

OPERATOR'S MANUAL

# BOX BLADES

TB3060H

TB3078H

TB4078H

TB3066H

TB3084H

TB4084H

TB3072H

TB3096H

TB4096H



**Tuffline**

## TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Tufline dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Owner's/Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Warranty Registration located on the Frontier website.

## TO THE OWNER:

Read this manual before operating your Tufline 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 Tufline dealer has trained mechanics, genuine Tufline service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Tufline 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 Decal 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 NOTE

Indicates that failure to observe can cause damage to equipment.

Indicates helpful information.

# TABLE OF CONTENTS

INTRODUCTION . . . . .	ii
SPECIFICATIONS . . . . .	1 - 2
SAFETY DECALS . . . . .	3
SAFETY RULES . . . . .	4 - 7
DEALER INSTRUCTIONS . . . . .	8
OPERATION . . . . .	9 - 10
OWNER SERVICE . . . . .	11 - 12
PARTS CATALOG . . . . .	13 - 15
BOLT SIZE AND BOLT TORQUE CHART . . . . .	16



## GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your Box Blade. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance.

These instructions have been compiled from 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.

# SPECIFICATIONS

Model #	TB3060	TB3066	TB3072	TB3078	TB3078
Tailgate	Hinged, Floating	Hinged, Floating	Hinged, Floating	Hinged, Floating	Hinged, Floating
Grading & Leveling	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling
Tractor Compatibility	Category I iMatch Compatible	Category I iMatch Compatible	Category I iMatch Compatible	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible
Beam Type	Tubular Scarifier Beam	Tubular Scarifier Beam	Tubular Scarifier Beam	Tubular Scarifier Beam	Tubular Scarifier Beam
Scarifier Shanks	Notched 4 Position	Notched 4 Position	Notched 4 Position	Notched 4 Position	Notched 4 Position
Points	Heat Treated Points	Heat Treated Points	Heat Treated Points	Heat Treated Points	Heat Treated Points
Box Design	Low Back	Low Back	Low Back	Low Back	High Back
Hydraulic Opening	Hydraulically Oper- ated Scarifier Bar	Hydraulically Oper- ated Scarifier Bar	Hydraulically Oper- ated Scarifier Bar	Hydraulically Oper- ated Scarifier Bar	Hydraulically Oper- ated Scarifier Bar
Hydraulic Kit	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included
Capacity (cu. ft.)	21.8	24	26.2	28.3	32
Tractor HP	25 to 50 HP	25 to 50 HP	25 to 50 HP	50 to 90 HP	50 to 90 HP
Cutting Edges	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible
Scarifier Shanks	(6) Replaceable	(6) Replaceable	(6) Replaceable	(8) Replaceable	(8) Replaceable
Beam Size	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"
Beam Reinforcement	1/2" x 3/4" bar	1/2" x 3/4" bar	1/2" x 3/4" bar	1/2" x 3/4" bar	1/2" x 3/4" bar
End Plate Thickness	3/8"	3/8"	3/8"	1/2"	1/2"
Working Width	60"	66"	72"	78"	78"
Height	20"	20"	20"	20"	20" Front 26" Rear
Depth	33"	33"	33"	33"	33"
Hitch Type	Category I iMatch Compatible	Category I iMatch Compatible	Category I iMatch Compatible	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible
Mast Design	Welded 3/8" Plate	Welded 3/8" Plate	Welded 3/8" Plate	Welded 1/2" Plate	Welded 1/2" Plate
Assembly/Set-Up Time	30 min	30 min	30 min	30 min	30 min
Operating Weight	725 lbs.	772 lbs.	815 lbs.	1016 lbs.	1160 lbs.
Shipping Weight	765 lbs.	812 lbs.	855 lbs.	1056 lbs.	1200 lbs.
Moldboard Thickness	3/16"v	3/16"	3/16"	1/4"	1/4"
Paint Color	Green	Green	Green	Green or Construction Yellow	Green or Construction Yellow

