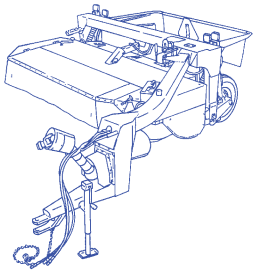


NEW HOLLAND

1411
1412

REPAIR MANUAL

NEW HOLLAND

SERVICE

1411, 1412 REPAIR MANUAL CONTENTS

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books.

The sections listed above are the sections utilized for the 1411, 1412 Disc Mower-Conditioners.

SECTION 00 – GENERAL INFORMATION

Chapter 1 – General Information

CONTENTS

FOREWORD

Appropriate service methods and correct repair procedures are essential for the safe, reliable operation of all equipment, as well as the personal safety of the individual performing the repair.

This Repair Manual provides troubleshooting and overhaul instructions using recommended procedures and equipment. Following these instructions will ensure the safe, efficient, and timely completion of the service or repair.

The manual is divided into sections which are subdivided into chapters. Each chapter contains information on general operating principles, detailed inspection, overhaul and, where applicable, specific troubleshooting, special tools, and specifications.

Any reference in this manual to right, left, rear, front, top, or bottom is determined by standing behind the machine and looking in the direction of travel.

All data and illustrations in this manual are subject to variations in build specification. This information was correct at the time of issue, but New Holland policy is one of continuous improvement, and the right to change specifications, equipment, or design at any time, without notice, is reserved.

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.

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.

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.

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

MACHINE SAFETY

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

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

INFORMATION

NOTE: *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. **Never operate the machine with any shield raised. Always operate the disc mower-conditioner with the covers and shields in place and skirts clipped together.**
2. **A tractor with an enclosed cab is recommended when operating a rotary disc cutting machine.**
3. **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. Before disconnecting lines or fittings, be sure to release all pressure by operating the tractor control valves. Before applying pressure to the system, be sure all connections are tight and that hoses and connections are not damaged. If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately.**
4. **If hydraulic couplers must be changed, be sure to bleed off any residual pressure slowly.**
5. **Before swinging the tongue, be sure the machine will clear any obstructions. Be sure bystanders are clear of the machine when swinging the tongue. Air in the system or high hydraulic flow rate can cause erratic operation.**
6. **When you disconnect and later reattach the machine to a standard electrical socket on propelling vehicle, the brake light circuit must be reconnected to function.**
7. **Failure to engage the header lift locks and tongue swing cylinder lock when transporting machine could cause the machine to drop onto the pavement or to swing to the right into roadside obstacles or ditches if the tractor hydraulics are accidentally engaged during transport.**
8. **Never adjust or make a repair with the disc mower-conditioner running. Disengage the PTO and shut off the tractor engine before attempting to make adjustments or service the machine. Wait for all rotating parts to stop before opening shielding, covers, or standing close to the machine.**
9. **Loose stones and foreign objects can be deflected toward the operator on machines with rotary discs.**
10. **Immediately replace any skirt that is torn or has a hole in it.**
11. **Tilt the cutter bar back in fields where stones and foreign objects are present, to raise the cutting knives and minimize debris deflected from the knives and reduce knife damage. If stones or other foreign objects enter the cutter bar, they can be deflected toward the operator or bystanders, resulting in physical injury.**
12. **Stand clear! Rotating elements may cause serious bodily injury.**
13. **Do not attempt to remove material from the disc mower-conditioner while it is in operation. Shut the tractor off and allow the rotating discs to stop before leaving the tractor.**
14. **Always operate the disc mower-conditioner with the covers and shields in place. Do not lean against or stand on the covers or shields.**
15. **Be sure that the header lift locks are engaged before working on a raised header.**
16. **Do not attempt to unplug conditioner rolls without first relieving roll pressure. Roll pressure could cause top conditioner roll to move downward suddenly and could cause personal injury.**

17. **The header should be resting on the ground or suspended in the transport position by the header lift locks during lubrication or maintenance.**

18. **Replace damaged knives, knife hardware or discs immediately to prevent an accident.**

19. **The bottom leading edge of worn discs can become very sharp; wear gloves to prevent injury.**

20. **Replace cracked or severely deformed knives immediately to prevent an accident.**

21. **The tractor end of the primary PTO shaft has a CV joint which is heavy. Be careful when handing it; dropping it could cause personal injury to yourself and damage the CV joint.**

22. **Before disconnecting the lift cylinder hose, be sure the header is resting on the ground or on the header lift locks.**

23. **Always replace or close all shields after making repairs, adjustments, or after lubricating. Shields are for your protection. Keep them in place!**

On this equipment, left and right are determined by standing behind the unit, looking in the direction of travel.

