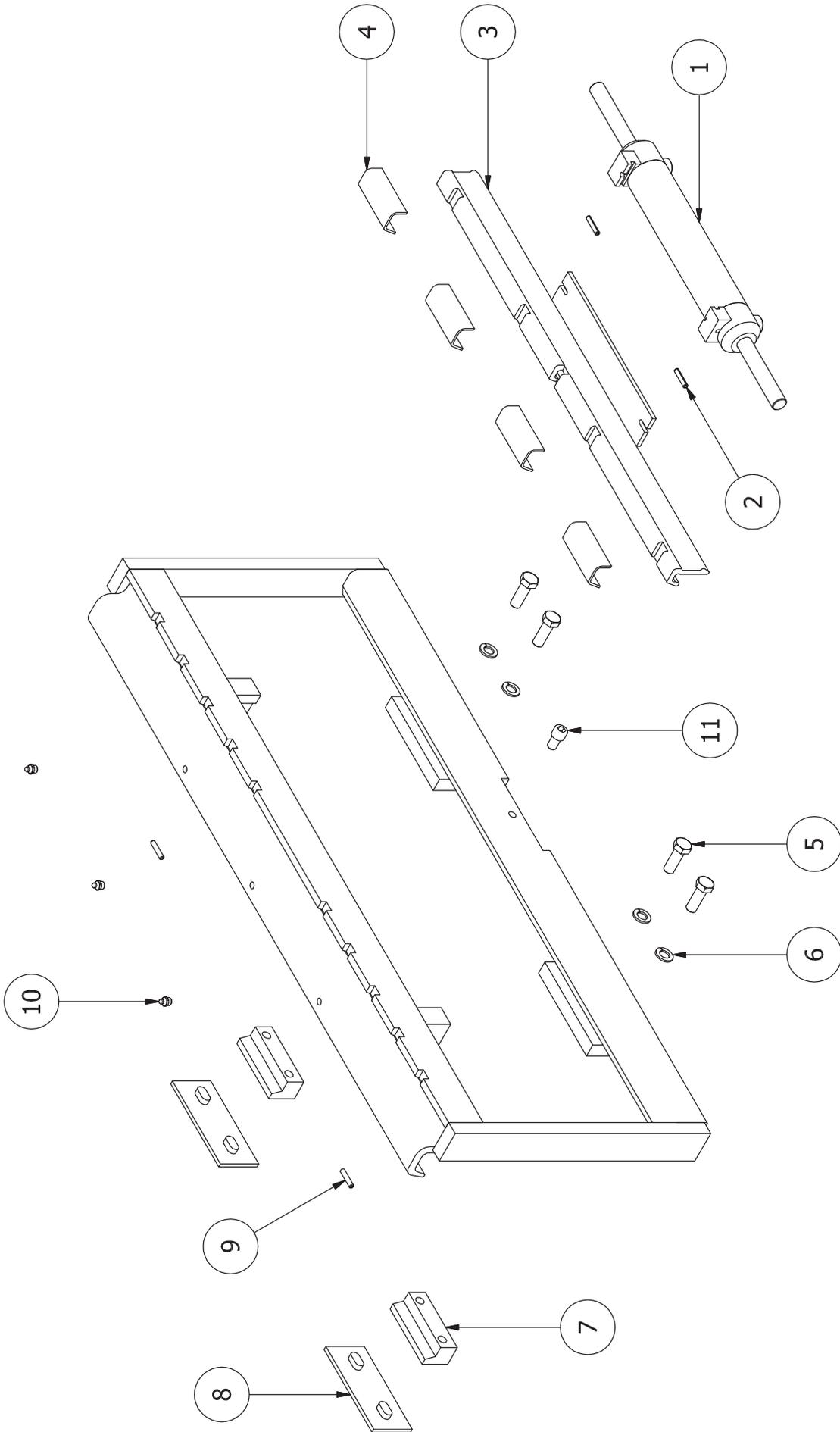
TRF225 TRF335

Carefully read the manual before use

**Side-Shifter TRF225**

<b>Item</b>	<b>Qty</b>	<b>Part Number</b>	<b>Description</b>	<b>Note</b>
1	1	MTC4520.200	Cylinder	
2	2	*6873.06x30	Pin	
3	1	TRF225C.02.050	Fixed Extruded	For TRF L-800
3	1	TRF225C.02.060	Fixed Extruded	For TRF from L-900 to L-940
3	1	TRF225C.02.072	Fixed Extruded	For TRF from L-970 to L-1100
3	1	TRF225C.02.092	Fixed Extruded	For TRF from L-1150 to L-1400
3	1	TRF225C.02.122	Fixed Extruded	For TRF from L > 1450
4	4	LAT00104	Upper Nylon Slide	
5	4	*5739.14X40	Screw	
6	4	*1751.14	Washer	
7	2	N150204	Bottom Hook	
8	2	T280001/0	Bottom Nylon Slide	
9	2	*5923.06X30	Screw	
10	3	*2657A.10X1	Greaser	
11	1	*5931.12X20	Safety Screw	
	1	MTC4520.200.K	Seal Kit	