# SPECIFICATIONS

Model #	TB3084	TB4084	TB4096	TB4096
<b>Tailgate</b>	Hinged, Floating	Hinged, Floating	Hinged, Floating	Hinged, Floating
<b>Grading &amp; Leveling</b>	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling	Fine, Precision Grading And Leveling
<b>Tractor Compatibility</b>	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible
<b>Beam Type</b>	Tubular Scarifier Beam	Tubular Scarifier Beam	Tubular Scarifier Beam	Tubular Scarifier Beam
<b>Scarifier Shanks</b>	Notched 4 Position	Notched 4 Position	Notched 4 Position	Notched 4 Position
<b>Points</b>	Heat Treated Points	Heat Treated Points	Heat Treated Points	Heat Treated Points
<b>Box Design</b>	Low Back	High Back	Low Back	High Back
<b>Hydraulic Opening</b>	Hydraulically Operated Scarifier Bar	Hydraulically Operated Scarifier Bar	Hydraulically Operated Scarifier Bar	Hydraulically Operated Scarifier Bar
<b>Hydraulic Kit</b>	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included	Pin Kit And Hydraulic Hose Kit Included
<b>Capacity (cu. ft.)</b>	30.5	34.5	34.9	39.4
<b>Tractor HP</b>	50 to 90 HP	50 to 90 HP	50 to 90 HP	50 to 90 HP
<b>Cutting Edges</b>	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible	(2) 1/2" x 6" reversible
<b>Scarifier Shanks</b>	(8) Replaceable	(8) Replaceable	(8) Replaceable	(8) Replaceable
<b>Beam Size</b>	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"	Main Beam 5" x 5" x 1/4" Shank Beam 5" x 5" x 1/4"	Main Beam 4" x 4" x 1/4" Shank Beam 4" x 4" x 1/4"	Main Beam 5" x 5" x 1/4" Shank Beam 5" x 5" x 1/4"
<b>Beam Reinforcement</b>	1/2" x 3/4" bar	1/2" x 3/4" bar	1/2" x 3/4" bar	1/2" x 3/4" bar
<b>End Plate Thickness</b>	1/2"	1/2"	1/2"	1/2"
<b>Working Width</b>	84"	84"	96"	96"
<b>Height</b>	20"	20" Front 26" Rear	20"	20" Front 26" Rear
<b>Depth</b>	33"	33"	33"	33"
<b>Hitch Type</b>	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible	Category I & 2 iMatch & Quick Coupler Compatible
<b>Mast Design</b>	Welded 1/2" Plate	Welded 1/2" Plate	Welded 1/2" Plate	Welded 1/2" Plate
<b>Assembly/Set-Up Time</b>	30 min	30 min	30 min	30 min
<b>Operating Weight</b>	1052 lbs.	1200 lbs.	1146 lbs.	1310 lbs.
<b>Shipping Weight</b>	1092 lbs.	1240 lbs.	1186 lbs.	1350 lbs.
<b>Moldboard Thickness</b>	1/4"	1/4"	1/4"	1/4"
<b>Paint Color</b>	Green or Construction Yellow	Green or Construction Yellow	Green or Construction Yellow	Green or Construction Yellow

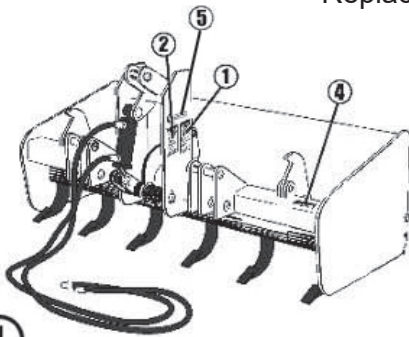
# SAFETY & INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

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

Replace Decals Immediately If Damaged!

5TL15511C



15511A

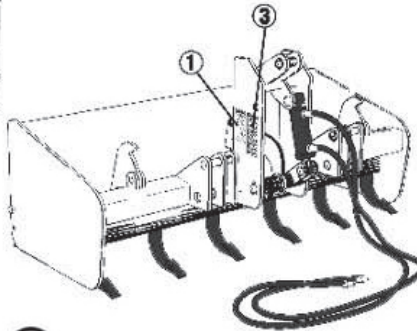
**1**

**⚠ WARNING**

**CRUSHING AND PINCHING HAZARD**

- Be extremely careful handling various parts of the machine. They are extremely 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 when in operation or when it is being raised or lowered.

