



MODEL 7130
TO THE MAX™ ROLLER HARROW
OPERATOR'S MANUAL



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MARYSVILLE, KANSAS 66508
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TO THE MAXTM ROLLER HARROW
OPERATOR'S MANUAL

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NOTES:

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SAFETY PRECAUTIONS



THIS IS THE SAFETY ALERT SYMBOL. IT IS USED TO ALERT YOU TO POTENTIAL INJURY HAZARDS. OBEY ALL SAFETY MESSAGES THAT FOLLOW THIS SYMBOL TO AVOID POSSIBLE INJURY OR DEATH.

DANGER

DANGER INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

WARNING

WARNING INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

CAUTION

CAUTION INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY.

CAUTION

CAUTION USED WITHOUT THE SAFETY ALERT SYMBOL INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN PROPERTY DAMAGE.

INTRODUCTION

1

The Landoll 7130 To The Max Harrow is a quality product designed to give years of trouble free performance. By following each section of this manual, your system will perform as designed for you and your operation.

SECTION 1 gives basic instructions on the use of this manual.

SECTION 2 gives product specifications. These specifications supply lengths and measures for your equipment. A Standard Bolt Torque Table is provided to give guidelines for bolt torques to be used when servicing this product.

SECTION 3 instructs how to operate your equipment before using it, and describes adjustments needed. It also gives practical advice for the care and maintenance of your Landoll equipment. Drawings in this section locate adjustment points on the equipment.

NOTE: IF THE EQUIPMENT IS IMPROPERLY ASSEMBLED OR MAINTAINED, THE WARRANTY IS VOID. IF YOU HAVE ANY QUESTIONS CONTACT:

**LANDOLL CORPORATION
1900 NORTH STREET
MARYSVILLE, KANSAS 66508
or phone:
(785) 562-5381 or
(800) 428-5655
or FAX:
(785) 562-3240**

SECTION 4 is a troubleshooting guide to aid in diagnosing and solving problems with the equipment.

PARTS LIST is a separate manual showing the various assemblies, subassemblies, and systems. Refer to that manual when ordering Landoll replacement parts. Order parts from your Landoll dealer.

WARRANTY The Warranty Registration form is included with the product documents. Fill it out and mail it within 15 days of purchase. The Warranty is printed inside the front cover.

NOTE: IMPROPER ASSEMBLY, MODIFICATION, OR MAINTENANCE OF YOUR LANDOLL MACHINE CAN VOID YOUR WARRANTY.

COMMENTS Address comments or questions regarding this publication to:

**LANDOLL CORPORATION
1900 NORTH STREET
MARYSVILLE, KANSAS 66508
ATTENTION: PUBLICATIONS -DEPT. 55**

NOTES:

STANDARD SPECIFICATIONS

2

Working Width	32'
Rolling Harrow Attack Angle	40° fixed
Transport Width:	
Standard	16'
Hydraulic	16'
Standard Transport Height:	
w/ boards up	12'-9"
w/ boards down	12'-5"
Hydraulic Transport Height:	
w/ boards up	14'-6"
w/ boards down	11'-11"
Overall Weight	13,600 lbs.
Power Requirements	200 hp in most conditions
Rolling Blades	17" dia. reel w/ hardened steel blades on a spring cushioned frame
Rotary Harrow	Tines 3/4" od. C1060 heat-treated steel, tine assembly dia. is 16.5"
Tires:	
Main	11L-15
Outer	7.6L-15
Wheel Bolt Torque	85 ft. lbs.

Specifications are subject to change without prior notification.

NEW TIRE DIMENSIONS (IN.)						CONTACT AREA (SQ. IN.)			MAX. SPEED 25 MPH	
										
Tire Size	Ply Rating	Overall Width	Overall Dia.	Static Loaded Radius	Rolling Circum.	Bar Height	Flat Plate	3" Pene.	Tire Weight Lbs.	Max. Load & Infl. (lbs. @ psi)
TUBELESS										
7.60-15	8	7.5	28.7	12.8	87	.26	42	100	25	2090 @ 52
9.5L-15	6	9.4	30.0	13.3	91	.26	58	118	27	2040 @ 32
9.5L-15	8	9.4	30.0	13.3	91	.26	58	118	29	2470 @ 44
9.5L-15	12	9.4	30.0	13.3	91	.26	58	118	36	3150 @ 64
11L-15	8	10.7	30.6	13.6	92	.26	75	146	32	2540 @ 36
11L-15	10	10.7	30.6	13.6	92	.26	75	146	38	2910 @ 44
11L-15	12	10.7	30.6	13.6	92	.26	75	146	43	3200 @ 52

Table 2-1 Tire Specifications

LANDOLL CORPORATION GENERAL TORQUE SPECIFICATIONS (REV. 4/97)

THIS CHART PROVIDES TIGHTENING TORQUES FOR GENERAL PURPOSE APPLICATIONS WHEN SPECIAL TORQUES ARE NOT SPECIFIED ON PROCESS OR DRAWING.

ASSEMBLY TORQUES APPLY TO PLATED NUTS AND CAPSCREWS ASSEMBLED WITHOUT SUPPLEMENTAL LUBRICATION (AS RECEIVED CONDITION). THEY DO NOT APPLY IF SPECIAL GRAPHITE MOLY-DISULFIDE OR OTHER EXTREME PRESSURE LUBRICANTS ARE USED.

WHEN FASTENERS ARE DRY (SOLVENT CLEANED), ADD 33% TO AS RECEIVED CONDITION TORQUE.

BOLT HEAD IDENTIFICATION MARKS INDICATE GRADE AND MAY VARY FROM MANUFACTURER TO MANUFACTURER.

THICK NUTS MUST BE USED ON GRADE 8 CAPSCREWS.

USE VALUE IN [] IF USING PREVAILING TORQUE NUTS.

