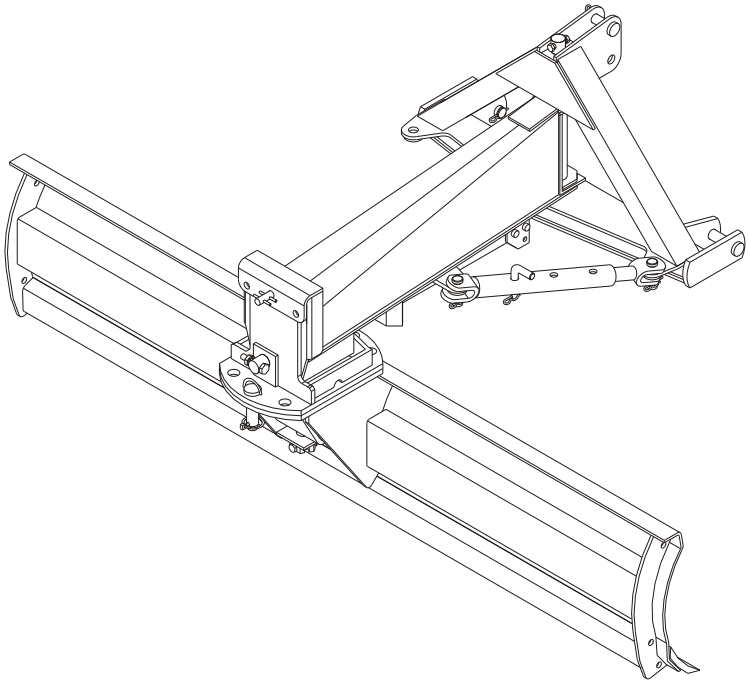
REAR BLADES

OPERATOR'S MANUAL



NVH-180

NVH-210

NVH-240

NVH-270

BISON VH!!!!

...harvesting better implements!

4350-2112-00 (Rev. 02/27/06)

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the BISON[VH] dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.
The dealer must complete the Warranty Registration, located on the BISON[VH] website. **Warranty claims will be denied if the Warranty Registration has not been completed.**

TO THE OWNER:

Read this manual before operating your BISON[VH] equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer.
The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.
For service, your authorized BISON[VH] dealer has trained mechanics, genuine BISON[VH] service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine BISON[VH] service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: _____ **Date of Purchase:** _____

Serial Number: (see Safety & Instructional Decals section for location) _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION, WARNING,** and **DANGER** are used in conjunction with the Safety-alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.

⚠	This Safety-alert Symbol indicates a hazard and means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
⚠ DANGER	Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed.
⚠ CAUTION	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.
IMPORTANT	Indicates that failure to observe can cause damage to equipment.
NOTE	Indicates helpful information.

TABLE OF CONTENTS

GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your rear blade. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature, due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing. However, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the tractor facing the direction of forward travel.

NVH-180 / NVH-210 / NVH-240 / NVH-270 SPECIFICATIONS

Models	NVH-180	NVH-210	NVH-240	NVH-270
Features & Specifications				
Angle, tilt, & offset	Manually adjusted angle, tilt and offset	Manually adjusted angle, tilt and offset	Manually adjusted angle, tilt and offset	Manually adjusted angle, tilt and offset
Hitch compatibility	Cat. 2 Quick Coupler	Cat. 2 Quick Coupler	Cat. 2 Quick Coupler	Cat. 2 Quick Coupler
Frame	Formed steel channel frame	Formed steel channel frame	Formed steel channel frame	Formed steel channel frame
Cutting edge	½" x 6" reversible	½" x 6" reversible	½" x 6" reversible	½" x 6" reversible
Angle/Pivot	360 Degrees	360 Degrees	360 Degrees	360 Degrees
Angle-Forward	3, up to 45 degrees each side	3, up to 45 degrees each side	3, up to 45 degrees each side	3, up to 45 degrees each side
Angle-Reverse	3, up to 45 degrees each side	3, up to 45 degrees each side	3, up to 45 degrees each side	3, up to 45 degrees each side
Moldboard thickness	1/4"	1/4"	1/4"	1/4"
Moldboard length	72"	84"	96"	108”
Moldboard height	19"	19"	19"	19"
Moldboard type	Progressive-formed	Progressive-formed	Progressive-formed	Progressive-formed
Moldboard upper edge	Full bend	Full bend	Full bend	Full bend
Offset (or swing)	9" or 18" left or right *	9" or 18" left or right *	9" or 18" left or right *	9" or 18" left or right *
Tractor max. HP	80HP (2WD) 70HP (4WD)	80HP (2WD) 70HP (4WD)	80HP (2WD) 70HP (4WD)	80HP (2WD) 70HP (4WD)
Tractor hydraulic system pressure	3000 psi Maximum (20.68 MPa)	3000 psi Maximum (20.68 MPa)	3000 psi Maximum (20.68 MPa)	3000 psi Maximum (20.68 MPa)
Tilt	3, up to 23 degrees up and down	3, up to 23 degrees up and down	3, up to 23 degrees up and down	3, up to 23 degrees up and down
Operating weight	738 lbs.	755 lbs.	772 lbs.	789 lbs.

* 0" or 19" left or right with optional offset hydraulic kit.

****Tecnomec Agricola, S.A. de C.V. reserves the right to make any changes deemed necessary to the specifications without prior notice.**

SAFETY RULES
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

TRAINING

■ **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from your dealer). Failure to follow instructions or safety rules can result in serious injury or death.**

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Know your controls and how to stop engine and attachment quickly in an emergency.**

■ **Operators must be instructed in 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 hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Never allow children or untrained persons to operate equipment.**

PREPARATION

■ **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

■ **Do not connect a low-pressure hydraulic hose into a high-pressure system - it will burst the hose. Do not use a high-pressure hose in place of a low-pressure hose - it is possible to rupture the valve.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.**

■ **Make sure attachment is properly secured, adjusted, and in good operating condition.**

■ **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.**

■ **Make sure all safety decals are installed. Replace if damaged. (See Safety & Instructional Decals section for location).**

■ **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

■ **Make sure circuit selector lever does not hit tractor cab, etc. throughout operating range of 3-point hitch of tractor. Bend lever, if necessary, to clear cab, but it should still be convenient to operate from the tractor seat.**

OPERATION

■ **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

■ **Do not operate equipment while under the influence of alcohol or drugs.**

■ **Operate only in daylight or good artificial light.**

■ **Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.**

(Safety Rules continued on next page)

SAFETY RULES
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

(Safety Rules continued from previous page)

■ **Always comply with all state and local lighting and marking requirements.**

■ **Never allow riders on power unit or attachment.**

■ **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.**

■ **Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.**

■ **Look down and to the rear and make sure area is clear before operating in reverse.**

■ **Do not operate on steep slopes.**

■ **Do not stop, start, or change directions suddenly on slopes.**

■ **Use extreme care and reduce ground speed on slopes and rough terrain.**

■ **Watch for hidden hazards on the terrain during operation.**

■ **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.**

■ **Before changing positions of manual swing, tilt, or angle positions:**
- **Park tractor on level ground, apply parking brake, level implement boom, shut off tractor, and remove key.**
- **Make manual changes slowly and carefully to prevent hazardous movement of mechanisms.**
- **Never stand in positions where you could become entrapped during adjustment changes or if the 3-point hitch suddenly lowers.**

■ **Always secure lock pins with safety pins to prevent lock pins from bumping out of the positioning holes. Failure to do so may result in accidents and/or damage to rear blade.**

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.**

■ **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

MAINTENANCE

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.**

■ **Before performing any service or maintenance, lower attachment to ground, turn off engine, set parking brake, and remove key.**

■ **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.**

■ **Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.**

■ **Make sure attachment is properly secured, adjusted, and in good operating condition.**

■ **Never perform service or maintenance with engine running.**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

■ **Tighten all bolts, nuts and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.**

■ **Make sure all safety decals are installed. Replace if damaged. (See Safety & Instructional Decals section for location).**

■ **Do not disconnect hydraulic lines until machine is securely blocked or placed in lowest position and system pressure is released by operating valve levers.**

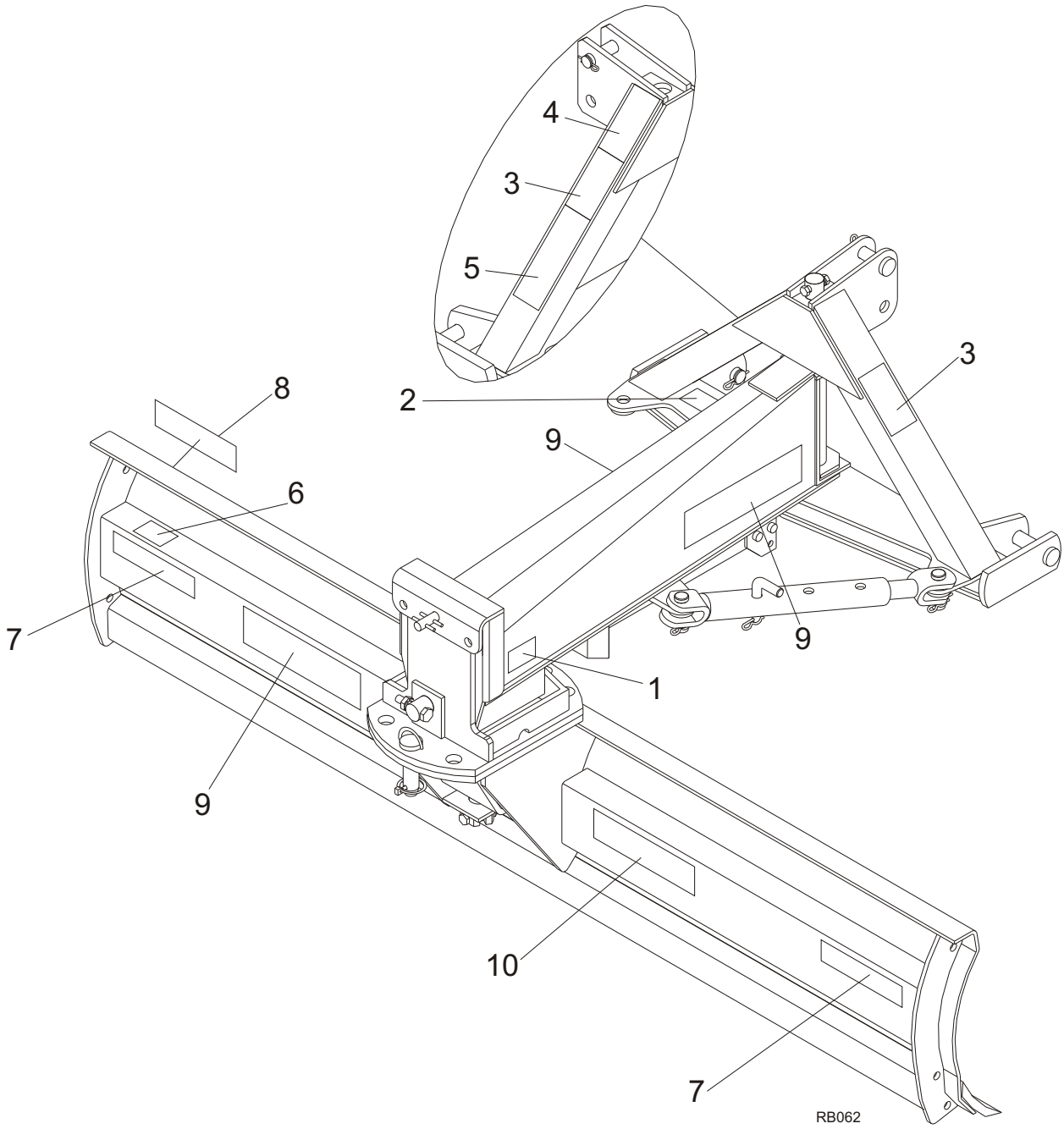
STORAGE

■ **Secure equipment parking stand(s) in park position before detaching.**

■ **Keep children and bystanders away from storage area.**

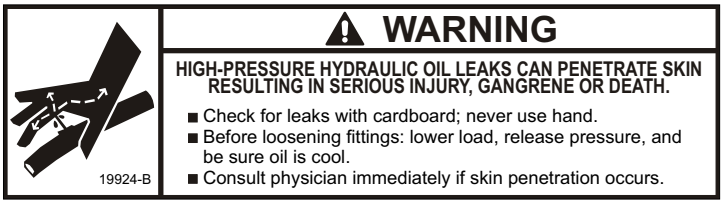
SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



1.- Serial Number Plate (1)

2.- TA4310-7070-00 (1)



SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Replace Immediately If Damaged!