TL15511A



15511B

**2**

**⚠ 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.
- Do not transport towed or semi-mounted units over 20 MPH.

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

TL15511B

**3**

**⚠ 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.**

TL15511C

**4**

**⚠ WARNING**

**HIGH-PRESSURE HYDRAULIC OIL LEAKS CAN PENETRATE SKIN RESULTING IN INJURY, GANGRENE OR DEATH**

- Relieve pressure on system before repairing or disconnecting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Consult physician immediately if skin penetration occurs.

TL15511D

15511D

**5**  
Serial Number Plate

**TUFLINE**

MODEL # \_\_\_\_\_

SERIAL # \_\_\_\_\_

**TUFLINE MANUFACTURING COMPANY, INC.**  
COLUMBUS, MS  
662-328-8347



# 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 selling 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.
- 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.
- Never allow children or untrained persons to operate equipment.
- Train all new personnel and review instruction's frequently with existing workers. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- 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 eas-

ily 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.

## PREPARATION

- Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.
- Route hydraulic hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate movable components through full operational range to check clearances. Replace any damaged hose immediately.
- 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.

Safety Rules continued on next page.



# SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Safety Rules continued from previous page.

## **PREPARATION (cont'd)**

- 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 system in “locked up” position at all times.
- 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.

## **TRANSPORTATION**

- Always comply with all state and local laws governing highway safety and lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Do not operate or transport on steep slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Do not operate or transport equipment while under the influence of alcohol or drugs. Consult your doctor about operating this machine while taking prescription medications.

## **OPERATION**

- Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and

cause severe injury or death.

- Always comply with all state and local laws governing highway safety and lighting and marking requirements.
  - Operate only in daylight or good artificial light.
  - Keep bystanders away from equipment.
  - Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
  - Always relieve the pressure on the hydraulic lift system before performing service or maintenance on any hydraulic components. Failure to do so may cause serious injury from injection of pressurized hydraulic fluid.
  - Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.
  - Do not use hands to search for leaks on any hydraulic components. Use cardboard or similar material. Failure to do so may cause serious injury from injection of pressurized hydraulic fluid.
  - 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 system in “locked up” position at all times.
  - Never allow riders on power unit or attachment.
- Safety Rules continued on next page.  
Safety Rules continued from previous page.

## **OPERATION (cont'd)**





# SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

- 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.
- Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.
- Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes. Always operate down slopes; never across the face.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Keep alert and watch the front as well as the rear when operating.
- When making adjustments, be careful to keep hands and feet clear of sliding parts and possible pinch points.
- Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- Before leaving operator's seat, lower lift arms and put attachment on the ground. Engage brake, stop engine, remove key, and remove seat belt.

## MAINTENANCE

- Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.
- Never go underneath equipment (lowered to the ground or raised) unless it is properly

blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

- When performing maintenance or repairs make sure the equipment is in the lowered position and both the mainframe and gangs are properly blocked and secured to prevent rolling. Failure to do so can cause serious injury or death.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Before leaving operator's seat, lower lift arms and put attachment on the ground. Engage brake, stop engine, remove key, and remove seat belt.
- Never perform service or maintenance with engine running.
- 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.
- Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

Safety Rules continued on next page.  
Safety Rules continued from previous page.

## MAINTENANCE (cont'd)

# SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

- Route hydraulic hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hose immediately.

- 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.

- 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.

- 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

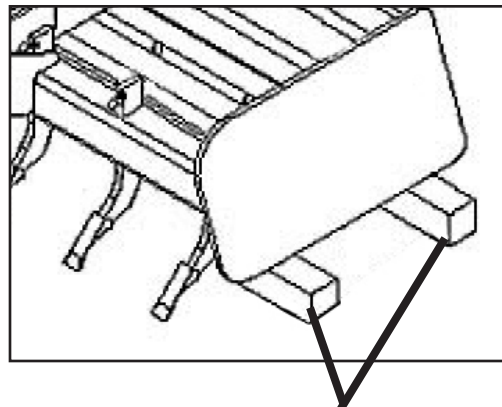
a safe condition before putting unit into service.

