SERVICE MANUAL

E45B SR / E50B SR / E55B

Mini Excavator

Part number 47574277B
English
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NEW HOLLAND CONSTRUCTION

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CONSTRUCTION

SERVICE MANUAL

E45B SR
E50B SR
E55B

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INTRODUCTION

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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 information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, or changes to the laws and regulations of different countries.

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

Safety rules

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 death or injury.

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 that, if not avoided, will result in death or serious injury.

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

CAUTION indicates a hazardous situation that, 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.

Machine safety

NOTICE: *Notice indicates a situation that, 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 that 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.

Personal safety

NOTICE: *The proper and safe lubrication and maintenance for this machine, recommended by Manufacturer, are outlined in the OPERATOR'S MANUAL for the machine.*
Improper performance of lubrication or maintenance procedures are dangerous and could result in injury or death. Read and understand the MANUAL before performing any lubrication or maintenance.

The serviceman or mechanic may be unfamiliar with many of the systems on this machine. This makes a careful use of the systems very important when performing maintenance operations. Sound knowledge of the system and or components is important before the removal or disassembly of any component.

Because of the size of some of the machine components, the serviceman or mechanic should check the weights noted in this manual. Use proper lifting procedures when removing any components. Weight of components table is shown in this section.

The following is a list of basic precautions that must always be observed.

1. Read and understand all Warning plates and decals on the machine before Operating, Maintaining or Repairing this machine.
2. Always wear protective glasses and protective shoes when working around machines. In particular, wear protective glasses when using hammers, punches or drifts on any part of the machine or attachments. Use welders gloves, hood/goggles, apron and the protective clothing appropriate to the welding job being performed. Do not wear loose fitting or torn clothing. Remove all rings from fingers, loose jewellery, confine long hair and loose clothing before working on this machinery.
3. Disconnect the battery and hang a "Maintenance in Progress" tag in the operator's seat. Remove starter key.
4. If possible, make all repairs with the machine parked on a level and firm surface. Block the machine so it does not roll while working on or under the machine. Hang a "Maintenance in Progress" tag in the operator's seat.
5. Do not work on any machine that is supported only by lift, jacks or a hoist. Always use blocks or stops for the jack before carrying out any disassembly operation.

NOTICE: *Do not operate this machine unless you have read and understood all instructions contained in this manual. Improper machine operation is dangerous and could result in injury or death.*

6. Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always make sure all raised components are blocked correctly and be alert for possible pressure when disconnecting any device from a system under pressure.
7. Lower the bucket, dozer or other attachments to the ground before performing any work on the machine. If this cannot be done, make sure the bucket, blade or other attachment is blocked correctly to prevent it from dropping unexpectedly.
8. Use steps and grab handles when mounting or dismounting a machine. Remove any debris or mud from steps, walkways or work platforms before using them. Always face the machine when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work, platforms to perform safe repair operations.
9. To avoid back injury, use a hoist when lifting components which weigh 20 kg (44.09 lb) or more. Make sure all chains, hooks, slings, etc., are in good condition and are the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.
10. To avoid burns, be alert for hot parts and surfaces immediately after stopping the machine such as hot fluids in lines, tubes and compartment covers.
11. Be careful when removing cover plates. Gradually back off the last two capscrews or nuts located at opposite ends of the cover or device and carefully pry the cover loose to relieve any spring or other pressure, before removing the last two capscrews or nuts completely.
12. Be careful when removing filler caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. Danger is even greater if the machine has just been stopped, as liquids might be boiling hot.
13. Always use the proper tools that are in good condition and that are suited for the job at hand. Be sure you understand how to use them before performing any service work.
14. Reinstall all clamps with the same spare part number. Do not use clamps of inferior quality if replacement is necessary.

15. Repairs which require welding should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and skilled in welding procedures. Determine the type of metal being welded and select the correct welding procedure and electrodes, rods or wires to provide a metal weld strength at least equivalent to that of the parent metal. Make sure to disconnect the battery before any welding operation is performed.
16. Do not damage wiring during removal operations. Reinstall the wiring so it is not damaged nor will be damaged in operation of the machine by contacting sharp corners, or by rubbing against some object or hot surface. Do not connect wiring to a line containing fluid.
17. Be sure all protective devices, including guards and shields, are properly installed and functioning correctly before starting a repair. If a guard or shield must be removed to perform the repair work, use extra caution and replace the guard or shield after repair is complete.
18. Performing maintenance and repair operations while the bucket is lifted is dangerous, because there is the possibility of a device falling. Do not fail to lower such device and place the bucket to the ground before starting the operation.
19. Loose or dirty fuel, lubrication and hydraulic systems, pipes and hoses may cause fires. Do not bend or strike high-pressure lines, do not install bent or damaged lines. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Very small (pinhole) leaks can result in a high velocity oil jet that will be invisible close to the hose.
    This oil can penetrate the skin and cause personal injury. Use card-board or paper to locate pinhole leaks.
20. Tighten connections to the correct torque. Make sure that all protections against burns, the clamps and the operator's protective devices are correctly installed in order to prevent excessive heat, vibrations or rubbing against other parts during operation. Shields that protect against oil spray onto hot exhaust components in event of a line, tube or seal failure must be installed correctly.
21. Do not operate a machine if any rotating part is damaged or contacts any other part during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.
22. Be careful when servicing or separating the tracks. Chips can fly when removing or installing a track pin. Wear safety glasses and long sleeve protective clothing. Tracks can unroll very quickly when separated. Keep away from front and rear of machine. The machine can move unexpectedly when both tracks (crawlers) are disengaged from the sprockets. Block the machine to prevent it from moving.

General precautions for repairs

Preparation before disassembling

1. Understanding operating procedure
   Read OPERATION AND MAINTENANCE MANUAL carefully to understand the operating procedure.
2. Cleaning machines
   Remove soil, mud, and dust from the machine before carrying it into the service shop to prevent loss of work efficiency, damage of parts, and difficulty in rust prevention and dust protection while reassembling.
3. Inspecting machines
   Identify the parts to be disassembled before starting work, determine the disassembling procedure by yourself considering the workshop situations etc., and request procurement of necessary parts in advance.
4. Recording
   Record the following items for communication and prevention of recurring malfunction.
   1. Inspection date and place
   2. Model name, applicable machine number, and hour meter read
   3. Trouble condition, place and cause.
   4. Visible oil leakage, water leakage and damage
   5. Clogging of filters, oil level, oil quality, oil contamination and loosening of connections
   6. Result of consideration if any problem exists based on the operation rate per month calculated from hourmeter indication after the last inspection date.
5. Arrangement and cleaning in service shop
   1. Tools required for repair work.
   2. Prepare space to place the disassembled parts.
   3. Prepare oil containers for draining oil etc.

Safety in disassembling and assembling

1. Wear appropriate clothes with long sleeves, safety shoes, safety helmet and protective glasses.
2. Suspend warning tag “DO NOT OPERATE” from the doorknob or the operating lever, and have a preliminary meeting before starting work.
3. Stop the engine before starting inspection and maintenance to prevent the operator being caught in machine.
4. Identify the location of a first-aid kit and a fire extinguisher, and also where to make contact in a state of emergency.
5. Choose a hard, level and safe place, and place the attachment on the ground securely.
6. Use a lifter such as a crane to remove heavy parts (**20 kg** (**44 lb**) or more) from the machine.
7. Use proper tools, and replace or repair defective tools.
8. Support the machine and attachment with supports or blocks if the work is performed in the lifted condition.

Disassembling and assembling hydraulic equipment

1. Removing hydraulic equipment
    1. Before disconnecting pipes, release the hydraulic pressure of the system, or open the return side cover and take out the filter.
    2. Carefully drain oil of the removed pipes into a containers without spilling on the floor.
    3. Apply plugs or caps on the pipe ends to avoid oil spillage and dust intrusion.
    4. Clean off the external surface of the equipment before disassembling, and drain hydraulic and gear oil before placing it on the workbench.
2. Disassembling hydraulic equipment
    1. Do not disassemble, reassemble or modify the hydraulic equipment without the permission of the manufacturer, who is not responsible for the performance and function of the product after modification.
    2. When disassembling and reassembling for unavoidable reason, refer the work to qualified personnel who have the specific knowledge or completed the parts service training.
    3. Provide matching marks to facilitate reassembling work.
    4. Before starting the work, read the manual of disassembling procedure, if it is provided, and decide whether the work can be performed by yourself.
    5. Use the special jig and tools without fail if they are specified.
    6. If it is hard to remove a part according to the procedure, do not try it by force but investigate the cause.
    7. Place the removed parts in order and attach tags to facilitate the reassembling.
    8. Note the location and quantity of parts commonly applied to multiple locations.
3. Inspecting parts
    1. Ensure that the disassembled parts are free from seizure, interference and uneven contact.
    2. Measure and record wear condition of parts and clearance.
    3. If the problem is found in a part, repair or replace it with a new one.
4. Reassembling hydraulic equipment
    1. Turn On the ventilation fan or open windows to maintain good ventilation prior to starting the cleaning of parts.
    2. Perform rough and finish cleaning before assembling.
    3. Remove washing oil by air and apply clean hydraulic or gear oil for assembling.
    4. Always replace the removed O-rings, backup rings and oil seals with new ones by applying grease in advance.
    5. Remove dirt and moisture from and perform degreasing on the surface where liquid gasket to be applied.
    6. Remove rust preventive agent from the new parts before use.
    7. Fit bearings, bushings and oil seals using special jigs.
    8. Assemble the parts utilizing matching marks.
    9. Ensure all the parts are completely assembled after the work.
5. Installing hydraulic equipment
    1. Ensure hydraulic oil and lubricant are properly supplied.
    2. Perform air bleeding when:
        1. Hydraulic oil changed
        2. Parts of suction side piping replaced
        3. Hydraulic pump installed
        4. Slewing motor installed
        5. Travel motor installed
        6. Hydraulic cylinder installed

NOTICE: *Operation of the hydraulic equipment without filling hydraulic oil or lubricant or without performing air bleeding will result in damage to the equipment.*

3. Perform air bleeding of the hydraulic pump and slewing motor after loosening the upper drain plug, starting the engine and keep it in low idle condition.
   Complete the air bleeding when seeping of hydraulic oil is recognized, and tightly plug.
4. Perform air bleeding of the travel motor and the hydraulic cylinders by running the engine for more than **5 min** at low speed without load.

   NOTICE: *Do not allow the hydraulic cylinder to bottom on the stroke end just after the maintenance.*
5. Perform air bleeding of pilot line by performing a series of digging, slewing and travel.
6. Check hydraulic oil level after placing the attachment to the oil check position, and replenish oil if necessary.

Electrical equipment

1. Do not disassemble electrical equipment.
2. Handle it carefully not to drop and give a shock.
3. Turn the key Off prior to connecting and disconnecting work.
4. Disconnect the connector by holding it and pressing the lock. Do not pull the wire to apply force to the caulking portion.
5. Connect the connector and ensure it is completely locked.
6. Turn the key Off prior to touching the terminal of starter or generator.
7. Remove the ground (earth) terminal of battery when handling tools around the battery or its relay.
8. Do not splash water on the electrical equipment and connectors during machine washing.
9. Check for moisture adhesion inside the waterproof connector after pulling it out, since it is hard to remove moisture from the connector.

If moisture adhesion is found, dry it completely before the connection.

Battery electrolyte is hazardous.

Battery electrolyte is dilute sulfuric acid. Exposure of skin or eyes to this liquid will cause burning or loss of eyesight.

If the exposure occurs, take the following emergency measures and seek the advice of a medical specialist.

- When skin exposed:
  Wash with water and soap sufficiently.
- When eyes exposed:
  Immediately wash away with city water continuously for more than **10 min**.
- When a large amount of the liquid flows out:
  Neutralize with sodium bicarbonate or wash away with city water.
- When swallowed:
  Drink a large amount of milk or water.
- When clothes exposed:
  Immediately undress and wash.

