



# Pequea Windrow Pro

## Model 1820HD

### Operator's Manual



**THIS MANUAL MUST BE READ AND UNDERSTOOD BEFORE ANYONE OPERATES THIS MACHINE!**

Manual# 990029  
Revised 02/2008

# YOU MUST FILL OUT YOUR WARRANTY REGISTRATION TO ACTIVATE YOUR WARRANTY AND TO QUALIFY FOR PARTS AND SERVICE!!

To the Owner;

Thank-You for choosing a quality wheel rake from Pequea Machine, Inc. We strive to give you the best equipment and the best level of service of any company. With a little care and maintenance this machine will do your work for you for many years. In this manual, we make an effort to get you better acquainted with the rake so you can achieve maximum performance. We design and build all of our equipment with the end user in mind so we welcome any suggestions or ideas for improvement.

Please take a few minutes to fill out the area below. This information will be valuable to you when ordering parts or requesting service from your dealer.

Dealer Name: \_\_\_\_\_

Dealer Phone Number: \_\_\_\_\_

Service Manager/Technician: \_\_\_\_\_

Model# and Description: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

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## INTRODUCTION

Thank-You for choosing the Pequea Windrow Pro 1820HD Wheel Rake. Your rake is the result of years of research and development work. This Operator's Manual will familiarize the operator with the safety and operation of the machine. Included are complete instructions for safe and efficient operation, lubrication, and maintenance procedures. Understanding and following these procedures will result in years of maximum performance from your Pequea Rake.

***Read entire manual before operating. Failure to follow the instructions outlined in this manual may result in personal injury and/or damaged equipment, and could void the warranty.***

### Rake Serial Number

The rake's serial number can be found under the main frame on the left side of the machine. Please use this number when requesting service, seeking information, or ordering parts. For the operator's convenience, space to record the serial number, model number, purchase date, and dealer has been provided inside the front cover of this manual.

***All pictures and instructions in this manual assume that the right and left side of the machine are that of someone standing behind the rake facing forward.***

### Specifications

Specifications	Windrow Pro 1820HD
Raking Width	29'
Transport Width	12' 4"
Weight	5450 lbs.
Wheel Diameter	52"
Number of Wheels	17
Tines	18 Double Rubber Mounted Tines (36 Teeth) per Wheel
Rake Wheel Hubs	Heavy Duty Tapered Bearings (2 sets per wheel)
Rake Wheel Covers	UV Resistant HDPE Poly Sheets
Anti Hay Wrap	Standard
Axles	Tandem w/ 2" Removable Spindles
Tires	9.5L-15 Implement Tires
Lighting	Running Lights, Turn Signals, Rear Working Lights
Bridge Frame Cylinder	(2) 60" Stroke Cylinders

## SAFETY



***This symbol precedes specific safety instructions throughout this manual. When reading the manual pay close attention to the information that follows this symbol***



FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL COULD RESULT IN PERSONAL INJURY OR DEATH. READ ENTIRE MANUAL BEFORE OPERATING THE RAKE.



Keep hands, feet, and clothing away from all moving parts.



Never allow anyone to ride on the rake or the tractor.



Be constantly aware of the location of the ends of the rake to avoid collision with other objects.



When transporting the machine on public roads use the proper reflectors, lights, and slow moving vehicle signs required by local government agencies.



Stop the tractor engine, remove ignition key, and allow all mechanisms to stop before cleaning, adjusting, or lubricating the machine.



Stay clear of the rake when opening or closing the main rake arm beams, or raising or lowering the rake wheels.



Stay clear of hydraulic lines, they may be under extreme pressure or heat. Never go near a hydraulic leak until the pressure has been relieved and the leaking has stopped. A high pressure hydraulic leak can easily penetrate your skin and cause serious injury, gangrene or death.

We at Pequea Machine, Inc. try to provide safety shield and guards wherever possible, however, it is impossible to shield every area that could be dangerous. We will not be responsible for carelessness and misuse of any of our equipment.

