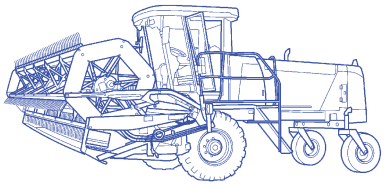

NEW HOLLAND

SERVICE MANUAL

18HB
21HB
25HB
30HB
36HB

NEW HOLLAND
AGRICULTURE
SERVICE

84157369 5/09
Replaces 87519332

18HB, 21HB, 25HB, 30HB, 36HB SERVICE MANUAL CONTENTS

The sections used through out all New Holland product Service manuals may not be used for each product. Each Service manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Service manual and which sections are in each book.

The sections listed above are the sections utilized for the 18HB, 21HB, 25HB, 30HB and 36HB.

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Chapter 1 - General Information

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SECTION 35 - HYDRAULICS

Chapter 1 - Draper Drive

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Chapter 2 - Windrower Headers

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Chapter 3 - Schematics and Troubleshooting

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CONTENTS

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SECTION 58 - ATTACHMENTS

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SECTION 00 - GENERAL INFORMATION

Chapter 1 - General Information

CONTENTS

PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

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

DANGER

This word "DANGER" indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

M1169

WARNING

This word "WARNING" indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

M1170

CAUTION

This word "CAUTION" indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

M1171

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

MACHINE SAFETY

The precautionary statement ("**NOTICE**") is followed by specific instructions. This statement is intended for machine safety.

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

INFORMATION

NOTICE: *Instructions used to identify and present supplementary information.*

SAFETY

⚠ PRECAUTIONARY STATEMENTS ⚠

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read the following precautions before operating this equipment. Equipment should be operated only by those who are responsible and instructed to do so.

Carefully review the procedures given in this manual with all operators. It is important that all operators be familiar with and follow safety precautions.

1. **When transporting the machine on public roads, make sure the machine has lights in compliance with ASAE S279.13 standard and the machine is in compliance with all local road regulations.**
2. **Before operating the unit, be sure that it is assembled correctly and in good operating condition.**
3. **If machine maintenance work, repairs or adjustments must be done in the field, they should be done at a spot where the ground is firm and level. Turn off the tractor and apply the parking brake. Use the proper tools and wear suitable protection (safety goggles, work gloves, etc.).**
4. **If any maintenance work, repairs or adjustments are done which require disassembly, always make sure that everything is reassembled or retightened as it had been prior to making repairs or adjustments.**
5. **Follow the schedule provided for maintenance. By following these suggestions, it will be possible to keep the machine operating safely and efficiently, to the benefit of the user.**
6. **General checking of bolts, security pins and split pins must be carried out initially after the first 8 hours of use. Subsequently, check every 50 hours and whenever the machine is laid up for extended periods.**
7. **Before applying pressure to the system, be sure all connections are tight and that hoses and connections are not damaged.**
8. **Fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Always protect the skin and eyes from escaping fluid under pressure. If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately.**
9. **Do not weld on wheels. Welding on wheels may cause high stress and a wheel failure.**
10. **Do not weld on wheels with a mounted tire. Welding on wheels with a mounted tire may cause the tire to burst, causing serious injury or death.**
11. **Before leaving the cab, engage the parking brake, shut down the engine, and wait for all moving parts to stop.**
12. **Always keep bystanders away from machine during operation. Rotating elements may cause serious bodily injury.**
13. **Do not attempt to remove material from the draper header while it is in operation. Shut off the tractor and allow all rotating parts to stop before leaving the tractor.**
14. **Be sure the tractor header lift locks are engaged before working on or around a raised header.**
15. **Engage the lift locks or lower the header to the ground before performing any maintenance or lubrication.**
16. **Replace any damage knives or knife hardware immediately to prevent an accident.**
17. **Always wear heavy canvas or leather gloves when working with the knife.**
18. **Always engage the reel lift cylinder locks and header lift locks before working under or around a raised reel. Do not rely on the windrower hydraulic system for support. A rupture or a leak in any part of the system will allow the table to lower if the proper stops are not in place.**
19. **When mounting to a windrower, make sure the ends of the lift arms are securely in the mounting brackets under the header. Failure to do so could allow the header to fall or slide off the arms, causing damage to the header or personal injury.**

GENERAL SAFETY

YOU are responsible for the safe operation and maintenance of your model HB Series draper header. YOU must ensure that you and anyone else who is going to operate, maintain or work around the draper header be familiar with the operating and maintenance procedures and related safety information contained in this manual.

Remember YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

Review the operating instructions for this header at least once a year per OSHA regulations 1928.57. Know the meaning and location of each decal before operating the draper header.

Watch for this symbol in this manual and on the draper header:

It will draw your attention to hazards that could cause injury or death.

