

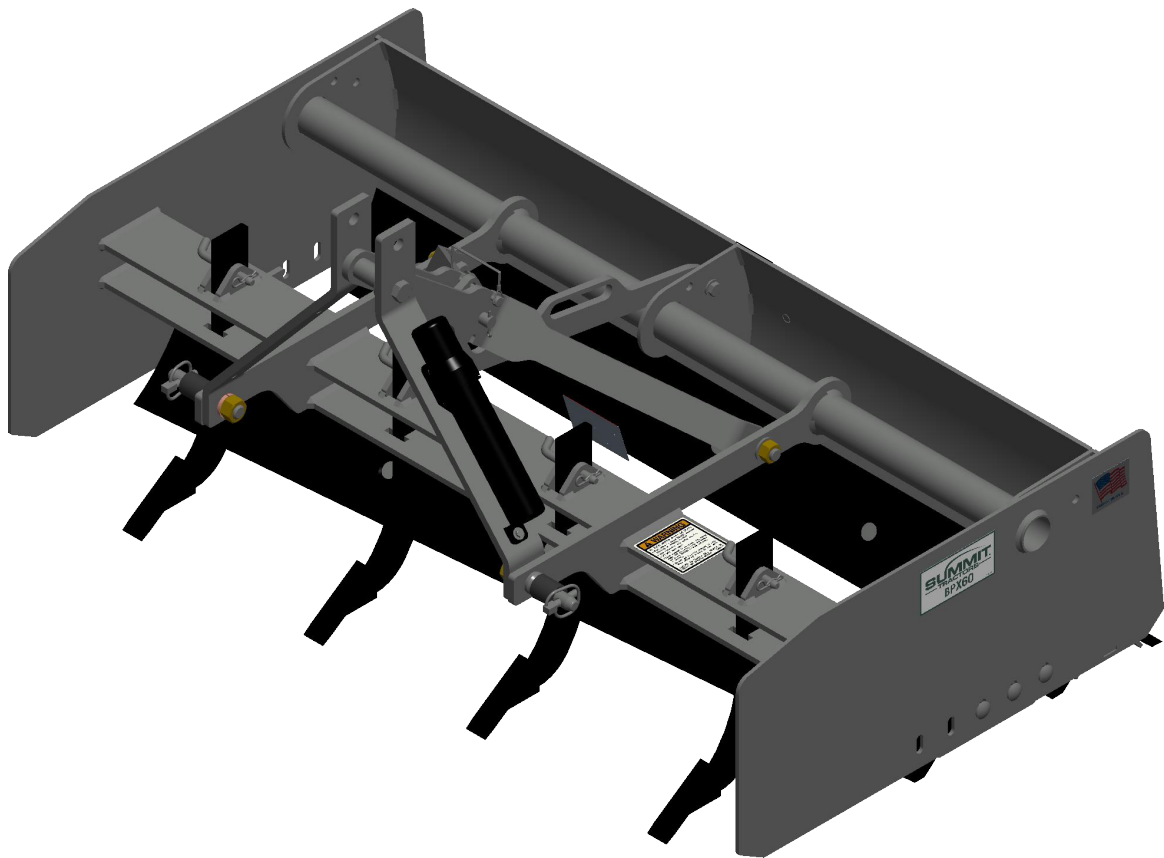


MODEL BPX60
BOXPLANE

BPX SERIES

**INCLUDES OPERATOR'S MANUAL,
INSTALLATION INSTRUCTIONS, & PARTS CATALOG**

SERIAL NUMBER 10001 AND LATER



WARRANTY CONDITIONS

Warranty Coverage:

Summit Tractors warrants to the original purchaser that the BPX Series BoxPlanes be free of defects in material and workmanship for a period of twenty-four (24) months from purchase date.

Right To Make Design and Product Changes:

Summit Tractors reserves the right to make changes in the design and other changes in its Summit Tractors Products at any time without incurring any obligation with respect to any product previously ordered, sold, or shipped.

DEALER PREPARATION CHECKLIST

Before delivering machine:

The following check list should be completed.
Use the Operator's Manual as a guide.

Before operating your BoxPlane, check that your Dealer has covered the following information with you:

- Equipment has been completely assembled as directed.
- Equipment has been functionally tested for proper operation.
- All safety decals are readable (see decal pages).
- Purchaser has been instructed in proper & safe operating methods:

 - Tractor Wheel Tread-Tire & Inflation Recommendations
 - Proper BoxPlane Operation
 - BoxPlane Dismounting
 - BoxPlane Mounting
 - Lubrication - Service Care
 - Storage

- Warranty Coverage & Operators Manual explained to purchaser.
- Operators Manual has been delivered to purchaser.

Dealer's Signature _____



CAUTION: It is recommended that the tractor be equipped with Rollover Protection System (ROPS) and seat belt be used for all implement operations.

NOTE: This checklist is to remain in owner's manual.
It is the responsibility of the dealer to complete the procedures listed above before delivery of this implement to the customer.

California Proposition 65



WARNING: Cancer and reproduction harm - www.P65Warnings.ca.gov

CONGRATULATIONS

You are now the proud owner of a Summit Tractors BoxPlane. This BoxPlane is a product of quality engineering and manufacturing. It is made of fine materials and under a rigid quality control system. It will give you long, satisfactory service. To obtain the best use of your BoxPlane, please read this manual carefully. It will help you become familiar with the operation of the BoxPlane and contains many helpful hints about BoxPlane maintenance. The immediate use of new techniques in the manufacture of products may cause some small parts of this manual to be outdated. Summit Tractor dealers will have the most up-to-date information. Please do not hesitate to consult with them.

Because Summit Tractor maintains an ongoing program of product improvement, we reserve the right to make improvements in design or changes in specifications without incurring any obligation to install them on units previously sold.

Because of the possibility that some photographs in this manual were taken of prototype models, production models may vary in some detail. In addition, some photographs may show shields removed for purposes of clarity. Never operate this implement without all shields in place.

RETAIL CUSTOMER'S RESPONSIBILITY UNDER THE SUMMIT TRACTOR WARRANTY

It is the Retail Customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain, and store the product in accordance with all instructions and safety procedures. Failure of the operator to read the Operator's Manual is a misuse of this equipment.

It is the Retail Customer and/or Operator's responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause a safety hazard.

It is the Retail Customer's responsibility to deliver the product to the authorized Summit Tractor dealer from whom it was purchased, for service or replacement of defective parts which are covered by warranty. Repairs to be submitted for warranty consideration must be made within forty-five (45) days of failure.

It is the Retail Customer's responsibility for any cost incurred by the Dealer for traveling to or hauling of the product for the purpose of performing a warranty obligation or inspection.

IMPORTANT SAFETY PRECAUTIONS

UNDERSTAND SIGNAL WORDS

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to address practices not related to physical injury.