## STORAGE

- Block equipment securely for storage.

- Keep children and bystanders away from storage area.

- Lock scarifier bar in lowered position for storage.



4" X 4" blocks securing box blade for storage

# DEALER INSTRUCTIONS

## Pre-Assembly

### Attaching Scarifier Shanks in the Box Blade

Remove scarifier shanks and shank keys from carton inside box scraper.

Block up machine by placing two 4" x 4" blocks under each side frame of the box blade.

Insert the scarifier shank in the shank hole from the bottom up.

Note: The scarifier shank has four notches for adjustments. The bottom notch is for transport. The top three notches are for ground penetration to be determined by the user.

After inserting scarifier shank, place shank key on the front side of shank. This will prevent the shank from working loose.

### Dealer Checklist

(Dealer's Responsibility)

Inspect the equipment thoroughly after assembly to be certain it is set up properly before delivering it to the customer. The following check list is a reminder of points to inspect.

Check off each item if 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 tight.

\_\_\_\_ Check that all cotter pins and safety pins are properly installed. prior to delivery to customer.

\_\_\_\_ Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.

\_\_\_\_ For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. When adding weight to attain 20% of tractor and equipment weight on front tractor wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not estimate!

\_\_\_\_ Show customer how to make adjustments.

\_\_\_\_ Present Owner's/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.

\_\_\_\_ 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.

\_\_\_\_ Explain to customer the potential crushing hazards of going underneath raised equipment. Instruct customer that service work does not require going underneath unit and never to do so.

\_\_\_\_ Complete the Warranty Registration located on the Frontier website.

## 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.

The operator is responsible for the safe operation of this equipment. The operator must be properly trained. Operators should be familiar with the equipment, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on pages 2-6.

Owner should check and tighten all hardware after the first hour of operation. The break in stage of your new box blade can cause minimal loosening of hardware. Please see Bolt Torque Chart (page 16) for proper torque information.

- 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.

• Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

- Never allow children or untrained persons to operate equipment.

- Keep bystanders away from equipment.
- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
- Service work does not require going underneath.
- Read Manual for service instructions or have service performed by a qualified dealer.
- Stop tractor and implement immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- 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.

### **Owner/Operator Pre-Operation Checklist (Owner's/Operator's Responsibility)**

\_\_\_\_ Review and follow all safety rules and safety decal instructions on page 2 through page 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 is properly installed and secured.

\_\_\_\_ Do not allow riders.

\_\_\_\_ Make sure tractor ROPS or ROPS CAB and seat belt are in good condition. Keep seat belt securely fastened during operation.

## Operation (cont'd.)

### Connecting Box Blade to Tractor

The box blade is compatible with Category I and/or Category II, 3-point tractors equipped with side swing-type lower lift arms.

1. To avoid interference with the box blade, adjust tractor drawbar to the shortest and highest position.
2. Attach the tractor's lower lift arms to the box blade and secure in place with Category I mounting pin (1) and Klik pin (2).
3. Attach the tractor's top link to the top of the box blade's mast and secure with the heavyduty top link pin (3) and klik pin (3) and klik pin.

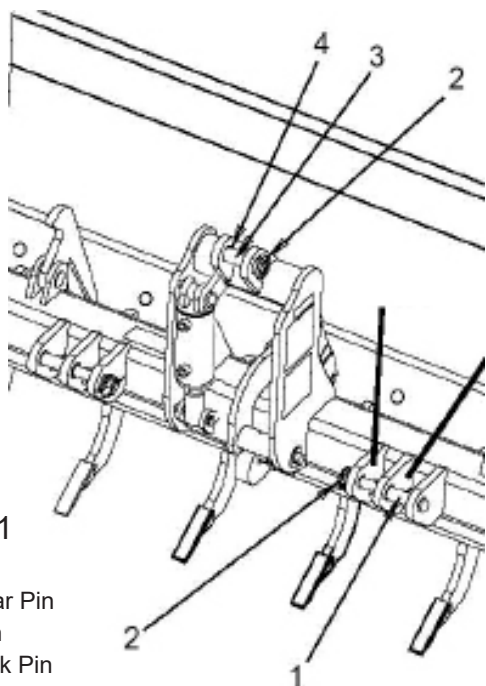


Figure 1

1. Drawbar Pin
2. Klik Pin
3. Top Link Pin
4. Top Link Bushing

For model specific part numbers refer to pages 13-15

4. Connect cylinder hoses to tractor auxiliary valve.

To use box blade with Category II tractors

5. Remove the top link pin (3) and top link bushings(4).

(4). Category II top link pin is required. Do not use Category I pin on a Category II tractor.