1. Keep the hydraulic pump, gearbox and motors clean of all chaff and straw to prevent any possibility of fire.
2. Carry a multipurpose fire extinguisher in the machine in case of fire and know how to use it. Check the extinguisher regularly and keep it maintained.
3. Provide a first aid kit in the cab for emergencies and know how to use it.
4. Wear appropriate protective gear.
    - A hard hat
    - Protective shoes with slip resistant soles
    - Protective glasses or goggles
    - Leather gloves
    - Hearing protection
    - Respirator or filter mask
5. Do not allow any one to ride on the header while it is in motion.
6. Make certain that the park brake is engaged, and the power unit is in neutral before starting the engine.
7. Clear the area of bystanders, especially small children before starting the power unit.
8. Do not allow anyone to operate the header who has not been instructed in how to operate the machine.
9. All operators should familiarize themselves with the safety section in the power unit operator's manual.
10. Some pictures or illustrations may not show protective shields in place. Make certain that all protective shields are in place before operating the machines.

OPERATING AND MAINTENANCE SAFETY

1. STOP the power unit, engage the parking brake, place the power unit in neutral, remove the key, and wait for all movement to stop before leaving the cab.
2. Either lower both the table and reel or raise the header to its full height and use platform locks before leaving the power unit or servicing the header. If working under reel, use reel cylinder locks. A sudden loss of hydraulic pressure could cause the header and reel to fall.
3. NEVER operate the power unit and the header while tired, sick, or impaired.
4. DANGER, DO NOT stand between the power unit and the header while raising or lowering the header.
5. Do not operate the header in crowded or confined areas.
6. Ensure that all the pressure is released from the hydraulic lines before repairing. Replace or repair damaged hoses immediately.
7. Care should be taken when maintaining the knife. The sickle sections are very sharp and can easily cause injury. Use heavy leather or canvas gloves when working with the knife.

HYDRAULIC SAFETY

Release all the pressure from the hydraulic lines before making any repairs. Replace or repair damaged hoses immediately.

⚠ WARNING ⚠

Hydraulic oil leaking under pressure can penetrate the skin and cause infection or other injury.

To Prevent Personal Injury:

- **Relieve all hydraulic pressure, before disconnecting fluid lines.**
- **Before applying pressure, make sure all connections are tight and components are in good condition.**
- **Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.**
- **If injured by leaking fluid, seek medical attention immediately.**

Failure to comply could result in death or serious injury.

M587A

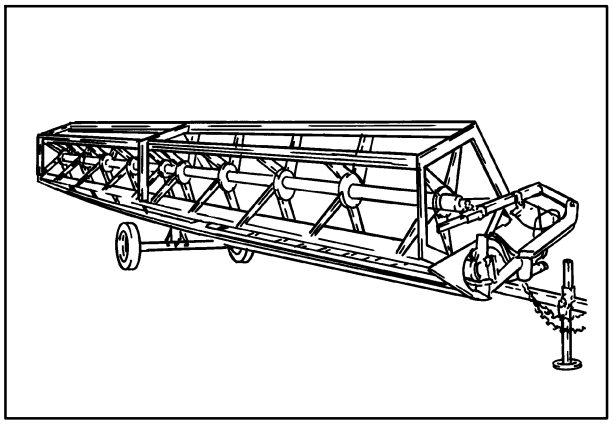
WELDING SAFETY

DO NOT weld on wheels. Welding on wheels may cause high stress and wheel failure.

DO NOT weld on wheels with a mounted tire. Welding on wheels with a mounted tire may cause the tire to burst, causing serious injury or death.

BEFORE TRANSPORTING

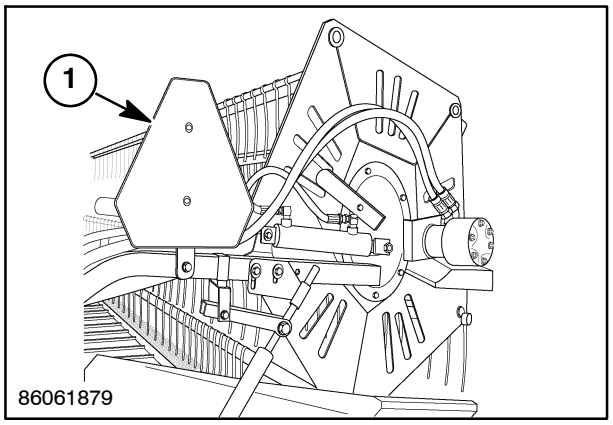
1. Do a complete walk–around visual check to be sure there are no loose parts or components.
2. Check wheel bolts to make sure they are tight.
3. Check transport tire pressure. Recommended pressure is 3.4 bar (50 psi) for 225/75R15 radials.
4. Check spindle and hitch lockpins to make sure they are in place and securely fastened.
5. Do a visual check of all hoses to make sure they are securely tied so they will not pinch or drag during transporting.
6. Be sure hitch tongue and safety chain are fastened securely to the header and to the transporting vehicle.
7. Hand check all reel mounting, reel drive, and adapter assembly bolts to be sure no bolts/nuts are loose.



