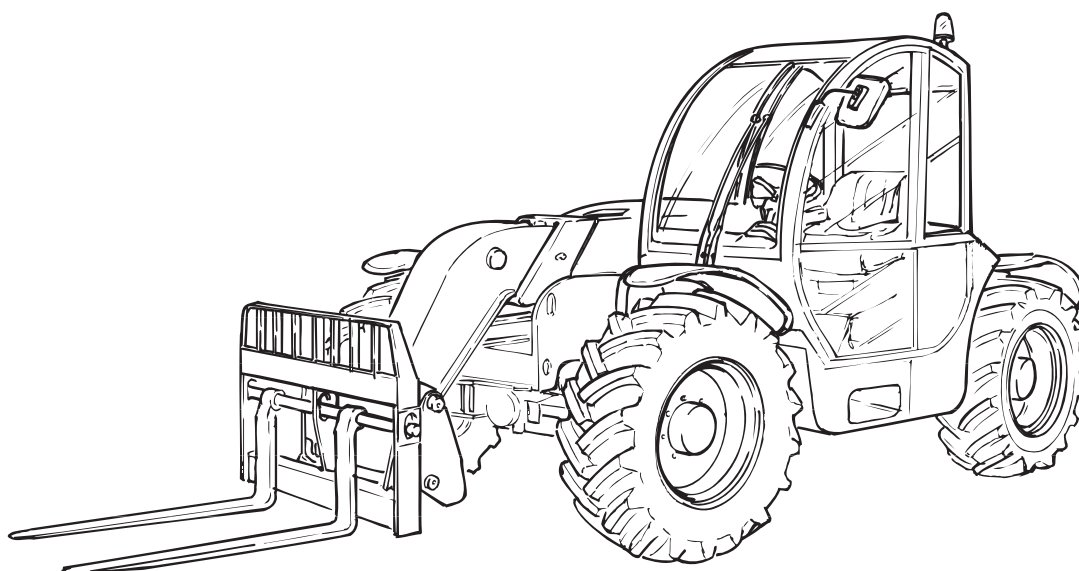


TEREXLIFT

WORKSHOP MANUAL

Code 57.4400.9200 - 1st Edition 11/2005

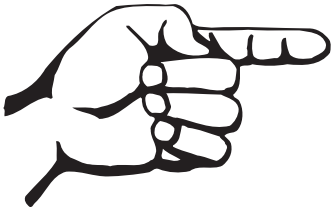
Agricultural machinery **AGRILIFT 737 - 1037**



English

Edition

INDEX



Intentionally blank page

WORKSHOP MANUAL

Code 57.4400.9200 - 1st Edition 11/2005

Number:

Consigned to:

DECLARATION

I, the undersigned.....
declare that I have received the **Workshop manual for TEREXLIFT agricultural machinery series Agrilift 737 - 1037.**

Copies consigned: n° on paper
 n° on CD-Rom

The undersigned is obliged to use the manual in their workshop, without disclosing the information in the same in any way, to unauthorised workshops and third parties in general, and not to photocopy or reproduce this manual or parts of the same in any way without the prior written authorisation of TEREXLIFT to do so.

If business relations between the undersigned and TEREXLIFT should come to an end, the undersigned is obliged to return the copies received without charges for TEREXLIFT.

Yours sincerely

Date

For acceptance

The consignee

Company stamp
and signature of the Legal representative

.....

Copy to return stamped and signed for acceptance by the
Legal representative of the company receiving the copies of the manual.



WORKSHOP MANUAL

Code 57.4400.9200 - 1st Edition 11/2005

Number:

Consigned to:

DECLARATION

I, the undersigned.....
declare that I have received the **Workshop manual for TEREXLIFT agricultural machinery series Agrilift 737 - 1037.**

Copies consigned: n° on paper
 n° on CD-Rom

The undersigned is obliged to use the manual in their workshop, without disclosing the information in the same in any way, to unauthorised workshops and third parties in general, and not to photocopy or reproduce this manual or parts of the same in any way without the prior written authorisation of TEREXLIFT to do so.

If business relations between the undersigned and TEREXLIFT should come to an end, the undersigned is obliged to return the copies received without charges for TEREXLIFT.