### Scarifying

1. Place the scarifier shanks in position with the points facing toward the tractor.
2. Lock shanks into position with the lock keys provided. The lower shank position provides the greatest ground penetration.
3. Lock the scarifier bar into the lowered position.
4. Lower the box blade and drive the tractor ahead to begin the scarifying operation.
5. Adjust the depth of the scarifier by tilting the unit with the tractor top link. Shortening the top link will provide deeper and more aggressive operation.

### Scraping

1. Raise the scarifier bar. Lower the box blade and drive forward to move material.
2. Adjust the depth of the blade by tilting the unit with the tractor top link. Shortening the top link when scraping will transfer more weight on the front of the blade and will raise the cutting blade to provide a more shallow cut.

NOTE: When the top link is adjusted properly, the bowl of the blade should fill easily and material can be pulled to a desired location.

3. To change the level of the blade, shorten or lengthen the tractor lift arm tilt link to provide the correct slope.

4. Spread material by gradually raising the box blade as the tractor moves forward.

NOTE: Top link adjustment for loose or previously scarified material will differ from adjustment for hard or compacted material.

### Backfilling

1. Raise the scarifier bar.
2. Lower the blade to the ground and back up into the fill material.
3. Shorten the top link to raise the cutting blade and control how much the blade digs in.

### Leveling

1. Raise the scarifier bar.
2. Shorten the top link so the cutting edge clears the ground.
3. Drive forward with the box blade in this position and loose material will be leveled.

## Owner Service

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual.

### **WARNING**

- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
- Service work does not require going underneath.
- Read Manual for service instructions or have service performed by a qualified dealer.

### **WARNING**

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

### **CAUTION**

operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

- 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.

## BLOCKING UP BOX BLADE

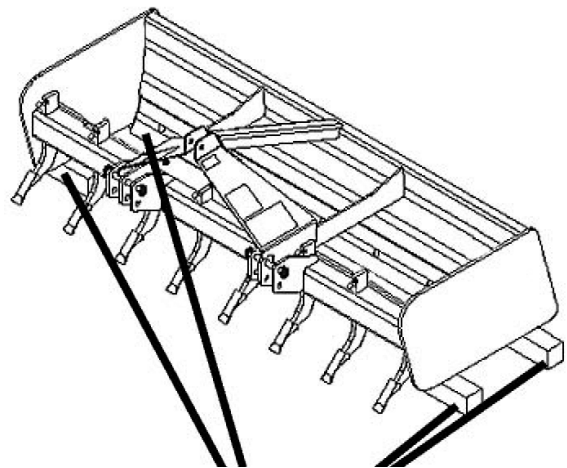
### **WARNING**

NOTE: To service the box blade when attached to the tractor, it must be blocked up off the ground.

1. Place two 4" x 4" blocks under each side frame of the box blade as shown in Figure 2.
2. Lower the box blade to rest securely on the blocks.
3. Do not block the machine any higher than needed for removing the shanks or cutting edge.

## Storage

When storing your box blade make sure the unit is placed on level ground and that the box blade is properly chocked by bracing with 4" x 4" blocks on the front and rear side of each end of the box blade.



4" x 4" blocks securing gang for storage

Figure 2

## Operation (cont'd.)

### Removing Scarifier Shanks

Scarifier shanks have three operating positions in the box blade. They may be removed if scarifying action is not needed.

1. Block up machine by placing two 4" x 4" (10 x 10 cm) blocks under each side-frame of the box blade (see Page 11, Figure 2).

2. Lower the box blade to rest securely on the blocks.

NOTE: Do not block the machine any higher than necessary to remove the shanks or cutting edge.

