

OPERATOR'S MANUAL

DISK HARROWS TW6 SERIES



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 Tufline 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 / GENERAL INFORMATION	1 - 2
SAFETY DECALS	3 - 4
SAFETY RULES	5 - 8
DEALER INSTRUCTIONS	9 - 18
OPERATION	19 - 22
TROUBLE SHOOTING.	23
OWNER SERVICE	24 - 25
ASSEMBLY SCHEMATIC.	26
PARTS CATALOG	27 - 35
OPTIONAL EQUIPMENT	36 - 44
BOLT AND TORQUE CHART	45
NOTES	46



SPECIFICATIONS

Model #	Blades #	# of Bearings	Spacing	Cut Width	Appox. HP	Weight
TW6102022	20-22"	8	10 1/2"	9'	60-75	3231#
TW6102024	20-24"	8	10 1/2"	9'	60-75	3511#
TW692422	24-22"	8	9"	9' 6"	65-75	3349#
TW692424	24-24"	8	9"	9' 6"	65-75	3679#
TW692822	28-22"	8	9"	10' 6"	65-75	4065#
TW692824	28-24"	8	9"	10' 6"	65-75	4401#
TW6102422	24-22"	8	10 1/2"	10' 6"	70-85	3991#
TW6102424	24-24"	8	10 1/2"	10' 6"	70-85	4279#
TW693222	32-22"	8	9"	12'	80-90	4410#
TW693224	32-24"	8	9"	12'	80-90	4794#
TW6102822	28-22"	8	10 1/2"	12'	85-95	4260#
TW6102824	28-24"	8	10 1/2"	12'	90-110	4570#
TW693622	36-22"	12	9"	13' 4"	110-120	4726#
TW693624	36-24"	12	9"	13' 4"	110-120	5158#
TW6103222	32-22"	12	10 1/2"	13' 4"	110-120	4586#
TW6103224	32-24"	12	10 1/2"	13' 4"	110-120	4970#
TW694022	40-22"	12	9"	15'	120-140	5059#
TW694024	40-24"	12	9"	15'	120-140	5539#
TW6103632	36-22"	12	10 1/2"	15'	120-140	4887#
TW6103624	36-24"	12	10 1/2"	15'	120-140	5319#
TW694422	44-22"	16	9"	16' 8"	130-150	5409#
TW694424	44-24"	16	9"	16' 8"	130-150	5937#
TW6104022	40-22"	16	10 1/2"	17'	140-160	5630#
TW6104024	40-24"	16	10 1/2"	17'	140-160	6136#

Specifications 1

SPECIFICATIONS, Con't.

Model #	Blades #	# of Bearings	Spacing	Cut Width	Approx. HP	Weight
TW962822SF	28-22"	8	9"	10' 6"	65-75	4533#
TW692824SF	28-24"	8	9"	10' 6"	65-75	4869#
TW6102422SF	24-22"	8	10 1/2"	10' 6"	70-85	4595#
TW6102424SF	24-24"	8	10 1/2"	10' 6"	70-85	4883#
TW693222SF	32-22"	8	9"	12'	80-90	4828#
TW693224SF	32-24"	8	9"	12'	80-90	5212#
TW6102822SF	28-22"	8	10 1/2"	12'	85-95	4550#
TW6102824SF	28-24"	8	10 1/2"	12'	85-95	4886#
TW693622SF	36-22"	8	9"	13' 4"	110-120	5144#
TW693624SF	36-24"	8	9"	13' 4"	110-120	5576#
TW6103222SF	32-22"	8	10 1/2"	13' 4"	110-120	4940#
TW1063234SF	32-24"	8	10 1/2"	13' 4"	110-120	5324#
TW694022SF	40-22"	12	9"	15'	120-140	5477#
TW694024SF	40-24"	12	9"	15'	120-140	5957#
TW69103622SF	36-22"	12	10 1/2"	15'	120-140	5305#
TW6103624SF	36-24"	12	10 1/2"	15'	120-140	5737#

GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your Disc Harrow. 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.

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!

⚠ 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 being raised or lowered.

15194A

⚠ WARNING

FALLING BLADE HAZARD

- Can cause serious injury or death.
- Keep hands and feet from under raised blade.
- Always put disc in the lowered position and chock gangs to prevent rolling when disconnecting disc gangs for maintenance or repair.

15194B

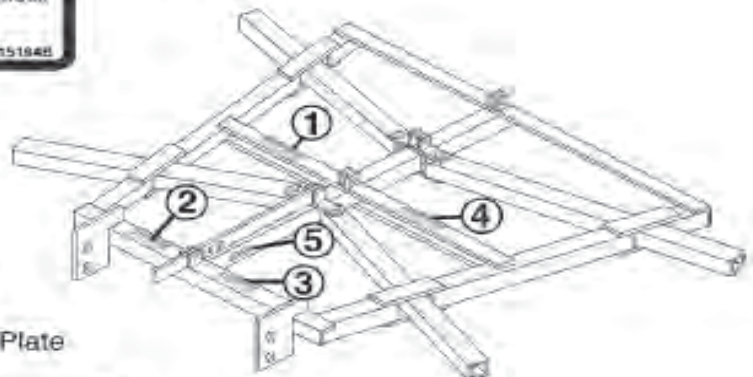
TUFLINE

MODEL # _____

SERIAL # _____

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

Serial Number Plate



⚠ WARNING

TO PREVENT SERIOUS INJURY OR DEATH:

- Avoid unsafe operation and maintenance. Do not operate or work on this machine without reading and understanding the operator's manual.
- If manual is lost, contact your dealer.

15194C

15194D

4

⚠ WARNING

- DO NOT allow others to ride on the machine or tractor.
- Park or block disc so it will not roll when disconnecting from tractor drawbar.
- 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 movable parts even when the engine has been turned off.
- Be sure that everyone is standing clear before operating the machine.
- DO NOT operate or transport at high speeds.
- DO NOT operate or transport on steep slopes.

15194E

SAFETY REFLECTOR DECALS

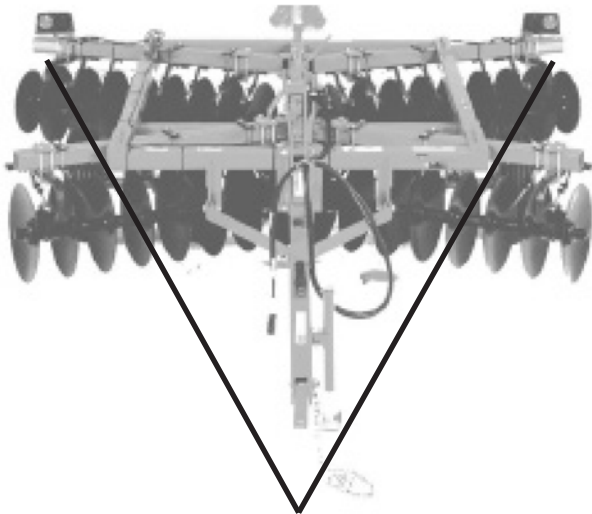
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

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

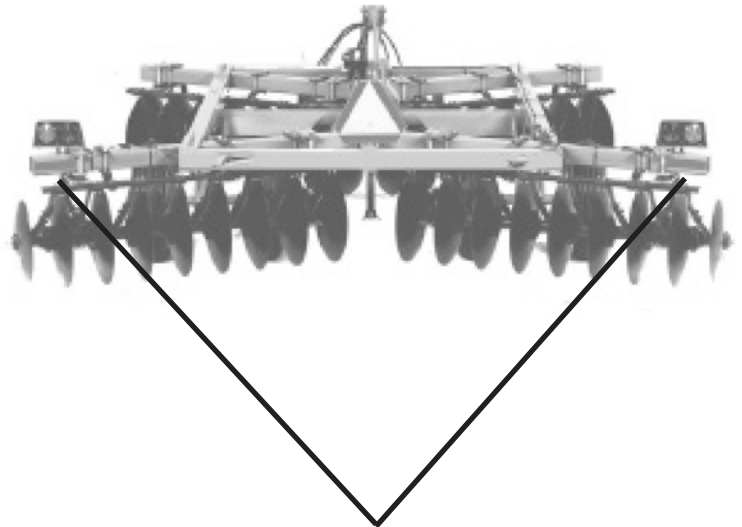
Replace Decals Immediately If Damaged!

Check that all reflector decals are installed and in good condition. Replace if decals are worn or damaged.

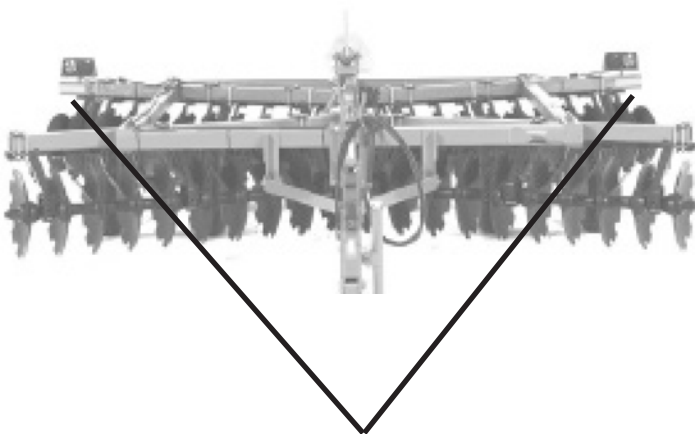
Reflector Decals



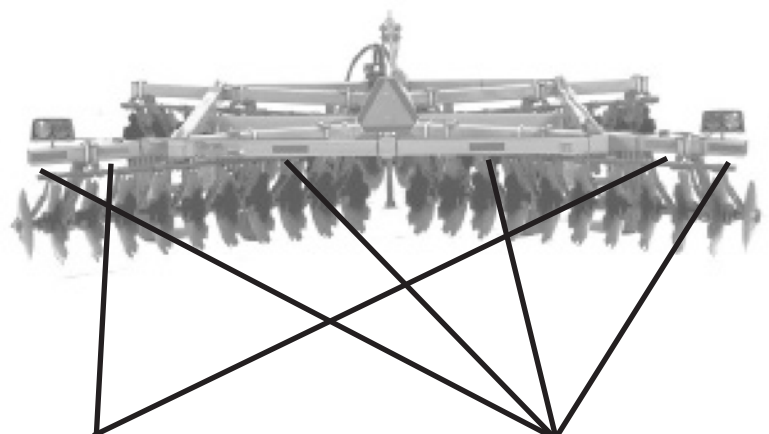
9" YELLOW REFLECTORS
15200



9" RED REFLECTORS
15199



9" YELLOW REFLECTORS
15200



9" ORANGE REFLECTORS
15361

9" RED REFLECTORS
15199



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

• OPERATION (cont'd.)

- 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.
- 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.
- When making gang 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 the lift carriage 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 the lift carriage 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



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

MAINTENANCE (cont'd.)

- 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 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 DE-LAY.

- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Tighten all bolts, nuts, and screws to torque chart specifications (page 45). 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 in the lowered position.
- Keep children and bystanders away from storage area.



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

• OPERATION (cont'd.)

- 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.
- 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.
- When making gang 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 the lift carriage 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 the lift carriage 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



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

MAINTENANCE (cont'd.)

- 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 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 DE-LAY.

- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Tighten all bolts, nuts, and screws to torque chart specifications (page 45). 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 in the lowered position.
- Keep children and bystanders away from storage area.

Dealer Instructions

Pre-Assembly

The TW6 is shipped from the factory partially assembled (Photo 1). Move the unit to a suit-

Photo 1



able, open, flat location for complete assembly (Photo 2).

When completing this portion of the assembly

Photo 2



CAUTION

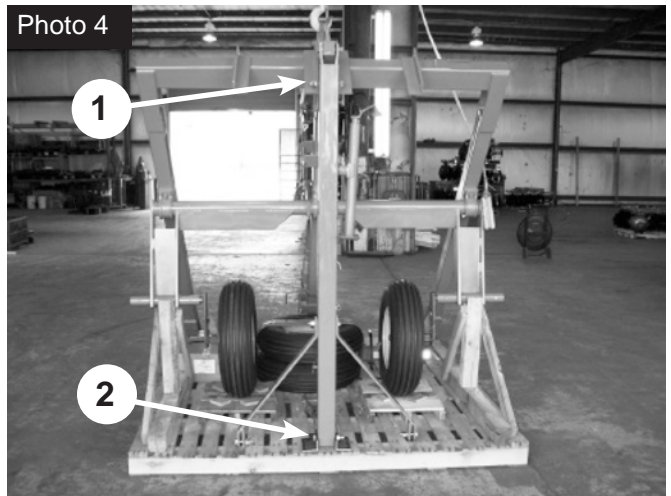
process, be careful handling the large parts. They are heavy and dropping them could lead to moderate or serious injury.

Use an overhead hoist and sling to raise frame up to relieve pressure on the tongue which is being used as a support (Photo 3). Remove the two 7/8" x 6 1/2" Gr. 5 bolts (Ref. 1 & 2, Photo 4) which connect the tongue to the frame and pal-

Photo 3

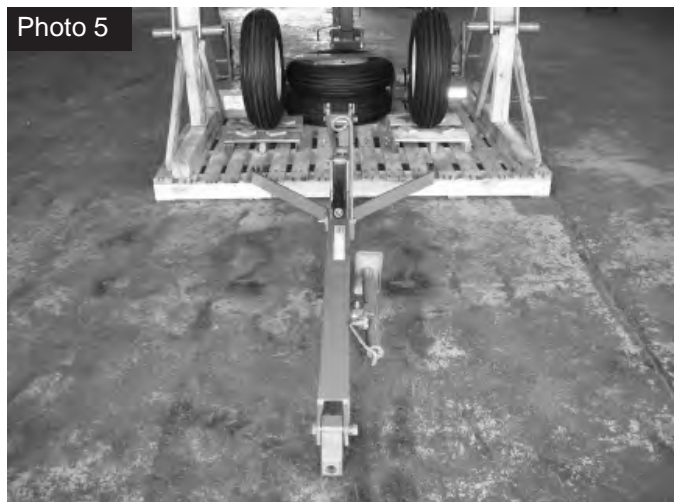


Photo 4



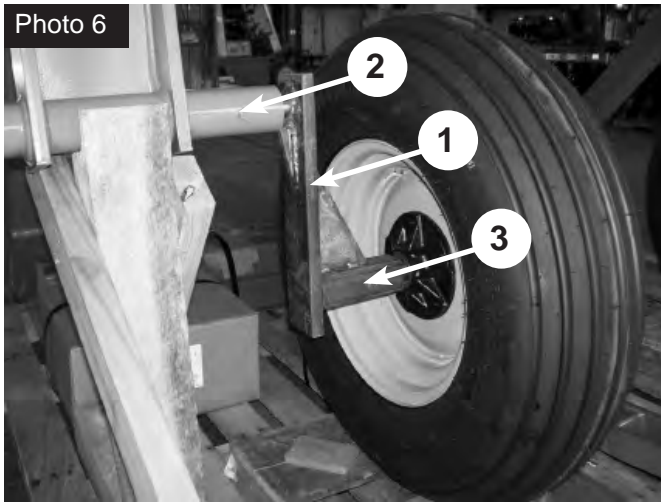
let. Do not discard these bolts. They will be used to connect the tongue to the frame later in the set up. Lay the tongue assembly on the ground (Photo 5). Using the overhead hoist, raise the frame until pressure has been removed

Photo 5



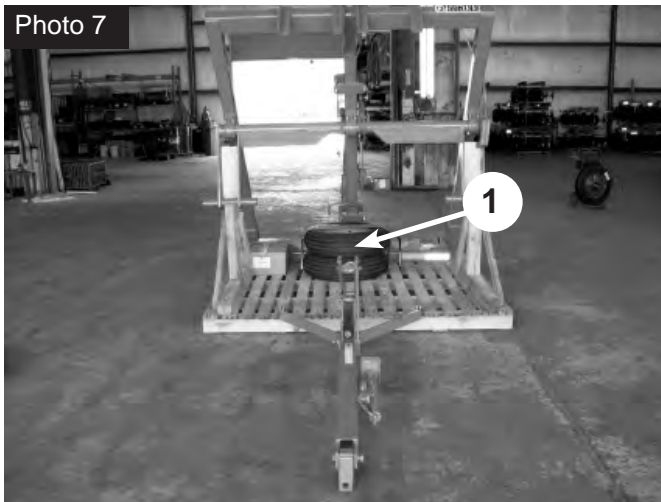
from the wheels. Remove the wheel extensions (Ref. 1, Photo 6) from the wheel carriage by removing the 3/8" x 3" Gr. 5 bolt (Ref. 2, Photo

Photo 6



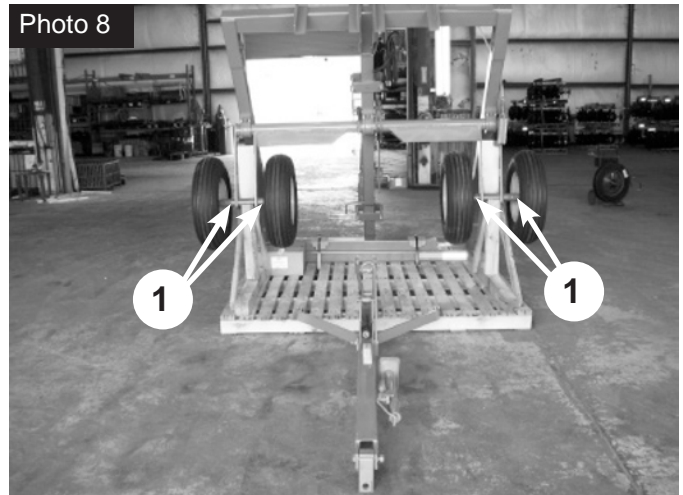
6). Do not discard 3/8" x 3" Gr. 5 bolts, they will be used again to reapply the wheel & spindle assembly to wheel carriage. Also, remove the 3/8" x 3" Gr. 5 bolt holding the wheel & spindle assembly to the wheel carriage extensions (Ref. 3, Photo 6). Once both wheel carriage extensions have been removed, discard both, as they are for shipping purposes only. Cut band from the two remaining wheel & spindle assemblies on pallet (Ref. 1, Photo 7). Insert the spindle into the wheel carriage where the

Photo 7



wheel carriage extensions were removed. Line up the hole in the spindle and wheel carriage and insert the 3/8" x 3" Gr. 5 bolt removed in an earlier step (Ref. 1, Photo 8). Repeat the same steps for the three remaining wheels. Once

Photo 8



complete, tighten nuts accordingly. Please see Bolt Torque Chart (Page 45) for proper torque information.

