

# SERVICE MANUAL

**T7.175 / T7.190 / T7.210**

**T7.175 AutoCommand™ / T7.190 AutoCommand™**

**T7.210 AutoCommand™ / T7.225 AutoCommand™**

**Tier 4B (final)**

**Tractor**

**Part number 47936462**

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## **SERVICE MANUAL**

**T7.175 AutoCommand™ , T7.175 , T7.190 AutoCommand™ , T7.190 , T7.210  
AutoCommand™ , T7.210 , T7.225 AutoCommand™**

# Link Product / Engine

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<b>Product</b>	<b>Market Product</b>	<b>Engine</b>
T7.175 AutoCommand™	North America	F4DFE613P*B003
T7.190 AutoCommand™	North America	F4DFE613N*B006
T7.210 AutoCommand™	North America	F4DFE613M*B003
T7.225 AutoCommand™	North America	F4DFE613K*B008
T7.175	North America	F4DFE613P*B003
T7.190	North America	F4DFE613N*B006
T7.210	North America	F4DFE613M*B003

# Contents

---

## INTRODUCTION

<b>Engine</b> .....	<b>10</b>
[10.001] Engine and crankcase .....	10.1
[10.101] Cylinder heads .....	10.2
[10.216] Fuel tanks .....	10.3
[10.210] Lift pump and lines .....	10.4
[10.218] Fuel injection system.....	10.5
[10.202] Air cleaners and lines .....	10.6
[10.250] Turbocharger and lines.....	10.7
[10.254] Intake and exhaust manifolds and muffler .....	10.8
[10.500] Selective Catalytic Reduction (SCR) exhaust treatment.....	10.9
[10.400] Engine cooling system .....	10.10
[10.414] Fan and drive .....	10.11
[10.408] Oil cooler and lines.....	10.12
<b>Clutch</b> .....	<b>18</b>
[18.112] Slip clutch or flywheel damper .....	18.1
<b>Transmission</b> .....	<b>21</b>
[21.111] Semi-Powershift transmission .....	21.1
[21.133] Semi-Powershift transmission external controls .....	21.2
[21.103] Semi-Powershift transmission lubrication system.....	21.3
[21.152] Semi-Powershift transmission internal components .....	21.4
[21.113] Powershift transmission .....	21.5
[21.504] Continuously Variable Transmission (CVT) .....	21.6
[21.505] Continuously Variable Transmission (CVT) external controls.....	21.7
[21.506] Continuously Variable Transmission (CVT) lubrication system .....	21.8
[21.507] Continuously Variable Transmission (CVT) internal components .....	21.9
[21.160] Creeper .....	21.10

[21.166] Overdrive .....	21.11
<b>Four-Wheel Drive (4WD) system .....</b>	<b>23</b>
[23.202] Electro-hydraulic control .....	23.1
[23.314] Drive shaft.....	23.2
<b>Front axle system .....</b>	<b>25</b>
[25.100] Powered front axle .....	25.1
[25.102] Front bevel gear set and differential .....	25.2
[25.108] Final drive hub, steering knuckles, and shafts .....	25.3
[25.122] Axle suspension control.....	25.4
<b>Rear axle system.....</b>	<b>27</b>
[27.100] Powered rear axle.....	27.1
[27.106] Rear bevel gear set and differential.....	27.2
[27.120] Planetary and final drives .....	27.3
[27.126] Spur gear and final drives.....	27.4
<b>Power Take-Off (PTO).....</b>	<b>31</b>
[31.101] Rear mechanical control .....	31.1
[31.104] Rear electro-hydraulic control.....	31.2
[31.114] Two-speed rear Power Take-Off (PTO) .....	31.3
[31.116] Three-speed rear Power Take-Off (PTO) .....	31.4
[31.146] Front Power Take-Off (PTO).....	31.5
<b>Brakes and controls .....</b>	<b>33</b>
[33.202] Hydraulic service brakes .....	33.1
[33.300] Pneumatic service brakes.....	33.2
[33.110] Parking brake or parking lock .....	33.3
[33.220] Trailer brake hydraulic control.....	33.4
[33.224] Trailer brake pneumatic control .....	33.5
<b>Hydraulic systems.....</b>	<b>35</b>