3.- TA4310-7071-00 (2)

WARNING

CRUSHING AND PINCHING HAZARD

- Be extremely careful handling various parts of the hitching mechanism. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement.
- Operate tractor controls from tractor seat only.
- Do not stand between tractor and implement when tractor is in gear.
- Make sure parking brake is engaged before going between tractor and implement.
- Stand clear of machine while in operation or when it is being raised or lowered.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

1002941

4.- TA4310-7072-00 (1)

WARNING

TO AVOID SERIOUS INJURY OR DEATH:

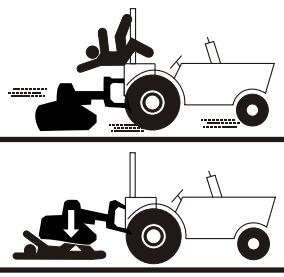
- Read Operator's Manual before operating, servicing, or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
- Never allow riders.
- Keep bystanders away from equipment during operation.
- Operate from tractor seat only.
- Keep all shields in place and in good condition.
- Lower equipment to ground, stop engine, remove key, and set brake before dismounting tractor.
- Never allow children or untrained persons to operate equipment.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

1003199

5.- TA4310-7073-00 (1)

WARNING



FALLING OFF CAN RESULT IN BEING RUN OVER

- Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.
- Buckle Up! Keep seat belt securely fastened.
- Allow no riders.

RAISED IMPLEMENT CAN DROP AND CRUSH.

- Never go underneath raised implement which can drop from equipment or tractor 3-point hitch hydraulic leak down, hydraulic system failures, movement of control levers, or mechanical linkage failures.
- Service work does not require going underneath implement. Read manual instructions.

FALLING OFF OR GOING UNDERNEATH IMPLEMENT CAN RESULT IN SERIOUS INJURY OR DEATH.

55121-C

6.- TA4310-7074-00 (1)

WARNING

Unit must not extend more than 4 feet left of center of the tractor when driving on public roads.

7.- TA4310-6020-01 Red Reflector 2” x 9” (2)
8.- TA4310-6020-02 Yellow Reflector 2” x 9” (1)
9.- TA4310-1101-03 BISON^{VH} decal (3)
10.- Model decal (1)

OPERATION

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

⚠ WARNING

■ **Never allow children or untrained persons to operate equipment.**

■ **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

■ **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

■ **Never allow riders on power unit or attachment.**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

⚠ WARNING

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires, or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

⚠ CAUTION

■ **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.**

MOUNT REAR BLADE TO TRACTOR

IMPORTANT

■ **The rear blade should be mounted on tractors with a maximum power rating of 80 hp (60 kW). For 4WD tractors, the maximum power rating is 70 hp (52 kW).**

The rear blade is a 3-point Category 2 implement. It will attach to ASAE standard Category 2 quick-attaching coupler.

Place the tractor rockshift control in “position control” (non-floating) for attaching and detaching the rear mounted blade. “Draft control” or “position control” can be used while operating.

Back the tractor until the ends of the lift arms can be attached to the lift points on the implement. Secure the lift arms to the mast.

Attach the center link to the top of the mast and adjust so that the rear blade will be level in the operating position.

CATEGORY 2

1. Place the lift arms between the inside lower hitch supports. Secure with lower hitch pins (22) and insert the 1/8 safety pins (17).

2. Connect the tractor top link to upper hitch support hole of the 3-point frame (4) using the upper hitch pin category 2 (23). Secure with the 1/8 safety pin (17).

3. Level the main frame by adjusting lift and top links.

4. Position sway blocks to eliminate side sway or install sway braces if required.

CATEGORY 2 QUICK-HITCH

1. Secure lower hitch pins (22) using 1 7/16 O.D. lower hitch pin bushings* and insert the 1/8 safety pins (17).

2. Place upper hitch pin category 2 (23) and 1 1/4 O.D. upper hitch pin bushing* category 2 in the lower hitch support hole and secure with the 1/8 safety pin (17).

3. Back up tractor with 3 quick-hitch attachment into 3-point frame (4) making sure pins are aligned to the center and the outside lower hitch supports.

4. Lift tractor lift arms.

5. Level the main frame by adjusting lift and top links.

6. Position sway blocks to eliminate side sway or install sway braces if required.

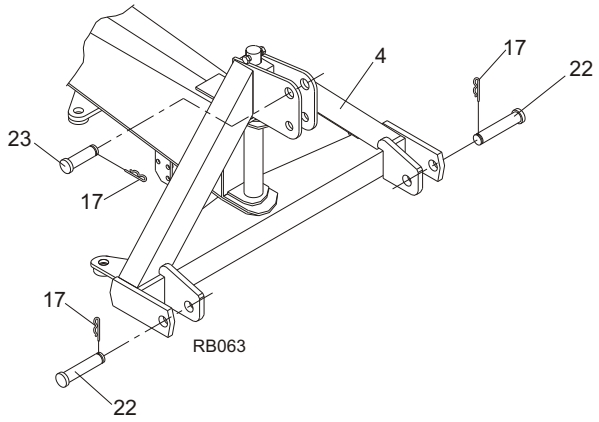


Figure 1. 3-point Hitch Connection

***NOTE:** The upper and lower hitch pin bushings are not included with rear blade.

NOTE: The drawbar may have to be removed on some tractors. Make sure rear blade is at least six inches from tractor tires, throughout operating range of 3-point hitch.

⚠ CAUTION

■ **Before changing positions of manual swing, tilt, or angle positions:**

- **Park tractor on level ground, apply parking brake, level implement boom, shut off tractor, and remove key.**
- **Make manual changes slowly and carefully to prevent hazardous movement of mechanisms.**
- **Never stand in positions where you could become entrapped during adjustment changes or if the 3-point hitch suddenly lowers.**

⚠ CAUTION

■ **Always secure lock pins with safety pins to prevent lock pins from bumping out of the positioning holes. Failure to do so may result in accidents and/or damage to rear blade.**

Angle Adjustment

Mechanical Adjustment

Insert the turn table pin (19) using the various hole combinations between the moldboard and the turn table holes to achieve angle positions up to 45 degrees each side. Secure turn table pin (19) with klik pin (28).

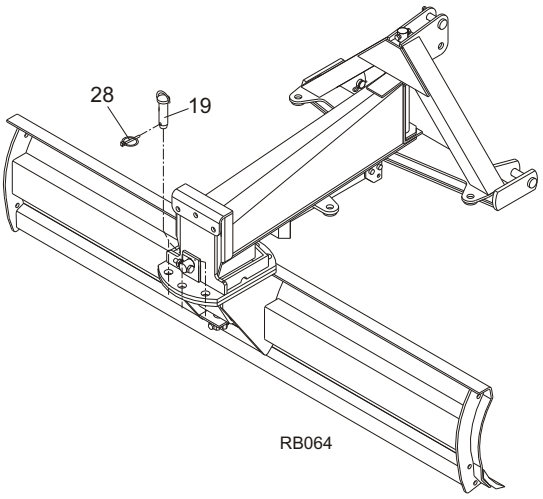


Figure 2. Angle Cylinder and Turn Table Pin

Reverse Blade

The blade is reversible without removing it from the tractor.

Mechanical Adjustment

1. Remove turn table pin (19) and klik pin (28).

2. Rotate moldboard counter-clockwise 180 degrees (viewed from the top).

3. Insert the turn table pin (19) using the various hole combinations between the moldboard and the turn table holes to achieve angle positions up to 45 degrees each side. Secure turn table pin (19) with klik pin (28).

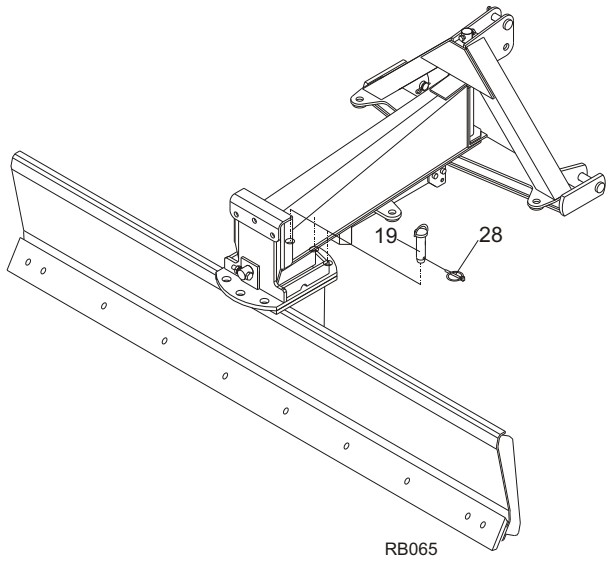


Figure 3. Reverse Blade

Tilt Adjustment

Mechanical Adjustment

Insert the upper turn table pin (18) using the various hole combinations between the main frame and the turn table holes to achieve angle tilt positions up to 23 degrees up and down.

NOTE: In some cases it may not be possible to fully tilt and angle and still be able to raise the blade high enough to clear the ground. In this case, use less tilt.

NOTE: It is possible for the blade to contact other components if the blade is tilted when angled. Operate blade slowly when angling it.

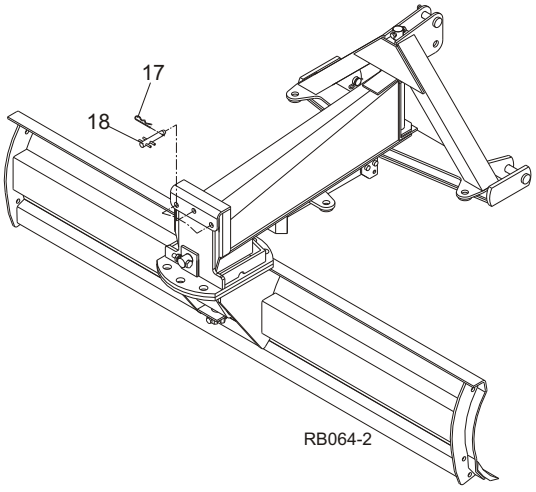


Figure 4. Upper Turn Table Pin

Offset Adjustment

Mechanical Adjustment

Mechanical adjustment model has three blade offset positions. Hole positions in offset link allows main frame to rotate to the right or left with a maximum blade offset of 18 inches to the right or left.

To offset the blade:

1. Park the tractor on level ground.

2. Apply parking brake and raise blade 2 inches above the ground.

3. Shut off the engine and level the boom.

4. Remove safety pin (17) and center linkage pin (21). Swing the boom to the desired position and replace the pins.

Offset mechanical linkage must be installed on the opposite side of the main frame to offset moldboard to the opposite side.

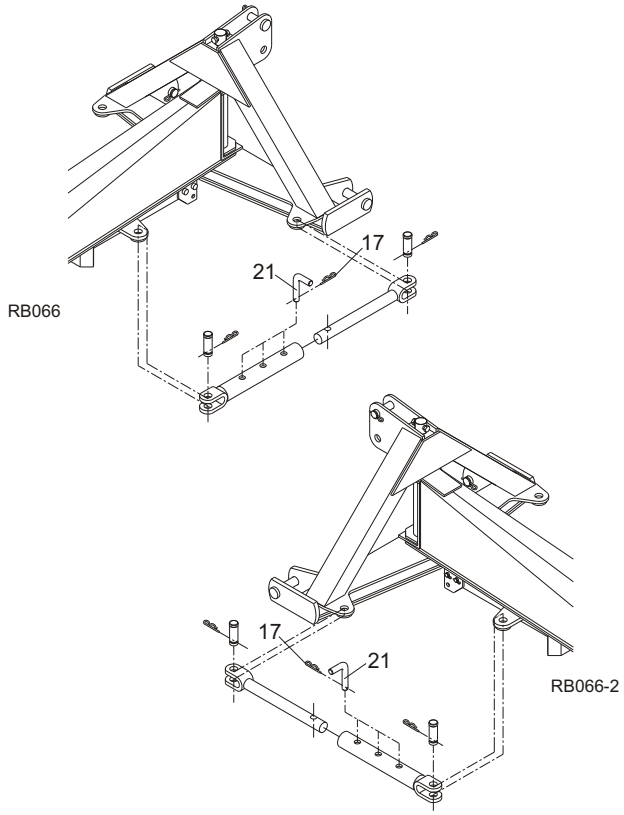


Figure 5. Mechanical Offset

Adjustment with Hydraulic Offset Cylinder (Optional)

The offset cylinder (1) rotates the main frame right or left or to any position in between, resulting in a maximum of 19 inches offset to the right or left.