1

TRANSPORT SAFETY

1. Transport the header with the SMV (Slow Moving Vehicle) sign, 1, displayed on the rear of the header and use your hazard lights if the laws permit. Check local road laws before transporting.
2. When transporting the header on the road, be aware of the width of the header.
3. For long distance transporting, put the header into full transport.
4. Remove crop dividers and divider pipes.
5. Do not transport the machine at night, at dawn, or at dusk.
6. Do not exceed 32 km/h (20 mph) during transport.



2

TRANSPORTING CHECKS

1. If you are towing your header to a distant destination, stop after the first 5 – 10 kilometers (3 – 6 miles) and check to make sure the wheel bolts are tight and the wheel hubs are not hot. Make periodic checks 50 – 60 km (30 – 35 miles) if towing the header long distances.
2. Check the hitch bolt and safety chain periodically to make sure they are secure.

Towing Restrictions on Public Roads

Check with local and state authorities and follow all regulations concerning towed equipment on public roads.

Do not tow equipment, such as a draper header, that does not have brakes:

- at speeds over 32 km/h (20 mph); or
- that when fully loaded weighs more than 1.5 ton (3300 lb) and more than 1.5 times the weight of the towing unit.

WINDROWER MOUNTING

These mounting instructions will help you mount your HB draper header onto the windrower in a safe and easy manner. Follow the instructions in the given order, or possible difficulties may arise.

Windrower Terminology:

Front - Cab end of windrower

Rear - Engine end of windrower

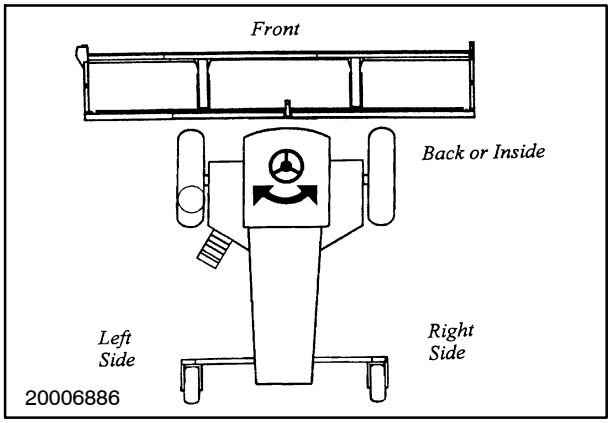
Left and Right - As seen when sitting in the driver's seat, facing the header.

Header Terminology:

Front - Cutter bar side

Rear - Windrower attaching side

Left and Right - As seen when sitting in the driver's seat facing the header when mounted on the windrower or standing at the back of the header facing toward the cutter bar.



3

WINDROWER HEADER

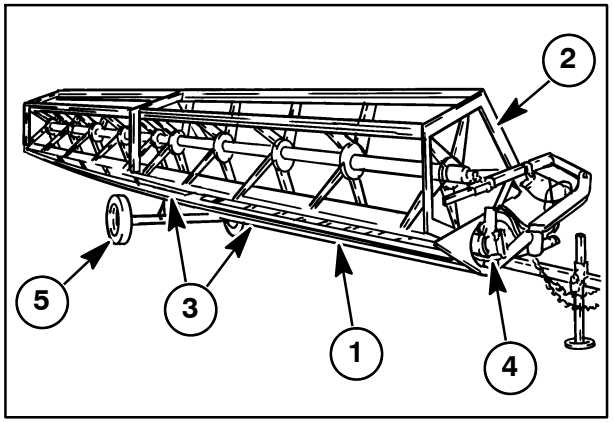
The HB draper header used with a windrower consists of the main components listed below. The hydraulic pressure to run the header comes from the header drive pump of the windrower. A hydraulic motor powers the epicycle knife drive to cut the crop. The reel lays the crop onto the drapers. The drapers carry the crop to the opening of the header to create a windrow.

When in field position, flotation is achieved through the use of the hydraulic flotation on the windrower and optional caster gauge wheels on the header.

Principal Components

1. Cutter Bar
2. Reel
3. Drapers
4. Knife Drive
5. Transport Axle

NOTICE: *The HB draper header cannot be used on HW300, HW320, HW340 or prior model windrowers.*



4

PRODUCT IDENTIFICATION NUMBER (PIN)

The PIN is stamped on a metal tag, 1, located on the back of the upper frame, on the left hand side of the header.

The PIN will give the following information:

1. The first two numbers give the length in feet.
2. The next two letters represent the swather model.
3. The next two numbers represent the year built.