[35.000] Hydraulic systems .....	35.1
[35.300] Reservoir, cooler, and filters .....	35.2
[35.106] Variable displacement pump .....	35.3
[35.105] Charge pump .....	35.4
[35.220] Auxiliary hydraulic pump .....	35.5
[35.322] Regulated/Low pressure system .....	35.6
[35.204] Remote control valves .....	35.7
[35.114] Three-point hitch control valve .....	35.8
[35.160] Front hitch controls and lines .....	35.9
[35.162] Front hitch cylinders and lines .....	35.10
<b>Pneumatic system .....</b>	<b>36</b>
[36.100] Pneumatic system .....	36.1
<b>Hitches, drawbars, and implement couplings .....</b>	<b>37</b>
[37.110] Rear three-point hitch .....	37.1
[37.120] Rear three-point hitch linkage .....	37.2
[37.162] Front hitch .....	37.3
<b>Frames and ballasting .....</b>	<b>39</b>
[39.100] Frame .....	39.1
<b>Steering .....</b>	<b>41</b>
[41.101] Steering control .....	41.1
[41.106] Tie rods .....	41.2
[41.200] Hydraulic control components .....	41.3
[41.216] Cylinders .....	41.4
[41.432] Autoguidance steering .....	41.5
<b>Wheels .....</b>	<b>44</b>
[44.511] Front wheels .....	44.1
[44.520] Rear wheels .....	44.2
<b>Cab climate control .....</b>	<b>50</b>

[50.100] Heating .....	50.1
[50.104] Ventilation .....	50.2
[50.200] Air conditioning .....	50.3
<b>Electrical systems .....</b>	<b>55</b>
[55.000] Electrical system .....	55.1
[55.100] Harnesses and connectors .....	55.2
[55.015] Engine control system .....	55.3
[55.301] Alternator .....	55.4
[55.302] Battery .....	55.5
[55.011] Fuel tank system .....	55.6
[55.010] Fuel injection system .....	55.7
[55.988] Selective Catalytic Reduction (SCR) electrical system .....	55.8
[55.640] Electronic modules .....	55.9
[55.513] Cab transmission controls .....	55.10
[55.020] Transmission speed sensors .....	55.11
[55.021] Transmission pressure sensors .....	55.12
[55.022] Transmission temperature sensors .....	55.13
[55.023] Transmission position sensors .....	55.14
[55.610] Ground speed control .....	55.15
[55.045] Front axle control system .....	55.16
[55.048] Rear Power Take-Off (PTO) control system .....	55.17
[55.030] Service brake electrical system .....	55.18
[55.031] Parking brake electrical system .....	55.19
[55.512] Cab controls .....	55.20
[55.035] Remote control valve electric control .....	55.21
[55.051] Cab Heating, Ventilation, and Air-Conditioning (HVAC) controls .....	55.22
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system .....	55.23
[55.047] Steering control system .....	55.24

[55.130] Rear three-point hitch electronic control system .....	55.25
[55.911] Global Positioning System (GPS) .....	55.26
[55.510] Cab or platform harnesses and connectors .....	55.27
[55.408] Warning indicators, alarms, and instruments .....	55.28
[55.DTC] FAULT CODES .....	55.29
<b>Platform, cab, bodywork, and decals .....</b>	<b>90</b>
[90.150] Cab .....	90.1
[90.100] Engine hood and panels .....	90.2
[90.116] Fenders and guards .....	90.3







# INTRODUCTION

# Contents

---

## INTRODUCTION

Foreword - Important notice regarding equipment servicing .....	3
Foreword - How to use and navigate through this manual .....	4
Safety rules .....	9
Safety rules - Ecology and the environment .....	13
Basic instructions .....	14
Torque .....	16
Conversion factors .....	18
Hydraulic contamination .....	19
Consumables Lubrications and coolants .....	20
Capacities .....	23

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## **Foreword - Important notice regarding equipment servicing**

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND Sales and Service Networks.

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## Foreword - How to use and navigate through this manual

This manual has been produced by a new technical information system. This new system is designed to deliver technical information electronically through web delivery (eTIM), DVD, and paper manuals. A coding system called SAP has been developed to link the technical information to other Product Support functions, e.g., Warranty.

