

Product: New Holland EC15/EC25/EC35/EC45 Mini Excavator Crawler Service Repair Manual

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SERVICE MANUAL

Excavator Crawler Mini EC15 - EC25 - EC35 - EC45



NEWHOLLAND
CONSTRUCTION

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INTRODUCTION

This service manual provides the technical information needed to properly service and maintain the Models listed below. Use this manual in conjunction with the operator's manual which is supplied with the machine. Keep both manuals available for ready reference.

The easiest and least time-consuming removal, disassembly, and reassembly procedures are detailed in the service manual. Modifying these procedures is not recommended.

Whenever working on New Holland Construction equipment, left and right sides of the machine are determined by standing behind the unit, looking in the direction of travel.

New Holland Construction machines are designed with emphasis on safety for operator protection. However, careless and negligent operation can still result in serious injury to personnel or damage to property. Be sure to read and follow all safety instructions in this manual.

Your New Holland Construction dealer is interested in your obtaining the most from your investment and will be glad to answer any questions you may have about your machine. When major service is required, your dealer's staff of trained service technicians is ready to serve you.

When in need of parts, always order genuine New Holland Construction original spare parts from your New Holland Construction dealer to maintain operating efficiency. Be prepared to give your dealer the model and engine serial numbers. The location of the numbers is described later in this section. Record the serial numbers here.

Machine Model _____

Machine Serial Number _____

Engine Model _____

Engine Serial Number _____

MODEL CODES

The range of machines included in this manual are listed below and may not be available in all countries or markets therefore, for the latest information consult your local New Holland Construction dealer.

MODEL	ENGINE TYPE - HORSEPOWER
EC15	Mitsubishi L3E four-stroke diesel engine - 17.8 hp
EC25	Mitsubishi S4L- 61KL four-stroke diesel engine - 27.5 hp
EC35	Mitsubishi S4L-2-61KL four-stroke diesel engine - 35.5 hp
EC45	Mitsubishi S4Q2-61KL four-stroke diesel engine - 46.4 hp

PROPRIETARY NOTICE

The contents of this manual are proprietary data of New Holland Construction. Reproduction or use of any part for other than the operation and maintenance of New Holland Construction equipment is permissible only if expressly authorized in writing by New Holland Construction.

Additional copies may be obtained from your New Holland Construction dealer. Address requests for copies to your dealer and refer to the publication number appearing on the bottom of the manual cover.

TO THE OWNER

The warranty coverage that is extended to your machine is explained in the Warranty and Limitation of Liability form. Your dealer will provide you with a copy of the warranty and retain a copy which you have signed. After you read the warranty, ask your dealer to explain any points that you may not understand.

The machine was designed to power and propel itself. It is intended to move material in the normal and customary applications.

Do not modify or alter or permit anyone else to modify or alter this machine or any of its component's mechanical function without first consulting an authorized New Holland Construction dealer. If you have any questions regarding machine modifications contact New Holland Construction, 245 East North Ave., Carol Stream, IL 60188.

Your safety and the safety of those around you depend upon the care and good judgement you use while operating and maintaining this equipment. Read the safety precautions carefully.

After you have operated the machine for 50 hours, take your machine and this manual to your selling dealer. He or she will perform the factory recommended 50-hour service. You will be responsible for the cost of lubricants, fluids, filters and other items replaced as part of normal maintenance. Prior to taking the machine to your selling dealer for service, it is recommended that you contact them to determine any other charges for which you may be responsible.

ABOUT IMPROVEMENTS

New Holland Construction is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

COMPANY POLICY

Company policy is one of continuous improvement, and reserves the right to change prices and to make changes in design and specification at any time without notice and without obligation to modify units previously built.

All data given in this manual is subject to production variations. Dimensions and weights are approximate only and the illustrations do not necessarily show machines in standard condition. For exact information about any particular machine, please consult your New Holland Construction dealer.

PARTS AND ACCESSORIES

Genuine parts and accessories have been specifically designed for these machines. We would like to point out that 'non-genuine' parts and accessories have NOT been examined and released by New Holland Construction. The installation and/or use of such products could have negative effects upon the design characteristics of your machine and thereby affect its safety. New Holland Construction is not liable for any damage caused by the use of "non-genuine" parts and accessories.

OWNER ASSISTANCE

We at New Holland Construction and your New Holland Construction dealer want you to be completely satisfied with your investment. Normally any problems with your equipment will be handled by your dealer's Service Department. Sometimes, however, misunderstandings can occur. If your problem has not been handled to your satisfaction, we suggest the following.

1. Contact the Owner or General Manager of the dealership, explain the problem, and request assistance. When additional assistance is needed, your dealer has direct access to our office.
2. If you cannot obtain satisfaction by doing this, contact the New Holland Construction office and provide them with:

- Your name, address, and telephone number
- Machine model and serial number
- Dealership name and address
- Machine purchase date and amount of use
- Nature of problem

NEW HOLLAND CONSTRUCTION
245 E. North Ave
Carol Stream, IL 60188
Ph # (630) 260-4000

When contacting New Holland Construction, be aware that your problem will likely be resolved in the dealership using the dealer's facilities, equipment, and personnel. So it is important that your initial contact be with the dealer.

PRECAUTIONARY STATEMENTS

Personal Safety

Throughout this manual and on machine decals, you will find precautionary statements (“CAUTION”, “WARNING”, and “DANGER”) followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.



CAUTION

THE WORD “CAUTION” IS USED WHERE A SAFE BEHAVIORAL PRACTICE ACCORDING TO OPERATING AND MAINTENANCE INSTRUCTIONS AND COMMON SAFETY PRACTICES WILL PROTECT THE OPERATOR AND OTHERS FROM ACCIDENT INVOLVEMENT.



WARNING

THE WORD “WARNING” DENOTES A POTENTIAL OR HIDDEN HAZARD WHICH HAS A POTENTIAL FOR SERIOUS INJURY. IT IS USED TO WARN OPERATORS AND OTHERS TO EXERCISE EVERY APPROPRIATE MEANS TO AVOID A SURPRISE INVOLVEMENT WITH MACHINERY.



