

SERVICE MANUAL

Boomer™ 24 Tier 4B (final) Compact Tractor

Part number 47827505

1st edition English

January 2016

Sample manual. Download All 749 pages at:

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EN

Link Product / Engine

Product	Market Product	Engine
Boomer™ 24 Boomer 24, 4-Wheel Drive, ROPS, HST	North America	S3L2

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

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

International symbols

As a guide to the operation of the machine, various universal symbols have been utilized on the instruments, controls, switches, and fuse box. The symbols are shown below with an indication of their meaning.

 Thermostat starting aid	 Radio	 PTO	 Position Control
 Alternator charge	 KAM Keep alive memory	 N Transmission in neutral	 Draft Control
 Fuel level	 Turn signals	 Creeper gears	 Accessory socket
 Automatic Fuel shut-off	 Turn signals -one trailer	 Slow or low setting	 Implement socket
 Engine speed (RPM x 100)	 Turn signals -two trailers	 Fast or high setting	 %age slip
 Hours recorded	 Front wind-screen wash/wipe	 Ground speed	 Hitch lower (rear)
 Engine oil pressure	 Rear wind-screen wash/wipe	 Differential lock	 Hitch height limit (rear)
 Engine coolant temperature	 Heater temperature control	 Rear axle oil temperature	 Hitch height limit (front)
 Coolant level	 Heater fan	 Transmission oil pressure	 Hitch disabled
 Tractor lights	 Air conditioner	 FWD engaged	 Hydraulic and transmission filters
 Headlamp main beam	 Air filter blocked	 FWD dis-engaged	 Remote valve extend
 Headlamp dipped beam	 Parking brake	 Warning!	 Remote valve retract
 Work lamps	 Brake fluid level	 Hazard warning lights	 Remote valve float
 Stop lamps	 Trailer brake	 Variable control	 Malfunction! See Operator's Manual
 Horn	 Roof beacon	 Pressurised! Open carefully	 Malfunction! (alternative symbol)
	 Warning! Corrosive substance		

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.

Safety rules

**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.

Battery post, terminals and related accessories contain lead and lead compounds.

Wash hands after handling

BT09A213 1

Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND strongly recommends that you return all used batteries to a NEW HOLLAND dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



Mandatory battery recycling

NOTE: The following requirements are mandatory in Brazil.

Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling

Basic instructions - Shop and assembly

Shimming

For each adjustment operation, select adjusting shims and measure the adjusting shims individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value shown on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

1. Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
2. Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
3. Position the sealing lip facing the fluid.

NOTE: *With hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will move the fluid towards the inner side of the seal.*

4. Coat the sealing lip with a thin layer of lubricant (use oil rather than grease). Fill the gap between the sealing lip and the dust lip on double lip seals with grease.
5. Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
6. While you insert the seal, check that the seal is perpendicular to the seat. When the seal settles, make sure that the seal makes contact with the thrust element, if required.
7. To prevent damage to the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before you insert them in the seats. This will prevent the O-ring seals from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply a sealing compound on the mating surfaces when specified by the procedure. Before you apply the sealing compound, prepare the surfaces as directed by the product container.

Spare parts

Only use CNH Original Parts or NEW HOLLAND Original Parts.

Only genuine spare parts guarantee the same quality, duration, and safety as original parts, as they are the same parts that are assembled during standard production. Only CNH Original Parts or NEW HOLLAND Original Parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- Machine model (commercial name) and Product Identification Number (PIN)
- Part number of the ordered part, which can be found in the parts catalog

Protecting the electronic and/or electrical systems during charging and welding

To avoid damage to the electronic and/or electrical systems, always observe the following practices:

1. Never make or break any of the charging circuit connections when the engine is running, including the battery connections.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any machine attachment.
 - Position the welder ground clamp as close to the welding area as possible.
 - If you weld in close proximity to a computer module, then you should remove the module from the machine.
 - Never allow welding cables to lie on, near, or across any electrical wiring or electronic component while you weld.
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

NOTICE: *If you must weld on the unit, you must disconnect the battery ground cable from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*

5. Remove the battery ground cable. Reconnect the cable when you complete welding.

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.

Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately. Failure to comply could result in death or serious injury.

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Special tools

The special tools that NEW HOLLAND suggests and illustrate in this manual have been specifically researched and designed for use with NEW HOLLAND machines. The special tools are essential for reliable repair operations. The special tools are accurately built and rigorously tested to offer efficient and long-lasting operation.

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions

Basic instructions hardware

General

Your tractor has been built using metric hardware.