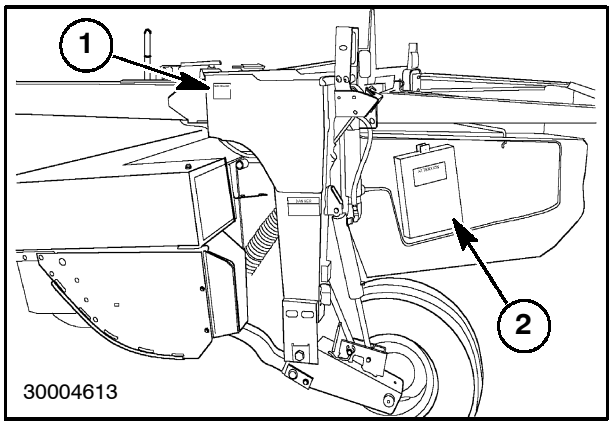
SERIAL NUMBER

The serial number plate, 1, for the mower-conditioner is located on the left side of the trailframe.

Give your dealer the model and serial number of your disc mower-conditioner when ordering parts. Always order genuine factory parts from your authorized dealer.

MANUAL HOLDER

A manual holder, 2, is mounted on the left side window shield, and provides a readily accessible storage location for this manual.



1

HARDWARE TORQUE VALUES

Check the tightness of hardware periodically.

Use the following charts to determine the correct torque when checking, adjusting or replacing hardware on the tractor.

IMPORTANT: *DO NOT use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.*

Install a lock washer on all bolts unless a locknut or jam nut is specified.

Install a flat washer at all slotted holes unless a carriage bolt or flanged head bolt is specified.

Make sure fastener threads are clean and not damaged.

NOTE: *A torque wrench is necessary to properly torque hardware.*

MINIMUM HARDWARE TIGHTENING TORQUES

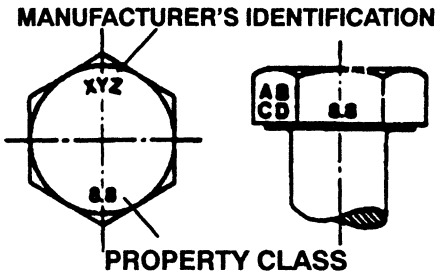
IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC HARDWARE AND LOCKNUTS

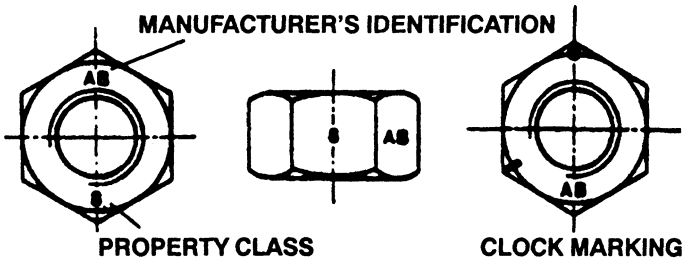
	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT
NOMINAL SIZE	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	CL.8 w/CL8.8 BOLT
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8	14 (124*)	18 (159*)	22 (195*)	28 (248*)	31 (274*)	40 (354*)	15 (133*)
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	30 (22)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	53 (39)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	131 (97)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	265 (195)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	458 (338)

NOTE: 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



MINIMUM HARDWARE TIGHTENING TORQUES

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

INCH 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*)	6.9 (61*)	9.8 (86*)	1/4
5/16	13 (115*)	17 (149*)	20 (178*)	26 (229*)	28 (250*)	37 (324*)	14 (125*)	20 (176*)	5/16
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	26 (19)	35 (26)	3/8
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	41 (30)	57 (42)	7/16
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	61 (45)	88 (64)	1/2
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	88 (65)	125 (92)	9/16
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	122 (90)	172 (127)	5/8
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	217 (160)	306 (226)	3/4
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	350 (258)	494 (364)	7/8
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	523 (386)	739 (545)	1

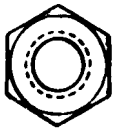
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS

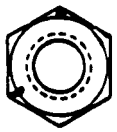
SAE GRADE 2

SAE GRADE 5

SAE GRADE 8



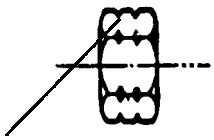
REGULAR NUTS



SAE GRADE 5 HEX NUTS

SAE GRADE 8 HEX NUTS

LOCKNUTS



GRADE IDENTIFICATION

GRADE A NO NOTCHES

GRADE B ONE CIRCUMFERENTIAL NOTCH

GRADE C TWO CIRCUMFERENTIAL NOTCHES

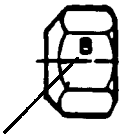
GRADE IDENTIFICATION

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

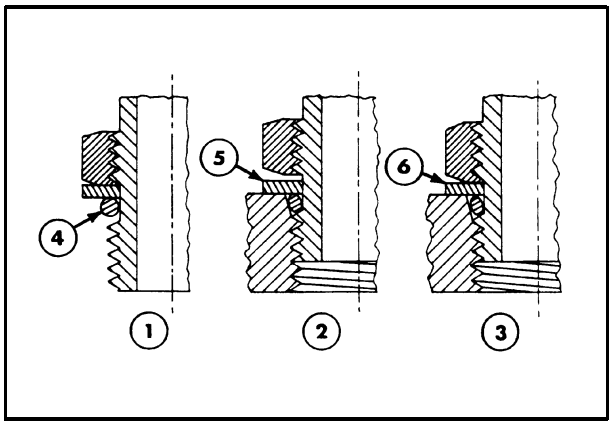
INSTALLATION OF ADJUSTABLE FITTINGS IN STRAIGHT THREAD O RING BOSSES

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.