DANGER

THE WORD “DANGER” DENOTES A FORBIDDEN PRACTICE IN CONNECTION WITH A SERIOUS HAZARD.

FAILURE TO FOLLOW THE “CAUTION”, “WARNING”, AND “DANGER” INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

This “” symbol is used throughout this manual whenever personal safety is involved. Take time to read and follow the instructions. Be Careful!

CALIFORNIA PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Machine Safety

Additional precautionary statements (“ATTENTION” and “IMPORTANT”) are followed by specific instructions. These statements are intended for machine safety.

ATTENTION: The word “ATTENTION” is used to warn the operator of potential machine damage if a certain procedure is not followed.

IMPORTANT: The word “IMPORTANT” is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.

NOTE: The word “NOTE” is used for information containing important notes about the correct use and/or how to proceed. Non-compliance may lead to malfunction.



SAFETY PRECAUTION INFORMATION

UNSAFE OPERATING AND MAINTENANCE PRACTICES AND IMPROPER USE OF THE MACHINE AND ITS ATTACHMENTS ON THE PART OF THE OPERATOR OR SERVICE TECHNICIAN CAN RESULT IN INJURIES. OBSERVE THE FOLLOWING SAFETY PRECAUTIONS AT ALL TIMES:

- 1. FOR SERVICING, THE MACHINE SHOULD BE ON LEVEL TERRAIN, ENGINE STOPPED WITH THE WHEELS/TRACKS BLOCKED OR THE ENTIRE MACHINE SOLIDLY SUPPORTED WITH THE WHEELS/TRACKS OFF THE GROUND BEFORE SERVICING ANY COMPONENT OF THE DRIVETRAIN.**
- 2. FOR SERVICING UNDER THE MOVABLE EQUIPMENT, SUCH AS OPERATOR'S SEAT, ENGINE HOODS, ETC. MOVE THE EQUIPMENT ASSEMBLY TO THE LATCHED POSITION AND SECURELY LATCH.**
- 3. DO NOT OPERATE THE MACHINE UNLESS ALL MOVABLE EQUIPMENT IS LATCHED IN THE OPERATE POSITION.**
- 4. DO NOT SERVICE THE MACHINE WITH RAISED HYDRAULIC EQUIPMENT UNLESS THE MACHINE IS PROPERLY AND SECURELY SUPPORTED WITH ALL FOUR WHEELS OR TRACKS OFF THE GROUND.**
- 5. DO NOT SERVICE THE MACHINE WITH THE ENGINE RUNNING UNLESS THE MACHINE IS PROPERLY AND SECURELY SUPPORTED WITH ALL FOUR WHEELS OR TRACKS OFF THE GROUND.**
- 6. USE CAUTION AROUND MOVING PARTS WHEN SERVICING THE UNIT.**
- 7. DO NOT OPERATE ANY MOVEABLE EQUIPMENT WITHOUT PROPER INSTRUCTION.**
- 8. DO NOT OPERATE MOVABLE EQUIPMENT WITHOUT USING THE PROPER TOOLS.**
- 9. REINSTALL ALL SHIELDS, SAFETY DEVICES OR INTERLOCKS REMOVED FOR SERVICE.**
- 10. NEVER LOOSEN ANY HYDRAULIC CONNECTIONS BEFORE RELIEVING THE PRESSURE IN THE HYDRAULIC SYSTEM.**
- 11. WEAR EYE PROTECTION SUCH AS GOGGLES, ETC.**
- 12. WEAR EAR PROTECTION SUCH AS EARPLUGS, ETC. WHEN YOU FEEL THE NOISE LEVEL IS UNCOMFORTABLE.**
- 13. IF ANY SERVICING OR ADJUSTMENTS REQUIRE THE BATTERY TO BE DISCONNECTED, DISCONNECT THE (-) NEGATIVE GROUND CABLE.**
- 14. WHEN SERVICING ELECTRICAL COMPONENTS, DISCONNECT THE (-) NEGATIVE GROUND CABLE.**

15. IF ELECTRONIC EQUIPMENT REQUIRES REMOVAL FROM THE DASH AREA OR THE MACHINE, DISCONNECT THE (-) NEGATIVE GROUND BATTERY CABLE. THIS WILL SHUT OFF POWER TO THE ELECTRICAL SYSTEM AND PREVENT DAMAGE TO THE ELECTRICAL SYSTEM.
16. IF WELDING IS REQUIRED ON THE MACHINE, DISCONNECT THE (-) NEGATIVE GROUND CABLE. FAILURE TO DISCONNECT THE BATTERY MAY RESULT IN DAMAGE TO ELECTRICAL SYSTEM, MONITORING SYSTEM AND/OR OTHER ELECTRICAL COMPONENTS.
17. IF WELDING IS REQUIRED ON AN ATTACHMENT, REMOVE THE ATTACHMENT FROM THE MACHINE.
18. GIVE COMPLETE AND UNDIVIDED ATTENTION TO THE JOB AT HAND SO THAT COMPLETE CONTROL OF THE MACHINE IS MAINTAINED AT ALL TIMES.
19. DRIVE SLOWLY OVER ROUGH GROUND AND ON SLOPES; KEEP ALERT FOR HOLES, DITCHES AND OTHER IRREGULARITIES THAT MAY CAUSE THE MACHINE TO OVERTURN.
20. AVOID STEEP HILLSIDE OPERATION WHICH COULD CAUSE THE MACHINE TO OVERTURN.
21. NEVER TRANSPORT A LOADED BUCKET AT FULL HEIGHT. OPERATE THE MACHINE WITH THE LOAD AS LOW AS POSSIBLE UNTIL IT BECOMES NECESSARY TO RAISE THE BOOM TO DISCHARGE THE LOAD INTO A TRUCK, CONTAINER, ETC.
22. REDUCE SPEED WHEN TURNING SO THERE IS NO DANGER OF OVERTURNING.
23. NEVER DRIVE UP OR BACK UP A HILL OR INCLINE WITH A RAISED BOOM OR THE MACHINE COULD OVERTURN.
24. ALWAYS LOOK BEHIND YOU BEFORE BACKING UP THE MACHINE.
25. MAINTAIN PROPER FLUID LEVELS TO PREVENT LOSS OF POWER, BRAKING OR OTHER FUNCTIONS.
26. DO NOT ALLOW PASSENGERS TO RIDE ON THE MACHINE AT ANY TIME.
27. DO NOT ALLOW CHILDREN TO OPERATE THE MACHINE OR RIDE ON THE MACHINE AT ANY TIME.
28. DO NOT ALLOW ANYONE TO OPERATE OR SERVICE THE MACHINE WITHOUT PROPER INSTRUCTION.
29. OSHA REQUIRES THAT ALL OPERATORS BE INSTRUCTED ON THE PROPER OPERATION OF THE MACHINE BEFORE THEY OPERATE THE UNIT.
30. DO NOT OPERATE THE MACHINE IN ANY POSITION OTHER THAN WHILE IN THE OPERATOR'S SEAT WITH THE SEAT BELT SECURELY FASTENED.
31. BEFORE STARTING THE ENGINE, BE SURE THAT ALL OPERATING CONTROLS ARE IN NEUTRAL AND THE PARKING BRAKE IS ENGAGED.