Yours sincerely

Date

For acceptance

The consignee

Company stamp
and signature of the Legal representative

.....

Revision No.	Revision date	Revised pages	Notes	Issued by
1	11-2005		Publication	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				

MANUAL CONTENTS**INTRODUCTION****Sect. 1 SAFETY RULES****Sect. 2 TECHNICAL SPECIFICATIONS****Sect. 3 SCHEDULED MAINTENANCE INSPECTIONS****Sect. 4 SCHEDULED MAINTENANCE PROCEDURES****Sect. 5 TROUBLESHOOTING****Sect. 6 SCHEMES****Sect. 7 REPAIR PROCEDURES**

INTRODUCTION

Important

Read, understand and obey the safety rules and operating instructions in the Agrilift 737 - 1037 Operator's Handbook before attempting any maintenance or repair procedure. This manual provides the machine owner and user with detailed information on the scheduled maintenance. It also provided qualified service technicians with information on troubleshooting and repair procedures. Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, as well as specific tools and equipment.

In these instances, we strongly recommend letting service and repair the machine at an authorized TEREXLIFT service center.

Technical Publications

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior written permission from TEREXLIFT srl.

In pursuing a policy of constant quality improvement, TEREXLIFT srl reserves the right to make changes at any time and without undertaking to give prior notice; therefore, also this publication may be subject to modifications.

Contact Us

<http://www.terexlift.it>

e-mail: info@terexlift.it

DESCRIPTION OF THE MACHINE OPERATION

The source of mechanical energy of this machine is a Deutz turbo-compressed diesel engine (**pos. 1**), model BF4M2012, with a max torque of 390 Nm at 1500 rev/min. and a power rating of 74.9 kW at 2300 rev/min.

The VDT12000 "power shift" mechanical transmission (**pos. 2**) produced by Dana is fitted to the flywheel side of the engine, and connected to this engine by a Technodrive coupler with elastic joint and with a 1-to-1 ratio. This transmission has 4 "forward" speed ratios and 3 "reverse" speed ratios.

The torque transmission between engine and drive is controlled by a Dana hydrodynamic torque converter.

On the special power takeoff (PTO) lodged in the transmission housing (**pos. 2**) there is a Casappa open-loop gear pump (with fixed displacement) (**pos. 3**) with priority valve integrated in the housing. The displacement of this pump is 43 cm³. Its function is to provide hydraulic power, under form of pressure and capacity, to the steering cylinder of the machine (priority side) and to the telescopic boom cylinder (secondary side).

The diesel engine to pump revs ratio is 0.971:1, thus the pump turns just a bit faster than the engine.

A second Casappa open-loop gear pump (with fixed displacement) (**pos. 4**) with a displacement of 25 cm³, is installed on the power takeoff (PTO) of the engine, on the distribution side. This pump feeds the servo-assisted braking system (**pos. 28**), the (optional) distributor (**pos. 22**) operating the frame levelling and the rear (optional) hydraulic sockets, and the oil-dynamic circuit of the (optional) three-point hitch (**pos. 26**).

The suction lines of the open-loop pumps (**pos. 3**) and (**pos. 4**) are protected by an immersed filter (**pos. 5**), placed inside the 85-lt. hydraulic fluid tank (**pos. 6**).

The mechanical torque at the VDT12000 transmission output (**pos. 2**) is transmitted to the front axle (**pos. 30**) and the rear axle (**pos. 29**), both model 212 manufactured by Dana, through Cardan shafts.

The hydraulic drive (**pos. 7**) of the "load sensing" type with a displacement of 315 cm³, receives oil from the priority line of the pump (**pos. 3**) in relation to the "load sensing" signal sent by the hydraulic drive and connected to such pump with function of pilot signal. In this way, the input flow to the hydraulic drive will be exactly the one needed for the instantaneous steering functions; any excess flow of the pump will be used for the operation of the telescopic boom.

The steering circuit is protected against input overpressures by a pressure reducing valve set at 140 bar. On the two delivery lines, there are other two reducing valves with anti-shock function set at 200 bar. The function of these two valves is limiting possible shocks on the steering wheel in case of overstress on the steering cylinders.

The three pressure reducing valves are installed in the hydraulic drive (**pos. 7**) and cannot be regulated from the outside.