**To order, place prefix SY in front of part # above.**

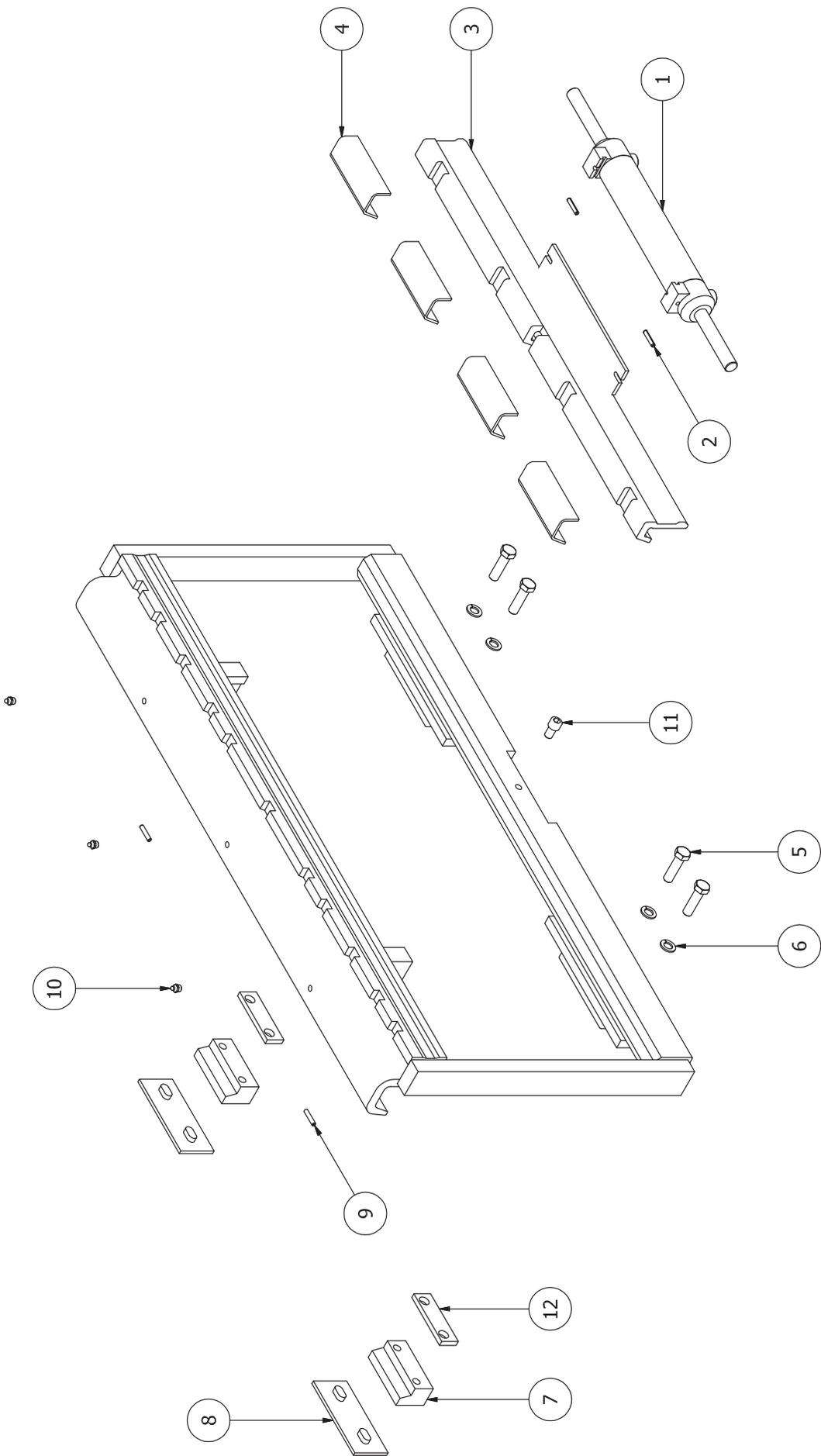


**Side-Shifter Class 2-TRF225**

**Side-Shifter TRF335**

<b>Item</b>	<b>Qty</b>	<b>Part Number</b>	<b>Description</b>	<b>Note</b>
1	1	MTC4520.200	Cylinder	
2	2	*6873.06X30	Pin	
3	1	TRF335C.02.070	Fixed Extruded	For TRF L-1000
3	1	TRF335C.02.080	Fixed Extruded	For TRF from L-1070 to L-1200
3	1	TRF335C.02.100	Fixed Extruded	For TRF from L-1250 to L-1350
4	4	LAT03005	Upper Nylon Slide	
5	4	*5739.14X50	Screw	
6	4	*1751.14	Washer	
7	2	N150205	Bottom Hook	
8	2	T280001/0	Bottom Nylon Slide	
9	2	*5923.06X30	Screw	
10	3	*2657A.10X1	Greaser	
11	1	*5931.12X20	Safety Screw	
12	2	TRF3493.P2	Shim	
	1	MTC4520.200.K	Seal Kit	