## SAFETY

### Safety Decals and Reflectors

*Decals and reflectors are for the protection of yourself and others. If they are missing, faded, or not readable, get replacements from your dealer immediately.*

#### **WARNING**

- Read operators manual before beginning use of machine.
- Do not remove shields.
- Never allow riders on machine.
- Do not attempt to repair, adjust or perform maintenance while PTO is attached to the tractor.
- Do not approach machine while in operation.

#### **WARNING**

**Chain Lock Required  
For Transportation To Hold  
Main Frame In Position.**

#### **WARNING**

**Do Not Exceed 45 Mph**

#### **WARNING**

**Pinlock Required  
To Keep Wheel Arms  
Up During Transportation**

## HITCHING



Check tires to make sure they are inflated to the correct pressure. Recommended pressure is written on the sidewall of the tire.



Check lug bolts. Bolts should be torqued to 65 - 75 ft. lbs.



Perform a quick visual check of all hardware on the rake. Vibrations from normal use can cause bolts to loosen, especially on new machinery.

Align the hole in the tractor draw bar with the hole in the rake tongue and insert an approved hitch pin. Lock the hitch pin with a safety clip to insure it cannot work its way out.

Remove the jack from the hitch and place onto the storage position. (Figure 1)

Connect hydraulic hoses for all functions to a double acting valve on the tractor.

Plug the 7-pin wiring connector to the tractor. This plug operates the lights and turn signals. If the tractor is not equipped with this plug, it should be installed by your servicing dealer.

Mount the control box at a convenient location on the tractor. Connect the control box to a 12 Volt DC circuit on the tractor. The control box comes from the factory equipped with a set of battery clamps and can be connected directly to the starter battery on the tractor, or, the clamps can be removed and replaced with a plug that matches the 12 Volt DC outlet on your tractor.



Figure 1

## TRANSPORTING



Never travel at speeds of more than 45 MPH



Remain fully aware of the width of the rake in relation to the objects you are passing, either stationary or moving.

Make sure the rake wheels are up in the transport position and locked as shown in Figure 2

Make sure the rake beams are locked securely to prevent from unfolding in transport. (Figure 3)

Make sure the chains are attached to prevent the main bridge frame from spreading in transport. (Figure 4)

Follow all local regulations for moving agricultural equipment on public roads, especially those related to lights, reflectors, SMV (slow moving vehicle) symbols and safety markers

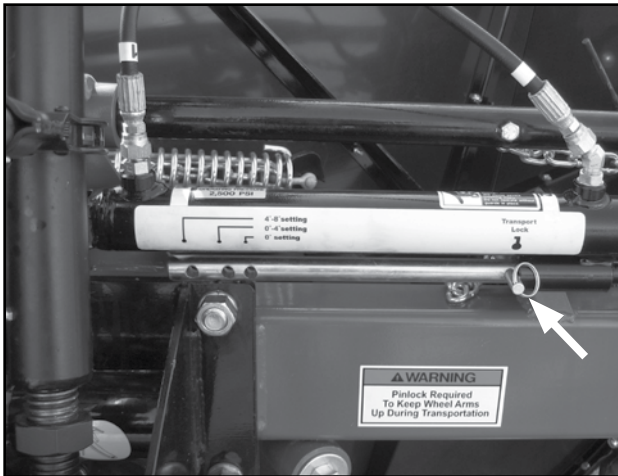


Figure 2

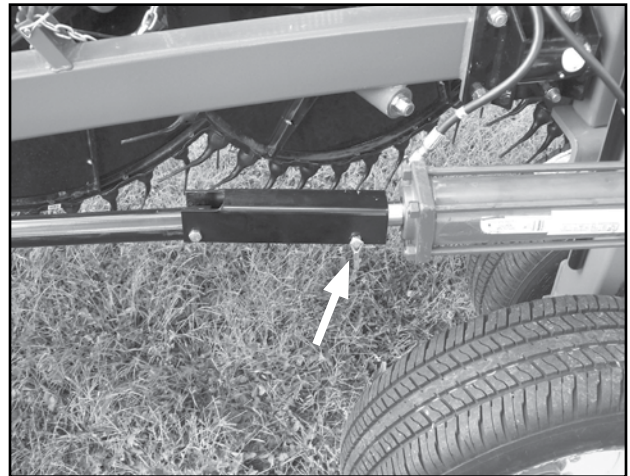


Figure 3



Figure 4



## OPERATION



***Never adjust main frame width without forward or reverse motion of the rake. Failure to heed will cause damage to the main frame or axle uprights.***



Check for proper assembly and adjustment and make sure that all bolts are tightened. Recheck all bolts after a few hours of operation as bolts can loosen up on new machinery. Check wheel lug bolts upon delivery and periodically thereafter.



