TH & THF

SERIES

3 PT. LIFT TANDEM DISC HARROWS

BY TUFLINE

ASSEMBLY & OPERATING INSTRUCTIONS

MONROE-TUFLINE MANUFACTURING CO., INC.
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INTRODUCTION

We are pleased that you have chosen a TUFLINE product. To assist you in the assembly and safe operation of your unit, we are providing this booklet. We urge you to read this booklet and thoroughly familiarize yourself with all aspects of safety, assembly, and operation. **Note:** All information contained in this booklet is general in nature and to be used for instructional purposes only. Actual appearance, material and specifications may vary somewhat depending on the specific model being assembled or adjusted.

All references made to the left or right in this booklet are determined by standing a the rear of the machine and facing the direction of travel.

** DISCLAIMER**

Any modifications to this product without the specific permission of TUFLINE are not allowed. Unauthorized modifications beyond the original factory specifications could cause damage to the unit and void the warranty.

LIMITED WARRANTY

Monroe Tufline Mfg. Co. Inc., the manufacturer, warrants only to the original purchaser of new TUFLINE equipment that they are free of defects in material and workmanship under normal use and service. This warranty is applicable for six months form date of purchase if for personal use; 90 days for commercial or rental purposes. This warranty does not apply to any equipment which has been improperly assembled or which has been subjected to abuse, negligence, normal ear and tear, modifications, tampering or failure to follow operating instructions, or which has been used for a purpose for which the product is not designed. This warranty does not cover any parts not manufactured by Monroe-Tufline Mfg., Inc.

Claims shall be made to the dealer who originally sold the equipment. Warranty coverage is not valid unless the owner registration card below is completed and returned. All claims must be submitted within 30 days of equipment failure and faulted parts or equipment are subject for return to TUFLINE at TUFLINE'S expense and discretion. Monroe-Tufline reserves the right to make improvements and/or changes in specifications of the product at any time without notice or obligation to modify previously manufactured unit.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

Please fill out the registration card below and mail it to:
Monroe Tufline MFG. Attention: Owner Registration
P.O. Box 7755 Columbus, MS 39705

OWNER REGISTRATION

Name_____Address/City

State_____

Dealer Name_____ City/State_____

Date of Purchase_____Model No._____Serial #_____

Comments_____

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GENERAL SAFETY

⚠ Before hitching, always be certain that the proper hitch pins and retaining pins are available for each position. Use of incorrect parts can allow an unexpected and possibly disastrous partial or complete disconnection which can result in serious property damage and/or personal injury to the operator and others in the vicinity. Direct hitched equipment can be jerked up on top of the tractor. Jet blasts of escaping hydraulic fluid can severely injure also.

⚠ It is very important to throttle the engine to idle speed as the tractor is backed up to the implement and to keep helpers clear.

⚠ Be sure implement is solidly supported to prevent movement during hitching.

⚠ Never place hands or feet in possible "pinch holes" such as hitch pin holes.

⚠ Periodically check all hydraulic fluid hoses for damage or wear. Hydraulic fluid can injure your skin, blind you, or allow the implement to drop suddenly. Never operate the tractor hydraulic control while not in the tractor seat. Repair all hydraulic leaks immediately.

⚠ Never allow anyone close to the implement when the hydraulic components are being operated. Be sure that the air has been properly bled from the system and that the tractor system is full of of hydraulic fluid before operating. Air in the system can cause erratic operation.

⚠ Never allow anyone other than the operator to be on or around the tractor or implement when it being operated. NO RIDERS ANYWHERE! Most accidents are from falls off the tractor.

⚠ Check wheel bearings, wheel lugs, wing locks, and transport locks before starting and every 5 to 10 miles.

⚠ Use all legally required safety equipment during transport such as slow moving vehicle signs and flashing lights front and rear. Obey all applicable traffic regulations for such transportation. Watch for overheads such as power lines and low limbs.

⚠ If the equipment is "over width", use common sense courtesy by pulling off the road and stopping in order to let impatient traffic to pass.

⚠ Never transport at night without adequate front and rear caution lights.

⚠ Never transport at speeds over 20 MPH on highways or roads where bumps may exist. Be aware that heavy implements cannot withstand severe bouncing. Hitting bumps can cause accidents for not only the operator but others in the vicinity.

⚠ Stop the tractor engine and PTO and apply the parking brake before leaving the tractor seat.

⚠ Always operate at reasonable field speeds. Absolute maximum for earth working implements is 7 MPH. If terrain is uneven or obstructions are present, 1 1/2 to 3 MPH will probably be more productive and safer.

⚠ Use extra caution and slow speeds on steep slopes, near power lines, gullies, or trees.

⚠ Lower the implement to the ground before performing adjustments or maintenance.

⚠ If the implement cannot be lowered, keep all parts of your body clear and securely block the implement up to prevent accidental falling.

⚠ Never step on top of an implement's wheels or walk in the top of the frame. Falls can result in serious injury.

⚠ Never operate implement without all of the wheels. The implement may overturn.