TORQUE IS SPECIFIED IN FOOT POUNDS

UNC Size	SAE Grade 2	SAE Grade 5	SAE Grade 8	UNF Size	SAE Grade 2	SAE Grade 5	SAE Grade 8
1/4-20	4 [5]	6 [7]	9 [11]	1/4-28	5 [6]	7 [9]	10 [12]
5/16-18	8 [10]	13 [16]	18 [22]	5/16-24	9 [11]	14 [17]	20 [25]
3/8-16	15 [19]	23 [29]	35 [43]	3/8-24	17 [21]	25 [31]	35 [44]
7/16-14	24 [30]	35 [43]	55 [62]	7/16-20	27 [34]	40 [50]	60 [75]
1/2-13	35 [43]	55 [62]	80 [100]	1/2-20	40 [50]	65 [81]	90 [112]
9/16-12	55 [62]	80 [100]	110 [137]	9/16-18	60 [75]	90 [112]	130 [162]
5/8-11	75 [94]	110 [137]	170 [212]	5/8-18	85 [106]	130 [162]	180 [225]
3/4-10	130 [162]	200 [250]	280 [350]	3/4-16	150 [188]	220 [275]	320 [400]
7/8-9	125 [156]	320 [400]	460 [575]	7/8-14	140 [175]	360 [450]	500 [625]
1-8	190 [237]	408 [506]	680 [850]	1-14	210 [263]	540 [675]	760 [950]
1-1/8-7	270 [337]	600 [750]	960 [1200]	1-1/8-12	300 [375]	660 [825]	1080 [1350]
1-1/4-7	380 [475]	840 [1050]	1426 [1782]	1-1/4-12	420 [525]	920 [1150]	1500 [1875]
1-3/8-6	490 [612]	110 [1375]	1780 [2225]	1-3/8-12	560 [700]	1260 [1575]	2010 [2512]
1-1/2-6	650 [812]	1460 [1825]	2360 [2950]	1-1/2-12	730 [912]	1640 [2050]	2660 [3325]

METRIC

COARSE THREAD METRIC CLASS 10.9 FASTENERS AND CLASS 10.0 NUTS AND THROUGH HARDENED FLAT WASHERS, PHOSPHATE COATED, ROCKWELL "C" 38-45.

USE VALUE IN [] IF USING PREVAILING TORQUE NUTS.

Nominal Thread Diameter mm	Standard Torque		Nominal Thread Diameter mm	Standard Torque	
	Newton-Meters	Foot-Pounds		Newton-Meters	Foot-Pounds
6	10 [14]	7 [10]	20	385 [450]	290 [335]
7	16 [22]	12 [16]	24	670 [775]	500 [625]
8	23 [32]	17 [24]	27	980 [1105]	730 [825]
10	46 [60]	34 [47]	30	1330 [1470]	990 [1090]
12	80 [101]	60 [75]	33	1790 [1950]	1340 [1450]
14	125 [155]	90 [115]	36	2325 [2515]	1730 [1870]
16	200 [240]	150 [180]	39	3010 [3210]	2240 [2380]
18	275 [330]	205 [245]			

Table 2-2 General Torque Specifications

**LANDOLL CORPORATION
HYDRAULIC FITTING TORQUE SPECIFICATIONS
37° JIC, ORS, & ORB (REV. 10/97)**

THIS CHART PROVIDES TIGHTENING TORQUES FOR HYDRAULIC FITTING APPLICATIONS WHEN SPECIAL TORQUES ARE NOT SPECIFIED ON PROCESS OR DRAWING.

ASSEMBLY TORQUES APPLY TO PLATED CARBON STEEL AND STAINLESS STEEL FITTINGS ASSEMBLED WITHOUT SUPPLEMENTAL LUBRICATION (AS RECEIVED CONDITION). THEY DO NOT APPLY IF SPECIAL GRAPHITE MOLY-DISULFIDE OR OTHER EXTREME PRESSURE LUBRICANTS ARE USED.

BRASS FITTINGS AND ADAPTERS - 65% OF THE TORQUE VALUE FOR STEEL. STAINLESS STEEL, ALUMINUM AND MONEL - THREADS ARE TO BE LUBRICATED.

TORQUE IS SPECIFIED IN FOOT POUNDS

PARKER BRAND FITTINGS

Dash Size	37 Degree JIC	O-Ring (ORS)	O-Ring Boss (ORB)
-4	11-13	15-17	13-15
-5	14-16	—	21-23
-6	20-22	34-36	25-29
-8	43-47	58-62	40-44
-10	55-65	100-110	57.5-62.5
-12	80-90	134-146	75-85
-16	115-125	202-218	109-121
-20	160-180	248-272	213-237
-24	185-215	303-327	238-262
-32	250-290	—	310-340

**LANDOLL CORPORATION
HYDRAULIC FITTING TORQUE SPECIFICATIONS
37° JIC, ORS & ORB (REV. 10/97)**

THIS CHART PROVIDES TIGHTENING TORQUES FOR HYDRAULIC FITTING APPLICATIONS WHEN SPECIAL TORQUES ARE NOT SPECIFIED ON PROCESS OR DRAWING.

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BRASS FITTINGS AND ADAPTERS - 65% OF THE TORQUE VALUE FOR STEEL.

TORQUE IS SPECIFIED IN FOOT POUNDS.

AEROQUIP BRAND FITTINGS

Dash Size	37 Degree JIC	O-Ring (ORS)	O-Ring Boss (ORB)
-4	11-12	10-12	14-16
-5	15-16	—	18-20
-6	18-20	18-20	24-26
-8	38-42	32-35	50-60
-10	57-62	46-50	72-80
-12	79-87	65-70	125-135
-14	—	—	160-180
-16	108-113	92-100	200-220
-20	127-133	125-140	210-280
-24	158-167	150-165	270-360
-32	245-258	—	—

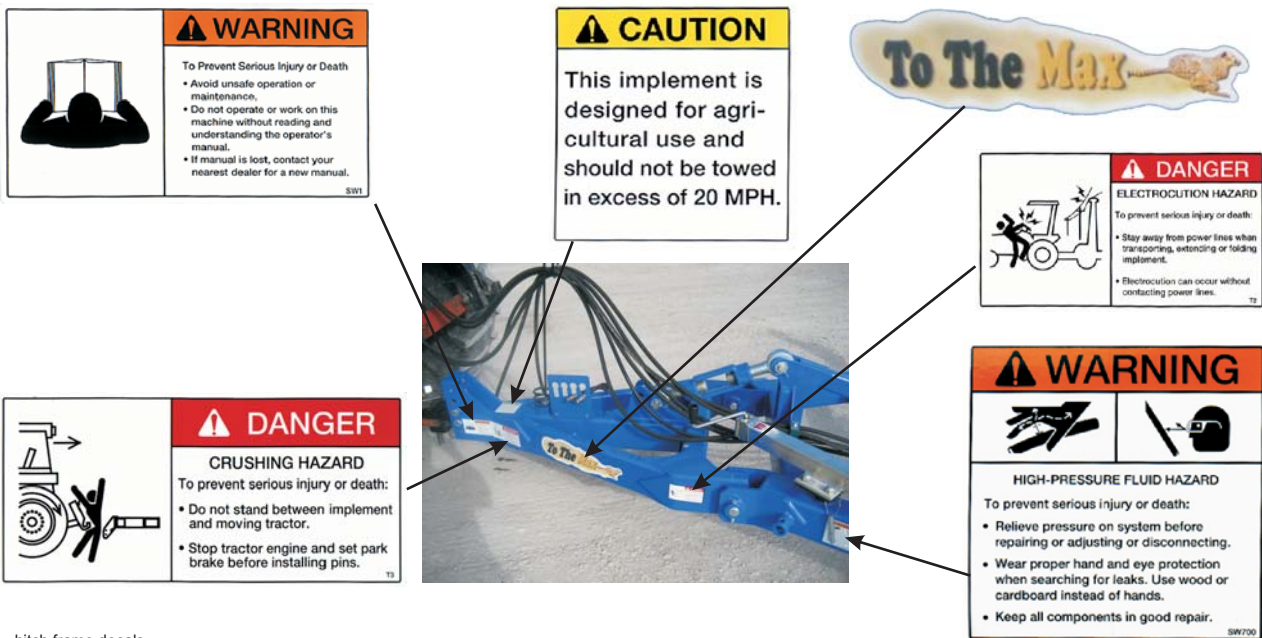
Table 2-3 Hydraulic Fitting Torque Specifications