NOTE: *Be sure to use the hardware specified when using tapped holes, as trying to install a metric bolt in an inch thread, or an inch bolt in a metric thread, will damage the thread.*

Certain hardware must be tightened to specific torque specifications. If specific torque specifications are not noted, tighten the hardware to the standard torque chart specification listed in this manual.

Plating

Hardware used on NEW HOLLAND balers is plated with zinc chromate (gold color). Gold colored hardware has different torquing requirements from unplated or zinc plated (silver color) hardware because of the difference in the coefficient of friction of the plating material. The torque charts in this manual list the correct specifications for gold, silver, and unplated bolts.

Nut tightening

Whenever possible, the nut should be tightened, not the head of the bolt. When tightening using the bolt head, the clamp load can be lost because some of the torque applied twists the bolt instead of tensioning (stretching) it. The tension on the bolt is what holds the joint together.

Approximately 90% of the torque applied during assembly goes to overcoming friction between the parts. The other 10% is used to tension (stretch) the bolt. After assembly, the frictional forces disappear, which is the basis for the saying 'If it does not fail during assembly, it will not fail in service.' The bolt may later fail due to other factors, but not from being over tightened.

Locknuts

Most locknuts are coated with a special lubricant that is dry to the touch. Anytime a locknut is used, a lower than normal torque is required. Refer to the torque charts in this manual for specific values.

Jam nuts

When using a jam nut to lock a regular nut, the jam nut should be installed first and tightened to one half the recommended torque, then held in place while installing a regular nut to the recommended torque.

Thread lubrication

The addition of antiseize compound, Molykote, oil, graphite, or any other lubricant to a bolt decreases the friction between it and a nut. This makes it necessary to reduce the recommended torque to prevent over tensioning of the bolt. When using the torque charts in this manual, decrease the value by 20% whenever a lubricant is used.

Torque specification tables

Standard bolt hardware & hydraulic connector torques, specifications and information

This specification establishes general torque values to be used in bolted joints for metric and inch hardware. This specification is assumed to apply unless another specification (standard or specified requirement) is indicated in the repair manual.

NOTE: These Standards do not include electrical or hydraulic components, they are referred to in their specific charts or tables.

INCH 'NON-FLANGED' HARDWARE AND LOCKNUTS {MINIMUM HARDWARE TIGHTENING TORQUES}

IN NEWTON-METERS (FOOT-POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS								
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	Gr.B w/Gr5 Bolt	Gr.C w/Gr8 Bolt
1/4	6.2 (55)*	8.1 (72)*	9.7 (86)*	13 (112)*	14 (121)*	18 (157)*	8.5 (75)*	12.2 (109)*
5/16	13 (115)*	17 (149)*	20 (178)*	26 (229)*	28 (21)	37 (27)	17.5 (155)*	25 (220)*
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	31 (23)	44 (33)
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	50 (37)	71 (53)
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	76 (56)	108 (80)
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	111 (82)	156 (115)
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	153 (113)	215 (159)
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	271 (200)	383 (282)
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	437 (323)	617 (455)
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	654 (483)	924 (681)

NOTE: Torque values shown with * are inch pounds.

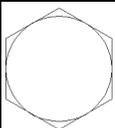
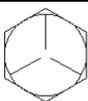
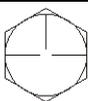
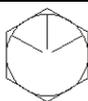
NOTICE: Values shown on these charts are minimum hardware tightening torques unless otherwise stated.

METRIC 'NON-FLANGED' HARDWARE AND LOCKNUTS {MINIMUM HARDWARE TIGHTENING TORQUES}

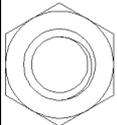
IN NEWTON-METERS (FOOT-POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS							
Nominal Size	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCK-NUTS
	Unplated	Plated w/ZnCr	Unplated	Plated w/ZnCr	Unplated	Plated w/ZnCr	Cl.8 w/Cl8.8 Bolt
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	18 (159)*	22 (195)*	28 (21)	31 (23)	40 (30)	19 (169)*
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	38 (28)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	66 (49)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	164 (121)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	330 (243)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	572 (422)

NOTE: Torque values shown with * are inch pounds.

