

MH2.6
MH3.6

Repair Manual

Repair
Manual

Print No. 87730662A *Tier III*
English

MH2.6
MH3.6

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- Operator's Manual
 - Parts Catalogue
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COMPLETE REPAIR MANUAL

The complete Repair Manual consists of two volumes:

- MH2.6 - MH3.6
Repair Manual "Wheel Excavators"
- MH2.6 - MH3.6
Repair Manual "Engine"

The Repair Manuals for "Wheel Excavators" and "Engine" contain the necessary technical information to carry out service and repair on machine and on engine, necessary tools to carry out those operations and information on service standard, on procedures for connection, disconnection, disassembly and assembly of parts.

The Repair Manual which covers the models MH2.6 - MH3.6 consists of the following volumes, which can be identified through their print number as stated below:

VOLUME	MACHINE TYPE	PRINT NUMBER
Repair Manual "Wheel Excavators"	MH2.6 - MH3.6	87730662A
Repair Manual - "Engine"	MH2.6 - MH3.6	87659057A

TO PREVENT ACCIDENTS

The majority of accidents and injuries which occur in industry, at home or on the road, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason **MOST ACCIDENTS CAN BE PREVENTED** by recognizing the real cause and taking the necessary precautions, before the accident occurs.

Regardless of the care used in design and construction of any type of equipment, there may be conditions that cannot be completely safeguarded against, without interfering with reasonable accessibility and efficient operation.

A careful operator and/or technician is the best insurance against accidents. The complete observance of one simple rule would prevent many thousands of serious injuries each year.

This rule is: never attempt to clean, lubricate or adjust a machine while it is in motion.

WARNING

Before carrying out any maintenance operation, adjustment and or repair on machines equipped with attachments, controlled hydraulically or mechanically, make sure that the attachment is lowered and safely set on the ground. If it is necessary to have the equipment partially or fully raised to gain access to certain items, be sure the equipment is suitably supported by means other than the hydraulic lift cylinders, cable and /or

SAFETY INSTRUCTION



This warning symbol points out important messages involving your safety.

Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and to safeguard your safety and personal integrity.

In this manual you will find this symbol together with the following key-words:

WARNING

This symbol warns about the possibility of potential damages to the machine that can involve the operator's safety.

DANGER

With specific warnings about potential dangers for the operator's or other persons integrity directly or indirectly involved.

The non compliance with the warning preceded by the above mentioned key-words (**WARNING** and **DANGER**) can cause serious accidents or even the death of the persons involved.

Moreover in the present Manual have been given some instructions preceded by the words **NOTE** and **CAUTION**:

NOTE: it emphasizes and underlines to the operator the correct technique or correct procedure to follow.

CAUTION

It warns the operator of a possible hazard of machine damage in case he does not follow a determined procedure.

SECTION 01 - MAIN OPERATING RULES

1. INTRODUCTION	1
1.1 FOREWORD	1
1.2 MANUAL HANDLING	1

SECTION 02 - SAFETY PRECAUTIONS

1. SAFETY PRECAUTIONS	1
2. SAFETY DECALS	41

SECTION 03 - FEATURES AND DATA

1. FOREWORD	1
2. IDENTIFICATION DATA	2
3. NOISE LEVELS (2000/14/EC)	3
4. SUMMARY PLATE FOR MAINTENANCE OPERATIONS	5
5. WHEELED EXCAVATOR MAIN COMPONENTS	6
5.1 TECHNICAL SPECIFICATIONS	7
5.2 OPERATING WEIGHTS	17
5.3 DIGGING PERFORMANCE	18
5.4 TRANSPORT DIMENSIONS	20
5.5 BUCKET USEFULNESS DEPENDING ON ARM	24
6. FILLING CHART	26