OPERATION AND MAINTENANCE

3

3-1 SAFETY INFORMATION AND DECAL LOCATIONS

The types of Safety/Information Signs and locations on the harrow are shown in **Figures 3-1, 3-2, and 3-3**. Good safety practice requires that you familiarize yourself with the various Safety/Information Signs. Replacement part numbers are found in the Parts List manual. Immediately replace all worn, damaged, peeling, or obscured decals.



hitch frame decals

Figure 3-1 Hitch Frame Decals



side wing decals



wing frame decals

Figure 3-2 Side Wing Decals

Figure 3-3 Wing Frame Decals

3-2 GENERAL SAFETY INSTRUCTIONS

- All operator's are to be instructed in the safe and proper use of this machine and must understand all safety decals as well as all written instructions in the manual.
- Safety instructions are important. Read this manual, the tractor manual, and all safety rules.
- Know your controls and how to stop engine and attachment quickly in an emergency.
- Operator's must read this manual and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
- Keep all safety signs in good condition. Replace when necessary.
- Find a spacious, clear, and level surface to perform any maintenance or adjustments.
- Never work around running machinery.
- Never remove obstructions from machinery while tractor engine is still running.
- DO NOT walk under the harrow when wings are elevated.
- DO NOT ride on harrow frame.
- Any damage/deterioration on any parts should be repaired/ replaced immediately by capable operators to reduce the risk of personal injury.
- Regularly check the condition of the u-bolts and bearing assemblies. Replace any suspect parts to prevent accidents.

3-3 OPERATIONAL SAFETY

- When this equipment is operated in populated areas, extreme care must be taken. If anyone comes within several hundred feet, suspend operation.
- Keep bystanders away from equipment while in operation.
- Operate only in daylight or with good artificial light that illuminates the entire operating area.
- Only use tractor with ROPS and seat belt. Securely fasten seat belt. Falling off tractor can result in being run over.
- Always comply with all state and local lighting and marking requirements.
- No riders are allowed on equipment.
- Always sit in tractor seat when operating controls or starting engine. Place transmission in park or neutral, engage brake and ensure all other controls are disengaged before starting tractor engine.
- Do not operate on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on sloped and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop tractor and attachment immediately upon striking an obstruction. Turn off engine, remove key. Inspect and repair any damage before resuming operation.

DANGER

WINGS MUST BE UNFOLDED BEFORE LOWERING THE HARROW TO THE GROUND. FAILURE TO DO THIS WILL RESULT IN SEVERE OPERATOR INJURY.

3-4 TRANSPORT SAFETY

3-4.1 General

- Use the safety chains provided for securing the wings during transport. See Harrow Safety Locks for more information.
- Always use tow-safety chain.
- Check that local road regulations are adhered to when moving your harrow on public roads. Refer to Section 2. for dimensions and weight of harrow.
- Never transport your 7130 To The Max Roller Harrow over 20 mph.
- Be sure your tow vehicle is properly equipped and is capable of pulling the harrow.
- Always take precautions near overhead wires.

3-4.2 Extremity/ Wing Lights

The harrow comes equipped with back wing lights that work in conjunction with the flashing/ signal tractor lights. Join the electrical connector to the tractor prior to use. **See Figures 3-4 and 3-5** for lighting locations.

IMPORTANT

BE SURE TO DISCONNECT THE LIGHTING HARNESSES WHEN DISCONNECTING THE HARROW FROM THE TRACTOR.

3-4.3 Slow Moving Vehicle Sign

Regulations for SMV signs require towing speeds not to exceed 20 mph. **See Figure 3-6** for location.



Figure 3-4 Close-Up View of Lighting



Figure 3-5 Distant View of Lighting



Figure 3-6 Location of SMV Sign

3-5 GENERAL MAINTENANCE SAFETY

- Good maintenance is your responsibility. Remember that poor maintenance is just an invitation for future inconvenience. Be sure to familiarize yourself with the proper servicing procedures in this manual.
- Before working on this machine, stop the tractor or towing vehicle, set the brakes, lower the wings or secure them in the wing rests, relieve the hydraulic fluid pressure, shut off the engine, and remove the ignition keys.
- Always use a safety support and block the wheels. When performing maintenance, never use a jack alone to support the machine. Assist the jack with blocks or other adequate support.
- Use extreme caution when making adjustments. Always wear protective clothing and use personal safety devices when required.
- When disconnecting hydraulic lines, first shut off hydraulic supply and relieve all hydraulic pressure.
- Never use hands to locate a hydraulic leak on attachments. Use a piece of cardboard or wood. Hydraulic fluid escaping under pressure can penetrate the skin.
- Openings in the skin and minor cuts are susceptible to infection from hydraulic fluid. If injured by escaping hydraulic fluid, see a doctor at once. Gangrene can result. Without immediate medical treatment, serious infections, and reactions can occur.
- When installing, replacing, or repairing hydraulic system cylinders or parts, make sure that the entire system is charged and free of air before resuming operations. Failure to bleed the system of all air can result in improper machine operation, causing severe injury.
- After servicing, be sure all tools, parts, and service equipment are removed.
- Never replace hex bolts and washer with less than grade 8 bolts and washers unless otherwise specified.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use.
- If equipment has been altered in any way from original design, the manufacturer does not accept any liability for injury or warranty.

3-6 TIRE SAFETY

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- Do not attempt to mount tires unless you have the proper equipment and experience to do the job.
- Follow recommended tire pressures in Table 3-6 on page 3-20.
- Always order and install tires and wheels with appropriate capacity to meet or exceed the weight of the transport cart and harrows.

IMPORTANT

YOUR BEST ASSURANCE AGAINST ACCIDENTS IS A CAREFUL AND RESPONSIBLE OPERATOR. IF THERE IS ANY PORTION OF THIS MANUAL OR FUNCTION YOU DO NOT UNDERSTAND, CONTACT YOUR LOCAL LANDOLL DEALER OR THE LANDOLL CORPORATION.