Unlock the three areas mentioned in the transport section of this manual. (Page 7)

### Center Frame

When opening or closing the center frame of the rake it is necessary to have forward or reverse motion. Failure to do so will result in serious damage to the main overhead frame. Also keep an eye on the hydraulic hoses and to make sure they don't hang down and get pinched when closing the main frame.

### Control Box

The electric/hydraulic system allows the operator to make many adjustments from the tractor seat by using the switches on the control box. Each switch is marked for its specific function. The tractor hydraulics must be engaged in order for these functions to operate.

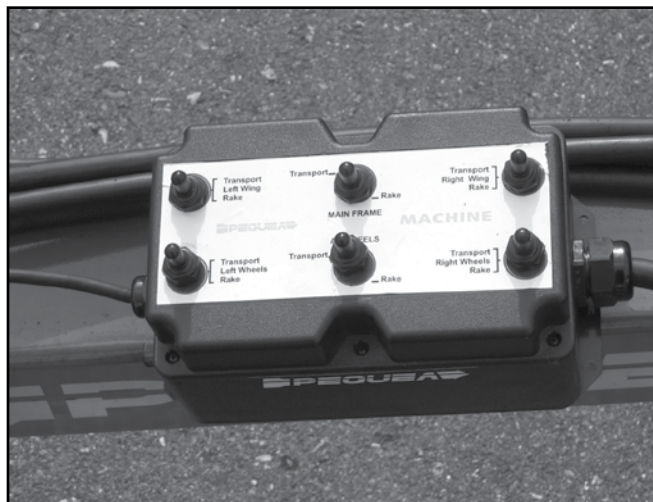


Figure 5

### Rake Beams

The right and left rake beam can be angled separately by their own switch on the control box. By angling each side more or less the desired raking width and windrow width can be achieved.



Figure 6

## ADJUSTMENTS

### Ground Pressure

Rake wheel ground pressure is adjusted by moving the chain into different positions. (Figure 7) The wheels can all be adjusted individually, but we recommend keeping the same setting on all wheels to eliminate uneven tine wear. Use the tool shown in Figure 8 to lift the rake wheel and relieve the pressure from the chain so it can be adjusted. Figure 9 shows this tool in the storage position.



Figure 7

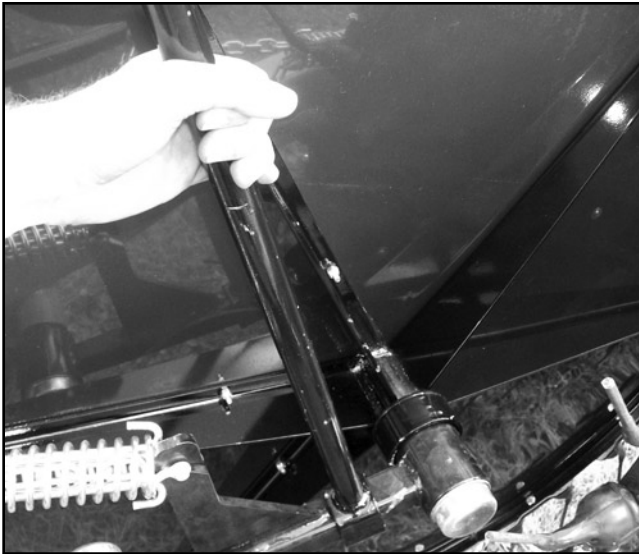


Figure 8



Figure 9

## ADJUSTMENTS

### Hitch

The hitch can be moved up or down to accommodate various drawbar heights. Simply remove the two bolts that attach the hitch and move to the desired position.