NOTE: *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.



2

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		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	3/4-18	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″) OD and larger with wall thickness of 0.889 mm (0.035″) or less. The torque is specified for 0.889 mm (0.035″) 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″ - 27	13 N·m (10 ft lbs)
1/4″ - 18	16 N·m (12 ft lbs)
3/8″ - 14	22 N·m (16 ft lbs)
1/2″ - 14	41 N·m (30 ft lbs)
3/4″ - 14	54 N·m (40 ft lbs)

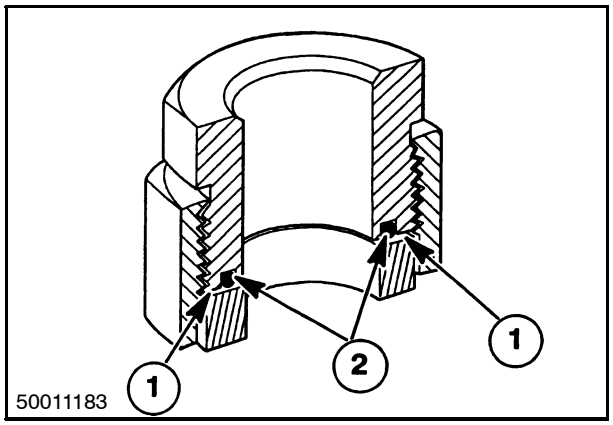
INSTALLATION OF ORFS (O RING FLAT FACED) FITTINGS

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.

IMPORTANT: *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.*

IMPORTANT: *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.



3

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, should 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 and 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

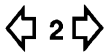

Horn


Radio

KAM
Keep alive memory


Turn signals

Turn signals –one trailer



Turn signals –two trailers


Front windscreen wash/wipe


Rear windscreen wash/wipe


Heater temperature 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 temperature


Transmission oil pressure


FWD engaged


FWD disengaged


Warning!


Hazard warning lights


Variable control


Pressurised! 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)

TRACTOR REQUIREMENTS

1. 540 or 1000 RPM PTO.
2. 80 HP (60 kw) minimum PTO HP.
3. ASAE standard hitch and PTO dimensions conforming to category 1 or 2 specifications. (See Figure 1 & 2).

NOTE: *For tractors with a stepped, or bent drawbar, the bend must be positioned to met ASAE hitch and PTO specifications. PTO separation or bottoming out could occur if these specifications are not followed.*

4. Two remote hydraulic circuits with a minimum of 104 bar (1500 PSI) and maximum of 193 bar (2800 PSI). One of the circuits must be a two-way circuit for the tongue shift cylinder.
5. Adequate ballast, wheel spacing, and tire inflation to stabilize the tractor on hillsides.

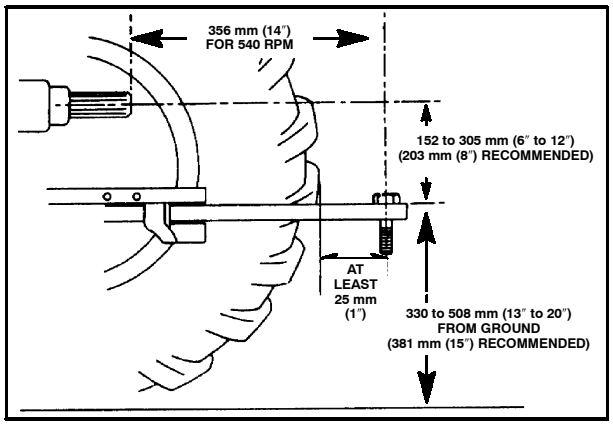
CAUTION

A tractor with an enclosed cab is recommended when operating a rotary disc cutting machine.

TRACTOR DRAWBAR DIMENSIONS

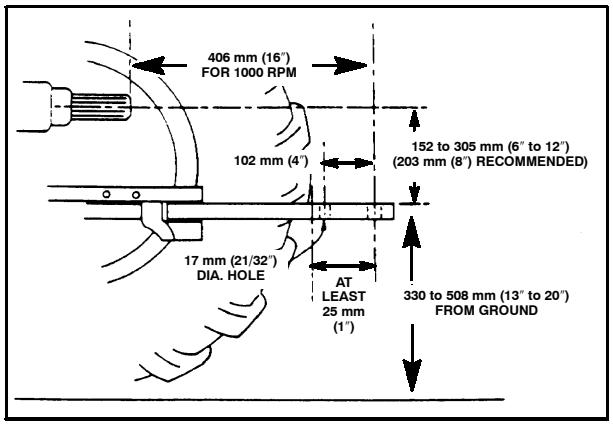
Be sure the drawbar is adjusted to meet the ASAE standard specifications (see Figure 1 and 2).

On 540 RPM machines, the distance from the end of the tractor PTO shaft to the center of the drawbar hitch pin must be 356 mm (14″).