To offset the blade:

1. Raise blade a few inches above the ground by operating the lift control lever of the tractor.

2. Actuate the control valve connected to the offset cylinder.

3. On tractors having two circuit selector valves, select offset circuit and actuate tractor control valve connected to selector valve.

Offset cylinder (1) must be installed on the opposite side of the main frame to offset moldboard to the opposite side.

NOTE: Do not operate the selector valve under load.

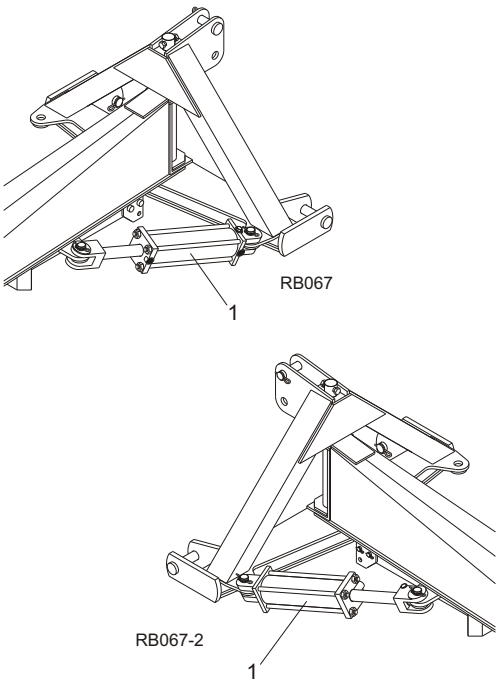


Figure 6. Hydraulic Offset

OPERATING TIPS

⚠ WARNING

- **Look down and to the rear and make sure area is clear before operating in reverse.**
- **Do not operate on steep slopes.**
- **Do not operate while the parking stand is in the down position.**
- **Do not stop, start, or change directions suddenly on slopes.**
- **Use extreme care and reduce ground speed on slopes and rough terrain.**
- **Watch for hidden hazards on the terrain during operation.**
- **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

⚠ CAUTION

- **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.**

BACKFILLING

For backfilling ditches or trenches, reverse the blade by rotating counter-clockwise and back push.

LEVELING AND GRADING

Set the blade to the desired position of offset, angle, and tilt for leveling and grading.

PRE-OPERATION CHECK LIST
(OPERATOR'S RESPONSIBILITY)

___ Review and follow all safety rules and safety decal instructions on pages 3 through 6.

___ Check that equipment is properly and securely attached to tractor.

___ Check that all safety decals are installed and in good condition. Replace if damaged.

___ Check that all hardware and cotter pins are properly installed and secured.

PRE-OPERATION CHECK LIST
(OPERATOR'S RESPONSIBILITY)

___ Check all lubrication points are greased.

___ Check that blade cutting edge is in good condition.

___ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed, or pulled tight. Replace any damaged hoses immediately.

OWNER SERVICE

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

⚠ WARNING

- **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.**

- **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

⚠ WARNING

- **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

- **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

- **Never perform service or maintenance with engine running.**

⚠ CAUTION

- **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.**

- **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

Blade Cutting Edge

To reverse the cutting edge

1. Remove the 5/8 plow bolts.

2. Remove the cutting edge from the moldboard and reinstall with the sharp edge down.

3. Replace cutting edge when both edges are worn.

Lubrication

Monthly

1. Lubricate between moldboard (1) and turn table (3).

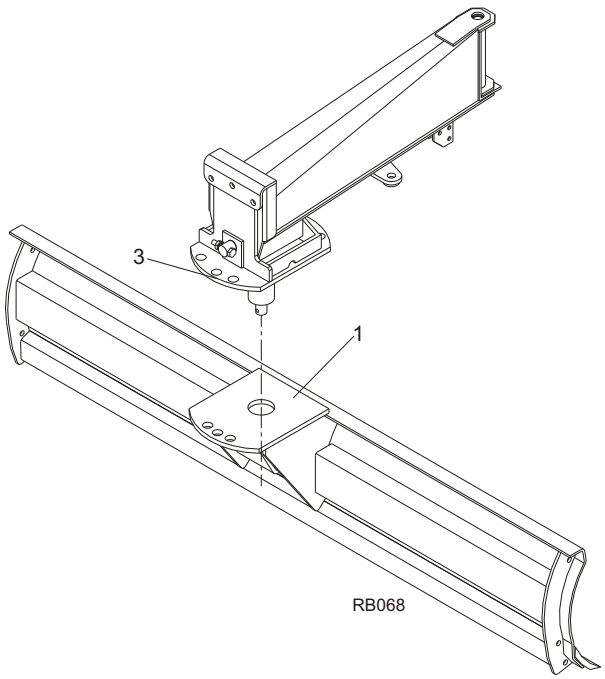


Figure 7. Lubrication Points

Bolts

1. Check bolts periodically to be sure they are tight.

2. Replace bolts as needed.

NOTE: Replacement bolts must have the same strength markings on the heads. Refer to Bolt Torque Chart on page 35.

ASSEMBLY

⚠ WARNING

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.**

■ **Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

⚠ CAUTION

■ **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.**

■ **Tighten all bolts, nuts and screws to torque chart specifications. Check that all safety and cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.**

Dealer Set-Up Instructions

Assembly of this equipment is the responsibility of the BISON^{VH} dealer. It should be delivered to the owner completely assembled, lubricated, and adjusted for normal operating conditions. Assembly will be easier if components are aligned and loosely assembled before tightening hardware. Recommended torque values for hardware are located on page 35.

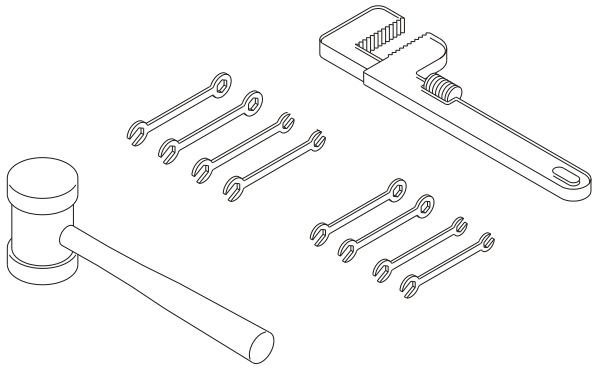
ASSEMBLY TABLE OF CONTENTS

MAIN ASSEMBLY

These instructions illustrate the sequence of assembling the parts of the rear blade. We suggest that you follow this sequence carefully. Assembly of the rear blade should be done with no less than two people and the appropriate equipment for making assembling easier.

The following tools are necessary for assembling your rear blade:

- Two adjustable wrenches or:
  - One adjustable wrench and:
    - One 9/16 wrench or 9/16 rachet
    - One 15/16 wrench or 15/16 rachet
    - One 1/2 wrench or 1/2 rachet
    - One 2 1/2 wrench or 2 1/2 rachet
- One rubber mallet



In some cases, it is necessary to make use of a steel mallet at the time you install the pins. In these cases, we suggest that a piece of wood be used to soften the impact between the pin and mallet to avoid damaging the pin.

⚠ WARNING

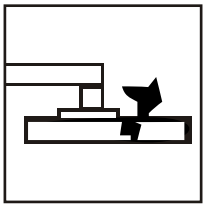
DANGER OF CUTTING EDGE FALLING

It could cause serious injuries or even death. Keep hands and feet out of cutting edge while it is up.

⚠ WARNING

DANGER OF BRUISING

Be careful with the pieces joined by pins since they tend to rotate.



Remove Parts from Crate

NOTE: The shipping crate base can be used to aid in the assembly of the rear blade.

1. Remove top and sides from crate.

2. Remove box of parts and mechanical linkages from base.

Attach Main Frame to Turn Table and King Pin

A. Attach the turn table (3) to the main frame (2) by inserting the lower turn table pin (8) through the king pin (12). Secure with two bolts (9), two hex nuts (11), and two lock washers (10).

NOTE: Prop the main frame (2) upright as shown before assembling turn table (3). Use a fork-lift or a crane for easier assembly.

NOTE: Remove paint from the lower turn table pin (8) and the inside of the turn table (3) and main frame (2) holes where the lower turn table pin (8) goes through if necessary. Apply grease to all contact surfaces to facilitate assembly, if necessary.

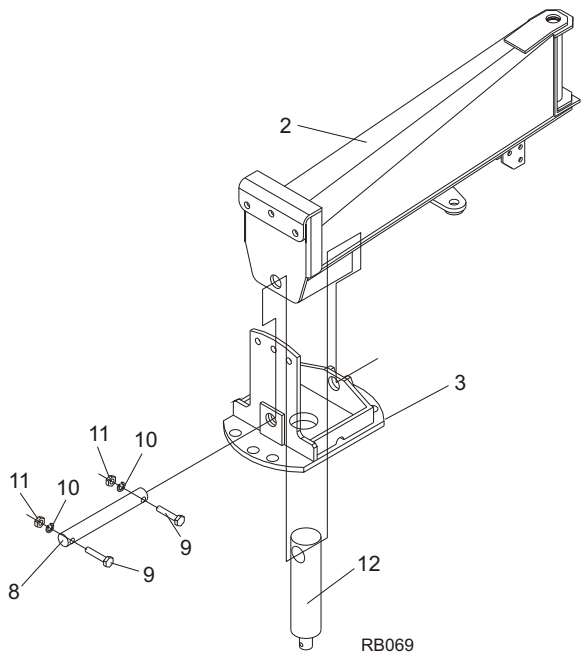


Figure 8. Turn Table Installed to Main Frame

Upper Turn Table Pin Installation

B. Tilt the turn table (3) to one of the three positions available keeping the main frame (2) in an upright position. Secure with upper turn table pin (18) and safety pin (17) through the holes in the turn table (3) and the main frame (2).

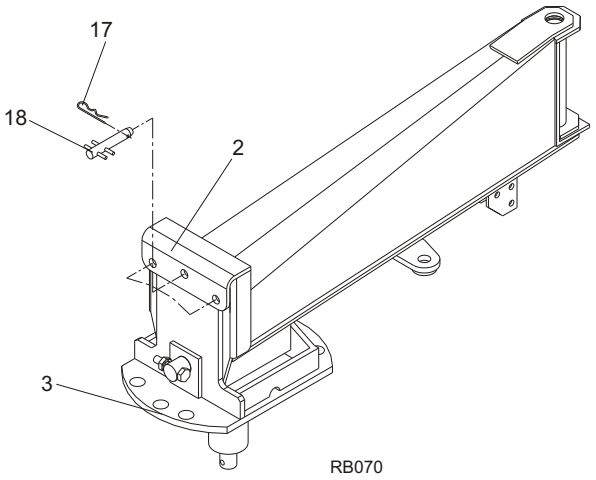


Figure 9. Upper Turn Table Pin Installation

2. Main Frame
3. Turn Table
8. Lower Turn Table Pin
9. Bolt, 3/8 x 2 HHCS
10. Lock Washer, 3/8
11. Hex Nut, 3/8
12. King Pin
17. Safety Pin, 1/8
18. Upper Turn Table Pin

Attach Turn Table to Moldboard

C. Secure king pin (12) to the moldboard (1) by using the king pin cap (29) and castle nut (14). Secure using bolt (13), lock washer (30), and hex nut (31).

NOTE: Remove paint from the moldboard (1) hole where the king pin (12) goes through if necessary. Apply grease to all contact surfaces to facilitate assembly.