   Example:

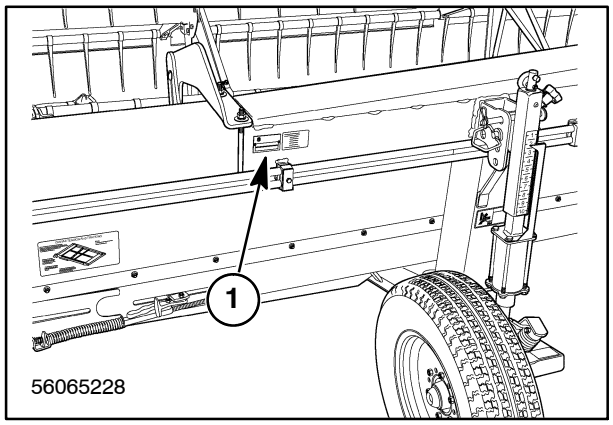
   36WS091234

   36 = thirty-six feet long

   WS = swather model

   09 = built in 2009

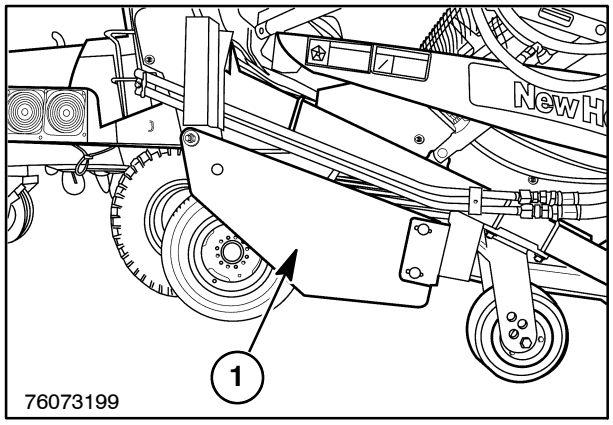
   1234 = sequential numbering



5

BALLAST SYSTEM

The HB Series Draper Header is equipped with steel plates, 1, attached to one end of the header to act as a ballast for the other side. This ballasting helps balance the draper for the flotation system on the Windrower.



6

Single Swath

Table Condition	Number of Plates	Counter-weight Side
Single knife drive w/out transport		
18 FT	n/a	n/a
21 FT	4	Left
25 FT	0	Right
30 FT	0	Right
36 FT	0	Right

Table Condition	Number of Plates	Counter-weight Side
Double knife drive w/out transport		
18 FT	n/a	n/a
21 FT	0	Left
25 FT	0	Left
30 FT	0	Left
36 FT	0	Left

Table Condition	Number of Plates	Counter-weight Side
Single knife drive with transport		
18 FT	n/a	n/a
21 FT	0	Right
25 FT	0	Right
30 FT	0	Right
36 FT	0	Right

Table Condition	Number of Plates	Counter-weight Side
Double knife drive with transport		
18 FT	1	Left
21 FT	n/a	n/a
25 FT	0	Left
30 FT	3	Left
36 FT	1	Left

NOTICE: *n/a = not available*

Double Swath

Table Condition	Number of Plates	Counter-weight Side
Single knife drive w/out transport		
21 FT	8 (Plus 4 inside)	Left
25 FT	8	Left
30 FT	8	Left

Table Condition	Number of Plates	Counter-weight Side
Double knife drive w/out transport		
21 FT	2	Left
25 FT	1	Left
30 FT	0	Left

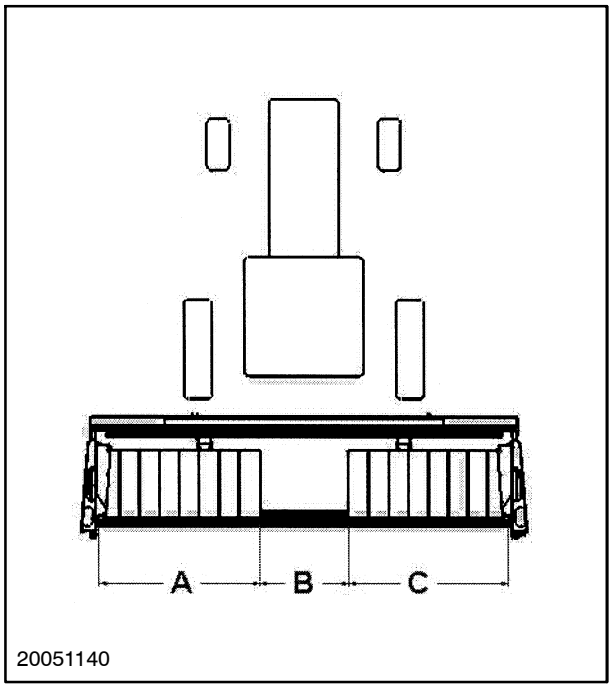
NOTICE: *Transport package is available when ordering a double swath table, but the transport tongue MUST BE REMOVED for proper operation.*