4

On 1000 RPM machines, the distance from the end of the tractor PTO shaft to the center of the drawbar hitch pin must be 406 mm (16″).



5

NOTE: *Using a tractor with nonstandard PTO-to-hitch dimension can damage the front PTO and, or the tractor PTO driveline.*

NOTE: *Ideally the top of the tractor drawbar should be 483 mm (19″) above the ground. A low or high drawbar will affect the driveline angle, header flotation and cutter bar angle.*

IMPORTANT: *Do not offset the drawbar from center or PTO damage will occur. Locate the drawbar directly below the PTO shaft. Clamp the drawbar so it cannot be moved from side to side.*

IMPORTANT: *If the tractor has a three-point hitch, raise the lower links as high as possible, lower as low as possible, or remove them, to prevent them from hitting the tongue and PTO shaft when turning.*

ATTACHING THE MOWER-CONDITIONER TO THE TRACTOR

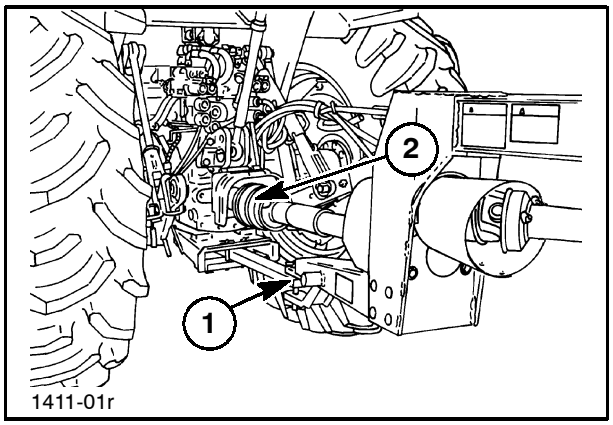
Attach the mower-conditioner to the tractor with a 19 mm (3/4″) minimum diameter hitch pin that can be securely fastened as shown, 1. The pin should also be smaller than the hitch holes to prevent binding when operating over rough terrain.

Attach the PTO by pulling back on the slide collar, 2, and slide the PTO forward on the tractor shaft until the pins engage in the tractor PTO shaft groove. The collar will slide forward automatically locking the PTO shaft onto the tractor shaft.

NOTE: *The yoke where the collar slides must be free of paint and rust and must be kept lubricated with oil for the collar to slide freely.*

NOTE: *The tractor end of the primary PTO shaft has a CV joint which is heavy. Be careful when handling it, as dropping it could cause personal injury to yourself and damage the CV joint.*

Check to make sure the PTO is locked on the tractor shaft by trying to slide it on the shaft. To remove, pull back on the collar to unlock the pins and remove the PTO.

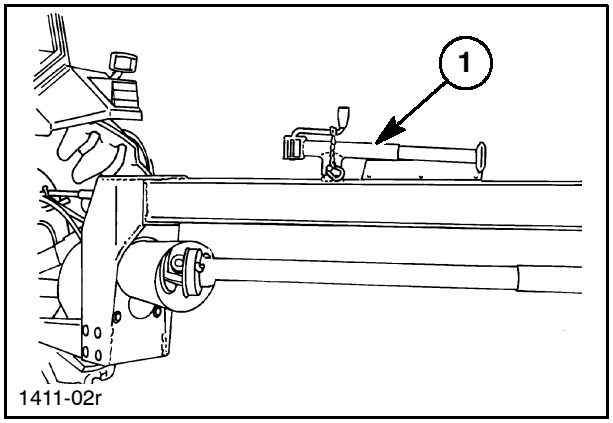


6

JACK ASSEMBLY

After attaching the mower-conditioner to the tractor, retract the jack by turning the hand crank counterclockwise. Pull the pin and remove the jack. Store the jack, 1, on top of the tongue. Secure the jack with the pin.

NOTE: *To prevent the jack from unwinding during use, loop the chain over the handle before inserting the pin.*

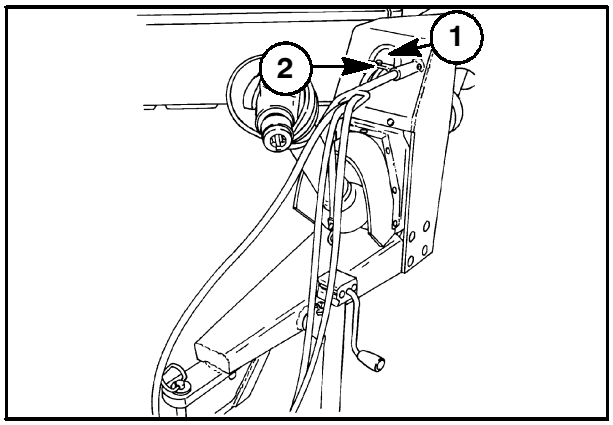


7

HYDRAULIC HOSES

Excess hose length should be pushed back into the tongue, 1, and clamped, 2.

NOTE: *Do not allow hoses to come in contact with rotating PTO.*



8

HYDRAULIC CYLINDERS

WARNING

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.

