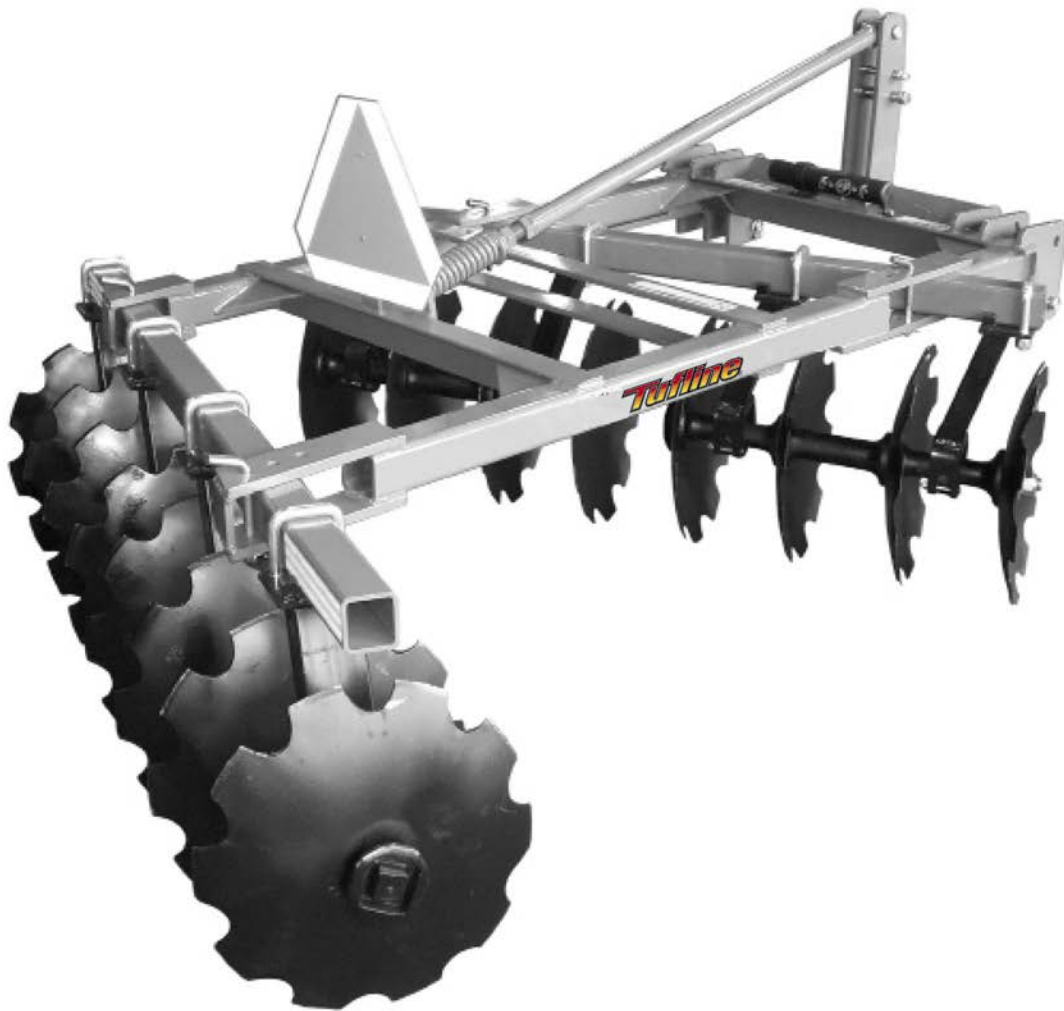


OPERATOR'S MANUAL

TLO SERIES OFFSET DISC



Tufline®

www.monroetufline.com

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

Indicates that failure to observe can cause damage to equipment.

Indicates helpful information.

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GENERAL INFORMATION

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

SPECIFICATIONS

Model #	Cut Width	# / Size of Blades	Spacing	Weight
TLO91420	5'3"	14-20	9"	790#
TLO91620	6'	16-20	9"	1021#
TLO91622	6'	16-22	9"	1029#
TLO91820	6'8"	18-20	9"	1105#
TLO91822	6'8"	18-22	9"	1159#
TLO92020	7'6"	20-20	9"	1170#
TLO92022	7'6"	20-22	9"	1230#
TLO92220	8'4"	22-20	9"	1238#
TLO92222	8'4"	22-22	9"	1298#

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 safety decals are installed and in good condition.
Replace if decals are worn or damaged.



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!