NOTICE: *18 ft models are not available in a double swath table configuration.*

HB SERIES SWATHER DELIVERY KITS

Single Swath Delivery

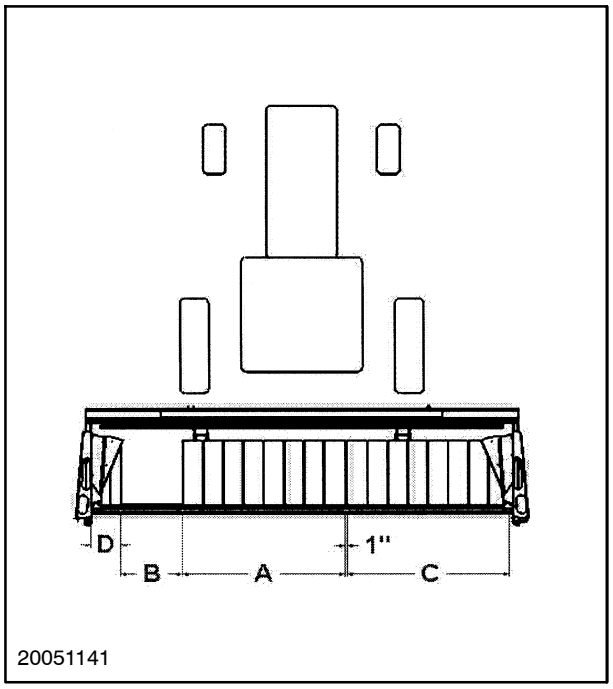
Models	A	B	C
18HB 5.5 m (18 ft)	80 inch	50 inch	80 inch
21HB 6.4 m (21 ft)	99 inch	50 inch	99 inch
25HB 7.6 m (25 ft)	118 inch	56 inch	118 inch
	104 inch*	68 inch	118 inch
	104 inch*	80 inch	104 inch*
30HB 9.1 m (30 ft)	150 inch	56 inch	150 inch
	136 inch*	68 inch	150 inch
	136 inch*	80 inch	136 inch*
36HB 11 m (36 ft)	189 inch	56 inch	189 inch
	175 inch*	68 inch	189 inch
	175 inch*	80 inch	175 inch*



7

Double Swath Delivery

Models	A	B	C	D
21HB 6.4 mm (21 ft)	99 inch	45 inch	99 inch	6 inch
	99 inch	50 inch S	99 inch	–
25HB 7.6 mm (25 ft)	118 inch	54 inch	118 inch	6 inch
	118 inch	56 inch S	118 inch	–
	104 inch*	68 inch C	118 inch	–
	104 inch*	80 inch C	104 inch*	–
30HB 9.1 mm (30 ft)	150 inch	50 inch	150 inch	6 inch
	150 inch	56 inch S	150 inch	–
	136 inch*	68 inch C	150 inch	–
	136 inch*	80 inch C	136 inch*	–