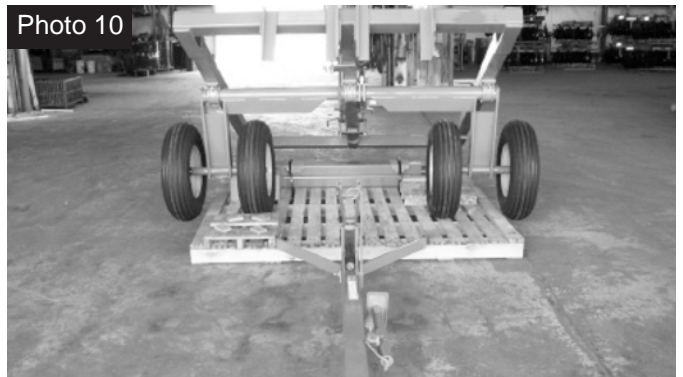
Before unit can be lowered to pallet, remove the bracing the wheel carriage was resting on when shipped (Photo 9). When bracing has been removed, lower frame so that wheels are resting on pallet (Photo 10). Use the two small pal-

Photo 9



lets, shipped with unit, as chocks for the wheels on the wheel carriage (Photo 11). This will keep

Photo 10



Pre-Assembly cont'd on page 11

the frame from rolling off the pallet and causing potential serious injury. While the frame is rest-

Photo 11



ing on the pallet, relocate the sling from its current location to the main bar (6x4 tube) on front of frame (Photo 12). This will allow you to attach the leveling assembly without interference in a

Photo 12



later step. Once sling has been relocated, connect to overhead hoist and raise hoist until slack has been removed from sling. When completing this portion of the assembly

WARNING

process, be careful handling the large parts. They are heavy and dropping them could lead to moderate or serious injury.

Keep slight upward pressure on front of frame and cut bands connecting the rear of frame to

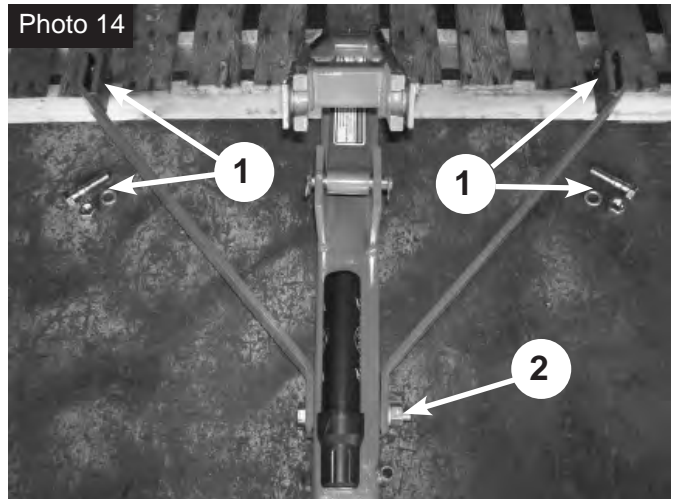
the pallet (Photo 13). When all bands have been cut, lower the frame to the tongue lying on

Photo 13



the ground. Down pressure may need to be applied to frame in order for the frame to come down. Connecting the tongue to the frame will be the next step in assembly. The two 7/8" x 6 1/2" Gr. 5 bolts removed from an earlier step (Photo 4) will be needed for this process. Once frame has been lowered to the pallet, remove the two 7/8" x 3 1/2" Gr. 5 bolts from the tongue side braces which connect the braces to frame (Ref. 1, Photo 14). Loosen the 7/8" x 6 1/2" Gr. 5 bolt which connects the tongue side braces to

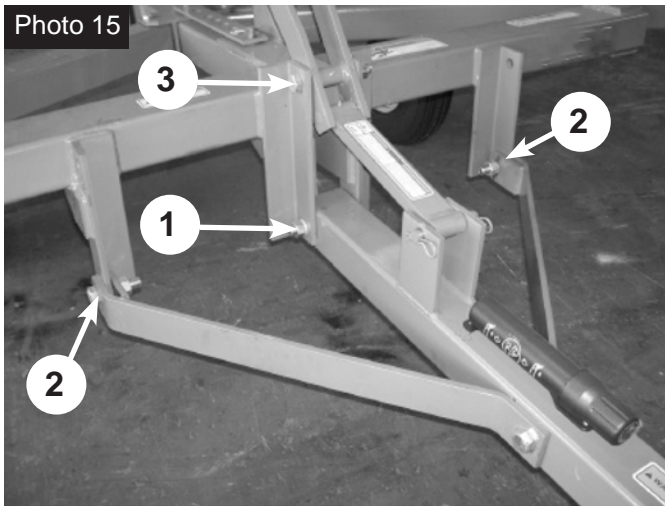
Photo 14



the tongue (Ref. 2, Photo 14). Do not remove! Using one of the 7/8" x 6 1/2" Gr. 5 bolts removed earlier connect the tongue to the main frame (Ref. 1, Photo 15). Use the two 7/8" x 3 1/2" Gr. 5 bolts, to connect the tongue side braces to the frame (Ref. 2, Photo 15). Use the remaining

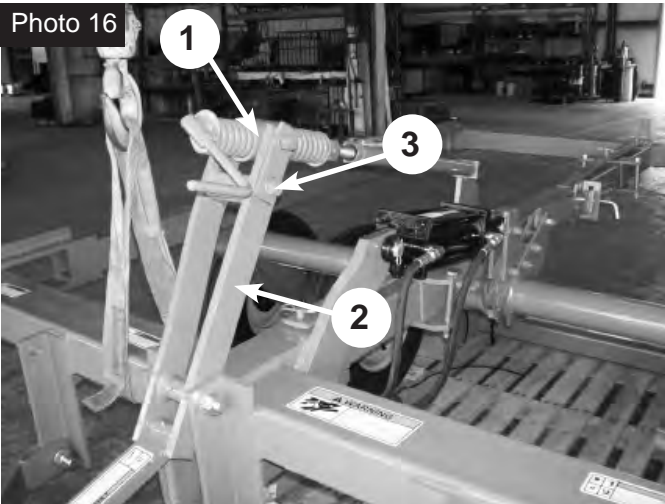
7/8" x 6 1/2" Gr. 5 bolt to connect the rocker arm & link bar to the frame (Ref. 3, Photo 15). Once tongue has been connected to frame, fold the

Photo 15



spring rod assembly (Ref. 1, Photo 16) over to meet the rocker arm & link bar (Ref. 2, Photo

Photo 16



16). Connect the two using the 5/8" x 6 1/2" Gr. 2 bolt which is already in rocker arm & link bar (Ref. 3, Photo 16). Remove the hose holder (ref. 1, photo 17) and the angle adjusting lever (ref. 2, photo 17) which have been banded to the tongue. Place the hose holder into the round tube on side of tongue and hang angle adjusting lever from hose holder as seen in photo 17. Remove the safety chain and safety chain bolt from the cardboard box banded to pallet (Photo 18). Connect the safety chain to the tongue using the 1" x 6" Gr. 5 bolt removed from box (Photo 19). Once all bolts are applied,

Photo 17

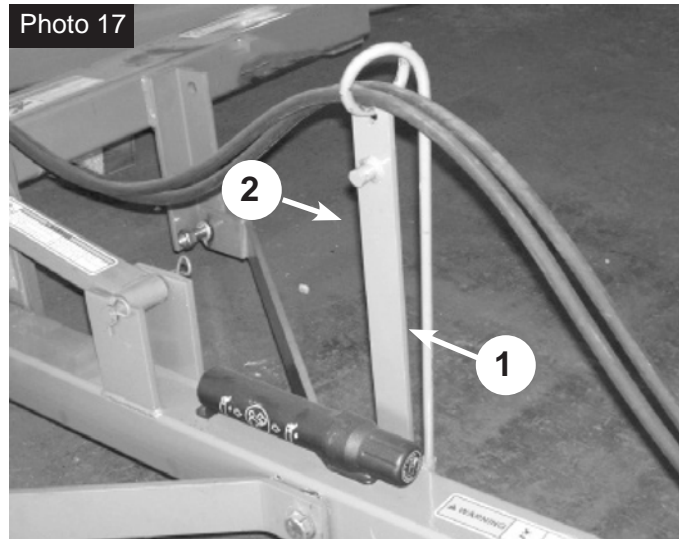


Photo 18



Photo 19



tighten all nuts. Please see Bolt Torque Chart (Page 45) for proper torque information. The unit should now look like Photo 20 on Page 13. Chocks should now be removed and frame

Pre-Assembly cont'd on page 13

Photo 20



should be rolled off of pallet. Leave in open area for further assembly.

The next steps will be attaching the gang beams
Photo 21



& gangs to frame. Determine which beams are front and which are rear by looking at Figures 7

Photo 22



& 8 in Parts Catalog. Remove the 5/8" x 6" Gr. 2 bolts from the front and rear slide plates (Photo 21) to accommodate the gang beams. Slide the rear beams through the slot in frame (Photo 22) till they meet the rear slide plate in

Photo 23



center of frame. Repeat the same procedure for the front gang beams. Insert the 5/8" x 4 1/16" bushing into the hole at the inside end of the

Photo 24



gang beam (Photo 23). Reinsert the 5/8" x 6" Gr. 2 bolt downward through the hole in the slide plate and through the bushing in the gang

CAUTION

beam. Attach nut & washer and tighten (Photo 24). Please see Bolt Torque Chart (Page 46) for proper torque information. Repeat the same procedure for the remaining gang beams. When completing this portion of the assembly

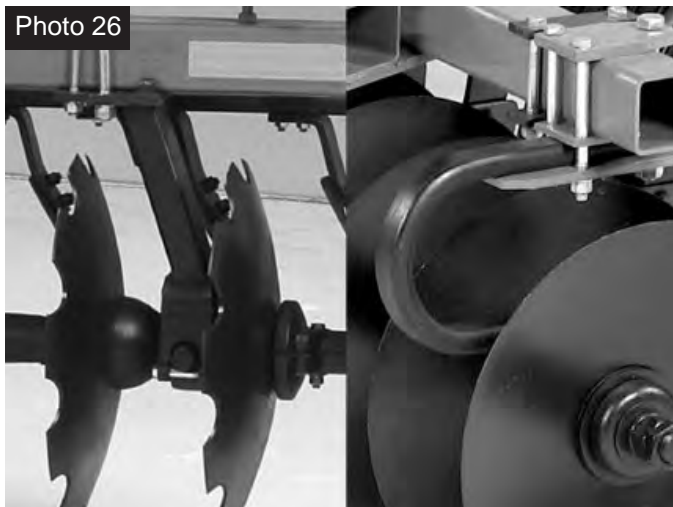
process, be careful handling the large parts. They are heavy and dropping them could lead to moderate or serious injury.

Photo 25



The next steps will be attaching the gangs to the gang beams and correctly adjusting each gang. Cut bands from gang pallet (Photo 25). Roll a gang assembly under its corresponding gang beam. Gangs assembled with an outrigger washer should be placed on the rear gang beams with the washer facing outward. Gangs

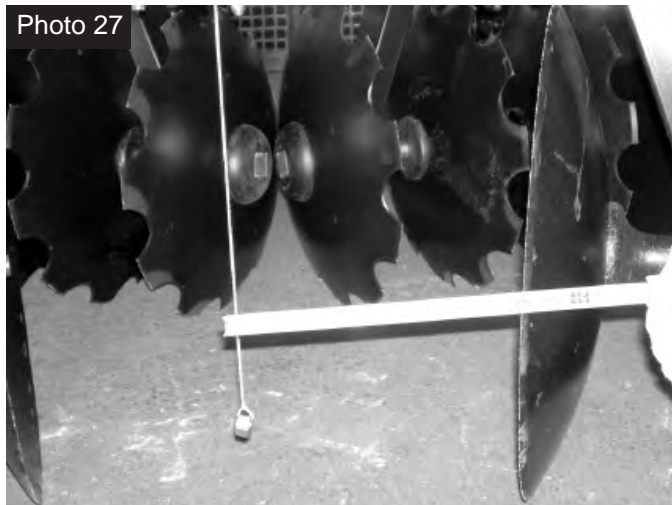
Photo 26



with relube bearings should be placed with the grease fitting pointing to the rear of the unit. There are two types of hangers on the DH16, tubular and shock flex (Photo 26). Depending on the type you have purchased, see Page 31 or 33 for proper assembly to the gang beam. Only hand tighten hangers to the gang beams. Gangs will need to be adjusted later. To cor-

rectly adjust the spacing between the rear gang assemblies, drop a plumb bob from the rear of

Photo 27



the main frame directly under the center of the center beam. The proper distance from the center of the center beam to the rear tip of a 22"

Photo 28



disk blade is 10" (Photo 27). To correctly adjust the spacing between the front gang assemblies, drop a plumb bob from the front of the main frame directly under the center of the center beam. Adjust the gang assemblies so the front disk blades of each gang assembly are within $\frac{1}{4}$ " of touching (Photo 28). Once gangs are positioned in the correct location, tighten all u-bolts and/or fasteners to the correct torque. Please see Bolt Torque Chart (Page 45) for proper torque information.

Remove the SMV sign & mounting bracket from

Pre-Assembly cont'd on page 15

Photo 28

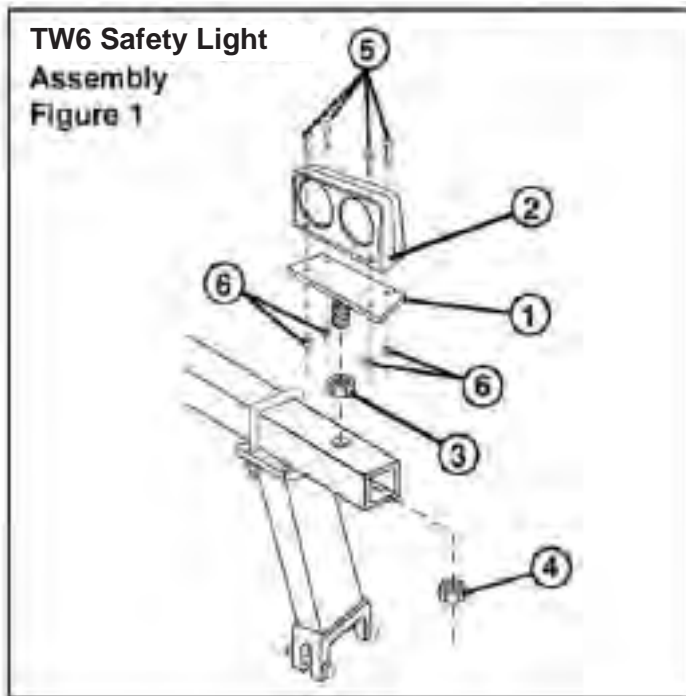


the cardboard box in Photo 18. Mount the SMV sign to the mounting bracket using 1/8" x 1/2" Gr. 2 round head machine screws. Now mount the mounting bracket to the rear of frame using 5/16" x 1" Gr. 2 carriage bolts (Photo 29). When mounted, tighten nuts accordingly.