SAFETY ALERT SYMBOL

This symbol is used to call attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol, carefully read the message that follows and heed its advice. Failure to comply with safety precautions could result in serious bodily injury.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel in the operation, transport, maintenance and storage of equipment. Lack of attention to safety can result in accident, personal injury, reduction of efficiency and worst of all – loss of life. Watch for safety hazards and correct deficiencies promptly. Use the following safety precautions as a general guide to safe operations when using this machine. Additional safety precautions are used throughout this manual for specific operating and maintenance procedures. Read this manual and review the safety precautions often until you know the limitations. Do not allow children or untrained persons to operate equipment. Do not operate equipment under the influence of drugs or alcohol.

THE TRACTOR

1. Read, understand, and follow all instructions in the manual and on the machine before starting. Failure to do so could result in serious injury or death and equipment damage. Keep this manual in a safe place for future and regular reference and for ordering service parts.
2. Read and understand all Safety Precautions in the Tractor Operator's Manual.
3. Allow only responsible operators familiar with the instructions to operate the machine. Know the controls and how to stop tractor engine and Boxplaner quickly in an emergency.
4. Tractor must be equipped with Rollover Protective System (ROPS) and seat belt for all operations. Keep foldable ROPS systems locked in the up position at all times when operating the BoxPlane. Falling off or overturning a tractor can result in death from being run over or crushed.
5. Always wear seat belt on Rollover Protective System (ROPS) equipped tractors. Do not wear a seat belt if the tractor Rollover Protective System (ROPS) has been removed.
6. Wear personal protective equipment (PPE), such as, but not limited to, protection for eyes, ears, lungs, head, hair, hands, and feet when operating, servicing, or repairing the equipment. Avoid wearing loose clothing or jewelry that may catch and entangle on equipments moving parts.
7. Start tractor from the driver's seat.
8. Operate tractor and controls from the driver's seat only.
9. Stop tractor engine, place transmission in park (or neutral), engage parking brake, lower BoxPlane to ground, allow machine moving parts to stop, remove ignition key to prevent unauthorized person from starting tractor before servicing, repairing, or making adjustments to the equipment.
10. Never leave the tractor seat with the BoxPlane raised, with the tractor in motion, or the engine running.

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11. Use fender hand holds and steps when mounting and dismounting tractor to prevent falls. Keep steps and Operator's platform clean and free of debris.
 12. All tractor three point hitch components and hardware must be tightened to proper specifications to avoid damage to tractor or BoxPlane prior to operation. Please review tractor Operator's Manual or consult your local dealer for proper torque and tightening specifications of tractor three point hitch components.
 13. Move and turn the tractor at low speeds. Avoid erratic operation and excessive speed.
 14. Keep the tractor in gear when traveling down hill.
 15. Do not grade/blade near drop offs, ditches, or embankments. The tractor could suddenly over turn if a wheel travels over the edge of a ditch, or if an edge caves in.
 16. Add wheel ballast for stability when operating on slopes. Use extreme care when operating on slopes to maintain stability.
 17. Do not allow anyone but the operator on the tractor. Never allow riders on tractor.
 18. Use extreme caution when loading or unloading the tractor and BoxPlane from a trailer or truck.

THE BOXPLANE

1. Do not operate the BoxPlane unless it is rigidly attached to the tractor. Failure to do so could result in serious injury or death and equipment damage.
2. Keep all shields and guards securely in place.
3. Stop tractor immediately upon striking a foreign object. Exit tractor using proper technique and procedure. Inspect and repair any damage before continuing with grading/planing operation.
4. Make sure all hardware is properly torqued before operating the tractor and BoxPlane. See torque chart specifications in this manual as well as the tractor manual. If none are available, contact your dealer for proper values.
5. Make sure all Safety Decals are installed, clean, and free of debris so they are readable. Replace if damaged or worn.
6. Wear gloves when installing. Be careful to prevent fingers from being caught or pinched.
7. Do not allow anyone to stand between tractor and implement while backing up to implement.
8. Park on solid, level ground and lower implement to ground or onto support blocks.
9. Detach and store implement in an area where children normally do not play. Secure implement using blocks and supports.

GENERAL OPERATION

1. Know your controls. Read this operator's manual and the manual provided with your tractor. Learn how to stop the tractor and engine in an emergency.
2. Watch overhead clearances carefully before driving under power lines, bridges, tree branches, or when exiting or entering buildings. These situations may allow the operator to be struck or pulled from the tractor, which could result in serious injury or death.
3. Do not put hands or feet under the BoxPlane.
4. Always wear safety glasses with side shields or safety goggles during operation.

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5. To help avoid injury while operating the BoxPlane, keep bystanders, children, and pets at a minimum distance of 75 feet while in operation. Stop the grading/planing operation if anyone enters the area.
 6. Watch for hidden hazards in the area being graded during operation.
 7. Always look down and behind before and while backing.
 8. Watch for traffic when operating near or crossing roadways.
 9. Never allow riders on tractor.
 10. Operate only in daylight or with good artificial light.
 11. Never use tractor or implement to lift or transport riders.
 12. Never assume children will remain where you last saw them.
 13. Keep children out of the work area and under the watchful eye of a responsible adult.
 14. Be alert and shut the implement and tractor down if children enter the work area.
 15. Do not operate the equipment while under the influence of drugs or alcohol as they impair the ability to safely and properly operate the equipment.
 16. Operating equipment safely requires the operator's full attention. Avoid wearing headphones while operating equipment.

SLOPE OPERATION



WARNING – Slopes are a major factor leading to loss of control and tip over accidents, which can result in severe injury or death. All slopes require extra caution. If slopes are greater than 15 degrees, do not operate the BoxPlane in that area or serious injury or death may occur.

1. Add wheel ballast for stability when operating on slopes. Use extreme care when operating on slopes to maintain stability.
2. Use extreme caution and reduce ground speed on slopes.
3. Do not stop, start, or change directions suddenly on slopes. If the tractor tires lose traction, lift tractor hitch to disengage the BoxPlane from the ground and proceed slowly straight down the slope.
4. To prevent loss of control and overturning of tractor, always grade/plane up and down slopes, never across.
5. Do not operate or transport on steep slopes.
6. Do not operate on wet grass. Reduced traction could cause sliding on slopes.
7. Keep the tractor in gear when traveling down hill.

TRANSPORTATION

1. Always engage lift system before transporting the BoxPlane.
2. Never allow riders on tractor.
3. Always drive with load on end of loader arms low to the ground, if so equipped.

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4. Maximum transport speed for an attached equipment is 20 mph. DO NOT EXCEED. Never travel at a speed which does not allow adequate control of steering and stopping. Some rough terrains require a slower speed.
 5. Always use accessory lights and devices when transporting on a road or highway to warn operators of other vehicles. Check your local government regulations.
 6. Be sure the Slow Moving Vehicle (SMV) emblem is visible to the rear. If the SMV sign is worn, faded, or damaged replace immediately.
 7. Use caution and reduce speed when transporting under adverse conditions, turning, or on inclines.
 8. Do not operate PTO during transport.