Hydraulic parts

1. O-ring
   - Ensure O-rings have elasticity and are not damaged before use.
   - Use the appropriate O-rings. O-rings are of different kinds and made of different materials, and they have a different hardness to be applied to a variety of parts, such as moving or fixed parts, subject to high pressure and exposed to corrosive fluids, even if their size is same.
   - Fit the O-rings without distortion and bend.
   - Always handle floating seals as a pair.
2. Flexible hose (F hose)
   - Use the appropriate parts. Different parts are used depending on the working pressure even the size of fitting and the total length of the hose is same.
   - Tighten the fitting at the specified torque.
     Ensure no kink, tension, interference nor oil leakage is recognized.

Welding repair

1. Refer repair welding to qualified personnel according to the appropriate procedure.
2. Disconnect the ground (earth) cable of the battery before starting the repair.
   Failure to do so will cause damage to the electrical equipment.
3. Move away the articles in advance that may cause fire if exposed to sparks.
4. Before starting the repair of the attachment, do not fail to cover the plated surface of the piston rod with flameproof sheet to prevent it from being exposed to sparks.

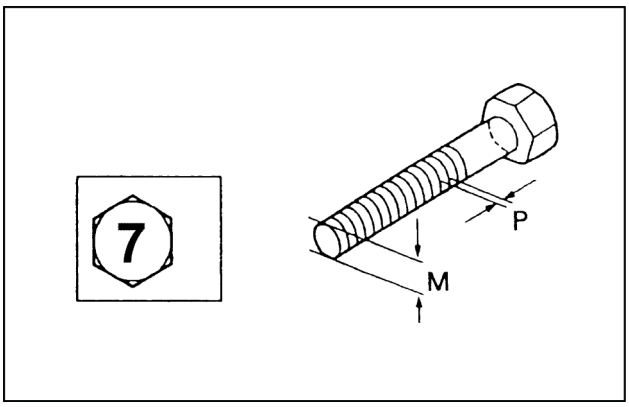
Environmental measure

1. Run the engine at the place that is sufficiently ventilated.
2. Industrial waste disposal
   Dispose of the following parts according to the relevant regulations:
   Waste oil and waste container
   Battery
3. Precautions for handling hydraulic oil
   Exposure of eyes to hydraulic oil will cause inflammation. Wear protective glasses before handling to avoid an accident. If an eye is exposed to the oil, take the following emergency measures:
   - When an eye exposed:
     Immediately wash away with city water sufficiently till stimulative feeling vanishes.
   - When swallowed:
     Do not let vomit, and receive medical treatment immediately.
   - When skin exposed:
     Wash with water and soap sufficiently.
4. Others
   Use replacement parts and lubricants authorized as the genuine parts.

Torque

Torque specifications for capscrews and nuts

The following torque specifications are indicated in case the actual torque value of a fastener is unknown. Check the capscrews and nuts for their looseness and dropping off before the start of daily work and at the periodical maintenance. Retighten the loosened ones, and install new ones for the dropped off. For the new machine, the check and retightening of them must be carried out at first **50 h** operation. For the replacement of them, make sure to use the same size of manufacturer's genuine parts.



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Refer to the table below for the tightening and retightening of capscrews.

- The table below is not applicable for the capscrews to fix the cover, etc., made of plastic. For the tightening torque for such capscrews, consult with an authorized our Distributor. Over-tightening may cause damages on the parts to be fixed.
- If the operator's manual specifies a different torque, use such value regardless of the table below.
- Numerical indication on the capscrew head shows the classification for strength (e.g., **7 = 7 T**). No indication is provided for smaller size of capscrews, **M5** or less.

Metric coarse thread standard tightening torque values. Be certain to tighten all capscrews and nuts to proper torque values

Classification	4.8T		7T		10.9T	
Nominal dimension	No lubrication	Oil lubrication	No lubrication	Oil lubrication	No lubrication	Oil lubrication
M6 x 1	3.9 - 4.9 N·m (2.88 - 3.61 lb ft)	3.3 - 4.1 N·m (2.43 - 3.02 lb ft)	8.6 - 10.6 N·m (6.34 - 7.82 lb ft)	7.3 - 8.9 N·m (5.38 - 6.56 lb ft)	15.6 - 19.2 N·m (11.51 - 14.16 lb ft)	13.2 - 16.2 N·m (9.74 - 11.95 lb ft)
M8 x 1.25	9.6 - 11.8 N·m (7.08 - 8.70 lb ft)	8.1 - 9.9 N·m (5.97 - 7.30 lb ft)	21.5 - 25.5 N·m (15.86 - 18.81 lb ft)	17.6 - 21.6 N·m (12.98 - 15.93 lb ft)	38.3 - 46.1 N·m (28.25 - 34.00 lb ft)	31.4 - 39.2 N·m (23.16 - 28.91 lb ft)
M10 x 1.5	19.6 - 23.6 N·m (14.46 - 17.41 lb ft)	16.1 - 19.7 N·m (11.87 - 14.53 lb ft)	41.2 - 51 N·m (30.39 - 37.62 lb ft)	35.3 - 43.1 N·m (26.04 - 31.79 lb ft)	74.6 - 92.2 N·m (55.02 - 68.00 lb ft)	63.7 - 77.5 N·m (46.98 - 57.16 lb ft)
M12 x 1.75	32.4 - 40.2 N·m (23.90 - 29.65 lb ft)	28.5 - 34.3 N·m (21.02 - 25.30 lb ft)	71.6 - 87.2 N·m (52.81 - 64.32 lb ft)	59.8 - 73.6 N·m (44.11 - 54.28 lb ft)	128 - 158 N·m (94.41 - 116.53 lb ft)	109 - 133 N·m (80.39 - 98.10 lb ft)
M14 x 2	52 - 63.8 N·m (38.35 - 47.06 lb ft)	44.1 - 53.9 N·m (32.53 - 39.75 lb ft)	113 - 139 N·m (83.34 - 102.52 lb ft)	96 - 116 N·m (70.81 - 85.56 lb ft)	206 - 246 N·m (151.94 - 181.44 lb ft)	172 - 210 N·m (126.86 - 154.89 lb ft)
M16 x 2	79.5 - 97.1 N·m (58.64 - 71.62 lb ft)	67.6 - 81.4 N·m (49.86 - 60.04 lb ft)	171 - 211 N·m (126.12 - 155.63 lb ft)	145 - 177 N·m (106.95 - 130.55 lb ft)	304 - 382 N·m (224.22 - 281.75 lb ft)	255 - 313 N·m (188.08 - 230.86 lb ft)
M18 x 2.5	110 - 134 N·m (81.13 - 98.83 lb ft)	93 - 113 N·m (68.59 - 83.34 lb ft)	236 - 294 N·m (174.06 - 216.84 lb ft)	206 - 246 N·m (151.94 - 181.44 lb ft)	432 - 530 N·m (318.63 - 390.91 lb ft)	363 - 441 N·m (267.74 - 325.26 lb ft)
M20 x 2.5	155 - 189 N·m (114.32 - 139.40 lb ft)	130 - 158 N·m (95.88 - 116.53 lb ft)	334 - 412 N·m (246.35 - 303.88 lb ft)	285 - 343 N·m (210.21 - 252.984 lb ft)	598 - 736 N·m (441.06 - 542.846 lb ft)	500 - 618 N·m (368.78 - 455.813 lb ft)
M22 x 2.5	206 - 246 N·m (151.94 - 181.44 lb ft)	172 - 212 N·m (126.86 - 156.36 lb ft)	451 - 549 N·m (332.64 - 404.92 lb ft)	383 - 461 N·m (282.49 - 340.02 lb ft)	814 - 990 N·m (600.38 - 730.19 lb ft)	677 - 833 N·m (499.33 - 614.39 lb ft)
M24 x 3	265 - 323 N·m (195.45 - 238.23 lb ft)	206 - 264 N·m (151.94 - 194.72 lb ft)	568 - 706 N·m (418.94 - 520.72 lb ft)	471 - 569 N·m (347.39 - 419.67 lb ft)	1042 - 1278 N·m (768.54 - 942.60 lb ft)	843 - 1039 N·m (621.76 - 766.33 lb ft)
M27 x 3	392 - 470 N·m (289.12 - 346.65 lb ft)	314 - 392 N·m (231.59 - 289.12 lb ft)	843 - 1039 N·m (621.76 - 766.33 lb ft)	687 - 843 N·m (506.71 - 621.76 lb ft)	1533 - 1867 N·m (1130.68 - 1377.03 lb ft)	1233 - 1507 N·m (909.41 - 1111.51 lb ft)
M30 x 3.5	529 - 647 N·m (390.17 - 477.2 lb ft)	441 - 539 N·m (325.26 - 397.55 lb ft)	1158 - 1412 N·m (854.10 - 1041.44 lb ft)	971 - 1187 N·m (716.17 - 875.49 lb ft)	2065 - 2535 N·m (1523.07 - 1869.72 lb ft)	1744 - 2136 N·m (1286.31 - 1575.43 lb ft)
M33 x 3.5	716 - 872 N·m (528.09 - 643.20 lb ft)	598 - 736 N·m (441.06 - 542.85 lb ft)	1549 - 1903 N·m (1142.48 - 1403.58 lb ft)	1304 - 1598 N·m (961.78 - 1178.62 lb ft)	2796 - 3424 N·m (2062.22 - 2525.41 lb ft)	2345 - 2875 N·m (1729.58 - 2120.49 lb ft)
M36 x 4	932 - 1128 N·m (687.41 - 831.97 lb ft)	775 - 951 N·m (571.61 - 701.42 lb ft)	2000 - 2452 N·m (1475.12 - 1808.5 lb ft)	1677 - 2049 N·m (1236.89 - 1511.26 lb ft)	3608 - 4412 N·m (2661.12 - 3254.12 lb ft)	3027 - 3693 N·m (2232.60 - 2723.82 lb ft)

Metric coarse thread standard tightening torque values. Be certain to tighten all capscrews and nuts to proper torque values

Classification	4.8T		7T		10.9T	
Nominal dimension	No lubrication	Oil lubrication	No lubrication	Oil lubrication	No lubrication	Oil lubrication
M8 x 1	10.2 - 12.4 N·m (7.52 - 9.15 lb ft)	8.5 - 10.5 N·m (6.27 - 7.74 lb ft)	22.5 - 26.5 N·m (16.6 - 19.55 lb ft)	18.6 - 22.6 N·m (5.38 - 6.56 lb ft)	40.2 - 48.0 N·m (29.65 - 35.4 lb ft)	33.6 - 41.2 N·m (24.78 - 30.39 lb ft)
M10 x 1.25	20.6 - 24.6 N·m (15.19 - 18.14 lb ft)	16.8 - 20.5 N·m (12.39 - 15.12 lb ft)	43.2 - 53.0 N·m (31.86 - 39.09 lb ft)	37.3 - 45.1 N·m (27.51 - 33.26 lb ft)	78.5 - 96.1 N·m (57.90 - 70.88 lb ft)	66.6 - 80.4 N·m (49.12 - 59.3 lb ft)
M12 x 1.25	35.3 - 43.1 N·m (26.04 - 31.79 lb ft)	30.4 - 36.2 N·m (22.42 - 26.70 lb ft)	76.5 - 94.1 N·m (56.42 - 69.40 lb ft)	64.7 - 78.5 N·m (47.72 - 57.90 lb ft)	138 - 170 N·m (101.78 - 125.39 lb ft)	116 - 142 N·m (85.56 - 104.73 lb ft)
M16 x 1.5	83.4 - 101 N·m (61.51 - 74.49 lb ft)	69.7 - 85.3 N·m (51.41 - 62.91 lb ft)	176 - 216 N·m (129.81 - 159.31 lb ft)	152 - 186 N·m (112.11 - 137.19 lb ft)	324 - 402 N·m (238.97 - 296.5 lb ft)	275 - 333 N·m (202.83 - 245.61 lb ft)
M20 x 1.5	167 - 205 N·m (123.17 - 151.2 lb ft)	139 - 171 N·m (102.52 - 126.12 lb ft)	363 - 441 N·m (267.74 - 325.26 lb ft)	304 - 362 N·m (224.22 - 267.00 lb ft)	657 - 795 N·m (484.58 - 586.36 lb ft)	549 - 667 N·m (404.92 - 491.95 lb ft)
M24 x 2	285 - 343 N·m (210.21 - 252.98 lb ft)	236 - 294 N·m (174.06 - 216.84 lb ft)	617 - 755 N·m (455.08 - 556.86 lb ft)	510 - 628 N·m (376.16 - 463.19 lb ft)	1122 - 1358 N·m (827.54 - 1001.61 lb ft)	932 - 1128 N·m (687.41 - 831.97 lb ft)
M30 x 2	578 - 696 N·m (426.31 - 513.34 lb ft)	481 - 579 N·m (354.77 - 427.05 lb ft)	1253 - 1527 N·m (924.17 - 1126.26 lb ft)	1039 - 1275 N·m (766.33 - 940.39 lb ft)	2245 - 2755 N·m (1655.83 - 2031.98 lb ft)	1874 - 2286 N·m (1382.19 - 1686.07 lb ft)
M33 x 2	765 - 941 N·m (564.24 - 694.05 lb ft)	636 - 776 N·m (469.09 - 572.35 lb ft)	1674 - 2046 N·m (1234.68 - 1509.05 lb ft)	1395 - 1705 N·m (1028.90 - 1257.54 lb ft)	3016 - 3684 N·m (2224.49 - 2717.18 lb ft)	2515 - 3065 N·m (1854.97 - 2260.63 lb ft)
M36 x 3	962 - 1178 N·m (709.53 - 868.85 lb ft)	804 - 980 N·m (593.00 - 722.81 lb ft)	2104 - 2556 N·m (1551.83 - 1885.21 lb ft)	1744 - 2136 N·m (1286.31 - 1575.43 lb ft)	3778 - 4622 N·m (2786.51 - 3409.01 lb ft)	3147 - 3853 N·m (2321.11 - 2841.83 lb ft)