3-7 PRE-OPERATION SET UP

- 3-7.1** Make sure all wheel lug nuts or bolts are tightened before use.
- 3-7.2** Assure that all tires are inflated evenly.
- 3-7.3** Inspect the complete machine for any loose bolts, worn parts, or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included in the manual.
- 3-7.4** Before using the hydraulics on the harrow, be sure all fittings and connections are tight.
- 3-7.5** Make sure the area is clear of children, animals, and other obstacles before using.
- 3-7.6** Experiment with the operation of the reel choppers, tooling modules, and leveling boards to familiarize yourself with the harrow's performance before using. Ease into the operation, and become familiar with your new equipment.

3-8 HOOKING THE HARROW TO THE TRACTOR

- 3-8.1** The harrow comes equipped with a clevis style bolt on cast hitch. The clevis portion must be removed if your tractor is equipped with a double tongue on the drawbar. If your tractor has a single tongue, you will need the clevis style double tongue arrangement.

DANGER

EITHER THE TRACTOR HITCH OR THE HARROW MUST HAVE A DOUBLE CLEVIS ARRANGEMENT. DURING WING FOLDING, THERE WILL TEMPORARILY BE NEGATIVE WEIGHT ON THE HITCH!

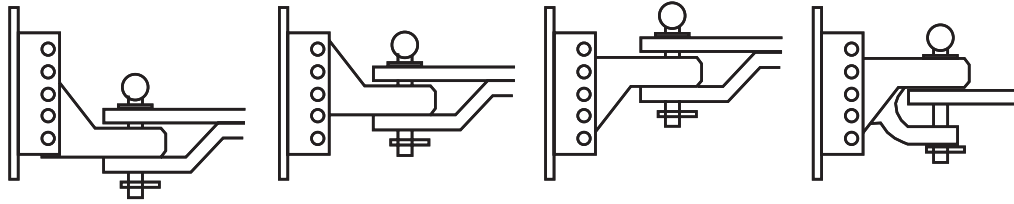
- 3-8.2** The cast hitch is held on using (2) two 1" grade 8 bolts (**See Figure 3-7**). The cast hitch can be adjusted so that the harrow frame will be level. Our goal is to get the harrow frame as level as possible so that proper depth control can be achieved. Note that the harrow will not always be perfectly level when operating at the proper depths. Please see **Section 3-11** for more information.



Figure 3-7 Correct Use of Double Clevis

DANGER

IF A DOUBLE CLEVIS IS USED ON THE HARROW, IT IS IMPERATIVE THAT THE HITCH PINTLE (LARGER EYELET) IS ON TOP!

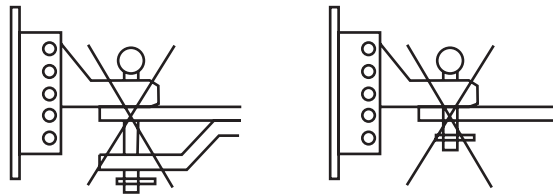


correct hitching

Figure 3-8 Correct Hitching of the Harrow

3-8.3 Hitch Height Adjustment (See Figures 3-8 and 3-9)

- a. Remove the 1" bolts holding the cast hitch to the hitch plate.
- b. Move the cast hitch up or down to a location on the hitch plate where the frame will be level.
- c. Rebolt the cast hitch in place.
- d. Hitch height can vary depending on the desired pressure on leveling boards.



incorrect hitching

Figure 3-9 Incorrect Hitching of the Harrow

3-9 PUTTING THE HARROW INTO THE FIELD

There are several important steps that you must take before you are able to use the 7130 To The Max Roller Harrow in the field. Be sure to read this operator's manual and follow all safety procedures before operating this machine.

3-9.1 Unfolding And Preparing For Work:

- a. Unhook the wing safety chains (See Figure 3-10).
- b. From the tractor, set folding, lowering, and cover board remote hydraulic flow valves to their slowest position (See Figure 3-11). Refer to your tractor's operator's manual for proper procedure.
- c. Raise cover boards to the raised position (See Figure 3-12).

IMPORTANT

DAMAGE TO COVER BOARD WILL RESULT IF YOU FAIL TO FOLLOW THIS PROCEDURE.

- d. Slowly unfold the wings. Once wings are completely unfolded, set wing valve to the FLOAT position.
- e. Carefully lower harrow (See Figure 3-13).
- f. When the leveling boards are approximately one foot above the ground, slowly roll the tractor forward as you finish lowering the harrow to its working position.
- g. Lower the hydraulic cover boards and set correct down pressure (See Figure 3-14).

IMPORTANT

THE HYDRAULIC VALVE MUST BE SET TO CONSTANT PRESSURE DOWN TO FUNCTION CORRECTLY.



Figure 3-10 Wing Safety Chains



Figure 3-11 Set Valve to Slowest Position



Figure 3-12 Cover Boards in Raised Position



Figure 3-13 Harrow Lowered



Figure 3-14 Setting Hydraulic Pressure

3-10 GENERAL OPERATING TIPS

- 3-10.1** Recommended operating speed is 8 - 10 mph in normal conditions. The rougher the condition, the slower the operating speed will need to be.
- 3-10.2** If running machine in rocky conditions, 8 mph is the maximum operating speed! Harrow components damaged due to rocky conditions are not warrantable items!
- 3-10.3** Do not lift machine when turning harrow around.

IMPORTANT

THE ONLY TIME YOU NEED TO RAISE THE HARROW IS WHEN CROSSING WATERWAYS IN THE FIELD. THEN, ONLY RAISE HARROW 6 - 10 INCHES TO RELIEVE PRESSURE ON BACK LEVELING BOARDS.

- 3-10.4** Use care when turning harrow so that the inside wing does not move backwards when turning sharply.

IMPORTANT

TURNING TOO SHARPLY WILL BEND LEVELING BOARDS.

- 3-10.5** When using your 7130 To The Max Roller Harrow, pay special attention to the amount of residue in the field. As the volume of residue increases, cover board tension will need to be relaxed to allow proper flow of residue. Failure to decrease tension will result in bunching of stalks and trash (the infamous rabbit-hutch syndrome").