MAINTENANCE

1. Protect your eyes – Wear Safety Glasses.
2. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
3. Never run the tractor inside a closed area. Engine exhaust fumes can be lethal.
4. Always place adequate blocking before servicing the BoxPlane.
5. Before performing any service work, make sure hoists, floor jacks, and jack stands are in good working order and are properly rated to support the tractor and BoxPlane.
6. Do not work under the tractor or BoxPlane unless they are secured by a hoist and jack stands. Never place any body part underneath equipment or between moveable parts even after tractor has been turned off. Hydraulic system leak downs, hydraulic system failures, mechanical failures, or control lever movement can cause BoxPlane and tractor components to drop or rotate unexpectedly and cause serious injury or death.
7. Avoid injury, do not adjust, service, or clean when the tractor engine is running.
8. Do not work under any hydraulic supported equipment. It can settle, suddenly leak down, or be lowered accidentally. If it is necessary to work under the equipment, securely support it with stands or suitable blocking beforehand.
9. Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on implement.
10. Do not weld or torch on galvanized metal as it will release toxic fumes.
11. Do not handle tooth and shanks with bare hands. Wear leather gloves in the area where they will be handled. Improper handling may result in serious injury.
12. Your Dealer can supply genuine replacement shanks and cutting edges. Substitute components may not meet original equipment specifications and may be dangerous if installed.
13. To reduce fire hazard, keep the tractor free of grass, leaves, or other debris build up. Debris may build up or contact the tractor exhaust presenting a potential fire hazard.
14. Never alter safety devices. Check their proper operation regularly. Use all guards as instructed in this manual.



AVOID HIGH-PRESSURE FLUIDS

ESCAPING fluid under pressure can have sufficient force to penetrate the skin and cause serious injury. Be sure to stop engine and relieve all pressure before disconnecting lines. Be sure all connections are tight and that lines, pipes, and hoses are not damaged before applying pressure to the system. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood – not your hands-to search for suspected leaks.

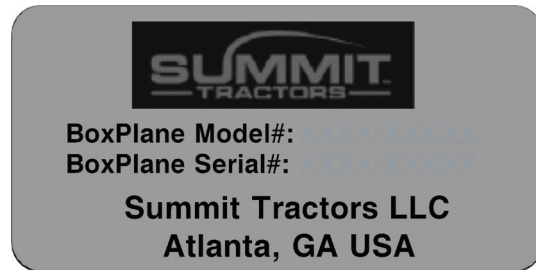
SEE A DOCTOR at once if injured by escaping fluid. Serious infection or gangrene can develop if proper medical treatment is not administered immediately.

SAFETY DECALS

The safety of the operator was the prime consideration in the design of the BoxPlane. Proper shielding, convenient controls, simple adjustments, and other safety features have been built into this implement. The following decals are located on the BoxPlane. Keep decals clean and replace them immediately if they are missing or damaged. Contact your dealer for replacements.

SERIAL NUMBER INFORMATION

A product identification label is provided for your mower. The numbers on this label are important if your mower should require dealer service, or if you need additional information on the equipment. Prior to using the BoxPlane for the first time, record the numbers from the identification label in the appropriate spaces listed on serial tag shown below.



IMPORTANT FEDERAL LAWS AND REGULATIONS* CONCERNING EMPLOYERS, EMPLOYEES & OPERATIONS

*(This section is intended to explain in broad terms the concept and effect of the following federal laws and regulations. It is not intended as a legal interpretation of the laws and should not be considered as such).

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:

“...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources...”

DUTIES

\Sec. 5(a) Each employer-

- (1) shall furnish to each of his employees employment and a place of employment, which are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.
 - (b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act, which are applicable to his own actions and conduct.

OSHA Regulations

Current OSHA regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.” These will include (but are not limited to) instructions to:

- Keep all guards in place when the machine is in operation.
- Permit no riders on equipment.
- Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.
- Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

EMPLOYEE TRACTOR OPERATING INSTRUCTIONS:

1. Securely fasten your seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going, especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly – no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers.
9. When tractor is stopped, set brakes securely and use park lock if available.

Child Labor Under 16 Years Old

Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situations. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

Introduction BoxPlane 3-Point Implement

Terminology

“Right” or “Left” as used in this manual is determined by facing forward in the direction the machine will operate while in use unless otherwise stated. The BoxPlane is uniquely designed to be extra user friendly and a low cost alternative for road grading applications. The BoxPlane has the ability to convert between moving material and grading material that would previously require two different implements (box blade and grading scraper). The unique feature that allows this dual function is the pivoting rear gate.

With the gate placed in the **down** position, the BoxPlane operates like a normal box blade that holds and moves the material that gathers within the box structure. With the gate placed in the **up** position, the BoxPlane operates like a grading scraper which allows excess material to ride over the cutting edge and evenly disperse behind.

General Operating Instructions

The BoxPlane primary purpose is leveling and grading for use in small feedlots, outdoor arenas, building sites, and maintenance operations on farm and ranch lanes or roadways.

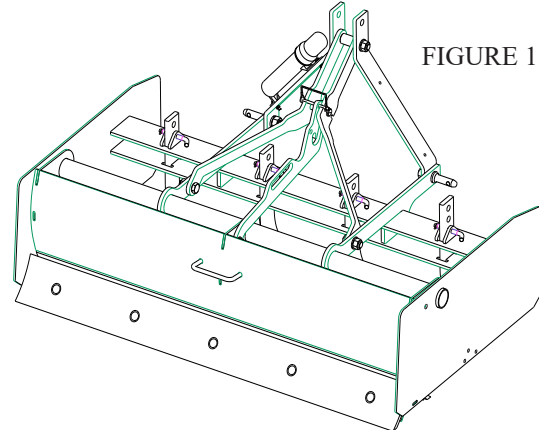
It is recommended that the tractor is operated at a forward speed of 2-4 mph while engaging the implement to ground. When the BoxPlane is lowered to the ground, the forward cutting edge will immediately begin to shave the soil surface. The aggregate or soil material will start to gather in front of the cutting edge. Depending on the intention of the operator, the gathered material can be relocated to other areas of the worksite or allowed to spill over the cutting edge and disperse behind the BoxPlane. To allow the material to build within the box structure, the rear gate needs to be kept in the down position (see gate adjustment procedure for proper and safe operation). As shown in Figure 1, once the material has accumulated in the box structure, the gathered material can be deposited at a chosen location by raising the BoxPlane while driving forward.

If it is not desired to accumulate material, the rear gate can be adjusted (see gate adjustment procedure for proper and safe operation) to the up position which will allow the material to flow through and disperse as shown in Figure 2.

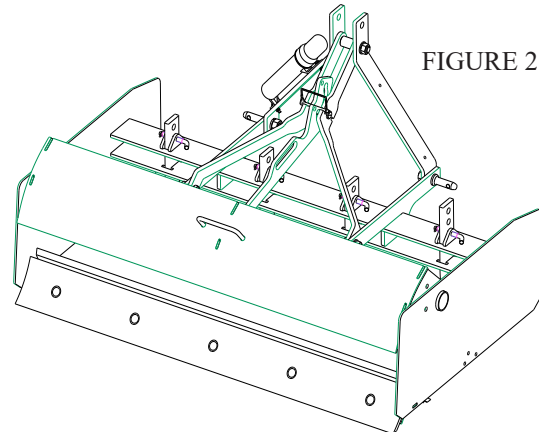
If the cutting edges fail to shave material due to the ground being too hard, the BoxPlane is equipped with ripping shanks that will penetrate and loosen the soil profile. It is recommended that the shanks are lowered (see shank adjustment procedure for proper and safe operation) by only one hole at a time and several shallow passes are made. Going too deep immediately

will cause the tractor to stop and/or invoke damage to the ripper shanks or BoxPlane structure. Fine tuning of the ripper shank depth can be achieved by adjusting the hitch top link (shorten to go deeper/lengthen to shallow). It may require experimentation to achieve the desired effect. Generally, having a soil with a moisture level that is slightly damp will provide the best grading results with the least amount of power needed.