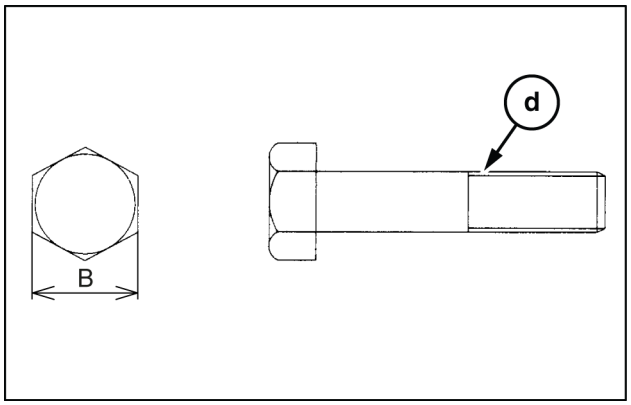
Application of screw locking and sealing compounds

Service		Features
Screw locking compound	**LOCTITE® 242**	Low strength
	LOCTITE® 262	Middle strength
	LOCTITE® 271	High strength
Sealing compound	**LOCTITE® 515**	Sealing

Screw and tool sizes

Edge bolt

Nominal screw size (d)	B Tool size	Nominal screw size (d)	B Tool size
M6	10 mm	M24	36 mm
M8	13 mm	M30	46 mm
M10	17 mm	M36	55 mm
M12	19 mm	M42	65 mm
M16	24 mm	M48	75 mm
M20	30 mm		



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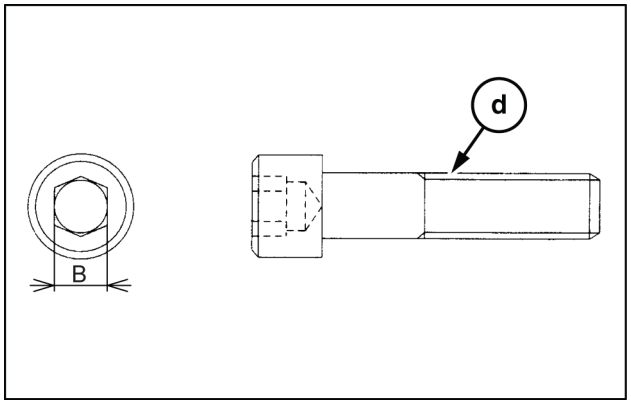
Capscrew (socket bolt)

Nominal screw size (d)	B Tool size	Nominal screw size (d)	B Tool size
M6	5 mm	M20	17 mm
M8	6 mm	M24	19 mm
M10	8 mm	M30	22 mm
M12	10 mm	M36	27 mm
M14	12 mm	M42	32 mm
M16	14 mm	M48	36 mm
M18	14 mm		



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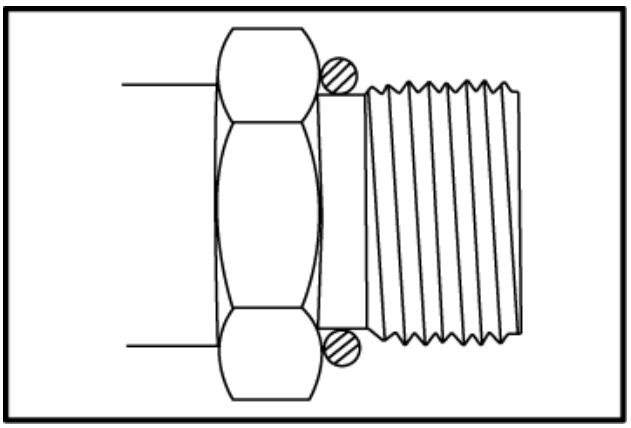
Torque specifications for joints and hoses

Joints for piping (with O-ring)

Nominal screw size (PF)	Wrench size	Tightening torque
1/8	**14 mm**	**17 N·m (12.5 lb ft) ± 2 N·m (1.5 lb ft)**
1/4	**19 mm**	**36 N·m (26.6 lb ft) ± 2 N·m (1.5 lb ft)**
3/8	**22 mm**	**74 N·m (54.6 lb ft) ± 5 N·m (3.7 lb ft)**
1/2	**27 mm**	**108 N·m (79.7 lb ft) ± 9.8 N·m (7.2 lb ft)**
3/4	**36 mm**	**162 N·m (119.5 lb ft) ± 9.8 N·m (7.2 lb ft)**
1	**41 mm**	**255 N·m (188.1 lb ft) ± 9.8 N·m (7.2 lb ft)**



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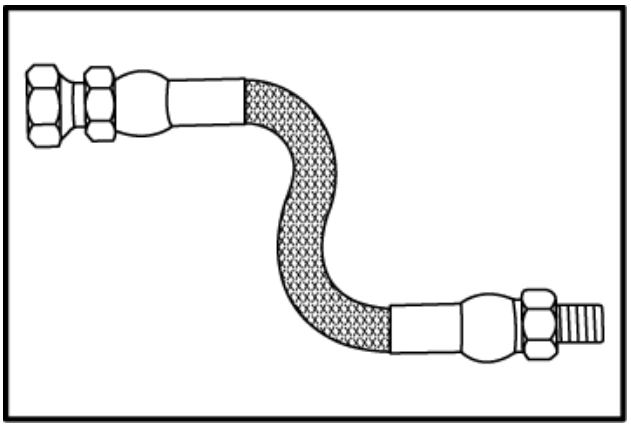
Hydraulic hose (30 °C flare type)

Nominal screw size (PF)	Wrench size	Tightening torque
1/8	**17 mm**	**15 N·m (11.1 lb ft) ± 2.0 N·m (1.5 lb ft)**
1/4	**19 mm**	**29 N·m (21.4 lb ft) ± 4.9 N·m (3.6 lb ft)**
3/8	**22 mm**	**49 N·m (36.1 lb ft) ± 4.9 N·m (3.6 lb ft)**
1/2	**27 mm**	**78 N·m (57.5 lb ft) ± 4.9 N·m (3.6 lb ft)**
3/4	**36 mm**	**118 N·m (87.0 lb ft) ± 9.8 N·m (7.2 lb ft)**
1	**41 mm**	**137 N·m (101.0 lb ft) ± 15 N·m (11.1 lb ft)**



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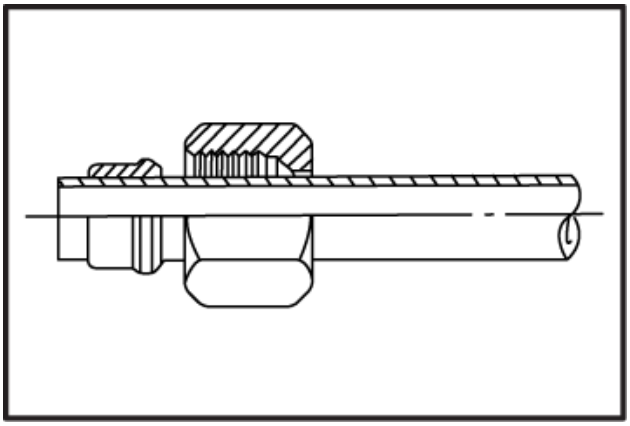
NOTE: *The application of the tightening torque is subject to a dry condition.*

Torque specifications for sleeve type tube fitting

Sleeve type tube fittings

Tube size Outside diameter x thickness	Wrench size	Tightening torque
10 mm (0.4 in) x 1.5 mm (0.1 in)	19 mm	44 N·m (32.5 lb ft) ± 4.9 N·m (3.6 lb ft)
15 mm (0.6 in) x 2.0 mm (0.1 in)	27 mm	147 N·m (108.4 lb ft) ± 20 N·m (14.8 lb ft)
18 mm (0.7 in) x 2.5 mm (0.1 in)	32 mm	177 N·m (130.5 lb ft) ± 20 N·m (14.8 lb ft)
22 mm (0.9 in) x 3.0 mm (0.1 in)	36 mm	216 N·m (159.3 lb ft) ± 20 N·m (14.8 lb ft)
28 mm (1.1 in) x 4.0 mm (0.2 in)	41 mm	275 N·m (202.8 lb ft) ± 29 N·m (21.4 lb ft)
35 mm (1.4 in) x 5.0 mm (0.2 in)	55 mm	441 N·m (325.3 lb ft) ± 44 N·m (32.5 lb ft)



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Basic instructions - How to use maintenance standards and precautions

Application

1. For new machine;
   his manual is to be used to check the actual performance and functions of the machine compared with the PERFORMANCE STANDARDS.
2. At specific self-inspection (as per LOCAL RULES);
   The maintenance standards are used to make them as the criteria to determine the time for reconditioning, adjustment and replacement.
3. At deterioration of performance;
   This manual is of the criteria of safe and economical judgment whether the deterioration of performance on the machine would be caused by any faults or normal deterioration due to machine operation for a long period.
4. For replacement of major components:
   This manual is of the standard to determine the time for replacement to recover the performance of major components such as pump, etc.

Terminology

1. Standard values:
   These are of the standard values to assemble and regulate a new machine. Where special notes are not given, these values are based on the machine with standard structure (the machine with standard attachments and shoes).
2. Standard values for repair:
   These are of the values at which the reconditioning is required. In order to ensure the performance and safety, it is strictly prohibited to use the machine with the parts and components being over the standard values.
3. Serviceability limit:
   This is of the service limit for each part and component at which the reconditioning is impossible and they must be replaced to new ones.
   All the parts and components which are estimated to exceed the serviceability limit up to the next periodical inspection and maintenance, should be also replaced to new ones.
   The machine operation with the parts and components which have exceeded the serviceability limit, causes increase of troubles and down time of the machine, and also causes safety problems.

Precautions for judgment

1. Evaluation for measured data:
   It is inevitable some variation on the measured data due to differences between measuring conditions, peculiar variability on a new machine, old and new versions of the machine and measuring characteristics. The judgment for the measured data should be comprehensively conducted based on the extent of level of the measured data, instead of mere comparison with the standard values.
2. Determination for reconditioning, adjustment or replacement:
   There are two kinds of deterioration of machine performance; one is due to normal wear with time elapsing of operation, and the other is recoverable to the standard values with the adjustment for pressure, etc.
   Therefore, the determination for reconditioning, adjustment or replacement should be conducted taking various factors into consideration such as operating hours, working conditions and maintenance conditions of the machine, so that the machine is able to be operated at the optimum performance level.