3-11 HARROW DEPTH ADJUSTMENT

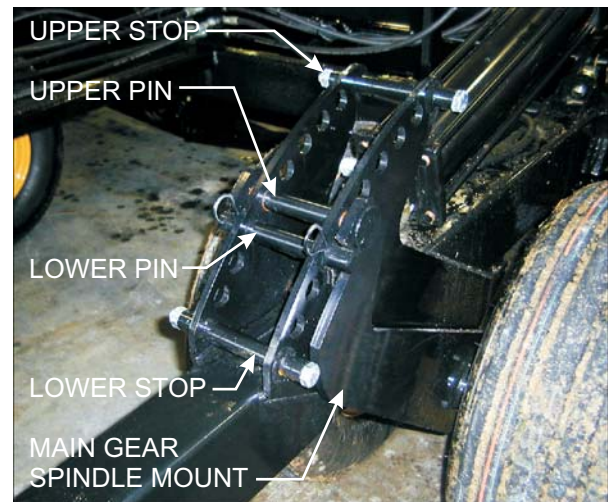
The 7130 To The Max Roller Harrow is designed to work at depths of 1" - 1-1/2". When running through the field, there should be no more than 1-1/2" of dirt being disturbed. Check depth behind machine. If the working depth is greater than 1-1/2", the main frame wheels need to be adjusted.

The initial factory setting for the main frame wheel is for the upper pin to be in the fourth adjustment hole from the bottom.

Both pins **MUST** always be used in the main gear spindle mount (See Figure 3-15).

DANGER

FAILURE TO FOLLOW SAFETY PROCEDURES OUTLINED IN SECTIONS 3-1 - 3-6 MAY RESULT IN SERIOUS INJURY OR DEATH. PLEASE EXERCISE EXTREME CAUTION AND CARE WHEN ADJUSTING MAIN FRAME WHEEL DEPTH.



depth adjust

Figure 3-15 Depth Adjustment Components

3-11.1 Main Frame Wheels Adjustment Procedure:

- a. To adjust the main frame wheels, make sure the harrow is unfolded and lowered on the ground.
- b. Once the harrow is on the ground, pull the hitch pin off the tractor and slowly pull forward until the harrow tongue can rise without hitting the tractor (**See Figure 3-16**).

IMPORTANT

PULLING TOO FAR FORWARD WILL STRETCH OR BREAK HOSE.

- c. Slowly activate the hydraulics to raise the harrow. There is enough weight on the back that it will make the tongue raise, causing your main frame wheels to come off the ground. At this time the main frame wheels can now be adjusted (**See Figure 3-17**).
- d. Carefully pull both pins out of the main gear spindle mount (**See Figure 3-18**). Raise the pin positions to lower the wheels (to work shallower). Lower the pin positions to raise the wheels (to work deeper) (**See Figure 3-19**). Replace both pins to desired positions and return cotter keys to their safety locations (**See Figure 3-20**).
- e. Slowly release the tractor's hydraulic to lower the tongue back to hitch position. Carefully back the tractor up until you can repin the harrow's tongue to the tractor's hitch. (It may be necessary to adjust the turnbuckle to rehook the harrow to the tractor). You have now successfully changed the depth adjustments on the main frame wheels!

IMPORTANT

LOWER PIN LOCATION=DEEPER SETTING

HIGHER PIN LOCATION=SHALLOW SETTING



Figure 3-19 Pins Removed



Figure 3-16 Harrow Hitch



Figure 3-17 Main Frame Wheel Adjustment



Figure 3-18 Remove Pins



Figure 3-20 Pins Replaced

3-12 GAUGE WHEEL ADJUSTMENT

The 7130 To The Max Roller Harrow is equipped with adjustable gauge wheels on the outside of each wing section to help maintain uniform working depth across the entire harrow. Adjust wheels in field conditions so that reel depth is consistent across the entire harrow.

3-12.1 Adjustment Procedure:

- a. Remove clip and pin on the gauge wheel arm (**See Figure 3-21**).
- b. Slide arm up or down to desired hole position and reinsert pin and clip. (Slide arms up to lower working depth; slide arms down to raise outside wings.)

IMPORTANT

THERE ARE TWO PIN HOLE LOCATIONS WHICH ALLOW HALF-HOLE INCREMENTS WHEN RAISING OR LOWERING THE OUTER GAUGE WHEELS. EACH HALF HOLE ON THE OUTER WHEEL IS EQUAL TO ONE HOLE ON THE MAIN FRAME. (OUTER WHEEL SLIDE ARM HAS 4 HOLES X 2 PIN LOCATIONS = 8 HOLES ON MAIN FRAME).

IMPORTANT

BE SURE AND MATCH GAUGE WHEEL DEPTH ADJUSTMENT WITH MAIN FRAME DEPTH ADJUSTMENT. FOR MORE INFORMATION, SEE SECTION 3-11. FIGURE 3-21 WOULD BE EQUIVALENT TO THE MAIN WHEEL PIN SET IN THE 1ST HOLE FROM THE BOTTOM.

ATTENTION

FAILURE TO MATCH GAUGE WHEEL DEPTH TO MAIN FRAME WHEEL DEPTH WILL CREATE IMPROPER SEEDBED CONDITIONS.



Figure 3-21 Gauge Wheel Adjustment

3-13 COVER BOARD ADJUSTMENT

Before operating the harrow, make sure the leveling boards are set correctly for the current amount of residue and soil ridge heights.

3-13.1 Recommended Settings:

- a. Connect cover-board hydraulic lines into a secondary bank hydraulic valve (if positioned in a primary bank, you may not be able to turn the down pressure control knob.) Lock the hydraulic control lever into the down position so the cover boards will maintain constant down pressure across the width of the harrow - automatically compensating for ridges or depressions in the terrain. If a cover board hits a rock or obstruction, it will float up and return to its down position.
- b. The factory recommended setting would be a pressure reading between 0 - 500 lbs. of pressure for optimum performance (**See Figure 3-22**). If more leveling is desired, increase the pressure setting. If bunching of residue is observed, decrease the pressure setting.

IMPORTANT

WHEN PRESSURE SETTING IS ABOVE 200 LBS., IT IS NECESSARY TO RAISE THE HYDRAULIC BOARDS WHEN TURNING ON THE ENDS. DAMAGE TO THE COVER BOARDS COULD RESULT IF YOU FAIL TO FOLLOW THIS PROCEDURE.



Figure 3-22 Pressure Gauge

3-13.2 Adjusting the Cover Boards:

- a. To adjust pressure, make sure the tractor is in "Park" before adjusting cover board down pressure.
- b. With the tractor on and the hydraulic lever locked in the down position, turn the adjustment knob below the down pressure gauge (located on the harrow's hitch) (**See Figures 3-23 and 3-24**).
- c. You will need to loosen the locking screw on the assembly first.
- d. As you turn the knob clockwise, the system increases down pressure - turn the knob counter clockwise to reduce down pressure.
- e. After you have set the desired down pressure, retighten the locking screw. The range available pressure is 50 to 800 pounds, but the recommended operating range for the cover board is 50 to 500 psi.

IMPORTANT

RUNNING AT PRESSURES ABOVE 500 POUNDS MAY DAMAGE THE COVER BOARDS IN CERTAIN FIELD CONDITIONS.

- f. At the minimum down pressure setting, the cover boards will rest lightly on the ground. At the maximum pressure, the cover boards will exert enough down force to lift the rear of the harrow frame.