The steering circuit is completed by the front steering cylinder (**pos. 9**), the rear steering cylinder (**pos. 10**) [these cylinders being integral part of the front axle (**pos. 30**) and the rear axle (**pos. 29**) respectively] and by a 4-way/3-position solenoid valve (**pos. 8**) for the selection of the three different steer modes (rear wheels straight, co-ordinate front/rear steering and independent front/rear steering). When the solenoid valve (**pos. 8**) is not energised, the front steering cylinder is fed by the hydraulic drive and the rear cylinder is blocked. When one magnet or the other of the solenoid valve (**pos. 8**) is energised, the chambers of the cylinders are connected in a different manner thus causing the desired steering effect.

The Bucher/Tecnord electro-proportional modular distributor (**pos. 11**), with 5 sections, receives oil from the secondary line of the pump (**pos. 3**) and feeds all of the movements of the telescopic boom, as well as the rear (optional) power takeoff. This distributor consists of an input head with a 3-way pressure compensator used as a flow regulator for the user which works at max load (load sensing), and as a discharge valve when the pump flow is not used for the boom movements, and of 5 modules, each of them controlling a specific movement of the telescopic boom (4 in total, that is lifting/lowering, attachment holding plate rotation, boom extension/retraction, attachment locking/unlocking) and the rear (optional) power takeoff.

In the head there is a pressure relief valve set at 270 bar which, acting on the line of the "load sensing" signal, limits the maximum pressure at the inlet of the distributor through such 3-way compensator. On the main inlet head of the distributor, there is the pilot line head which includes an inlet safety filter, a pressure relief valve acting on the pilots line, and a safety solenoid valve which, when de-excited, discharges the input pilot pressure, thus preventing the distributor from working. This solenoid valve is used as a "dead man" control and is activated by the relevant button on the joystick in the driving cab. The pilot head delivers oil at pressure to the 5 pilot modules of the distributor which are used to operate the relevant main sliders in relation to the command signal they receive from the joystick via the control unit.

Module 1 of the distributor controls the telescopic boom lifting cylinder (**pos. 13**). This cylinder has one single-acting compensation valve with safety function. The pilot module of this element of the distributor is the electro-proportional type with electrical feed-back and integrated electronics. The 0.35-lt. accumulator prefilled at 50 bar (**pos. 14**) and located on the line of the differential chamber of the lifting cylinder (**pos. 13**), allows damping the boom swings when the same boom

is moved down.

Module 2 of the distributor controls the cylinder operating the attachment holding plate of the telescopic boom (**pos. 15**). This cylinder is equipped with a double-acting compensation valve with safety function. Paralleled to this cylinder there is the fork levelling (or balancing) cylinder (**pos. 16**) equipped with a special double-acting compensation valve. Inside this valve, the one-way valves are installed in a reverse manner with respect to the normal position to avoid the pressurisation of the cylinder when the rotation command of the attachment holding plate is operated. Again inside this valve, there are other two one-way valves set at 5 bar with anti-cavitation function. These are used to deliver oil, sucked from the low pressure line coming from the pressure relief valve (**pos. 12**), to the fork levelling compensation circuit, when such circuit cannot do it alone.

The pilot module of element 2 of the distributor is the electro-proportional type with electrical feed-back and integrated electronics. On the two control lines of the cylinder (**pos. 15**), and integral to module 2, there are two pressure relief valves set at 290 bar which protect the automatic levelling system of the forks when the boom is moved up and down and in case of overload on the attachment holding plate (ex. use of the bucket). Module 3 of the distributor controls the extension cylinder of the telescopic boom (**pos. 17**). This cylinder is equipped with a double-acting compensation valve with safety function. The pilot module of this element of the distributor is the electro-proportional type with electrical feed-back and integrated electronics.

On the control line of the circular chamber of the cylinder (**pos. 17**) and integral to module 3, there is a pressure relief valve set at 150 bar which limits the load when the boom is extended in those working zones where the electronic overload warning system cannot detect overload conditions with respect to the load chart of the machine.

Module 4 of the distributor controls the attachment locking cylinder (**pos. 18**). This cylinder has a double one-way valve with hydraulic release and safety function. The control module of this element of the distributor is the ON/OFF electrical type with integrated electronics.