		<h3>⚠ WARNING</h3> <h4>CRUSHING AND PINCHING HAZARD</h4> <ul style="list-style-type: none">• 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. <p>15194A</p>
		

①

5TL15194A

	<h3>⚠ WARNING</h3> <h4>FALLING BLADE HAZARD</h4> <ul style="list-style-type: none">• 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. <p>15194B</p>
	

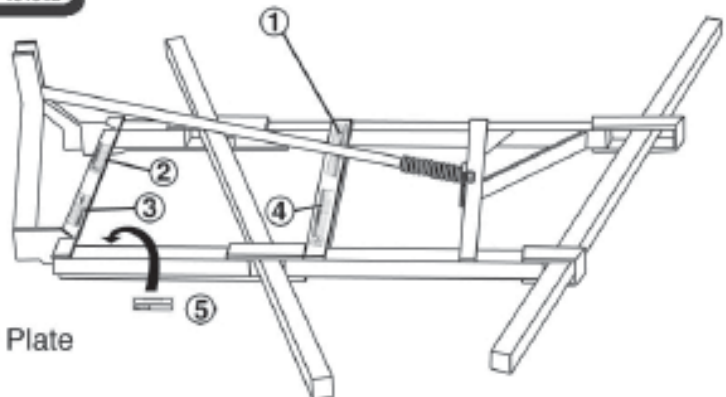
②


5TL15194B

TUFLINE	
MODEL # _____	_____
SERIAL # _____	_____
TUFLINE MANUFACTURING COMPANY, INC.	
COLUMBUS, MS	
662-328-8347	

⑤

Serial Number Plate



	<h3>⚠ WARNING</h3> <h4>TO PREVENT SERIOUS INJURY OR DEATH:</h4> <ul style="list-style-type: none">• 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. <p>15194C</p>
---	---

③

5TL15194C

5TL15194D

④

	<h3>⚠ WARNING</h3> <ul style="list-style-type: none">• 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. <p>15194D</p>
	



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.

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.
- 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

5 Safety Rules



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

OPERATION (cont'd)

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.
- 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.
- 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 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 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.



SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

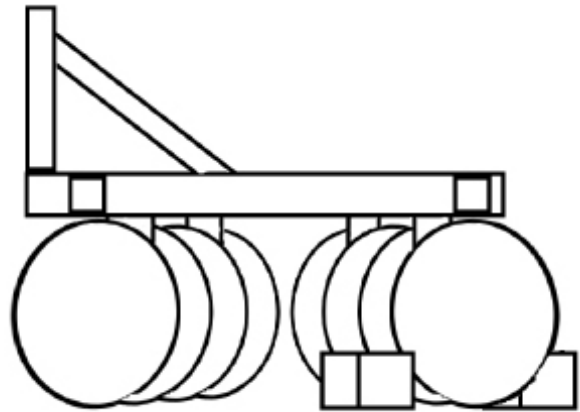
MAINTENANCE(cont'd)

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

- Tighten all bolts, nuts, and screws to torque chart specifications on page 19. 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. See the diagram below.



Dealer Checklist (Dealer's Responsibility)

It is the dealer's responsibility to complete all pre-assembly of the TLOB before delivery to the customer. Pre-assembly instructions follow on page 9, 10.

Inspect the equipment thoroughly after pre-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.

_____ 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.

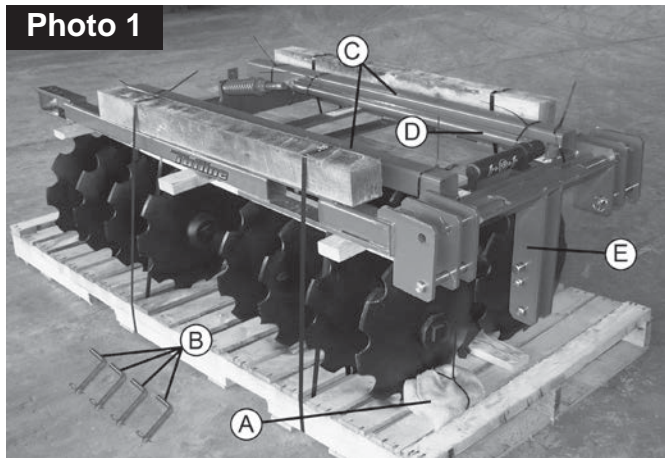
Dealer Instructions

Pre-Assembly

The TLOB is shipped from the factory unassembled. Most of the main frame assembly can be done with the frame resting on top of the gangs just as you received it (Reference Photo 1). When assembly is complete tighten all bolts according to the Torque and Bolt Chart on page 19.

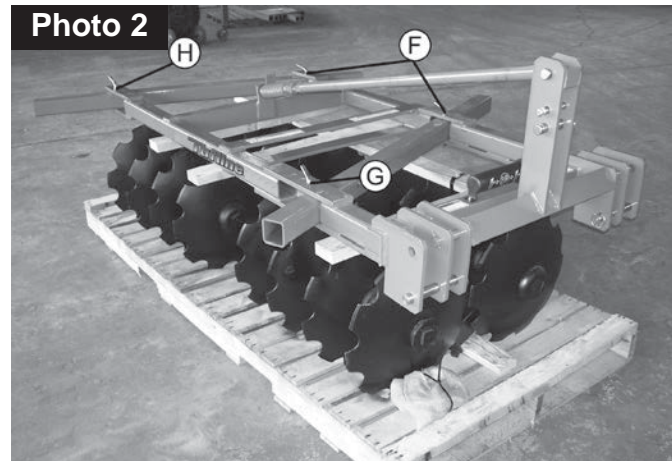
Remove the bag from the pallet (Photo 1, Ref. A), which contains the angle adjusting pins (Ref. B). Cut only the bands which are holding the gang beams (Ref. C), adjusting tube weldment (Ref. D)