Technical information is written to support the maintenance and service of the functions or systems on a customer's machine. When a customer has a concern on their machine it is usually because a function or system on their machine is not working at all, is not working efficiently, or is not responding correctly to their commands. When you refer to the technical information in this manual to resolve that customer's concern, you will find all the information classified using the SAP coding, according to the functions or systems on that machine. Once you have located the technical information for that function or system, you will then find all the mechanical, electrical or hydraulic devices, components, assemblies, and sub assemblies for that function or system. You will also find all the types of information that have been written for that function or system: the technical data (specifications), the functional data (how it works), the diagnostic data (fault codes and troubleshooting), and the service data (remove, install adjust, etc.).

By integrating SAP coding into technical information, you will be able to search and retrieve just the right piece of technical information you need to resolve that customer's concern on his machine. This is made possible by attaching 3 categories to each piece of technical information during the authoring process.

The first category is the Location, the second category is the Information Type and the third category is the Product:

- LOCATION - the component or function on the machine, that the piece of technical information is going to describe (e.g., Fuel tank).
- INFORMATION TYPE - the piece of technical information that has been written for a particular component or function on the machine (e.g., Capacity would be a type of Technical Data describing the amount of fuel held by the fuel tank).
- PRODUCT - the model for which the piece of technical information is written.

Every piece of technical information will have those three categories attached to it. You will be able to use any combination of those categories to find the right piece of technical information you need to resolve that customer's concern on their machine.

That information could be:

- the procedure for how to remove the cylinder head
- a table of specifications for a hydraulic pump
- a fault code
- a troubleshooting table
- a special tool

## Manual content

This manual is divided into Sections. Each Section is then divided into Chapters. Contents pages are included at the beginning of the manual, then inside every Section and inside every Chapter. An alphabetical Index is included at the end of each Chapter. Page number references are included for every piece of technical information listed in the Chapter Contents or Chapter Index.

Each Chapter is divided into four Information types:

- Technical Data (specifications) for all the mechanical, electrical or hydraulic devices, components, assemblies or sub-assemblies.
- Functional Data (how it works) for all the mechanical, electrical or hydraulic devices, components, assemblies or sub-assemblies.
- Diagnostic Data (fault codes, electrical and hydraulic troubleshooting) for all the mechanical, electrical or hydraulic devices, components, assemblies or sub-assemblies.
- Service Data (remove disassemble, assemble, install) for all the mechanical, electrical or hydraulic devices, components, assemblies or sub-assemblies.

## Sections

Sections are grouped according to the main functions or a systems on the machine. Each Section is identified by a number (00, 35, 55, etc.). The Sections included in the manual will depend on the type and function of the machine that the manual is written for. Each Section has a Contents page listed in alphabetic/numeric order. This table illustrates which Sections could be included in a manual for a particular product.

SECTION	PRODUCT					
	Tractors					
	Vehicles with working arms: backhoes, excavators, skid steers, ....					
	Combines, forage harvesters, balers, ....					
	Seeding, planting, floating, spraying equipment, ....					
Mounted equipment and tools, ....						
00 - Maintenance	X	X	X	X	X	
05 - Machine completion and equipment	X	X	X	X	X	
10 - Engine	X	X	X	X		
14 - Main gearbox and drive	X	X	X	X		
18 - Clutch	X	X	X			
21 - Transmission	X	X	X	X		
23 - Four wheel drive (4WD) system	X	X	X	X		
25 - Front axle system	X	X	X	X		
27 - Rear axle system	X	X	X	X		
29 - Hydrostatic drive	X	X	X	X		
31 - Power Take-Off (PTO)	X		X			
33 - Brakes and controls	X	X	X	X		
35 - Hydraulic systems	X	X	X	X		
36 - Pneumatic system	X	X	X	X		
37 - Hitches, drawbars and implement couplings	X		X	X		
39 - Frames and ballasting	X	X	X	X	X	
41 - Steering	X	X	X	X		
44 - Wheels	X	X	X	X		
46 - Steering clutches						
48 - Tracks and track suspension	X	X	X			
50 - Cab climate control	X	X	X	X		
55 - Electrical systems	X	X	X	X	X	
56 - Grape harvester shaking						
58 - Attachments/headers			X			
60 - Product feeding			X			

