TEREX®

Service Manual

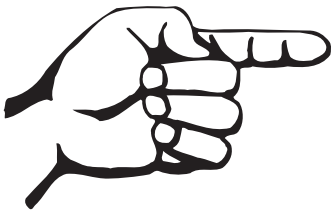
Serial number range

TH 19-55

From serial n.: 19925

Part No. 57.4400.9201

October 2008



Intentionally blank page

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the **TH 19-55 Operator's Manual** (part n. 57.0100.5605) 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 infromation 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.com
e-mail: info@terexlift.it
http://www.genielift.com

First Edition, First Printing, October 2008

MACHINE IDENTIFICATION

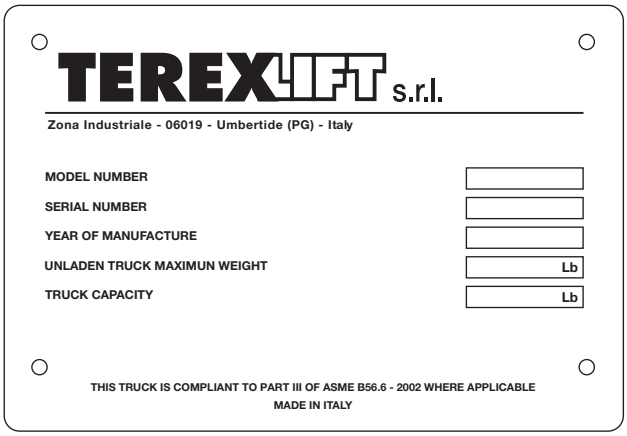
Machine Identification

■ CHASSIS SERIAL NUMBER

The chassis serial number is punched at the front of the chassis on the right side.

■ IDENTIFICATION PLATES OF THE MAIN PARTS

The plates of the main components, not directly manufactured by TEREXLIFT srl (for instance, engines, pumps, etc.), are located where originally applied by the manufacturers.

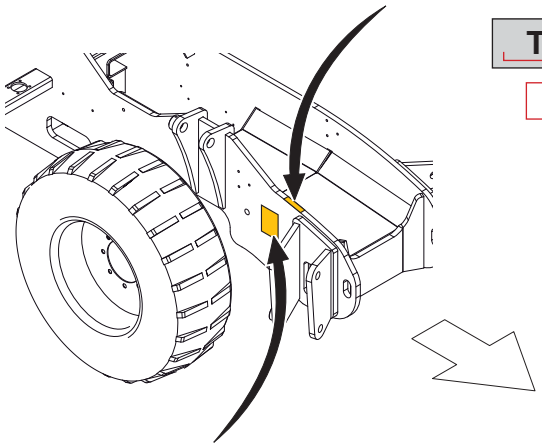


MACHINE DATA PLATE

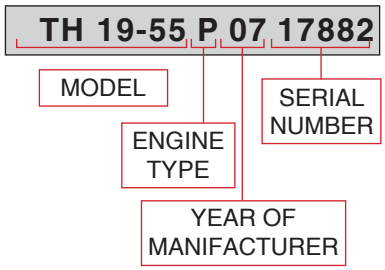
HOW TO READ THE MACHINE SERIAL NUMBER

Chassis serial number

(The chassis serial number is punched at the front of the chassis on the right side)