Photo 1



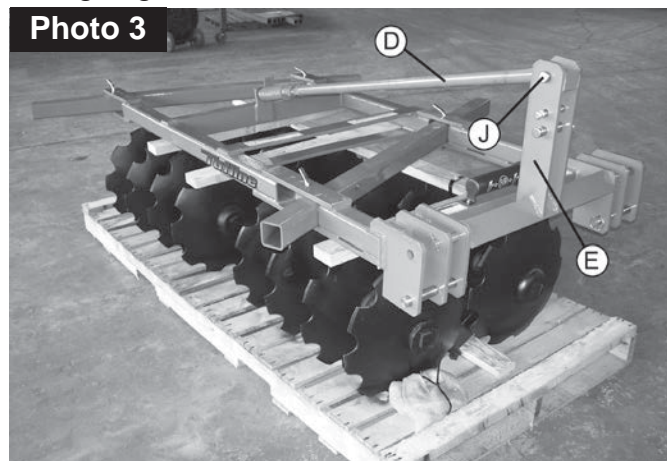
and the mast and pivot weldment (Ref. E). Once this is done reference the gang assembly chart (Page 10, Fig. 1). Find the model purchased and determine which beam is the front and which is the rear. This is determined by the distance from the end of the beam to the center of the hole in the beam. Once determined, slide each beam (front & rear) through the frame so the hole in the beam lines up with the single hole in the frame (Photo 2, Ref. F). Using the angle adjusting pins (Photo 1, Ref. B), place the pin through the frame and beam for both front and rear. The left side of beams should now

Photo 2



be stationary with the frame. To pin the right side of the beam, push the front beam forward as far as it will go. Place angle adjusting pin (Photo 1, Ref. B) in the first hole from the front (Photo 2, Ref. G). Place another angle adjusting pin (Photo 1, Ref. B) for the rear beam in the last hole from the front (Photo 2, Ref. H) and slide the rear beam back until it hits the pin. The unit is now in the most aggressive cutting angle.

Photo 3



To attach the adjusting tube (Photo 1 & 3, Ref. D) to the screw rod, place the nut end of the tube to the screw rod and turn clockwise. The adjusting tube should be screwed on far enough to attach the bushing end to the mast and pivot weldment (Photo 1 & 3, Ref. E). Rotate the mast and pivot weldment up and connect the two with the front pivot pin (Photo 3, Ref. J) which is already in the mast and pivot weldment. The adjusting tube may need to be adjusted in or out on the screw rod so the mast and pivot weldment is in an upright position.

Cut and remove all remaining bands from the pallet. Using a hoist, remove frame from pallet, leave the frame approximately 24" from the ground to allow for gang attachment. Reference the gang assembly chart (Page 10, Fig. 1). Find the model purchased and attach the gangs to the main frame using the u-bolts (Fig 2, Page 14, Ref. # 11) and hardware (Page 14, Fig 2, Ref. # 28 & #29) from the bag removed earlier. Position the gangs under frame using the diagram and measurements given on the gang assembly chart (Page 10, Fig. 1). Each model has one gang with an outrigger washer attached (Page 14, Fig 2, Ref. #22). This gang is to be placed on the right rear of the unit with the washer facing out.

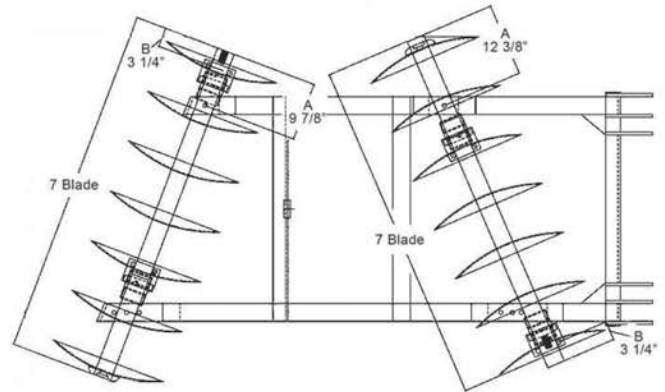
The SMV sign (Page 14, Fig 2, Ref. #43) should be bolted on with hardware provided on the back side of frame.

9 Dealer Instructions

TLO91420

TLOB Gang Assembly and
Gang Beam Placement
Figure 1

A - Measurement from end of gang beam to center of hole on gang beam.
B - Measurement from end of gang beam to center of u-bolt in hanger.