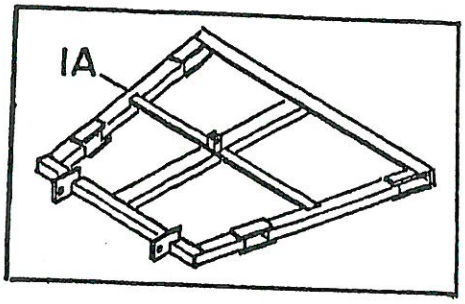
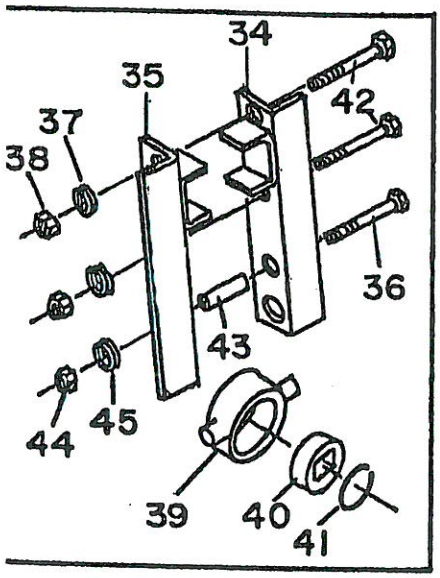