IMPORTANT

DURING A TURN IT IS COMMON FOR ONE WING TO ROLL BACKWARDS. IF THIS HAPPENS WITH THE COVER BOARDS UNDER HEAVY PRESSURE, YOU CAN BEND THE COVER BOARDS.

- g. Be sure cover board hydraulics are in the "Constant On" position.
- h. Check your tractor operator's manual to learn how to run the hydraulics in this position. It is often described under the section that discusses running a hydraulic motor through your hydraulic system.
- i. Do not run the cover board in the neutral position. This does not allow the boards to float over ridges or waterways and can damage cover boards.

IMPORTANT

THE HARROW IS DESIGNED TO LEVEL RIDGES BEHIND RIPPERS AND CHISEL PLOWS A MAXIMUM OF 3" - 5". ATTEMPTS TO LEVEL MORE AGGRESSIVE RIDGES WILL NOT BE SATISFACTORY, AND MAY CAUSE PREMATURE WEAR OR FAILURE ON HARROW COMPONENTS.



Figure 3-23 Pressure Adjustment Knob



Figure 3-24 Pressure Adjustment Location

TYPICAL DOWN-PRESSURE SETTINGS	
No-till, Heavy Residue	Raised or Minimum (100 psi)
Tillage Strips (Anhydrous, In-Lining Ripping), Medium Residue	200 psi
Tilled Soil, 0" to 3" Ridge and Valley, Medium Residue	300 psi
Tilled Soil, 3" to 6" Ridge and Valley, Medium Residue	400 psi
Tilled Soil, Heavy Ridge Ridges, Minimum Residue	Up to 500 psi

Table 3-4 Typical Down-Pressure Settings

RESIDUE PROBLEMS AND SOLUTIONS	
PROBLEM	SOLUTION
Bunching or Raking Residue	Reduce psi or adjust gauge wheels to deeper setting to create more loose soil to mix with the residue.
Loping or Bounce in Module	Retention modules
Wash Boarding	Change cover board angle by changing turnbuckle or reducing psi.
Not Filling in Valleys	Increase psi or adjust gauge wheels to deeper setting to create more loose soil to mix with the residue.
Streaking of Residue	Most likely due to module overlap - shorten modules or move the front of the module mounting u-bolt forward 3" - 4". This will also reduce overlap. Clipping the end teeth on each harrow section will also reduce the overlap and reduce streaking.
Harrow Not Level because of High Down Pressure on the Cover Boards	Harrow frame does not need to be level for successful operation. When running the harrow just make sure that reel is running 1/2 - 1-1/2" deep, rolling harrow assembly is rolling over the ground and that cover board down-pressure is appropriate for the cover conditions.

Table 3-5 Residue Problems and Solutions

3-14 TOOL TENSIONING

It is very important to keep your tool module tension properly adjusted when using the 7130 To the Max Roller Harrow. As you run your machine, you should expect to adjust the tool tension after the first 100 acres and then check daily after that.

IMPORTANT

OVERTIGHTENING THE TOOLS MAY CAUSE PREMATURE BEARING FAILURE OR DAMAGE TO THE FRAME.

IMPORTANT

RUNNING THE TOOLS TOO LOOSE MAY CAUSE POOR PERFORMANCE AND ACCELERATED WEAR ON THE BEARINGS, U-BOLTS, INDIVIDUAL TOOLS, AND/OR COVER BOARDS.

- a. When hanging in transport position, the center of the tooling should not sag more than two (2) inches down from the center line of the bearings (**See Figures 3-25 and 3-26**).
- b. During operation, rearward sag of 1" - 2" from the original center line should be observed.



Figure 3-25 Correct Tool Tension in Transport Position



Figure 3-26 Incorrect Tool Tension in Transport Position

3-15 TOOLING ADJUSTMENT PROCEDURE

- 3-15.1** Unfold the machine so that the tooling modules are resting on a level shop floor.

IMPORTANT

ADJUSTING THE TOOLING TENSION IS EASIEST WHEN DONE ON A HARD LEVEL SURFACE WHICH ALLOWS THE TOOLING TO FREELY MOVE SIDE TO SIDE WHEN ADJUSTED. REFER TO SECTIONS 3-1 - 3-6 AND FOLLOW ALL SERVICE SAFETY PROCEDURES.

- 3-15.2** Loosen the 3/4" locking nut located next to the module frame on the end of the tool tension rod (**See Figure 3-27**).
- 3-15.3** Rotate the outside 3/4" nut to apply more or less tension to the tools (**See Figure 3-28**). Turn the rod clockwise to tighten the tools; counterclockwise to loosen. Use a 3/4" drive socket or air wrench to make these changes.

IMPORTANT

WHEN TIGHTENING - COMPRESS SPRING UNTIL INSIDE SPACER "BOTTOMS OUT".

- 3-15.4** Firmly retighten the inside locking nut to hold adjustment.

IMPORTANT

THE MODULES NEED TO BE RETIGHTENED WHEN YOU SEE APPROXIMATELY 1/4 INCH SHOWING BETWEEN INSIDE SPACER AND THE BRACKET. MODULES AND U-BOLTS WILL WEAR PREMATURELY IF MODULES ARE NOT TIGHTENED AS RECOMMENDED.

IMPORTANT

IN HIGH WEAR CASES, IT MAY BE NECESSARY TO REMOVE PART OF THE TOOLING IN ORDER KEEPING ENOUGH TENSIONING ADJUSTMENT ON THE TOOLING MODULE.

- 3-15.5** If necessary, you can remove one chain link by torching off the first link and reinstalling the mounting tooth.
- 3-15.6** If you experience wear in the first link, there is a weld in replacement assembly for the first 2 links.



Figure 3-27 Locknut Adjustment



Figure 3-28 Applying Tension

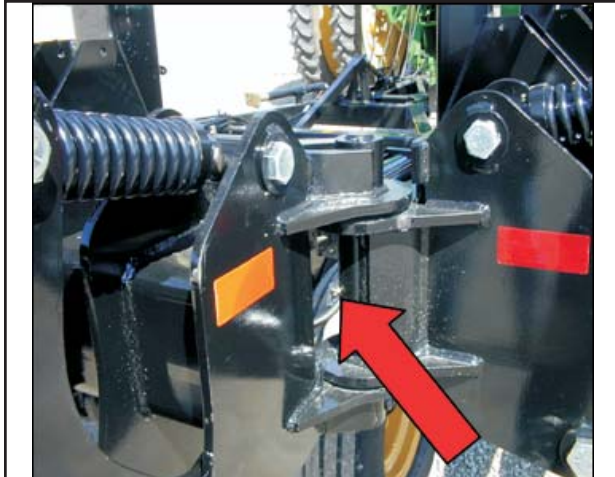


Figure 3-29 Lubrication of Wing Hinges (4)