3. Remove shank key for disengagement of shank(see Figure 3).

4. Disengage shank retaining notch from box blade frame.

5. Remove shank from bottom of tube (see Figure 3).

### Replacing Cutting Edge

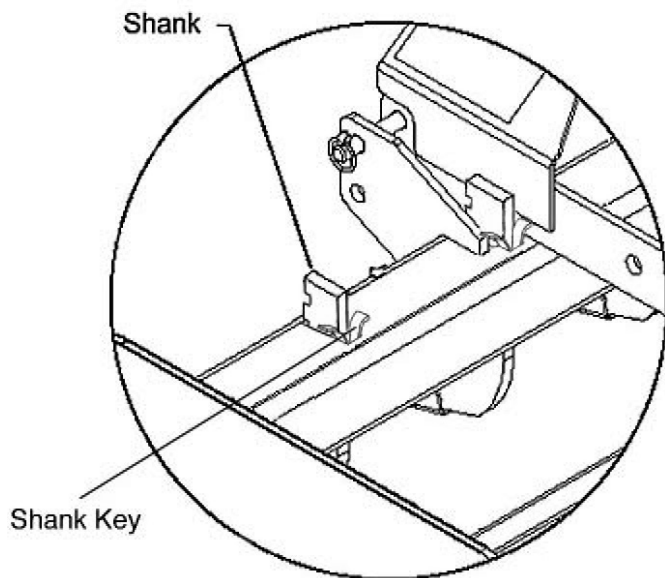


Figure 3. Scarifier Shanks Adjustment

To service the box blade when attached to the tractor, it must be blocked up off the ground.

1. Place two 4" x 4" (10 x 10 cm) blocks under each side-frame of the box blade (see Page 11 , Figure 2).

2. Lower the box blade to rest securely on the blocks.

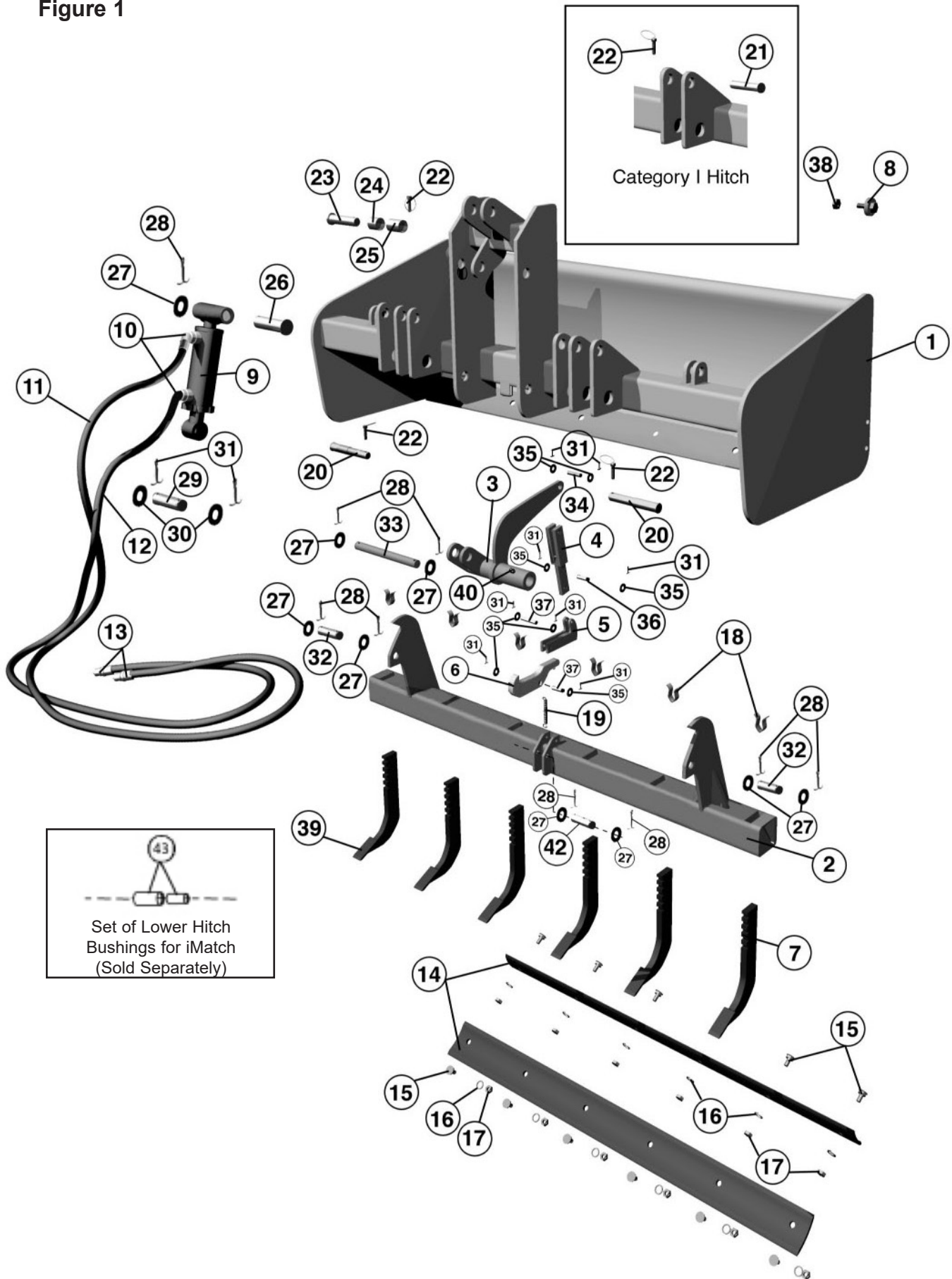
NOTE: Do not block the machine any higher than necessary to remove the shanks or cutting edge.