FIG. 1



THF/TH ANGLE HANGER OPTION

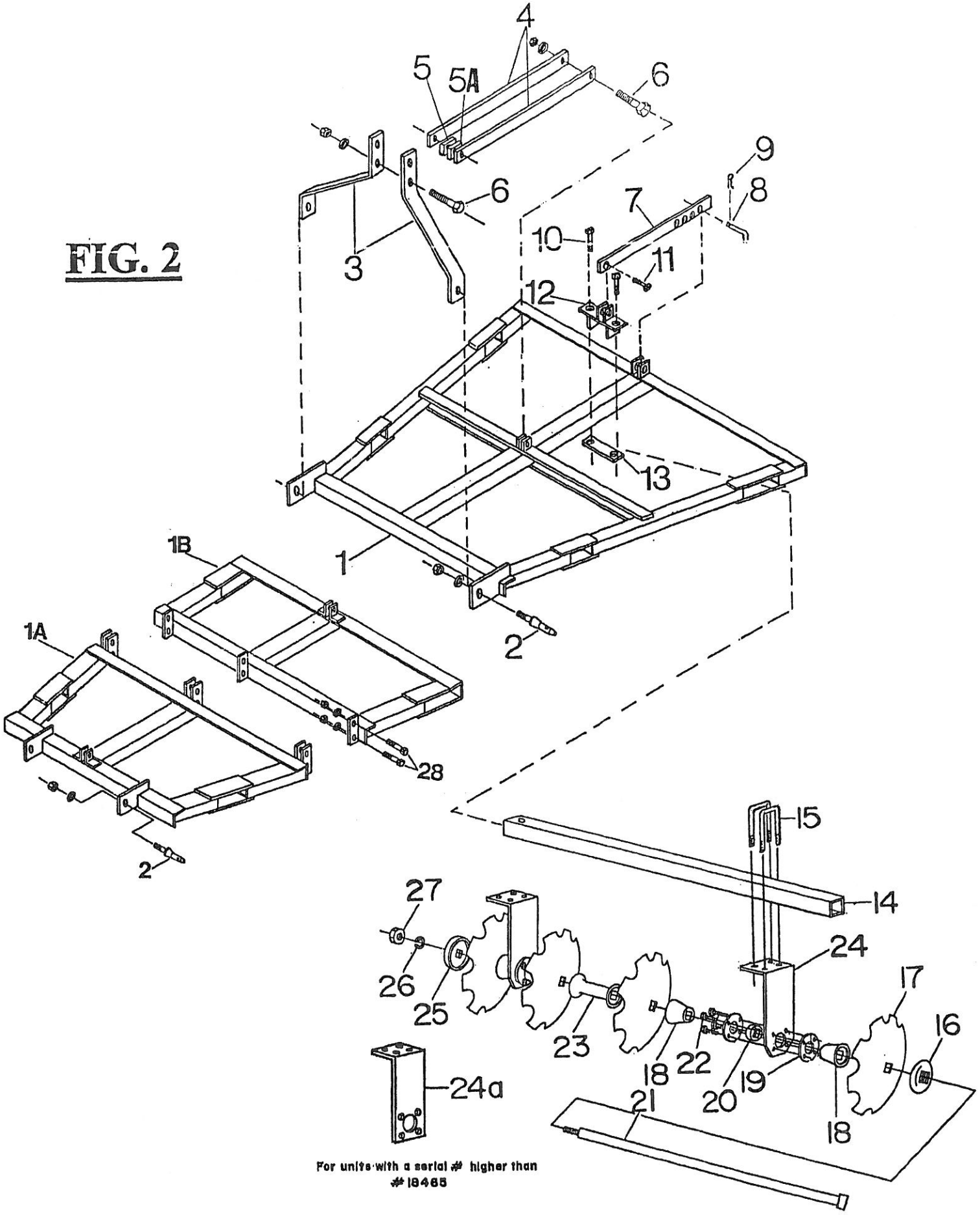
TH, THF

TH, THF
PILLOW BLOCK

REF. NO.	PART NO.	DESCRIPTION
1	9779	FRONT MAIN FRAME, THF
1A	9757	MAIN FRAME, TH
2	10623	REAR MAIN FRAME, THF
3	T-33	HITCH PIN, 7/8"
4	T-741	HEX BOLT 5/8" x 2 1/2"
5	T-690	A-FRAME HITCH, 2 1/2"
6	T-393	STRUT, 31 3/4"
7	T-391	STRUT SPACER, 1/2"
8	T-392	STRUT SPACER, 3/8"
9	T-725	HEX BOLT 5/8"x 3 3/4" GR.5
10	T-24	LOCKWASHER, 5/8"
11	T-22	HEX NUT, 5/8"
12	12443	REAR ADJ. BAR, 18 1/2"
NS	12444	FRONT ADJ. BAR, 22 1/2"
13	9690	ADJUSTING BAR PIN
14	T-745	HEX BOLT 5/8" x 5" GR. 2 THF & TH
15	9979	HAIR PIN CLIP
16	12895	SLIDE PLATE TOP THF,TH
17	T-18A	LOCK NUT, 1 1/8"
18	T-20	LOCKWASHER, 1 1/8"
19	T-1	END WASHER 1 1/8"
20		DISC BLADE
21	11506	SPACER SPOOL 1 1/8" x 9"
	11478	SPACER SPOOL 1 1/8" x 7 1/2"
22	T-48	END SPACER, 1 1/8" x 3 3/4"
	T-46	END SPACER, 1 1/8" x 3"
23	T-740	HEX BOLT, 5/8" x 2" GR. 2
24	T-60	BEARING 1 1/8" SQ.(W208PPB5)
25	TPB	PILLOW BLOCK BRG. HOUSING
26	T-2	BUMPER WASHER, 1 1/8" SQ.
27		AXLE, 1 1/8" SQ.
28	T-714	TOP CLAMP PLATE
29		GANG BEAM 3" x 3"
30	T-41	PILLOW BLOCK GANG HANGER
	12378	PB GANG HANGER, 22" BLADES
31	T-741	HEX BOLT 5/8" x 2 1/2" GR. 2
32	12896	SLIDE PLATE BOTTOM
33	T-56	BUSHING, 5/8" x 3 1/16"
34	T-683L	LH ANGLE HANGER, TH & THF
35	T-683R	RH ANGLE HANGER, TH & THF
36	T-735	HEX BOLT, 1/2" x 5 1/2" GR. 2
37	T-24	LOCKWASHER, 5/8"
38	T-22	HEX NUT, 5/8"
39	TMB	TRUNNION BEARING HOUSING
40	T-602	BEARING 1 1/8" SQ.(W208PPB12)
41	T-722	SNAP RING, 3 1/2"