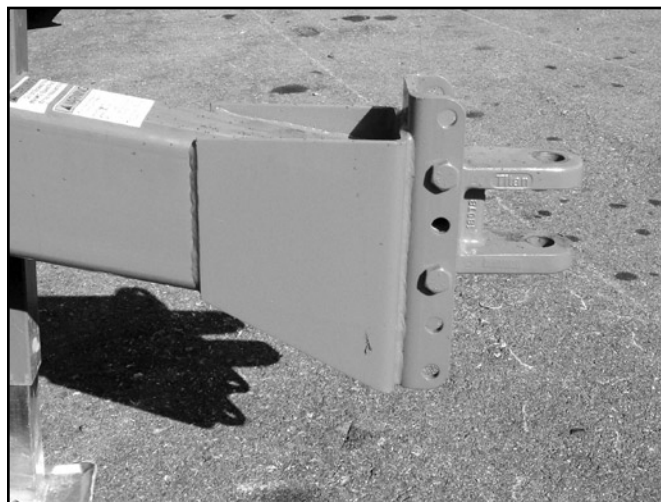


Figure 11

### Rake Beam

Rake beams should be adjusted so they are level to slightly up in the front. They can be adjusted by using the ratchet jack located near the center of the rake. This adjustment is important to keep uniform pressure on all the rake wheels. Failure to do this will cause the front wheels to make heavier contact with the ground resulting in more tine wear and more crop loss.



Figure 12

You can also make slight adjustments to leveling the rake beams by adjusting the turnbuckle that is installed in the braces shown in Figure 13



Figure 13

## LUBRICATION

### General Lubrication

Proper lubrication on all the hinge points and bearings will greatly increase the life and the performance of the rake. This section shows the location of some of the grease fittings on the 1720HD rake. All of the grease points listed below should be greased daily during normal use and before and after storage and after power washing. On the sleeve type bearings, grease until it oozes out around the pivot shaft, then wipe off all excess grease to keep from collecting dust and chaff.

There are three ratchet jacks, each with two grease fittings. One between the tongue and the main overhead frame and one on each side to adjust the rake beam pitch. (Figure 14) There are two fittings where the tongue pivots on the main frame. (Figure 15) There are two fittings on each of the rake beam swivel mounts (Figure 16) There is one fitting on each of the axle tandems. (Figure 17)