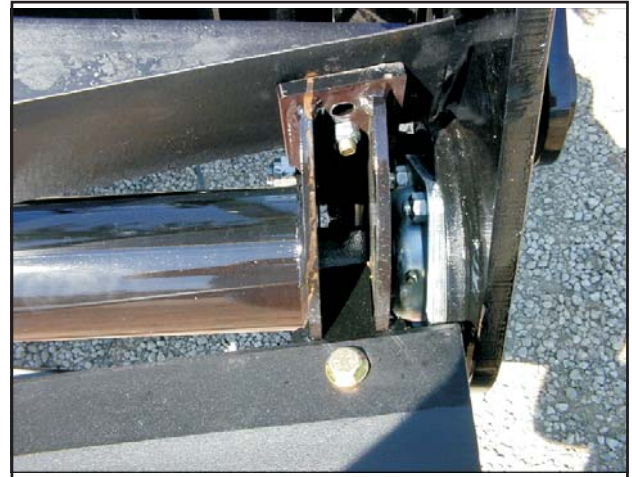


**Figure 3-30 Outer Chopper Reel Bearings (6)
(1 Pump of Grease Only)**

3-16 LUBRICATION

There are 54 grease points and 4 oil points on the harrow. Before initial use, make sure these points are supplied with grease. Lubricate all fittings with a hand grease gun. Use a good grade of bearing grease. Do not over-lubricate the bearings - too much grease may damage the bearing seals.

While lubricating the machine, remember to check frame for structural weaknesses and/or fatigue. Make sure to check all bearings and u-bolts for damage or wear.

3-16.1 Daily (Every 10 hours)

- a. Wing hinges (4) (**See Figure 3-29**)
- b. Chopper reel bearing housings - outer (6) (1 pump of grease only)(**See Figure 3-30**)
- c. Chopper reel bearing housings - inner (6) (1 pump of grease only)(**See Figure 3-31**)
- d. Tool bearing housings (12) (1 pump of grease only)(**See Figure 3-32**)
- e. Main frame wheel pivot pins
- f. Reel pivot pins

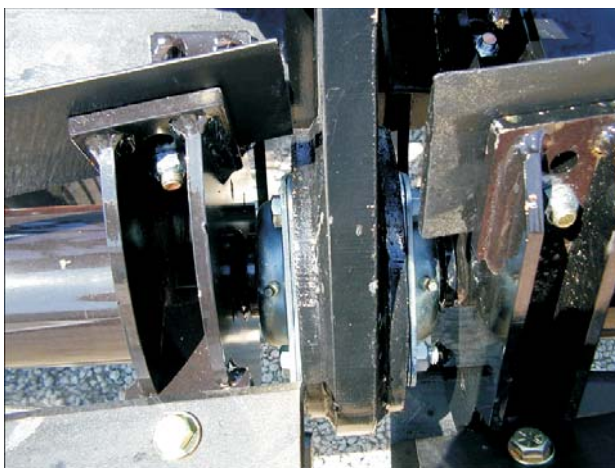


**Figure 3-31 Inner Chopper Reel Bearings (6)
(1 Pump of Grease Only)**



**Figure 3-32 Tool Bearing Housings (12)
(1 Pump of Grease Only)**

3-16.2 Weekly (Every 50 hours)

- a. Main frame hinge (2) (**See Figure 3-33**)
- b. Hitch pivot point (2) (**See Figure 3-34**)
- c. Turnbuckle adjustment (2) (**penetrating oil only**) (**See Figure 3-35**)

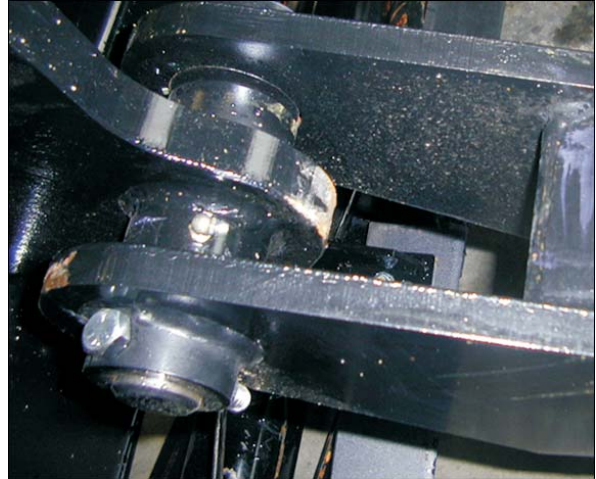


Figure 3-33 Main Frame Hinge (2)

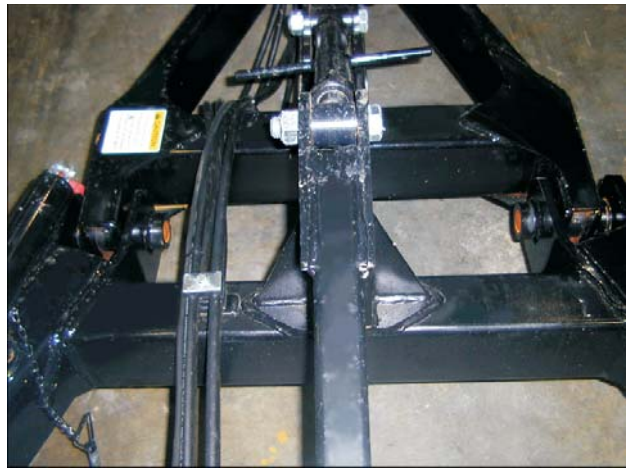


Figure 3-34 Hitch Pivot Point (2)

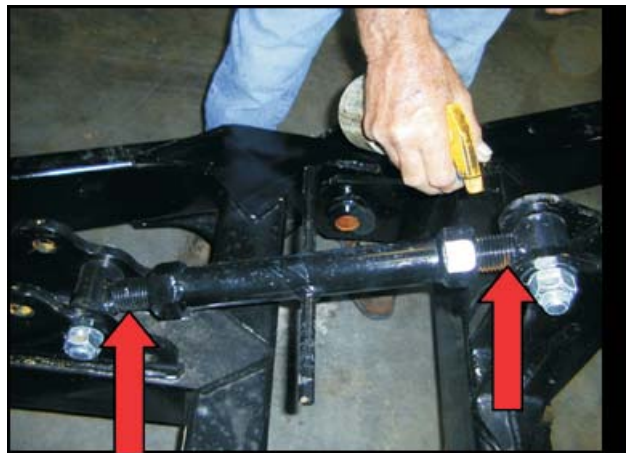


Figure 3-35 Turnbuckle Adjustment (2)
(Penetrating Oil Only)

3-16.3 Seasonally (Every 200 hours)