SECTION 04 - UPPER STRUCTURE

1. UPPER STRUCTURE	1
2. MAIN FRAME AND COUNTERWEIGHT	5
3. POWER UNIT	9
3.1 ENGINE	10
4. RADIATOR	12
5. HYDRAULIC PUMPS	14
5.1 MAIN PUMP	15
5.2 DOUBLE PUMP WITH GEARS	49
6. AIR CLEANER	61
7. EXHAUST SILENCER	62
8. HYDRAULIC OIL TANK	64
9. FUEL TANK	66
10. FUEL TRANSFER PUMP	67
11. GUARDS AND COVERS	70
12. CAB	76
13. SWINGING ASSY	88
14. MAIN CONTROL VALVE	100
15. SLEW DEVICE	124
15.1 SLEW HYDRAULIC MOTOR	126
15.2 SLEW REDUCTION UNIT	140
16. CONTROL LEVER	159
17. CONTROL PEDAL	164

18. STEERING UNIT	166
19. SWIVEL JOINT	191
19.1 FEATURES AND DATA.....	193
20. BRAKE PEDAL VALVE	194
21. ACCUMULATORS	208
22. PRESSURE SWITCHES	211
23. SOLENOID VALVES	215

SECTION 05 - UNDERCARRIAGE

1. SLEWING BEARING	2
2. LOWER FRAME	5
3. TRAVEL ASSY	6
3.1 TRAVEL HYDRAULIC MOTOR.....	7
3.2 SPEEDS GEAR BOX.....	23
3.3 STEERING AXLES: FRONT AND REAR	52
3.4 RIGID REAR AXLE.....	150
3.5 DRIVE SHAFT	213
4. WHEELS AND TYRES	214
4.1 TYRES.....	222
5. BLADE	227
6. LATERAL STABILIZERS	228

SECTION 06 - FRONT ATTACHMENT

1. INTRODUCTION	1
2. CYLINDER REMOVAL AND INSTALLATION	6
2.1 BUCKET CYLINDER	6
2.2 ARM CYLINDER.....	10
2.3 POSITIONING CYLINDER	14
2.4 BOOM CYLINDER.....	19
3. MH2.6 - CYLINDERS.....	24
3.1 BUCKET CYLINDER	24
3.2 ARM CYLINDER.....	31
3.3 POSITIONING CYLINDER	38
3.4 BOOM CYLINDER.....	45
4. MH3.6 - CYLINDERS.....	52
4.1 BUCKET CYLINDER	52
4.2 ARM CYLINDER.....	59
4.3 POSITIONING CYLINDER	66
4.4 BOOM CYLINDER.....	73
5. ANTIDROP VALVE.....	81
6. PINS AND BUSHINGS	83
7. BUCKETS	88

SECTION 07 - HYDRAULIC SYSTEM

1. HOSES AND FITTINGS	1
2. HYDRAULIC SYSTEM	8
2.1 MAIN PIPELINES	8

2.2	SUCTION AND DELIVERY PIPELINES.....	9
2.3	RETURN PIPELINES	11
2.4	DRAINING PIPELINES.....	13
2.5	FRONT ATTACHMENT PIPELINES	17
2.6	NIBBLER/BREAKER CONTROL PIPELINES	18
2.7	SLEW CONTROL PIPELINES - TRAVEL AND BLADE/STABILIZERS.....	23
2.8	STEERING PIPELINES (MACHINE 4WD).....	25
2.9	STEERING PIPELINES (MACHINE 2WD).....	28
2.10	BRAKE PIPELINES.....	31
2.11	POWER STEERING PIPELINES	35
2.12	LATERAL STABILIZERS AND BLADE CONTROL PIPELINE.....	40
2.13	LOCK VALVES	44
2.14	STABILIZERS/BLADE SELECTION VALVE	45
2.15	FRONT AXLE LOCK	46
2.16	AXLE LOCK VALVE	48
2.17	PRESSURE RELIEF VALVE.....	48
3.	OPERATION OF CIRCUITS.....	50