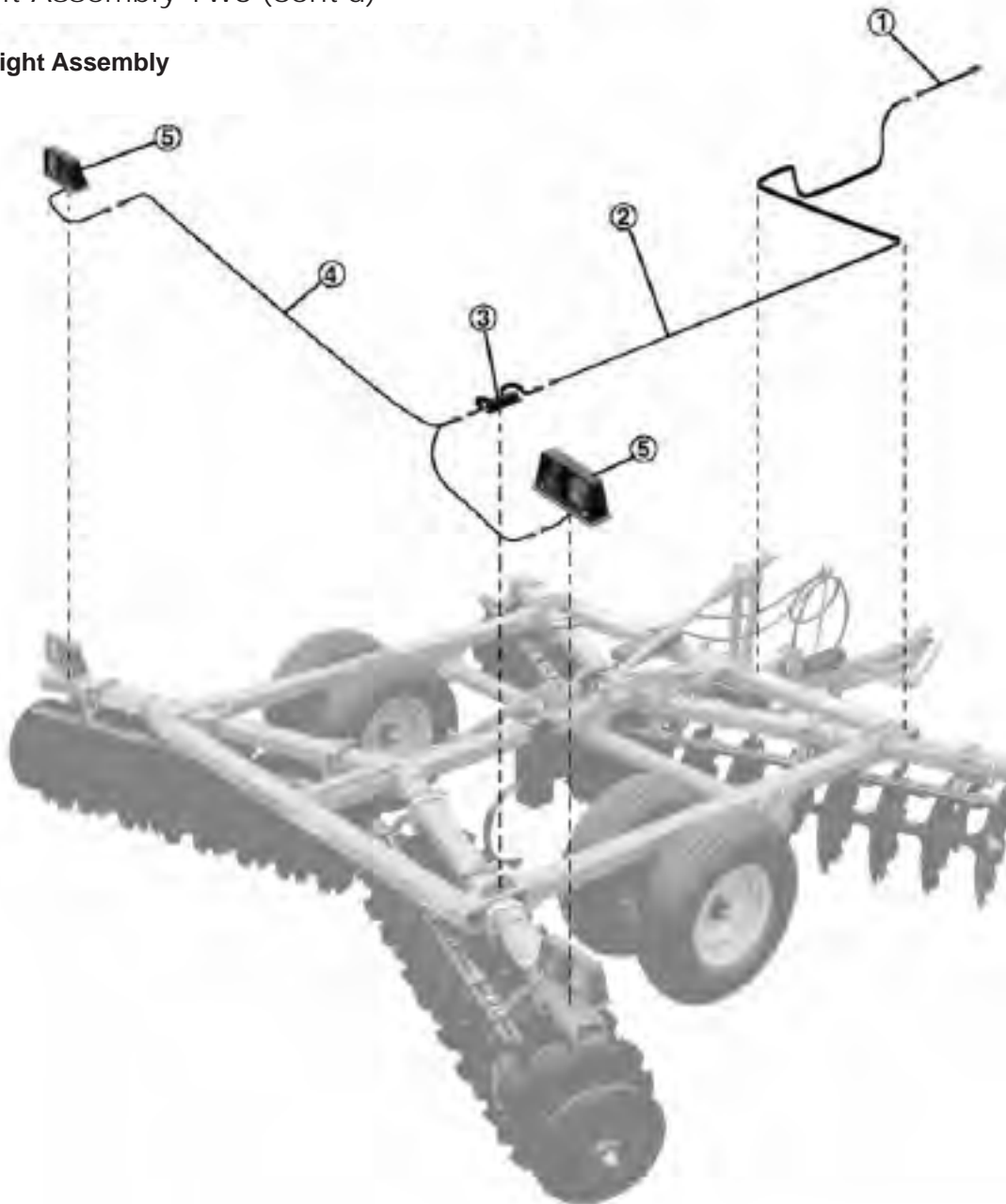
Safety Light Assembly TW6

The light mount brackets (Ref.1) are attached to the rear gang beams from the factory. It may be necessary to loosen the 5/8" nylon hex nut(Ref.4) in order to rotate the light mount bracket and attach the light fixture. Attach the light fixture to the light mount bracket using the 1/4" X 1 1/2" Gr. 2 hex bolts(Ref.5) and 1/4" nylon hex nuts(Ref.6) and tighten. Please see Bolt Torque

Chart (Page 45) for proper torque information. Turn the light unit so that the red and orange lights are to the rear and the orange is on the outside. Make sure they are clearly visible from the rear of the unit and tighten the 5/8" nylon nut .Please see Bolt Torque Chart (Page 45) for proper torque information.



TW6 Safety Light Assembly
Figure 2



Begin assembling the wire harness from the front of the unit. Plug the harness extension (Ref.2 Figure 2) to the tractor connector (Ref. 1). Lay the harness extension around the right side of the unit as shown in Figure 2. Connect the harness extension (Ref.2) to the light control module (Ref. 3) with the holes on the mainframe. Insert 1/4" screws into the two holes and tighten. Connect the Y harness (Ref. 4) to the light control module (Ref. 3). Attach the short end of the Y harness (Ref. 4) into the closest light fixture (Ref. 5). Attach the

long end of the Y harness (Ref. 4) into the furthest light fixture (Ref. 5). Hook up the front of the light harness to a tractor and check that all lights are working properly.

Use cable ties to attach the light harness to the mainframe. Be careful about pinch points and rubbing areas of machine surfaces that might damage the wiring. Allow room from the front of the mainframe to the tractor for right and left turning radius.

(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.

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

____ Inform the customer on the correct use and safety precautions for hydraulic components.

____ Air in hydraulic systems can cause erratic operation and allows loads or equipment components equipment or hoses or preforming

hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing more to approach the equipment.

____ Show customer how to make adjustments.

____ Present Owner's/Operator's Manual and request that the 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 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 under unit and never to do so.

____ After day of operation, check all hardware and gang bolts. Retighten if needed. Please see Bolt Torque Chart (page 45) for proper torque information.

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 3-8.

Owner should check and tighten all hardware after the first hour of operation. The break in stage of your new land plane can cause minimal loosening of hardware. Please see Bolt Torque Chart (page 45) 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.
- 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 3 through page 8.

____ 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.

GETTING STARTED

5 simple adjustments to remember to help operate disk properly.

STEP 1: SET INITIAL GANG ANGLE

Setting the initial gang angle on the DH16 disk harrow is very important in providing good penetration capabilities, good soil sizing abilities and minimal soil ridging problems. Listed below are three recommended settings for gang angles. For a general purpose gang angle (Figure A), a more aggressive gang angle

(Figure B), and a less aggressive gang angle (Figure C). It is recommended the unit be set with the general purpose gang angles first. There are additional gang angle settings for the front and rear other than the three basic settings listed before. When making gang adjustments, be careful to keep hands and feet clear of sliding parts and possible pinch points. To adjust the gang angle, the unit should be lifted and secured with the transport lock pin.

Figure A



Figure B

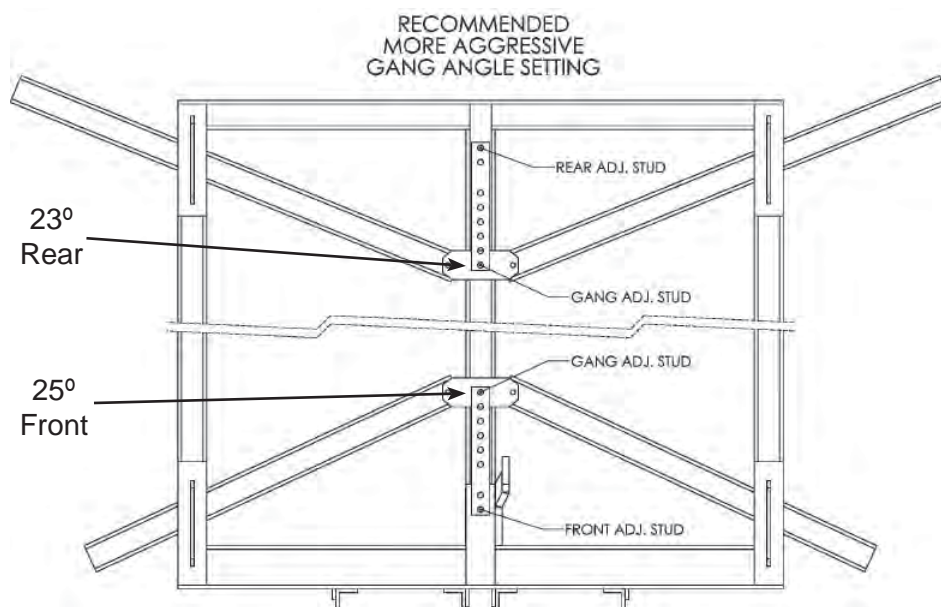
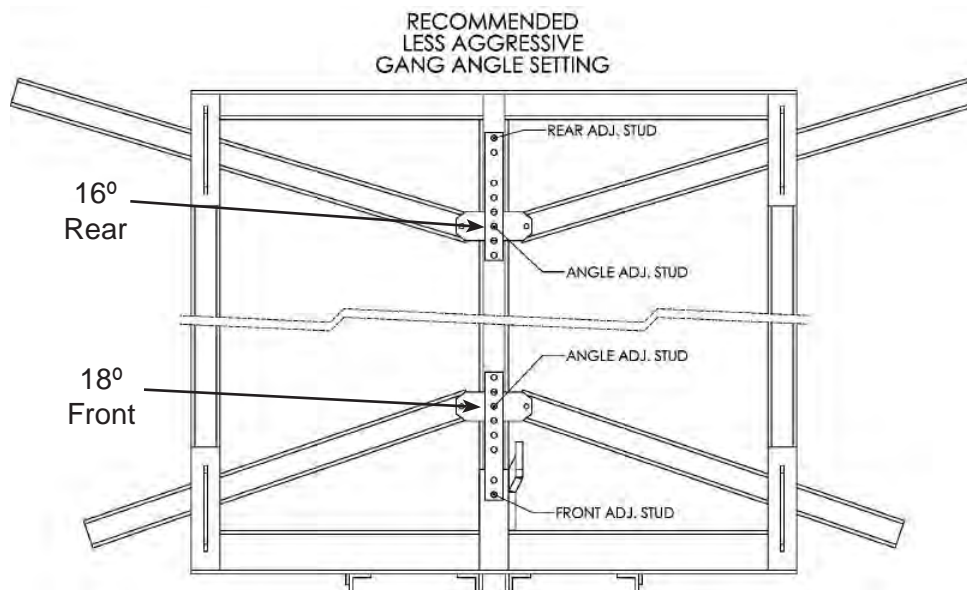
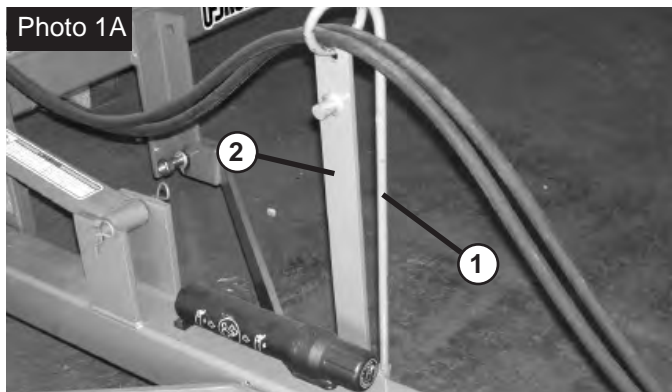


Figure C



To adjust the front or rear gang angles remove the angle adjusting lever (Ref. 2, Photo 1A) from the hose holder (Ref. 1, Photo 1A) which

Photo 1A



proper hole in gang adjusting bar. This will provide leverage to shift the slide plate (Ref. 5, Photo 1B) whichever direction you desire for the gang angle needed. Once desired gang angle is set, position the gang adjusting bar over the stud on slide plate. Use hair pin clips to secure. Hang the angle adjusting lever back on hose holder until further adjustments are needed.

STEP 2: LEVEL DISK HARROW FRONT TO REAR

The leveling system automatically keeps the disk level from full depth penetration all the way up to transport height. Once it is set for the particular tractor drawbar height, only minor adjustments will ever be required. The springs also allow pressure controlled flexibility when obstructions and/or uneven terrain are encountered.

Photo 1B



is located on the tongue assembly. Remove the gang adjusting bar (Ref. 1, Photo 1B) from slide plate stud (Ref. 2, Photo 1B). Place hole in angle adjusting lever (Ref. 3, Photo 1B) over slide plate stud (Ref. 2, Photo 1B). Insert angle adjusting lever stud (Ref. 4, Photo 1B) into

Photo 2

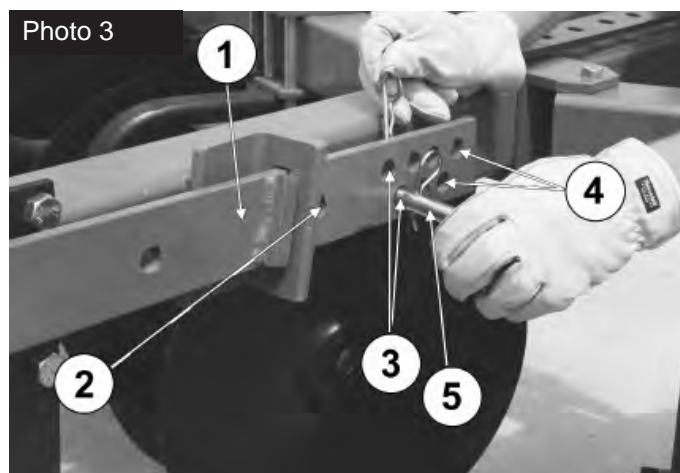


Operation 21

Most operating problems are caused by unequal pressure and penetration of the front and rear gangs. Adjust the leveling system to obtain equal penetration by the front and rear gangs and stabilize the direction and side shift of the disk.

To adjust the leveling system use the handle welded to the leveling arm (Ref. 1, Photo 2). Turning clockwise will lower the rear and counter-clockwise will raise the rear. It is recommended to re-adjust the levelness when unit is at actual working depth to prevent ridging.

IMPORTANT: It is important that the transport wheels be in contact with the ground and have some pressure on them for the leveling system to work properly. If they are not in contact with the ground the front gangs could severely gouge into the ground and cause ridges.



STEP 3: SET WORKING DEPTH

The TW6 is equipped with a depth control bar (Ref. 1, Photo 3). The transport hole (Ref. 2, Photo 3) should be used when transporting disk to different locations. The shallow disking hole positions are indicated by Ref. 3, Photo 3 and the deep disking hole positions are indicated by Ref. 4, Photo 3. To set depth control, stop the tractor with the disk clear of the ground. Lower the disk to the ground. Remove the pin (Ref. 5, Photo 3) from the depth control bar. Disengage the parking brake on the tractor and engage the tractor. Begin pulling disk to desired depth.

Disengage the tractor and engage the parking brake before dismounting the tractor. Replace the pin (Ref. 5, Photo 3) in the depth control bar through the nearest hole (Ref. 3, Photo 3) to the depth control bar stop. Once again, it is very important to have the transport wheels in contact with the ground and have some pressure on them for the leveling system to make a level pass and prevent ridging.

STEP 4: SET DISKING SPEED

The recommended disking speed for the DH16 disk harrow is 4-6 MPH.

STEP 5: ADJUST GANG ANGLE IF NEEDED

Once the initial setup steps are finished, if a deeper penetration is desired, increase the front & rear gang angles. If a smoother soil profile is desired, decrease the front & rear gang angles.

Each trial run should be made with the tractor in the same gear and approximately the same RPM. Keep in mind that many variables affect the operation of your disk. These include, but are not limited to penetration, speed, soil conditions, etc. Any changes in any one of these could cause a requirement for further adjustments.