SAE HARDWARE IDENTIFICATION CHART

Grade	1 or 2	5	8
SAE Markings for Bolts and Cap Screws		  	 

INTRODUCTION

SAE Markings for Hex Nuts			
Grade A-B-C Locknuts	A (No Notches)	B (Three Marks)	C (Six Marks)

METRIC HARDWARE IDENTIFICATION CHART

Class	5.8	8.8	10.9
			
Hex Cap Screw and Carriage Bolts	Located on the face or flat, on the cap of the bolt	Located on the face or flat, on the cap of the bolt	Located on the face or flat, on the cap of the bolt
Hex Nuts and Locknuts	Located on the face or flat of the nut	Located on the face or flat of the nut	Located on the face or flat of the nut

Metric cap screws and nuts are identified by the grade number stamped on the head of the cap screw or on the surface of the nuts. U.S. customary cap screws are identified by radial lines stamped on the head of the cap screw.

DEFINITIONS:

1. Break-Away Torque - Torque measured in the direction of tightening, the moment before the bolt/nut starts to turn.
2. Clamping Force - Force equal to the tension in the fastener that clamps the parts together.
3. Stabilized Torque - Torque measured on a joint that has had a settling time after fastener installation, and the torque is measured in the direction of tightening, the moment after the bolt/nut begins to turn.
4. Proof Load - Safe test load for fasteners, approximately 10% below the yield load.
5. Torque - Force on the wrench handle times the handle length.
6. Torque and Turn - Bolting method utilizing a torque sufficient to close the joint, followed by rotation of a specific angle to obtain the desired bolt stretch.
7. Torque to Yield - Bolting method that tightens the joint until 0.2% yield is detected. Generally requires a computer monitored tightening tool.
8. Target Torque - Torque specified by engineering, generally nominal torque.
9. Ultimate Load - Load when bolt failure occurs.
10. Yield Load - Load when 0.2% deformation occurs.

NOTE: Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original. When replacing cap screws, always use a cap screw of the same measurement and strength as the cap screw being replaced.

NOTE: Make sure the fasteners threads are clean, and that thread engagement is started. This will prevent them from failing when being tightened. Assure that joints that utilize threaded fasteners are properly tightened, and that they remain tight during the period of their intended usage.

NOTE: Tighten plastic insert or crimped steel-type lock nuts to approximately 50 % of table torque, applied to the nut, not the bolt head. Tighten toothed or serrated type lock nuts to their full torque value.

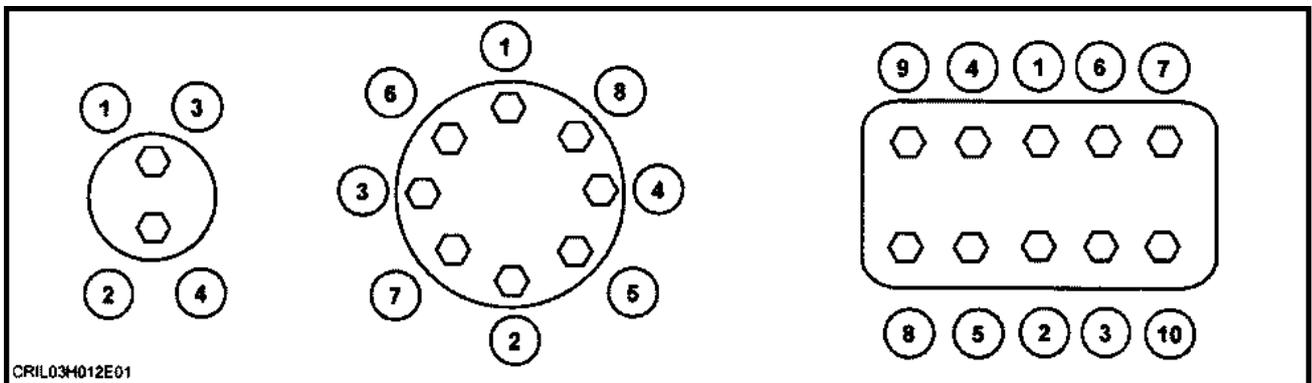
NOTE: Always use the torque values listed in the supplied charts in this section when values are not supplied in a procedure.

NOTE: DO NOT use these torque values when values are given in a specified procedure.

NOTE: Reuse of fasteners. Fasteners that have been tightened above yield point during assembly should not be reused after disassembly. They have been permanently deformed and the elastic range has been shifted closer to the ultimate tensile point.

NOTE: Torque and Turn is a recommended procedure for manufacturing and service when sophisticated tools are not available, especially for large diameter fasteners.

NOTE: Large diameter fasteners, unless specifically stated, should be tightened in sequence using the related torque chart below, at a low torque that is sufficient until the joint is closed. Each bolt is then rotated 90 degrees in sequence. Each bolt is then rotated another 90 degrees in sequence. The result is a clamp load above the yield point. This procedure results in a consistent clamp load. The fasteners should not be reused after disassembly.