42	T-746	HEX BOLT 5/8" x 5 1/2" GR. 2
43	T-822	PIPE SPACER, 1/2" x 4 1/8"
44	T-26	HEX NUT, 1/2"
45	T-25	LOCKWASHER, 1/2"

****NOTE: NOS. 34 - 45 ARE FOR THE ANGLE HANGER OPTION FOR THE TH & THF SERIES**

FIG. 2



TH/BF, THF/BF
BALL FLANGETTE

THF/BF, TH/BF
BALL BEARING FLANGETTE

REF. NO.	PART NO.	DESCRIPTION
1	12427	MAIN FRAME, TH/BF
1A	12428	FRONT MAIN FRAME, THF/BF
1B	12429	REAR MAIN FRAME, THF/BF
2	T-33	HITCH PIN, 7/8"
3	T-690	A-FRAME HITCH, 2 1/2"
4	T-393	STRUT, 31 3/4"
5	T-391	STRUT SPACER, 1/2"
5A	T-392	STRUT SPACER, 3/8"
6	T-725	HEX BOLT, 5/8" x 3 3/4", GR. 5
7	12443	REAR ADJUSTING BAR, 18 1/2"
NS	12444	FRONT ADJUSTING BAR, 22 1/2"
8	9690	ADJUSTING BAR PIN
9	9979	HAIR PIN CLIP
10	T-745	HEX BOLT 5/8" x 5", GR. 2 TH/BF&THF/BF
11	T-741	HEX BOLT 5/8" x 2 1/2', GR. 2
12	12895	TOP ADJUSTING PLATE, TH/BF & THF/BF
13	12896	BOTTOM AJDUSTING PLATE
14		GANG BEAM 3" x 3" TH/BF
15	11139	U-BOLT, 5/8" FOR 3" x 3" TUBING TH/BF
16	T-2	BUMPER WASHER, 1 1/8" SQ.
17		DISC BLADE
18	T-48	END SPACER, 1 1/8" SQ. x 9"
	T-46	END SPACER, 1 1/8" SQ. x 7 1/2"
19	11479	FLANGETTE, 1 1/8"
20	T-60	BEARING, 1 1/8" SQ. (W208PPB5)
21		AXLE, 1 1/8" SQ.
22	T-804	CARRIAGE BOLT, 1/2" x 1 ½", GR. 2
23	11506	SPACER SPOOL, 1 1/8" SQ. x 9"
	11478	SPACER SPOOL, 1 1/8" SQ. x 7 1/2"
24	12423	GANG HANGER
24a	14419	GANG HANGER, CAST IRON, for models with a serial # higher than 18465
25	T-1	END WASHER, 1 1/8" SQ.
26	T-20	LOCK WASHER, 1 1/8"
27	T-18A	HEX LOCK NUT, 1 1/8"
28	9192	HEX BOLT, 5/8" x 1 1/2", GR. 5