Observe the soil behind the disk. It should be level and smooth. If the disk leaves a water furrow in the center, and you've verified that the disk is set level, the transport tires have some weight on them and your operating speed is between 4 and 6 mph, this would indicate that the front gangs are more aggressive than the rear gangs. To correct this, either increase the angle of the rear gangs or decrease the angle of the front gangs. Conversely, if the disk is ridging, that is leaving a ridge behind it, this would indicate that the rear gangs are more aggressive than the front gangs. To correct this, either decrease the angle of the rear gangs or increase the angle of the front gangs.

Gang Adjustment Troubleshooting

- | | |
|--|--|
| 1. Unit not tracking or is fishtailing | A. Adjust leveling system to increase weight on the rear of the disk and make sure the wheels have some weight on them
B. Disk assembled incorrectly. Refer to assembly instructions. |
| 2. Unit not tracking: skipping, jumping, and fishtailing(in untilled, hard soil) | A. Level disk and make sure the wheels have some weight on them
B. Reduce speed.
C. Reduce gang angle. |
| 3. Unit leaving water furrow in center. | A. Disk not level. Lower rear gangs or raise front gangs.
B. Increase speed.
C. Increase angle on rear gangs.
D. Decrease angle on front gangs.
E. Any combination of the above. |
| 4. Unit ridging or leaving behind a high spot in center of machine. | A. Disk not level. Raise rear gangs or lower front gangs.
B. Decrease speed.
C. Decrease angle on rear gangs
D. Increase angle on front gangs.
E. Any combination of the above. |
| 5. Unit leaving water furrows on outside of each rear gang. | A. Add optional outrigger attachments. |
| 6. Blades plugging with soil or trash. | A. Add optional heavy scraper kit.
If already equipped, re-adjust them.
B. Soil conditions not suitable for disking due to excessive moisture. |
| 7. Unit leaving a balk between front inside gangs. | A. Add optional center sweep balkbreaker assembly. |
| 8. Unit does not penetrate as desired. | A. Check gang angle. Increase slightly, keeping front gang angle approximately 2 degrees more aggressive than the rear.
B. Check depth control and that cylinders retract freely. |

Owner Service

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

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.

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

CAUTION

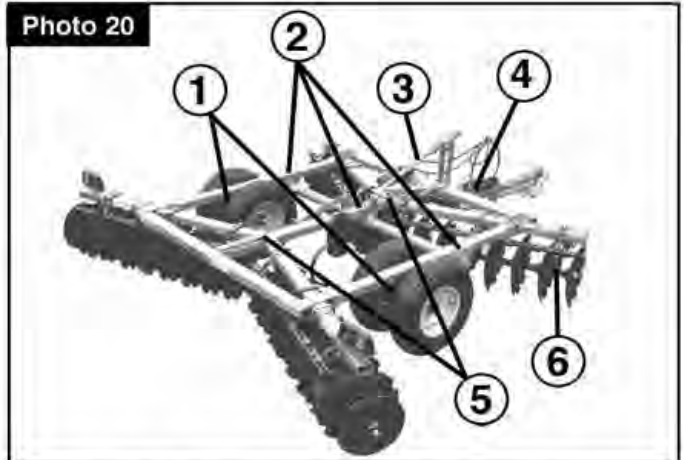
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic main-

tenance, 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 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.

Lubrication

Photo 20



Lubricate the following every 50 hours or annually:

- Wheel hubs(Ref. 1, Photo 20), one on each hub.
- Wheel carriage bearings(Ref. 2), One on each wheel carriage bracket.
- Leveling tube(Ref. 3).
- Leveling rocker pivot(Ref. 4), 2 at bottom of rocker pivot.

Lubricate the following every 25 hours:

- Optional regreasable gang bearings(Ref. 6) with lithium based pressure gun grease. One on each gang bearing.
- If gang angles are hard to slide place some grease

Lubrication(cont'd.)

on the mainframe where the gang angle turn-buckles slide.

Lubricate the following at the end of each use period :

- Transport wheel bearings. Pack with heavy wheel bearing grease.

Check all gang axle nuts for proper torque periodically. Please see Bolt Torque Chart (Page 45) for proper torque information.

Check gang hanger bolts periodically. Please see Bolt Torque Chart (Page 45) for proper torque information.



WARNING

Gang Assembly for Maintenance

- 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.

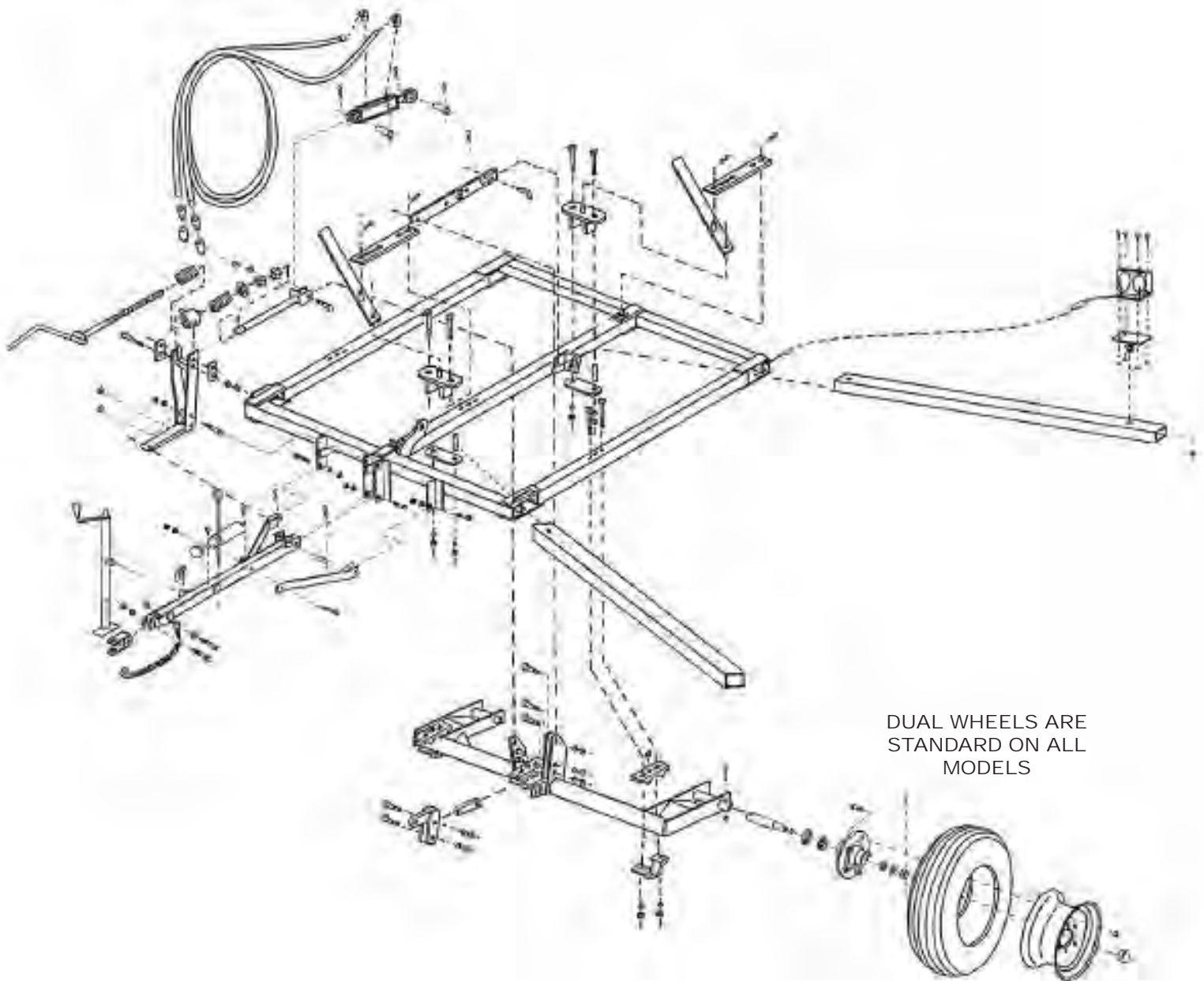
When gang component replacement is required, carefully observe all safety issues. Place unit on level ground prior to gang drop. Also make sure that gangs are blocked to keep them from rolling in either direction. After unit is lowered to ground and gangs are secure, loosen nuts on all u-bolts holding hangers to main frame. Observe the sequence and location of each gang component and refer to the gang diagrams on Pages 31 and 33 for removal and replacement of the desired component. After replacement is completed reinstall gang parts in proper order as shown on gang diagrams on Pages 31 and 33. Make sure that the gang nut on the gang axle is properly tightened after replacements are made. Refer to Bolt Tightening Torque Chart on (Page 45) for proper torque information.

Storage

Lower unit for storage on level ground with gangs resting on plyboard or other sheet material to keep components out of the ground.

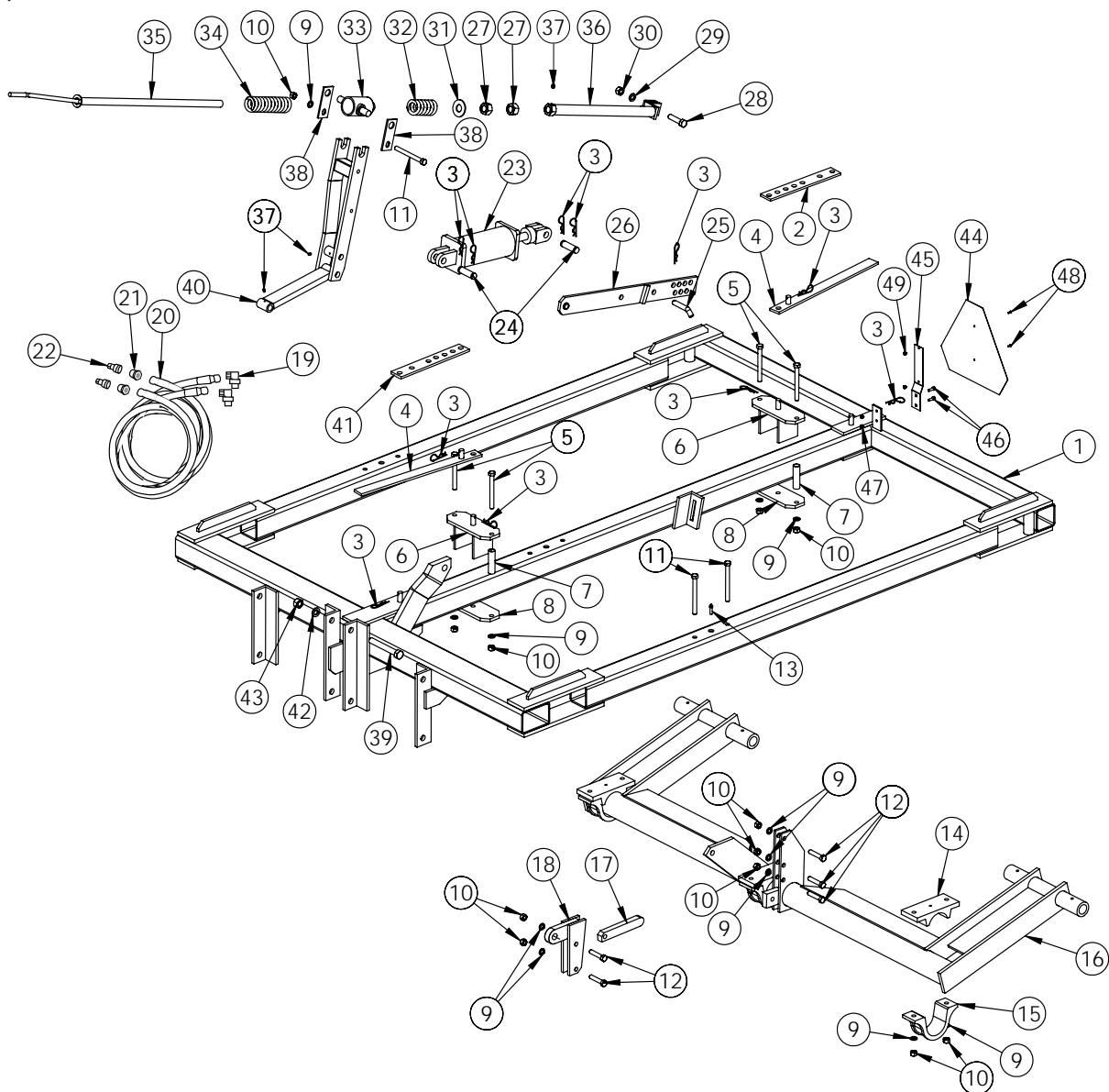
TW6 Assembly Schematic

Figure 3



Assembly Schematic 26

TW6 Main Parts Schematic
Figure 4



TW6 Main Parts List

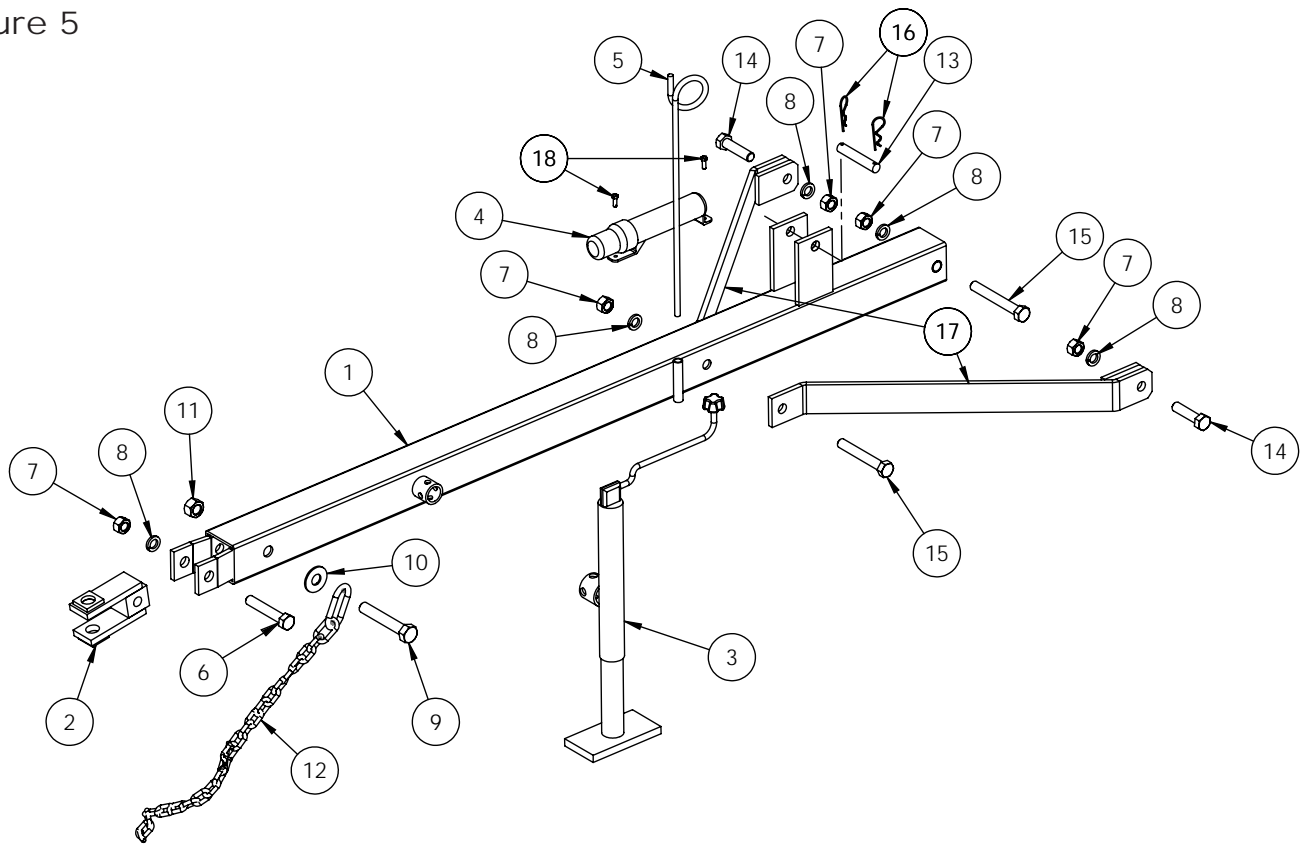
Ref.#	Part #	Description	Qty.
1	11434	MAIN FRAME- TW6928,TW6932	1
	11436	MAIN FRAME- TW6936 TW6940	1
2	12413	GANG ANGLE ADJUSTMENT BAR, REAR- TW6928, TW6932	1
	12416	GANG ANGLE ADJUSTMENT BAR, REAR-TW6936, TW6940	1
3	9979	HAIR PIN CLIP	5
4	12034	ANGLE ADJUSTING LEVER	1
5	T-747	HEX BOLT, 5/8" X 6" GR. 2	4
6	12409	SLIDE PLATE TOP	2
7	T-610	BUSHING, 5/8" X 4 1/16"	4
8	11421	SLIDE PLATE BOTTOM	2