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NOTE: Shown above is the suggested initial torque tightening sequences for general applications, tighten in sequence from item 1 through to the last item of hardware.

Hydraulic Hoses and Tubes

NOTE: Tightening the joint to the proper torque will keep it leak free, and prevent it from damaging the hose or fitting.

Always replace hoses and tubes with damaged cone ends or the end connections.

When installing a new hose, loosely connect each end and make sure the hose fits its desired location, without kinking or twisting, before tightening the connection. Tighten non-swivel end of hose first if applicable. Tighten the hose clamps enough to hold the hose without chafing but not so tight as to crush the ends.

Keep the hoses and tubes clear of moving parts and replace any hoses and fittings that have moved from their original positions over time. A hose with a chafed outer cover will allow moisture to get into the system. Concealed corrosion of the wire reinforcement will then occur along the hose length and result in hose failure.

Ballooning of the hose indicates internal leakage as the hose deteriorates. This condition can rapidly lead to hose failure.

Kinked, crushed, stretched or damaged hoses generally suffer internal structural damage that restricts fluid flow, reduces performance and ultimately causes the hose to fail.

Do not allow free moving, unsupported hoses or tubes to touch each other or related working surfaces. This causes chafing and reduces line life.

National Pipe Thread (NPT) Fittings

Before installing and tightening pipe fittings, clean the threads with a cleaning solvent or Loctite® brand cleaner. Apply the appropriate Loctite® brand sealant to all fittings including stainless steel, unless as otherwise stated. Generally Loctite® 567™ can be used for all fittings including stainless steel. Loctite® 565™ is used for most metal fittings. For high filtration/zero contamination systems use Loctite® 545™.

NPT PIPE FITTING TORQUE CHART

Thread Size	Torque (Maximum)
1/8" - 27	13 Nm (10 lb ft)
1/4" - 18	16 Nm (12 lb ft)
3/8" - 18	22 Nm (16 lb ft)
1/2" - 14	41 Nm (30 lb ft)
3/4" - 14	54 Nm (40 lb ft)

PIPE FITTING

Nom. SAE Dash Size	Thread Size	TFFT (Turns For Finger Tight)
-2	1/8 - 27	2.0 - 3.0
-4	1/4 - 18	2.0 - 3.0
-6	3/8 - 18	1.5 - 3.0
-8	1/2-14	2.0 - 3.0
-12	3/4 - 14	2.0 - 3.0
-16	1 - 11-1/2	1.5 - 2.5
-20	1-1/4 - 11-1/2	1.5 - 2.5
-24	1-1/2 - 11-1/2	1.5 - 2.5
-32	2 - 11-1/2	1.5 - 2.5

Apply sealant/lubricant to male pipe threads. The first two threads should be left uncovered to avoid system contamination. Screw pipe fitting into female pipe port to the finger tight position. Wrench tighten fitting to the appropriate turns from finger tight (TFFT) shown in table above, making sure the tube end of an elbow or tee fitting is aligned to receive incoming tube or hose fitting.

Installation of Adjustable Fittings in Straight Thread O Ring Bosses

1. Lubricate the O ring by coating it with light oil or petroleum jelly. Install the O ring in the groove adjacent to the metal backup washer which is assembled at the extreme end of the groove.

2. Install the fitting into the SAE straight thread boss until the metal backup washer contacts the face of the boss.

NOTE: Do not over tighten and distort the metal backup washer.

3. Position the fitting by turning out (counter clockwise) up to a maximum of one turn. Holding the pad of the fitting with a wrench, tighten the locknut and washer against the face of the boss.

4. When hose ends or connectors are made of materials other than steel, different torque values may be required.

O RING BOSS END FITTING OR LOCK NUT

Nom. SAE Dash Size	Thread Size	Newton-meters	lb/in	lb/ft
-6	9/16 - 18	48 to 54	432 to 480	
-8	3/4 - 16	70 to 78	612 to 684	
-10	7/8 - 14	102 to 114		75 to 84
-12	1-1/16 - 12	142 to 160		105 to 117
-16	1-5/16 - 12	237 to 254		175 to 187