32. NEVER OPERATE THE ENGINE IN A CLOSED AREA WITHOUT ADEQUATE VENTILATION.
33. REFUEL THE MACHINE OUTDOORS WITH THE ENGINE SHUT OFF. REPLACE THE FUEL CAP SECURELY. USE AN APPROVED FUEL CONTAINER. DO NOT SMOKE WHEN HANDLING FUEL. AVOID SPILLING FUEL.
34. AFTER OPERATING THE ENGINE, NEVER TOUCH THE MUFFLER, EXHAUST PIPE, ENGINE OR RADIATOR UNTIL THEY HAVE HAD TIME TO COOL.
35. DRESS APPROPRIATELY - WEAR RELATIVELY TIGHT-FITTING CLOTHING WHEN OPERATING OR SERVICING THE MACHINE. LOOSE OR TORN CLOTHING CAN CATCH IN MOVING PARTS OR CONTROLS.
36. BEFORE SERVICING THE MACHINE OR ANY OF ITS ATTACHED EQUIPMENT, BE SURE THAT THE ATTACHMENTS ARE LOWERED TO THE GROUND OR ARE SUPPORTED.
37. DO NOT WORK UNDER OVERHANGS, ELECTRIC WIRES, OR WHERE THERE IS DANGER OF A SLIDE.
38. WEAR AN APPROVED SAFETY HAT WHEN OPERATING THE MACHINE AND WHILE IN ANY WORK AREA.
39. WHEN DRIVING THE MACHINE ON A PUBLIC ROAD OR HIGHWAY, USE WARNING LIGHTS OR WARNING DEVICES AS MAY BE REQUIRED BY LOCAL OR STATE GOVERNMENT REGULATIONS. HEADLIGHTS, WARNING LIGHTS AND SMV SIGNS ARE AVAILABLE THROUGH YOUR NEW HOLLAND DEALER.
40. KEEP THE MACHINE CLEAN. DO NOT ALLOW TRASH, DEBRIS OR OTHER ARICLES TO ACCUMULATE IN THE CAB, FLOOR OR FOOT CONTROL PEDAL AREA THAT MAY HINDER SAFE MACHINE OPERATION.
41. NEVER OPERATE THE MACHINE WITH ANY OF THE SHIELDING, SAFETY DIVICE OR INTERLOCKS REMOVED OR INOPERATIVE.
42. NEVER OPERATE THE MACHINE WITHOUT WINDOWS AND/OR SCREENS IN PLACE.
43. NEVER EXTEND ANY PART OF THE BODY OUTSIDE OF THE OPERATOR'S AREA.
44. ALWAYS PROPERLY TIE DOWN THE EXCAVATOR TO A TRUCK OR TRAILER BEFORE TRANSPORT.
45. MAKE SURE ALL PERSONNEL ARE AT A SAFE DISTANCE AWAY FROM THE MACHINE BEFORE STARTING THE ENGINE.
46. DO NOT ALLOW ANYONE NEAR THE MACHINE WHILE THE ENGINE IS RUNNING AND THE MACHINE IS OPERATIONAL.
47. WHEN USING THE MACHINE TO LIFT OBJECTS, DO NOT ALLOW ANYONE TO RIDE ON OBJECTS BEING LIFTED.
48. DO NOT USE THE MACHINE AS A WORK PLATFORM FOR SUPPORTING MATERIALS.

49. DO NOT LIFT PERSONNEL OR ALLOW PERSONNEL TO WORK WHILE STANDING IN THE BUCKET OR ON OTHER ATTACHMENTS. THIS IS NOT A MAN-LIFT.

OSHA REQUIREMENTS NOW MAKE IT THE EMPLOYER'S RESPONSIBILITY TO FULLY INSTRUCT EACH OPERATOR IN THE PROPER AND SAFE OPERATION OF ALL OPERATIVE EQUIPMENT. BOTH EMPLOYER AND EMPLOYEE SHOULD THOROUGHLY FAMILIARIZE THEMSELVES WITH THE MACHINE OPERATION.



CAUTION!

CAUTION: SOME PICTURES IN THIS MANUAL SHOW SAFETY SHIELDS REMOVED OR OPEN TO SHOW PARTS BEING SERVICED OR FOR CLARITY. ALL SHIELDS SHOULD BE CLOSED OR REPLACED PRIOR TO OPERATING THE MACHINE.



DANGER!

**FASTEN SEAT BELT
BEFORE STARTING ENGINE!**

Read and heed all safety instruction carrying the signal words CAUTION, WARNING AND DANGER. STUDY THE OPERATION AND MAINTENANCE INSTRUCTION MANUAL THOROUGHLY BEFORE STARTING, OPERATING, MAINTAINING, FUELING OR SERVICING THIS MACHINE.

Most accidents are caused by failure of some individual to follow simple and fundamental safety rules or precaution. For this reason most accidents can be prevented by recognizing the real cause and doing something about it before an accident occurs. Regardless of the care used in the design and construction of any type of equipment there are many conditions that can't be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

General Safety Information

Handle Fluids Safely

When working around fuel or other flammable material, do not smoke, work near heaters or other fire hazards.