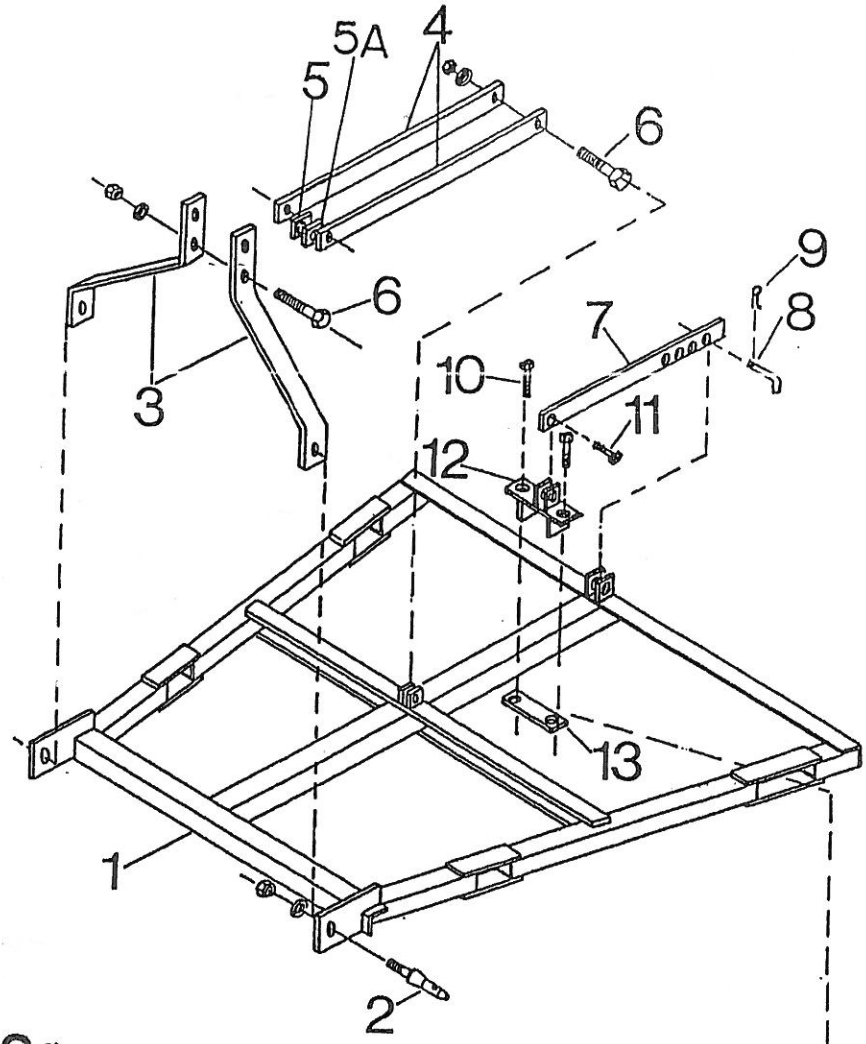
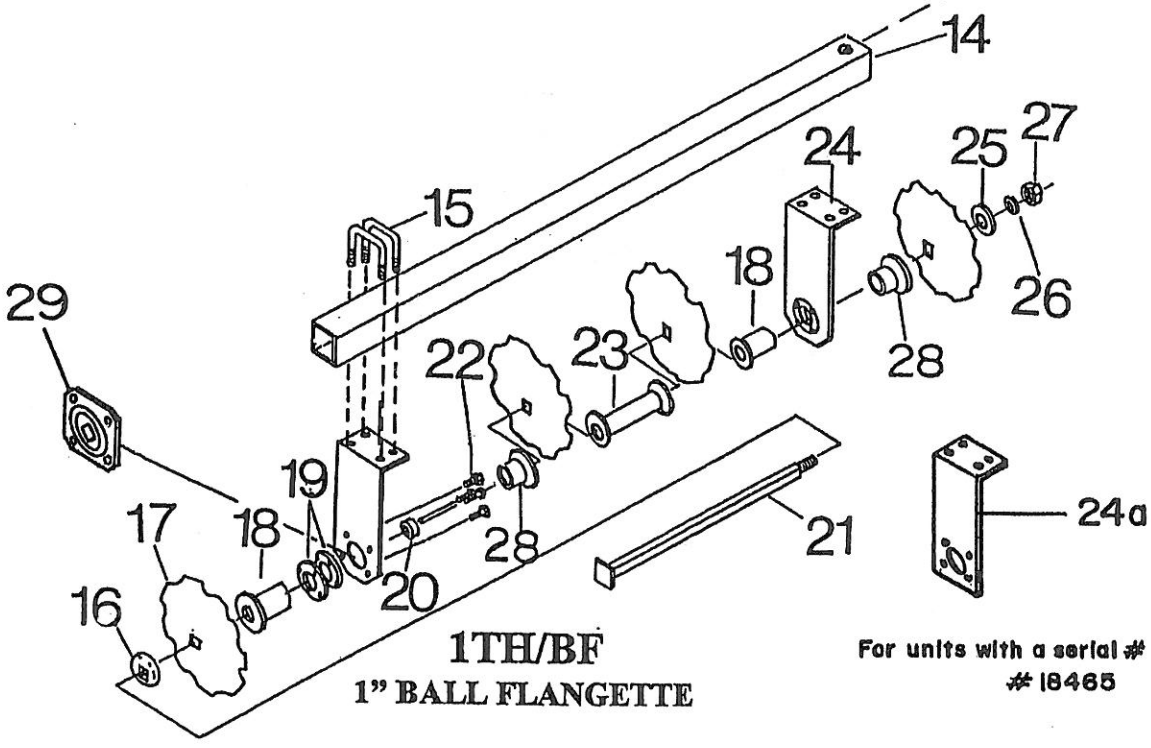