Before disconnecting lines or fittings, be sure to release all pressure by operating the tractor control valves. Before applying pressure to the system, be sure all connections are tight and that hoses and connections are not damaged.

If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately.

CONNECTING HYDRAULIC HOSES TO THE TRACTOR

1. Be sure the hydraulic couplers on the hoses match the tractor couplings. If not install the correct couplers.

CAUTION

If hydraulic couplers must be changed, be sure to bleed off any residual pressure slowly.

2. Attach both swing cylinder hoses to the remote outlets of one tractor control valve.

NOTE: *If this valve is adjustable, set it for slow hydraulic flow.*

3. Attach the single lift cylinder hose to a remote outlet from the second control valve. Connect the hose so the machine will raise when the hydraulic valve is pulled back in the opposite direction of the float position.

NOTE: *Check the tractor operators manual for instructions on which outlet should be used for single acting cylinders.*

IMPORTANT: *Tractor hydraulic relief valve pressure must not exceed 193 bar (2800 PSI), or the machine may be damaged. It will require a minimum of 104 bar (1500 PSI) to operate the lift cylinders.*

4. Disengage the tongue swing lock, maneuver the tractor through both hard left and right turns with unit in both transport and field operating positions, header both up and down. Check to be sure the hoses do not get pinched or hung up on frame components. Secure excess hose using the rubber strap so it is protected.

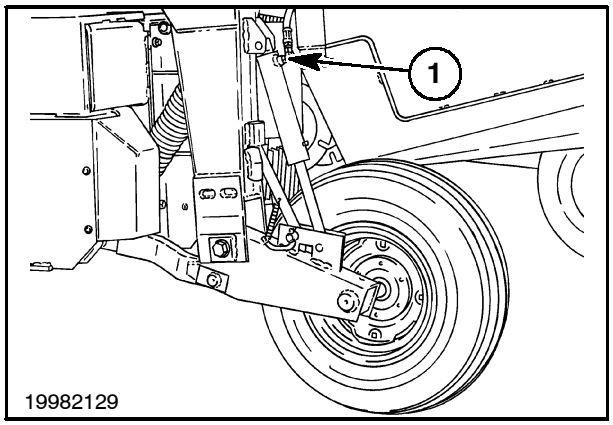
CAUTION

Before swinging the tongue, be sure the machine will clear any obstructions. Be sure bystanders are clear of the machine when swinging the tongue. Air in the system or high hydraulic flow rate can cause erratic operation.

BLEEDING AIR FROM THE LIFT CYLINDERS

If the lift cylinders do not lift the frame evenly or if one side lifts higher than the other, rephase the cylinders by lowering the mower-conditioner and continue to hold the tractor valve in the lower position for 10 to 15 seconds, or raise the mower-conditioner and continue to hold the tractor valve in the raise position for 10 to 15 seconds. If the cylinders do not extend far enough to release the header lift locks, there may be air in the hydraulic system that must be purged.

Loosen the hose swivel fitting, 1, at the upper end of the slave cylinder.



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NOTE: *Use a shop rag or other shielding means for protection from seeping oil at loosened fittings.*

With the tractor engine at a low idle, move the tractor hydraulic lever to the raise position to extend the master lift cylinder until oil flow from the loosened fitting is free of air. Then tighten the fitting.

IMPORTANT: *If the cylinders do not extend far enough to release the header lift locks, air remains in the hydraulic system and must be purged. If the header lift lock on the master cylinder side does not release, excessive oil may be in the slave cylinder circuit. Bleed this oil until both lock rods are engaged on their respective stop blocks.*

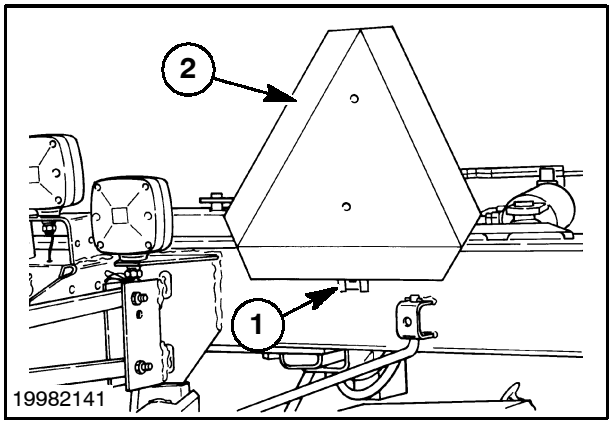
Raise and lower the header several times until all air is purged from the system. Repeat the previous steps if necessary.

TRANSPORTING THE MOWER-CONDITIONER

SLOW-MOVING VEHICLE EMBLEM

Some states and provinces require Slow-Moving Vehicle (SMV) emblems on machines traveling at speeds under 40 km/hr (25 MPH). Consult local regulations for information and mounting requirements.

A SMV mounting bracket, 1, is located on the left rear frame. The SMV emblem, 2, and mounting bracket are furnished as standard equipment on the mower-conditioner. Attach the emblem as shown.