Do not store flammable material in open containers.

Store flammable fluids away from fire hazards.

Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, oil, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

Check for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and nearby personnel.

Do not heat by welding, soldering, or using a torch near pressurized fluid lines.

Pressurized lines can be accidentally cut or damaged when heat goes beyond the immediate flame area.

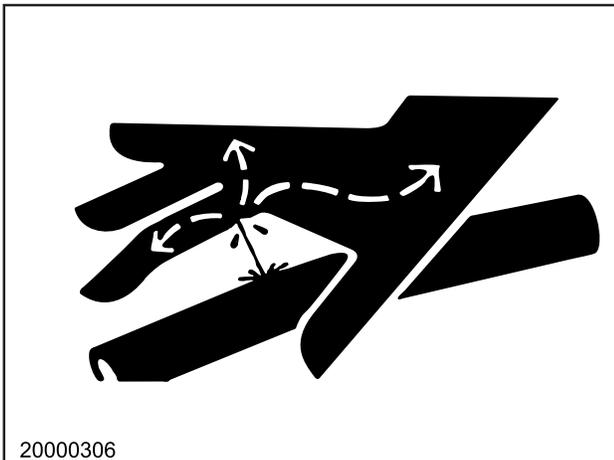
Use Care in Handling and Servicing Batteries

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of the battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Do not charge a frozen battery; it may explode. Warm the battery to 60°F (16°C).



Use Care Around High Pressure Fluid Lines

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines.

Tighten all line connections before applying pressure.



WARNING

IF ANY SERVICING OR ADJUSTMENTS REQUIRE THE BATTERY TO BE DISCONNECTED, OR WELDING IS REQUIRED ON THE MACHINE, DISCONNECT THE (-) NEGATIVE GROUND CABLE. FAILURE TO DISCONNECT THE BATTERY MAY RESULT IN DAMAGE TO ELECTRICAL COMPONENTS.



WARNING

IF WELDING ON AN ATTACHMENT IS REQUIRED, FIRST REMOVE THE ATTACHMENT FROM THE MACHINE.



WARNING

ENGINE STARTING WITH A BOOSTER BATTERY REQUIRES EXTREME CARE AS BATTERIES PRODUCE EXPLOSIVE GASSES. THE SLIGHTEST SPARK CAN CAUSE AN EXPLOSION.

FOLLOW THESE SAFETY TIPS:

1. ALWAYS SHIELD YOUR EYES WHEN CHARGING OR WORKING NEAR A BATTERY. ALWAYS PROVIDE GOOD VENTILATION.
2. COVER THE BATTERY WITH A PIECE OF CARPET OR OTHER HEAVY MATERIAL. DO NOT REMOVE THE BATTERY VENTCAPS.
3. CONNECT ONE CABLE TO THE (+) POSITIVE TERMINAL OF THE WEAK BATTERY. CONNECT THE OTHER END OF THE CABLE TO THE (+) POSITIVE TERMINAL OF THE STRONGER BATTERY.
4. CONNECT THE SECOND CABLE TO THE (-) NEGATIVE TERMINAL OF THE STRONGER BATTERY.
5. CONNECT THE REMAINING (-) NEGATIVE CABLE END TO THE ENGINE BLOCK OR STARTER GROUND TERMINAL.
6. REVERSE THIS PROCEDURE WHEN DISCONNECTING THE BOOSTER.

Use Safe Service Procedures

Wear Protective Clothing

Wear close-fitting clothing.

Wear safety glasses or face shield as required.

Wear other safety equipment appropriate to the job.

Wear earplugs or earmuffs as required.

Service Machine Safely

Use caution when working around moving parts.

If servicing requires the boom to be in the raised position, remove any attachments and support securely. If servicing requires the complete machine to be in the supported position, support the machine with adequate jack stands or blocking with both tracks off the ground.

If servicing requires the engine to be operated, raise the machine and properly support the machine with adequate jack stands or blocking with both tracks off the ground.



CAUTION

BEFORE SERVICING THE MACHINE OR ANY OF ITS ATTACHED EQUIPMENT, BE SURE THAT THE ATTACHMENTS ARE LOWERED TO THE GROUND.

Use Proper Tools

Use tools appropriate for the job.

Review Safety Equipment, Signs and Shields

Replace missing or damaged safety decals.

Reinstall all shielding, safety device or interlocks removed for servicing.

Replace any damaged or missing shielding, safety device or interlocks.