SECTION 08 - ELECTRICAL SYSTEM

1.	SAFETY PRECAUTIONS	1
2.	FEATURES AND DATA	2
3.	COMPONENTS LOCATION AND OPERATION	3
4.	UNDERCARRIAGE ELECTRIC COMPONENTS.....	6
4.1	MACHINE WITH FOUR STEERING WHEELS	6
4.2	MACHINE WITH TWO STEERING WHEELS	7
5.	CONTROL UNITS ELECTRIC SYSTEM.....	7
6.	LIGHT AND BEAMS GROUP	8
7.	GAUGES AND CONTROLS.....	9
7.1	DASHBOARDS.....	9
7.2	CONTROL LEVERS	11
7.3	SWITCHES AND CONTROL LIGHTS PANEL.....	12
7.4	SWITCHES AND WARNING LAMPS.....	13
7.5	MONITOR PANEL	14
7.6	KEY START SWITCH.....	26
7.7	LEFT CONTROL LEVER.....	27
7.8	RIGHT-HAND CONTROL LEVER.....	28
7.9	CONTROL PANEL AND SWITCHES.....	29
7.10	MACHINE CONTROL CARD	32
7.11	PUMP CONTROL CARD.....	34
8.	ELECTRIC COMPONENTS	36
8.1	THROTTLE LEVER CONTROL	36
8.2	SWIVEL JOINT.....	37
8.3	BATTERIES.....	38
8.4	GENERATOR.....	39
8.5	STARTER.....	40
9.	CONTROL LINE AND WIRING HARNESSSES	41
9.1	CONTROLS ON CONSOLES	41
9.2	CONTROLS FOR SIDE PANEL SWITCHES.....	49
9.3	ANTI-TILTING CHECK CONTROL LINE	51

9.4	WORKING LIGHTS CONTROL LINE	52
9.5	TRAFFIC BEAMS CONTROL LINE.....	53
9.6	STEERING COLUMN CONTROLS	58

SECTION 09 - TROUBLESHOOTING

1.	INTRODUCTION	1
2.	HYDRAULIC SYSTEM TROUBLESHOOTING	3
3.	ELECTRICAL SYSTEM TROUBLESHOOTING	28

SECTION 10 - PERFORMANCE TEST

1.	INTRODUCTION	1
1.1	GENERAL INFORMATION FOR MACHINE TESTING.....	1
2.	STANDARD PERFORMANCES - MH2.6	3
2.1	TABLE OF EXCAVATOR STANDARD PERFORMANCES	3
2.2	HYDRAULIC COMPONENTS STANDARD PERFORMANCE.....	5
2.3	MAIN PUMP P-Q CURVE.....	6
3.	STANDARD PERFORMANCES - MH3.6	7
3.1	TABLE OF EXCAVATOR STANDARD PERFORMANCES	7
3.2	HYDRAULIC COMPONENTS STANDARD PERFORMANCE.....	9
3.3	MAIN PUMP P-Q CURVE.....	10
4.	PREPARATION FOR PERFORMANCE TEST.....	11
5.	EXCAVATOR PERFORMANCE TEST.....	13
5.1	ENGINE PERFORMANCE	13
5.2	SWING PERFORMANCE.....	14
5.3	FRONT ATTACHMENT PERFORMANCE	18
5.4	CONTROL LEVERS	21
6.	BOOM/SLEW PERFORMANCE	22
6.1	COMBINED SLEW/BOOM TEST	22
6.2	STEERING.....	23
6.3	BRAKES SYSTEM.....	24
7.	GEAR BOX	27
7.1	GEAR BOX PRESSURE CHECK.....	27
8.	COMPONENTS PERFORMANCE	28
8.1	OVERPRESSURE VALVE AND PILOT CONTROL LINE.....	28
8.2	OVERPRESSURE RELIEF VALVES	30
8.3	DRIVE SHAFT	33
8.4	HYDRAULIC PUMPS - MH2.6.....	35
8.5	HYDRAULIC PUMPS - MH3.6.....	37
8.6	TRAVEL MOTOR.....	39

SECTION 01 - MAIN OPERATING RULES

1. INTRODUCTION 1

1.1 FOREWORD..... 1

1.2 MANUAL HANDLING 1

1. INTRODUCTION

1.1 FOREWORD

This service manual has been prepared in order to increase repair quality, providing to the technicians the elements for a good knowledge of the product and showing the proper procedures to carry out the maintenance operations. We recommend to thoroughly read the content and follow it when necessary.