1. Moldboard
12. King Pin
13. Bolt, 5/16 x 3 HHCS
14. Castle Nut, 1 1/2
29. King Pin Cap
30. Lock Washer, 5/16
31. Hex Nut, 5/16

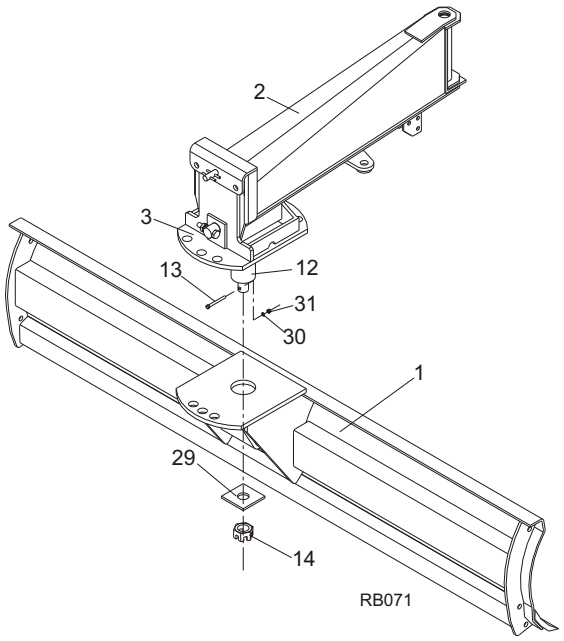


Figure 10. Main Frame and Turn Table Installed to Moldboard

Turn Table Pin Installation

D. Angle the moldboard (1) to one of the three positions available. Secure with turn table pin (19) and klik pin (28) through the holes in the turn table (3) and the moldboard (1).

1. Moldboard
3. Turn Table
19. Turn Table Pin
28. Klik Pin, 3/8

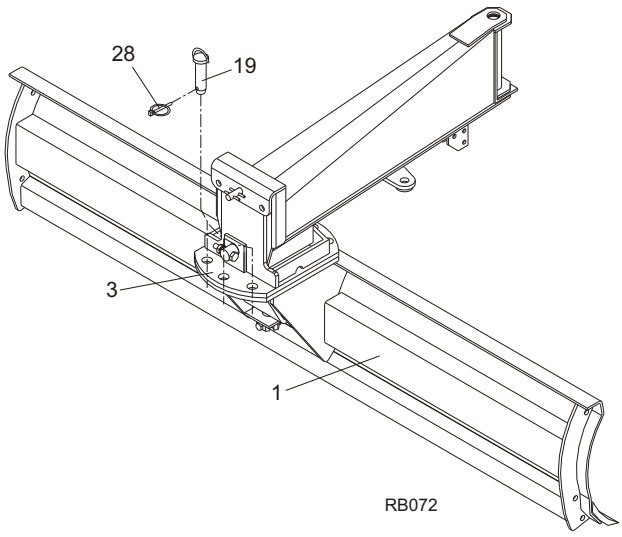


Figure 11. Turn Table Pin Installation

Attach Parking Stand

E. Attach parking stand (7) to the main frame (2) and insert the parking stand pins (16) through the two holes of the parking stand (7). Use two safety pins (17) to secure parking stand (7) in position.

2. Main Frame
7. Parking Stand
16. Parking Stand Pin
17. Safety Pin, 1/8

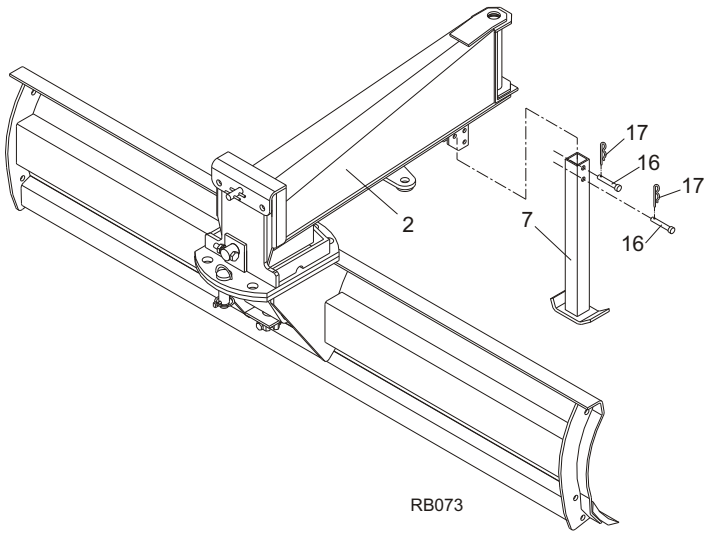


Figure 12. Parking Stand Installation

Attach 3-Point Frame to Main Frame

F. Some blades may require placing the flat washers (32) in the upper and lower ears of the main frame (2). Assemble 3-point frame (4) to the main frame (2). Use 3-point pivot pin (15) and secure with two bolts (9), two lock washers (10), and two hex nuts (11).

NOTE: Apply grease to 3-point pivot pin (15) to facilitate assembly.

NOTE: Remove paint from 3-point pivot pin (15) to facilitate assembly, if necessary.

2. Main Frame
4. 3-Point Frame
9. Bolt, 3/8 x 2 HHCS
10. Lock Washer, 3/8
11. Hex Nut, 3/8
15. 3-Point Pivot Pin
32. Flat Washer, 1 1/2

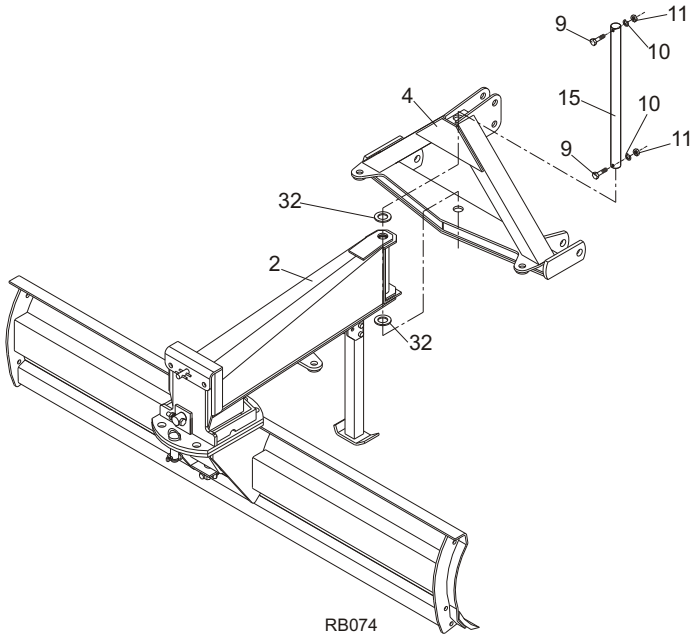


Figure 13. 3-Point Frame Assembly

3-Point Frame Pin Installation

G. Insert the two lower hitch pins (22) through the 3-point frame (4) ear holes. Secure with safety pins (17).

H. Insert the upper hitch pin (23) into the upper hole on the 3-point frame (4), and secure with a safety pin (17).

4. 3-Point Frame
17. Safety Pin, 1/8
22. Lower Hitch Pin
23. Upper Hitch Pin

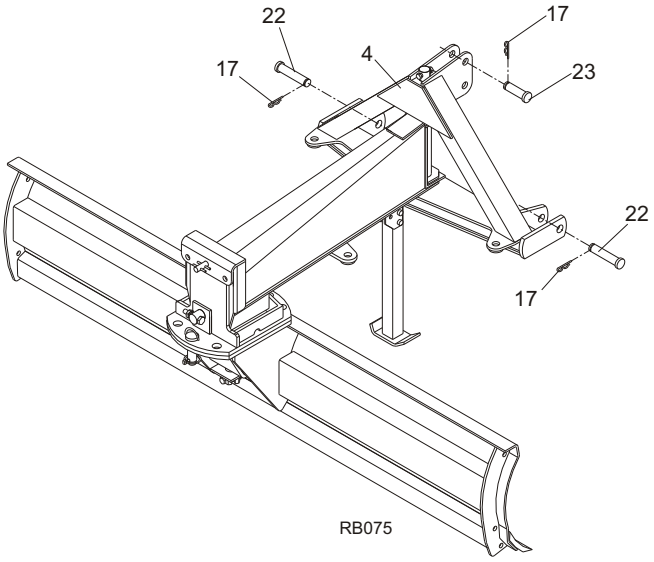


Figure 14. Main Frame Pin Installation

Attach Manual Holder (Optional)

I. Attach the manual holder (34) through the three bolts located on the side of the main frame (2). Secure using three flat washers (33), three lock washers (30) and three hex nuts (31).

2. Main Frame
30. Lock Washer, 5/16
31. Hex Nut, 5/16
33. Flat Washer, 5/16
34. Manual Holder

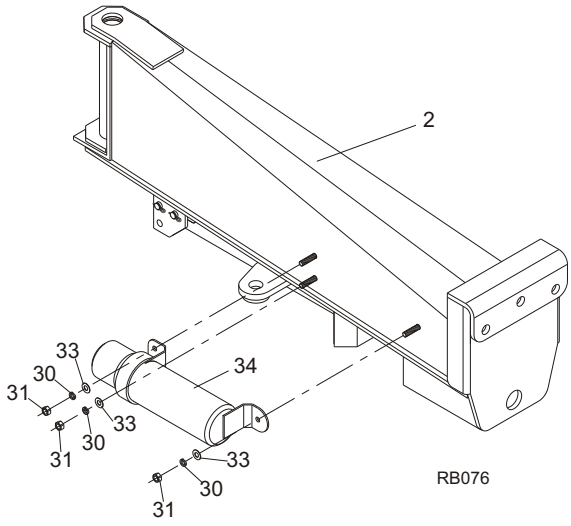


Figure 15. Manual Holder Installation

Offset Mechanical Linkage Installation*

J. Assemble offset mechanical linkage by attaching outer offset link (6) with inner offset link (5) using the center linkage pin (21) and safety pin (17). Attach the offset mechanical linkage assembly to both the 3-point frame (4) and main frame (2) using two linkage end pins (20) and two safety pins (17).

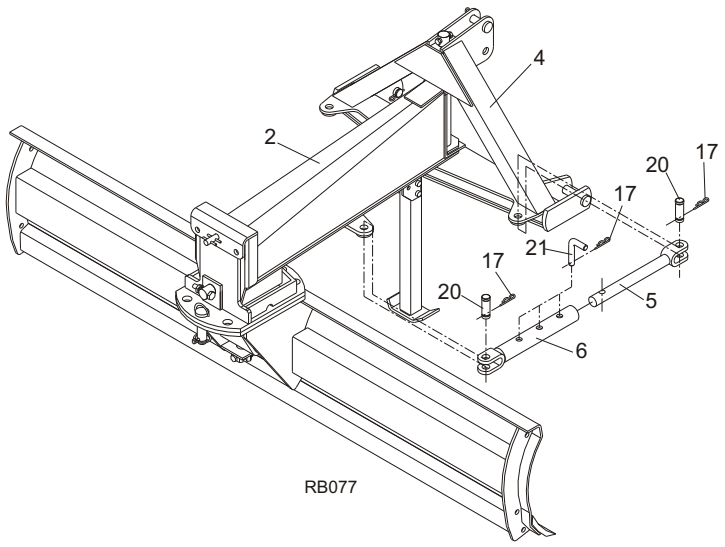


Figure 16. Offset Mechanical Linkage.

2. Main Frame
4. 3-Point Frame
5. Inner Offset Link
6. Outer Offset Link
17. Safety Pin, 1/8
20. Linkage End Pin
21. Center Linkage Pin

*If you are going to install the optional offset hydraulic kit skip this step an continue installing the cylinder. You will not require the offset mechanical linkage assembly, you can either dispose it or keep it for future use.

HYDRAULIC CONFIGURATION

Attach Offset Cylinder Kit (*TAC6300073*) to Rear Blade Assembly (Optional)

A. Attach offset cylinder (1) to main frame (2) offset cylinder lug and 3-point frame (4) offset cylinder lug. Secure with two clevis pins and two clevis pin retainers.