Controls

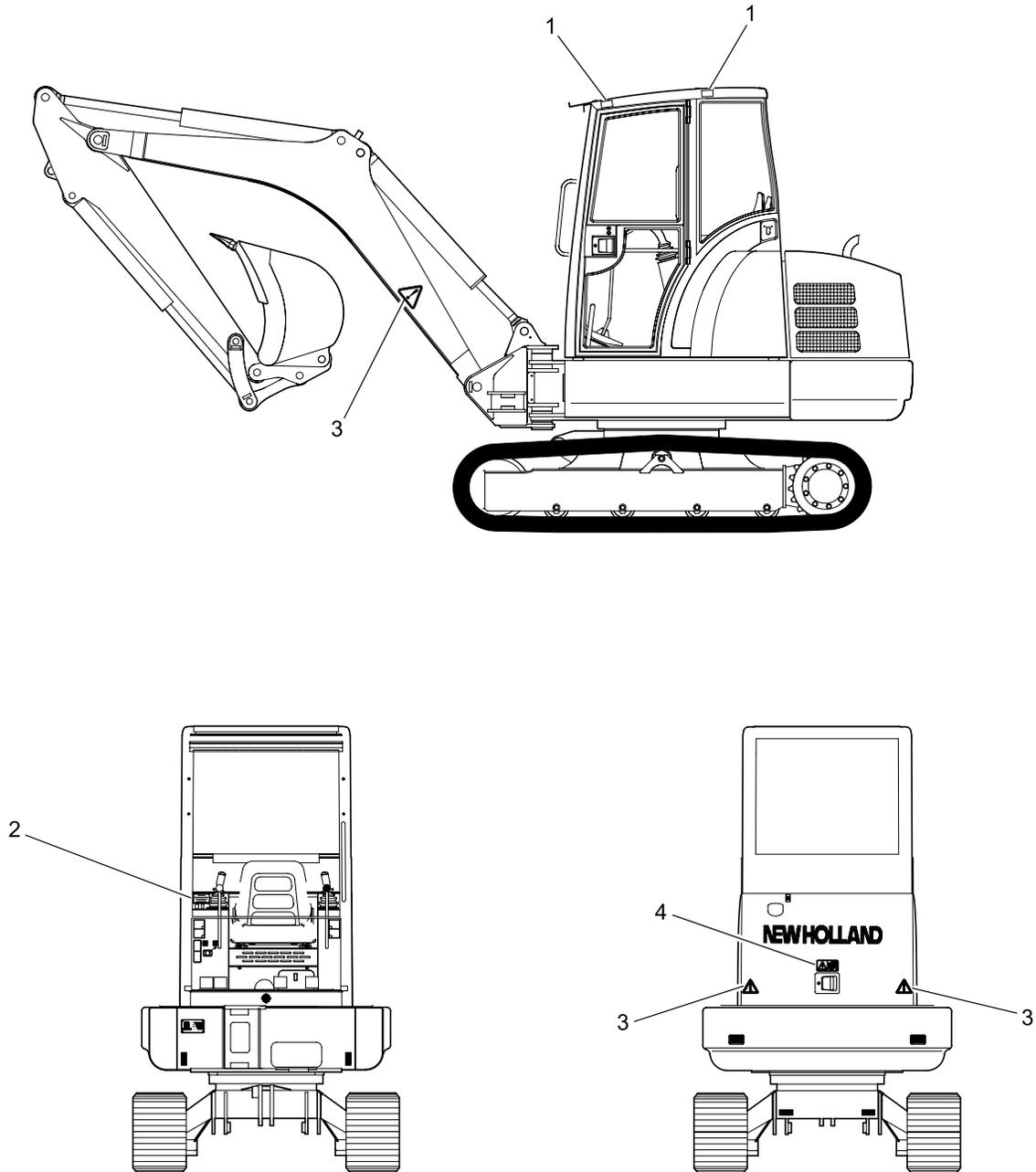
Operate machine and check functions for proper operation.

Check seat belt for proper operation, wear, and damage - Replace as needed.

SAFETY DECALS

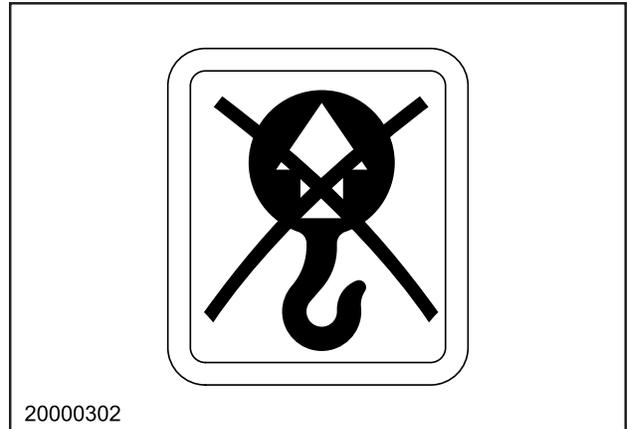
The following safety decals have been placed on the machine in the areas indicated. These decals are intended for the personal safety of you, and those working with you.

Keep the decals legible. If they are not, obtain replacements from your New Holland dealer.

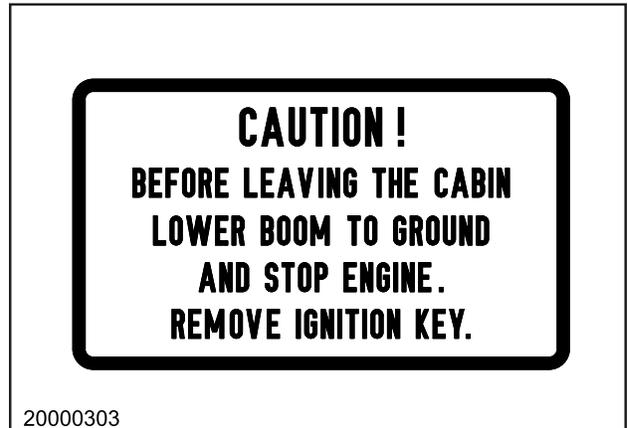


20000301

1. **CAUTION: LOCATED AT FOUR PLACES ON THE TOP LEFT AND RIGHT SIDE OF THE CAB ENCLOSURE ON THE EC25, EC35, AND EC45 MACHINES. THESE MACHINES MUST NOT BE LIFTED WITH A HOOK.**



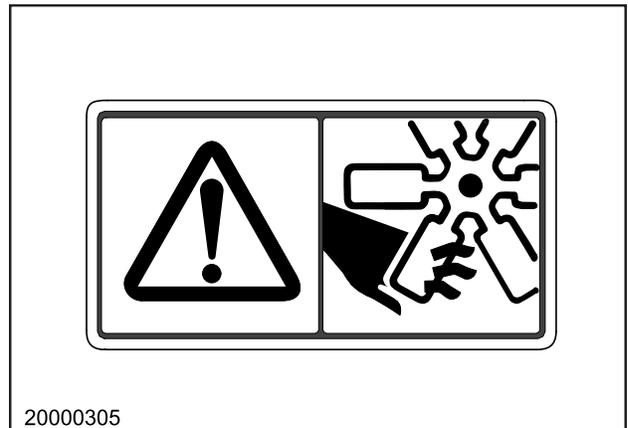
2. **CAUTION: LOCATED IN THE CAB ON THE RIGHT CONSOLE. LOWER BOOM TO GROUND, STOP ENGINE AND REMOVE STARTER KEY BEFORE LEAVING THE CAB.**