- a. Wheel bearings (6) **(See Figure 3-36)**
- b. Back hinge point (2) **(See Figure 3-37)**



Figure 3-36 Wheel Bearings (6)

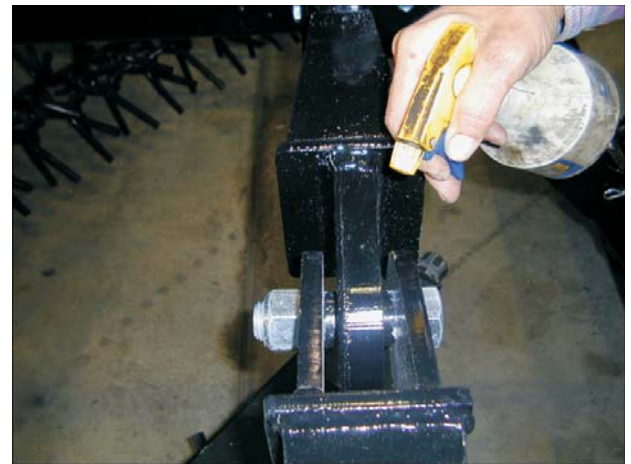


**Figure 3-37 Back Hinge Point (2)
(Penetrating Oil Only)**

3-17 LUBRICATION SPECIFICATIONS

3-17.1 Axle Bearing Grease

Make sure to use grease that fits your expected air temperature range during operation intervals. Greases meeting SAE Multipurpose High Temperature Grease with Extreme Pressure (EP) Performance and capable of operating at compartment temperatures above 150 degrees Celsius (302 degrees Fahrenheit) are recommended.

At temperatures below -30 degrees Celsius, (-22 degrees Fahrenheit), use arctic greases such as those meeting Military Specifications MIL-G-10924C.

3-17.2 General Purpose Grease

Make sure to use grease that fits your expected air temperature range during operation intervals. SAE Multipurpose Grease or SAE Multipurpose Grease containing 3 to 5 percent molybdenum disulfide.

At temperatures below -30 degrees Celsius, (-22 degrees Fahrenheit), use arctic greases such as those meeting Military Specifications MIL-G-10924C.

3-18 TIRE INFLATION

It is important that the inflation of all tires be set properly for maximum safety and performance. See **Table 3-6** to adjust the inflation pressure in the tires to match the application of the machine.

NEW TIRE DIMENSIONS (IN.)						CONTACT AREA (SQ. IN.)			MAX. SPEED 25 MPH	
										
Tire Size	Ply Rating	Overall Width	Overall Dia.	Static Loaded Radius	Rolling Circum.	Bar Height	Flat Plate	3" Pene.	Tire Weight Lbs.	Max. Load & Infl. (lbs. @ psi)
TUBELESS										
7.60-15	8	7.5	28.7	12.8	87	.26	42	100	25	2090 @ 52
9.5L-15	6	9.4	30.0	13.3	91	.26	58	118	27	2040 @ 32
9.5L-15	8	9.4	30.0	13.3	91	.26	58	118	29	2470 @ 44
9.5L-15	12	9.4	30.0	13.3	91	.26	58	118	36	3150 @ 64
11L-15	8	10.7	30.6	13.6	92	.26	75	146	32	2540 @ 36
11L-15	10	10.7	30.6	13.6	92	.26	75	146	38	2910 @ 44
11L-15	12	10.7	30.6	13.6	92	.26	75	146	43	3200 @ 52

Table 3-6 Cold Inflation Pressure Values in PSI

NOTES

TROUBLESHOOTING GUIDE

4

The Troubleshooting Guide, shown below, is included to help you quickly locate problems that can happen using your 7130 To The Max Roller Harrow. Follow all safety precautions stated in the previous section when making any adjustments to your machine.

PROBLEM	PROBABLE CAUSE:SOLUTION
HYDRAULICS RESPOND TOO RAPIDLY	Hydraulic restrictors not installed: install hydraulic restrictors Hydraulic flow valve on tractor is open too far: partially close hydraulic valve
WINGS DO NOT SLIDE INTO WING RESTS	Stop bolt is out of adjustment: adjust the main cylinder stop bolt (fine-thread)
EXCESSIVE CLOGGING DURING OPERATIONS	Angle of attack too steep: lower main frame wheels making less ground contact. Improper adjustment of the leveling boards: decrease tension on the leveling boards Ground speed too slow: increase ground speed to 10 - 11 mph
LEVELING BOARD GATHERING DEBRIS	Too much tension on leveling board. Excess field debris, or ground speed too slow: reduce tension on leveling board spring. Remove latch assembly from leveling board arms and let leveling boards float.
THE MODULE CHAINS ARE LOPING	Too fast or too loose: slow down by 1 mph increments until loping stops. If loping continues, tighten tooling module. If you cannot get any more adjustment out of them, remove teeth in pairs until tool tension is correct.
A RIDGE LEFT IN THE FIELD LOCATED ON THE OUTSIDE OF THE HARROW SWATH (OUTSIDE WINGS)	Outside wings are digging in: adjust the gauge wheel depth
WINGS ARE JERKING AND BOUNCING IN FIELD	Running too fast: slow down Improper gauge wheel pressure: adjust tire inflation to proper specs Cross brace has come loose: examine and tighten cross brace.
CHOPPER REELS FREEZE UP WHEN RUN IN HEAVY ROCK GROUND	Large rocks are caught in blades: remove rocks from blades
WING CYLINDERS ARE BENDING	Hydraulic valve is not in float position: move hydraulic valve forward into the floating position
MUD IS BUILDING UP BETWEEN THE CHOPPER REEL SECTIONS AND LIFTING THE HARROW OUT OF THE GROUND	Running too deep: adjust working depth Running too wet: wait for appropriate field conditions before using machine

EXCESSIVE BENDING OR BREAKAGE OF REELS AND/OR REEL BLADES

Rocky ground: slow down and make sure reel trash fenders are removed

Excessive speed: slow down

UNABLE TO LEVEL IN ONE PASS

Field ridges are more than 5": run two passes at opposite 90 degree angles to better level the field

Improper adjustment of leveling boards: increase tension on leveling boards

Ground is too hard for proper harrow operation: if possible, work all ground before excessive dry spells

HARROW WILL NOT FOLD OR UNFOLD PROPERLY

Not enough hydraulic pressure on some older tractors: increase pressure on hydraulic pump.

Hydraulic flow valve on tractor is not open far enough: open hydraulic valve more

NOTES:



Intertek

Equipment from Landoll Corporation is built to exacting standards ensured by ISO 9001:2008 registration at all Landoll manufacturing facilities.

**Model 7130 Series
To The Max™ Roller Harrow
Operator's Manual**

Re-Order Part Number F-452-1007

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