8

NOTICE: *Dimension "D" is to edge of the deflector.*

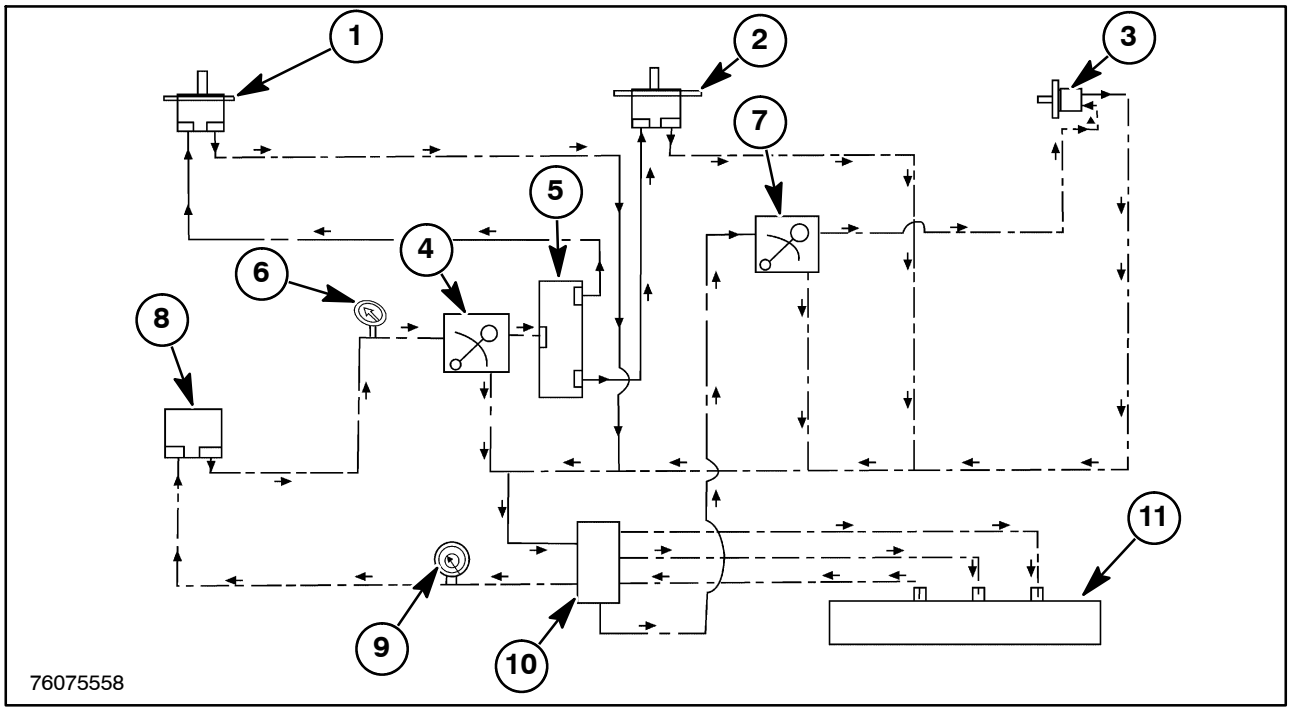
NOTICE: *No tables get a junior deck.*

NOTICE: *"C" denotes 'center delivery only' available.*

NOTICE: *"S" denotes 'shifted to center delivery.'*

NOTICE: ***"*"*** *denotes removal of 14 inch deck.*

HEADER HYDRAULIC DRIVE SYSTEM (Single-Swath, Single Knife System Shown)



9

1. Draper deck motor, left hand
2. Draper deck motor, right hand
3. Reel drive motor
4. Draper speed flow control
5. 50/50 flow control
6. Pressure gauge (measures pressure after knife drive)
7. Reel speed flow control
8. Knife drive motor
9. Pressure gauge (measures pressure before knife drive)
10. Manifold block
11. Tractor

This section outlines the hydraulic system which drives the draper header components. The components, as well as the plumbing of the various systems, are also shown on the hydraulic schematics in the Specifications Section.

The header uses the tractor hydraulics to provide power to the various systems. The hydraulic pressure from the power unit flows into the hydraulic manifold block, mounted to the upper tube of the draper header. The manifold block regulates the flow of the hydraulic fluid from the power unit by sending 73.8 lpm (19.5 gpm) to knife drive motor and then splitting into individual left and right draper motors. An additional, secondary flow of approximately 35.9 lpm (9.5 gpm) is directed to the reel circuit from the manifold block. The draper and reel circuits have their own flow controls. This allows both the draper and reel speeds to be independently adjusted. The excess from the flow controls are sent directly to the return side of the system.

The system is protected with a pressure relief valve, which should be set at 207 bar (3000 psi).

The gauge on the hydraulic manifold block allows the operator to read the header's current hydraulic system operating pressure. The power unit connection to the draper header has three hoses. The two larger hoses provide pressure and return. The third hose is called the case drain hose which keeps the hydraulic fluid from stagnating and overheating.

NOTICE: *If the double swath and/or fore/aft option is installed on the draper header, a separate hydraulic hose needs to be installed on the hydraulic manifold block.*

⚠ WARNING ⚠

Care must be used when checking hydraulic components. Quick couplers must be securely coupled before the machine is started. Failure to comply could result in death or serious injury.

M1500

ECOLOGY AND THE ENVIRONMENT

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances which are required by advanced technology, common sense should govern the use and disposal of products of a chemical and petrochemical nature.

The following are recommendations which may be of assistance:

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use and dispose of these substances. Agricultural consultants will, in many cases, be able to help you as well.

HELPFUL HINTS

1. Avoid filling tanks using cans or inappropriate pressurized fuel delivery systems which may cause considerable spillage.
2. In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances which may be harmful to your health.
3. Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
4. Avoid spillage when draining off used engine coolant mixtures, engine, gearbox and hydraulic oils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.
5. Modern coolant mixtures, i.e. antifreeze and other additives, must be replaced every two years. They should not be allowed to get into the soil but should be collected and disposed of safely.
6. Do not open the air-conditioning system yourself. It contains gases which should not be released into the atmosphere. Your dealer or air conditioning specialist has a special extractor for this purpose and will have to recharge the system properly.
7. Repair any leaks or defects in the engine cooling or hydraulic system immediately.
8. Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
9. Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of oils, coolant, etc.

INTERNATIONAL SYMBOLS

As a guide to the operation of your tractor, 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.