REAR GATE DOWN POSITION



REAR GATE UP POSITION



TRACTOR SHUTDOWN PROCEDURE

Follow the basic tractor shutdown procedures listed below before leaving the operator's seat.

1. Reduce engine speed and disengage power take-off if engaged.
2. Park tractor and implement on level, solid ground.
3. Lower implement to ground or onto non-concrete support blocks.
4. Put tractor in park or set park brake, turn off engine, and remove switch key to prevent unauthorized starting.
5. Relieve all hydraulic pressure to auxiliary hydraulic lines.
6. Wait for all components to come to a complete stop before leaving the operator's seat.
7. Use steps, grab-handles and anti-slip surfaces when stepping on and off the tractor.



3-POINT HOOK-UP



DANGER

To avoid serious injury or death:

A crushing hazard exists while hooking-up and unhooking implement. Keep people and animals away while backing-up to implement or pulling away from implement. Do not operate hydraulic controls while a person or animal is directly behind the power machine or near the implement.



WARNING

To avoid serious injury or death:

- *Lightweight tractors with rear attached implements may need weights added to the front to maintain steering control. Consult your tractor Operator's Manual to determine proper weight requirements and maximum weight limitations.*
- *Always shut tractor down using "Tractor Shutdown Procedure" provided in this manual before allowing anyone including the operator to hook-up and unhook implement.*

A 3-point Category I hitch is required. The lower 3-point arms of the 3-point hitch must be stabilized to prevent side-to-side movement. Most tractors have sway blocks or adjustable chains for this purpose.

1. Slowly back tractor up to the BoxPlane while using the tractor's 3-point hydraulic control to align lower hitch arm holes with draft arm pins on the BoxPlane.
2. Engage tractor park brake, shut tractor engine off, and remove key before dismounting from tractor.
3. With lower hitch arms positioned and aligned with draft arm pins (15), secure with linch pins (16).
4. Connect top center link to upper hole in mast using clevis pin and hair pin.
5. Ensure that the lower hitch arms are stabilized to prevent excessive side movement.
6. Return to the tractor and slowly operate controls up and down to check for clearance between scraper frame, tractor tires, and tractor drawbar. Move or remove drawbar if it interferes with scraper.
7. See "**Leveling Boxplaner**".

NOTE: The BoxPlane is designed to be compatible with Quick-hitch adapters. Quick-hitches adapters are purchased separately and can provide a quick and easy way to attach/detach 3-point implements. When using quick-hitch adapter, bushing (22) must be installed on to lower link pins and retained with lynch pins (16). Use image on page 15 as reference.

LEVELING BOXPLANE



WARNING

To avoid serious injury or death:

Always keep your body extremities out from under the implement. Hydraulics can drop the implement if a line burst or if lift controls are accidentally actuated.

The BoxPlane should be leveled from left to right and front to back.

1. Park tractor with BoxPlane on a level surface.
2. Engage tractor park brake, shut tractor engine off and remove key before dismounting from tractor.
3. Manually adjust one of the lower lift arms on the tractor up or down to level BoxPlane from left to right.
4. Manually adjust length of top center link to level BoxPlane from front to rear.

SHANK HEIGHT ADJUSTMENT



WARNING

To avoid serious injury or death:

- *To prevent injury, make adjustments to the shank height after the implement has been properly hooked to a tractor.*
- *Always keep your body extremities out from under the shanks while adjusting them. It is possible for the shanks to fall causing injury to your feet and/or legs.*
- *Keep clear of the shank slots while adjusting shank height. Shanks can pinch body parts in the slots during adjustments.*

Shank settings are based on the vertical distance measured from bottom edge of blades to bottom edge of shank tips.

1. Hook Grading Scraper to a tractor with a category I 3-point hitch before adjusting shanks.
2. Adjust shank height by removing hair cotter pin and shank lock pin (19).
3. Adjust shank up or down to the desired depth and then replace shank lock pins and hair cotter pin.



WARNING

To avoid serious injury or death:

- To prevent injury, make adjustments to the gate position after the Boxplaner has been hooked to a tractor and is lowered securely to the ground.
- Always keep your body extremities out from under the gate. It is possible for the gate to fall causing injury.

REAR GATE ADJUSTMENT PROCEDURE

(DIAGRAM INCLUDED BELOW FOR ITEM NUMBER REFERENCES)

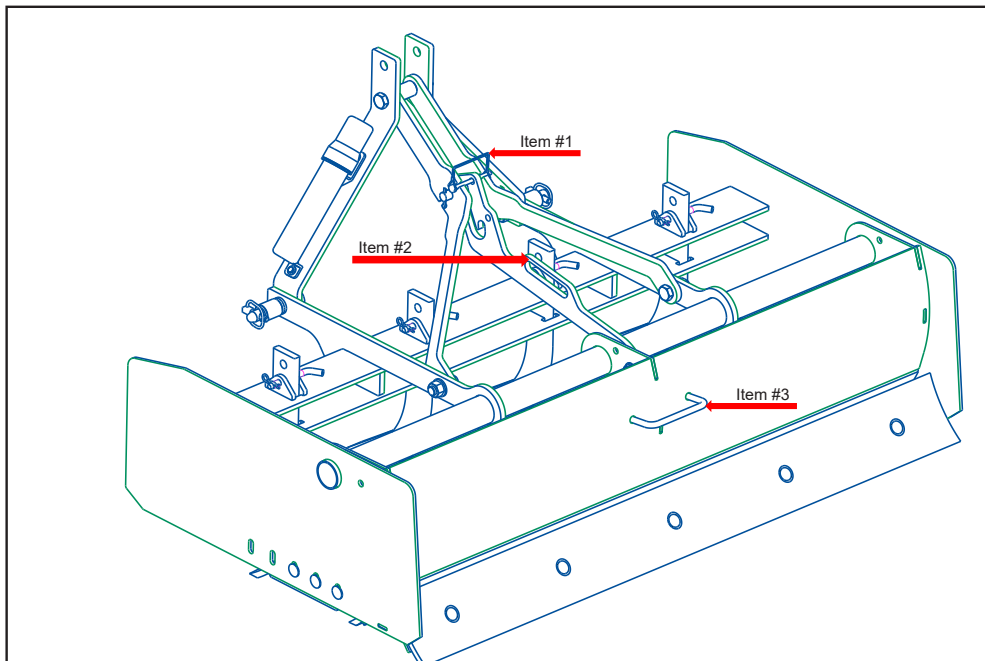
To **OPEN** gate:

- 1) Remove wire retainer lock pin (item #1)
- 2) With one hand, grab the Pivot Link (item #2) in the designated hand loop. Apply light upward pressure.
- 3) With your second hand, grab the wire loop handle (item #3) on the backside of the gate. Lift on the handle until the gate rotates upward. Continue to lift until the pivot link travels through the long leg of "J" channel and into the short side. The gate will now be latched in the up position.
- 4) Reinstall the wire retainer lock pin (item #1).