Machine data plate



Description

DESCRIPTION OF THE MACHINE OPERATION

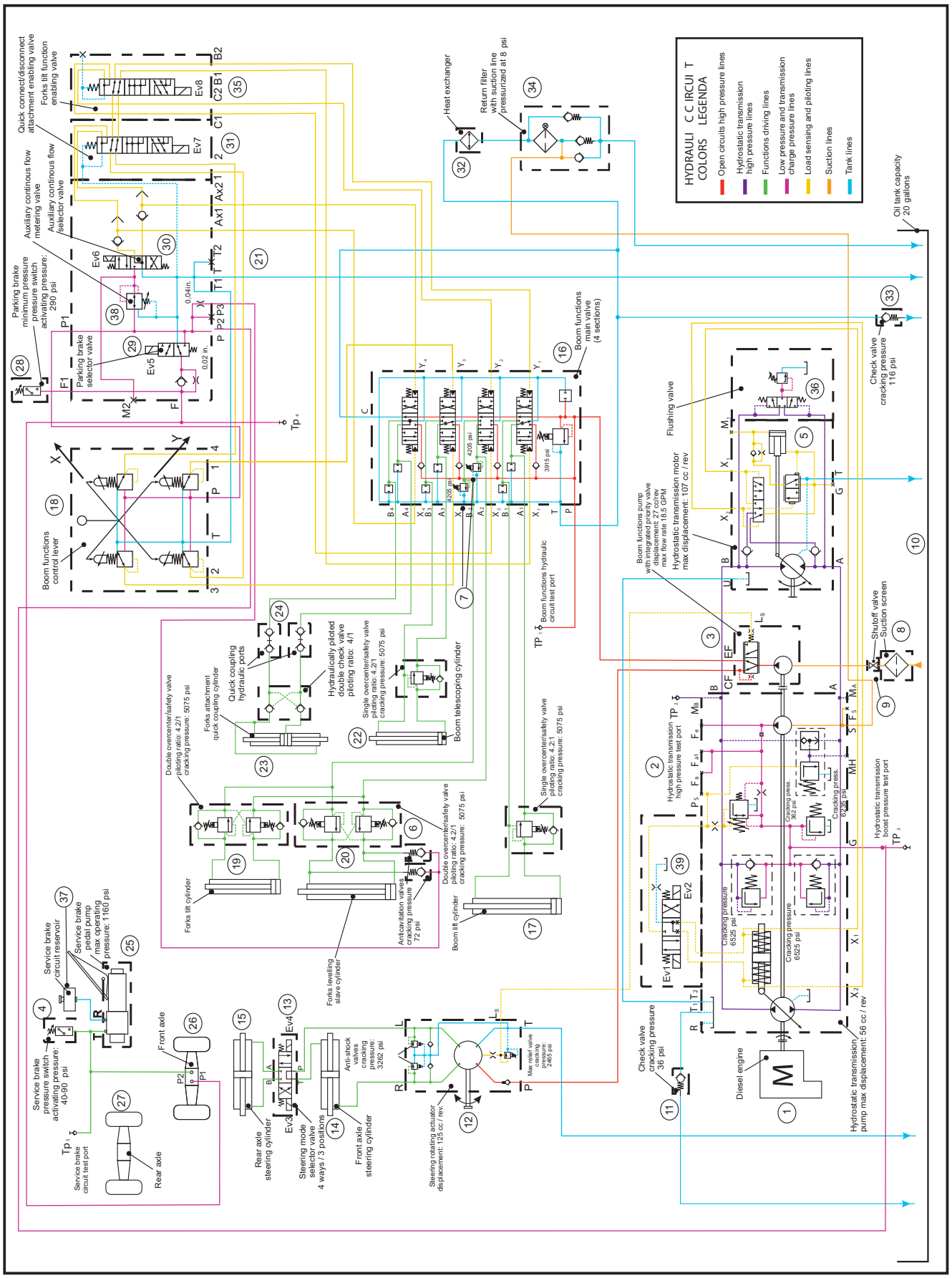
The mechanical energy source of this machine is a diesel engine **(1) Perkins**, model 804D-33 Tier 3 with a power of 47.1 kW at 2500 rev/min (63 HP) and a maximum torque of 147 lb-ft at 1600 rev/min. On the flywheel side of the engine, and connected to the same by a Technodrive coupler complete with elastic joint and with a 1-to-1 ratio, there is Bosch-Rexroth closed-loop pump for hydrostatic drives, model A4VG56 **(2)** with adjustment valve of DA type. The max displacement of this swashplate pump is 0.0000732 yd^3/rev. and the max calibration pressure is 6235 psi. This pump is used to supply hydraulic power under form of pressure and flow rate which is then used for moving the machine. On the through-shaft of such drive pump there is a Casappa open-loop gear pump (with fixed displacement) **(3)** with priority valve integrated in the housing. The displacement of this pump is 0.0000353 yd^3/rev. Its function is to provide hydraulic power, under form of pressure and flow rate, to the steering circuit of the machine (primary branch of the priority valve) and to the circuit for the telescopic boom movements (secondary branch of the priority valve).The assembly of the two pumps involves they have a rotation velocity equal to the speed of the diesel engine. The suction line of the open-loop pump **(3)** is protected by an immersed filter **(8)**, placed inside the hydraulic fluid tank **(10)** whose capacity is 75 litres (20 gallons). Just upstream of the connection with the suction line, there is a gate valve with ball valve **(9)** which lets you cut out the hydraulic oil tank in order to perform maintenance interventions on the machine's hydraulic system without having to drain oil off the tank built in the same circuit. The filter **(34)**, placed in the line returning to pump **(3)**, purifies most oil coming from the hydraulic circuit operating the telescopic boom before this oil returns to the tank. In addition to purify the oil coming from the main open-loop circuit of the machine (telescopic boom operating circuit), this filter can deliver oil at a minimum pressure of 7,25 psi to the suction line of the drive pump (**2**). This construction feature of the filter guarantees important advantages in terms of absence of cavitation in the transmission suction line, especially when the machine is started from cold.
The one-way valve **(11)** set at 36 psi protects the pump housing against high pressures and guarantees a certain circulation of the drain oil to the hydrostatic motor reducing, in this way, the temperature. From port “G” of the drive pump **(2)** low-pressure oil is taken (362-345 psi) to feed the anti-cavitation circuit of the automatic fork levelling system, the pilot circuit of the main valve of the telescopic boom **(16)** and the parking brake unlock circuit. The hydraulic energy produced by the drive pump **(2)** is converted into mechanical power by a closed-loop hydrostatic motor, model Bosch-Rexroth A6VM107 **(5)** equipped with adjustment valve of DA1 type and with flush valve **(36)** for reducing the max temperatures inside the drive circuit. The max displacement of this bent-axis motor is 0.00014 yd^3/rev. The motor is directly flanged to the front steering axle **(26)**. The mechanical torque produced by the drive motor is transmitted to the rear axle **(27)** through a Cardan shaft.The hydraulic drive **(12)** of “load sensing” type with a displacement of 0.0001635 yd^3/rev., receives oil from the priority line of pump **(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 is exactly the one needed for the instantaneous steering functions; any excess flow of the pump is available for operating the different movements of the telescopic boom. The steering circuit is protected against input overpressures by a pressure reducing valve set at 2465 psi. On the two delivery lines to the steering cylinders there are other two pressure reducing valves with anti-shock function set at 3262 psi. These two valves are intended to limit possible shocks on the steering wheel due to overstress caused by the wheels on the steering cylinders. These pressure reducing valves are installed in the hydrostatic drive **(12)** and cannot be regulated from the outside. The steering circuit is completed by the front steering cylinder **(14)**, the rear steering cylinder **(15)** (these cylinders being integral part of the front axle **(26)** and the rear axle **(27)** respectively) and by a 4-way/3-position solenoid valve **(13)** 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 **(13)** 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 **(13)** is energised, the chambers of the cylinders are connected in a different manner thus causing the desired effect on the steering mode. The Walvoil hydraulic 4-section main valve **(16)** receives oil from the secondary line of pump **(3)** and feeds all the movements of the telescopic boom. Each of the 4 sections of the main valve controls a specific function of the machine (lifting/lowering, attachment holding plate rotation, boom extension/retraction, attachment locking/unlocking). In the head there is a pressure relief valve set at 3915 psi which reduces the max pressure at the main valve inlet and drains the excess oil. The joystick **(18)** is used to reduce the pressures of the main valve section pilot lines and to move the main sliders of the main valve in a proportional manner with respect to their