10

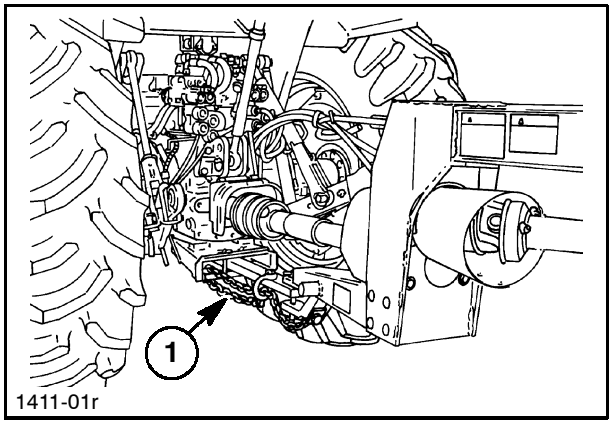
TRANSPORTING ON HIGHWAYS

Do not tow equipment that does not have brakes:

- At speeds over 32 km/hr (20 MPH) or
- That when fully loaded, weighs more than 1.5 t (3300 lbs) and more than 1.5 times the weight of the towing unit.

SAFETY CHAIN

The optional safety chain, 1, shown should be used when towing the mower-conditioner on a public road. The safety chain is intended to keep the machine under control in the event of loss or failure of the hitch pin.



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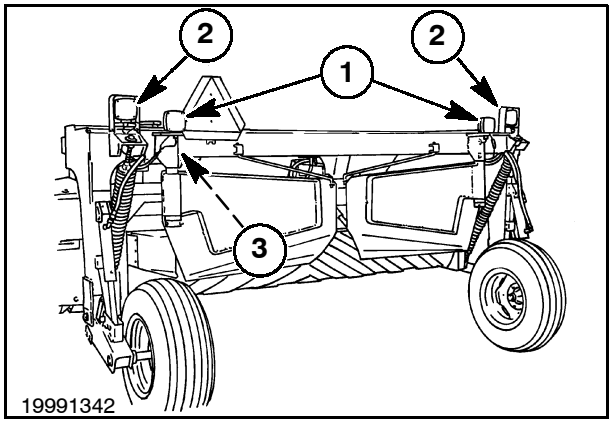
TRAILING LIGHTS

The trailing lights, as shown, should be used when towing the mower-conditioner on a public road.

The trailing lights consist of two red tail/brake lights, 1, two amber flashing lights, 2, and a lighting control box, 3, that controls the signals from the tractor to the mower-conditioner and connecting wire harnesses.

This lighting system is intended to improve the machine visibility on public roads. This machine is equipped with a lighting system which conforms to ASAE S279.10.



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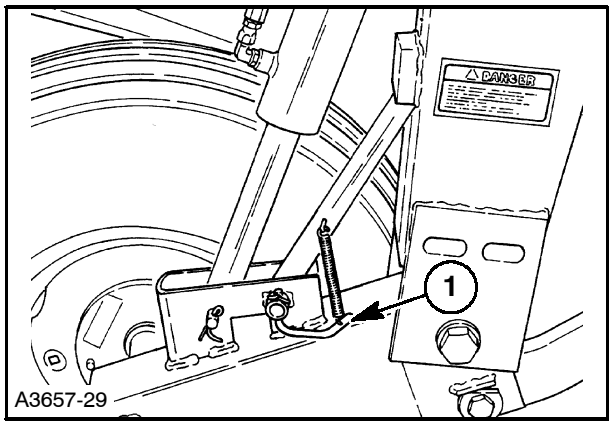
TOWING WITH A TRACTOR

1. Refer to “Hitching to the Tractor” section of this manual.
2. Raise the header. Engage the header lift locks by pivoting lock levers, 1, forward. Lower the header onto the stop blocks.



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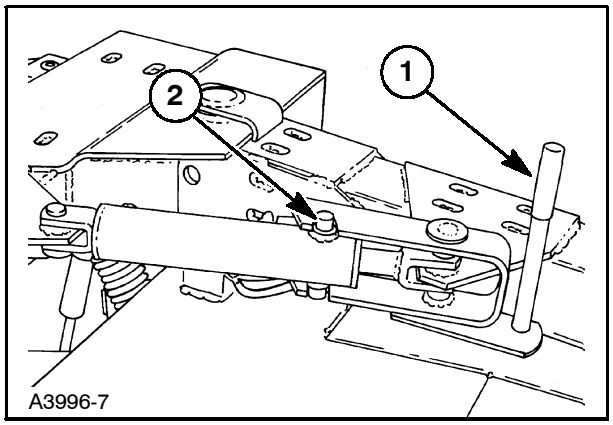
3. Shift the machine into the transport position. Lock the swing cylinder by pivoting handle, 1, forward. Be sure the lock bracket engages the pins, 2, fully.