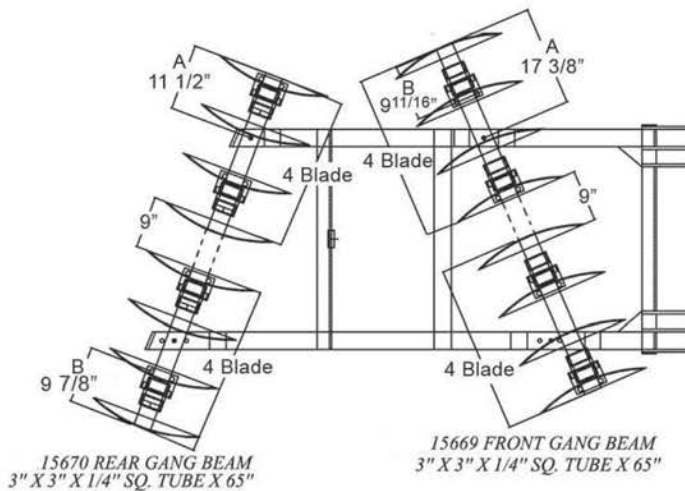


15668 REAR GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 60"

15667 FRONT GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 60"

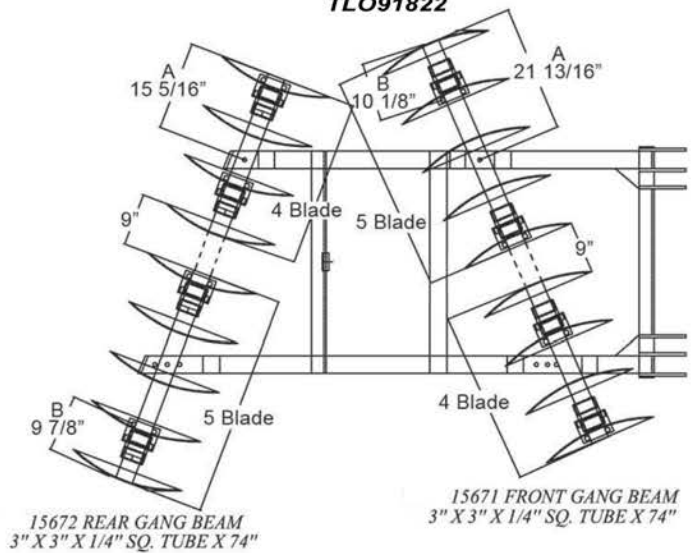
**TLO91620
TLO91622**

**TLO91820
TLO91822**



15670 REAR GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 65"

15669 FRONT GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 65"

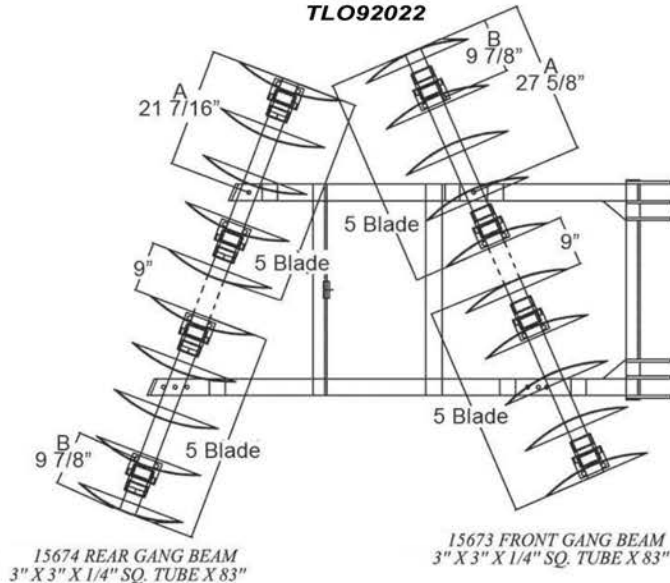


15672 REAR GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 74"

15671 FRONT GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 74"

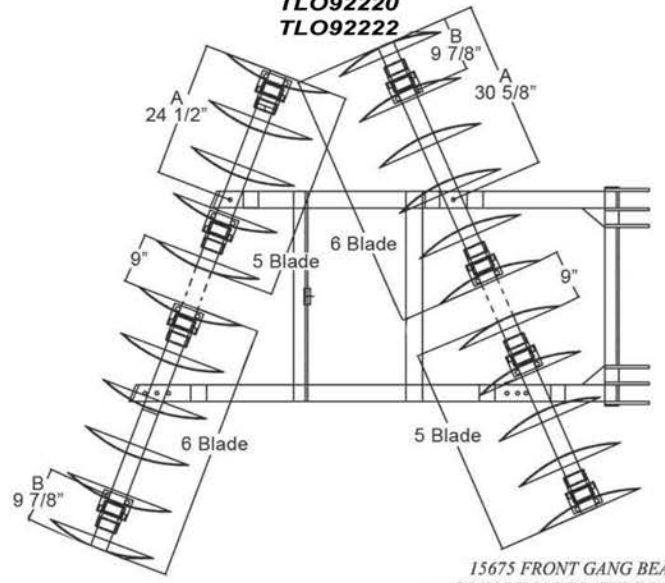
**TLO92020
TLO92022**

**TLO92220
TLO92222**



15674 REAR GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 83"

15673 FRONT GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 83"



15676 REAR GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 92"

15675 FRONT GANG BEAM
3" X 3" X 1/4" SQ. TUBE X 92"

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 3-7.

Owner should check and tighten all hardware after the first hour of operation. The break in stage of your new disc harrow can cause minimal loosening of disc gangs and other hardware as the new paint wears. Please see Bolt Torque Chart (page 19) for proper torque information.

WARNING

- 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 power unit 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 7.