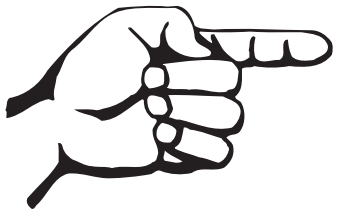
neutral position. Slider 1 of the main valve controls the lifting cylinder **(17)** of the telescopic boom. This cylinder has one single-acting compensation valve with safety function. Slider 2 of the main valve controls the attachment holding frame cylinder **(19)** of the telescopic boom. This cylinder is equipped with a double-acting compensation valve serving also as a safety valve. Parallel to this cylinder, there is the fork levelling compensation cylinder **(20)** (also called balancing cylinder) which is equipped with a special double-acting compensation valve. Inside this valve, the one-way valves are mounted in reversed manner with respect to the normal position to avoid the pressurisation of the cylinder when the rotation control of the attachment holding frame is activated. Again inside this valve, there are other two one-way valves, set at 72 psi, serving as anti-cavitation check valves **(6)**. These valves deliver oil, taken from the low-pressure line of the transmission pump **(2)**, to the fork levelling compensation circuit when needed. The two pressure relief valves **(7)** set at 4205 psi which protect the automatic fork levelling circuit during the boom lifting/lowering phases and in case of overload on the attachment holding frame (for instance, in the case of use of the bucket) are installed in the two control lines of cylinder (**19**) and they are integral to module 2. Slider 3 of the main valve controls the extension cylinder **(22)** of the telescopic boom which operates the movement of the second boom telescope and is equipped with a single-acting compensation valve used as well as safety valve.
Slider 4 of the main valve controls the attachment locking cylinder **(23)**. This cylinder has a double one-way valve with hydraulic release and safety function. On the feeding lines of this cylinder, there are two quick-fit connectors **(24)** for the connection of the hydraulic lines to those optional attachments necessitating hydraulic power for their operation (ex. hydraulic winch and maintenance jib, mixing bucket, etc.).