37 DEGREE FLARE FITTING (STEEL HYDRAULIC FITTINGS)

Nom. SAE Dash Size	Tube OD/Hose ID	Thread Size	Newton-meters	lb/in	lb/ft
-2		5/16 - 24	8 to 9	72 to 84	
-3		3/8 - 24	11 to 12	96 to 108	
-4	6.4 mm	1/4 inch	7/16 - 20	14 to 16	120 to 144
-5	7.9 mm	5/16 inch	1/2 - 20	18 to 21	156 to 192
-6	9.5 mm	3/8 inch	9/16 - 18	27 to 33	240 to 300
-8	12.7 mm	1/2 inch	3/4 - 16	46 - 56	408 to 504
-10	15.9 mm	5/8 inch	7/8 - 14	77 to 85	684 to 756
-12	19.0 mm	3/4 inch	1-1/16 - 12	107 to 119	79 to 88
-14	22.2 mm	7/8 inch	1-3/16 - 12	127 to 140	94 to 103
-16	25.4 mm	1.0 inch	1-5/16 - 12	131 to 156	97 to 117
-20	31.8 mm	1-1/4 inch	1-5/8 - 12	197 to 223	145 to 165
-24	38.1 mm	1-1/2 inch	1-7/8 - 12	312 to 338	230 to 250

37 DEGREE FITTINGS

TUBE NUTS FOR 37 DEGREE FLARED FITTINGS							O RING BOSS PLUGS ADJUSTABLE FITTING LOCKNUTS, SWIVEL JIC-37° SEATS				
			TORQUE				TORQUE				
Size	Tubing OD		Thread Size	Newton·Meters		Foot Pounds		Newton·Meters		Foot Pounds	
	mm	in.		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
4	6.4	1/4	7/16-20	12	16	9	12	8	14	6	10
5	7.9	5/16	1/2-20	16	20	12	15	14	20	10	15
6	9.5	3/8	9/16-18	29	33	21	24	20	27	15	20
8	12.7	1/2	3/4-16	47	54	35	40	34	41	25	30
10	15.9	5/8	7/8-14	72	79	53	53	47	54	35	40
12	19.1	3/4	1-1/16-12	104	111	77	82	81	95	60	70
14	22.2	7/8	1-3/16-12	122	136	90	100	95	109	70	80
16	25.4	1	1-5/16-12	149	163	110	120	108	122	80	90
20	31.8	1-1/4	1-5/8-12	190	204	140	150	129	158	95	115

These torques are not recommended for tubes of **12.7 mm (0.5 in)** OD and larger with wall thickness of **0.89 mm (0.035 in)** or less. The torque is specified for **0.89 mm (0.035 in)** wall tubes on each application individually. Before installing and torquing 37° flared fittings, clean the face of the flare and threads with a cleaning solvent or Loctite® brand cleaner, and apply hydraulic sealant Loctite® 569™ to the 37° flare and the threads. Install fitting, and torque to specified torque, loosen fitting and re-torque to specifications.

General specification

Model Boomer 24 Hydrostatic	
Engine	
Type	Diesel
Model	S3L2
Engine gross horsepower	18.2 kW (24.4 Hp)
Cylinders	3
Bore	78 mm (3.07 in)
Stroke	92 mm (3.62 in)
Displacement	1.319 l (80.5 in³)
Compression ratio	22.0:1
Firing order	1-3-2
Low idle speed	970 - 1000 RPM (970 - 1000 RPM)
Maximum speed:	
High idle	2700 ±20 RPM
Rated	2500 RPM
Valve clearance (cold)	
Intake	0.25 mm (0.010 in)
Exhaust	0.25 mm (0.010 in)
Capacities	
Fuel tank	25.0 l (6.6 US gal)
Cooling system	1.8 L (1.9 US qt) NEW HOLLAND AMBRA AGRIFLU
Engine crankcase:	
With filter	4.2 l (4.4 US qt) NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 15W-40 NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 10W-30
Rear axle and transmission (Includes hydraulics)	20 l (5.3 US gal) NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL
Front axle	3.0 l (3.2 US qt) NEW HOLLAND AMBRA HYPOIDE 90
Cooling system	
Type	Pressurized Liquid with recirculating bypass
Water pump:	
Type	Centrifugal
Drive	V-Belt
Belt deflection	10 - 13 mm (0.4 - 0.5 in) when 10 kg (22 lb) pressure is applied midway between belt pulleys
Fan diameter	340 mm (13.4 in)
Thermostat:	
Start to open	76.5 °C (170 °F)
Fully open	90 °C (194 °F)
Radiator cap	88.25 kPa (12.8 psi)
Electrical system	
Alternator	12 V, Heavy Duty, 50 A
Battery	12 V, w/ negative ground, 430 CCA, BCI Group 85
Starting Motor	Solenoid pre-engaged reduction
Fuel system	
Fuel type	Diesel
Type of fuel to use if above 4 °C (40 °F)	No. 2-Diesel, Cetane rating: minimum 40