FIG. 2a

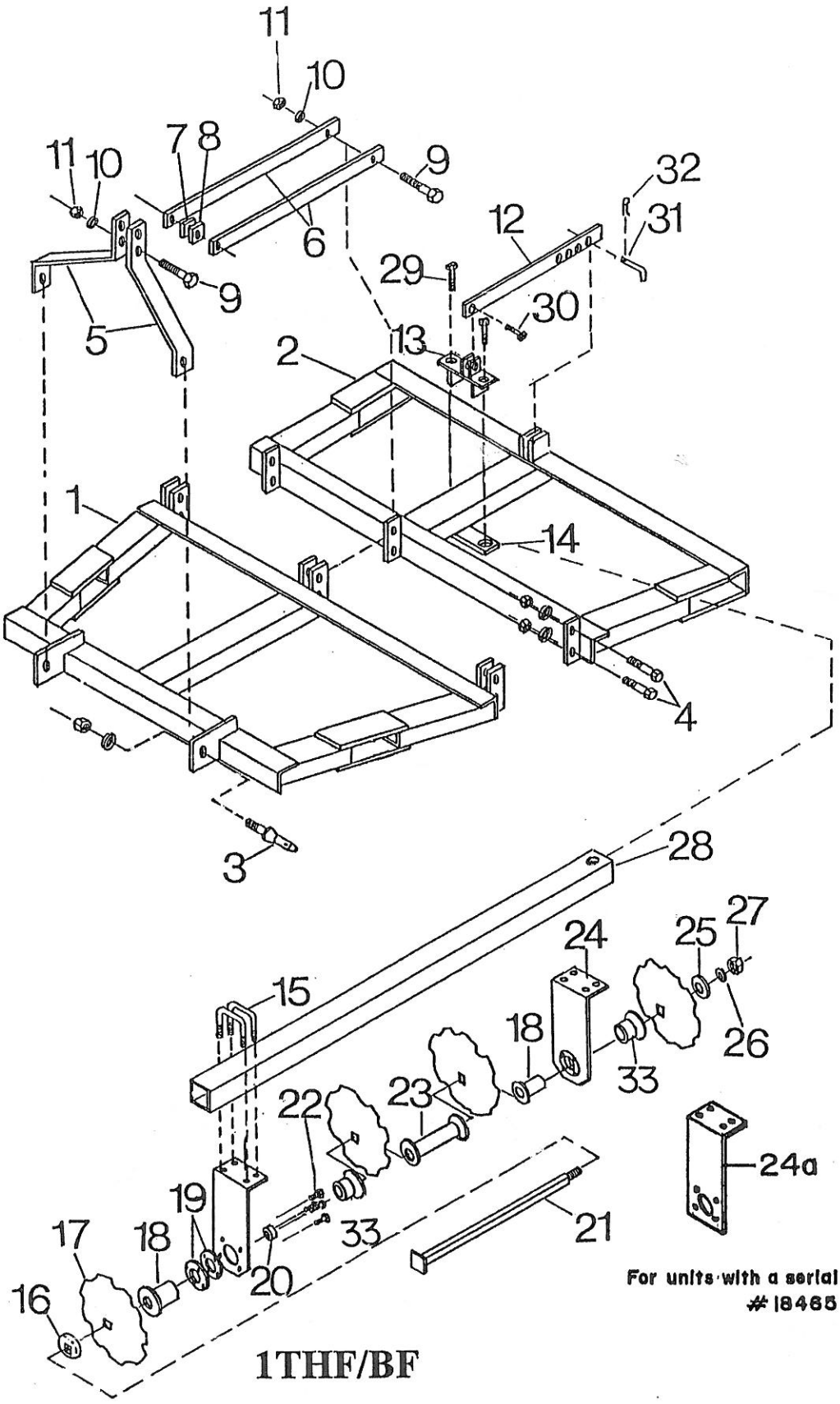


1TH/BF
1" BALL FLANGETTE

For units with a serial # higher than # 18465

1TH/BF

REF. NO.	PART NO.	DESCRIPTION
1	12427	MAIN FRAME
2	T-33	DRAFT PIN, 7/8"
3	T-690	A-FRAME HITCH, 2 1/2"
4	T-393	STRUT, 31 3/4"
5	T-391	STRUT SPACER, ½"
5a	T-392	STRUT SPACER, 3/8"
6	T-725	HEX BOLT, 5/8"
7	12443	REAR ADJUSTING BAR, 18 ½"
NS	12444	FRONT ADJUSTING BAR, 22 ½"
8	9690	ADJUSTING BAR PIN
9	9979	HAIR PIN CLIP
10	T-745	HEX BOLT, 5/8" x 5", GR. 2
11	T-741	HEX BOLT, 5/8" x 2 1/2", GR. 2
12	12895	TOP ADJUSTING PLATE
13	12896	BOTTOM ADJUSTING PLATE
14		GANG BEAM (SEE CHART ON PAGE 73)
15	11139	U-BOLT, 5/8" FOR 3 x 3 TUBING
16	13423	BUMPER WASHER, 1" SQ.
17		DISC BLADE (SEE CHART ON PAGE 65)
18	13428	END SPACER , 1" x 5 1/8" (for 9" spacing)
	13427	END SPACER, 1" x 3 5/8" (for 7 ½" spacing)
19	11479	FLANGETTE
20	13418	BEARING, 1" SQ. (W208PPB6)
21		AXLE (SEE CHART ON PAGE 68)
22	T-804	CARRIAGE BOLTS, ½" x 1 1/2", GR. 2
23	13425	SPACER SPOOL, 1" x 9"
	13424	SPACER SPOOL, 1" x 7 1/2"
24	12423	GANG HANGER
24a	14419	BF GANG HANGER, CAST IRON (for units with a serial # higher than #18465)
25	13422	END WASHER, 1" SQ.
26	T-34	LOCKWASHER, 1"
27	10332	HEX LOCK NUT, 1"
28	13426	END SPACER, 1" SQ. FOR 7 ½" & 9" spacing
29	13689	BEARING IN FLANGE HOUSING



1" BALL FLANGETTE

1THF/BF

REF. NO.	PART NO.	DESCRIPTION
1	12428	FRONT MAIN FRAME
2	12429	REAR MAIN FRAME
3	T-33	DRAFT PIN, 7/8"
4	9192	HEX BOLT, 5/8" X 2 ½", GR. 5
5	T-690	A-FRAME HITCH, 2 1/2"
6	T-393	STRUT, 31 3/4"
7	T-391	STRUT SPACER, ½"
8	T-392	STRUT SPACER, 3/8"
9	T-725	HEX BOLT, 5/8" X 3 ¾", GR. 5
10	T-24	LOCK WASHER, 5/8"
11	T-22	HEX NUT, 5/8"
12	12443	REAR ADJUSTING BAR, 18 ½"
NS	12444	FRONT ADJUSTING BAR, 22 ½"
13	12895	TOP ADJUSTING PLATE
14	12896	BOTTOM ADJUSTING PLATE
15	11139	U-BOLT, 5/8" FOR 3 x 3 TUBING
16	13423	BUMPER WASHER, 1" SQ.
17		DISC BLADE (SPECIFY SIZE)
18	13428	END SPACER , 1" x 5 1/8" (for 9" spacing)
	13427	END SPACER, 1" x 3 5/8" (for 7 ½" spacing)
19	11479	FLANGETTE
20	13418	BEARING, 1" SQ. (W208PPB6)
21		AXLE (SPECIFY SIZE)
22	T-804	CARRIAGE BOLTS, ½" x 1 1/2", GR. 2
23	13425	SPACER SPOOL, 1" x 9"
	13424	SPACER SPOOL, 1" x 7 1/2"
24	12423	GANG HANGER
24a	14419	BF GANG HANGER, CAST IRON (for units with a serial # higher than #18465)
25	13422	END WASHER, 1" SQ.
26	T-34	LOCKWASHER, 1"
27	10332	HEX LOCK NUT, 1"
28		GANG BEAM (SPECIFY LENGTH)
29	T-745	HEX BOLT, 5/8" x 5", GR. 2
30	T-741	HEX BOLT, 5/8" x 2 1/2", GR. 2
31	9690	ADJUSTING BAR PIN
32	9979	HAIR PIN CLIP
33	13426	END SPACER, 1" SQ. FOR 7 ½" & 9" spacing

ASSEMBLY

MAIN FRAME:

Refer to Fig. 1 or 2 depending on which model you have. Lay the frame on stands approximately 24" tall. Insert short gang beams in the front and longer beams in the rear of the frame. Note: Many frames are shipped from the factory with gang beams and slide plates installed.