On the feeding lines of this cylinder, there are two quick-fit connectors (**pos. 19**) for the connection of the hydraulic lines to the optional attachments which need hydraulic power for their operation (ex. hydraulic winch and maintenance jib, mixing bucket, etc.).

Module 5 of the distributor controls the rear (optional) power takeoff (PTO) of the machine. This device is driven by a Casappa oil-dynamic gear motor (**pos. 20**) for open loop circuits of the reversible type with a displacement of 38 cm³. The motor is flanged to a

mechanical reduction gear **(pos. 21)** with an output shaft conform to the agricultural regulations for the operation of different implements. A speed sensor senses the rotation speed of the PTO and sends a signal to the electronic control unit of the distributor **(pos. 11)** which keeps such speed constant regardless of the loads absorbed by the implement operated by the PTO.

Inside module 5 of the distributor, there are two anti-cavitation valves which are necessary for the operation of the oil-dynamic motors.

The pilot module of the 5th element of the distributor is of the electro-proportional type with electrical feed-back and integrated electronics.

The pressure relief valve **(pos. 12)** set at 25 bar is located upstream of the pressure port of the distributor **(pos. 11)**. This valve supplies oil at low pressure (25 bar) to the anti-cavitation circuits of the automatic levelling system of the forks and to feed the pilot valves line of the same distributor **(pos. 11)**.

The SAFIM S6 servo-assisted braking system with pedal **(pos. 28)** receives oil from the pump **(pos. 4)** and uses this oil to pressurise 2 hydraulic accumulators connected to this system. The oil at pressure contained in these accumulator is then used to operate the service brakes located inside the two axles **(pos. 29)** and **(pos. 30)**.

The fill valve inside the braking system receives the flow from the feeding line until the pressure in the line of the accumulators reaches the calibration value of the cutout valve set at 150 bar. When this pressure is reached, the valve gradually releases all the flow to line B for other uses.

The brake pedal located in the driving cab, which is an integral part of the S6 braking system, is connected to two proportional sliders which control the two separated lines of the service brake, one for each axle. In relation to the stroke of these sliders, a gradual communication between the feeding line, connected to two accumulators which, at their turn, are connected to ports R1 and R2 (the accumulators have a 0.5-lt. capacity and a fill pressure of 50bar), and the service brake lines is established so the flow is distributed to such lines and the discharge line increasing, in this way, the pressure (and as a result the braking force) on the lines of the service brakes. When the sliders are in the rest position, the lines of the service brakes are connected to the discharge.

The pressure switch set at 2-10 bar and connected in parallel to one of the two lines of the service brake, sends an electrical signal when the service brake is activated. The pressure switch set at 70 bar and connected to port F sends an electrical signal when the pressure inside the feeding circuit of the brake lines is not enough to guarantee the minimum breaking capacity.