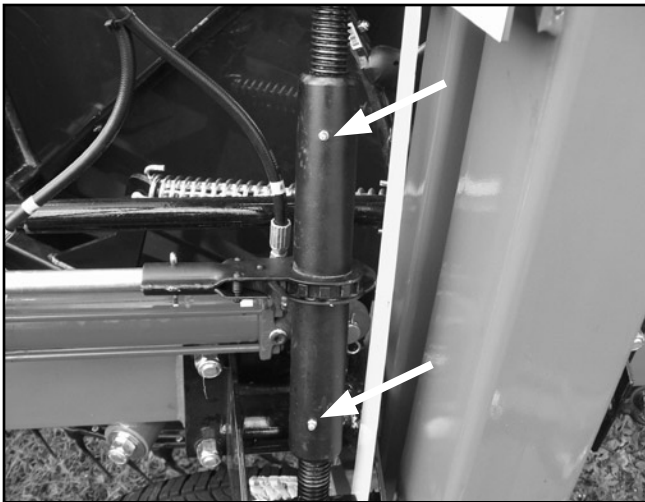


Figure 14

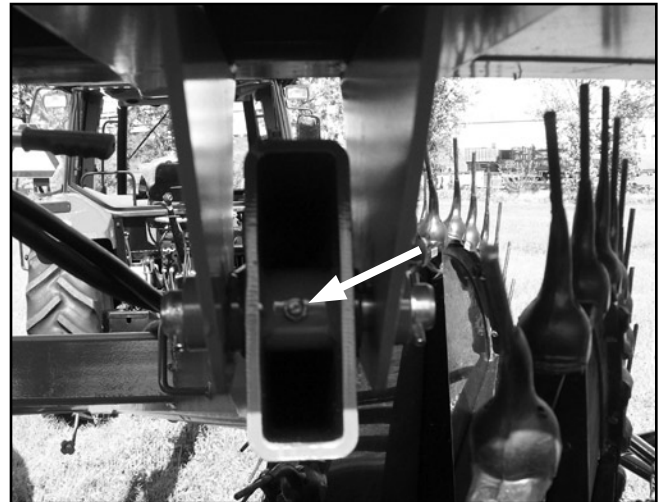


Figure 15

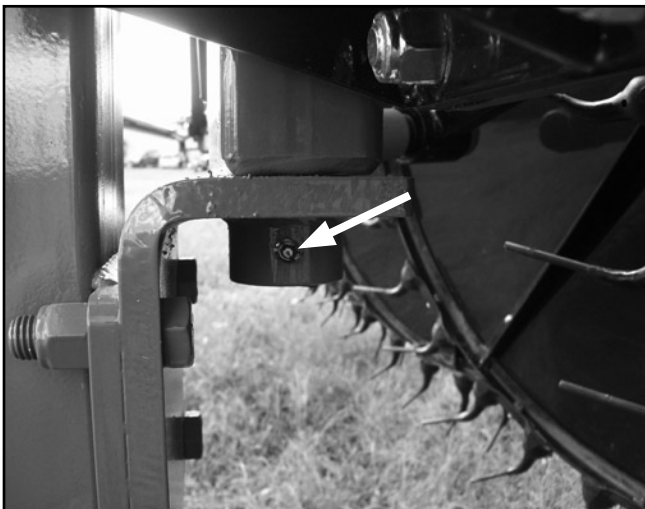


Figure 16

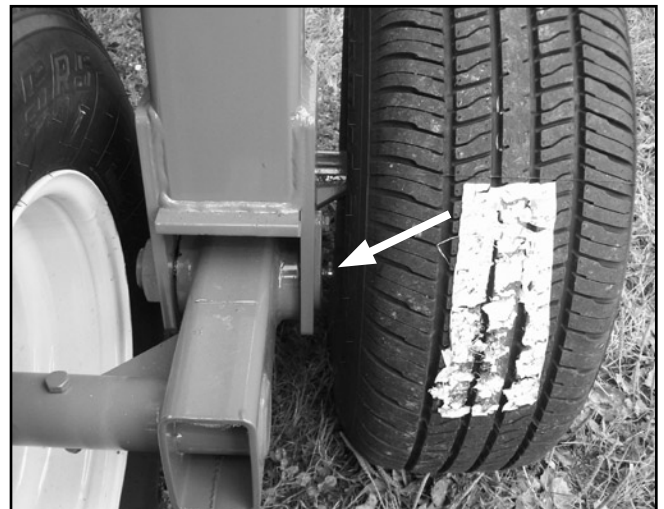


Figure 17

## LUBRICATION

### Transport Wheel Bearings

The wheel bearings should be repacked at the beginning of each season and checked periodically during the season.



Figure 18

### Rake Wheels Bearings

There are two tapered bearings on each of the rake wheel spindles. These bearings should also be checked periodically and repacked and/or cleaned whenever necessary. Replace any damaged or missing dust caps to avoid contaminating the bearings with dust and chaff.

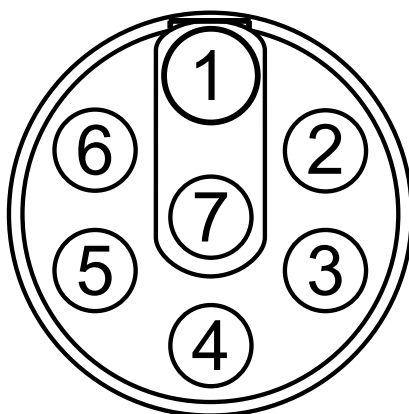


Figure 19

## ELECTRICAL

### Lights

The Windrow Pro 1820HD is equipped with lights to be used when transporting on public roads and work lights to be used when raking at night. Make sure the wiring and lights are kept fully functional at all times. Shown below is the wiring diagram for the 7-pin connector plug and the color code used for all Pequea equipment and trailers. The rear work light is powered through the auxiliary (red) wire. The drawing is shown looking at the back side of the plug insert. NOTE: The Windrow Pro 1820HD does not use all of the wire colors listed.