NOTE: *Be careful; with the machine in transport position, sharp left-hand turns cannot be made as tractor tire will hit the tongue.*



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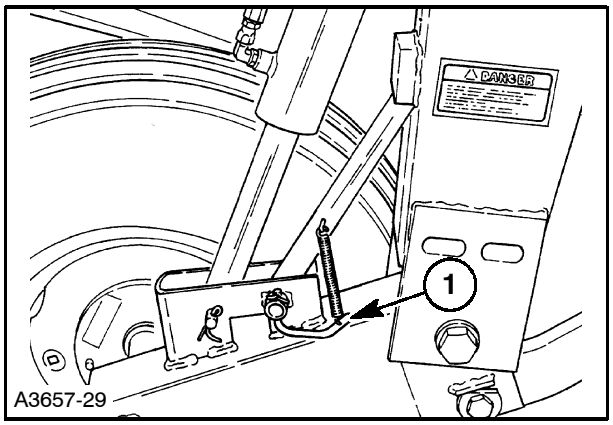
⚠ WARNING ⚠

Failure to engage the header lift locks and tongue swing cylinder lock when transporting machine could cause the machine to drop onto the pavement or to swing to the right into roadside obstacles or ditches if the tractor hydraulics are accidentally engaged during transport.

4. Leave the hydraulic hoses and PTO connected to the tractor or be sure they are positioned in the hanger bracket and secured with the rubber strap to prevent damage.
5. When towing the mower conditioner on a road or highway, use the necessary flashing lights to adequately warn operators of other vehicles. Consult local governmental regulations for specific requirements.
6. Use a safety chain when transporting the unit on a public highway. The safety chain is intended to keep the machine under control in the event of loss or failure of the hitch pin. A safety chain is available through your dealer.

TOWING WITH A TRUCK

1. Raise the header. Engage the header lift locks by pivoting lock levers, 1, forward. Lower the header onto the stop blocks.



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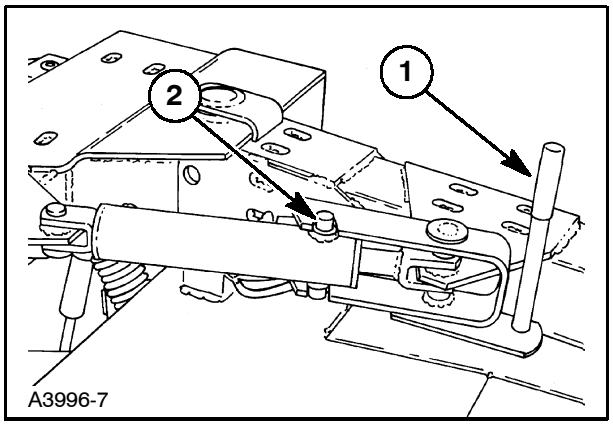
2. Shift the machine into the transport position. Lock the swing cylinder by pivoting handle, 1, forward. Be sure the lock bracket engages the pins, 2, fully.

NOTE: *Be careful; with the machine in transport, sharp left hand turns cannot be made or damage to the truck and machine will occur.*



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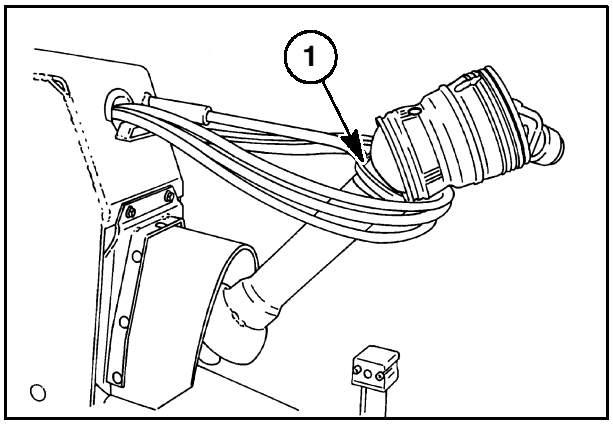
⚠ WARNING ⚠

Failure to engage the header lift locks and tongue swing cylinder lock could result in the machine dropping on the pavement or swinging to the right into roadside obstacles or ditches if a hydraulic failure were to occur during transport.

3. Secure the primary PTO shaft in the hanger bracket using the attached rubber strap as shown at 1. Loop the hoses around the PTO, and feed the ends back into the front opening of the tongue. Be sure the PTO shaft and hoses are secured to prevent damage. Check for adequate clearance between the PTO shaft and the rear of the truck.
4. When towing the mower-conditioner on a road or highway, use the necessary flashing lights to adequately warn operators of other vehicles. Consult local governmental regulations for specific requirements.
5. Use a safety chain when transporting the unit. The safety chain is intended to keep the machine under control in the event of loss or failure of the hitch pin. A safety chain is available through your dealer.
6. Limit highway speeds to 32 KPH (20 MPH).



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PARKING THE MACHINE

When cutting is finished:

1. Disengage the tractor PTO. Park the machine on a level area.
2. Pivot the header to the transport position.
3. Pin the header tilt cylinder in the 2 degree position.
4. Lower the header to the ground or let the header rest on the transport stops.
5. Remove the jack from the storage position and install it to support the tongue.
6. Remove the front PTO from the tractor PTO shaft and secure it in the hanger bracket.

CAUTION

The tractor end of the primary PTO shaft has a CV joint which is heavy. Be careful when handling it; dropping it could cause personal injury to yourself and damage the CV joint.