____ 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.

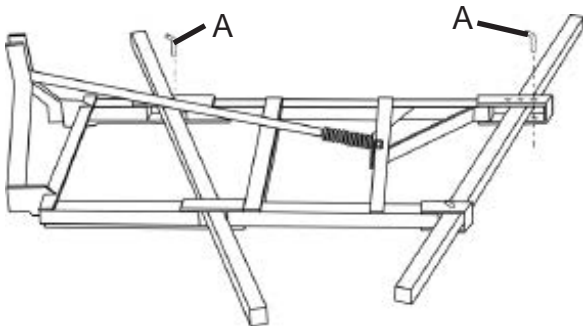
____ Make sure tractor ROPS or ROPS CAB and seat belt are in good condition. Keep seat belt securely fastened during operation.

Leveling Control

Most operating problems are caused by unequal pressure and penetration of the front and rear gangs. Adjust the three-point lift top link to obtain equal penetration by the front and rear gangs and stabilize the direction and side shift of the disk. Once it is set for a particular tractor, only minor adjustments will ever be required. The spring on the disc allows pressure controlled flexibility when obstructions and/or uneven terrain are encountered.

CAUTION

When making depth adjustments, be careful to keep hands and feet clear of sliding parts and possible pinch points.



Adjusting Gang Angles

The gang angles on the TLOB series disk are adjustable. The unit should be lifted two to three inches off the ground with the tractor hydraulic system for an easier adjustment. 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.

To adjust the front or rear gang angles remove the pin(A in figure below left) securing the gang on the side where there are multiple adjustment holes. Slide the gang to line up with the appropriate adjustment hole then re-insert the pin securing the gang.

CAUTION

When making gang adjustments, be careful to keep hands and feet clear of sliding parts and possible pinch points.

Gang Adjustment Trouble Shooting

- | | |
|---|---|
| <p>1. Unit not tracking or is fishtailing</p> <p>2. Unit not tracking: skipping, jumping, and fishtailing(in untilled, hard soil)</p> <p>3. Blades plugging with soil or trash.</p> | <p>A. Adjust top link to increase weight on the rear of the disc</p> <p>B. Disc assembled incorrectly. Refer to assembly instructions.</p> <p>A. Insure equal cut or depth on front and rear.</p> <p>B. Reduce speed.</p> <p>C. Reduce gang angle.</p> <p>D. Reduce depth of cut by carrying on 3 point lift discing shallow the first time over. NOTE: Some experimentation may be required by trial and error to arrive at proper solution.</p> <p>A. Add optional heavy scraper kit(Page 17). If already equipped, re-adjust them.</p> <p>B. Soil conditions not suitable for discing due to excessive moisture.</p> |
|---|---|

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.

WARNING

- Read Manual for service instructions or have service performed by a qualified dealer.

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.

Gang Assembly for Maintenance

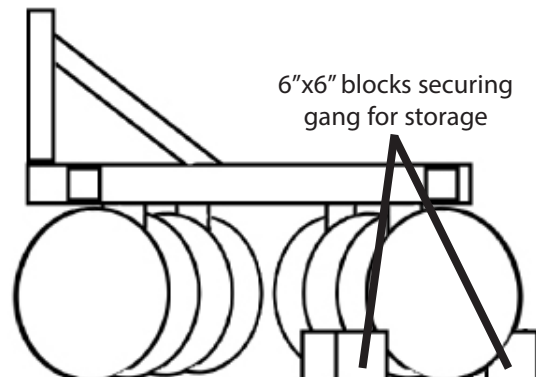
WARNING

- 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.