To **CLOSE** gate:

- 1) Remove wire retainer lock pin (item #1)
- 2) With one hand, grab the Pivot Link (item #2) in the designated hand loop. Apply light upward pressure.
- 3) With your second hand, grab the wire loop handle (item #3) on the backside of the gate. Lift on the handle until the gate rotates upward. Continue to lift until the pivot link travels through the short leg of "J" channel. Once the link rounds the bottom of the "J" channel, the gate will be allowed to lower. Slowly lower the gate until its bottom edge rests on the backside of the cutting edge.
- 4) Reinstall the wire retainer lock pin (item #1).

PLEASE NOTE: PRIOR TO STEP #1, INSPECT FOR MATERIAL BUILD-UP BETWEEN THE CUTTING EDGES THAT MIGHT NOT ALLOW THE GATE TO FULLY CLOSE. USE A POINTED TOOL, SUCH AS A LARGE SCREW DRIVER, TO CLEAN MATERIAL OUT PRIOR TO LOWERING GATE. KEEP CLEAR OF GATE AS IT CAN PINCH BODY PARTS IF IT WAS TO ROTATE DOWN UNEXPECTEDLY.



BOXPLANE REMOVAL FROM TRACTOR

1. Find a flat and level location to store the BoxPlane.
2. Lower the BoxPlane to the ground, ensure it is resting securely. If not, block up structure prior to removing implement from tractor.
3. Follow tractor shutdown procedure (page 11). Once tractor is parked and secure with the engine off, release the hydraulic pressure on the hitch by moving the hitch control lever back and forth several times.
4. Adjust top link length to relieve pressure on structure and remove pin from top hole of hitch mast structure. Place top link in storage location on tractor.
5. Remove lynch pins and disengage hitch lower links from link pins on the BoxPlane. Please note, it may be necessary to disengage the link stabilizers to allow the arms to swing away from the link pins.

MAINTENANCE

Proper servicing and adjustments are key to the long life of any implement. With careful inspection and routine maintenance, you can avoid costly downtime and repair.

After using your BoxPlane for several hours, check all bolts to be sure they are tight.

Replace any worn, damaged, or illegible safety labels by obtaining new labels from you dealer.



DANGER

To avoid serious injury or death:

Make adjustments to the implement after it has been properly attached to a tractor and secured with solid non-concrete supports in the up position. Never work around or under equipment supported by hydraulics. Hydraulics can drop equipment instantly if controls are actuated or if hydraulic lines burst even when power to hydraulics is shut off.



WARNING

To avoid serious injury or death:

- *Allow only persons to perform maintenance on this implement who have been properly trained in its safe operation.*
- *Perform schedule maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting implement back into service. Serious breakdowns can result in injury or death.*

- *Do not alter implement or replace parts on the implement with other brands. Other brands may not fit properly or meet OEM (Original Equipment Manufacturer) specifications. They can weaken the integrity and impair the safety, function, performance, and life of the implement. Replace parts only with genuine OEM parts.*
- *Always keep your body extremities out from under the shanks and cutting blades while removing, installing, and adjusting them. It is possible for the cutting blades and/or shanks to fall causing injury to your body.*

CUTTING BLADES

The three (3) mounted cutting blades (066356) have two cutting edges and are interchangeable. Unbolt blades and turn them over when bottom edges wear out. Inspect plow bolts (006557) and nuts (007532) for wear and replace as needed. Reattach blades and torque nuts to 150 ft-lbs. Replace cutting blades when both edges are worn out.

SHANK TIPS

Shank tips are removable by heating them in the dimpled area on both sides and knocking them off with a blunt punch. New shank tips need to be dimpled with a punch after they are installed.

LONG TERM STORAGE

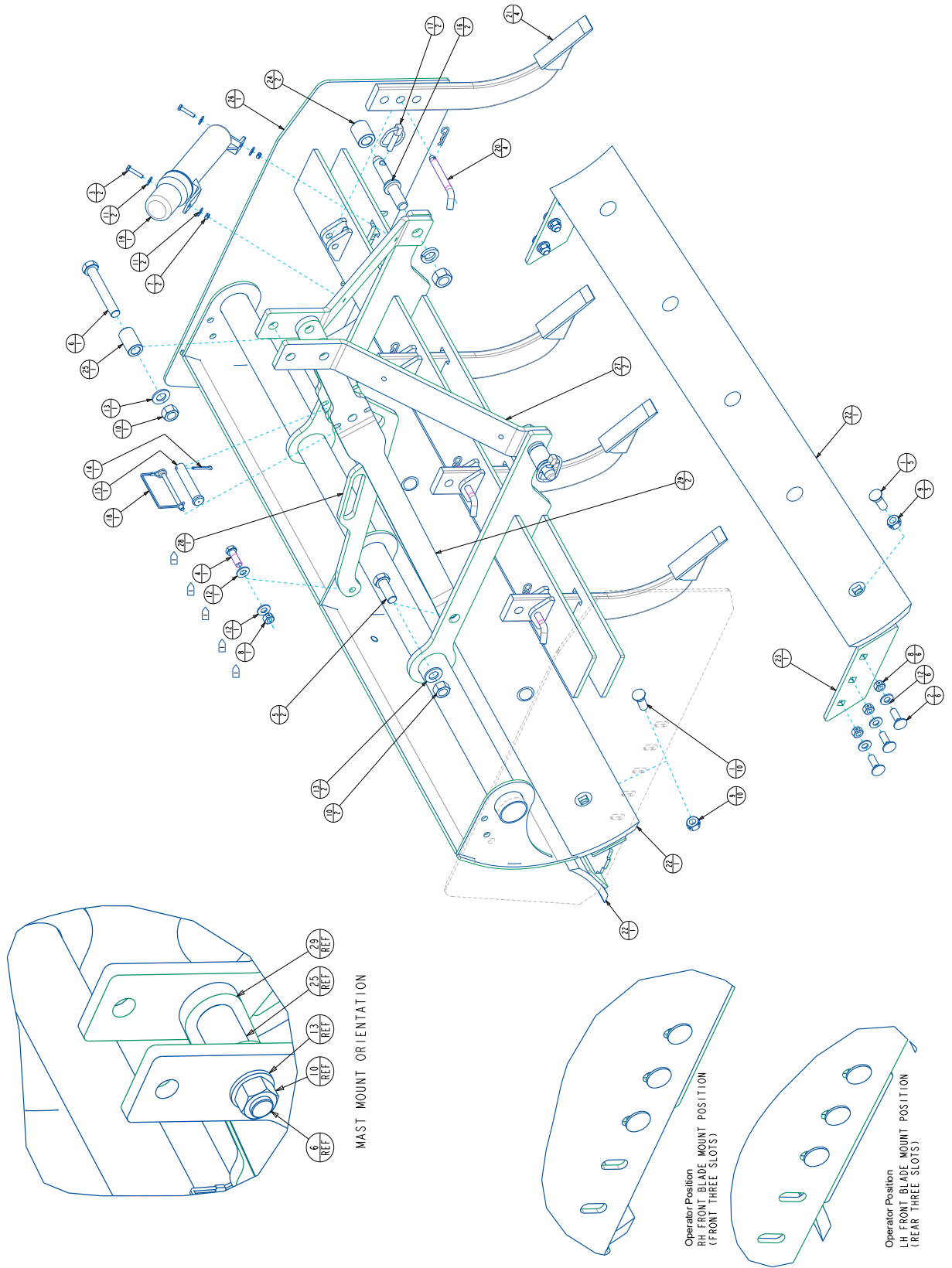
Clean, inspect, service, and make necessary repairs to the implement when storing it for long periods and at the end of the season. This will help ensure the unit is ready for field use the next time you hook-up to it.