**To order, place prefix SY in front of part # above.**

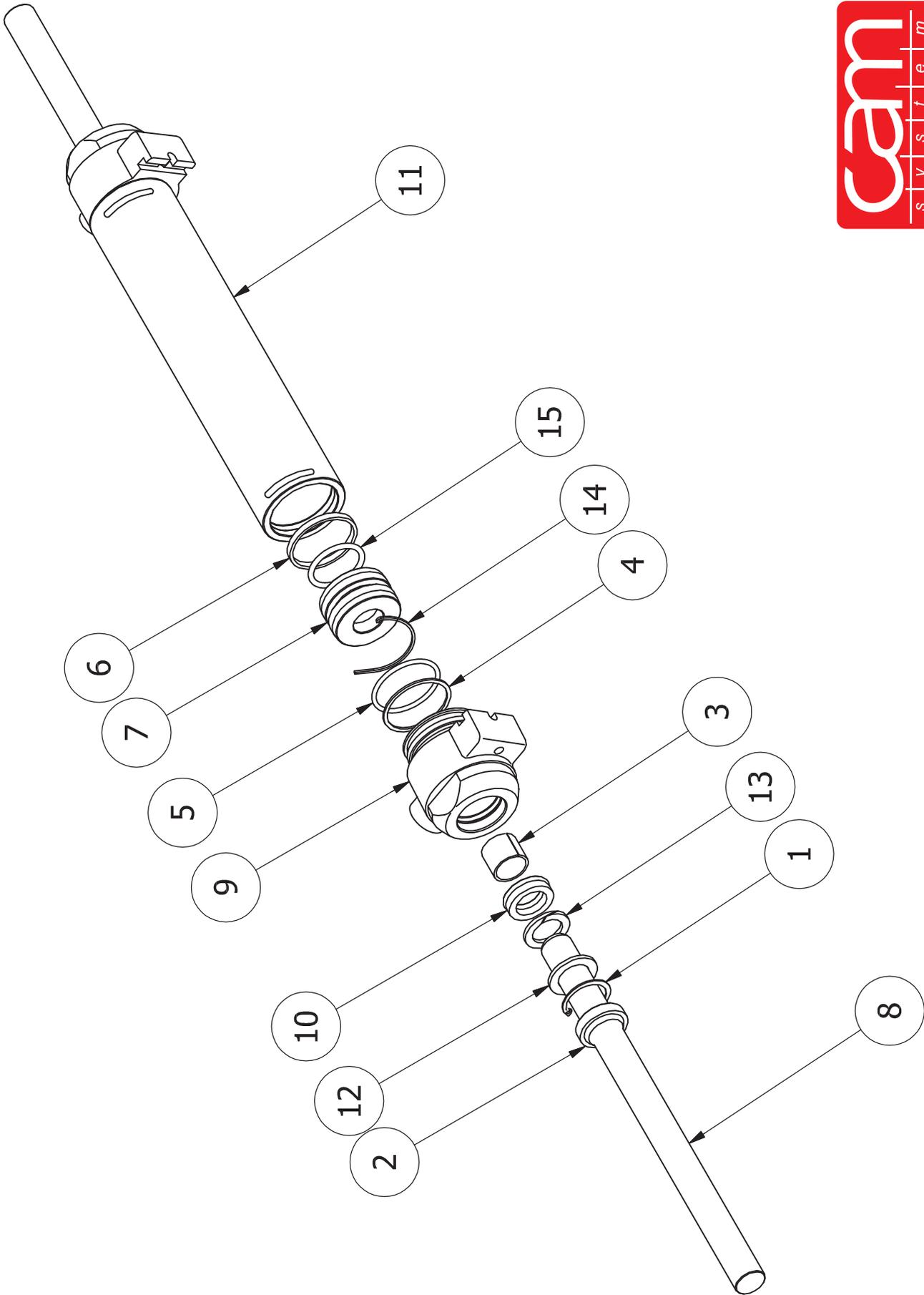


**Side-Shifter Class 3 - TRF225**

**Side-Shifting Cylinder Class 2-Class 3 for TRF225-335**

<b>Item</b>	<b>Qty</b>	<b>Part Number</b>	<b>Description</b>
1	2	MTC4520.200.08	Ring Retaining
2	2	MTC4520.200.09	Ring Wiper
3	2	MTC4520.200.11	Seal Head
4	2	MTC4520.200.12	Anti-extruding Ring
5	2	MTC4520.200.13	Thyroidal Gasket
6	2	MTC4520.200.15	Gasket
7	1	MTC4520.200.03	Piston
8	2	MTC4520.200.04	Rod
9	2	MTC4520.200.01	Head
10	2	MTC4520.200.05	Flange Head
11	1	MTC4520.200.02	Cylinder Body
12	2	MTC4520.200.07	Metal Washer
13	2	MTC4520.200.10	Plastic Washer
14	2	MTC4520.200.06	Steel Wire
15	2	MTC4520.200.14	Gasket
	1	MTC4520.200K	Seal Kit

**To order, place prefix SY in front of part # above.**





TVH Parts Co.  
16355 S. Lone Elm Road  
Olathe, KS 66062

Toll-Free: (800) 255-4109  
Fax: (913) 829-9208



PARTS & ACCESSORIES