Assemble the slide plates on the center member of the main frame with the front slide plate in the extreme forward position. Insert the drilled end of the gang beam into the slide plate and fasten with the 5/8" x 4" hex bolt for the TH series.

Attach the A-frame, Ref. 3, to the hitch ears of the main frame with the hitch pins, Ref. 2. Next connect the struts, Ref. 4, to the A-frame top and the main frame using the 5/8" x 3 3/4" hex bolts, Ref. 7.

Note the placement of the adjusting bars to the slide plate and main frame. Front adjusting bar is usually longer than the rear bar. The adjusting bar is held in place on the slide plate with a 5/8" x 2 1/2" hex bolt. The adjusting bar pin holds the bar in place on the main frame. These adjusting bars allow quick adjustment of the gang angles.

GANGS:

Gangs are shipped loosely assembled less the disc blades. Carefully observe the sequence and location of each spool and bearing. Disassemble gangs in order to reassemble them with the disc blades. Be careful to put each blade, spool, and bearing back into its proper location. After reassembly, tighten each axle nut to the proper torque as specified in the torque chart on page

⚠ **CAUTION:** Tighten by hand. Do not rely on an impact wrench because proper torque is critical to trouble free operation of your unit.

Arrange disc gangs under the gang beams. The front gangs are mounted with the blade concavity turned out and the rear gangs with the concavity turned in. Note: The outside rear 1 1/8" gangs are shipped equipped with outrigger washers. On gangs with combination spacing, the 9" spacing is always mounted on the front and the 7 1/2" spacing on the rear of the disc.

Pillow block hangers are placed underneath the gang beam and the gang beam strap goes on top of the gang beam. See Fig. 1. Align holes and clamp the top strap and the gang hanger together onto the gang beam with the 5/8" x 5" Gr. 5 hex bolt for the TH.

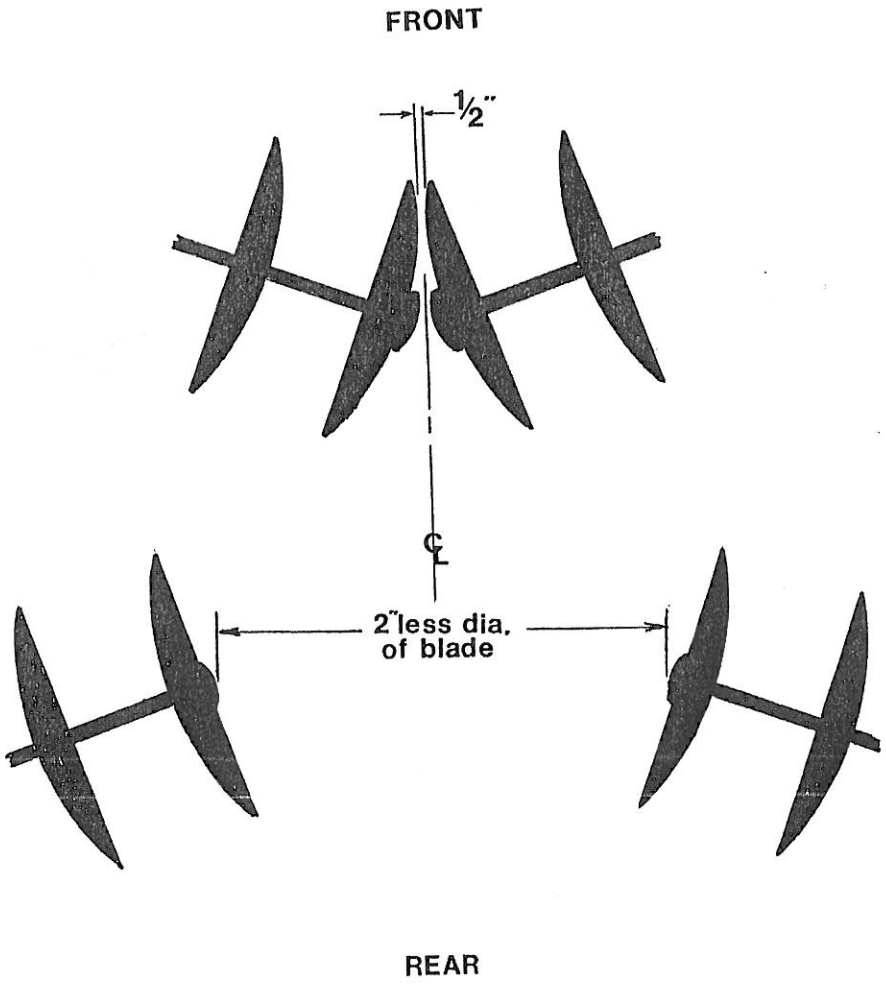
Flangette hangers are also placed underneath the gang beam and fastened onto the beam using the 5/8" U-bolt. See Fig. 2.