- Clean off any dirt that may have accumulated on the scraper and cutting blade. Scrape off compacted dirt and wash surfaces thoroughly with a garden hose.
- Check frames and plow bolts for wear and replace if necessary. For additional instructions, see "Cutting Blades".
- Inspect BoxPlane for loose, damaged, or worn parts. Adjust and tighten loose parts. When needed, replace parts.

Repaint parts where paint is worn or scratched to prevent rust. Ask your dealer for aerosol touch-up paint.

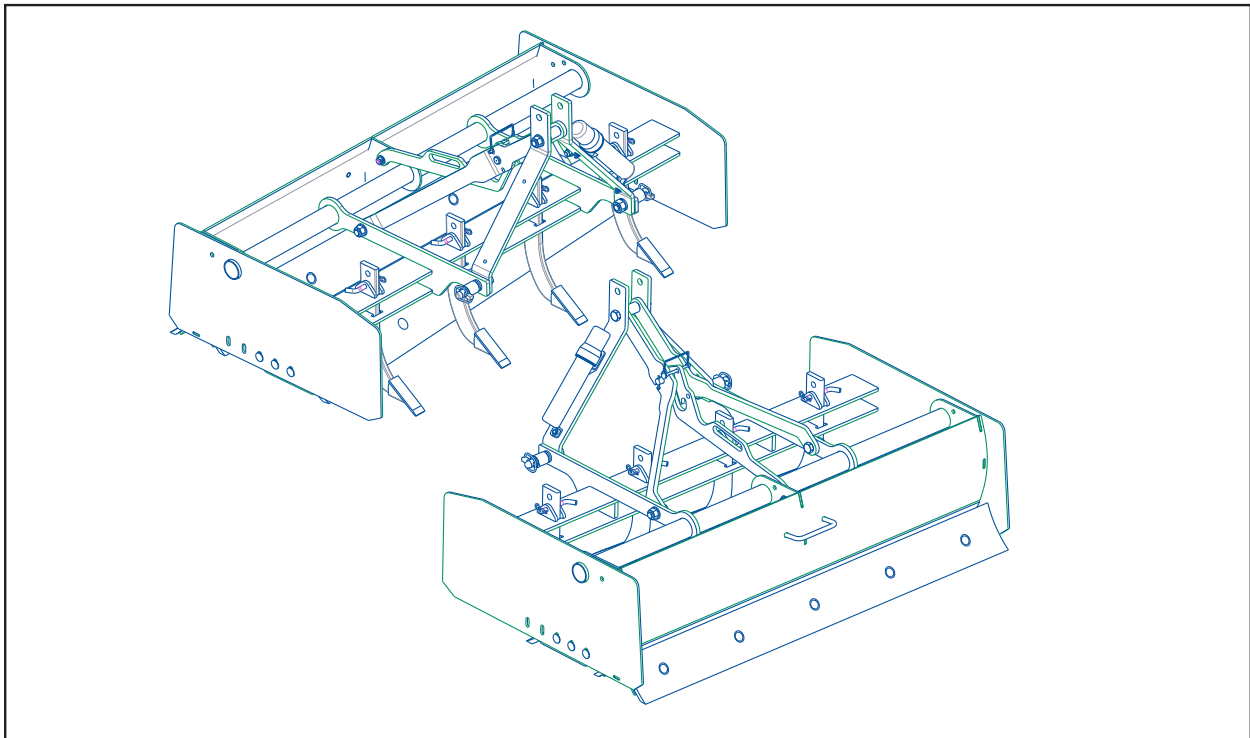
- A light coating of oil or grease may be applied to the lower frames, inside the mold board, and inside the side panels in lieu of paint to minimize oxidation.
- Replace all damaged or missing decals.
- Store BoxPlane on a level surface in a clean, dry place. Inside storage will reduce maintenance and make for a longer scraper life.

BOXPLANE COMPONENT DIAGRAM



BOXPLANE PARTS LIST

<u>SYM</u>	<u>QTY</u>	<u>PART</u>	<u>DESCRIPTION</u>
1	15	006557	Bolt, Plow 5/8"-11 UNC 1-3/4", Gr 5, #3, HD
2	6	006692	Bolt, Carr. 1/2-13 UNC 1-1/2" L, Gr 5
3	2	006750	Hex Head Capscrew, 1/4-20 UNC 1-1/4" Gr 2
4	1	007021	Hex Head Capscrew, 1/2-13 UNC 1-1/2" Gr 2
5	2	007244	Hex Head Capscrew, 3/4-10 UNC 2.0" Gr 5
6	1	007267	Hex Head Capscrew, 3/4-10 UNC 5.0" Gr 5
7	2	007403	Nut, Lock Mid 1/4-20 UNC Gr 2
8	7	007508	Nut, Lock Mid 1/2-13 UNC Gr 2
9	15	007532	Nut, Lock Mid 5/8-11 UNC Gr 2
10	3	007561	Nut, Hex 3/4-10 UNC Gr 5
11	4	008146	Washer, USS, LC 1/4" ID NOM
12	8	008173	Washer Flat SAE 0.50 ZC
13	3	008193	Washer, SAE, Hard 3/4" ID NOM
14	1	008582	Pin, Cotter 3/16" OD Wire 1.25" Long
15	1	013366	Pin, Clevis 3/4" OD, 3.75" Long
16	2	013394	Pin -CAT I (Low Draft Arm)
17	2	013484	Pin, Lynch 7/16 Heavy Duty Ring
18	1	066192	Pin, Lock (Wire Retainer)
19	1	066208	Tube, Owner's Manual
20	4	066343	Pin, Bend w/Clip 1/2 Dia 3.0" UL
21	4	066351	Assembly, Scarifier Tooth
22	3	066356	Cutting Edge 57.75"
23	1	504750	Weld-Blade Mount
24	2	504763	Bushing - Lower (Quick Adapter)
25	1	504764	Bushing, Mount Hook
26	1	504765	Weldment, Box Blade (60)
27	2	504777	Plate, Mast
28	1	504781	Plate, Pivot Link (Moldboard)
29	2	504782	Plate, Mast Support