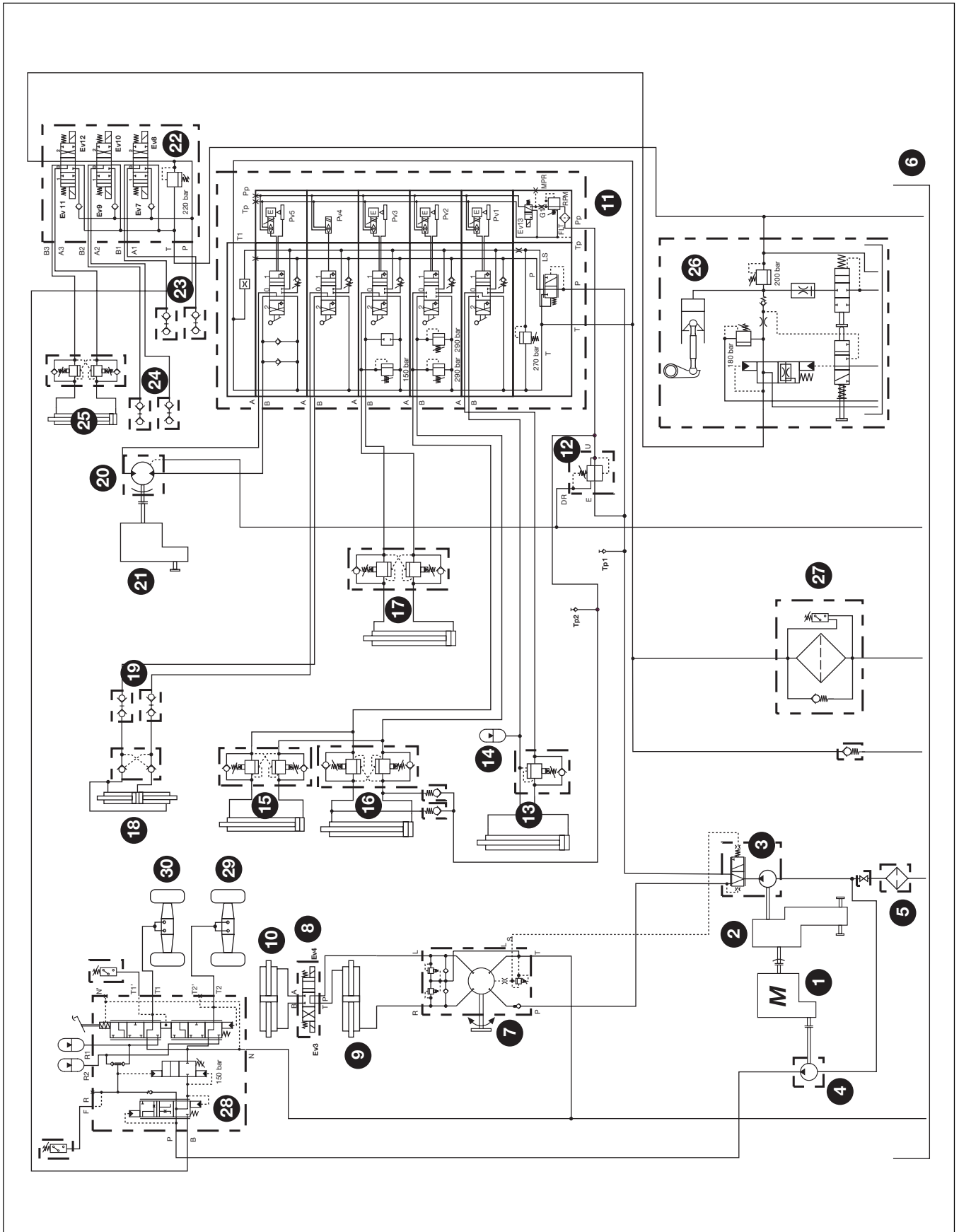
The Bucher electro-hydraulic modular distributor of the ON/OFF type for open loops **(pos. 22)** (on request) controls the frame levelling and supplies oil at pressure to the two additional rear oil-dynamic sockets equipped with quick-fit hydraulic connections **(pos. 23)** and **(pos. 24)**. It receives oil from port B of the braking system **(pos. 28)** and uses this to operate the cylinder controlling the frame levelling **(pos. 25)**, equipped with double-acting compensation valve which also acts as a safety valve, as well as the additional rear hydraulic sockets configured with quick-fit connections **(pos. 23)** and **(pos. 24)**.

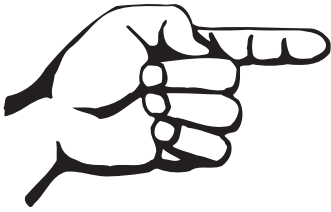
On the inlet head of this distributor there is a pressure relief valve set at 220 bar.

The oil flow which is not used by the distributor to operate the outriggers and the frame levelling function, is sent to the (optional) three-point hitch **(pos. 26)** for the operation of the lifting arms and the controlled effort device. Finally, the excess oil which is not used by the hitch is sent back to the tank **(pos. 6)**.

The heat exchanger **(pos. 27)** is divided into three sectors; one absorbs heat from the cooling circuit of the diesel engine, the second cools down the hydraulic circuit of the torque converter of the power shift transmission and the third one cools down the hydraulic circuit of the machine. The flow of the pump **(pos. 3)** is conveyed to this third sector. The oil cooled down by the heat exchanger is sent back to the tank **(pos. 6)**.