INTRODUCTION

61 - Metering system				X	
62 - Pressing - Bale formation			X		
63 - Chemical applicators				X	
64 - Chopping			X		
66 - Threshing			X		
68 - Tying/Wrapping/Twisting			X		
69 - Bale wagons					
70 - Ejection			X		
71 - Lubrication system	X	X	X	X	X
72 - Separation			X		
73 - Residue handling			X		
74 - Cleaning			X		
75 - Soil preparation/Finishing					
76 - Secondary cleaning / Destemmer					
77 - Seeding				X	
78 - Spraying				X	
79 - Planting				X	
80 - Crop storage / Unloading			X		
82 - Front loader and bucket	X	X			
83 - Telescopic single arm	X	X			
84 - Booms, dippers and buckets	X	X			
86 - Dozer blade and arm	X	X			
88 - Accessories	X	X	X	X	X
89 - Tools	X	X	X	X	X
90 - Platform, cab, bodywork and decals	X	X	X	X	

## Chapters

Each Chapter is identified by a number e.g. Engine - Engine and crankcase - 10.001. The first number is identical to the Section number i.e. Chapter 10.001 is inside Section 10, Engine. The second number is representative of the Chapter contained within the Section.

### CONTENTS

The Chapter Contents lists all the technical data (specifications), functional data (how it works), diagnostic data (fault codes and troubleshooting), and service data (remove, install, adjust, etc.), that have been written in that Chapter for that function or system on the machine.

### Contents

	ENGINE	
	ENGINE - Engine and crankcase – 10.001	
TECHNICAL DATA		
ENGINE - Engine and crankcase - General specification (10.001 - D.40.A.10)		4
FUNCTIONAL DATA		
ENGINE - Engine and crankcase - Dynamic description (10.001 - C.30.A.10)		6
SERVICE		
ENGINE - Engine and crankcase - Remove (10.001 -F.10.A.10)		8
DIAGNOSTIC		
ENGINE - Engine and crankcase - Troubleshooting (10.001 - G.40.A.10)		10

### INDEX

The Chapter Index lists in alphabetical order all the types of information (called information units) that have been written in that Chapter for that function or system on the machine.

### Index

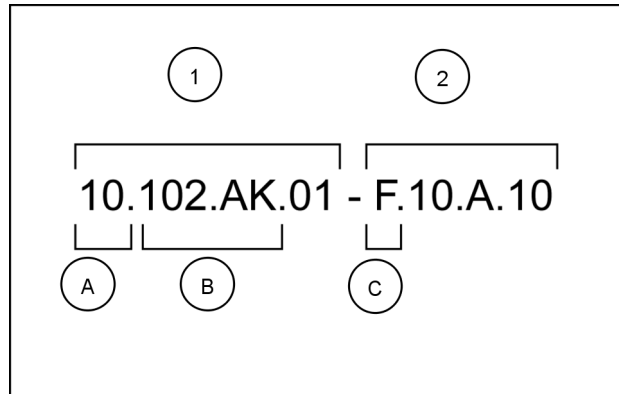
	ENGINE - 10	
	ENGINE	
ENGINE - Engine and crankcase - Dynamic description (10.001 - C.30.A.10)		6
ENGINE - Engine and crankcase - General specification (10.001 - D.40.A.10)		4
ENGINE - Engine and crankcase - Remove (10.001 -F.10.A.10)		8
ENGINE - Engine and crankcase - Troubleshooting (10.001 - G.40.A.10)		10



## Information units and information search

Each chapter is composed of information units. Each information unit has the SAP code shown in parentheses. This indicates the function and type of information in that information unit. Each information unit has a page reference within that Chapter. The information units provide a quick and easy way to find just the right piece of technical information you are looking for.

Example information unit	Engine block cover - Front – Remove (10.102.AP.01 - F.10.A.10)					
Information Unit SAP code	10	102	AK	01	F	10.A.10
SAP code classification	Engine	Pan and covers	Engine block cover	Front	Service data	Remove cover



NHIL12GEN0070A 1

Navigate to the correct information unit you are searching for by identifying the function and information type from the SAP code.