Other precautions

1. Parts with aging effect:
   The rubber products such as hydraulic hoses, O-rings, oil seals, etc. are deteriorated with the aging effect. It is necessary to replace them to new ones at periodical intervals or at every overhaul.
2. Parts required periodical replacement:
   It is recommendable to designate the important hoses critical to secure the safety as Very Important Parts (V.I.P.), and periodically replace with new ones.

3. Inspection and replacement of lubricants:
   It is necessary for the user of the machine to fully familiarize himself with the procedures and precautions to handle the machine in safe and carry out the maintenance, as well as the procedures for inspection and lubrication. Refer to the OPERATION AND MAINTENANCE MANUAL as well.

General specification

Speed and gradeability

Detail	Rubber crawler		Steel crawler	
Rotation speed	**8.8 RPM**			
Travel speed	Low (1st)	High (2nd)	Low (1st)	High (2nd)
	2.8 km/h (**1.74 mph**)	**4.6 km/h** (**2.86 mph**)	**2.5 km/h** (**1.55 mph**)	**4.2 km/h** (**2.61 mph**)
Gradient	**58 %** (**30 °**)			

Engine

Model	**4TNV88–XYB**
Type	Vertical, 4-cycle water-cooled diesel engine
Number of cylinders-Bore x stroke	4 – **88 mm** (**3.46 in**) x **90 mm** (**3.54 in**)
Total displacement	**2.189 l** (**0.6 US gal**)
Rated output	**31.5 kW** (**42.8 Hp**) at **2400 RPM**
Maximum torque	**139.3 N·m** (**102.74 lb ft**)/ **1440 RPM**
Starter	**12 V**x **1.7 kW**
Generator	**12 V**x **55 A**

Hydraulic components

Hydraulic pump	Variable displacement, with axial pistons, with pilot gear pump
Hydraulic motor	Axial piston
Hydraulic motor with reduction gear (travel)	2-axial pistons, 2-speed motor
Control valves	11-spool multiple control valve
Cylinder (boom, arm, swing, bucket, dozer)	Double action cylinder
Return filter	Safety valve containing/Filter type (30µ)

Swing and dozer

Type		Boom swing by hydraulic cylinder
Boom swing angle	Right	**60 °**
	Left	**70 °**
Stroke of dozer (up/down)	**E45B SR**	**505 mm** (**19.88 in**)/ **325 mm** (**12.80 in**)
Stroke of dozer (up/down)	**E50B SR / E55B**	**495 mm** (**19.5 in**)/ **375 mm** (**14.8 in**)

Operating mass

Models	Versions	Operating mass ISO 6016*
E45B SR	Canopy	**4395 kg** (**9689 lb**)
E45B SR	Cab	**4535 kg** (**9998 lb**)
E50B SR	Canopy	**4805 kg** (**10593 lb**)
E50B SR	Cab	**4945 kg** (**10902 lb**)
E55B	Cab	**5294 kg** (**11671 lb**)

Rubber belt	* The operating mass is measured with this configuration
Long arm	
Standard counterweight	
Big bucket (**117 kg** (**258 lb**))	
Fuel (**44 kg** (**97 lb**))	
Operator (**75 kg** (**165 lb**))	

Models	Ver-sions	Additional mass			
		Differential of rubber-steel crawler	Differential of long-short arm	Additional counterweight	Front Guard
E45B SR	Canopy	**100 kg** (**220 lb**)	**-25 kg** (**-55 lb**)	**349 kg** (**769 lb**)	–
E45B SR	Cab	**100 kg** (**220 lb**)	**-25 kg** (**-55 lb**)	**349 kg** (**769 lb**)	**18 kg** (**39.7 lb**)
E50B SR	Canopy	**110 kg** (**243 lb**)	**-30 kg** (**-66 lb**)	**349 kg** (**769 lb**)	–
E50B SR	Cab	**110 kg** (**243 lb**)	**-30 kg** (**-66 lb**)	**349 kg** (**769 lb**)	**18 kg** (**39.7 lb**)
E55B	Cab	**110 kg** (**243 lb**)	–	–	**18 kg** (**39.7 lb**)

Weight

Model	E45B SR			
	Rubber shoe		Steel shoe	
	Canopy	Cab	Canopy	Cab
Complete machine (Operating mass **ISO 6016**)	**4395 kg** (**9689 lb**)	**4535 kg** (**9998 lb**)	**4495 kg** (**9910 lb**)	**4635 kg** (**10218 lb**)
Upper superstructure assembly	**1930 kg** (**4255 lb**)	**2070 kg** (**4564 lb**)	**1930 kg** (**4255 lb**)	**2070 kg** (**4564 lb**)
Upper frame	**570 kg** (**1257 lb**)	←	←	←
Canopy / cab	**85 kg** (**187 lb**)	**220 kg** (**485 lb**)	**85 kg** (**187 lb**)	**220 kg** (**485 lb**)
Engine	**170 kg** (**375 lb**)	←	←	←
Hydraulic pump	**35 kg** (**77 lb**)	←	←	←
Radiator	**5 kg** (**11 lb**)	←	←	←
Hydraulic tank	**37 kg** (**82 lb**)	←	←	←
Fuel tank	**4 kg** (**176 lb**)	←	←	←
Swing bracket	**110 kg** (**243 lb**)	←	←	←
Swing cylinder	**39 kg** (**86 lb**)	←	←	←
Swing motor	**40 kg** (**88 lb**)	←	←	←
Control valve	**35 kg** (**77 lb**)	←	←	←
Counterweight	**275 kg** (**606 lb**)	←	←	←
Additional counterweight	**349 kg** (**769 lb**)	←	←	←
Guards, bonnets	**145 kg** (**320 lb**)	←	←	←
Boom cylinder	**47 kg** (**104 lb**)	←	←	←
Lower structure assembly	**1670 kg** (**3682 lb**)	←	**1770 kg** (**3902 lb**)	←
Lower structure	**525 kg** (**1157 lb**)	←	←	←
Slewing bearing	**76 kg** (**168 lb**)	←	←	←
Travel motor	**65 kg** (**143 lb**) 2	←	←	←
Upper roller	**5 kg** (**11 lb**) x 2	←	←	←
Lower roller	**9 kg** (**20 lb**) x 10	←	←	←
Idle wheel	**42 kg** (**93 lb**) x 2	←	←	←
Idler adjuster	**30 kg** (**66 lb**) x 2	←	←	←
Sprocket	**14 kg** (**31 lb**) x 2	←	←	←
Rubber track	**210 kg** (**463 lb**) x 2	←	–	–
Steel track	–	–	**260 kg** (**573 lb**) x 2	←
Rotary control valve	**22 kg** (**49 lb**)	←	←	←
Dozer blade	**170 kg** (**375 lb**)	←	←	←
Dozer blade cylinder	**27 kg** (**60 lb**)	←	←	←
Attachment assembly	**505 kg** (**1113 lb**)	←	←	←
Boom assembly	**223 kg** (**492 lb**)	←	←	←
Boom	**168 kg** (**370 lb**)	←	←	←
Arm cylinder	**42 kg** (**93 lb**)	←	←	←
Arm assembly [**1.43 m** (**4.69 ft**)]	**164 kg** (**362 lb**)	←	←	←
Arm assembly [**1.70 m** (**5.58 ft**)]	**189 kg** (**417 lb**)	←	←	←
Arm	**125 kg** (**276 lb**)	←	←	←
Bucket cylinder	**27 kg** (**60 lb**)	←	←	←
Bucket links	**13 kg** (**29 lb**)	←	←	←
Idler link	**4 kg** (**9 lb**) x 2	←	←	←
Bucket assembly (standard)	**96 kg** (**212 lb**)	←	←	←
Fluids assembly	**95 kg** (**209 lb**)	←	←	←
Hydraulic oil	**45 kg** (**99 lb**)	←	←	←
Fuel	**44 kg** (**97 lb**)	←	←	←

NOTE: *Bucket weight is shown with standard bucket weight.*

Model	E50B SR			
	Rubber shoe		Steel shoe	
	Canopy	Cab	Canopy	Cab
Complete machine (Operating mass **ISO 6016**)	**4805 kg** (**10593 lb**)	**4945 kg** (**10902 lb**)	**4915 kg** (**10836 lb**)	**5055 kg** (**11144 lb**)
Upper structure assembly	**2280 kg** (**5027 lb**)	**2420 kg** (**5335 lb**)	**2280 kg** (**5027 lb**)	**2420 kg** (**5335 lb**)
Upper frame	**570 kg** (**1257 lb**)	←	←	←
Canopy / cab	**85 kg** (**187 lb**)	**220 kg** (**485 lb**)	**85 kg** (**187 lb**)	**220 kg** (**485 lb**)
Engine	**170 kg** (**375 lb**)	←	←	←
Hydraulic pump	**35 kg** (**77 lb**)	←	←	←
Radiator	**5 kg** (**11 lb**)	←	←	←
Hydraulic tank	**37 kg** (**82 lb**)	←	←	←
Fuel tank	**4 kg** (**176 lb**)	←	←	←
Swing bracket	**110 kg** (**243 lb**)	←	←	←
Swing cylinder	**39 kg** (**86 lb**)	←	←	←
Swing motor	**40 kg** (**88 lb**)	←	←	←
Control valve	**35 kg** (**77 lb**)	←	←	←
Counterweight	**590 kg** (**1301 lb**)	←	←	←
Additional counterweight	**349 kg** (**769 lb**)	←	←	←
Guards, bonnets	**145 kg** (**320 lb**)	←	←	←
Boom cylinder	**58 kg** (**128 lb**)	←	←	←
Lower structure assembly	**1720 kg** (**3792 lb**)	←	**1820 kg** (**4012 lb**)	←
Lower structure	**545 kg** (**1202 lb**)	←	←	←
Slewing bearing	**76 kg** (**168 lb**)	←	←	←
Travel motor	**65 kg** (**143 lb**) 2	←	←	←
Upper roller	**5 kg** (**11 lb**) x 2	←	←	←
Lower roller	**9 kg** (**20 lb**) x 10	←	←	←
Idle wheel	**42 kg** (**93 lb**) x 2	←	←	←
Idler adjuster	**30 kg** (**66 lb**) x 2	←	←	←
Sprocket	**14 kg** (**31 lb**) x 2	←	←	←
Rubber track	**225 kg** (**496 lb**) x 2	←	–	–
Steel track	–	–	**275 kg** (**606 lb**) x 2	←
Rotary control valve	**22 kg** (**49 lb**)	←	←	←
Dozer blade	**180 kg** (**397 lb**)	←	←	←
Dozer blade cylinder	**27 kg** (**60 lb**)	←	←	←
Attachment assembly	**535 kg** (**1179 lb**)	←	←	←
Boom assembly	**273 kg** (**602 lb**)	←	←	←
Boom	**165 kg** (**364 lb**)	←	←	←
Arm cylinder	**50 kg** (**110 lb**)	←	←	←
Arm assembly [**1.56 m** (**5.12 ft**)]	**175 kg** (**386 lb**)	←	←	←
Arm assembly [**1.87 m** (**6.14 ft**)]	**205 kg** (**452 lb**)	←	←	←
Arm	**145 kg** (**320 lb**)	←	←	←
Bucket cylinder	**27 kg** (**60 lb**)	←	←	←
Bucket links	**13 kg** (**29 lb**)	←	←	←
Idler link	**4 kg** (**9 lb**) x 2	←	←	←
Bucket assembly (standard)	**100 kg** (**220 lb**)	←	←	←
Fluids assembly	**95 kg** (**209 lb**)	←	←	←
Hydraulic oil	**45 kg** (**99 lb**)	←	←	←
Fuel	**44 kg** (**97 lb**)	←	←	←
Coolant	**6 kg** (**13 lb**)	←	←	←