It is a concise guide. It covers construction features, operation principle, troubleshooting, disassembly and assembly of components and repair action.

Using this manual in systematic and rational way it is possible to reduce the repairing errors and delay that could cause machine stop with a detriment of cost management.

The information quoted in this service manual are supplied also to be used for training aids. Therefore it is advisable to be used in the training of new personnel that will be employed in the machine maintenance.

All the information, illustrations and specifications contained in this service manual are based on the latest product information available at the time of publication.

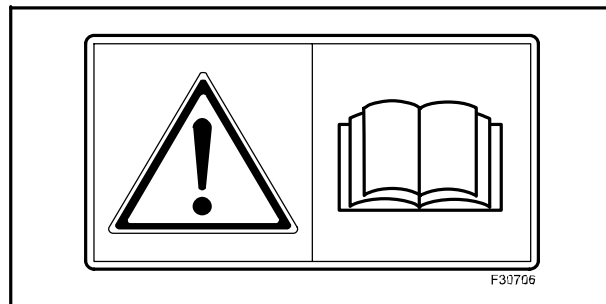
The Dealer reserves the right to makes changes at any time without notice to this service manual for technical or trading reasons.

1.2 MANUAL HANDLING

Changes and supplements

This service manual is carried out in loose-leaf and therefore can be easily kept up-to-date.

The personnel in charge is responsible for updating the manual and will insert the changes or supplements that the Dealer will issue to its service organisation.



Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and to safeguard your safety and personal integrity.

In this manual you will find the following indications:

WARNING

This symbol warns about the possibility of potential damages to the machine that can involve the operator's safety.

DANGER

With specific warnings about potential dangers for the operator's or other persons integrity directly or indirectly involved.

The non compliance with the warning preceded by the above mentioned key-words (**WARNING** and **DANGER**) can cause serious accidents or even the death of the persons involved.

Moreover in the present Manual have been given some instructions preceded by the words **NOTE** and **CAUTION**, with following meanings for machine protection:

NOTE: it emphasizes and underlines to the operator the correct technique or correct procedure to follow.

WARNING

It warns the operator of a possible hazard of machine damage in case he does not follow a determined procedure.

Your safety and that of people around you depends on you. It is essential that you understand this manual for the correct operation, inspection, lubrication and maintenance of this machine.



SECTION 02 - SAFETY PRECAUTIONS

1. SAFETY PRECAUTIONS	1
2. SAFETY DECALS.....	41

1. SAFETY PRECAUTIONS

GENERAL NOTES

Read the manual carefully before starting, operating, maintaining, fuelling or servicing the machine.

Carefully read the explanation to each and all safety signs in the special section of this manual before starting, operating, maintaining, fuelling or servicing the machine.

Machine-mounted safety plates are colour coded yellow with black borders when they refer to points where special WARNING must be paid and failure to observe them may cause a serious DANGER to the integrity of machine operators.

They are white with red borders and black lettering when they refer to a FORBIDDEN practice.

It is fundamental that all machine operators know very well the meaning of each safety plate as this considerably decreases operating hazards and accidents.

Do not allow unauthorised personnel to operate or service this machine.

Do not wear rings, wrist watches, jewellery, loose or hanging garments, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can get caught in moving parts. Wear certified safety clothes such as: hard hat, no-slip footwear, heavy gloves, ear protection, safety glasses, reflector vests, respirators every time the job requires it.