- **(1)** Location and **(2)** Information type.
- **(A)** corresponds to the sections of the service manual.  
**(B)** corresponds to the chapters of the service manual. After **(B)** there may be some additional information. In this case it shows “.01”, which represents the “Front” block cover. These options may be front/rear, left/right, hydraulic/mechanical etc.  
**(C)** corresponds to the type of information listed in the chapter contents: Technical Data, Functional Data, Diagnostic, or Service.  
**(A)** and **(B)** are also shown in the page numbering on the page footer.  
THE REST OF THE CODING IS NOT LISTED IN ALPHANUMERIC ORDER IN THIS MANUAL.
- You will find a table of contents at the beginning and end of each section and chapter.  
You will find an alphabetical index at the end of each chapter.
- By referring to **(A)**, **(B)** and **(C)** of the coding, you can follow the contents or index (page numbers) and quickly find the information you are looking for.

## Page header and footer

The page header will contain the following references:

- Section and Chapter description

The page footer will contain the following references:

- Publication number for that Manual.
- Version reference for that publication.
- Publication date
- Section, chapter, and page reference e.g. 10.102 / 9

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## Safety rules

### PRECAUTIONARY STATEMENTS


#### Personal Safety





This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Throughout this manual, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

 CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

***NOTICE:** Install new decals if the old decals are destroyed, lost painted over or cannot be read. When parts are replaced that have decals make sure you install a new decal with each new part.*

### MACHINE SAFETY

***NOTICE:** Notice indicates a situation which, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

### INFORMATION

***NOTE:** Note indicates additional information which clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

## ACCIDENT PREVENTION

### **⚠ WARNING**

**Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.**

1. Disengage all drives.
  2. Engage parking brake.
  3. Lower all attachments to the ground, or raise and engage all safety locks.
  4. Shut off engine.
  5. Remove key from key switch.
  6. Switch off battery key, if installed.
  7. Wait for all machine movement to stop.
- Failure to comply could result in death or serious injury.**

W0047A

Most accidents or injuries that occur in workshops are the result of non compliance to simple and fundamental safety principles. For this reason, IN MOST CASES THESE ACCIDENTS CAN BE AVOIDED by applying the fundamental safety principles, acting with the necessary caution and care.

Accidents may occur with all types of machine, regardless of how well the machine in question was designed and built.

## **SAFETY REQUIREMENTS FOR FLUID POWER SYSTEMS AND COMPONENTS - HYDRAULICS (EUROPEAN STANDARD EN982)**

- Flexible hose assemblies must not be constructed from hoses which have been previously used as part of a hose assembly.
- Do not weld hydraulic pipes: when flexible hoses or piping are damaged, replace them immediately.
- It is forbidden to modify a hydraulic accumulator by machining, welding or any other way.
- Before removing hydraulic accumulators for servicing, the liquid pressure in the accumulators must be reduced to zero.
- Pressure check on hydraulic accumulators must be carried out by a method recommended by the accumulator manufacturer.
- Take care not to exceed the maximum allowed pressure of the accumulator. After any check or adjustment, check for leakages or gas in the hoses or pipes.

## **SAFETY RULES**

### General guidelines

- Carefully follow specified repair and maintenance procedures.
- When appropriate, use P.P.E (Personal Protective Equipment)
- Do not wear rings, wristwatches, jewellery, unbuttoned or loose articles of clothing such as: ties, torn clothing, scarves, open jackets or shirts with open zips that may remain entangled in moving parts. It is advised to wear approved safety clothing, e.g.: non-slip footwear, gloves, safety goggles, helmets, etc.
- Do not carry out repair operations with someone sitting in the driver's seat, unless the person is a trained technician who is assisting with the operation in question.
- Do not operate the machine or use any of the implements from different positions, other than the driver's seat.
- Do not carry out operations on the machine with the engine running, unless specifically indicated.
- Bring all hydraulic cylinders to the home positions (down, retracted, etc.) before engine shut down.
- Stop the engine and check that the hydraulic circuits are pressure-free before removing caps, covers, valves, etc.
- All repair and maintenance operations must be carried out using extreme care and attention.
- Service steps and platforms used in the workshop or elsewhere should be built according to the applicable standards and legislation.
- Disconnect the power take off (p.t.o). and label the controls to indicate that the machine is being serviced. Any parts that are to be raised must be locked in position.