NOTE: *Bucket weight is shown with standard bucket weight.*

Model	E55B	
	Rubber shoe	Rubber shoe
	Cab	Cab
Complete machine (Operating mass **ISO 6016**)	**5294 kg** (**11671 lb**)	**5404 kg** (**11914 lb**)
Upper structure assembly	**2780 kg** (**6129 lb**)	←
Upper frame	**570 kg** (**1257 lb**)	←
Cab	**220 kg** (**485 lb**)	←
Engine	**170 kg** (**375 lb**)	←
Hydraulic pump	**35 kg** (**77 lb**)	←
Radiator	**5 kg** (**11 lb**)	←
Hydraulic tank	**37 kg** (**82 lb**)	←
Fuel tank	**4 kg** (**176 lb**)	←
Swing bracket	**110 kg** (**243 lb**)	←
Swing cylinder	**39 kg** (**86 lb**)	←
Swing motor	**40 kg** (**88 lb**)	←
Control valve	**35 kg** (**77 lb**)	←
Counterweight	**590 kg** (**1301 lb**)	←
Guards, bonnets	**145 kg** (**320 lb**)	←
Boom cylinder	**58 kg** (**128 lb**)	←
Lower structure assembly	**1720 kg** (**3792 lb**)	←
Lower structure	**545 kg** (**1202 lb**)	←
Slewing bearing	**76 kg** (**168 lb**)	←
Travel motor	**65 kg** (**143 lb**) 2	←
Upper roller	**5 kg** (**11 lb**) x 2	←
Lower roller	**9 kg** (**20 lb**) x 10	←
Idle wheel	**42 kg** (**93 lb**) x 2	←
Idler adjuster	**30 kg** (**66 lb**) x 2	←
Sprocket	**14 kg** (**31 lb**) x 2	←
Rubber track	**225 kg** (**496 lb**) x 2	–
Steel track	–	**275 kg** (**606 lb**) x 2
Rotary control valve	**22 kg** (**49 lb**)	←
Dozer blade	**180 kg** (**397 lb**)	←
Dozer blade cylinder	**27 kg** (**60 lb**)	←
Attachment assembly	**535 kg** (**1179 lb**)	←
Boom assembly	**273 kg** (**602 lb**)	←
Boom	**175 kg** (**386 lb**)	←
Arm cylinder	**50 kg** (**110 lb**)	←
Arm assembly [**1.87 m** (**6.14 ft**)]	**205 kg** (**452 lb**)	←
Arm	**145 kg** (**320 lb**)	←
Bucket cylinder	**27 kg** (**60 lb**)	←
Bucket links	**13 kg** (**29 lb**)	←
Idler link	**4 kg** (**9 lb**) x 2	←
Bucket assembly (standard)	**100 kg** (**220 lb**)	←
Fluids assembly	**95 kg** (**209 lb**)	←
Hydraulic oil	**45 kg** (**99 lb**)	←
Fuel	**44 kg** (**97 lb**)	←
Coolant	**6 kg** (**13 lb**)	←

NOTE: *Bucket weight is shown with standard bucket weight.*

Capacities

Component to be filled	Quantity	Consumable	Manufacturer specifications	International specifications
Engine oil pan	**3.4 - 7.4 l (0.90 - 1.95 US gal)**	**NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 10W-30**	**NH 324 H**	**API CI 4/CH-4 ACEA E7/E5**
		NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 15W-40	**NH 330 H**	
Travel motor	**0.9 l (0.24 US gal)**	**NEW HOLLAND AMBRA HYPOIDE 90**	**NH 520 A**	**API GL 5**
Upper rollers	**20 cm³ (20.00 cm³)**			
Idler wheels	**70 cm³ (70.00 cm³)**			
Radiator **(1)**	**2.6 l (0.69 US gal)**	**NEW HOLLAND AMBRA AGRIFLU-OT**	**NH 900 C**	**ASTM D 3306**
Fuel tank	**53 l (14 US gal)**	—	—	**EN 590**
Hydraulic oil tank **(2)**	**42 l (11 US gal)**	**AMBRA HI-TECH 46**	**NH 583/HD**	—
Attachment and dozer pin	20 places	**AMBRA GRS PLUS**	**NH 586/GR**	**NLGI 2**
Swing cylinder pin				
Slewing bearing	1 place			
Idler adjuster	2 place			
Operating lever and pedal	—			
Rotation gear	1 place	**AMBRA MG2**	**NH 585/GR**	**NLGI 2**
Air conditioning	**0.9 kg (1.98 lb)**	**R134A**	—	—
Compressor	**120 cm³ (7.32 in³)**	**SANDEN SP-10 LUBRICANT**	—	—

NOTE: (1)** Coolant to be mixed with water at **50 %**. Cooling system total volume: **~ 6 l (1.59 US gal)

***NOTICE: (2)** Hydraulic system total volume: **~ 77 l (20.34 US gal)**. If the machine was filled with biodegradable hydraulic oil **PANOLIN HLP SYNTH 46** (option), take note that this oil cannot be mixed with mineral hydraulic oil.*

Temperature operating ranges

	Consumable	Viscosity	Temperature operating range
Engine	**NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL**	**SAE 10W-30**	**-25 °C - +25 °C**
		SAE 15W-40	**-15 °C - +40 °C**
Travel motor, upper rollers and idler wheels	**NEW HOLLAND AMBRA HYPOIDE 90**	**SAE 80W-90**	**-25 °C - +45 °C**
Hydraulic system	**AMBRA HI-TECH 46**	**ISO VG 46**	**-20 °C - +50 °C**

Use of biodegradable oils

When you use biodegradable oil, please refer to following:

- There are two types of biodegradable oil available: vegetable-based and synthetic-based. We recommend using synthetic oils, because vegetable ones have a maximum operating temperature of **80 °C** (**176 °F**). For this reason, the degradation of vegetable-based oil occurs more rapidly, and they have a reduced service life.
- Do not mix bio-oil with original factory-filled mineral oil; in case it is necessary to use bio-oil, flush the hydraulic system that was filled with bio-oil three times.
- If you use bio-oil, the performance of the rotation brake and that of the parking/travel brake will be reduced, because of the lower friction factor of bio-oil compared to that of mineral oil.
- For further information about the type of biodegradable lubricant and the relevant specifications for use and maintenance, please refer to chapter ACCESSORIES.

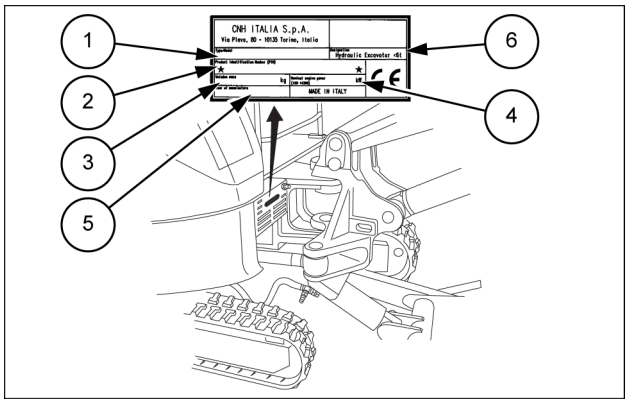
Use of coolant

- There are two types of coolant depending on the corrosion inhibitors base: ORGANIC-base and INORGANIC base.
- Mini excavators is ORGANIC-base type factory filled.
- Both type can be used, BUT THEY CANNOT BE MIXED. Flush the cooling system before change coolant type.

Product identification

Machine identification plate

1. Commercial name
2. Product identification number
3. Operating mass
4. Engine power (**ISO 14396**)
5. Year of construction
6. Machine category (Hydraulic excavator **<6t**)



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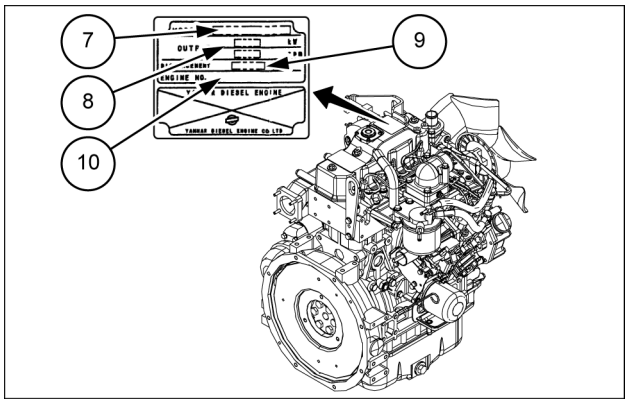
Engine identification plate

7. Engine model
8. Output
9. Displacement
10. Engine number



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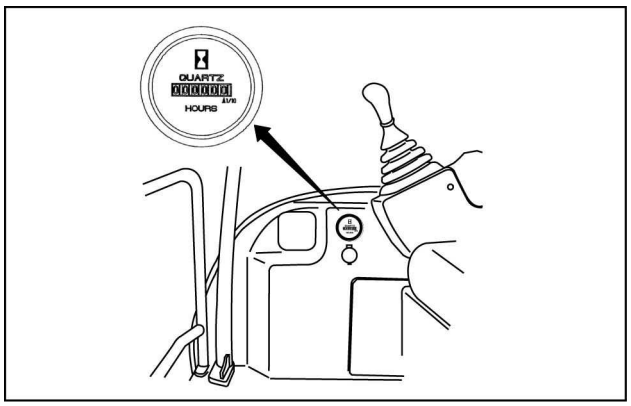
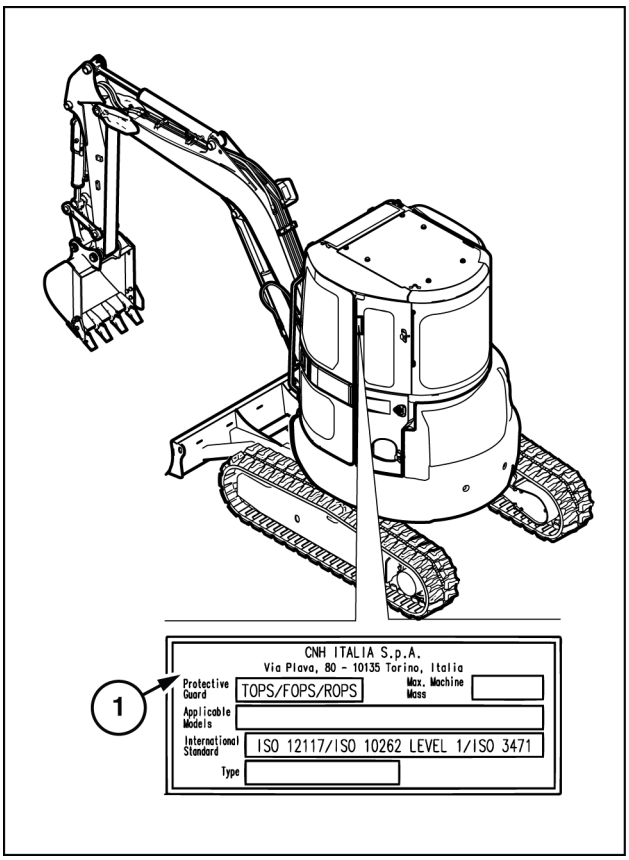
Hour counter



LELI11E0004AB 3

Tip/Roll Over Protective Structure (TOPS/ ROPS) and Falling Object Protective Structure (FOPS)