3. **CAUTION: REMAIN CLEAR OF BOOM AT ALL TIMES.**

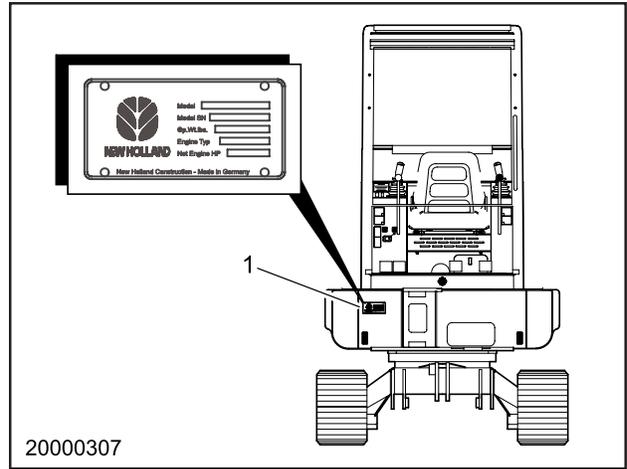


3. **WARNING: KEEP CLEAR! ROTATING FAN - STOP ENGINE.**



Machine Model and Serial Number Location

The excavator model and serial number tag, is located on the right front exterior of the operator's cab (1).



For the tightening torques for reassembly, use the following hardware torque chart unless the torque is specified in the instructions.

MINIMUM HARDWARE TIGHTENING TORQUES IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

INCH HARDWARE AND LOCKNUTS

NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS	
	UNPLATED or PLATED SILVER	PLATED w/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED w/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED w/ZnCr GOLD	GRB w/GR5 BOLT	GRC w/GR8 BOLT
1/4	55* (6.2)	72* (9.7)	86* (9.7)	112* (13)	121* (14)	157* (18)	61* (6.9)	86* (9.8)
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65B(88)	92 (125)
5/8	83 (112)	107 (149)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	220 (306)
7/8	142 (193)	183 (248)	365 (495)	473 (671)	515 (698)	667 (904)	258 (350)	364 (494)
1	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION CAP SCREWS AND CARRIAGE BOLTS



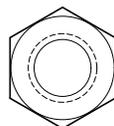
SAE GRADE 2



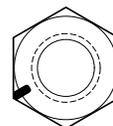
SAE GRADE 5



SAE GRADE 8



REGULAR NUTS



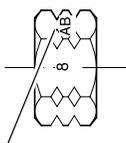
SAE GRADE 5
HEX NUTS



SAE GRADE 8
HEX NUTS

20000308

LOCKNUTS

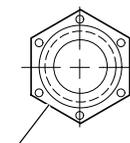


GRADE IDENTIFICATION

GRADE A NO NOTCHES

GRADE B ONE CIRCUMFERENTIAL NOTCH

GRADE C TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION

GRADE A NO MARKS

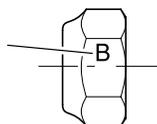
GRADE B THREE MARKS

GRADE C SIX MARKS

MARKS NEED NOT BE LOCATED AT CORNERS

GRADE IDENTIFICATION

GRADE A NO MARKS
GRADE B LETTER B
GRADE C LETTER C



20000309

MINIMUM HARDWARE TIGHTENING TORQUES IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

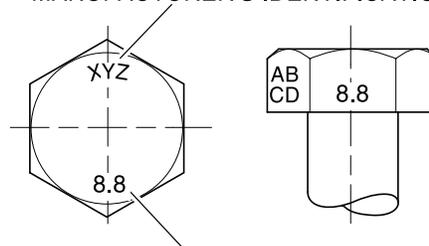
METRIC HARDWARE AND LOCKNUTS

NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL8 w/CL8.8 BOLT
	UNPLATED	PLATED w/ZnCr	UNPLATED	PLATED w/ZnCr	UNPLATED	PLATED w/ZnCr	
M4	15* (5.8)	19* (2.2)	23* (2.6)	30* (3.4)	33* (37)	42* (4.8)	16* (1.8)
M6	51* (5.8)	67* (7.6)	79* (8.9)	102* (12)	115* (13)	150* (17)	56* (6.3)
M8	124* (14)	159* (18)	195* (22)	248* (28)	274* (31)	354* (40)	133* (15)
M10	21 (28)	27 (36)	32 (63)	41 (56)	45 (61)	58 (79)	22 (30)
M12	36 (49)	46 (63)	55 (75)	72 (97)	79 (107)	102 (138)	39 (53)
M16	89 (121)	117 (158)	137 (186)	177 (240)	198 (266)	254 (344)	97 (131)
M20	175 (237)	226 (307)	277 (375)	358 (4585)	383 (519)	495 (671)	195 (255)
M24	303 (411)	392 (531)	478 (648)	619 (839)	662 (897)	855 (1160)	338 (458)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION HEX CAP SCREW AND CARRIAGE BOLTS CLASSES 5.6 AND UP

MANUFACTURER'S IDENTIFICATION

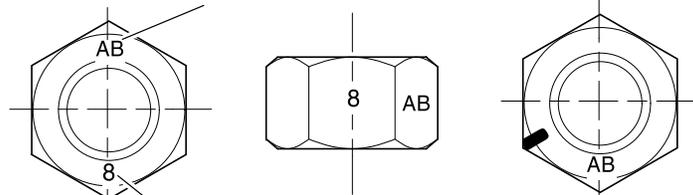


20000310

PROPERTY CLASS

HEX NUTS AND LOCKNUTS CLASSES 05 AND UP

MANUFACTURER'S IDENTIFICATION



20000311

PROPERTY CLASS

CLOCK MARKING

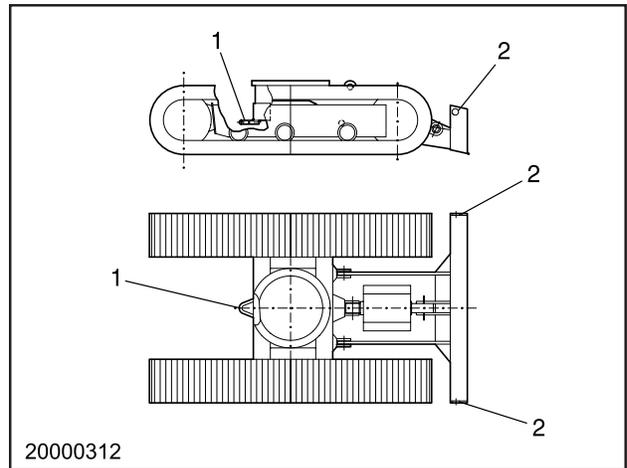
Recovery and Transport of the Machine

Recovery of the Machine

EC15

NOTE: *The recovery of the machine should be accomplished using a crane if possible.*