3. Refer to parts drawing, page 13. Remove the hex nuts (15) and plow bolts (13) from box blade. Turn cutting edge over and use new edge, or replace it if both edges have been used.

4. Attach cutting edge to box blade and secure with plow bolts and hex nuts previously removed.

5. Torque plow bolts to 170 lbs-ft. See specifications given in Bolt Torque Chart, page 15.

Figure 1



13 Parts Catalog



**Parts List (cont'd)**

<b>Ref.#</b>	<b>Part #</b>	<b>Description</b>	<b>Qty.</b>
1	15521	TB3060 Main Frame	1
	15522	TB3066 Main Frame	1
	15523	TB3072 Main Frame	1
	15524	TB3078 Main Frame	1
	15525	TB3084 Main Frame	1
	15526	TB3096 Main Frame	1
	15527	TB4078 Main Frame	1
	15528	TB4084 Main Frame	1
	15529	TB4096 Main Frame	1
2	15408	TB3060 Scarifier Bar	1
	15410	TB3066 Scarifier Bar	1
	15412	TB3072 Scarifier Bar	1
	15451	TB3078 Scarifier Bar	1
	15452	TB3084 Scarifier Bar	1
	15453	TB3096 Scarifier Bar	1
	15486	BTB4078 Scarifier Bar	1
	15487	TB4084 Scarifier Bar	1
	15408	TB4096 Scarifier Bar	1
3	15467	Hydraulic Arm Lever	1
4	15390	TB30 Extension Arm	1
	15538	TB40 Extension Arm	1
5	15421	Inner lock Arm	1
6	15441	TB30 Lock Arm	1
	15591	TB40 Lock Arm	1
7	14835F	Scarifier Shank	*MS
8	12526	Cam Lock	2
9	15516	2 x 4 Welded Cylinder	1
10	15439	Hydraulic Restrictor Elbow (.031)	1
11	15477	Top Cylinder Hose	1
12	15478	Bottom Cylinder Hose	1
13	15368	Hydraulic Quick Coupler	2
14	10702	60" Cutting Edge	2
	10703	66" Cutting Edge	2
	10704	72" Cutting Edge	2
	12566	78" Cutting Edge	2
	10705	84" Cutting Edge	2
	10706	96" Cutting Edge	2
15	10699	Plow Bolt, 5/8" X 1 3/4", Gr.5	*MS
16	T24	Lockwasher, 5/8"	*MS
17	T22	Hex Nut, 5/8"	*MS
18	15413	Retainer Clip	*MS
19	15517	3 1/2" Spring (TB30)	1
	15518	4 1/2" Spring (TB40)	1