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Model Boomer 24 Hydrostatic	
Type of Fuel to Use if Below 4 °C (40 °F)	No. 1-Diesel, Cetane rating: minimum 40
Injection pump:	
Type	In-Line
Timing	16° BTDC
Injector pressure	13727 kPa (1991 psi)
Brakes	
Type	Wet disc
2 Disc per side	114 mm (4.5 in) x 84 mm (3.3 in)
Steering	
Type	Power
Turns lock-to-lock:	3.92 L to R 3.30 R to L
Turn angle	Right turn 46–49° Left turn 30–34°
Front wheel	
Toe-In	0 - 7.65 mm (0 - 0.30 in)
Turning radius w/o brakes:	
Four Wheel Drive (FWD)	2591 mm (102 in) Left turn 2591 mm (102 in) Right turn
Steering pump flow	7.0 l/min (1.85 US gpm)
Steering system relief valve setting	8826 kPa (1280 psi)
Power take-Off (PTO)	
Type	Independent
Shaft size:	
Rear PTO	35 mm (1.4 in)
Mid PTO	25.4 mm (1 in)
Engine speed for 540 RPM Rear PTO Operation	2600 RPM
Engine speed for 2000 RPM Mid PTO Operation	2660 RPM
Horsepower PTO observed	12.4 kW (16.7 Hp)
Direction of Rotation (As viewed from rear of tractor)	
Rear PTO	Clockwise
Mid PTO	Clockwise
Hydraulic lift system	
Type	Open center
Pump type	Gear
Pump capacity	25.5 l/min (6.7 US gpm)
System relief valve setting	14706 kPa (2133 psi)
Lift capacity at lift arm ball ends	650 kg (1433 lb)
Lift capacity at 610 mm (24 in) behind lift arm ball ends	480 kg (1058 lb)
Transmission speeds (Hydrostatic)	
2500 RPM Engine rated speed with 12 x 16.5 (R4) Rear tires	
Gear position:	
Forward low	0 - 7.9 km/h (0 - 4.9 mph)
Forward high	0 - 18.2 km/h (0 - 11.3 mph)
Reverse low	0 - 4.9 km/h (0 - 3.0 mph)

INTRODUCTION

Model Boomer 24 Hydrostatic	
Reverse high	0 - 11.4 km/h (0 - 7.1 mph)
Cast iron weights	
Front end:	
With weight extension bracket installed.	(5) weights @ 26 kg (60 lb) each
Rear wheel weights:	
R-4 Tires	NA
Turf Tires	NA
Draw bar	
Extendible	Standard
Tires	
Front:	
Turf:	23 x 8.50-12, 4PR, R3
Industrial:	23 x 8.50-12, 4PR, R4
Rear:	
Turf	33 x 12.00-16.5, 4PR, R3
Industrial	12.00-16.5, 6PR, R4
Wheel bolt torques	
Front wheel --- Disc-to-hub:	93 - 108 N·m (69 - 80 lb ft)
Rear wheel --- Disc-to axle	176 - 196 N·m (130 - 145 lb ft)
Roll Over Protection System (ROPS) Attaching bolt torques	
ROPS to rear axle	85 N·m (63 lb ft)
Seat belt	49 N·m (36 lb ft)

Capacities

System	Capacities
Fuel tank	25.0 l (6.6 US gal)
Cooling system	3.8 L (4.0 US qt) NEW HOLLAND AMBRA AGRIFLU
Engine crankcase:	
With filter	4.2 l (4.4 US qt) NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 15W-40 NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 10W-30
Rear axle and transmission (Includes hydraulics)	20 l (5.3 US gal) NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL
Front axle	3.0 l (3.2 US qt) NEW HOLLAND AMBRA HYPOIDE 90

General specification

Fatty Acid Methyl Ester Biodiesel (Biodiesel Fuel) consists of a family of fuels derived from vegetable oils treated with methyl esters.

NOTICE: Biodiesel Fuel blends are approved for your engine only if they comply with **EN14214** Specification Standards or **ASTM D6751**.

NOTICE: It is imperative that you check which blend is approved for your engine with your NEW HOLLAND dealer. Be aware that the use of Biodiesel Fuel that does not comply with the Standards mentioned above could lead to severe damage to the engine and fuel system of your machine. The use of fuels that are not approved may void NEW HOLLAND Warranty coverage.

Biodiesel fuel usage conditions

NOTICE: The Biodiesel Fuel must meet the fuel Specification mentioned above.