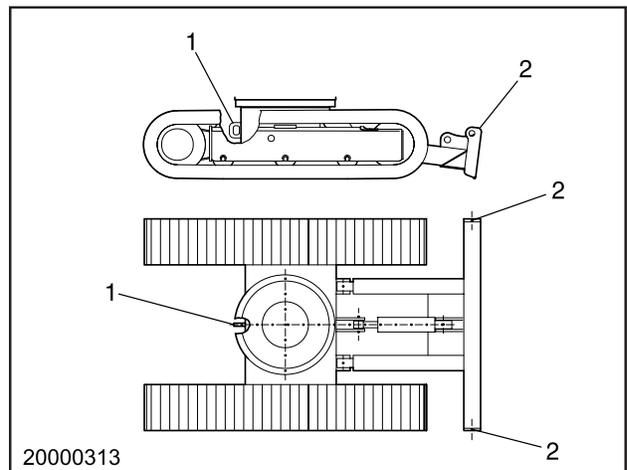
If the machine needs to be towed, connect to either the eye (1) on the undercarriage, or the two drilled holes (2) on the dozer blade.



EC25/EC35/EC45

NOTE: *The recovery of the machine should be accomplished using a crane if possible.*

If the machine needs to be towed, connect to either the eye (1) on the undercarriage, or the two drilled holes (2) on the dozer blade.



Loading the Machine Using a Crane

EC15



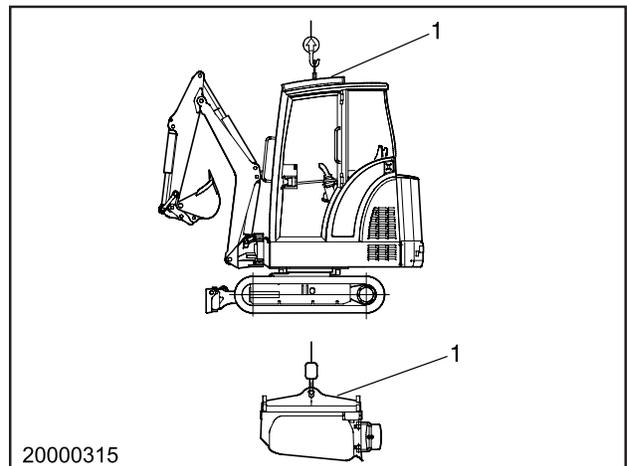
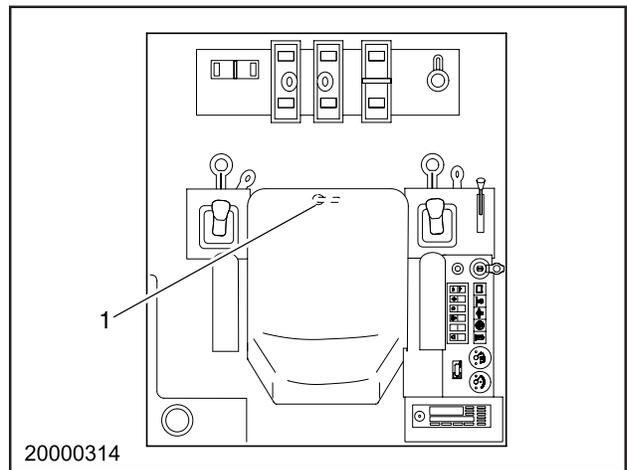
CAUTION

ONLY USE THE ORIGINAL NEW HOLLAND CONSTRUCTION CRANE LIFTING BEAM FOR THE CAB AND THE OVERHEAD GUARD (CANOPY).

USE A CRANE WITH SUFFICIENT LIFTING CAPACITY.

To load the machine onto a flat bed trailer, etc, proceed as follows:

1. Empty and fold in the bucket.
2. Position the machine straight ahead.
3. Block the uppercarriage using the swinglock (1).
4. Raise the boom.
5. Retract the dipperstick.
6. Stop the engine.
7. Dismount from the excavator and close the doors.
8. Attach the crane lifting beam (1) on the cab or overhead guard (canopy) with four screws.
9. Suspend the excavator on the crane lifting beam.



EC25/EC35/EC45**CAUTION**

ONLY USE THE ORIGINAL NEW HOLLAND CONSTRUCTION CRANE LIFTING HARNESS.

USE A CRANE WITH SUFFICIENT LIFTING CAPACITY.

To load the machine onto a flat bed trailer, etc, proceed as follows:

1. Empty and fold in the bucket.
2. Position the work equipment straight ahead.
3. Retract the dipperstick.
4. Move the boom upwards until it reaches distance (a) and cylinder reaches distance (b).

EC25/EC35/EC45

Distance (a) = 1300 mm (51 inches)