Thermostart starting aid


Alternator charge


Fuel level


Automatic Fuel shut-off


Engine speed (rev/min x 100)


Hours recorded


Engine oil pressure


Engine coolant temperature


Coolant level


Tractor lights


Headlamp main beam


Headlamp dipped beam


Work lamps


Stop lamps

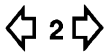

Horn


Radio

KAM Keep alive memory


Turn signals


Turn signals -one trailer


Turn signals -two trailers


Front wind-screen wash/wipe


Rear wind-screen wash/wipe


Heater temp-erature control


Heater fan


Air conditioner


Air filter blocked


Parking brake


Brake fluid level


Trailer brake


Roof beacon


Warning! Corrosive substance


P.T.O.

N Transmission in neutral


Creeper gears


Slow or low setting


Fast or high setting


Ground speed


Differential lock


Rear axle oil tem-perature


Transmission oil pressure


FWD engaged


FWD disengaged


Warning!


Hazard warning lights


Variable control


Pressurized! Open carefully


Position Control


Draft Control


Accessory socket


Implement socket


%age slip


Hitch raise (rear)


Hitch lower (rear)


Hitch height limit (rear)


Hitch height limit (front)


Hitch disabled


Hydraulic and transmission filters


Remote valve extend


Remote valve retract


Remote valve float


Malfunction! See Operator's Manual


Malfunction! (alternative symbol) See Operator's Manual

MINIMUM HARDWARE TIGHTENING TORQUES

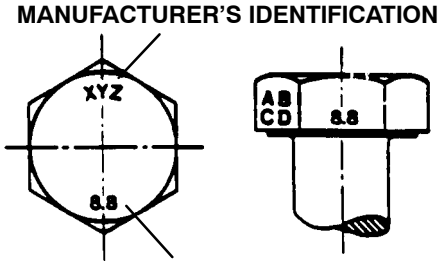
IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC NON-FLANGED HARDWARE AND LOCKNUTS

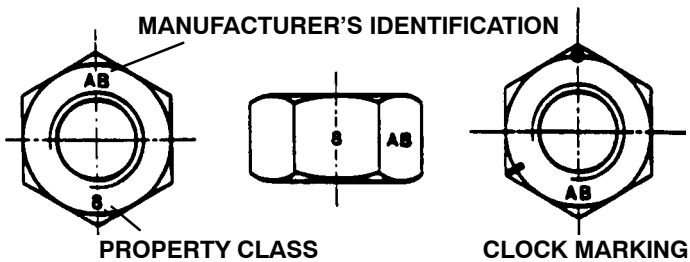
NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	18 (159)*	22 (195)*	28 (248)*	31 (274)*	40 (354)*	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)

NOTICE: Torque values shown with * are inch pounds.

IDENTIFICATION
HEX CAP SCREW AND CARRIAGE BOLTS
CLASSES 5.6 AND UP



HEX NUTS AND LOCKNUTS
CLASSES 05 AND UP



86529681 REV F 5.1

MINIMUM HARDWARE TIGHTENING TORQUES

IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

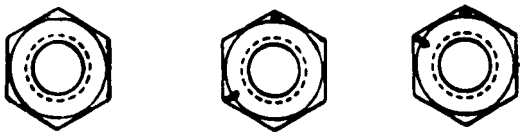
INCH NON-FLANGED HARDWARE AND LOCKNUTS

NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS		NOMINAL SIZE
	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)*	1/4
5/16	13 (115)*	17 (149)*	20 (178)*	26 (229)*	28 (250)*	37 (324)*	17.5 (155)*	25 (220)*	5/16
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	31 (23)	44 (33)	3/8
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	50 (37)	71 (53)	7/16
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	76 (56)	108 (80)	1/2
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	111 (82)	156 (115)	9/16
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	153 (113)	215 (159)	5/8
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	271 (200)	383 (282)	3/4
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	437 (323)	617 (455)	7/8
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	654 (483)	924 (681)	1

NOTICE: Torque values shown with * are inch pounds.

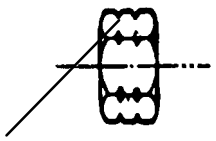
IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS