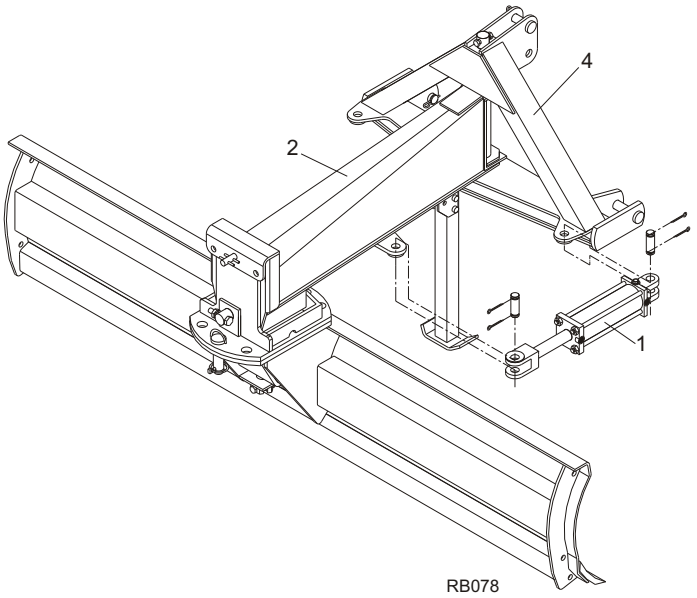


Figure 17. Offset Cylinder Installation

1. Cylinder, 3 x 8
   Clevis Pin
   Clevis Pin Retainer
2. Main Frame
4. 3-Point Frame

NOTE: TAC6300073 includes: hydraulic cylinder, hoses and fittings.

HOSE ASSEMBLY WITH OFFSET HYDRAULIC KIT (OPTIONAL)

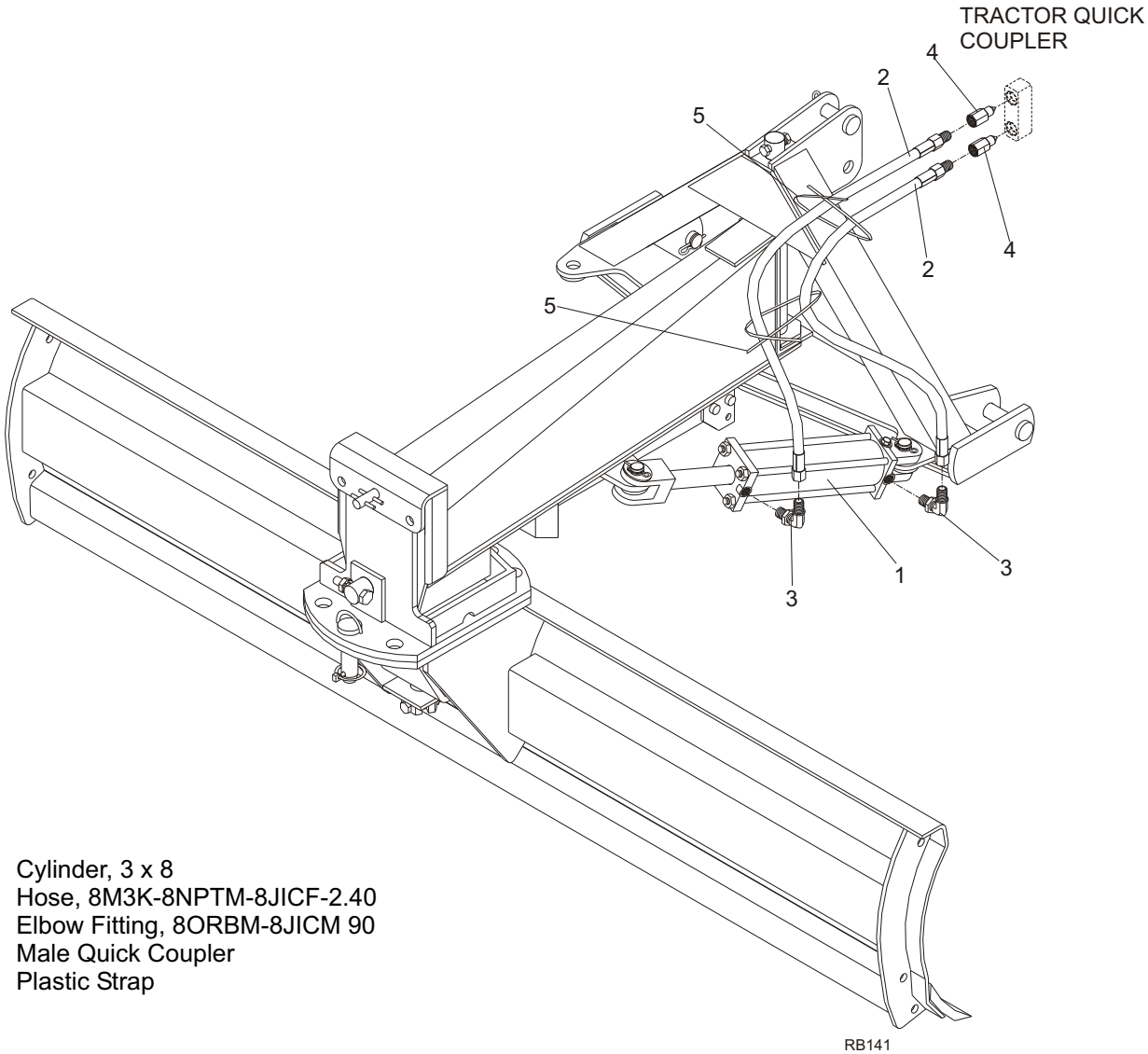
Hose Assembly

B. Offset Hose Assembly (2.40m hoses) (8-foot hoses)
Direct hoses (2) as shown to the offset cylinder (1). Connect the female ends of the hoses to the male ends of the elbow fittings (3). Then connect the male ends of the elbow fittings (3) to the cylinder (1) ports.

C. General Hose Assembly

1. For each pair of hoses coming out of a cylinder (1), use two plastic straps (5) in order to keep the sets together.

2. Connect the two quick couplers (4) to the hoses (2).



RB141

1. Cylinder, 3 x 8
2. Hose, 8M3K-8NPTM-8JICF-2.40
3. Elbow Fitting, 8ORBM-8JICM 90
4. Male Quick Coupler
5. Plastic Strap

END PLATES *C6200003* ASSEMBLY (OPTIONAL)

A. Attach rear blade to tractor.

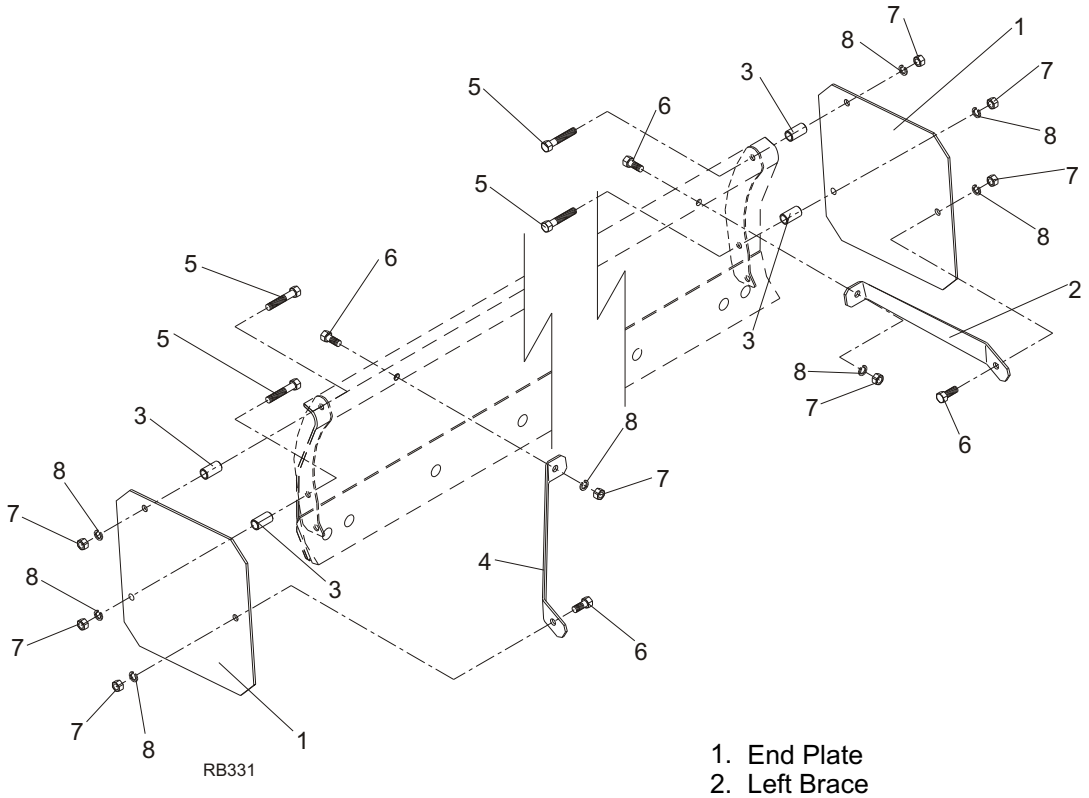
B. Raise the blade a few inches off the ground by operating the lift control lever of the tractor.

C. Properly support blade on blocking while installing end plates to prevent possible safety situation if rear blade were to fall due to lost hydraulic pressure.

D. Assemble the end plates (1) to the moldboard using bolts (5), spacers (3), hex nuts (7), and lock washers (8) making sure the holes of the end plate line up with the holes at the edge of the moldboard while the top and bottom edge of the end plates (1) are flush to the top and bottom of the moldboard.

E. Place the left and right braces (2 & 4) and secure to the moldboard and end plates (1) using four bolts (6), lock washers (8), and hex nuts (7).

F. Lower the blade to the ground.



1. End Plate
2. Left Brace
3. Spacer
4. Right Brace
5. Bolt, 5/8 x 3 1/2 HHCS GR5
6. Bolt, 5/8 x 1 1/2 HHCS GR5
7. Hex Nut, 5/8
8. Lock Washer, 5/8

SKID SHOES *C6100002* ASSEMBLY (OPTIONAL)

A. Attach rear blade to tractor and level the main frame.

B. Raise the blade a few inches off the ground by operating the lift control lever of the tractor.

C. Properly support blade on blocking while installing skid shoes to prevent possible safety situation if rear blade were to fall due to lost hydraulic pressure.

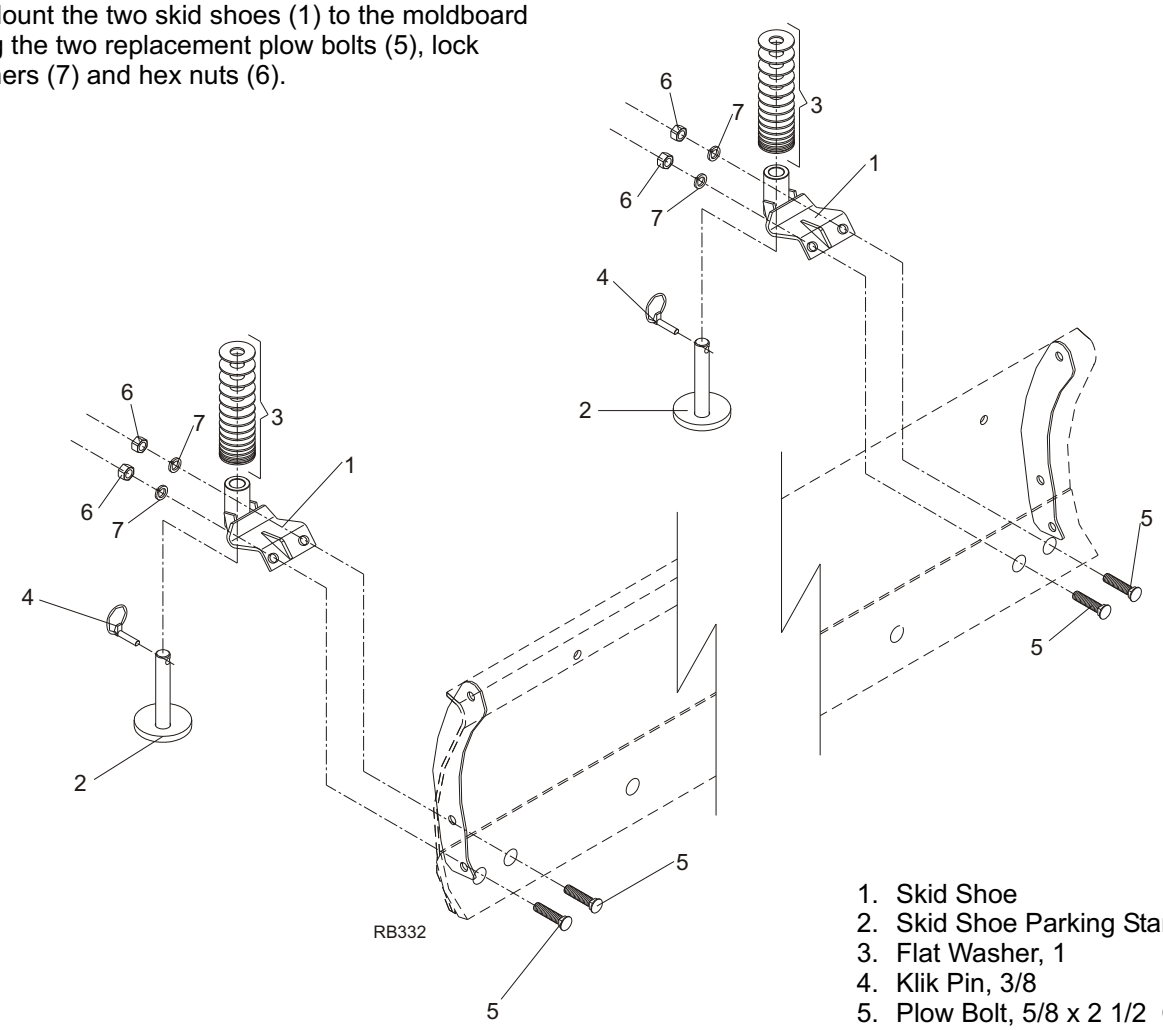
D. Remove the two plow bolts from both sides of the rear blade cutting edge.