## INTRODUCTION

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- Brakes are inoperative when manually released for repair or maintenance purposes. Use blocks or similar devices to secure the machine in these conditions.
- Only use specified towing points for towing the machine. Connect parts carefully. Make sure that all pins and/or locks are secured in position before applying traction. Never remain near the towing bars, cables or chains that are operating under load.
- When loading or unloading the machine from the trailer (or other means of transport), select a flat area capable of sustaining the trailer or truck wheels. Firmly secure the machine to the truck or trailer and lock the wheels in the position used by the carrier.
- Electric heaters, battery-chargers and similar equipment must only be powered by auxiliary power supplies with efficient ground insulation to avoid electrical shock hazards.
- Always use suitable hoisting or lifting devices when raising or moving heavy parts.
- Keep bystanders away.
- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents. Use non-inflammable, non toxic commercially available solvents.
- Wear safety goggles with side guards when cleaning parts with compressed air.
- Do not run the engine in enclosed spaces without suitable ventilation or exhaust extraction.
- Never use open flames for lighting when working on the machine or checking for leaks.
- All movements must be carried out carefully when working under, on or near the machine. Wear personal protective equipment (P.P.E.): helmets, goggles and special footwear.
- When carrying out checks with the engine running, request the assistance of an operator in the driver's seat. The operator must maintain visual contact with the service technician at all times.
- If operating outside the workshop, position the machine on a flat surface and lock in position. If working on a slope, lock the machine in position. Move to a flat area as soon as is safely possible.
- Damaged or bent chains or cables are unreliable. Do not use them for lifting or towing. Always use suitable protective gloves when handling chains or cables.
- Chains should always be safely secured. Make sure that the hitch-up point is capable of sustaining the load in question. Keep the area near the hitch-up point, chains or cables free of all bystanders.
- Maintenance and repair operations must be carried out in a CLEAN and DRY area. Clean up any water or oil spillage immediately.
- Do not create piles of oil or grease-soaked rags as they represent a serious fire hazard. Always store rags in a closed metal container.
- Before engaging the machine, make sure that there are no persons within the machine or implement range of action.
- Empty your pockets of all objects that may fall accidentally unobserved into the machine inner compartments.
- When metal parts are sticking out, use protective goggles or goggles with side guards, helmets, special footwear and gloves.
- When welding, use protective safety devices: tinted safety goggles, helmets, special overalls, gloves and footwear. All persons present in the area where welding is taking place must wear tinted goggles. NEVER LOOK DIRECTLY AT THE WELDING ARC WITHOUT SUITABLE EYE PROTECTION.
- Always disconnect battery ground terminal when welding.
- Metal cables tend to fray with repeated use. Always use suitable protective devices (gloves, goggles, etc.) when handling cables.

### Machine start-up.

- Never run the engine in confined spaces that are not equipped with adequate ventilation for exhaust gas extraction.
- Never place the head, body, limbs, feet, hands or fingers near rotating and moving parts.

### Hydraulic systems and fuel injection systems

- A liquid leaking from a tiny hole may be almost invisible but, at the same time, be powerful enough to penetrate the skin. Therefore, NEVER USE HANDS TO CHECK FOR LEAKS but use a piece of cardboard or paper for this purpose. If any liquid penetrates skin tissue, call for medical aid immediately. Failure to treat this condition with correct medical procedure may result in serious infection or death.
- In order to check the pressure in the system use suitable instruments.

### Wheels and Tires

- Make sure that the tires are correctly inflated at the pressure specified by the manufacturer. Periodically check the rims and tires for damage.
- Stand away from (at the side of) the tire when checking inflation pressure.
- Do not use parts of recovered wheels as incorrect welding brazing or heating may weaken and eventually cause damage to the wheel.
- Never cut or weld a rim mounted with an inflated tire.
- Deflate the tire before removing any objects that may be jammed in the tire tread.
- Never inflate tires using inflammable gases, as this may result in explosions and injury to bystanders.

### Removal and Re-fitting

- Lift and handle all heavy parts using suitable hoisting equipment. Make sure that parts are sustained by appropriate hooks and slings. Use the hoisting eyebolts for lifting operations. Extra care should be taken if persons are present near the load to be lifted.
- Handle all parts carefully. Do not put your hands or fingers between parts. Wear suitable safety clothing - safety goggles, gloves and shoes.
- Avoid twisting chains or metal cables. Always wear safety gloves when handling cables or chains.

**Thanks very much for your reading,  
Want to get more information,  
Please click here, Then get the complete  
manual**

**JustClickHere** 

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click on it.**

**Have any questions please write to me:  
[admin@servicemanualperfect.com](mailto:admin@servicemanualperfect.com)**