TW6 Main Parts List (cont'd)

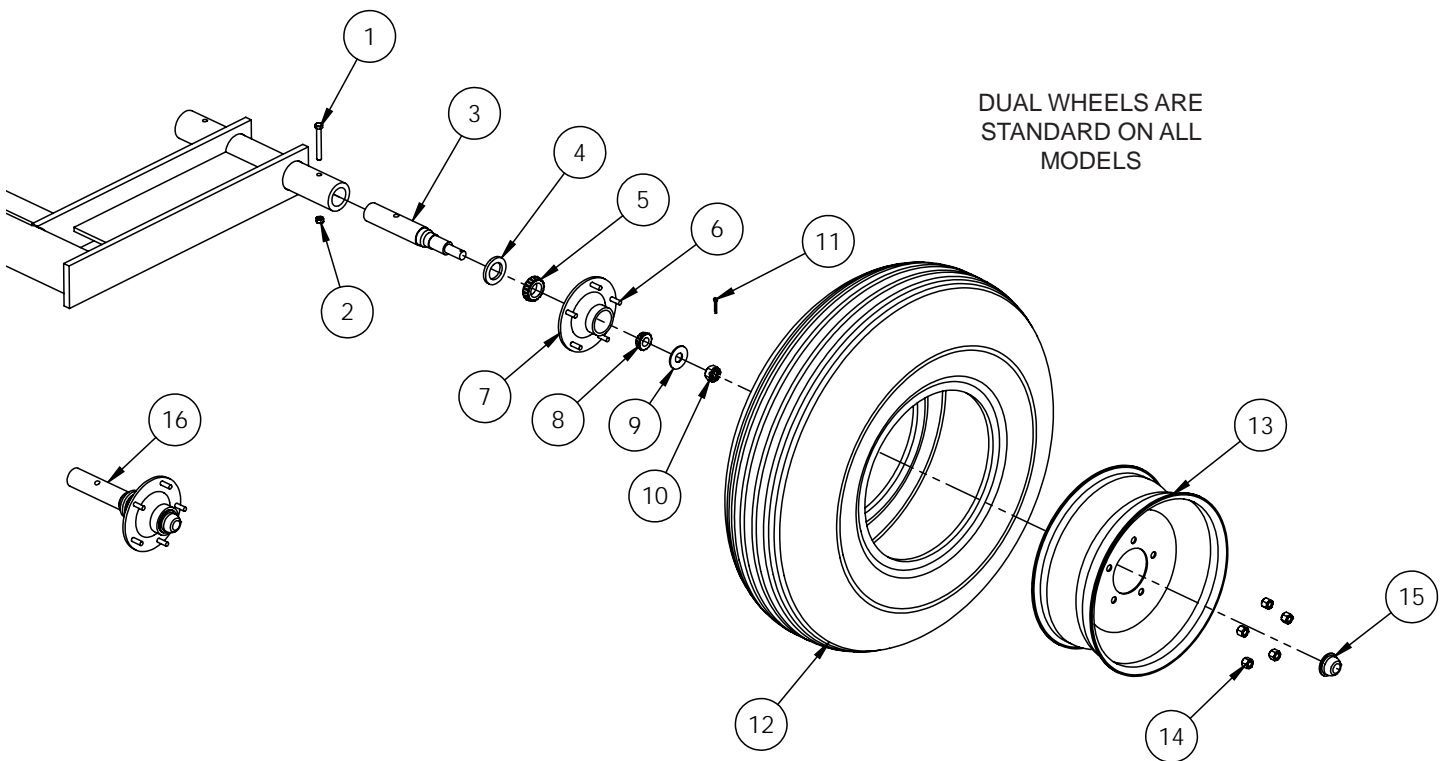
Ref.#	Part #	Description	Qty.
9	T-24	LOCKWASHER, 5/8"	16
10	T-22	HEX NUT, 5/8"	16
11	9661	HEX BOLT, 5/8" X 6 1/2" GR. 2	7
12	9651	HEX BOLT, 5/8" X 3" GR. 2	5
13	12511	1/8" X 1 3/4" STRAIGHT GREASE FITTING	3
14	T-58	WHEEL CARRIAGE BEARING TOP	3
15	T-57	WHEEL CARRIAGE BEARING BOTTOM	3
16	10665	WHEEL CARRIAGE- TW6908, TW6932	1
	10667	WHEEL CARRIAGE- TW6936, TW6940	1
17	9893	WHEEL LIFT BAR WELDMENT	1
18	9892	CYLINDER LATCH WELDMENT	1
19	15540	3/4" ORB MALE- 3/8" FEMALE SWIVEL ELBOW	2
20	13071	160" HYDRAULIC HOSE	2
21	15367	1/2" MALE- 3/8" FEMALE REDUCER	2
22	15368	HYDRAULIC QUICK COUPLER	2
23	10610	4 X 8 CYLINDER	1
24	15374	CYLINDER PINS, 1" X 3 1/2"	2
25	13308	ADJUSTING PIN, 3/4"	1
26	12387	DEPTH CONTROL BAR WELDMENT	1
27	T-18	HEX NUT, 1 1/8"	2
28	T-763	HEX BOLT, 3/4" X 3" GR. 5	1
29	T-31	LOCKWASHER, 3/4"	*MS
30	T-27	HEX NUT, 3/4"	*MS
31	T-698	FLATWASHER, 1 1/8"	*MS
32	T-511	ADJUSTING SPRING, 4 1/2"	1
33	T-510	SPRING HOUSING	1
34	T-509	ADJUSTING SPRING, 8 1/2"	1
35	9011	ADJUSTING ROD	1
36	11991	ADJUSTING TUBE WELDMENT	1
37	T-6	1/4" GREASE FITTING	3
38	9006	RETAINER STRAP	2
39	T-773	HEX BOLT, 7/8" X 6 1/2" GR. 5	1
40	9004	ROCKER ARM & LINK BAR	1
41	12413	GANG ANGLE ADJUSTMENT BAR, FRONT- TW6928,	1
	12415	GANG ANGLE ADJUSTMENT BAR, FRONT- TW6936,	1
42	T-21	LOCKWASHER, 7/8"	1
43	T-19	HEX NUT, 7/8"	1
44	14996	SMV SIGN	1
45	14997	SMV MOUNTING BRACKET	1
46	14998	CARRIAGE BOLT, 5/16" X 1" GR. 2	2
47	15198	LOCK NUT, 5/16"	2
48	15212	ROUND HEAD MACHINE SCREW, 1/8" X 1/2" GR. 2	2
49	15213	HEX NUT, 1/8"	2

* M/S - Model Specific

TW6 Drawbar Parts Schematic
Figure 5



TW6 Wheel Parts Schematic
Figure 6



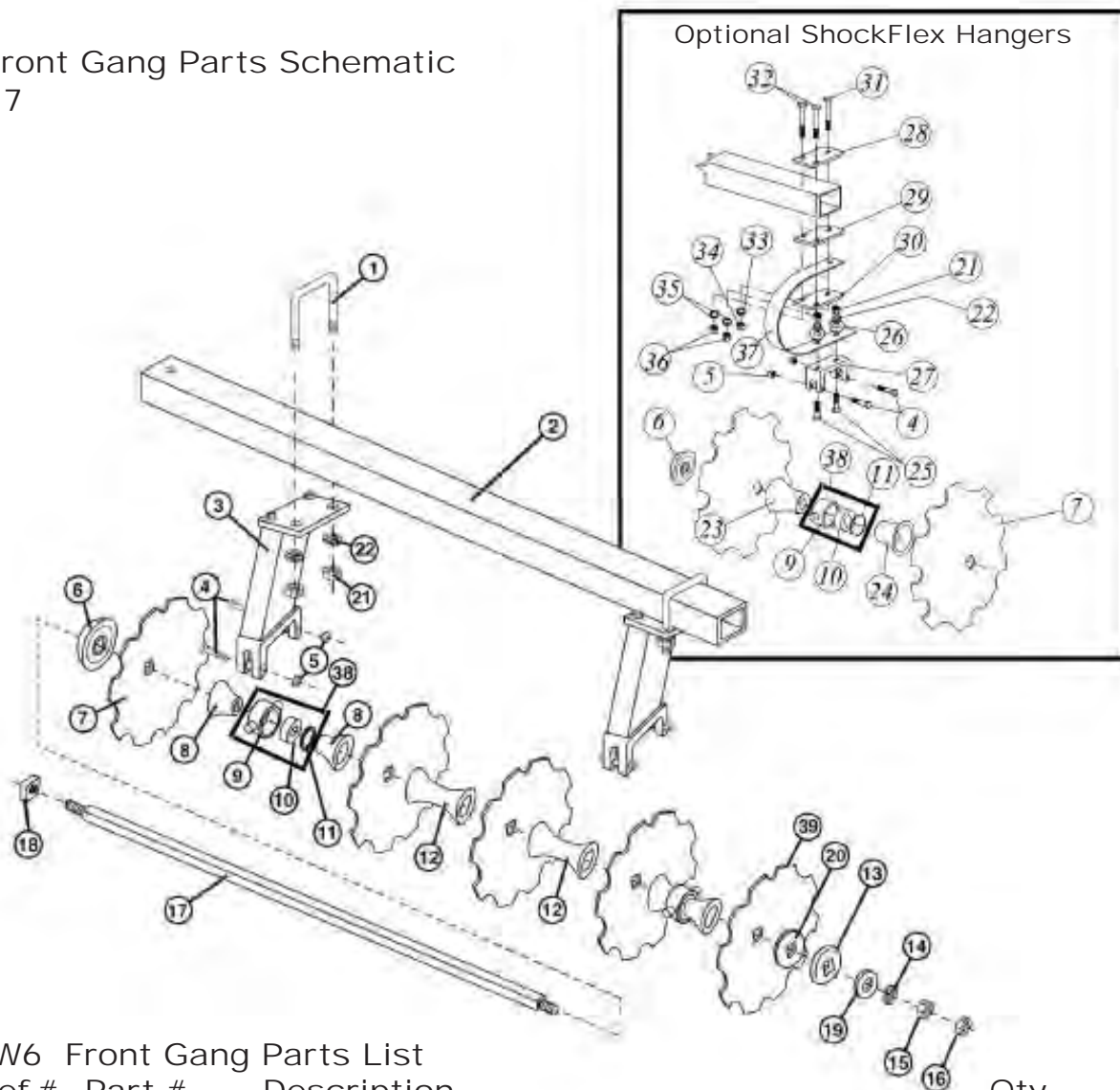
TW6 Drawbar Parts List

Ref.#	Part #	Description	Qty.
1	9027	TONGUE, DH16	1
2	T-2665	TONGUE CLEVIS	1
3	T-933	TONGUE JACK	1
4	15189	ASSEMBLY MANUAL TUBE AND CAP	1
5	T-465	HOSE HOLDER	1
6	T-772	HEX BOLT, 7/8" X 5" GR. 5	1
7	T-19	HEX NUT, 7/8"	4
8	T-21	LOCK WASHER, 7/8"	4
9	15349	HEX BOLT, 1" X 6" GR. 5	1
10	T-606	FLATWASHER, 1"	1
11	10332	LOCK NUT, 1"	1
12	15186	SAFETY CHAIN	1
13	15183	PIN, 7/8" X 5"	1
14	T-770	HEX BOLT, 7/8" X 3 1/2" GR. 5	2
15	T-773	HEX BOLT, 7/8" X 6 1/2" GR. 5	2
16	9979	HAIR PIN CLIP	2
17	T-970	TONGUE SIDE BRACE	2
18	15348	SELF TAPPING SCREW	2

TW6 Wheel Parts List

Ref.#	Part #	Description	Qty.
1	T-892	HEX BOLT, 3/8" X 3", GR.5	4
2	12899	FLANGE LOCK NUT, 3/8"	4
3	T-564	SPINDLE, 1 5/8"	4
4	T-576	SEAL, 1 1/2"	4
5	T-575	WHEEL BEARING, 1 1/4"	4
6	T-562	LUG STUD, 1/2" X 1 1/2"	20
7	T-572	5- BOLT HUB ASSEMBLY	4
8	T-574	WHEEL BEARING, 3/4	4
9	T-603	SPINDLE WASHER, 3/4"	4
10	T-567	SLOTTED NUT, 3/4"	4
11	T-342	COTTER PIN, 5/32" X 1 1/4"	4
12	95L156T	IMPLEMENT TIRE, (9.5L-15/6T TUBELESS)	4
13	T-612	15" X 6"X 5-HOLE WHEEL	4
14	T-23	LUG NUT, 1/2"	20
15	T-577	HUB CAP	4
16	13630	5 BOLT HUB & SPINDLE ASSY.	4
N/S	T-582	OUTER WHEEL BEARING CUP	4
N/S	T-583	INNER WHEEL BEARING CUP	4

TW6 Front Gang Parts Schematic
Figure 7



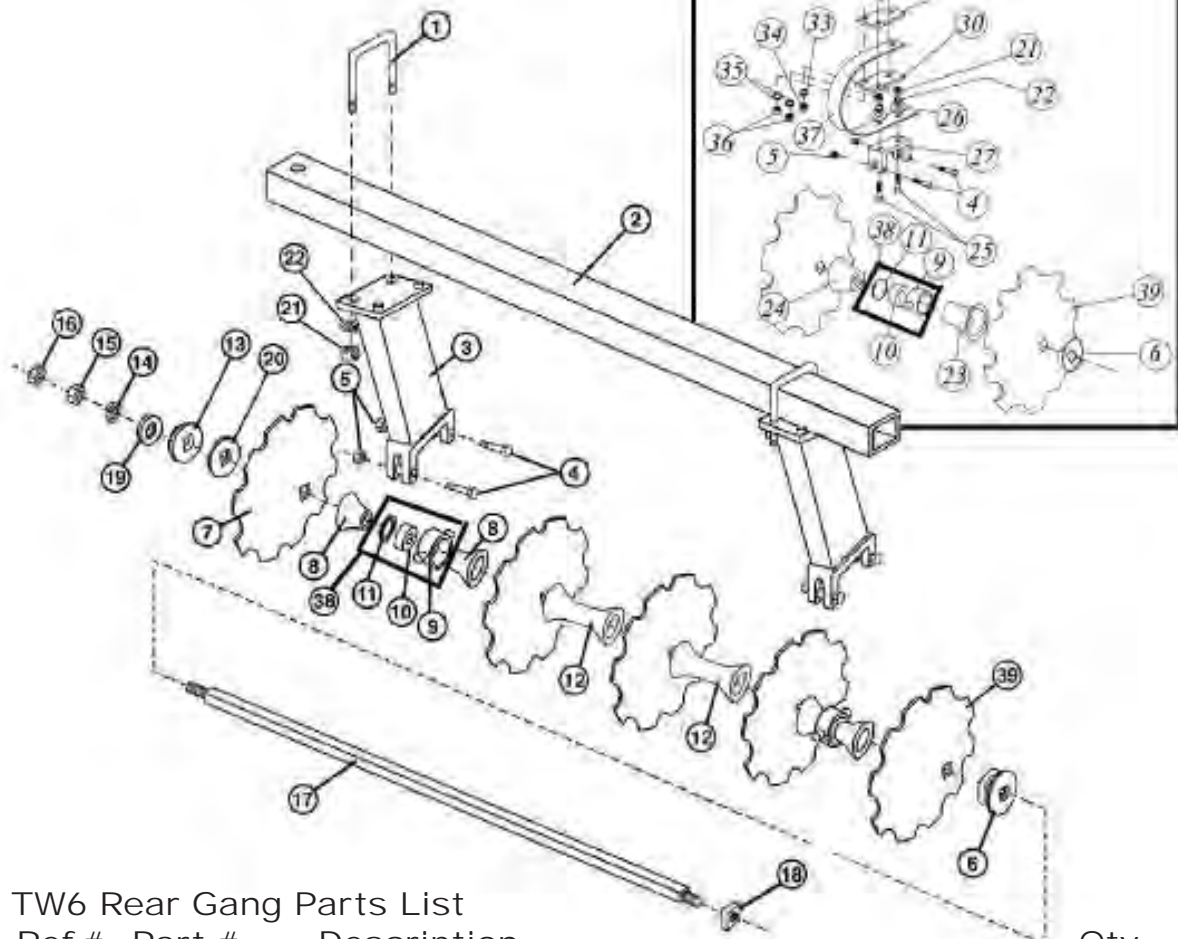
TW6 Front Gang Parts List

Ref.#	Part #	Description	Qty.
1	11971	3/4" U-BOLT FOR 4 X 4 BEAM	*MS
2	12449	4" X 4" X 56" GANG BEAM TW6928 FRONT	2
	12452	4" X 4" X 65" GANG BEAM TW6932 FRONT	2
	12454	4" X 4" X 74" GANG BEAM TW6936 FRONT	2
	12458	4" X 4" X 83" GANG BEAM TW6940 FRONT	2
3	12164	TUBULAR GANG HANGER FOR 4X4 BEAM	*MS
4	12163	HEX BOLT, 1/2" X 3 1/2" GR. 5	*MS
5	9226	FLANGE LOCK NUT, 1/2"	*MS
6	T-491	BUMPER WASHER, 1 1/2" SQ.	2
7	3221771	DISK BLADE, 22" X 1 1/2" PLAIN(4.5mm)	*MS
	3221772	DISK BLADE, 22" X 1 1/2" NOTCHED(4.5mm)	*MS
	3222561	DISK BLADE, 22" X 1 1/2" PLAIN (6MM)	*MS
	3222562	DISK BLADE, 22" X 1 1/2" NOTCHED (6MM)	*MS
8	T-495	END SPACER (FOR 9" BLADE SPACING)	*MS
9	TMD	TRUNNION BEARING HOUSING	*MS