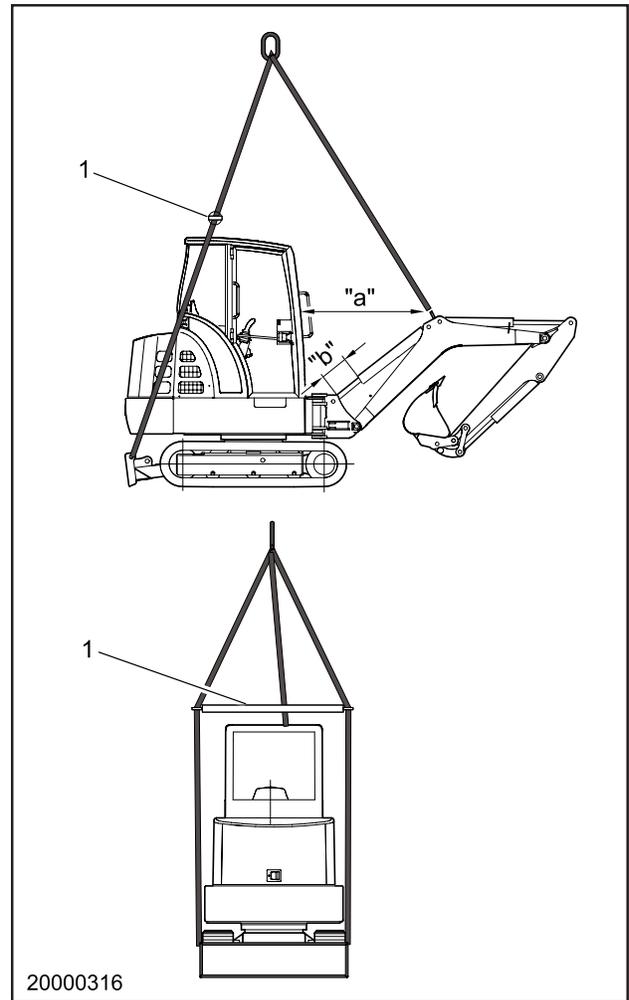
EC25/EC35

Distance (b) = 310 mm (12 inches)

EC45

Distance (b) = 215 mm (8 inches)

5. Stop the engine.
6. Dismount from the excavator and close the doors.
7. Attach the excavator to the three-point crane lifting harness at the points shown (two points on the dozer blade and one on the dipperstick).

**CAUTION**

BE SURE THAT THE SPREADER BAR (1) IS CORRECTLY SEATED.

Transporting the Machine

EC15/EC25/EC35

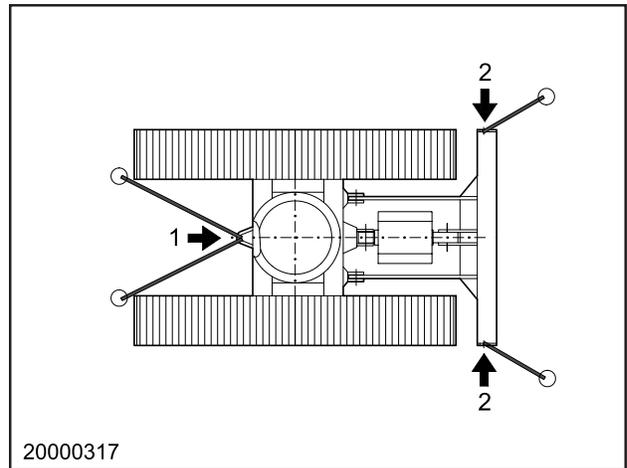
When transporting the machine on a flat bed trailer, etc., the machine must be properly lashed at the marked points, undercarriage (1) and dozer blade (2), and secured with chocks.

1. Prior to lashing, lower the dozer blade and position the work equipment on the ground.



DANGER

BE AWARE OF THE TOTAL TRANSPORT HEIGHT. BE CAREFUL WHEN DRIVING IN TUNNELS, UNDER BRIDGES, ETC.



EC45

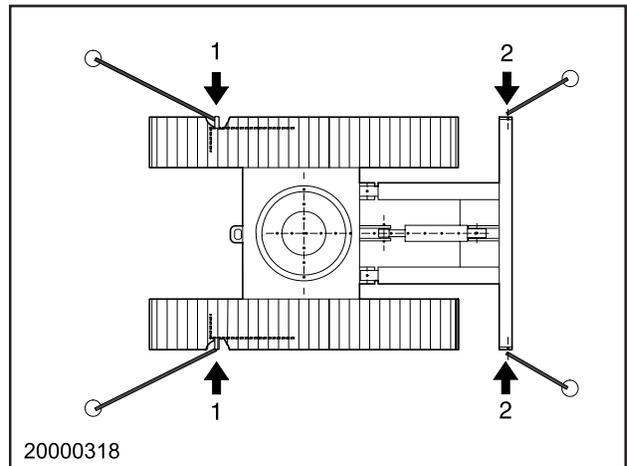
When transporting the machine on a flat bed trailer, etc., the machine must be properly lashed at the marked points, undercarriage (1) and dozer blade (2), and secured with chocks.

1. Prior to lashing, lower the dozer blade and position the work equipment on the ground.



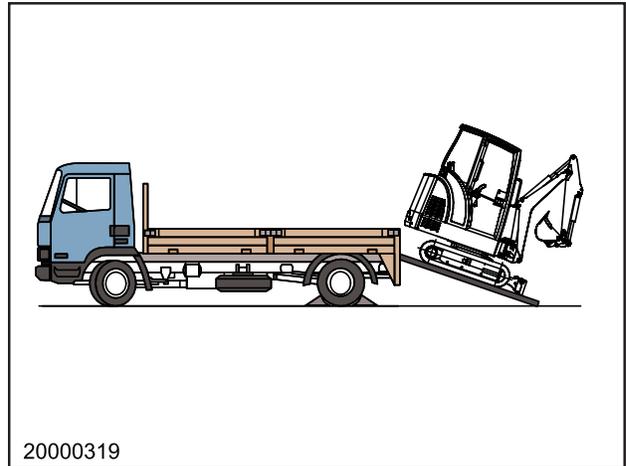
DANGER

BE AWARE OF THE TOTAL TRANSPORT HEIGHT. BE CAREFUL WHEN DRIVING IN TUNNELS, UNDER BRIDGES, ETC.



Loading the Machine onto a Flatbed

1. Use a loading platform with an angle less than 15 degrees.
2. Secure the vehicle with chocks so that it cannot roll.
3. Pull the machine onto the vehicle from the rear with the front of the machine pointed away.
4. Lash the machine for transport.



Proper Support of a Raised Machine

When it is necessary to have the machine completely raised with the tracks off the ground to perform a repair task, securely support the machine with adequate jack stands or blocks.

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EC15, EC25, EC35, EC45 CRAWLER EXCAVATOR SERVICE MANUAL CONTENTS

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SECTION 10 - OPERATOR'S PLATFORM

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SECTION 6

ELECTRICAL SYSTEM

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