(1) identification plate in the cab
(2) identification plate on the canopy



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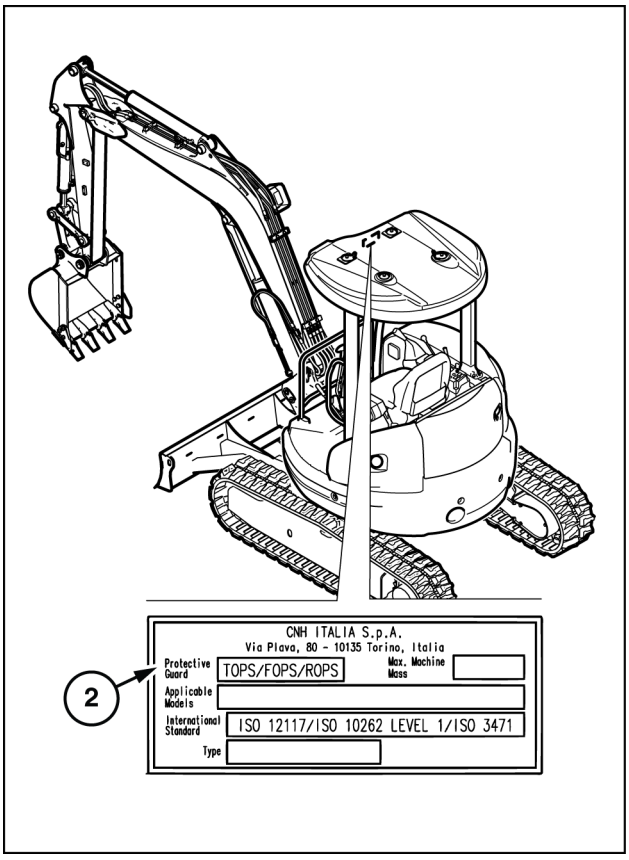
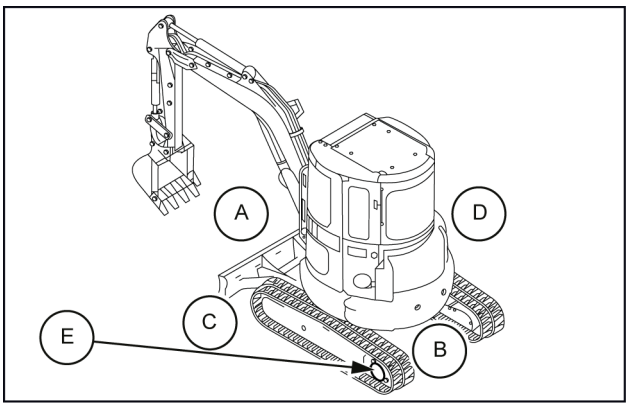


LELI11E0189AB 5

Product identification - Machine orientation

The terms right-hand, left-hand, front, and rear are used in this manual to indicate the sides as they are seen from the operator seat when the travel motors are positioned at the rear and the operator is facing the direction in which the machine advances (forward).

A Front of machine
B Rear of machine
C Left side of machine
D Right side of machine
E Travel motor



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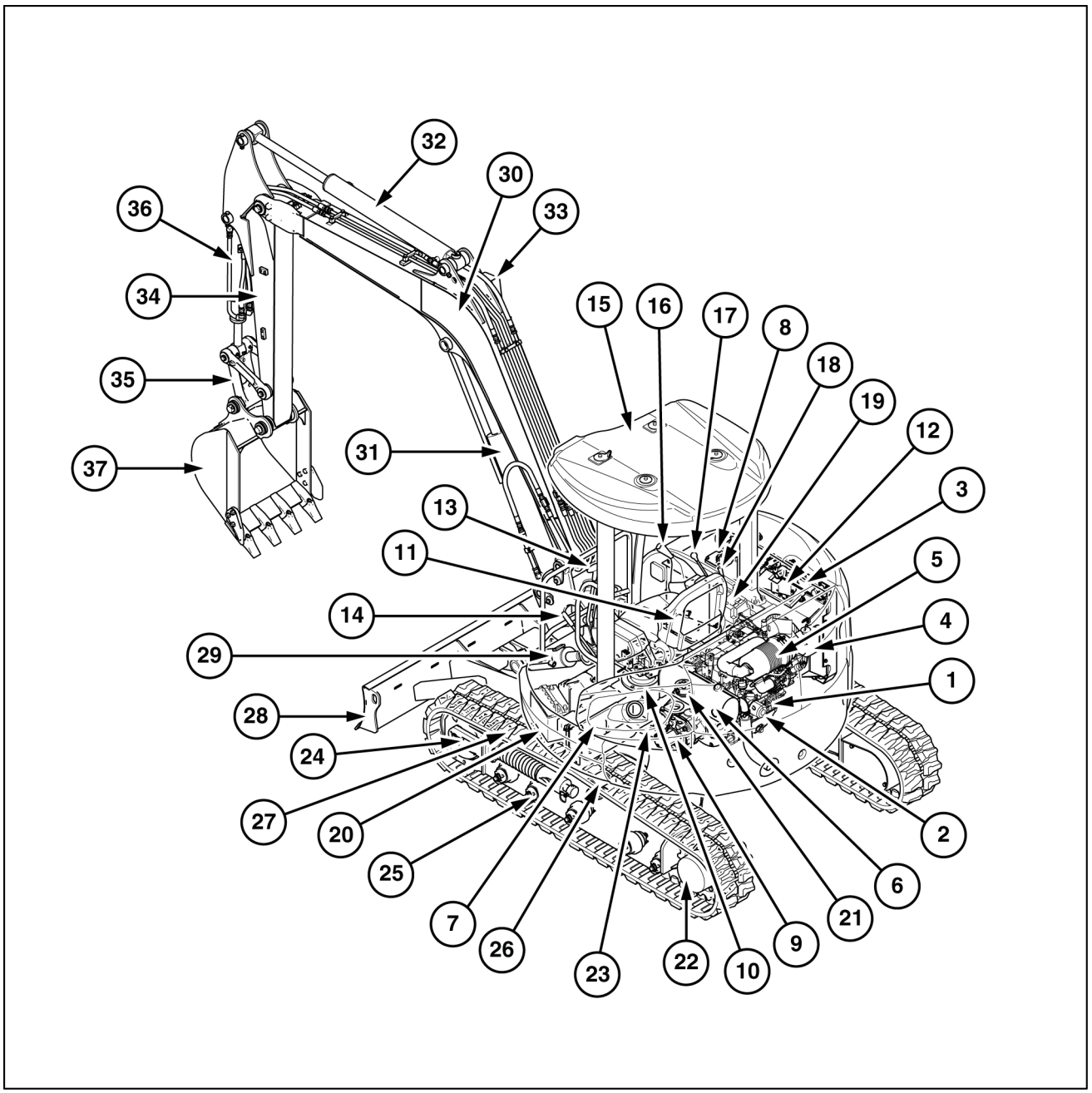
Part identification



TULI12EXN8006GB 1

1. Engine
2. Oil filter
3. Radiator
4. Reservoir tank
5. Air cleaner
6. Muffler
7. Fuel tank
8. Hydraulic oil tank
9. Hydraulic pumps
10. Slewing motor
11. Swing cylinder
12. Control valve
13. Travel lever
14. Safety lever
15. Canopy
16. Operating lever
17. Dozer control lever
18. Throttle lever
19. Gauge cluster
20. Battery
21. Swivel joint
22. Travel motor
23. Slewing ring
24. Idler adjuster
25. Lower roller
26. Upper roller
27. Rubber crawler
28. Dozer
29. Dozer cylinder
30. Boom
31. Boom cylinder
32. Arm cylinder
33. Light
34. Arm
35. Rod and idler link
36. Bucket cylinder
37. Bucket

SERVICE MANUAL

Engine

E45B SR
E50B SR
E55B

Contents

Engine - 10

Engine - 10

Engine and crankcase - 001

E45B SR
E50B SR
E55B

Contents

Engine - 10

Engine and crankcase - 001

Engine and crankcase - Torque

Tightening torques for main bolts and nuts

Part	Engine model	Thread diameter x pitch	Tightening torque	Lubricating oil application (thread portion, and seat surface)
Cylinder head screws	3TNV82A	**M9 x 1.25**	**61.7 - 65.7 N·m (45.5 - 48.5 lb ft)**	Applied
	TNV84~88	**M10 x 1.25**	**85.3 - 91.1 N·m (62.9 - 67.2 lb ft)**	
	4TNV94L·98	**M11 x 1.25**	**103.1 - 112.9 N·m (76.0 - 83.3 lb ft)**	
	4TNV106(T)	**M13 x 1.5**	**188.0 - 197.8 N·m (138.7 - 145.9 lb ft)**	
Connecting rod bolt	3TNV82A	**M8 x 1.0**	**37.2 - 41.2 N·m (27.4 - 30.4 lb ft)**	Applied
	TNV84~88	**M9 x 1.0**	**44.1 - 49 N·m (32.5 - 36.1 lb ft)**	
	4TNV94L·98	**M10 x 1.0**	**53.9 - 58.8 N·m (39.8 - 43.4 lb ft)**	
	4TNV106(T)	**M11x1.0**	**78.5 - 83.4 N·m (57.9 - 61.5 lb ft)**	
Flywheel set bolt	TNV82A~88	**M10 x 1.25**	**83.3 - 88.2 N·m (61.4 - 65.1 lb ft)**	Applied
	4TNV94L·98·106(T)	**M14 x 1.5**	**186.2 - 205.8 N·m (137.3 - 151.8 lb ft)**	
Bearing cap set bolt	3TNV82A	**M10 x 1.25**	**76.4 - 80.4 N·m (56.3 - 59.3 lb ft)**	Applied
	TNV84~88	**M12 x 1.5**	**93.2 - 98.1 N·m (68.7 - 72.4 lb ft)**	
	4TNV94L·98	**M11 x 1.25**	**108.1 - 117.9 N·m (79.7 - 87.0 lb ft)**	
	4TNV106(T)	**M14 x 1.5**	**186.2 - 205.8 N·m (137.3 - 151.8 lb ft)**	
Crankshaft pulley set bolt	TNV82A~88	**M14 x 1.5**	**112.7 - 122.7 N·m (83.1 - 90.5 lb ft)**	Applied
	4TNV94L·98·106(T)	**M14 x 1.5**	**107.9 - 127.5 N·m (79.6 - 94.0 lb ft)**	
Fuel nozzle setscrew	TNV82A~88	**M8 x 1.25**	**24.4 - 28.4 N·m (18.0 - 20.9 lb ft)**	Not applied
	4TNV94L·98·106(T)	**M8 x 1.25**	**22.6 - 28.4 N·m (16.7 - 20.9 lb ft)**	
Fuel pump drive gear set nut	TNV82A~88	**M14 x 1.5**	**78 - 88 N·m (57.5 - 64.9 lb ft)**	Not applied
	4TNV94L·98·106(T)	**M18 x 1.5**	**113 - 123 N·m (83.3 - 90.7 lb ft)**	
Fuel injection pipe set bolt	TNV82A~88	**M12 x 1.5**	**29.4 - 34.3 N·m (21.7 - 25.3 lb ft)**	Not applied
	4TNV94L·98·106(T)	**M12 x 1.5**	**19.6 - 24.5 N·m (14.5 - 18.1 lb ft)**	
Fuel return pipe joint bolt	4TNV94L·98·106(T)	**M6 x 1.0**	**7.8 - 9.8 N·m (5.8 - 7.2 lb ft)**	Not applied
Rocker arm cover set bolt	4TNV106(T)	**M8 x 1.25**	**16.7 - 22.5 N·m (12.3 - 16.6 lb ft)**	Not applied
EPA flange setscrew	4TNV106(T)	**M18 x 1.5**	**113 - 123 N·m (83.3 - 90.7 lb ft)**	Not applied