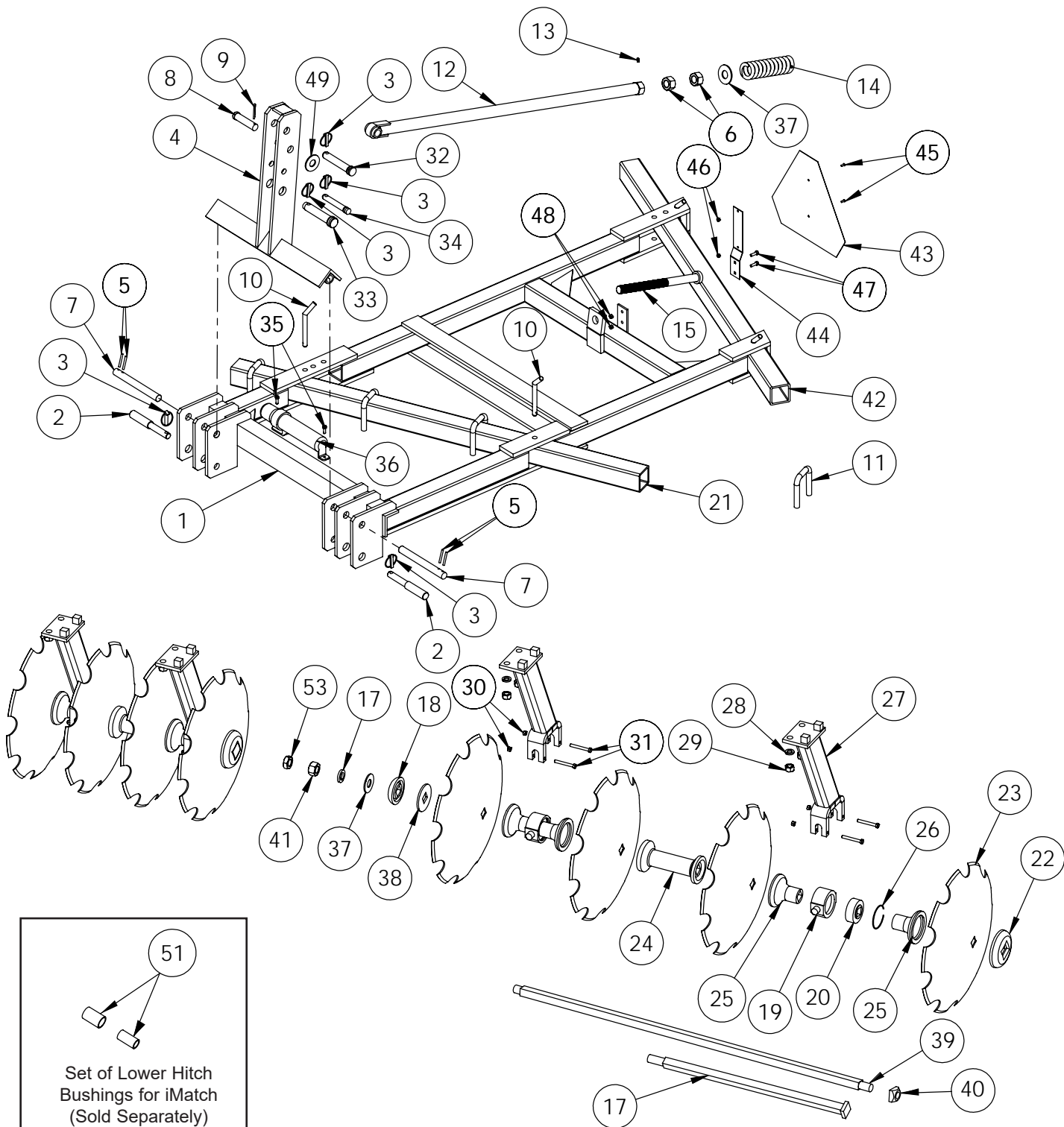
When gang component replacement is required, carefully observe all safety issues. Place unit on level ground prior to gang drop. Also make sure that gangs are blocked to keep them from rolling in either direction. After unit is lowered to ground and gangs are secure, loosen nuts on all hex bolts holding hangers to main frame. Observe the sequence and location of each gang component and refer to the gang diagram on Figure 1 for removal and replacement of the desired component. After replacement is completed reinstall gang parts in proper order as shown on gang diagram on Figure 1. 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 19 for proper torque.

Storage

When storing your disc harrow make sure the unit is placed on level ground and that the gangs are properly chocked by bracing with 6"x6" blocks on the front and rear side of one complete gang assembly. See the diagram below.