E. Mount the two skid shoes (1) to the moldboard using the two replacement plow bolts (5), lock washers (7) and hex nuts (6).

F. Insert the skid shoe parking stands (2) through the skid shoes (1) and stack the fifteen flat washers (3) on top of each skid shoe parking stand (2) and secure with klik pins (4).

Adjust skid shoe parking stands (2) to the desired clearance by taking out flat washers (3) from the top and placing them on the bottom in between the skid shoes (1) and the skid shoe parking stands (2).

G. Lower the blade to the ground.



1. Skid Shoe
2. Skid Shoe Parking Stand
3. Flat Washer, 1
4. Klik Pin, 3/8
5. Plow Bolt, 5/8 x 2 1/2 GR5
6. Hex Nut, 5/8
7. Lock Washer, 5/8

PRE-DELIVERY CHECK LIST
(DEALER'S RESPONSIBILITY)

Inspect the equipment thoroughly after assembly to ensure it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

___ Check that all safety decals are installed and in good condition. Replace if damaged.

___ Check all bolts to be sure they are properly torqued.

___ Check that all cotter pins and safety pins are properly installed. Replace if damaged.

___ Check and grease all lubrication points.

DELIVERY CHECK LIST
(DEALER'S RESPONSIBILITY)

___ Show customer how to make adjustments.

___ Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.

___ Instruct customer how to lubricate and explain importance of lubrication.

___ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.

___ Explain to customer that when equipment is transported on a road or highway, a Slow Moving Vehicle (SMV) sign should be used to provide adequate warning to operators of other vehicles.

NOTES

NOTES

...harvesting better implements!

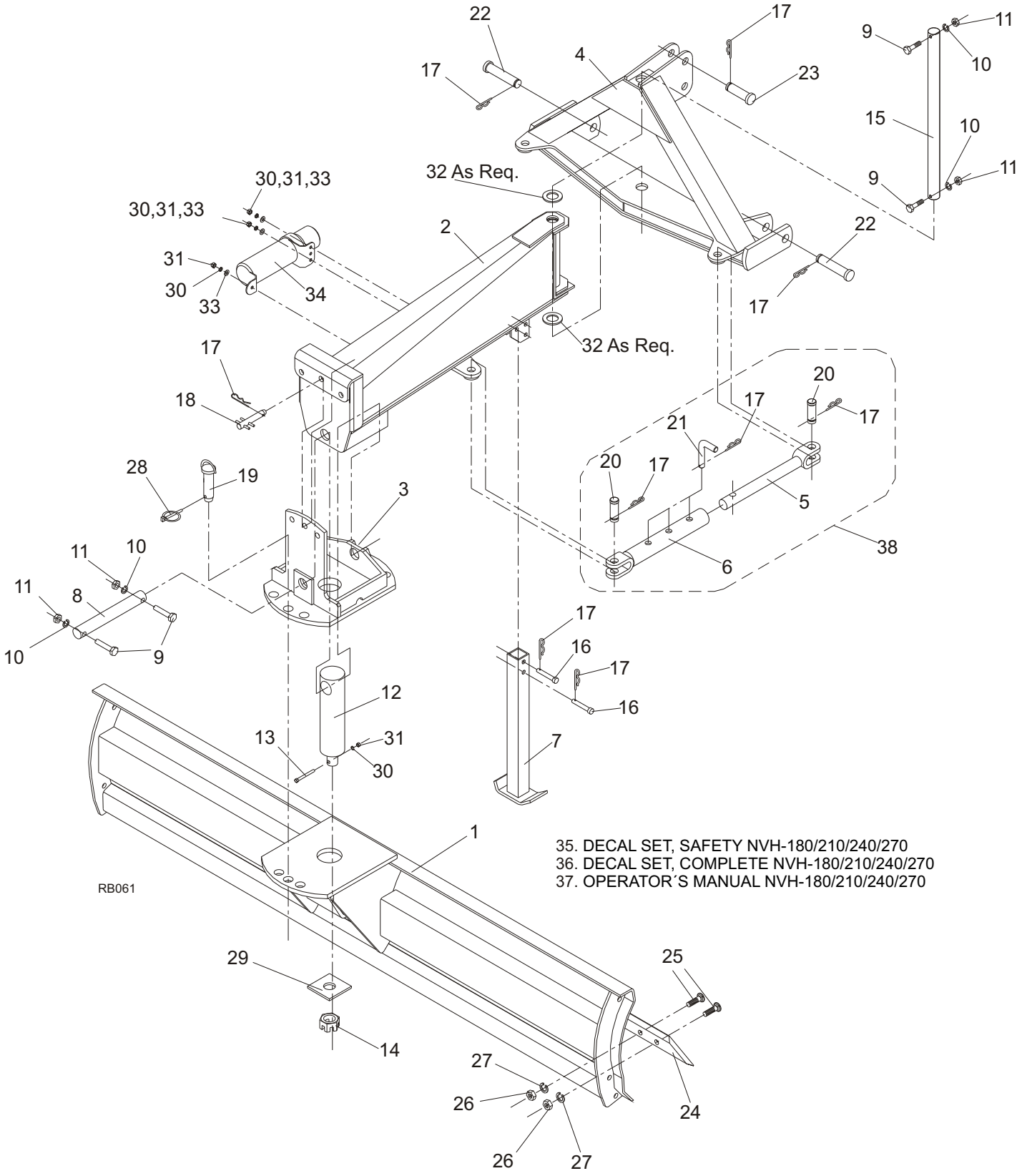
PARTS INDEX

REAR BLADES

NVH-180 NVH-240

NVH-210 NVH-270

NVH-180/NVH-210/NVH-240/NVH-270 MAIN ASSEMBLY



35. DECAL SET, SAFETY NVH-180/210/240/270
36. DECAL SET, COMPLETE NVH-180/210/240/270
37. OPERATOR´S MANUAL NVH-180/210/240/270