TW6 Front Gang Parts List (cont'd)

Ref.#	Part #	Description	Qty.
	TMDR	RELUBE TRUNNION BEARING HOUSING	*MS
10	T-604	SEALED BEARING, 1 1/2"	*MS
	T-604R	RELUBE BEARING, 1 1/2"	*MS
11	T-729	SNAP RING, 4"	*MS
12	T-103	SPACER SPOOL, 1 1/2" X 9"	*MS
13	T-492	END WASHER, 1 1/2"	2
14	T-728	LOCKWASHER, 1 1/2"	2
15	9472	JAM NUT, 1 1/2"	2
16	T-727A	LOCK NUT, 1 1/2"	2
17	15719	AXLE, 1 1/2" X 60 1/2" TW6928	2
	15762	AXLE, 1 1/2" X 61" TW6928 w/ 1/4" DISK BLADES	2
	15720	AXLE, 1 1/2" X 69 1/2" TW6932	2
	15763	AXLE, 1 1/2" X 70" TW6932 w/ 1/4" DISK BLADES	2
	15716	AXLE, 1 1/2" X 78 1/2" TW6936	2
	15764	AXLE, 1 1/2" X 79 1/8" TW6936 w/ 1/4" DISK BLADES	2
	15717	AXLE, 1 1/2" X 87 1/2" TW6940	2
	15765	AXLE, 1 1/2" X 88 1/4" TW6940 w/ 1/4" DISK BLADES	2
18	11397	SQ. AXLE NUT, 1 1/2"	2
19	T-605	FLATWASHER, 1 1/2"	2
20	15376	1 1/2" SPACER WASHER (IF NEEDED)	*MS
21	T-27	HEX NUT, 3/4"	*MS
22	T-31	LOCKWASHER, 3/4"	*MS
23	T-108	OFFSET BEARING SPACER, 1 1/2" X 5 9/16"	*MS
24	T-107	OFFSET BEARING SPACER, 1 1/2" X 2 5/16"	*MS
25	T-763	HEX BOLT, 3/4" X 3" GR. 5	*MS
26	T-723	FLATWASHER, 3/4"	*MS
27	12159	TRUNNION MOUNT WELDMENT	*MS
28	10054	SPRING MOUNT TOP PLATE	*MS
29	10055	SPRING MOUNT ALIGNMENT PLATE	*MS
30	10056	SPRING MOUNT BOTTOM PLATE	*MS
31	10483	HEX BOLT, 7/8" X 8" GR. 5	*MS
32	T-753	HEX BOLT, 5/8" X 8" GR. 5	*MS
33	T-21	LOCKWASHER, 7/8"	*MS
34	T-19	HEX NUT, 7/8"	*MS
35	T-24	LOCKWASHER, 5/8"	*MS
36	T-22	HEX NUT, 5/8"	*MS
37	9553	SPRING HANGER SHANK	*MS
38	TMDT604	TRUNNION BEARING, HOUSING & SNAP RING ASSY.	*MS
	TMDRT604R	RELUBE TRUNNION BEARING, RELUBE HOUSING & SNAP RING	*MS
39	3201771	DISK BLADE, 20" X 1 1/2" PLAIN	*MS
	3201772	DISK BLADE, 20" X 1 1/2" NOTCHED	*MS

TW6 Rear Gang Parts Schematic
Figure 8



TW6 Rear Gang Parts List

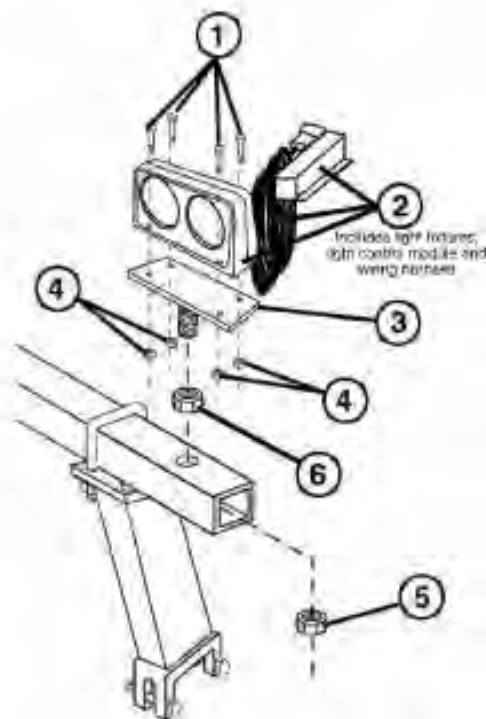
Ref.#	Part #	Description	Qty.
1	11971	3/4" U-BOLT FOR 4X4 BEAM	*MS
2	12450	4" X 4" X 66" GANG BEAM- TW6928 REAR	2
	12453	4" X 4" X 75" GANG BEAM- TW6932 REAR	2
	12455	4" X 4" X 84" GANG BEAM- TW6936 REAR	2
	12459	4" X 4" X 93" GANG BEAM- TW6940 REAR	2
3	12164	TUBULAR GANG HANGER FOR 4X4 BEAM	*MS
4	12163	HEX BOLT, 1/2" X 3 1/2" GR. 5	*MS
5	9226	FLANGE LOCK NUT, 1/2"	*MS
6	T-OR15	OUTRIGGER WASHER, 1 1/2" SQ.	2
7	3221771	DISK BLADE, 22" X 1 1/2" PLAIN(4.5mm)	*MS
	3221772	DISK BLADE, 22" X 1 1/2" NOTCHED(4.5mm)	*MS
	3222561	DISK BLADE, 22" X 1 1/2" PLAIN (6MM)	*MS
	3222562	DISK BLADE, 22" X 1 1/2" NOTCHED (6MM)	*MS
8	T-495	END SPACER (FOR 9" BLADE SPACING)	*MS
9	TMD	TRUNNION BEARING HOUSING	*MS

TW6 Rear Gang Parts List (cont'd)

Ref.#	Part #	Description	Qty.
	TMDR	RELUBE TRUNNION BEARING HOUSING	*MS
10	T-604	SEALED BEARING, 1 1/2"	*MS
	T-604R	RELUBE BEARING, 1 1/2"	*MS
11	T-729	SNAP RING, 4"	*MS
12	T-103	SPACER SPOOL, 1 1/2" X 9"	*MS
13	T-492	END WASHER, 1 1/2"	2
14	T-728	LOCKWASHER, 1 1/2"	2
15	9472	JAM NUT, 1 1/2"	2
16	T-727A	LOCK NUT, 1 1/2"	2
17	15719	AXLE, 1 1/2" X 60 1/2" TW6928	2
	15762	AXLE, 1 1/2" X 61" TW6928 w/ 1/4" DISK BLADES	2
	15720	AXLE, 1 1/2" X 69 1/2" TW6932	2
	15763	AXLE, 1 1/2" X 70" TW6932 w/ 1/4" DISK BLADES	2
	15716	AXLE, 1 1/2" X 78 1/2"-TW6936	2
	15764	AXLE, 1 1/2" X 79 1/8"-TW6936 w/ 1/4" DISK BLADES	2
	15717	AXLE, 1 1/2" X 87 1/2" TW6940	2
	15765	AXLE, 1 1/2" X 88 1/4" TW6940 w/ 1/4" DISK BLADES	2
18	11397	SQ. AXLE NUT, 1 1/2"	2
19	T-605	FLATWASHER, 1 1/2"	2
20	15376	1 1/2" SPACER WASHER (IF NEEDED)	*MS
21	T-27	HEX NUT, 3/4"	*MS
22	T-31	LOCKWASHER, 3/4"	*MS
23	T-108	OFFSET BEARING SPACER, 1 1/2" X 5 9/16"	*MS
24	T-107	OFFSET BEARING SPACER, 1 1/2" X 2 5/16"	*MS
25	T-763	HEX BOLT, 3/4" X 3" GR. 5	*MS
26	T-723	FLATWASHER, 3/4"	*MS
27	12159	TRUNNION MOUNT WELDMENT	*MS
28	10054	SPRING MOUNT TOP PLATE	*MS
29	10055	SPRING MOUNT ALIGNMENT PLATE	*MS
30	10056	SPRING MOUNT BOTTOM PLATE	*MS
31	10483	HEX BOLT, 7/8" X 8" GR. 5	*MS
32	T-753	HEX BOLT, 5/8" X 8" GR. 5	*MS
33	T-21	LOCKWASHER, 7/8"	*MS
34	T-19	HEX NUT, 7/8"	*MS
35	T-24	LOCKWASHER, 5/8"	*MS
36	T-22	HEX NUT, 5/8"	*MS
37	9553	SPRING HANGER SHANK	*MS
38	TMDT604	TRUNNION BEARING, HOUSING & SNAP RING ASSY.	*MS
	TMDRT604R	RELUBE TRUNNION BEARING, RELUBE HOUSING & SNAP RING	*MS
39	3201771	DISK BLADE, 20" X 1 1/2" PLAIN	*MS
	3201772	DISK BLADE, 20" X 1 1/2" NOTCHED	*MS

TW6 Safety light Kit Assembly

Figure 9



TW6 Safety Light Kit Parts List

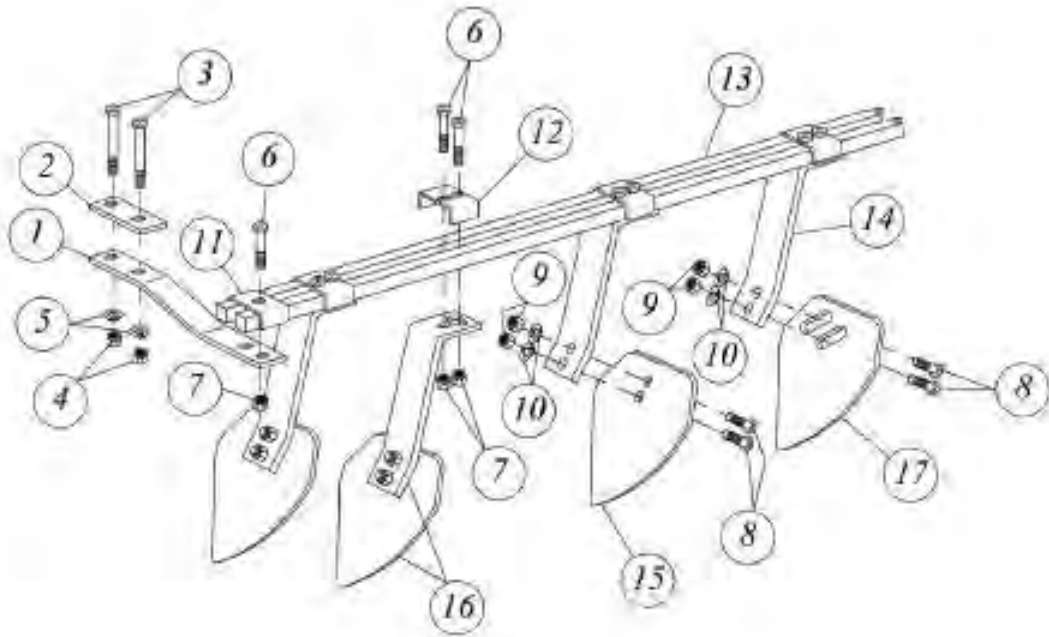
Ref.#	Part #	Description	Qty.
1	15365	HEX BOLT, 1/4" x 1 1/2", GR. 2	8
2	15346	LIGHT KIT	1
3	15347	LIGHT MOUNT BRACKET	2
4	15366	NYLON INSERT LOCK NUT, 1/4"	8
5	15132	NYLON INSERT LOCK NUT, 5/8"	2
6	T-22	HEX NUT, 5/8" HEX NUT, 5/8"	2

Parts Not Shown in Figures 4 - 9

Ref.#	Part #	Description	Qty.
N/S	15194	SAFETY DECAL SHEET	1
N/S	15362	WARNING DECAL (CYLINDER LOCKUPS)	1
N/S	15363	WARNING DECAL (TRANSPORTING)	1
N/S	15364	WARNING DECAL (PRESSURIZED HYD. FLUID)	1
N/S	15707	MODEL TW6928 DECAL	1
N/S	15708	MODEL TW6932 DECAL	1
N/S	15709	MODEL TW6936 DECAL	1
N/S	15710	MODEL TW6940 DECAL	1
N/S	15658	3 1/2" TUFLINE LOGO DECAL	3
N/S	15715	DH16 OPERATORS MANUAL	1
N/S	15199	9" RED REFLECTOR	*MS
N/S	15200	9" YELLOW REFLECTOR	2
N/S	15361	9" FLUORESCENT ORANGE DECAL	2
N/S	15718	4X8 CYLINDER SEAL KIT	1

Optional Equipment

Heavy Scraper Kit
Figure 10
TW6 Series



DH16 Series Heavy Scraper Kit Model Numbers

SK9286 for the TW6928

SK9326 for the TW6932

SK9366 for the TW6936

SK9406 for the TW6940

Heavy Scraper Kit Parts List

Ref.#	Part #	Description	Qty.
1	12891	SCRAPER MOUNT BRACKET	12
2	12894	SCRAPER BAR TOP PLATE	12
3	T-747	HEX BOLT, 5/8" X 6" GR. 2	24
4	T-22	HEX NUT, 5/8"	24
5	T-24	LOCKWASHER, 5/8"	24
6	11082	HEX BOLT, 1/2" X 2 1/2" GR. 2	*MS
7	9226	FLANGE LOCK NUT, 1/2"	*MS
8	T-733	HEX BOLT, 1/2" X 1 1/2" GR. 2	*MS
9	T-26	HEX NUT, 1/2"	*MS
10	T-25	LOCK WASHER, 1/2"	*MS
11	T-803	SCRAPER BAR CLAMP, "U" CLAMP- 1 HOLE	12
12	9356	2- HOLE CLAMP	*MS
13	12344	HEAVY SCRAPER BAR, 55"- TW6928 FRONT	2
	12462	HEAVY SCRAPER BAR, 59"- TW6928 REAR	2
	12347	HEAVY SCRAPER BAR, 64"- TW6932 FRONT	2
	12463	HEAVY SCRAPER BAR, 68"- TW6932 REAR	2
	T-2581	HEAVY SCRAPER BAR, 73"- TW6936 FRONT	2
	12348	HEAVY SCRAPER BAR, 77"- TW6936 REAR	2
	11731	HEAVY SCRAPER BAR, 82"- TW6940 FRONT	2
	12466	HEAVY SCRAPER BAR, 86"- TW6940 REAR	2
14	10151	SCRAPER ARM	*MS
15	11081	UNIVERSAL SCRAPER BLADE	*MS
16	11027 or	ARM & BLADE ASSEMBLY FOR RIGHT FRONT OR LEFT REAR	*MS
	11028	ARM & BLADE ASSEMBLY FOR LEFT FRONT OR RIGHT REAR	*MS
17	11065	FURROW FILLER BLADE	2

Heavy Scraper Kit Mount Instructions

* NOTE- When attaching heavy scraper kit, do NOT tighten any hardware until stated in directions. Adjustments need to be made .