TLOB Parts Catalog
Figure 2



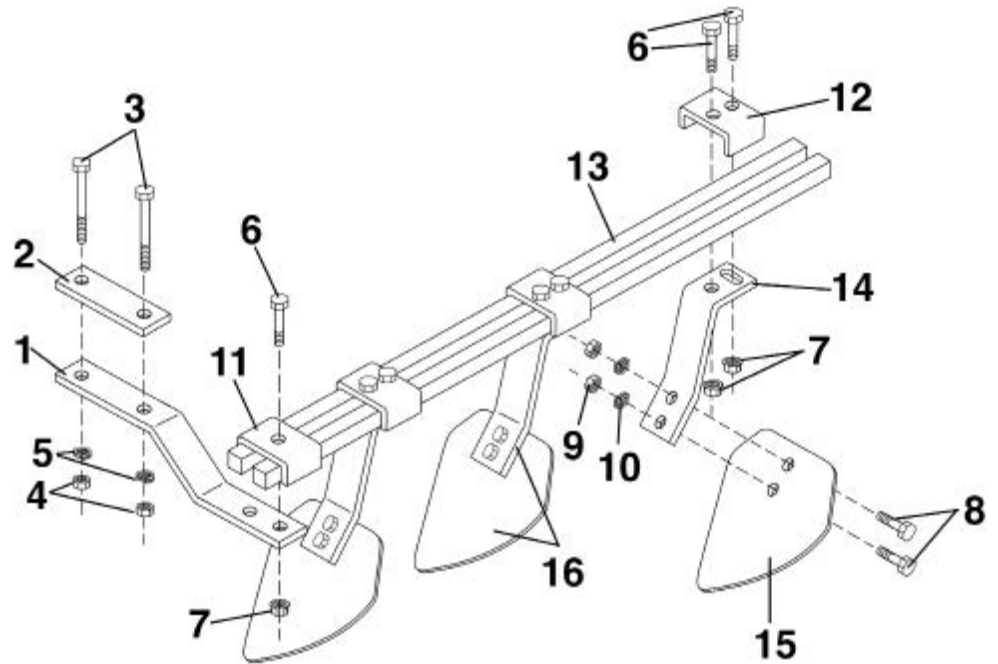
Ref.#	Part #	Description	Qty.
1	15640	MAIN FRAME, TLOB	1
2	13257	HITCH PIN, CAT. 1 & 2	2
3	VP252	LYNCH PIN	4
4	15641	MAST & PIVOT WELDMENT	1
5	10333	ROLL PIN	4
6	T18	HEX NUT, 1 1/8"	2
7	15647	MAST PIVOT PIN	2
8	15652	FRONT PIVOT PIN	1
9	15530	COTTER PIN, 3/16" X 2"	1
10	T718	ADJUSTING PIN	4
11	12029	U-BOLT, 3/4" FOR 3 X 3 BEAM	*MS
12	9410	ADJUSTING TUBE WELDMENT	1
13	T9	GREASE FITTING	1
14	T509	SPRING, 8 1/2"	1
15	9402	SCREW ROD	1
16	T20	LOCKWASHER, 1 1/8"	*MS
17	T13	AXLE, 1 1/8" X 31"	4
	T14	AXLE, 1 1/8" X 40"	2
	T142	AXLE, 1 1/8" X 41 3/4"	2
18	T1	END WASHER, 1 1/8"	*MS
19	TMB	TRUNNION BEARING HOUSING	*MS
20	T602	BEARING, 1 1/8" (W208PPB12)	*MS
21	15667	FRONT GANG BEAM, 60"	1
	15669	FRONT GANG BEAM, 65"	1
	15671	FRONT GANG BEAM, 74"	1
	15673	FRONT GANG BEAM, 83"	1
	15675	FRONT GANG BEAM, 92"	1
22	T2	BUMPER WASHER, 1 1/8" (FOR FRONT GANG)	*MS
	TOR1	OUTRIGGER WASHER, 1 1/8" (FOR REAR GANG-NOT SHOWN)	1
23	2201382	DISK BLADE, 20" X 1 1/8" NOTCHED	*MS
24	T3	SPACER SPOOL, 1 1/8" X 9"	*MS
25	T49	END SPACER, 1 1/8" X 3 3/4"	*MS
26	T722	SNAP RING, 3 1/2"	*MS
27	12102	TUBULAR GANG HANGER FOR 3 X 3 BEAM	*MS
28	T31	LOCKWASHER, 3/4"	*MS
29	T27	HEX NUT, 3/4"	*MS
30	12899	FLANGE LOCK NUT, 3/8"	*MS
31	T892	HEX BOLT, 3/8" X 3" GR. 5	*MS

Parts List (cont'd)

Ref.#	Part #	Description	Qty.
32	15208	CAT. 2 TOP LINK PIN	1
33	15651	CAT. 3 TOP LINK PIN	1
34	15206	CAT. 1 TOP LINK PIN	1
35	15348	SELF TAPPING SCREW, 5/16" X 1"	2
36	15189	ASSEMBLY MANUAL TUBE AND CAP	1
37	T698	FLATWASHER, 1 1/8"	*MS
38	11170	SPACER WASHER, 1 1/8"	*MS
39	11330	AXLE, 1 1/8" X 59 3/8"	2
40	11398	SQ. AXLE NUT, 1 1/8"	2
41	T18A	LOCK NUT, 1 1/8"	*MS
42	15668	REAR GANG BEAM, 60"	1
	15670	REAR GANG BEAM, 65"	1
	15672	REAR GANG BEAM, 74"	1
	15674	REAR GANG BEAM, 83"	1
	15676	REAR GANG BEAM, 92"	1
43	14996	SMV SIGN	1
44	14997	SMV MOUNTING BRACKET	1
45	15212	ROUND HEAD MACHINE SCREW, 1/8" X 1/2" GR. 2	2
46	15213	HEX NUT, 1/8"	2
47	14998	CARRIAGE BOLT, 5/16" X 1" GR. 2	2
48	15198	LOCK NUT, 5/16"	2
49	T606	FLATWASHER, 1"	1
50	TMBT602	TRUNNION HOUSING, BEARING, & SNAP RING ASSY.	*MS
51	15638	SET OF LOWER HITCH BUSHINGS FOR IMATCH	N/A
52	15194	SAFETY DECAL SHEET (INCLUDES 4 DECALS)	1
53	9401	JAM NUT, 1 1/8"	*MS

Optional Equipment

Heavy Scraper Kit
Figure 2



Ref.#	Part #	Description	Qty.
1	12892	SCRAPER MOUNT BRACKET (3X3) MODEL	*MS
2	12090	SCRAPER BAR TOP PLATE (3X3) MODEL	*MS
3	T745	HEX BOLT, 5/8" X 5" GR. 2	*MS
4	T22	HEX NUT, 5/8"	*MS
5	T24	LOCKWASHER, 5/8"	*MS
6	11082	HEX BOLT, 1/2" X 2 1/2" GR. 2	*MS
7	9226	FLANGE LOCK NUT, 1/2"	*MS
8	T733	HEX BOLT, 1/2" X 1 1/2" GR. 2	*MS
9	T26	HEX NUT, 1/2"	*MS
10	T25	LOCKWASHER, 1/2"	*MS
11	T803	SCRAPER BAR CLAMP, "U" CLAMP- 1 HOLE	*MS
12	9356	2- HOLE CLAMP	*MS
13	12462	HEAVY SCRAPER BAR, 59"	2
	T2644	HEAVY SCRAPER BAR, 63"	2
	11712	HEAVY SCRAPER BAR, 72"	2
	11731	HEAVY SCRAPER BAR, 82"	2
	11732	HEAVY SCRAPER BAR, 91"	2
14	10151	SCRAPER ARM	*MS
15	11081	UNIVERSAL SCRAPER BLADE	*MS
16	11027 or	ARM & BLADE ASSEMBLY (FRONT)	*MS
	11028	ARM & BLADE ASSEMBLY (REAR)	*MS