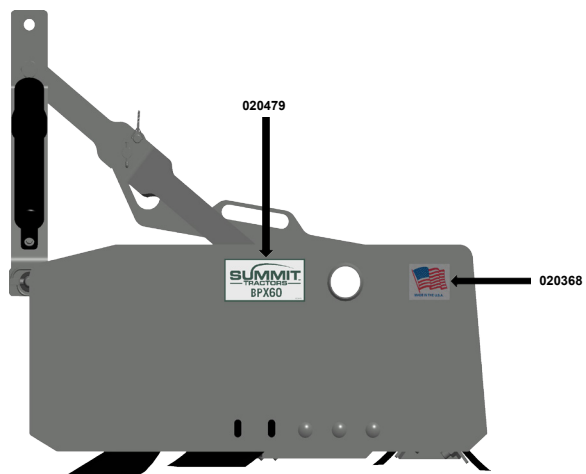
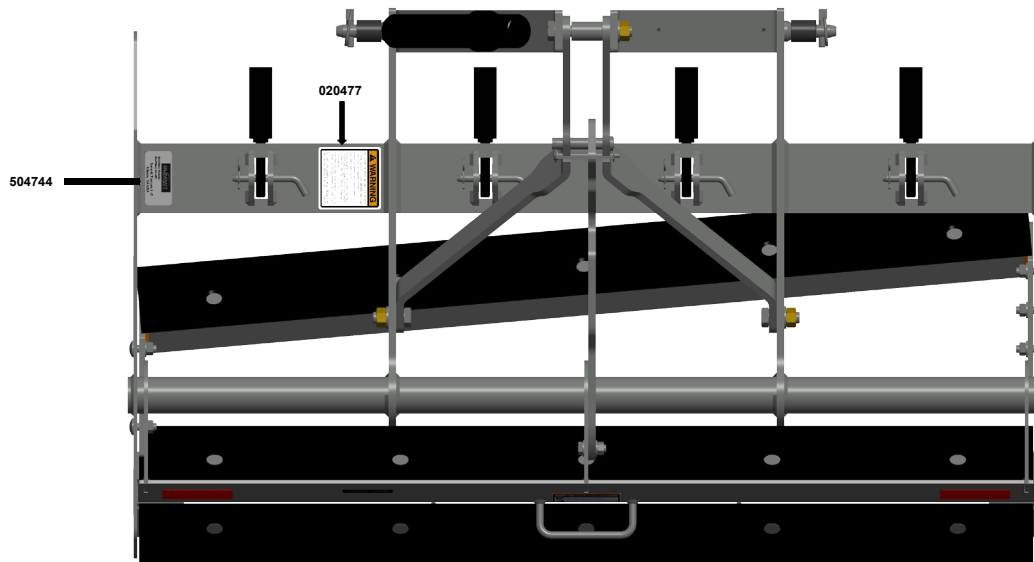
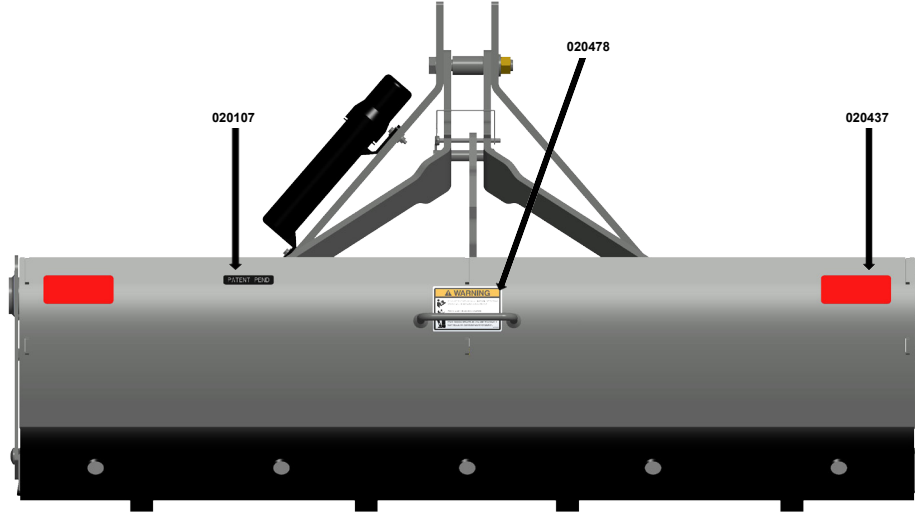
BOXPLANE SPECIFICATIONS

MODEL NUMBER	BPX60
WORKING WIDTH	58.5"
OVERALL WIDTH	59.25"
NUMBER OF SCARIFIER SHANKS	4
TRACTOR HORSEPOWER REQUIREMENT	20-40
UNIT WEIGHT WITH SHANKS	500 LBS
OVERALL LENGTH	35.8"
OVERALL HEIGHT	32.25"
SIDE PANEL HEIGHT	14.5"
SIDE PANEL LENGTH	34"
CUTTING EDGES	1/2" x 6"
SHANK ADJUSTMENTS	3
LOWER DRAFT LINK ATTACHMENT	FORGED DRAW PINS
HITCH TYPE	CAT I/COMPATIBLE WITH QUICK HITCH ADAPTER
ANGLED FRONT BLADE	REMOVEABLE

BOXPLANE DECAL REPLACEMENT INFORMATION

020107	PATENT PENDING
020368	MADE IN THE USA
020437	REFLECTOR
020477	WARNING (PG. 9)
020478	WARNING (PG. 9)
020479	SUMMIT LOGO
504744	SUMMIT SERIAL TAG

BOXPLANE DECAL ORIENTATION & PLACEMENT



SAE J1701 Revised MAR1999

TABLE 2—TORQUE-TENSION RELATIONSHIPS FOR SAE GRADES 2, 5, AND 8

Nominal Size and Threads/in	Stress Area (1) in ²	Grade 2 Clamp Load lb	Grade 2 Torque Dry K = 0.2 in-lb	Grade 2 Torque Lub K = 0.15 in-lb	Grade 5 Clamp Load lb	Grade 5 Torque Dry K = 0.2 in-lb	Grade 5 Torque Lub K = 0.15 in-lb	Grade 8 Clamp Load lb	Grade 8 Torque Dry K = 0.2 in-lb	Grade 8 Torque Lub K = 0.15 in-lb
0.250-28	0.03637	1500	75.0	56.0	2319	116.0	87.0	3273	164	123
0.250-20	0.03182	1313	66.0	49.0	2029	101.0	76.0	2864	143	107
0.3125-24	0.05806	2395	150.0	112.0	3700	230.0	173.0	5225	327	245
0.3125-18	0.05243	2163	135.0	101.0	3342	209.0	157.0	4719	295	221
0.375-24	0.08783	3623	272.0	204.0	5600	420.0	315.0	7905	593	445
0.375-16	0.07749	3196	240.0	180.0	4940	370.0	278.0	6974	523	392
0.4375-20	0.11870	4896	428.0	321.0	7567	662.0	496.0	10683	935	700
0.4375-14	0.10630	4385	384.0	288.0	6777	593.0	445.0	9567	837	628
0.500-20	0.15995	6598	660.0	495.0	10197	1020.0	764.0	14396	1440	1080
0.500-13	0.14190	5853	585.0	439.0	9046	904.0	678.0	12771	1277	958