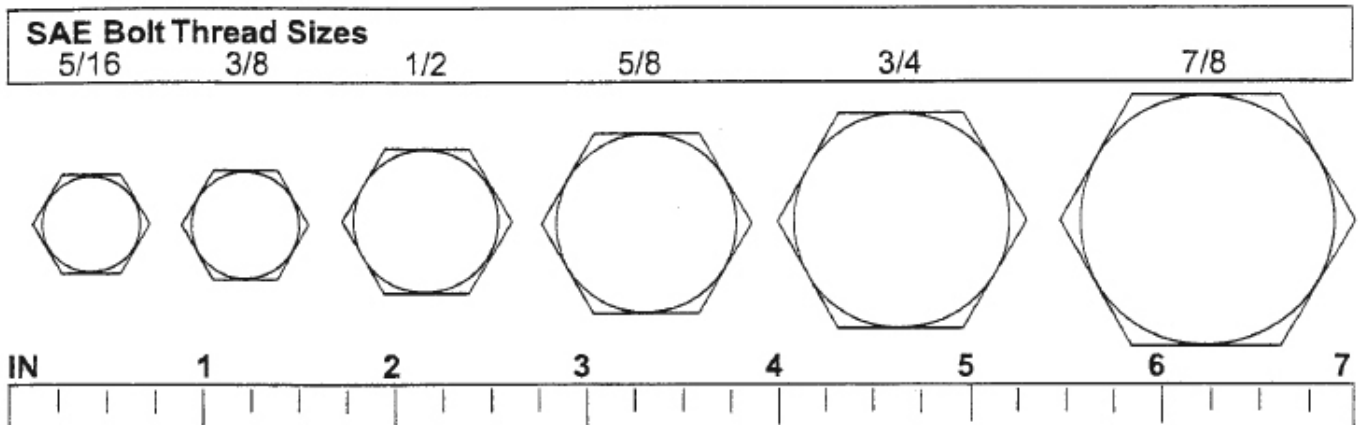
\* M/S - Model Specific

**Parts List (cont'd)**

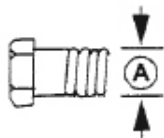
<b>Ref.#</b>	<b>Part #</b>	<b>Description</b>	<b>Qty.</b>
20	13257	Hitch pin, Cat. 1 & 2	2
21	10684	Hitch Pin, Cat. 1 only	2
22	VP252	Lynch Pin	3
23	15206	Cat. 1 Top link Pin	1
24	15209	Cat. 1 Top link Bushing	1
25	15210	Cat. 2 Top Link Bushing	1
26	13310	Top Cylinder Pin, 1"	1
27	T606	Flat Washer, 1"	9
28	15530	Cotter Pin, 3/16" x 2"	9
29	15531	Bottom Cylinder pin, 3/4"	1
30	T723	Flat Washer, 3/4"	2
31	T342	Cotter Pin, 5/32"x 1 1/4"	4
32	15532	Pin, 1"	3
33	15398	Pin, 1"x14 1/8"	1
34	15534	Pin, 1/2x 2"	1
35	9225	Flatwasher, 1/2"	6
36	15535	Pin, 1/2"x 1 1/2"	1
37	15536	Pin, 1/2" x 3"	1
38	T22	Hex Nut, 5/8"	2
39	10697	Scarifier Point Only	*MS
40	T9	Grease Fitting	1
41	15533	Hydraulic Cylinder Seal Kit	2
42	15541	Pin, 1"x 3 9/16"	2
43	15638	Set Of Lower Hitch Bushings For IMATCH	N/A

## Bolt Size Chart

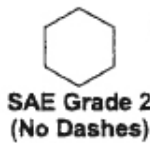
**NOTE:** Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.



## SAE Torque Chart



**SAE SERIES TORQUE CHART**



SAE Bolt Head Identification



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

**DH13 Series gang bolt torque 795 lbs-ft 1080 N-m**

**Tufline**®