Ask your employer about safety regulations in force and protective equipment.

Always keep the operator's compartment, step plates, grab-rails and handles clean and clear of foreign objects, oil, grease, mud or snow to minimise the danger of slipping or stumbling. Remove mud or grease from your shoes before operating the machine.

Do not jump on or off the machine. Always keep both hands and one foot, or both feet and one hand in contact with steps and/or grab rails.

Do not use controls or hoses as hand holds. Hoses and controls are movable parts and do not provide solid support. Besides, controls may be inadvertently moved and cause unexpected movement of the machine or its attachments.

Never operate the machine or its attachments from any position other than sitting in the driver's seat. Keep head, body, limbs, hands and feet inside the operator's compartment at all times to reduce exposure to external hazards.

Be careful of possible slippery conditions of the steps and hand rails as well as of the ground around the machine. Wear protective boots or shoes with the soles made of highly no-slip rubber.

Do not leave the machine until it has come to a complete stop.

Always check height, width and weight limitations which may be encountered in the working site and ensure the machine does not exceed them.

Assess exact paths of gas ducts, water mains, telephone lines, sewers, overhead and underground electric lines and all other possible obstacles.

Such paths should be opportunely defined by competent Authorities. If necessary, require that the service is interrupted or said installations are moved prior to starting the work.

You must know the working capacity of the machine.

Define the rear upper structure swing area and provide for opportune barriers to prevent access into it.

Never exceed machine lifting capacity.

Remain within the limits shown in the loading capacity chart located on the machine.

START UP

Never start up or set in motion a failed machine. Before getting on, walk around the machine to inspect it. Before operating the machine, make sure that any possible dangerous condition has been properly removed.

Before starting machine, check that steering and attachment controls are in the neutral position and the safety lever is in the LOCK position.

Immediately report any malfunction of parts or systems to the maintenance managers for proper action.

Prior to starting the engine, check, adjust and lock the driver's seat for maximum riding comfort and control accessibility.

Prior to operating the machine and/or its attachments, check that bystanders are outside the machine operating range. Sound horn.

Obey all hand signals, safety indications and signs.

Due to the presence of flammable fluids, never check fuel level, refuel, charge the batteries or use the starting fluid in the presence of smoking materials, open flames or sparks.

Ensure that nobody is within the excavator operating area before starting the machine, swinging the upper structure or moving in any direction.

Adjust all rear-view mirrors for maximum visibility of the area behind the machine.

Ensure that engine speed is appropriate to the job to be carried out.

If any hydraulic control or system exhibits erratic performance or responds abnormally, have the machine checked for air in the system.

Air in these circuits may cause incorrect movements with consequent accident hazard.

Refer to the Operation and Maintenance Instruction Manual about corrective action to be taken.

OPERATION

Do not run the engine of this machine in closed buildings without proper ventilation capable to remove harmful exhaust gases which concentrate in the air.

Keep the driver's seat free from foreign objects, especially if these are not secured. Never use the machine to transport objects, unless proper securing points are provided.

Do not carry riders on the machine.

Study and familiarise with escape routes alternative to normal exit routes.

For your personal safety, do not climb on or off the machine while it is in motion.

Make sure that bystanders are clear of the machine operating range before starting the engine and operating the attachment. Sound horn.

Obey all hand signals, safety indications and signs.

When backing, always look to where the machine is to be moved.

Be alert of the position of bystanders. Should someone enter the work area, stop the machine.

Maintain a safe distance from other machines or obstacles to ensure required visibility conditions.

Always give way to loaded machines.

Maintain a clear vision of the surroundings of the travel or work area at all times.

Keep cab windows clean and repaired.

When pulling loads or towing through a cable or chain, do not start suddenly at full throttle. Take-up slack carefully. Avoid kinking or twisting chains or cables.

Carefully inspect cables or chains for flaws or problems before proceeding.