Biodiesel Fuel must be purchased from a trusted supplier that understands the product and maintains good fuel quality. Biodiesel Fuel must be pre-blended by the supplier. Mixing Biodiesel Fuels on-site can result incorrect mixture that can lead to problems with both engine and fuel system.

Engine performance is affected by the use of Biodiesel Fuel. There may be up to **12 %** reduction in power or torque depending on the blend used.

NOTICE: DO NOT modify the engine and/or injection pump settings to recover the reduced performance.

The reduced power must be accepted if using any Biodiesel Fuel blend.

Some modification may be required to allow your engine to run Biodiesel Fuel. Consult you dealer for complete information on these modifications.

Biodiesel Fuel has a higher cloud point than Diesel Fuel.

NOTICE: The use of high Biodiesel Fuel blends are not recommended in cold weather conditions.

With Biodiesel Fuels, it may be necessary to change the engine oil, engine oil filter and fuel filter elements more frequently than with Diesel Fuels. Biodiesel Fuel can remove rust and particles from the inside of on-site fuel storage tanks that would normally adhere to the sides of the tank. Like particle deposits that commonly occur with Diesel Fuel, these particles can become trapped by the machine fuel filters, causing blockage and shortening filter life. In cold weather, this is more likely to happen. Consult your NEW HOLLAND dealer for information on cold weather operation and proper maintenance intervals when using any Biodiesel Fuel blend.

When handling Biodiesel Fuel, care must be taken not to allow water into the fuel supply. Biodiesel Fuel will actually attract moisture from the atmosphere.

Fuel tanks must be kept as full as possible to limit the amount of air and water vapors in them. It may be necessary to drain the fuel filter water tap more frequently.

Potential oxidation and stability could be a problem with the fuel stored in the machine.

NOTICE: Machines must not be stored for more than three months with Biodiesel Fuel blends in the fuel system.

If long storage periods are necessary, the engine must run on Diesel Fuel for 20 hours to flush the Biodiesel Fuel out of the engine fuel system prior to storage.

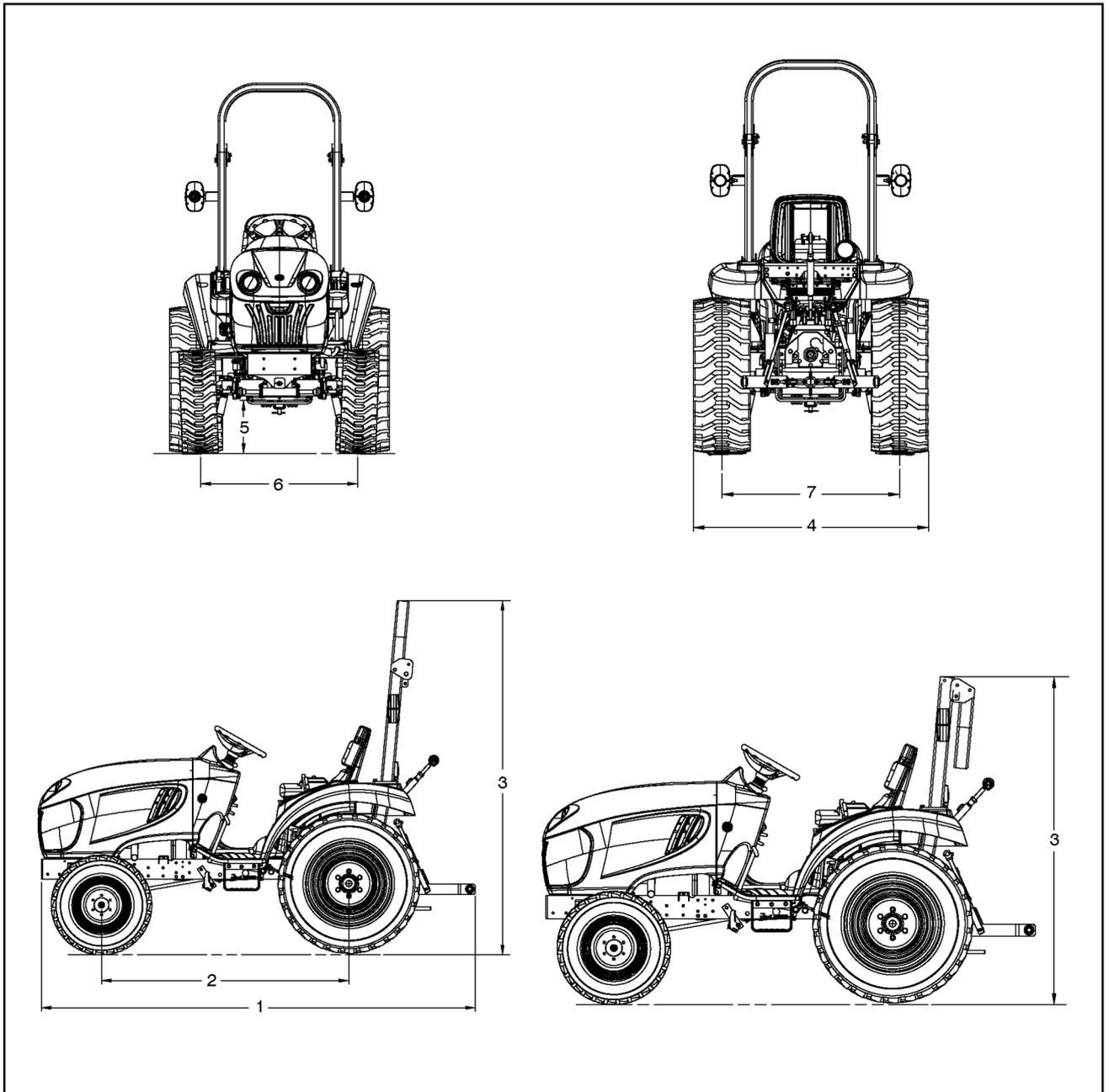
NOTICE: Biodiesel Fuel must not be stored in on-site storage tanks for more than three months.