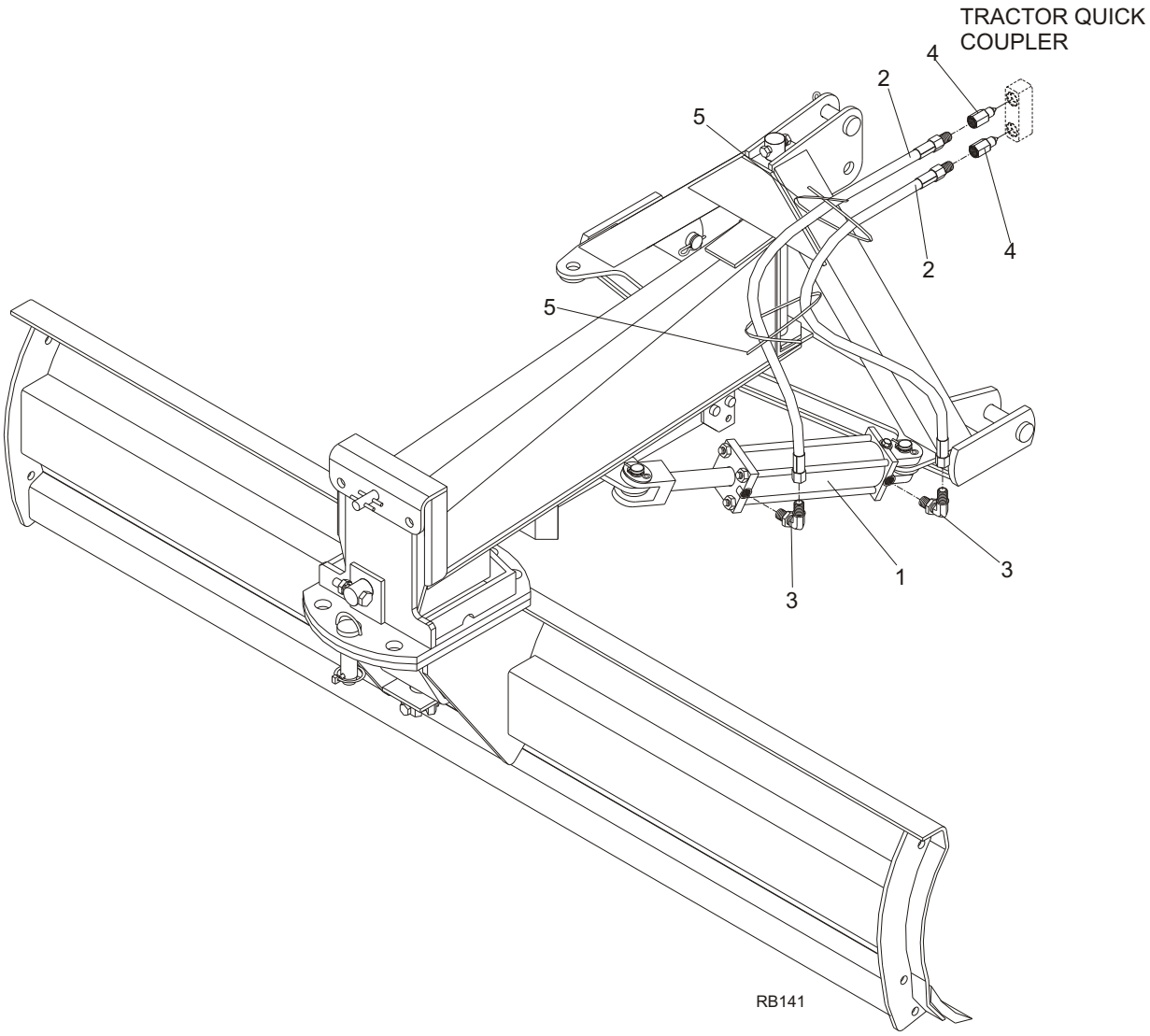
MAIN ASSEMBLY PARTS LIST

REF	PART	QTY	DESCRIPTION
1	TACN06040100W	1	NVH-180 MOLDBOARD ASSEMBLY (6 FT.)
	or		
1	TACN07010100W	1	NVH-210 MOLDBOARD ASSEMBLY (7 FT.)
	or		
1	TACN08050100W	1	NVH-240 MOLDBOARD ASSEMBLY (8 FT.)
	or		
1	TACN09010100W	1	NVH-270 MOLDBOARD ASSEMBLY (9 FT.)
2	TACN08050200W	1	MAIN FRAME
3	TACN08010300W	1	TURN TABLE
4	TACN08050400W	1	3-POINT FRAME
5	N/S	1	INNER OFFSET LINK
6	N/S	1	OUTER OFFSET LINK
7	TACN08020700W	1	PARKING STAND
8	TACN08050001C	1	LOWER TURN TABLE PIN
9	*	4	BOLT, 3/8 x 2 HHCS
10	*	4	LOCK WASHER, 3/8
11	*	4	HEX NUT, 3/8 - 16
12	TACN08010001C	1	KING PIN
13	*	1	BOLT, 5/16 x 3 HHCS
14	TA4220-1026-26	1	CASTLE NUT, 1 1/2 - 12
15	TACN08020009C	1	3-POINT PIVOT PIN
16	TACN08020007C	2	PARKING STAND PIN
17	*	9	SAFETY PIN, 1/8
18	TACN08020800W	1	UPPER TURN TABLE PIN
19	TACN08020900W	1	TURN TABLE PIN
20	TACN08020006C	2	LINKAGE END PIN
21	TACN99170001C	1	CENTER LINKAGE PIN
22	TACN08010011C	2	LOWER HITCH PIN
23	TACN08010010C	1	UPPER HITCH PIN
24	TA4370-1030-00	1	6 FT. CUTTING EDGE
	or		
24	TA4370-1050-00	1	7 FT. CUTTING EDGE
	or		
24	TA4370-1070-00	1	8 FT. CUTTING EDGE
	or		
24	TA4370-1080-00	1	9 FT. CUTTING EDGE
25	*	†	PLOW BOLT, 5/8 x 2 GR5
26	*	†	HEX NUT, 5/8 - 11
27	*	†	LOCK WASHER, 5/8
28	*	1	KLIK PIN, 3/8
29	TACN08010003C	1	KING PIN CAP
30	*	4	LOCK WASHER, 5/16
31	*	4	HEX NUT, 5/16 - 18
32	*	2	FLAT WASHER, 1 1/2
33	*	3	FLAT WASHER, 5/16
34	TA4350-6001-02	1	MANUAL HOLDER
35	TACN08010015K		DECAL SET, SAFETY NVH-180/210/240/270
36	TACN08010016K		DECAL SET, COMPLETE NVH-180/210/240/270
37	TACN08010017K		OPERATOR'S MANUAL NVH-180/210/240/270
38	TACN08090500A		OFFSET MECHANICAL LINKAGE KIT

† 8 FOR NVH-180, 9 NVH-210, 10 FOR NVH-240, 11 FOR NVH-270

* Standard Hardware; Obtain Locally
N/S Not Serviced Separately

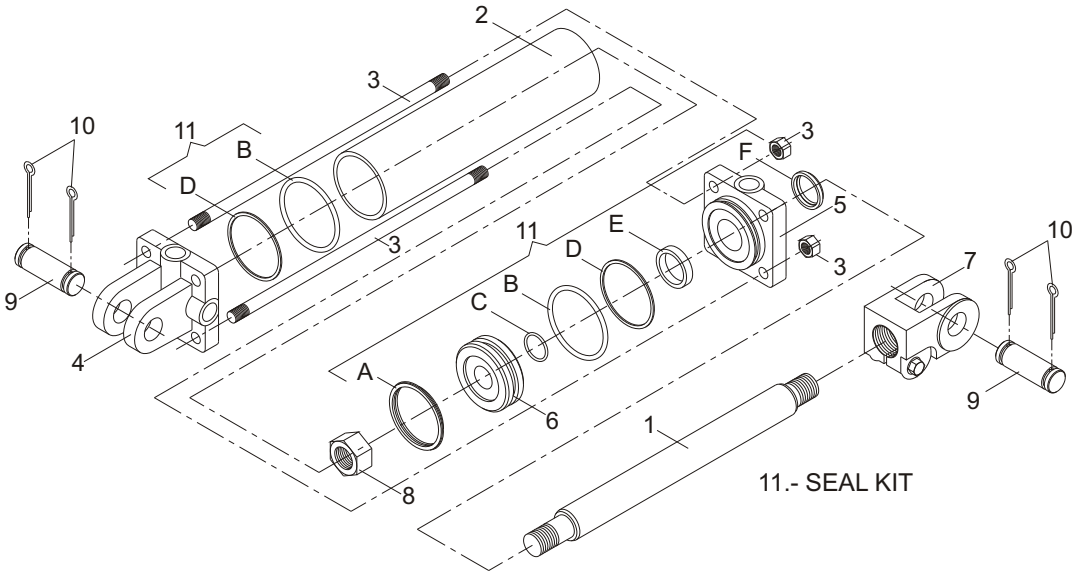
OFFSET HYDRAULIC *C6300073* KIT (OPTIONAL)

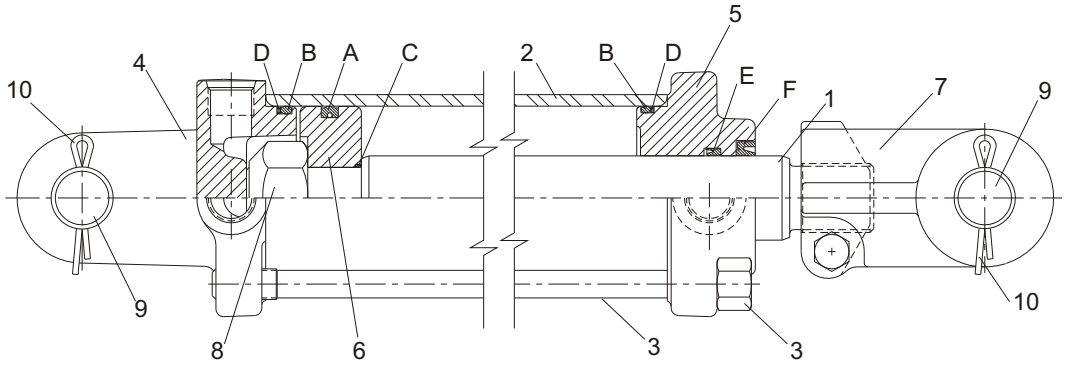


REF	PART	QTY	DESCRIPTION
1	TA4110-4047-01	1	CYLINDER 3 x 8 (Pins included)
2	TA4430-1567-40	2	HOSE, 8M3K-8NPTM-8JICF-2.40
3	TA4120-1159-50	2	ELBOW FITTING, 8ORBM-8JICM 90
4	*	2	MALE QUICK COUPLER
5	*	2	PLASTIC STRAP

* Standard Hardware; Obtain Locally

ANGLE/OFFSET/TILT HYDRAULIC CYLINDER ASSEMBLY & PARTS LIST

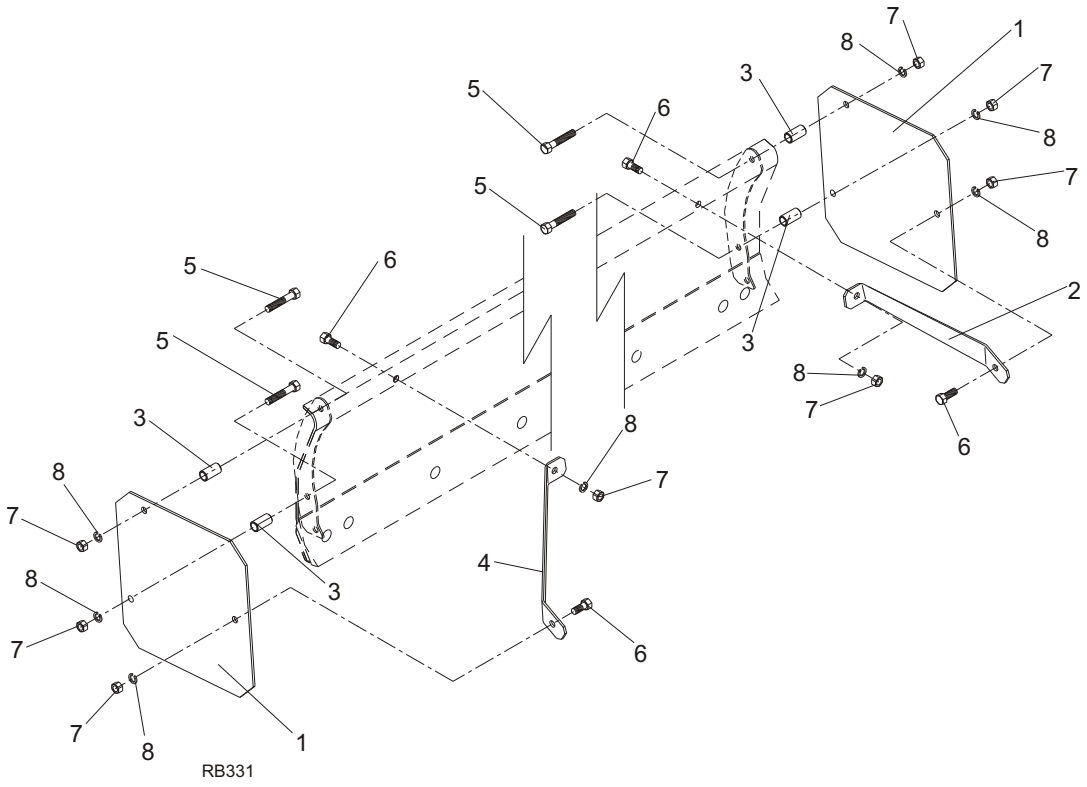




RB231

REF	PART	QTY	DESCRIPTION
1	TA4110-4047-05	1	PISTON ROD
2	TA4110-4048-05	1	TUBE
3	TA4110-4049-05	4	TIEROD ASSEMBLY WITH NUT
4	TA4110-4050-05	1	BUTT
5	TA4110-4051-05	1	GLAND
6	TA4110-4052-05	1	PISTON
7	TA4110-4053-05	1	CLEVIS ASSEMBLY
8	TA4110-4054-05	1	LOCKNUT, 1.00 - 14
9	TA4110-4055-05	2	CLEVIS PIN
10	TA4260-1100-01	4	CLEVIS PIN RETAINER
11	TA4110-4056-05		SEAL KIT
A		1	CROWN SEAL
B		2	O-RING
C		1	O-RING
D		2	BU-WASHER
E		1	U-CUP
F		1	WIPER

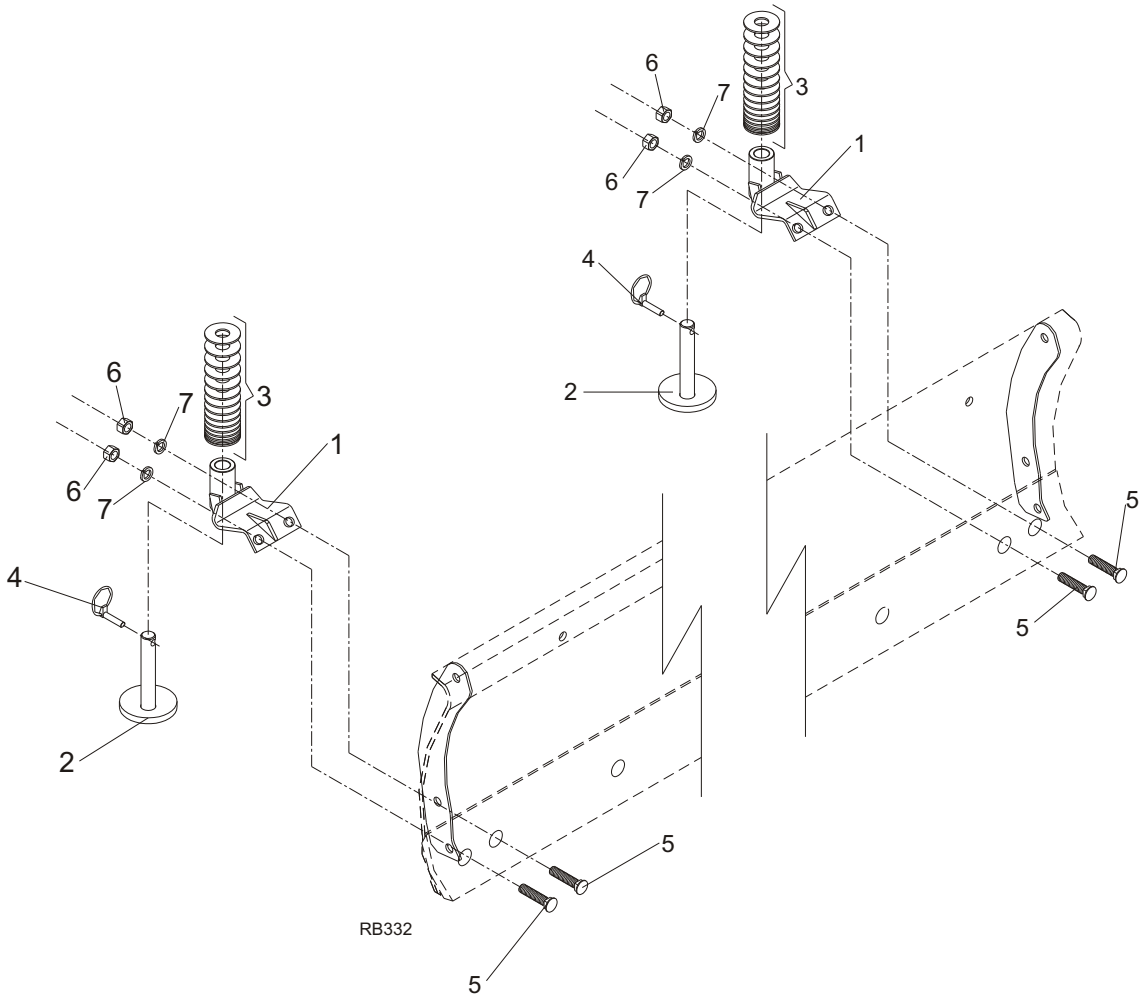
END PLATES *C6200003* ASSEMBLY (OPTIONAL)