SAE GRADE 2 | SAE GRADE 5 | SAE GRADE 8



REGULAR NUTS | SAE GRADE 5 HEX NUTS | SAE GRADE 8 HEX NUTS

LOCKNUTS



GRADE IDENTIFICATION
GRADE A NO NOTCHES
GRADE B ONE CIRCUMFERENTIAL NOTCH
GRADE C TWO CIRCUMFERENTIAL NOTCHES

GRADE IDENTIFICATION
GRADE A NO MARKS
GRADE B THREE MARKS
GRADE C SIX MARKS
MARKS NEED NOT BE LOCATED AT CORNERS

GRADE A NO MARK
GRADE B LETTER B
GRADE C LETTER C

GRADE IDENTIFICATION

86529681 REV F 5.2

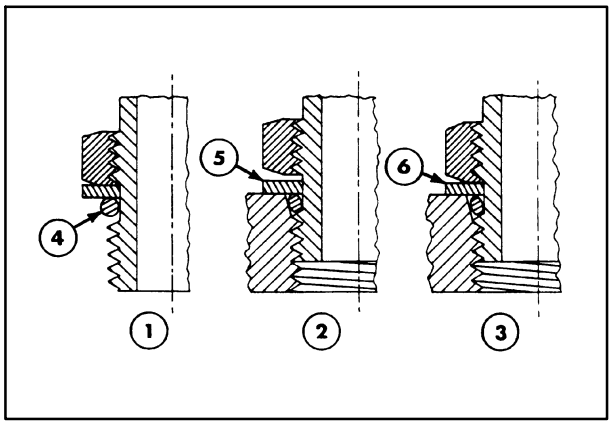
INSTALLATION OF ADJUSTABLE FITTINGS IN STRAIGHT THREAD O-RING BOSSES

1. Lubricate the O-ring by coating it with a light oil or petroleum. Install the O-ring in the groove adjacent to the metal backup washer which is assembled at the extreme end of the groove, 4.

2. Install the fitting into the SAE straight thread boss until the metal backup washer contacts the face of the boss, 5.

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

3. Position the fitting by turning out (counterclockwise) 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, 6.



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STANDARD TORQUE DATA FOR HYDRAULIC TUBES AND FITTINGS

TUBE NUTS FOR 37° FLARED FITTINGS								O-RING BOSS PLUGS ADJUSTABLE FITTING LOCKNUTS, SWIVEL JIC - 37° SEATS			
				TORQUE				TORQUE			
SIZE	TUBING OD		THREAD SIZE	NEWTON METERS		POUND FOOT		NEWTON METERS		POUND FOOT	
	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	3/4-18	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
24	38.1	1-1/2	1-7/8-12	217	237	160	175	163	190	120	140
32	50.8	2	2-1/2-12	305	325	225	240	339	407	250	300

These torques are not recommended for tubes of 12.7 mm (1/2 in) OD and larger with wall thickness of 0.889 mm (0.035 in) or less. The torque is specified for 0.889 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 clean solvent or Loctite cleaner and apply hydraulic sealant Loctite™ no. 569 to the 37° flare and the threads.

Install fitting and torque to specified torque, loosen fitting and retorque to specifications.

PIPE THREAD FITTING TORQUE

Before installing and tightening pipe fittings, clean the threads with a clean solvent or Loctite cleaner and apply sealant Loctite no. 567 for all fittings including stainless steel or no. 565 for most metal fittings. For high filtration/zero contamination systems use no. 545.

THREAD SIZE	TORQUE (MAXIMUM)
1/8 inch - 27	13 N·m (10 lb ft)
1/4 inch - 18	16 N·m (12 lb ft)
3/8 inch - 14	22 N·m (16 lb ft)
1/2 inch - 14	41 N·m (30 lb ft)
3/4 inch - 14	54 N·m (40 lb ft)

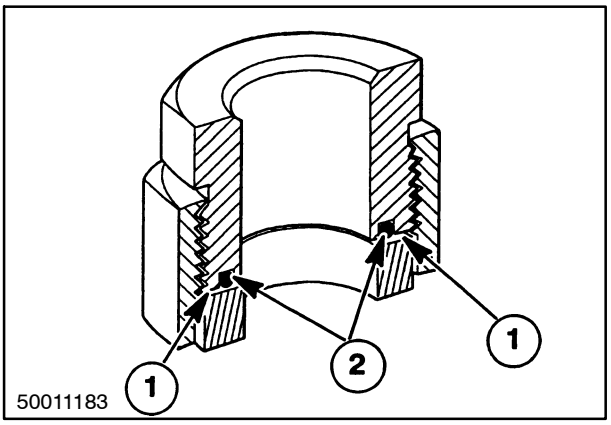
INSTALLATION OF ORFS (O RING FLAT FACED) FITTINGS

When installing ORFS fittings thoroughly clean both flat surfaces of the fitting, 1, and lubricate the O-ring, 2, with light oil. Make sure both surfaces are aligned properly. Torque the fitting to specified torque listed throughout the repair manual.

NOTICE: *If the fitting surfaces are not properly cleaned, the O-ring will not seal properly. If the fitting surfaces are not properly aligned, the fittings may be damaged and will not seal properly.*

NOTICE: *Always use genuine New Holland replacement oils and filters to ensure proper lubrication and filtration of engine and hydraulic system oils.*

The use of proper oils, grease, and keeping the hydraulic system clean will extend machine and component life.



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HYDRAULIC FITTING TORQUE

Tightening flare type tube fittings:

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

Tightening O-ring fittings:

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back the locknut off until washer bottoms out at top of groove.
3. Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
4. Position angle fittings by unscrewing no more than one turn.
5. Tighten straight fittings to torque shown.
6. Tighten angle fittings to torque shown while holding body of fitting with a wrench.