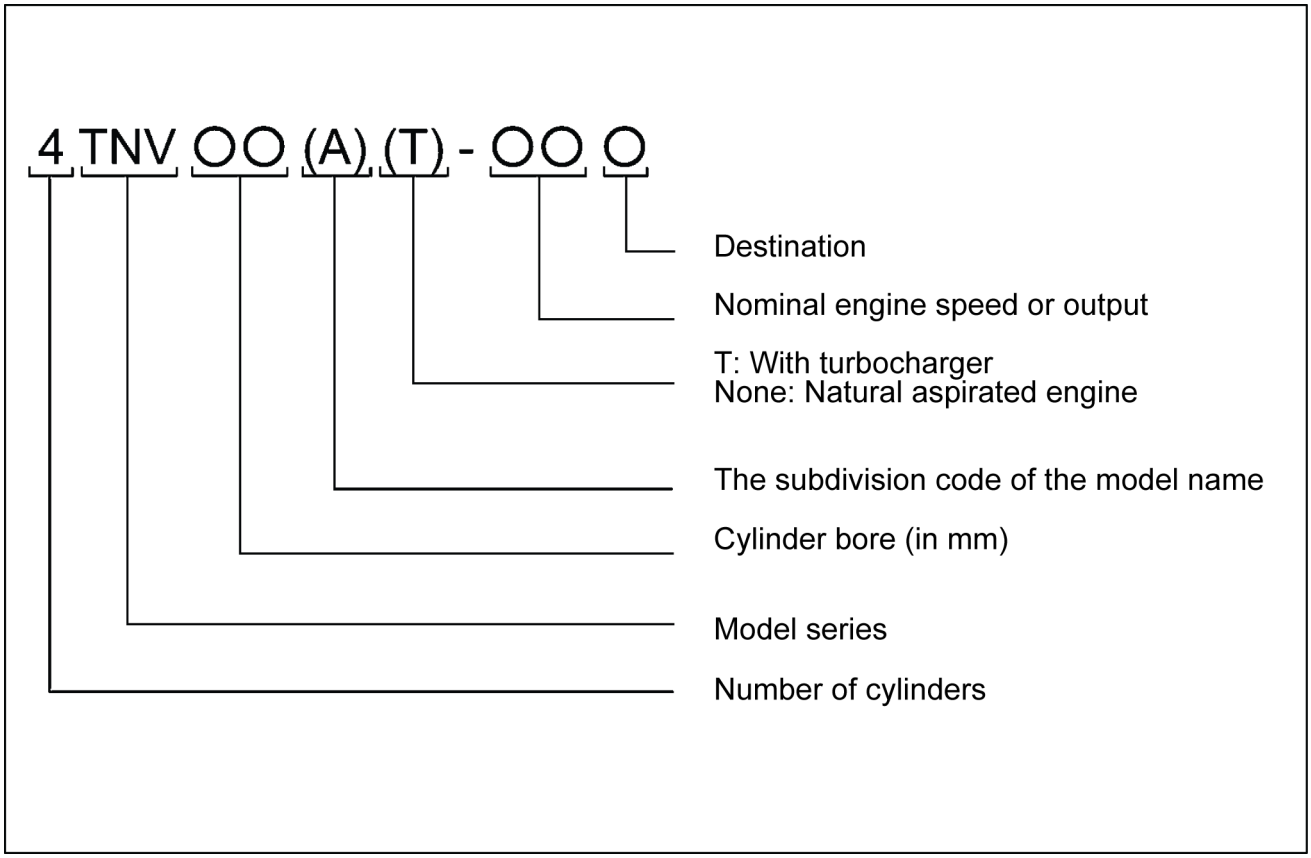
Tightening torques for standard bolts and nuts

Piece	Nominal thread diameter x pitch	Tightening torque	Observations
Hexagon bolt (7T) and nut	**M6 x 1**	**9.8 - 11.8 N·m (7.2 - 8.7 lb ft)**	Use 80% of the value at left when the tightening part is aluminum. Use 60% of the value at left for 4T bolts and lock nuts.
	M8 x 1.25	**22.6 - 28.4 N·m (16.7 - 20.9 lb ft)**	
	M10 x 1.5	**44.1 - 53.9 N·m (32.5 - 39.8 lb ft)**	
	M12 x 1.75	**78.4 - 98 N·m (57.8 - 72.3 lb ft)**	
	M14 x 1.5	**127.5 - 147.1 N·m (94.0 - 108.5 lb ft)**	
	M16 x 1.5	**215.7 - 235.4 N·m (159.1 - 173.6 lb ft)**	
Plug	**PT 1/8**	**9.8 N·m (7.2 lb ft)**	-
	PT 1/4	**19.6 N·m (14.5 lb ft)**	
	PT 3/8	**29.4 N·m (21.7 lb ft)**	
	PT1/2	**58.8 N·m (43.4 lb ft)**	
Pipe joint bolt	**M8**	**12.7 - 16.7 N·m (9.4 - 12.3 lb ft)**	-
	M10	**19.6 - 25.4 N·m (14.5 - 18.7 lb ft)**	
	M12	**24.5 - 34.3 N·m (18.1 - 25.3 lb ft)**	
	M14	**39.2 - 49.0 N·m (28.9 - 36.1 lb ft)**	
	M16	**49.0 - 58.8 N·m (36.1 - 43.4 lb ft)**	

NOTE: *Lubricating oil is not applied to threaded portion and seat surface.*

Engine - General specification

Engine nomenclature



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Engine specification class

Classification	Load	Engine speed	Available engine speed
CL	Constant load	Constant speed	**1500 - 1800 RPM**
VL	Variable load	Variable speed	**2000 - 3000 RPM**

* The engine specification class (CL or VL) is described in the specifications table.

Engine specification

1. The information described in the engine specifications tables (the next page and after) is for standard engine. To obtain the information about the engine installed in each machine, refer to the manual provided by the Manufacturer.
2. Engine rating conditions are as follows (**SAE J1349**, **ISO 3046/1**)

- Atmospheric condition: Ambient temperature **25 °C** (**77 °F**), atmospheric pressure **100 kPa** (**1 bar**), relative humidity 30%
- Fuel temperature: **25 °C** (**77 °F**) (fuel injection pump inlet)
- With cooling fan, air cleaner, exhaust silencer (**Yanmar** standard part)
- After running-in hours. Output allowable deviation: ± **3 %**

3TNV82A

Engine name		**3TNV82A**								
Engine specification class		CL		VL						
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine								
Combustion chamber		Direct injection								
Number of cylinders		3								
Cylinder bore stroke		**82 mm** (**3.2 in**) x **84 mm** (**3.3 in**)								
Displacement		**1.331 l** (**0.4 US gal**)								
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–						
	Output	**9.9 kW** (**13.5 Hp**)	**12.0 kW** (**16.3 Hp**)	–						
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**11.0 kW** (**15 Hp**)	**13.2 kW** (**17.9 Hp**)	**14.6 kW** (**19.9 Hp**)	**16.0 kW** (**21.8 Hp**)	**17.5 kW** (**23.8 Hp**)	**18.2 kW** (**24.7 Hp**)	**19.0 kW** (**25.8 Hp**)	**20.4 kW** (**27.7 Hp**)	**21.9 kW** (**29.8 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2375 RPM**	**2570 RPM**	**2675 RPM**	**2780 RPM**	**2995 RPM**	**3180 RPM**
Order of ignition		1-3-2-1(No. 1 cylinder on flywheel side)								
Power take-off		Flywheel								
Rotating direction		Counterclockwise (viewed from flywheel)								
Cooling system		Radiator								
Lubrication system		Forced lubrication with trochoid pump								
Starting system		Electrical system								
Appropriate fuel		**ASTM** fuel No. 2-D type TT								
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**		**NEW HOLLAND AMBRA SUPER GOLD 10W-30**						
Lubricant capacity (oil pan)*	Total	**3.6 l** (**1.0 US gal**)							**5.5 l** (**1.5 US gal**)	
	Effective	**1.2 l** (**0.3 US gal**)							**2.2 l** (**0.6 US gal**)	
Coolant volume (engine only)		**1.8 l** (**0.5 US gal**)								
Engine dimensions ** (with crankshaft Vpulley diameter and housing)	Overall length	**553 mm** (**21.8 in**)		**528 mm** (**20.8 in**)						
	Overall width	**489 mm** (**19.3 in**)								
	Overall height	**565 mm** (**22.2 in**)								
Engine mass (dry) ** (with flywheel housing)		**138 kg** (**304.2 lb**)		**128 kg** (**282.2 lb**)						
Fan (standard)		**335 mm** (**13.2 in**) O/D, 6 blades pusher type								
Fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)		**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)						

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

3TNV84

Engine name		**3TNV84**								
Engine specification class		CL	VL							
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine								
Combustion chamber		Direct injection								
Number of cylinders		3								
Cylinder bore stroke		**84 mm** (**3.3 in**) x **90 mm** (**3.5 in**)								
Displacement		**1.496 l** (**0.4 US gal**)								
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–						
	Output	**11.3 kW** (**15.4 Hp**)	**13.5 kW** (**18.4 Hp**)	–						
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**12.4 kW** (**16.86 Hp**)	**14.8 kW** (**20.1 Hp**)	**16.4 kW** (**22.3 Hp**)	**18.1 kW** (**24.6 Hp**)	**19.7 kW** (**26.8 Hp**)	**20.5 kW** (**27.9 Hp**)	**21.3 kW** (**29 Hp**)	**23.0 kW** (**31.3 Hp**)	**24.6 kW** (**33.4 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2400 RPM**	**2590 RPM**	**2690 RPM**	**2810 RPM**	**2995 RPM**	**3210 RPM**
Order of ignition		1-3-2-1(No. 1 cylinder on flywheel side)								
Power take-off		Flywheel								
Rotating direction		Counterclockwise (viewed from flywheel)								
Cooling system		Radiator								
Lubrication system		Forced lubrication with trochoid pump								
Starting system		Electrical system								
Appropriate fuel		**ASTM** fuel No. 2-D type TT								
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**	**NEW HOLLAND AMBRA SUPER GOLD 10W-30**							
Lubricant capacity (oil pan)*	Total	**6.7 l** (**1.8 US gal**)								
	Effective	**1.9 l** (**0.5 US gal**)								
Coolant volume (engine only)		**1.8 l** (**0.5 US gal**)								
Engine dimensions ** (with flywheel housing)	Overall length	**589 mm** (**23.2 in**)	**564 mm** (**22.2 in**)							
	Overall width	**486 mm** (**19.1 in**)								
	Overall height	**622 mm** (**24.5 in**)								
Engine mass (dry) ** (with flywheel housing)		**161 kg** (**354.9 lb**)	**155 kg** (**341.7 lb**)							
Fan (standard)		**335 mm** (**13.2 in**) O/D. 6 blades pusher type								
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)	**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)							

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

3TNV84T

Engine name		**3TNV84T**								
Engine specification class		CL		VL						
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine								
Combustion chamber		Direct injection								
Number of cylinders		3								
Cylinder bore stroke		**84 mm** (**3.3 in**) x **90 mm** (**3.5 in**)								
Displacement		**1.496 l** (**0.4 US gal**)								
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–						
	Output	**14.0 kW** (**19 Hp**)	**16.5 kW** (**22.4 Hp**)	–						
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**15.8 kW** (**21.48 Hp**)	**18.8 kW** (**25.6 Hp**)			**25.0 kW** (**34 Hp**)	**25.9 kW** (**35.2 Hp**)	**26.8 kW** (**36.44 Hp**)	**29.1 kW** (**39.6 Hp**)	**30.9 kW** (**42 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**			**2590 RPM**	**2700 RPM**	**2810 RPM**	**2995 RPM**	**3210 RPM**
Order of ignition		1-3-2-1(No. 1 cylinder on flywheel side)								
Power take-off		Flywheel								
Rotating direction		Counterclockwise (viewed from flywheel)								
Cooling system		Radiator								
Lubrication system		Forced lubrication with trochoid pump								
Starting system		Electrical system								
Appropriate fuel		**ASTM** fuel No. 2-D type TT								
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**		**NEW HOLLAND AMBRA SUPER GOLD 10W-30**						
Lubricant capacity (oil pan)*	Total	**6.7 l** (**1.8 US gal**)								
	Effective	**1.9 l** (**0.5 US gal**)								
Coolant volume (engine only)		**2.0 l** (**0.5 US gal**)								
Engine dimensions ** (with flywheel housing)	Overall length	**589 mm** (**23.2 in**)		**564 mm** (**22.2 in**)						
	Overall width	**486 mm** (**19.1 in**)								
	Overall height	**622 mm** (**24.5 in**)								
Engine mass (dry) ** (with flywheel housing)		**161 kg** (**354.9 lb**)		**155 kg** (**341.7 lb**)						
Fan (standard)		**350 mm** (**13.8 in**) O/D. 6 blades pusher type								
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)		**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)						