Do not pull through a kinked chain or cable as the high anomalous stresses existing in this condition may induce failures in the kinked portion. Always wear heavy gloves when handling chains or cables.

Chains and cables should be securely anchored using suitable hooks. Anchor points should be strong enough to withstand the expected load.

Keep anyone clear of anchor points and cables or chains. Do not pull or tow unless the operator's compartments of the machines involved are properly protected against possible backlash in case of cable or chain failure or detachment.

Be alert of soft ground conditions close to newly constructed walls. The fill material and machine weight may cause the wall to collapse under the machine.

In darkness, check area of operation carefully before moving in with the machine. Use all lights provided. Do not move into low visibility areas.

If the engine tends to slow down and stall for whatever reason under load or at idle, immediately report this problem to the maintenance managers for proper action. Do not operate the machine until this condition is corrected.

Regularly check all exhaust system components, as exhaust fumes are toxic for the operator.

Operators must know the performance of the machine they are driving.

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Thank you so much for reading.

When working on slopes or near sudden level drops in the terrain, pay attention not to lose adherence and avoid loose soft ground since overturn or loss of machine control could result.

If noise level is high and exceeds 90 dB(A) over 8 hours at the operator's ear, wear approved ear protection in compliance with local regulations.

Do not operate the machine if you are extremely tired or feel ill.

Be especially careful towards the end of the working shift.

Where removable counterweights are provided, do not operate the machine if they have been removed.

When operating the machine, keep in mind height limits of overhead doors, arches, overhead cables and lines as well as width limits of corridors, roads and narrow passages. Also, get to know load limits of the ground and paving type of the ramps you are to work on.

Beware of fog, smoke or dust that obscure visibility.

Check constantly the work areas to find out the dangerous points. Some examples of dangerous work areas are: inclines, overhangs, trees, demolition rubble, fires, ravines, steep slopes, rough terrain, ditches, crowns, ridge trenches, diggings in traffic areas, crowded parking lots, crowded service areas, fenced zones. In such conditions, proceed with extreme care.

Whenever possible, avoid crossing over obstacles such as very rough terrain, rocks, logs, steps, ditches, railroad tracks. When obstructions must be crossed, do so with extreme care and at a square angle, if possible.

Slow down. Ease up to the break-over point, pass the balance point slowly and ease down the other side also using the attachment, if necessary.

To overcome deep trenches or sinking ground, place the machine perpendicular to the obstacle, drastically reduce ground speed and start crossing using also the attachment if necessary, only after assessing that ground conditions allow the traverse safely and without risks.

The gradient you may attempt to overcome is limited by factors such as ground conditions, load being handled, machine type and speed, and visibility.

There is no substitute for good judgement and experience when working on slopes. Avoid operating the attachment too close to an overhang or high wall, either above or below the machine. Beware of caving edges, falling objects and landslides.

Remember that such hazards are likely to be concealed by bushes, undergrowth and such.

Avoid faggots, bushes, logs and rocks. Never drive over them, nor over any other surface irregularities that discontinue adherence or traction with the ground, especially near slopes or drop-offs.

Be alert to avoid changes in adherence conditions that could cause loss of control. Work with extreme care on ice or frozen ground and on stepped slopes or near drop-offs.

The word "bulldozing" generally refers to work in virgin rough terrain, characterised by the presence of all the perils and risks listed above. We emphasise the danger represented in these conditions by large tree limbs and large roots, which may act as a leverage under the machine when up-rooted and cause their overturn. Position the machine according to the loading and unloading areas in order to slew leftwards to load and to obtain best visibility.

Never use the bucket or attachment to lift persons or carry riders on the machine.

Never use the machine as a work platform or scaffolding. The machine must not be improperly used for works not consistent with its features (such as pushing railway cars, trucks or other machines).

Always pay attention to people within the machine operating range.

Never move or stop the bucket, other loads or the attachment above ground personnel or truck cabs.