### Wiring Schematic for 7-Pin Wiring Plug

<u>Position</u>	<u>Function</u>	<u>Wire Color</u>
1	Ground	White
2	Spare Circuit	
3	Left Turn Signal	Yellow
4	Auxiliary	Red
5	Right Turn Signal	Green
6	Running Lights	Brown
7	Electric Brakes	Black

# ELECTRICAL

## Control Box

Shown below is the illustration and wiring diagram of the control box for the Windrow Pro 1820HD. The input wires are black (+) and white (-). The white wire goes directly through the control box and to the electronic valves on the hydraulic system. The black wire feeds into a 10 amp fuse. The wire coming off the fuse is red and is connected to the (+) spade on each of the six switches. See the diagram below for the correct wire colors for each function. NOTE: The white striped wire powers the open center hydraulic option (if installed).



Function	Position	Wire Color	Cylinder Movement
LEFT WING	Rake	Orange (Striped)	Retract
	Transport	Blue (Striped)	Extend
MAIN FRAME	Rake	Black (Striped)	Extend
	Transport	Black	Retract
RIGHT WING	Rake	Pink	Retract
	Transport	Green	Extend
LEFT WHEELS	Rake	Green (Striped)	Extend
	Transport	Pink (Striped)	Retract
ALL WHEELS	Rake	Green (Striped) & Blue	Extend
	Transport	Pink (Striped) & Orange	Retract
RIGHT WHEELS	Rake	Blue	Extend
	Transport	Orange	Retract



## SPECIAL FEATURES

### Pequea QuickPitch

The Windrow Pro 1820HD is equipped with our unique QuickPitch feature that allows the user to make quick, easy adjustments to the angle of the wheels. They can be adjusted from 0 to 8 degrees. The '0' setting is most commonly used and works well in normal conditions (dry, fluffy hay). The settings up to 8 degrees are used in harsh conditions - heavy, green hay or rained on hay that is matted into the stubble. To adjust the beam tilt angle, simply turn the ratchet handle (Figure 20) until you reach the desired angle (Figure 21). You will need to select your wheel depth by moving the stop pin to the desired location on the cylinder depth rod (Figure 22).

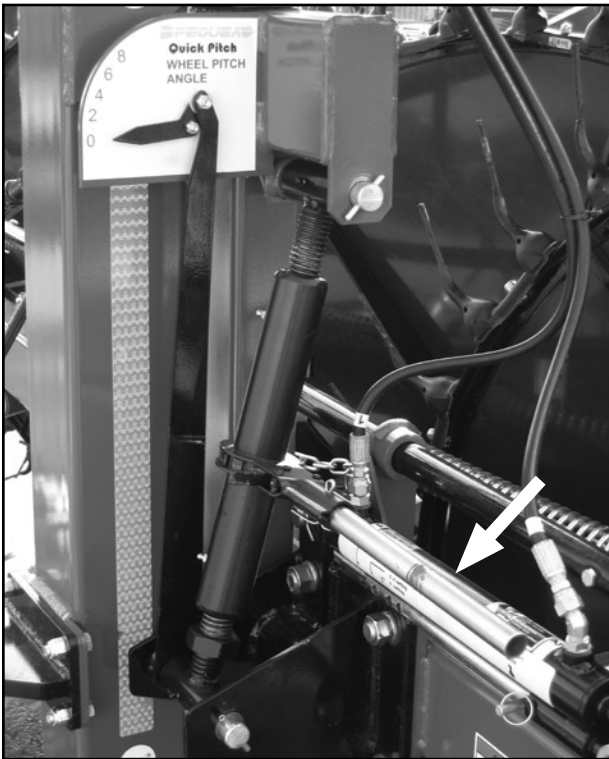


Figure 20



Figure 21



Figure 22



## OPTIONAL ACCESSORIES

### Open Center Hydraulics Option

Pequea offers an optional hydraulic valve kit that will make the machine adaptable to a tractor with open center fixed flow hydraulics. You will need to remove the two plugs on the end of the valve block shown in Figure 23 and thread the fittings on the valve block into the holes. Plug the 2-pin wiring connector into the valve. Figure 24 shows the optional kit installed.