Hydraulic scheme





Intentionally blank page

Section 1

SAFETY INFORMATION

SECTION INDEX

1.1	Safety rules	page	2
1.1-1	Personal safety		2
1.1-2	Workplace safety		2
1.2	General remarks		4
1.3	Servicemen's requisites		4
1.3-1	Personal protective equipment.....		5
1.4	General safety precautions		5
1.4-1	Working areas.....		5
1.4-2	Precautions during work		5

1.1 SAFETY RULES

1.1-1 Personal Safety

In this manual, any important information is preceded by a **SPECIAL SYMBOL**.

All operators who work or service the machine must know the exact meaning of these safety symbols.

There are six special (or safety) symbols in this manual, always combined with keywords that class the situations according to their danger degree.

The symbols are always followed by a text explaining the situation taken into account, the attention to be paid to such situation, the method and the behaviour to be adopted. When necessary, it stresses prohibitions or supplies instructions to prevent dangers.

Sometimes, it can be followed by illustrations.

We list below the special (or safety) symbols according to the relative seriousness of the hazard situation:



Draws the attention to situations that involve your own as well as the others' safety and that can result in serious or lethal injury.

⚠ DANGER

Draws the attention to situations that involve your own as well as the others' safety and that can result in serious or lethal injury.

⚠ WARNING

Draws the attention either to situations that involve your own as well as the others' safety and that can result in minor or moderate injury or to situations that involve the machine efficiency.

⚠ CAUTION

Draws the attention either to situations that involve your own as well as the others' safety and that can result in minor or moderate injury or to situations that involve the machine efficiency.

CAUTION

Draws the attention to important technical information or practical advice that allows for a safer and more efficient use of the machine.

NOTICE

Draws the attention to important environment-related information.



Be sure to wear protective eye wear and other protective clothing if the situation warrants it.



Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

1.1-2 Workplace Safety

Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.



Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.



Be sure that your workshop or work area is properly ventilated and well lit.



Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.



Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.



Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe.

1.2 GENERAL REMARKS

Most accidents occurring while working, servicing or maintaining operation machines, are caused by not complying with the basic safety precautions.

Therefore, it is necessary to pay steady attention to the potential hazards and the effects that may come of operations carried out on the machine.

CAUTION

If you recognise hazardous situations, you can prevent accidents!

For instance, this handbook makes use of special **safety symbols** to highlight potentially hazardous situations.

⚠ CAUTION

The instructions given in this handbook are the ones established by TEREXLIFT. They do not exclude other safe and most convenient ways for the machine commissioning, operation and maintenance that take into account the available spaces and means.

If you decide to follow instructions other than those given in this manual, you must:

- be sure that the operations you are going to carry out are not explicitly forbidden;
- be sure that the methods are safe and in compliance with the indications given in this section;
- be sure that the methods cannot damage the machine directly or indirectly or make it unsafe;
- contact TEREXLIFT Assistance Service for any suggestion and the necessary written permission.

CAUTION

Do not hesitate to pose questions if you are in doubt! Contact TEREXLIFT: the assistance service is at your disposal. Addresses, phone and fax numbers are given in the cover and in the title-page of this manual.

1.3 SERVICEMEN'S REQUISITES

The operators who use the machine regularly or occasionally (e.g. for maintenance or transport) shall have the following requisites:

health:

before and during any operation, operators shall never take alcoholic beverages, medicines or other substances that may alter their psycho-physical conditions and, consequently, their working abilities.

physical:

good eyesight, acute hearing, good co-ordination and ability to carry out all required operations in a safe way, according to the instructions of this manual.

mental:

ability to understand and apply the rules, regulations and safety precautions. They shall be careful and sensible for their own as well as for the others' safety and shall desire to carry out the work correctly and in a responsible way.

emotional:

they shall keep calm and always be able to evaluate their own physical and mental conditions.

training:

they shall read and familiarise with this handbook, its enclosed graphs and diagrams, the identification and hazard warning plates. They shall be skilled and trained about the machine use.

CAUTION

It is recommended to take part in at least one technical training course organised by TEREXLIFT Assistance Office.

CAUTION

Ordinary and extraordinary maintenance of the machine are quite complex from a technical point of view and should be performed by an authorised service centre.