**NOTE- When mounting outrigger scraper blades make sure the rear scraper bar is mounted as far to the outside as possible. This allows outrigger scraper blade to reach outrigger disc blade.

Reference Figure 10

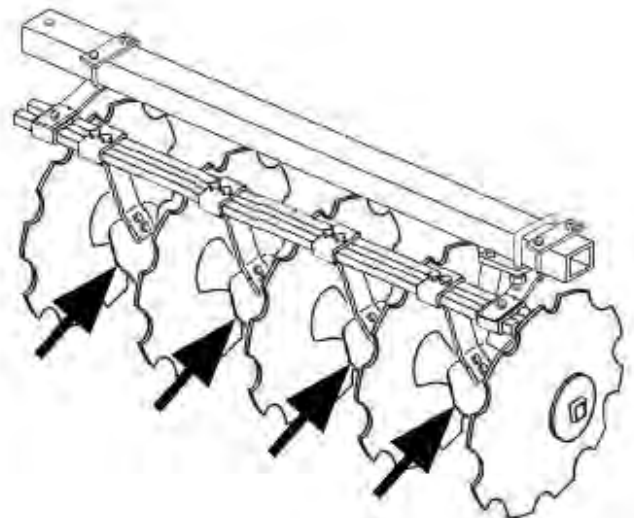
To attach heavy scraper disk, place scraper bar to plate(Ref #2) on top of gang beam and scraper mount bracket (Ref. #1) on bottom of gang beam . Using 5/8" x 5" gr.2 bolts (Ref.#3) fasten both pieces together around gang beam with 5/8" lock washer hex nut (ref.#4). There should be two scraper mount bracket assemblies for each gang beam with the placement being close to each gang hanger. Some adjustments may need to be made when mounting scraper arm & blade assemblies (Ref. #16). Take heavy scraper bar (Ref.#13) and mount on top of scraper bracket assembly with 1-hole scraper bar clamp (Ref.#11). Use a 1/2" x 2 1/2" Gr.2 bolt (Ref. #6) and a 1/2" flange locknut (Ref. #7) to fasten. Scraper arm & blade assemblies (Ref.#16) are now mounted on the bottom of scraper bar (Ref.#13). There are two different sides of scraper arm & blade assemblies (Ref. #16). One side fits the right front and left rear, the other side fits the left front, and right rear. When mounting scraper arm

& blade assemblies(Ref. #16) to the bottom of the scraper bar (Ref. #13), use 2-hole clamp (Ref.#12) on top of the scraper bar (Ref. #13) and fasten together with 1/2" x 2 1/2" GR. 2 bolt(Ref. #6) and 1/2" flange lock nut (Ref #7). Scraper arm & assemblies are not provided for outside front and inside rear blades! Once all scraper arm & blades assemblies(Ref. #16) have been mounted, now is the time to make adjustments to scraper mount bracket assemblies, if needed. When adjustments are made, tighten scraper mount bracket assemblies, if needed. When adjustments are made, tighten scraper mount bracket assemblies to gang beam and tighten scraper bar (Ref. #13) to scraper mount bracket using 1-hole scraper bar clamp (Ref.#11) and hardware(Ref. #6 & #7). Scraper arm blade assemblies(Ref. #16) should then be positioned as close to the disc blade as possible without touching it. Turning the gang after mounting each scraper arm & blade assembly (Ref. #16) will help determine the correct mounting position of each one. This is recommended to prevent dragging or binding of the gang.

*Note-Tighten all fasteners after setting and adjustments are made. Please see Bolt Torque Chart(page 45) for proper torque information.

*NOTE- Retighten all fasteners after first operational use. See Bolt Torque Chart(page 45) for proper torque information.

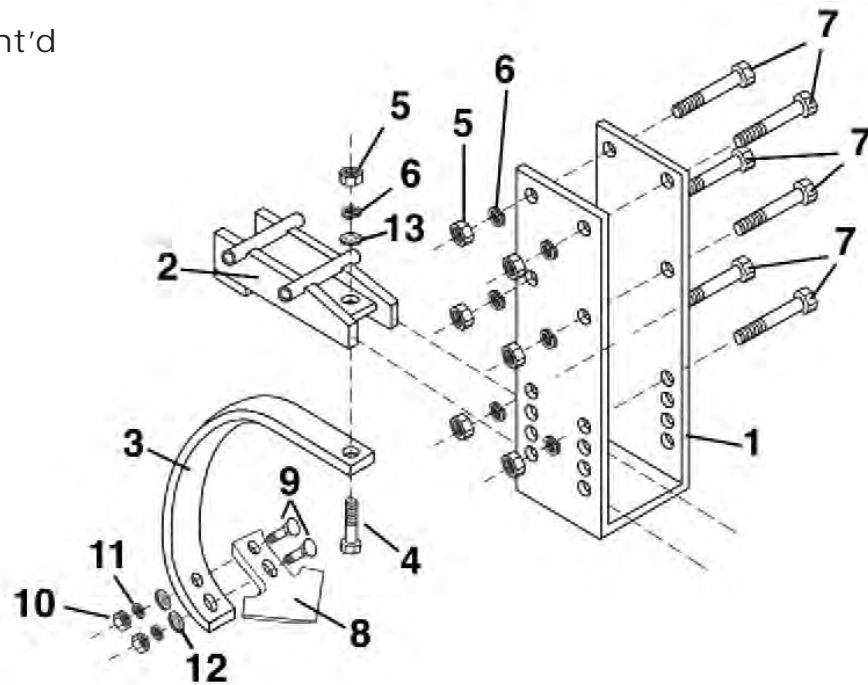
Regardless of model or configuration, scrapers are only located between two disk blades(Refer to the diagram to the right). There is no need for a scraper on the far outside blades on the front gangs or the far inside blades on the rear gangs.



Optional Equipment Cont'd

Center Sweep Kit Figure 11

Part Number 11476



Ref.#	Part #	Description	Qty.
1	10388	SHANK BRACKET 4" BEAM	1
2	9175	SHANK HOLDER 4" BEAM	1
3	10602	BALK BREAKER SHANK	1
4	9192	HEX BOLT, 5/8" X 2 1/2", GR. 5	1
5	T-22	HEX NUT, 5/8"	7
6	T-24	LOCK WASHER, 5/8"	7
7	T-746	HEX BOLT, 5/8" X 5 1/2"	6
8	13614	4" SWEEP POINT	1
9	14984	PLOW BOLT, 7/16" X 1 1/2"	2
10	14986	HEX NUT, 7/16"	2
11	14987	LOCK WASHER, 7/16"	2
12	14985	FLAT WASHER, 7/16"	2
13	9354	FLAT WASHER, 5/8"	1

Center Sweep Kit Mounting Instructions Reference Figure 11

To attach balk breaker to disk, remove the two top bolts from Ref. #1 (shank bracket) and slide on to center tube of frame, between the wheel carriage and depth control bracket. Insert top bolts back in Ref. #1 and apply lock washer and hex nut. DO NOT TIGHTEN! Attach Ref. #3 (balk breaker shank) to Ref. #2 (shank holder) with hardware supplied, then tighten this bolt only. Ref. #2 can be adjusted for different

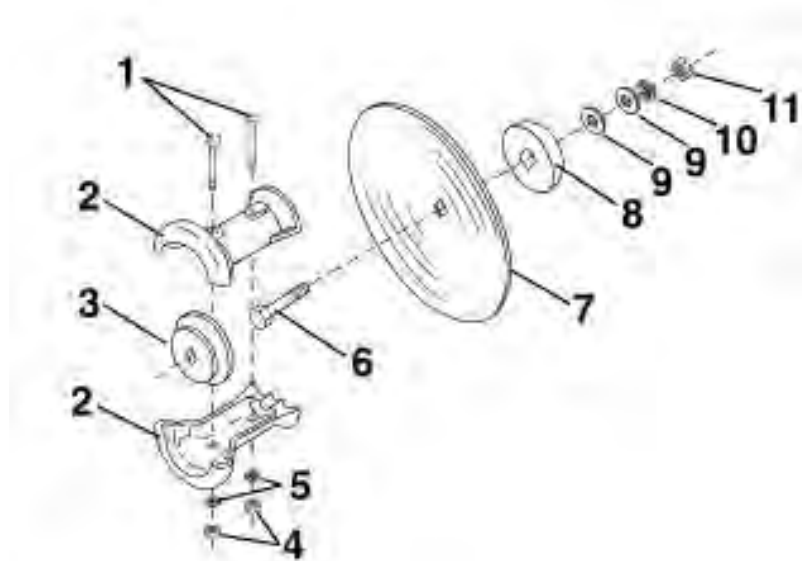
depths. Normal operational depth is the same as the disk blade depth. Depth adjustments can be made by putting disk on the ground, and adjusting bolts in Ref. #2 up or down. Once depth has been set, tighten all bolts and balk breaker is ready for operation. Please see Bolt Torque Chart (Page 46) for proper torque information.

*NOTE- Retighten all fasteners after first operational use. Please see Bolt Torque Chart (Page 45) for proper torque information.

Optional Equipment Cont'd

Outrigger Kit Figure 12

Part Number T-70318



Ref.#	Part #	Description	Qty.
1	12163	HEX BOLT, 1/2" X 3 1/2" GR. 5	4
2	T-OR2	OUTRIGGER HALF	4
3*	T-OR15	OUTRIGGER WASHER, 1 1/2"	*Note
4	T-26	HEX NUT, 1/2"	4
5	T-25	LOCK WASHER, 1/2"	4
6	T-760	HEX BOLT, 3/4" X 3 1/2" GR. 5	2
7	5181381	DISK BLADE, 18" X 1" PLAIN for 22"	2
8	T-1	END WASHER, 1 1/8"	2
9	T-723	FLAT WASHER, 3/4"	2
10	T-31	LOCK WASHER, 3/4"	2
11	T-27	HEX NUT, 3/4"	2

*Note: Item #3, Part# T-OR15 is not included with this assembly. The T-OR15 is standard equipment on the rear gangs of the TW6 series.

Outrigger Kit Mounting Instructions Reference Figure 12

Outrigger kits only attach to rear gang with outrigger washers (Ref. #3). Outrigger washers DO NOT come with kit. They are standard equipment on rear gangs of the TW6 series. To attach outriggers, remove cast iron end washer (Ref. #8), 3/4" flat washer (Ref. #9), 3/4" lock washer (Ref. #10), and 3/4" hex nut (Ref. #11) from 3/4" x 3 1/2" Gr. 5 bolt (Ref. #6). Remove 1/2" hex nuts & lock washers (Ref. #4 & #5) from 1/2" x 3 1/2" Gr. 5 bolts (Ref. #1). Take outrigger halves (Ref. #2) and pull apart wide enough to clamp over outrigger washer (Ref. #3) on gang assembly. Re-apply the 1/2" hex nuts & lock washers (Ref. #4 & #5) to 1/2" x 3 1/2" Gr. 5 bolt (Ref. #1) and tighten. Make sure

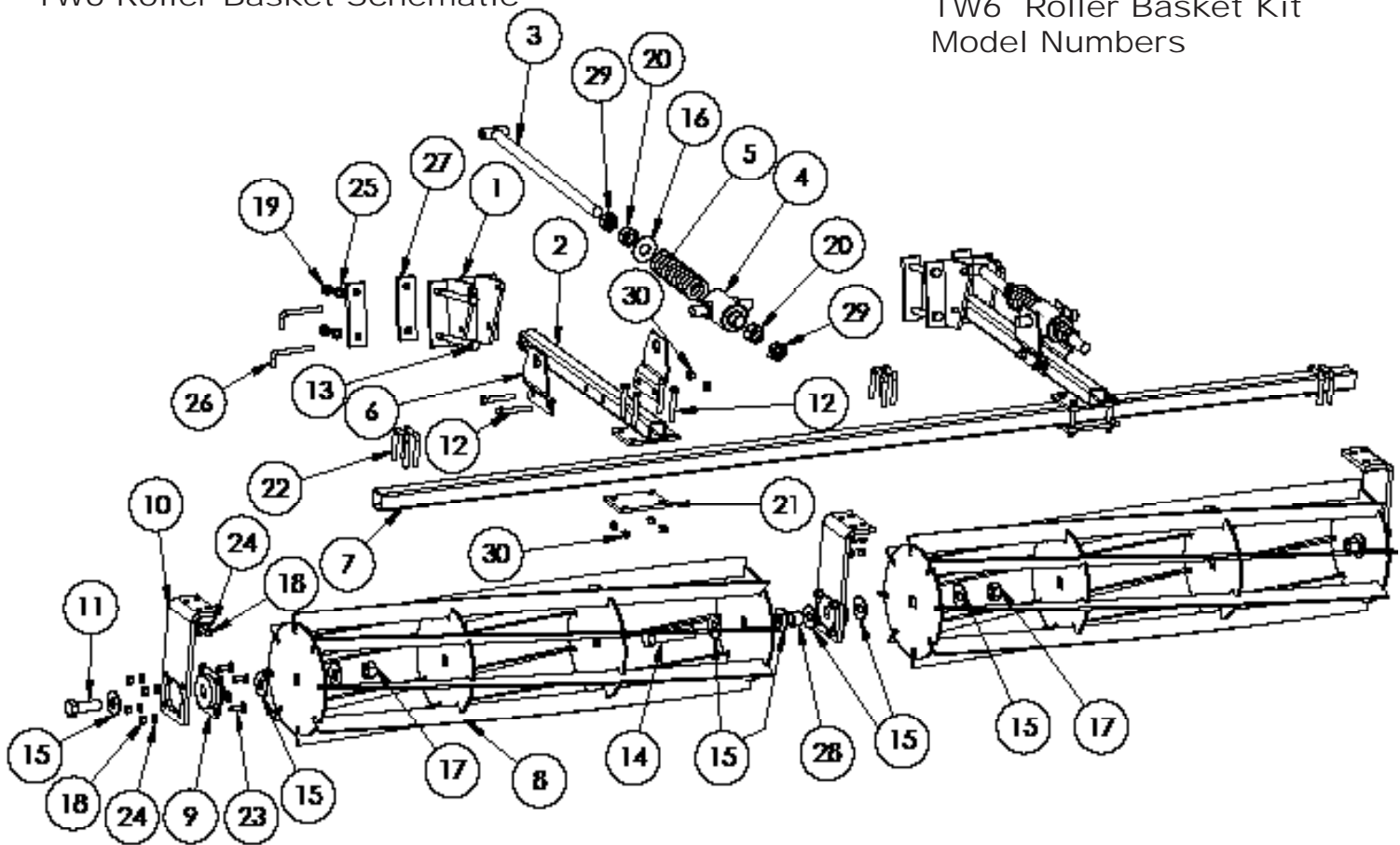
the 3/4" x 3 1/2" Gr. 5 bolt (Ref. #6) is pulled out as far as possible before tightening. Once tightened, apply the outrigger disk blade (Ref. #7) on the 3/4" x 3 1/2" Gr. 5 bolt (Ref. #6), followed by the cast iron end washer (Ref. #8), 3/4" flat washer (Ref. #9), 3/4" lock washer (Ref. #10), and 3/4" hex nut (Ref. #11). Tighten and outrigger is ready for operation. Please see Bolt Torque Chart (Page 45) for proper torque information.

*NOTE- TW6 models use 18" outrigger blades for 22" disk blades.

*NOTE- Retighten all fasteners after first operational use. Please see Bolt Torque Chart (Page 45) for proper torque information.