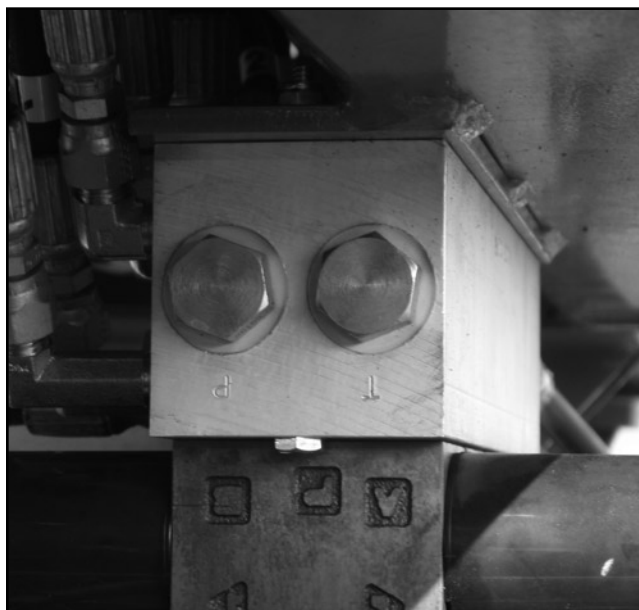


Figure 23

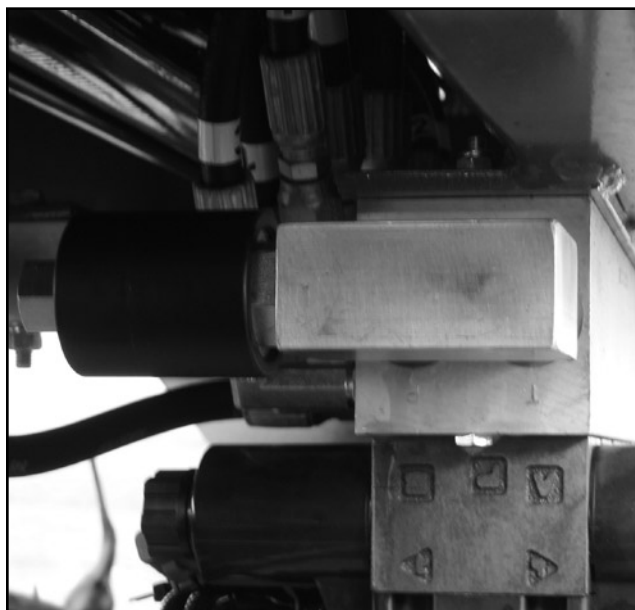


Figure 24

## TORQUE SPECIFICATIONS

Shown below is the torque chart for U.S. standard bolt sizes. All hardware on the Windrow Pro 1820HD should be tightened to these specs unless noted otherwise.

BOLT SIZE	GRADE 5 BOLTS		GRADE 8 BOLTS	
	TORQUE (DRY) FT. LBS.	LUBRICATED FT. LBS.	TORQUE (DRY) FT. LBS.	LUBRICATED FT. LBS.
1/4 20	8	6	12	9
1/4 28	10	7	14	10
5/16 20	17	13	24	18
5/16 24	19	14	27	20
3/8 16	30	23	45	35
3/8 24	35	25	50	35
7/16 14	50	35	70	50
7/16 20	55	40	80	60
1/2 13	75	55	110	80
1/2 20	85	65	120	90
9/16 12	110	80	150	110
9/16 18	120	90	170	130
5/8 11	150	110	210	160
5/8 18	170	130	240	180
3/4 10	260	200	380	280
3/4 16	300	220	420	310
7/8 9	430	320	600	450
7/8 14	470	350	670	500
1-8	640	480	910	680
1-14	720	540	1,020	760