Nominal Size and Threads/in	Stress Area (1) in ²	Grade 2 Clamp Load lb	Grade 2 Torque Dry K = 0.2 ft-lb	Grade 2 Torque Lub K = 0.15 ft-lb	Grade 5 Clamp Load lb	Grade 5 Torque Dry K = 0.2 ft-lb	Grade 5 Torque Lub K = 0.15 ft-lb	Grade 8 Clamp Load lb	Grade 8 Torque Dry K = 0.2 ft-lb	Grade 8 Torque Lub K = 0.15 ft-lb
0.5625-18	0.20298	8373	78	59	12940	121	91	18268	171	128
0.5625-12	0.18195	7505	70	53	11600	109	82	16376	154	115
0.625-18	0.25595	10558	110	82	16317	170	127	23036	240	180
0.625-11	0.22600	9322	97	73	14407	150	113	20340	212	159
0.750-16	0.37296	15385	192	144	23776	297	223	33566	420	315
0.750-10	0.33446	13796	172	129	21532	269	201	30101	376	282
1.000-12	0.66304	—	—	—	42269	704	528	59674	995	746
1.000-8	0.60574	—	—	—	38616	644	483	54517	909	681

Tensile Strength 74,000 psi 120,000 psi 150,000 psi
 Proof Load Stress 55,000 psi 85,000 psi 120,000 psi

Caution—The previously listed torque and resulting tension are provided as an advisory guide. Individual application discretion is recommended. The content has been presented as accurately as possible, but responsibility for its application lies with the user.

Note 1—The stress area of threaded series not included in Table 2 may be computed from the equation:

$$A_s = 0.7854(D - 0.9743/n)^2 \quad (\text{Eq. 3})$$

where:

A_s = Stress area in in²
 D = Diameter in inches
 n = Threads per inch

SAE Bolt Head Identification



SAE Grade 2
(No Dashes)



SAE Grade 5
(3 Radial Dashes)



SAE Grade 8
(6 Radial Dashes)

Lubricating the bolts is the recommended method.

Lubed means cleaned dry bolts lubricated with standard medium viscosity machine oil.

Lubricate all contact areas of the bolts and washers.

TABLE 2—TORQUE-TENSION RELATIONSHIP FOR METRIC PROPERTY CLASSES

Major Diameter and Thread Pitch	Stress Area mm ²	Class 4.6 Clamp Load kN	Class 4.6 Torque Dry K = 0.2 N·m	Class 4.6 Torque Lub K = 0.15 N·m	Class 4.8 Clamp Load kN	Class 4.8 Torque Dry K = 0.2 N·m	Class 4.8 Torque Lub K = 0.15 N·m	Class 5.8 Clamp Load kN	Class 5.8 Torque Dry K = 0.2 N·m	Class 5.8 Torque Lub K = 0.15 N·m
3.0 x 0.5	5.03	0.85	0.50	0.40	1.17	0.70	0.50			
3.5 x 0.6	6.78	1.14	0.80	0.60	1.58	1.10	0.80			
4.0 x 0.7	8.78	1.48	1.20	0.90	2.04	1.60	1.20			
5.0 x 0.8	14.20	2.40	2.40	1.80	3.30	3.30	2.50	4.05	4.00	3.00
6.0 x 1.0	20.10	3.40	4.00	3.00	4.67	5.66	4.20	5.73	6.90	5.20
8.0 x 1.25	36.6	6.18	9.90	7.40	8.51	13.60	10.20	10.40	16.70	12.50
10.0 x 1.50	58.0	9.79	19.60	14.70	13.48	27.00	20.00	16.50	33.10	24.80
12.0 x 1.75	84.3	14.22	34.10	25.60	19.60	47.00	35.00	24.00	58.00	43.00
14.0 x 2.00	115.0	19.41	54.30	40.80	26.74	75.00	56.00	32.80	92.00	69.00
16.0 x 2.00	157.0									
20.0 x 2.50	245.0									
24.0 x 3.00	353.0									
30.0 x 3.50	561.0									
36.0 x 4.00	817.0									
Tensile Strength			400 MPa			420 MPa			520 MPa	
Proof Load Stress			225 MPa			310 MPa			380 MPa	

Major Diameter and Thread Pitch	Stress Area mm ²	Class 8.8 Clamp Load kN	Class 8.8 Torque Dry K = 0.2 N·m	Class 8.8 Torque Lub K = 0.15 N·m	Class 9.8 Clamp Load kN	Class 9.8 Torque Dry K = 0.2 N·m	Class 9.8 Torque Lub K = 0.15 N·m	Class 10.9 Clamp Load kN	Class 10.9 Torque Dry K = 0.2 N·m	Class 10.9 Torque Lub K = 0.15 N·m
3.5 x 0.6	6.78									
4.0 x 0.7	8.78									
5.0 x 0.8	14.20									
6.0 x 1.0	20.10									
8.0 x 1.25	36.6	16.50	26.40	19.80	17.80	28.50	21.40	22.80	36.50	27.30
10.0 x 1.50	58.0	26.10	52.20	39.20	28.30	56.60	42.40	36.10	72.20	54.20
12.0 x 1.75	84.3	37.90	91.00	68.00	41.10	99.00	74.00	52.50	126.00	94.00
14.0 x 2.00	115.0	51.80	145.00	109.00	56.10	157.00	118.00	71.60	200.00	150.00
16.0 x 2.00	157.0	70.60	226.00	170.00	76.50	245.00	184.00	97.70	313.00	235.00
20.0 x 2.50	245.0	110.20	441.00	331.00	119.40	478.00	358.00	152.50	610.00	458.00
24.0 x 3.00	353.0	158.90	762.00	572.00	172.10	826.00	620.00	220.00	1055.00	791.00
30.0 x 3.50	561.0	252.40	1515.00	1136.00	273.50	1641.00	1231.00	349.00	2095.00	1572.00
36.0 x 4.00	817.0	367.60	2647.00	1985.00	398.30	2868.00	2151.00	509.00	3662.00	2746.00
Tensile Strength			830 MPa			900 Pa			1040 Pa	
Proof Load Stress			600 MPa			650 Pa			830 Pa	

Caution—The previously listed torque and resulting tension are provided as an advisory guide. Individual application discretion is recommended. The content has been presented as accurately as possible, but responsibility for its application lies with the user.

Note 1—The stress area of threaded series not included in Table 2 may be computed from the equation:

$$A_s = 0.7854 (D - 0.9382 P)^2$$

where:

A_s = Stress area in mm²

D = Diameter in mm

P = Pitch in mm

Metric Bolt Head Identification



Metric Grade 8.8



Metric Grade 10.9

Lubricating the bolts is the recommended method.

Lubed means cleaned dry bolts lubricated with standard medium viscosity machine oil.

Lubricate all contact areas of the bolts and washers.



be careful.....
avoid accidents