Any spillage of Biodiesel Fuel must be cleaned up immediately before it can cause damage to the environment and the paint finish of the machine.

Before using Biodiesel Fuel blends you should consult with your dealer to receive full information about the approved blend for your machine and any detailed conditions of its usage.

NOTICE: Be aware that not fulfilling the requirements and conditions of Biodiesel Fuel usage will void your machine's NEW HOLLAND Warranty coverage.

Dimension



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NOTE: See Figure 1 for the following tables.

Model Boomer 24	
(1) - Length:	
Four Wheel Drive (FWD):	2632 mm (103.6 in)
(2) - Wheel base:	
FWD	1500 mm (59.0 in)
(3) - Top of Roll Over Protection System (ROPS) - Folding:	
Ind. tires: 12.00 - 16.5	
UP position	2173 mm (85.5 in)
DOWN position	1768 mm (69.6 in)

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Model Boomer 24

Turf tires:
33 x 12.00 - 16.5

UP position **2161 mm (85.1 in)**

DOWN position **1756 mm (69.2 in)**

(4) - Width:

Rear axle - Outside to outside of tire:

Ind. tires:
12.00 - 16.5 **1247 mm (49.1 in)**

Turf tires:
33 x 12.00 - 16.5 **1255 mm (49.4 in)**

(5) - Minimum ground clearance (under drawbar support):

Ind. tires:
12.00 - 16.5 **241 mm (9.5 in)**

Turf tires:
33 x 12.00 - 16.5 **229 mm (9.0 in)**

Model Boomer 24

Wheel tread settings:

(6)-Front:

Ind. tires:
23 x 8.50 - 12 **912 mm (36.0 in)**

Turf tires:
23 x 8.50 - 12 **912 mm (36.0 in)**

(7)-Rear:

Ind. tires:
12.00 - 16.5 **940 mm (37.0 in)**

Turf tires:
33 x 12.00 - 16.5 **944 mm (37.3 in)**

Weight : less tires:

HST Four Wheel drive (FWD) **626 kg (1380 lb)**

Consumables

Lubricant	Type and description	Part number	Container size
Engine oil	NEW HOLLAND AMBRA SUPER GOLD 10W-30	104104A1	0.946 l (1 US qt)
		139033A1	3.785 l (1 US gal)
		104106A1	18.93 l (5 US gal)
	NEW HOLLAND AMBRA SUPER GOLD 15W-40	407410R2	0.946 l (1 US qt)
		139034A1	3.785 l (1 US gal)
		407414R2	18.93 l (5 US gal)
Transmission/hydraulic oil	NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL	404787A1	18.93 l (5 US gal)
	NEW HOLLAND AMBRA F200A HYDRAULIC FLUID	B17805	18.93 l (5 US gal)
Front axle/gear oil	NEW HOLLAND AMBRA HYPOIDE 90	87299775	0.946 l (1 US qt)
		87299136	18.93 l (5 US gal)
Grease	NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE	132096A1	Tube 14 oz
Coolant	Ethylene Glycol coolant concentrate		