## TROUBLE SHOOTING

TROUBLE	POSSIBLE CAUSE	REMEDY
Main Frame will not open or close	Transport safety chain still attached	Unsnap safety chain
	No electrical power to control box	Check plug and battery connections
	Blown fuse or circuit breaker on control box or tractor	Check and replace fuse or circuit breaker
	Hydraulic lever not engaged or engaged in wrong direction	Move hydraulic lever to correct position
	Hydraulic hoses not properly connected to tractor	Check hoses for proper connection
	Solenoid valve sticking or not working properly	Check solenoid and valve
Rake beams will not open or close	Transport lock still engaged	Disengage transport lock
	No electrical power to control box	Check plug and battery connections
	Blown fuse or circuit breaker on control box or tractor	Check and replace fuse or circuit breaker
	Hydraulic lever not engaged or engaged in wrong direction	Move hydraulic lever to correct position
	Hydraulic hoses not properly connected to tractor	Check hoses for proper connection
	Solenoid valve sticking or not working properly	Check solenoid and valve
Rake wheels will not raise or lower	Transport lock still engaged	Disengage transport lock
	No electrical power to control box	Check plug and battery connections
	Blown fuse or circuit breaker on control box or tractor	Check and replace fuse or circuit breaker
	Hydraulic lever not engaged or engaged in wrong direction	Move hydraulic lever to correct position
	Hydraulic hoses not properly connected to tractor	Check hoses for proper connection
	Solenoid valve sticking or not working properly	Check solenoid and valve
Rake wheels will not turn	String or wire wrapped around wheel	Remove string or wire
	Bearings dry or burned out	Grease or replace bearings

## **WARRANTY**

# **Pequea Machine's Limited Warranty**

Pequea Machine Company warrants to the original Purchaser all Machinery, Equipment, or Trailers manufactured by it, to be free from defects in material and workmanship under normal use and service. Its obligation under this Warranty shall be limited to replacement or repair of any parts thereof, free of charge to the original Purchaser, at its place of business, provided, however, that the part(s) to be replaced or repaired, shall within one (1) year after delivery to the original Purchaser, be demonstrated to be defective; which determination shall be made by the Company. The said components or parts must be returned through the Selling dealer or distributor directly to the Company with all transportation charges prepaid. Notice of defect shall be furnished in writing to the Seller and to the agent through whom the machinery was received, disclosing in full all known defects and failure in operation and use, and reasonable time shall be given to the Seller to remedy any such defects and failures. Failure to make such trial or give such notice shall be deemed an absolute acceptance by the Buyer and satisfaction in full of this Limited Warranty.

This Warranty does not cover, under any circumstances, any parts, components, or materials which, in the opinion of the Seller and Company, have been subjected to neglect, misuse, alteration, accident, or if repaired, with parts other than those manufactured by and obtained from Pequea Machine Company.

This Warranty does not cover components which are already covered by a separate Warranty provided by the supplier of said parts or components.

The Company's obligation under this Warranty is limited to repair or replacement, free of charge to the original Purchaser, of any part which in judgment of the Company is defective. This Warranty does not cover normal wear and tear.

**THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR USE AND PURPOSE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON ITS PART AND ANY IMPLIED WARRANTY. AND IT NEITHER ASSUMES NOR AUTHORIZES ANY OTHER LIABILITY IN CONNECTION WITH A SALE OF THIS MACHINE. THIS WARRANTY SHALL NOT APPLY TO THIS MACHINE OR TO ANY PART THEREOF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE, OR MISUSE.**

The Company makes no Warranty whatsoever in respect to accessories or parts not supplied by the Company. The term "original Purchaser" as used in this warranty, shall be deemed that person for whom the Machine, Equipment, or Trailer is originally supplied. This Warranty shall apply only within the boundaries of the continental United States.

Under this Warranty, the Company cannot guarantee that existing conditions beyond its control will not affect its ability to obtain materials or manufacture necessary replacement parts.

No one is authorized to alter, modify, or change the terms of this Warranty in any manner.

The Company warrants the Construction of the equipment sold herein and will replace at its expense for a period of (1) year from the date hereof, any parts which prove defective as determined under the terms of this Limited Warranty.

## NOTES







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