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

3TNV88

Engine name		**3TNV82A**								
Engine specification class		CL	VL							
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine								
Combustion chamber		Direct injection								
Number of cylinders		3								
Cylinder bore stroke		**88 mm** (**3.46 in**) x **90 mm** (**3.54 in**)								
Displacement		**1.642 l** (**0.43 US gal**)								
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–						
	Output	**12.3 kW** (**16.72 Hp**)	**14.8 kW** (**20.1 Hp**)	–						
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**13.5 kW** (**18.35 Hp**)	**16.3 kW** (**22.2 Hp**)	**18.0 kW** (**24.5 Hp**)	**19.9 kW** (**27.1 Hp**)	**21.6 kW** (**29.37 Hp**)	**22.6 kW** (**30.7 Hp**)	**23.5 kW** (**31.95 Hp**)	**25.2 kW** (**34.3 Hp**)	**27.1 kW** (**36.85 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2400 RPM**	**2590 RPM**	**2700 RPM**	**2810 RPM**	**2995 RPM**	**3210 RPM**
Order of ignition		1-3-2-1(No. 1 cylinder on flywheel side)								
Power take-off		Flywheel								
Rotating direction		Counterclockwise (viewed from flywheel)								
Cooling system		Radiator								
Lubrication system		Forced lubrication with trochoid pump								
Starting system		Electrical system								
Appropriate fuel		**ASTM** fuel No. 2-D type TT								
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**	**NEW HOLLAND AMBRA SUPER GOLD 10W-30**							
Lubricant capacity (oil pan)*	Total	**4.7 l** (**1.2 US gal**)							**7.2 l** (**1.9 US gal**)	
	Effective	**1.8 l** (**0.5 US gal**)							**3.5 l** (**0.9 US gal**)	
Coolant volume (engine only)		**2.0 l** (**0.5 US gal**)								
Engine dimensions ** (with flywheel housing)	Overall length	**589 mm** (**23.2 in**)	**564 mm** (**22.2 in**)							
	Overall width	**486 mm** (**19.1 in**)								
	Overall height	**622 mm** (**24.5 in**)								
Engine mass (dry) ** (with flywheel housing)		**155 kg** (**341.7 lb**)								
Fan (standard)		**350 mm** (**13.8 in**) O/D. 6 blades pusher type								
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)	**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)							

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

4TNV84

Engine name		**4TNV84**								
Engine specification class		CL		VL						
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine								
Combustion chamber		Direct injection								
Number of cylinders		4								
Cylinder bore stroke		**84 mm** (**3.31 in**) x **90 mm** (**3.54 in**)								
Displacement		**1.995 l** (**0.53 US gal**)								
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–						
	Output	**14.9 kW** (**20.26 Hp**)	**17.7 kW** (**24.1 Hp**)	–						
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**16.4 kW** (**22.3 Hp**)	**19.5 kW** (**26.5 Hp**)	**21.9 kW** (**29.8 Hp**)	**24.1 kW** (**32.8 Hp**)	**26.3 kW** (**35.76 Hp**)	**27.4 kW** (**37.3 Hp**)	**28.5 kW** (**38.75 Hp**)	**30.7 kW** (**41.7 Hp**)	**32.9 kW** (**44.73 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2400 RPM**	**2590 RPM**	**2700 RPM**	**2810 RPM**	**2995 RPM**	**3210 RPM**
Order of ignition		1-3-4-2-1(No. 1 cylinder on flywheel side)								
Power take-off		Flywheel								
Rotating direction		Counterclockwise (viewed from flywheel)								
Cooling system		Radiator								
Lubrication system		Forced lubrication with trochoid pump								
Starting system		Electrical system								
Appropriate fuel		**ASTM** fuel No. 2-D type TT								
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**		**NEW HOLLAND AMBRA SUPER GOLD 10W-30**						
Lubricant capacity (oil pan)*	Total	**7.4 l** (**2.0 US gal**)								
	Effective	**2.3 l** (**0.6 US gal**)								
Coolant volume (engine only)		**2.7 l** (**0.7 US gal**)								
Engine dimensions ** (with flywheel housing)	Overall length	**683 mm** (**26.9 in**)		**658 mm** (**25.9 in**)						
	Overall width	**498.5 mm** (**19.6 in**)								
	Overall height	**617 mm** (**24.3 in**)								
Engine mass (dry) ** (with flywheel housing)		**183 kg** (**403.4 lb**)		**170 kg** (**374.8 lb**)						
Fan (standard)		**370 mm** (**14.6 in**) O/D. 6 blades pusher type								
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)		**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)						

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

4TNV84T

Engine name		**4TNV84T**							
Engine specification class		CL		VL					
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine							
Combustion chamber		Direct injection							
Number of cylinders		4							
Cylinder bore stroke		**84 mm** (**3.31 in**) x **90 mm** (**3.54 in**)							
Displacement		**1.995 l** (**0.53 US gal**)							
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–					
	Output	**19.1 kW** (**25.97 Hp**)	**24.3 kW** (**33.0 Hp**)	–					
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**21.3 kW** (**29.0 Hp**)	**26.9 kW** (**36.6 Hp**)	**27.9 kW** (**37.9 Hp**)	**30.5 kW** (**41.5 Hp**)	**33.5 kW** (**45.55 Hp**)	**35.7 kW** (**48.54 Hp**)	**38.6 kW** (**52.5 Hp**)	**41.2 kW** (**56.02 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2400 RPM**	**2590 RPM**	**2810 RPM**	**2995 RPM**	**3210 RPM**
Order of ignition		1-3-4-2-1(No. 1 cylinder on flywheel side)							
Power take-off		Flywheel							
Rotating direction		Counterclockwise (viewed from flywheel)							
Cooling system		Radiator							
Lubrication system		Forced lubrication with trochoid pump							
Starting system		Electrical system							
Appropriate fuel		**ASTM** fuel No. 2-D type TT							
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**		**NEW HOLLAND AMBRA SUPER GOLD 10W-30**					
Lubricant capacity (oil pan)*	Total	**7.4 l** (**1.95 US gal**)							
	Effective	**3.4 l** (**0.90 US gal**)							
Coolant volume (engine only)		**2.7 l** (**0.70 US gal**)							
Engine dimensions ** (with flywheel housing)	Overall length	**683 mm** (**26.9 in**)		**649 mm** (**25.6 in**)					
	Overall width	**498.5 mm** (**19.6 in**)							
	Overall height	**713 mm** (**28.1 in**)							
Engine mass (dry) ** (with flywheel housing)		**183 kg** (**403.4 lb**)		**170 kg** (**374.8 lb**)					
Fan (standard)		**370 mm** (**14.6 in**) O/D. 6 blades pusher type							
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)		**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)					

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

4TNV88

Engine name		**4TNV88**								
Engine specification class		CL	VL							
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine								
Combustion chamber		Direct injection								
Number of cylinders		4								
Cylinder bore stroke		**88 mm** (**3.46 in**) x **90 mm** (**3.54 in**)								
Displacement		**2.190 l** (**0.58 US gal**)								
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–						
	Output	**16.4 kW** (**22.3 Hp**)	**19.6 kW** (**26.6 Hp**)	–						
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**	**2600 RPM**	**2800 RPM**	**3000 RPM**
	Output	**18.0 kW** (**24.5 Hp**)	**21.6 kW** (**29.4 Hp**)	**24.1 kW** (**32.8 Hp**)	**26.5 kW** (**36.0 Hp**)	**28.8 kW** (**39.16 Hp**)	**30.1 kW** (**40.92 Hp**)	**31.3 kW** (**42.56 Hp**)	**33.7 kW** (**45.8 Hp**)	**35.4 kW** (**48.13 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2400 RPM**	**2590 RPM**	**2700 RPM**	**2810 RPM**	**2995 RPM**	**3210 RPM**
Order of ignition		1-3-4-2-1(No. 1 cylinder on flywheel side)								
Power take-off		Flywheel								
Rotating direction		Counterclockwise (viewed from flywheel)								
Cooling system		Radiator								
Lubrication system		Forced lubrication with trochoid pump								
Starting system		Electrical system								
Appropriate fuel		**ASTM** fuel No. 2-D type TT								
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**	**NEW HOLLAND AMBRA SUPER GOLD 10W-30**							
Lubricant capacity (oil pan)*	Total	**5.8 l** (**1.53 US gal**)							**8.6 l** (**2.27 US gal**)	
	Effective	**2.3 l** (**0.61 US gal**)							**4.2 l** (**1.11 US gal**)	
Coolant volume (engine only)		**2.7 l** (**0.70 US gal**)								
Engine dimensions ** (with flywheel housing)	Overall length	**683 mm** (**26.9 in**)	**658 mm** (**25.9 in**)							
	Overall width	**498.5 mm** (**19.6 in**)								
	Overall height	**618 mm** (**24.3 in**)								
Engine mass (dry) ** (with flywheel housing)		**183 kg** (**403.4 lb**)	**170 kg** (**374.8 lb**)							
Fan (standard)		**370 mm** (**14.6 in**) O/D. 6 blades pusher type								
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**120 mm** (**4.7 in**) x **90 mm** (**3.5 in**)	**110 mm** (**4.3 in**) x **110 mm** (**4.3 in**)							

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.

4TNV94L

Engine name		**4TNV94L**					
Engine specification class		CL		VL			
Type		Vertical, in-line, 4-cycle, water-cooled diesel engine					
Combustion chamber		Direct injection					
Number of cylinders		4					
Cylinder bore stroke		**94 mm** (**3.7 in**) x **110 mm** (**4.33 in**)					
Displacement		**3.053 l** (**0.81 US gal**)					
Continuous rating	Rotation speed	**1500 RPM**	**1800 RPM**	–			
	Output	**26.1 kW** (**35.5 Hp**)	**31.3 kW** (**42.6 Hp**)	–			
Rated output	Rotation speed	**1500 RPM**	**1800 RPM**	**2000 RPM**	**2200 RPM**	**2400 RPM**	**2500 RPM**
	Output	**29.1 kW** (**39.6 Hp**)	**34.6 kW** (**47.0 Hp**)	**35.3 kW** (**48.0 Hp**)	**38.2 kW** (**51.9 Hp**)	**41.6 kW** (**56.56 Hp**)	**43.0 kW** (**58.46 Hp**)
Maximum no-load speed (±25)		**1600 RPM**	**1895 RPM**	**2180 RPM**	**2400 RPM**	**2590 RPM**	**2700 RPM**
Order of ignition		1-3-4-2-1(No. 1 cylinder on flywheel side)					
Power take-off		Flywheel					
Rotating direction		Counterclockwise (viewed from flywheel)					
Cooling system		Radiator					
Lubrication system		Forced lubrication with trochoid pump					
Starting system		Electrical system					
Appropriate fuel		**ASTM** fuel No. 2-D type TT					
Applicable lubricant		**NEW HOLLAND AMBRA SUPER GOLD 10W-30**		**NEW HOLLAND AMBRA SUPER GOLD 15W-40**			
Lubricant capacity (oil pan)*	Total	**10.2 l** (**2.69 US gal**)					
	Effective	**4.5 l** (**1.19 US gal**)					
Coolant volume (engine only)		**4.2 l** (**1.11 US gal**)					
Engine dimensions ** (with flywheel housing)	Overall length	**719 mm** (**28.3 in**)					
	Overall width	**498 mm** (**19.6 in**)					
	Overall height	**717 mm** (**28.2 in**)					
Engine mass (dry) ** (with flywheel housing)		**245 kg** (**540.1 lb**)			**235 kg** (**518.1 lb**)		
Fan (standard)		**410 mm** (**14.6 in**) O/D, 6 blades pusher type					
Crankshaft V pulley diameter and fan V-belt diameter (standard)		**130 mm** (**5.1 in**) x **130 mm** (**5.1 in**)					

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.

** Engine mass and dimensions without radiator.