REF	PART	QTY	DESCRIPTION
1	N/S	2	END PLATE
2	N/S	1	LEFT BRACE
3	N/S	4	SPACER
4	N/S	1	RIGHT BRACE
5	*	4	BOLT, 5/8 x 3 1/2 HHCS GR5
6	*	4	BOLT, 5/8 x 1 1/2 HHCS GR5
7	*	8	HEX NUT, 5/8 - 11
8	*	8	LOCK WASHER, 5/8

* Standard Hardware; Obtain Locally
N/S Not Serviced Separately

SKID SHOES *C6100002* ASSEMBLY (OPTIONAL)

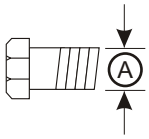


REF	PART	QTY	DESCRIPTION
1	N/S	2	SKID SHOE
2	TACN99030200W	2	SKID SHOE PARKING STAND
3	*	30	FLAT WASHER, 1
4	*	2	KLIK PIN, 3/8
5	*	4	PLOW BOLT, 5/8 x 2 1/2 GR5
6	*	4	HEX NUT, 5/8 - 11
7	*	4	LOCK WASHER, 5/8

* Standard Hardware; Obtain Locally
N/S Not Serviced Separately

BOLT TORQUE CHART

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.
Fasteners must always be replaced with the same grade as specified in the manual parts list.
Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.
Make sure fastener threads are clean and you start thread engagement properly.
All torque values are given to specifications used on hardware defined by SAE J1701 & J1701M JUL96.



SAE SERIES TORQUE CHART

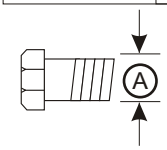
SAE Grade 2 (No Dashes)

SAE Bolt Head Identification

SAE Grade 5 (3 Radial Dashes)

SAE Grade 8 (6 Radial Dashes)

A Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		Lbs.-Ft.	N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



METRIC SERIES TORQUE CHART

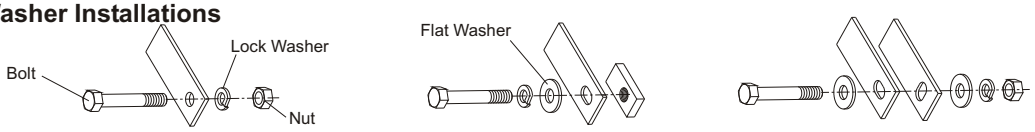
Metric Grade 8.8

Metric Bolt Head Identification

Metric Grade 10.9

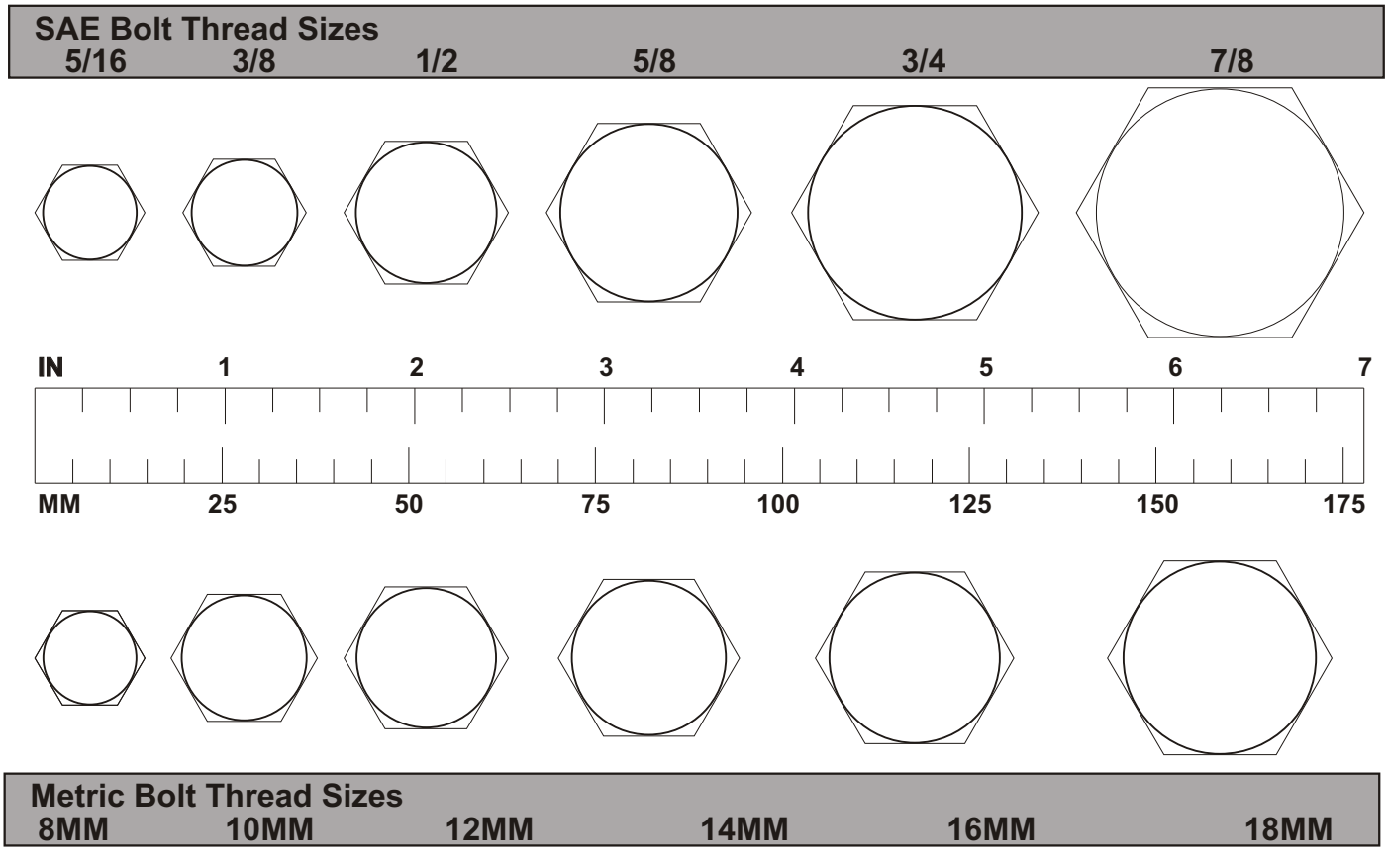
A Diameter & Thread Pitch (Millimeters)	Wrench Size	COARSE THREAD				FINE THREAD				A Diameter & Thread Pitch (Millimeters)
		MARKING ON HEAD				MARKING ON HEAD				
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	N-m	Lbs.-Ft.	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

Typical Washer Installations



BOLT SIZE CHART

NOTE: Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE metric bolts.



ABBREVIATIONS

AG	Agriculture
ATF	Automatic Transmission Fluid
BSPP	British Standard Pipe Parallel
BSPTM	British Standard Pipe Tapered Male
CV	Constant Velocity
CCW	Counter-Clockwise
CW	Clockwise
F	Female
GA	Gauge
GR (5,etc.)	Grade (5,etc.)
HHCS	Hex Head Cap Screw
HT	Heat Treated
JIC	Joint Industry Council 37º Degree Flare
LH	Left Hand
LT	Left
m	Meter
mm	Millimeter
M	Male
MPa	Mega Pascal
N	Newton
NC	National Coarse
NF	National Fine
NPSM	National Pipe Straight Mechanical
NPT	National Pipe Tapered
NPT SWF	National Pipe Tapered Swivel Female
ORBM	O-Ring Boss - Male
P	Pitch
PBY	Power Beyond
psi	Pounds per Square Inch
PTO	Power Take Off
QD	Quick Disconnect
RH	Right Hand
ROPS	Roll Over Protective Structure
RPM	Revolutions Per Minute
RT	Right
SAE	Society of Automotive Engineers
UNC	United Coarse
UNF	Unified Fine
UNS	Unified Special

WARRANTY

Please enter information below and save for future reference.

Date Purchased: _____ From (Dealer): _____

Model Number: _____ Serial Number: _____

A. GENERAL PROVISIONS - The warranties described below are provided by Tecnomec Agrícola, S.A. de C.V. (TECNOMEC) to the original purchasers of new agricultural products from TECNOMEC or authorized dealers for a period of one (1) year **under agricultural use**. Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or the expiration of the applicable new equipment warranty period, whichever occurs later. Under these warranties, TECNOMEC will repair or replace, at its discretion, any covered part which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by an authorized BISON^{VH} dealer, which will use only new or remanufactured parts or components furnished by TECNOMEC.

Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/ or transportation of product to and from the dealer's or service center's place of business, for any premium charged for overtime labor requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under the warranties below. At TECNOMEC's request, dealer will be responsible for returning the parts to TECNOMEC for evaluation.

B. WHAT IS WARRANTED - All parts of any new TECNOMEC product. TECNOMEC makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by TECNOMEC. Warranties for these items, if any, are provided separately by their respective manufacturers.

Each warranty term begins on the date of product delivery to the purchaser.

C. WHAT IS NOT WARRANTED TECNOMEC IS NOT RESPONSIBLE FOR THE FOLLOWING : (1) Used Products; (2) Any product that has been altered, modified, or used in connection with attachments in ways not approved by TECNOMEC; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow the product's OPERATOR MANUAL instructions, misuse, lack of proper protection during storage, or accident; (4) Normal maintenance parts and service, including, but not limited to, oil filters, coolants and conditioners, cutting parts, belts, brake and clutch linings.

Incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, TECNOMEC specifically disclaims responsibility for any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

D. SECURING WARRANTY SERVICE - To secure warranty services, the purchaser must (1) report the product defect to an authorized dealer and request repair within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer or service center within 45 days.

E. NO IMPLIED WARRANTY OR OTHER REMEDY - AGRICULTURAL PRODUCTS - Where permitted by law, neither TECNOMEC nor any company affiliated with it makes any warranties, representations, or promises, express or implied as to the quality or performance, or freedom from defect of its agricultural products other than those set forth above, and NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE. IN NO EVENT WILL THE DEALER, TECNOMEC OR ANY COMPANY AFFILIATED WITH TECNOMEC BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

The only remedies the purchaser has in connection with the breach of performance of any warranty on TECNOMEC agricultural products are those set forth above.

F. NO WARRANTY MODIFICATION - No agent, representative, authorized dealer, distributor, service center, serviceperson, salesperson, other than an officer from TECNOMEC is authorized to alter, modify, or enlarge this Warranty.

G. If further information is desired, contact your selling dealer or the nearest branch office of TECNOMEC

H. This Warranty is effective only if the warranty registration is electronically submitted to TECNOMEC by dealer within ten (10) days of retail purchase date.

For warranty services contact your selling dealer.

VH
TECNOMEC AGRICOLA

PART NO.
4350-2112-00