TW6 Roller Basket Schematic

TW6 Roller Basket Kit
Model Numbers



TW6 Roller Basket Parts List

Ref.#	Part #	Description	Qty.
1	16071	MOUNT WELDMENT	2
2	16076	ARM WELDMENT	2
3	16080	SPRING ROD WELDMENT	2
4	T-510	SPRING HOUSING	2
5	T-509	ADJUSTING SPRING 8 1/2"	2
6	16082	PIVOT PLATE	4
7	16086	TOOL BAR 141", TW6928	1
	16087	TOOL BAR 165", TW6932, TW6936	1
	16088	TOOL BAR 198", TW6940	1
8	16089	BASKET WELDMENT, 54", TW6940	1
	16091	BASKET WELDMENT, 66", TW6938, TW6940	*MS
	16092	BASKET WELDMENT, 78", TW6932, TW6936	2
9	13689	1" BALL FLANGE BEARING	3
10	15095	GANG HANGER	3
11	T-780	HEX BOLT, 1" X 3 1/2"	2
12	12163	HEX BOLT, 1/2" X 3 1/2"	12
13	T-748	HEX BOLT, 5/8" X 6" GR.5	4
14	16166	HEX BOLT, 1" X 5" GR. 5	1
15	T-606	FLAT WASHER, 1"	11

Optional Equipment 41

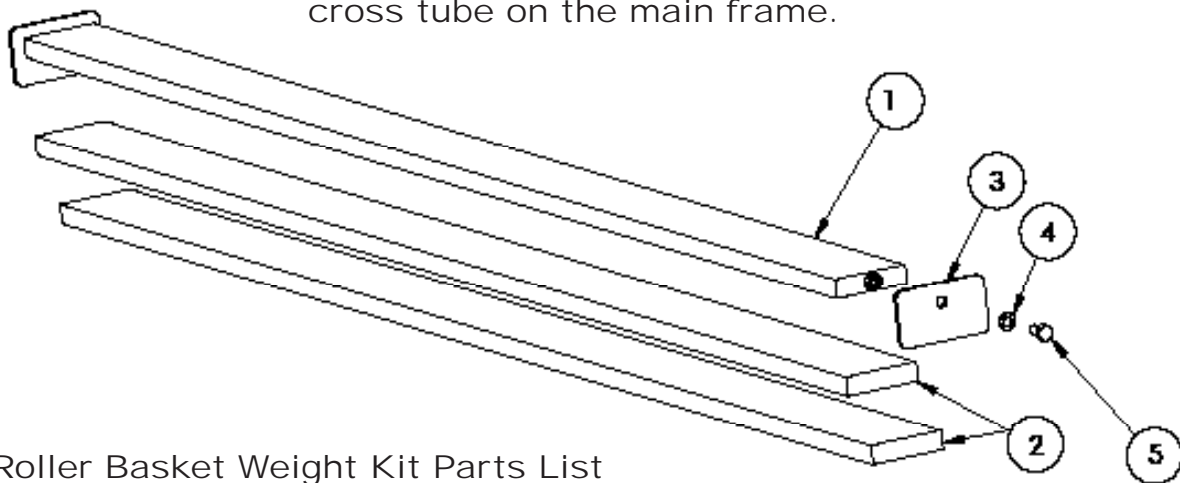
* M/S - Model Specific

TW6 Roller Basket Parts List (cont'd)

Ref.#	Part #	Description	Qty.
16	T-698	FLAT WASHER, 1 1/8"	2
17	10332	LOCK NUT, 1"	3
18	T-26	HEX NUT, 1/2"	12
19	T-22	HEX NUT, 5/8	4
20	T-18	HEX NUT, 1 1/8"	4
21	16079	ARM TOOLBAR MOUNT PLATE	2
22	11138	2" X 2" U-BOLT	6
23	T-804	CARRIAGE BOLT, 1/2" X 1 1/2"	12
24	T-25	LOCK WASHER, 1/2"	12
25	T-24	LOCK WASHER, 5/8	4
26	9406	MOUNT PIN	4
27	16203	MOUNTING STRAP WELDMENT	4
28	16167	SPACER	1
29	9401	JAM NUT, 1 1/8"	4
30	16104	LOCK NUT, 1/2"	12

TW6 Roller Basket Weight Kit

Note: Weight Kit Bars are to be installed into the front cross tube on the main frame.



TW6 Roller Basket Weight Kit Parts List

Ref.#	Part #	Description	Qty.
1	16267	FRAME WEIGHT WELDMENT, TW6928, TW6932	1
	16268	FRAME WEIGHT WELDMENT, TW6936, TW6940	1
2	16264	FRAME WEIGHT BAR, TW6928, TW6932	2
	16265	FRAME WEIGHT BAR, TW6936, TW6940	2
3	16269	END CAP	2
4	T-728	LOCK WASHER, 1/2"	2
5	16256	HEX BOLT, 1/2" X 1" GR. 5	2

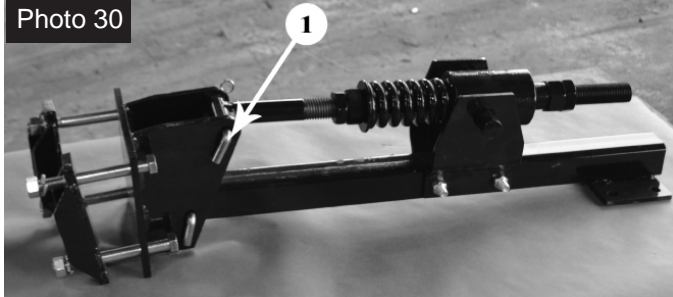
Roller Basket Assembly

Assembly

WARNING

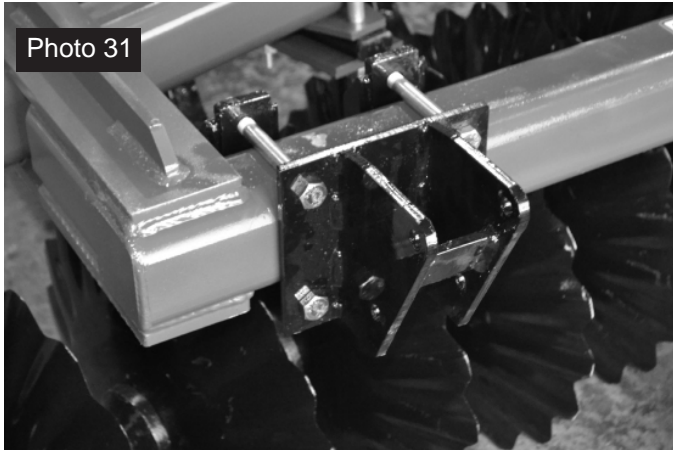
Mounting bracket, straps, arm, spring rod assembly and hardware are assembled together (Photo 30). Attach the mounting

Photo 30



bracket to the rear of the frame, with the mounting straps, using the 5/8" x 6" bolts, lock washers and nuts. Bracket should be 1/2" from the inside wall of frame (Photo 31). Tighten the

Photo 31



top and bottom bolts evenly during this step. Failure to do so will not allow the bracket to

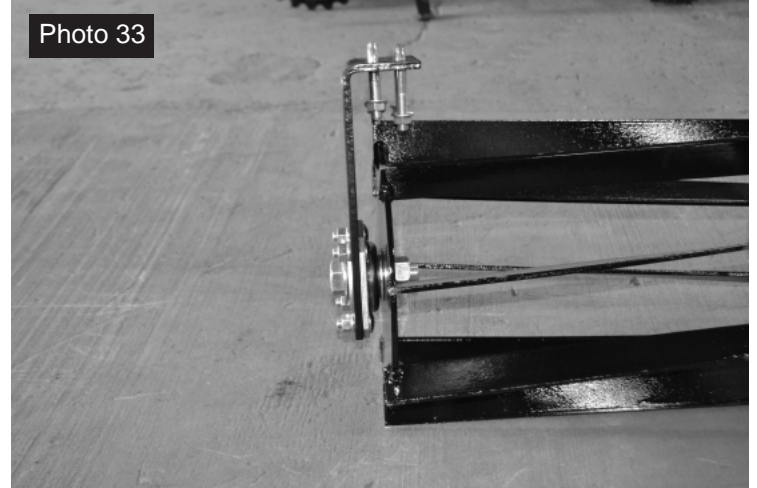
Photo 32



mount properly. Next attach the arm and spring rod assembly using the two mount pins (Photo 32).

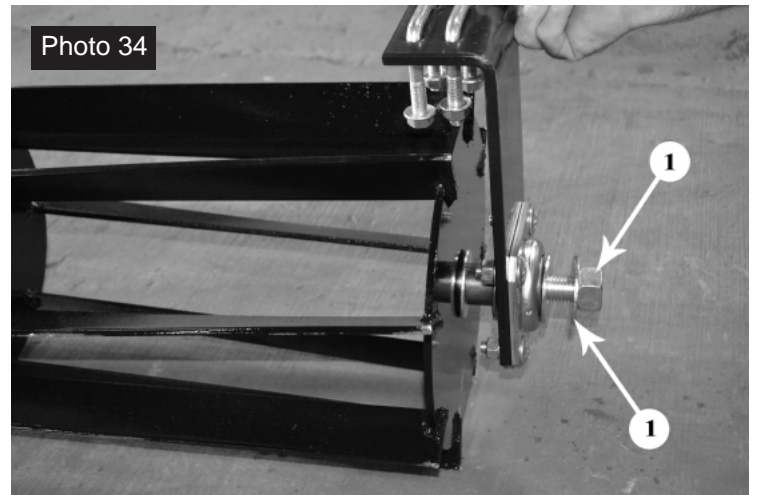
After both sides have been mounted start assembling the roller baskets together. Outer hangers are pre assembled onto the outer end of the roller basket (Photo 33). The inner hanger or hangers are

Photo 33



loosly attached to the inner end of the roller basket (Photo 34). Attach the inner ends of the roller bas-

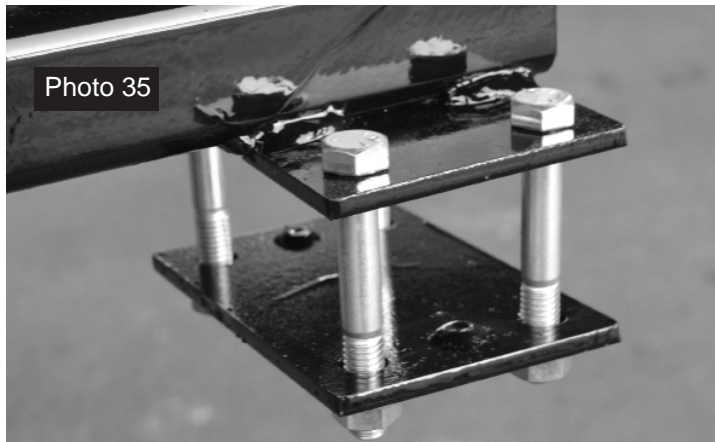
Photo 34



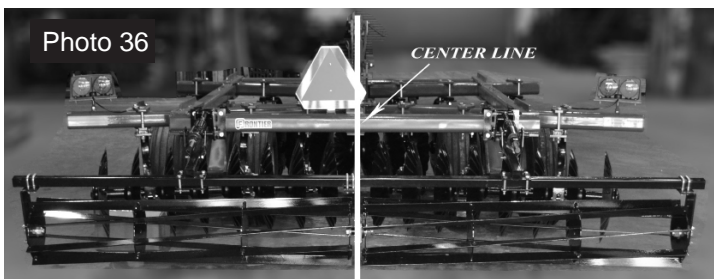
kets together. Do this by removing the 1" lock nut and one 1" flat washer (Photo 34, Ref. 1). Slide baskets together and insert end of bolt into hole in the roller basket. Put flat washer and lock nut back onto bolt. Tighten bolt and lock nut to torq specs (Page 45). Place tool bar onto hanger assembly. Use 2" sq. u-bolts located on the hanger. Adjust tool bar to the center. Roughly 2" of tool bar should extend past outer hangers. Attach tool bar to arms. Remove arm toolbar mount plate from arm

Optional Equipment 43

Roller Basket Assembly (cont'd.)



assembly (Photo35). Place roller assembly under arms. Position roller assembly to the center of vertical tillage unit left to right (Photo 36). Remove pin (Photo30, Ref 1) from arm and spring rod assembly. This will let the arms easily lay on top



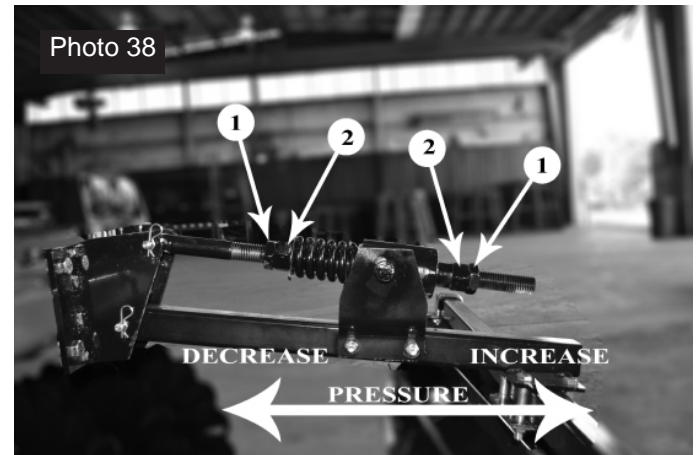
of the tool bar. Place the four 1/2" x 3 1/2" bolts thru the plate welded to the arm. Place the arm mount plate under the tool bar with four 1/2" lock nuts (Photo 37). Check to make sure the roller basket assembly is centered to the vertical tillage unit (Photo 36). Tighten bolts and lock nuts in an



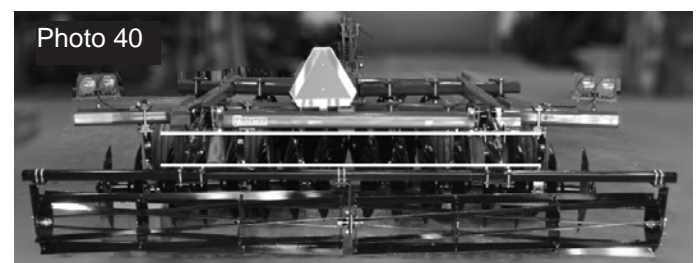
alternating pattern to ensure even pressure to torq specs (Page45). Raise roller basket assembly with hoist to reinsert top pin.

Adjusting Roller Basket

Loosen jam nuts (Photo38, Ref. 1) and hex nuts (Photo38, Ref. 2) on both ends of each spring rod assembly. Adjust the rear facing hex nut on spring rod assemblies to desired height.

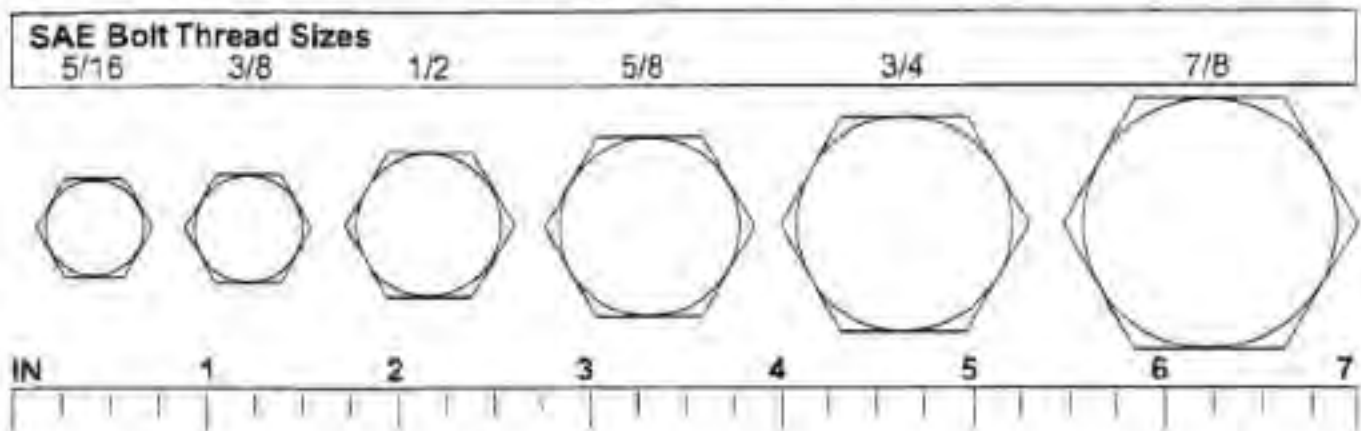


Tighten the jam nut on each side against the hex nut to create a lock. Tighten the forward facing hex nut on the front of each spring rod assembly to apply pressure on the spring (Photo 39). Once desired pressure is applied tighten the jam nut to create the lock. Make sure the roller basket assembly is level horizontally with the vertical tillage unit (Photo 40).

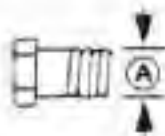


Bolt Size Chart

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	76	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

TW6 Series gang bolt torque 400 lbs-ft, then tighten nut clockwise 180°

PART NO.
16259

Tufline®