Heavy Scraper Kit Mounting Instructions

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

Reference Figure 2

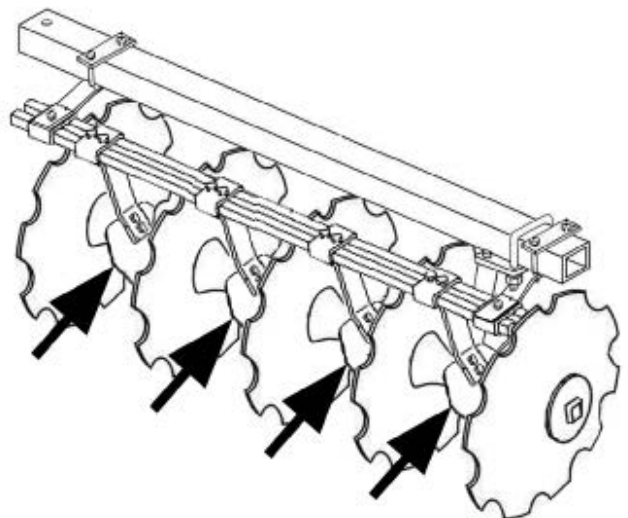
To attach heavy scraper kit to disc, place scraper bar top plate (ref. #2) on top of gang beam and scraper mount bracket (ref. #1) on bottom of gang beam. Using 5/8" x 5" Gr. 2 bolts (ref. #3), fasten both pieces together around gang beam with 5/8" lock washer and hex nut (ref. #4 & #5). There should be two scraper mount bracket assemblies for each gang beam with the placement being close to each gang hanger. Some adjustment 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 mount 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 bottom of scraper bar (ref. #13). There are two different sides of scraper arm & blade assemblies (ref. #16). One side fits the front, the other side fits the rear. When mounting scraper arm & blade assemblies (ref. #16) to bottom of scraper bar (ref. #13), use 2-hole clamp (ref. #12) on top of 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 & blade assemblies are not provided for right front and left rear blades! Once all scraper arm & blade 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 to gang beam and tighten scraper bar (ref. #13) to scraper mount bracket assembly 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 and torque Chart on page 19.

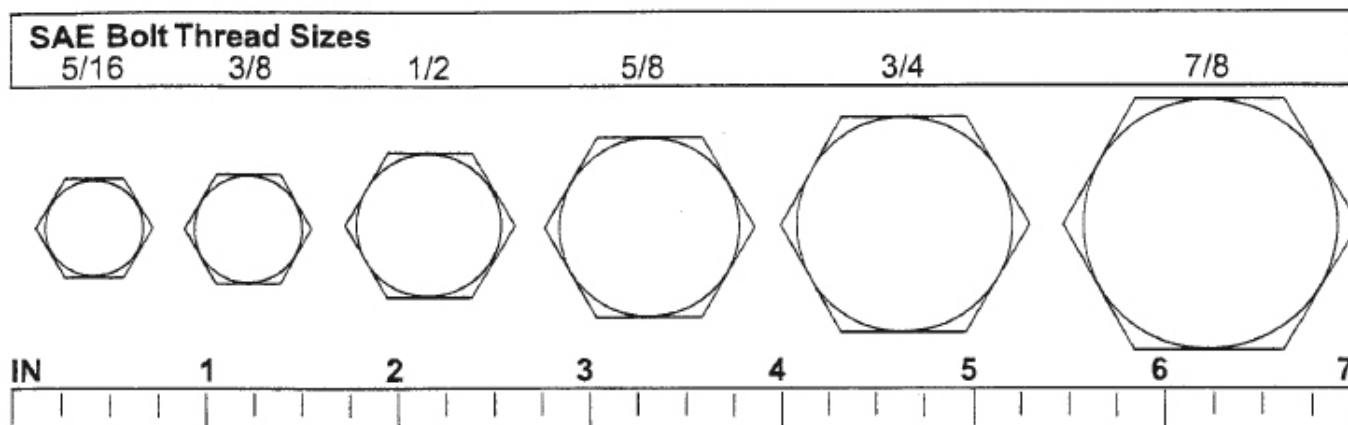
*NOTE- Re-tighten all fasteners after first operational use. Please see Bolt and Torque Chart on page 19.

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 right blade on the front gangs or the far left blade on the rear gangs.

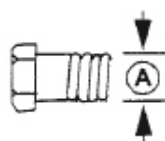


Bolt Size Chart

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

DH32 Series gang bolt torque 795 lbs-ft 1080 N-m

19 Bolt Size and Bolt Torque Chart

NOTES

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