The special hydraulic block **(21)** has been designed to group, in a single element, some valves of the low-pressure circuit fed through port "G" of pump **(2)**, which, in the previous versions of the machine, were installed separately. In particular, this block houses the selection solenoid valve **(29)** operating the parking brake and the relevant valve controlling the flow rate of the calibrated throttle with 0.02in diameter; the selection solenoid valves **(31)** and **(35)** used to switch the pilot lines coming from joystick **(18)** and relevant to the longitudinal axis of this joystick (forward/backward) which, depending on the operation of the two pushbuttons installed on the control lever in the driving place, activate one of the three sections of the main valve **(16)**, and namely the lift/lower movement, the attachment holding plate rotation movement and the attachment lock/unlock movement. The selection solenoid valve **(30)**, again built in block **(21)**, activates the attachment lock/unlock line (also used as auxiliary line for the operation of optional attachments) without any need to move the joystick (continuous flow). The pressure reducing valve with screw adjustment **(38)**, when operated together with solenoid valve **(30)**, allows to adjust the oil flow rate of the attachment lock/unlock line (auxiliary line) through the adjustment of the pilot pressure on the line of the fourth element of the main valve **(16)**. Finally, one of the hydraulic ports of the block connected to the feeding line of the parking brake is used for the connection of the safety pressure switch **(28)**. This pressure switch prevents the machine from moving when the pressure of the parking brake line is too low to guarantee the complete release of this brake.

The circuit of the service brake is operated by a SAFIM 27-20 pump **(25)** which takes hydraulic oil from tank **(37)** to operate the service brake, located inside the front axle **(26)**. The brake pump can provide a maximum pressure of 1160, thus depending on the pressure exerted on the brake pedal placed inside the driving place.
The pressure switch **(4)** set at 40 - 90 psi, placed on the pump head, sends an electrical signal when the service brake is engaged. The oil coming from the drain line of the main valve operating the telescopic boom **(16)** is cooled down by the heat exchanger **(32**). This exchanger is divided in two sectors, the former absorbs heat from the cooling circuit of the diesel engine and the latter absorbs heat from the hydraulic circuit of the machine. The oil cooled down by the heat exchanger is sent back to the special filter **(34)** and finally drained into tank **(10)**. A one-way valve **(33)** calibrated at 116 psi, is installed parallel to the input line of the heat exchanger and used as safety valve. Its function is to avoid overpressure conditions of the heat exchanger (as is the case of a machine starting at low temperatures) by directly draining any excess oil into the tank.

TH 19-55 hydraulic schematic





Intentionally blank page

SAFETY RULES

Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.

Many of the hazards identified in the Operator's Manual are also safety hazards when maintenace and repair procedures are performed.

Do Not Perform Maintenace Unless:

You are trained and qualified to perform maintenace on this machine.

You read, understand and obey:
- manufacturer's instructions and safety rules
- employer's safety rules and worksite regulations
- applicable governmental regulations

You have the appropriate tools, lifting equipment and a suitable workshop.

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.

NOTICE

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

PROTECT THE ENVIRONMENT

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.