7. Disconnect the hydraulic hoses and hang them so the coupler ends do not touch the ground or loop the hoses around the PTO shaft and feed the ends back into the front opening of the tongue.

CAUTION

Before disconnecting the lift cylinder hose, be sure the header is resting on the ground or on the transport stops.

Always replace or close all shields after making repairs, adjustments, or after lubricating. Shields are for your protection. Keep them in place!

STORING THE MOWER-CONDITIONER

When preparing the mower-conditioner for storage:

1. Clean the mower-conditioner. Remove any buildup of debris and any wrappage from the cutter bar components.
2. Lubricate the mower-conditioner completely.
3. Drain the oil from all gearboxes and all modules, and refill with new, clean oil of the correct specifications to the correct level. Run the unit for a few minutes.
4. Inspect for worn or broken parts. Replace with genuine factory parts.
5. Relieve pressure from the conditioner drive belt.
6. Clean the cutter bar or rusted areas and touch up with factory paint. Spray cans are available from your dealer.
7. Store the machine where it is not exposed to the weather.
8. Park the machine with the transport stops engaged. If the cutter bar is lowered to the ground, place wood blocks under the cutter bar to prevent direct ground contact.

SPECIFICATIONS

MODEL 1411

Overall Width	
Transport position	3429 mm (11′3″)
Field position	4877 mm (16′0″)
Overall Length	
Transport position	5131 mm (16′10″)
Field position	4750 mm (15′7″)
Height	
Transport position	1600 mm (5′3″)
Cutting position	1346 mm (4′5″)
Ground Clearance (transport)	457 mm (18″)
Wheel Tread Width	2643 mm (8′8″)
Weight	1864 kg (4100 lbs.)
Driveline	
Tractor Requirement	60 kw (80 HP) Minimum with two remote circuits with minimum of 1043 kPa (1500 PSI) relief pressure
Input Speed	540 or 1000 RPM
Drive Protection	Main driveline - slip clutch with overrunning clutch, conditioner roll drive - V-belt with spring loaded idler
Header	
Cutting Width	3160 mm (10′4″)
Flotation	Vertical & radial
Windrow Width	914 mm - 2134 mm (36″ - 84″)
Header Lift	Hydraulic (master-slave system)
Cutter Bar	
Type	Modular
No. of Discs	8
Knives Per Discs	2
Disc Cutting Diameter	500 mm (19.7″)
Disc Drive	Bevel gears in sealed modules
Disc Speed	3000 RPM
Cutting Height	32 mm - 76 mm (1.25″- 3″)
Cutter Bar Angle	−2 degree to −10 degrees
Conditioner	
Type	Intermeshing rolls
Drive	4HB v-belt & spur gears

Rolls	
Type	Molded rubber with intermeshing chevron design
Length	2591 mm (102″)
Diameter	264 mm (10.38″)
Speed	635 RPM
Travel Speed	0 to 14 KPH (0 to 9 MPH)
Capacity	2.5 H/hr (6.1 A/hr) @ 10 KPH (6 MPH) & 80% field efficiency
Tire	11L x 15, 6-ply tubeless agricultural implement tire
Jack	Side-wind
Tongue Swing	Hydraulic

MODEL 1412

Overall Width	
Transport position	3429 mm (11′3″)
Field position	4877 mm (16′0″)
Overall Length	
Transport position	5537 mm (18′2″)
Field position	5385 mm (17′8″)
Height	
Transport position	1600 mm (5′3″)
Cutting position	1346 mm (4′5″)
Ground Clearance (transport)	432 mm (17″)
Wheel Tread Width	2682 mm (8′10″)
Weight	1891 kg (4160 lbs.)
Driveline	
Tractor Requirement	60 kw (80 HP) Minimum with two remote circuits with minimum of 1043 kPa (1500 PSI) relief pressure
Input Speed	540 or 1000 RPM
Drive Protection	Main driveline - slip clutch with overrunning clutch, conditioner roll drive - V-belt with spring loaded idler
Header	
Cutting Width	3160 mm (10′4″)
Flotation	Vertical & radial
Windrow Width	914 mm - 2134 mm (36″ - 84″)
Header Lift	Hydraulic (master-slave system)
Cutter Bar	
Type	Modular
No. of Discs	8
Knives Per Discs	2
Disc Cutting Diameter	500 mm (19.7″)
Disc Drive	Bevel gears in sealed modules
Disc Speed	3000 RPM
Cutting Height	32 mm - 83 mm (1.25″- 3″)
Cutter Bar Angle	–2 degrees to –10 degrees
Conditioner	
Type	Flail
Drive	4HB v-belt & bevel gears
Rotor	
Length	2591 mm (102″)
Diameter	560 mm (22″)
Speed	718 RPM, 1000 RPM (Optional)

Travel Speed	0 to 14 KPH (0 to 9 MPH)
Capacity	2.5 H/hr (6.1 A/hr) @ 10 KPH (6 MPH) & 80% field efficiency
Tire	9.5L x 15, 6-ply tubeless agricultural implement tire
Jack	Side-wind
Tongue Shift	Hydraulic