GANG ADJUSTMENT:

Locate the center of the main frame and position the front gangs so that the bumper washers and the disc blades of each gang are an equal distance from the center of the unit and 1/2" apart from on another. See Fig.3

The spacing of the rear gangs depends on the size of the disc blades use on the unit. Spacing is usually 2" less than the diameter of the disc blade. For example: If the unit has 20" disc blades, the spacing should be 18" between the axle nuts of each gang. Again locate the center of the main frame and equally space the gangs from than point.

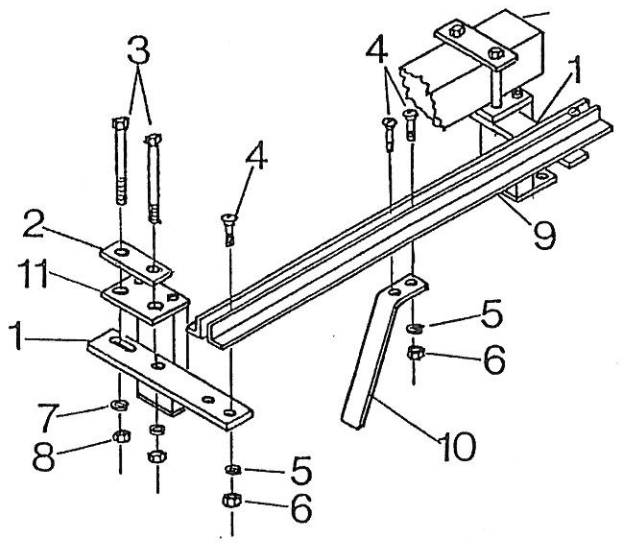
When the gangs are their proper positions, tighten all hanger bolts to the proper torque as specified in the torque chart.



SCRAPER KITS:

Two different scraper kits are available for the 3 pt. lift disc harrows. They are the RSK (regular scraper kit) and the SK (heavy scraper kit). Each scraper kit contains the components to outfit one complete unit with scraper blades. We do not provide scraper blades for the outside front and inside rear disc blades.

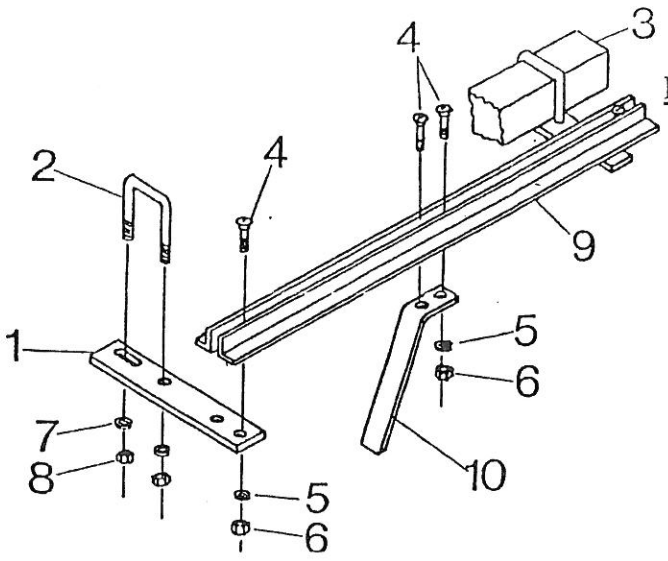
RSK - Regular Scraper Kit: Refer to Fig. 4 for scraper attachment to harrows with pillow block or friction hangers. Mount the universal scraper mounting bracket, Ref. 1, underneath the top plate of the pillow block or friction hanger using the 5/8" hex bolts, Ref. 3. These bolts should go through the clamp plate, hanger, and mounting bracket. The mounting bracket should be placed so that the scraper bar is on the rear o the gang beam. Place the scraper bar, Ref. 9, on top of the mounting bracket and secure with the 1/2" x 2" carriage bolts, Ref. 4. Scrapers mount underneath the scraper bar with 1/2" x 2" carriage bolts. Position each scraper blade as close to the disc blade as possible without touching it. Turning the gang after mounting and tightening each scraper blade is recommended to prevent dragging or binding of the gang. After all scraper blades are correctly adjusted, tighten each bolt to approximately 40 ft./lb.



REF. NO.	PART NO.	DESCRIPTION
1	12889	SCRAPER BAR MTG. BRACKET
2	T-714	TOP GANG BEAM STRAP
3	T-746	HEX BOLT, 5/8" x 5 1/2" GR. 2 for 3 x 3 GANG BEAM
	T-744	HEX BOLT, 5/8" x 4 1/2" GR. 2 for 2 x 3 GANG BEAM
4	T-805	CARRIAGE BOLT, 1/2" x 2"
5	T-25	LOCKWASHER, 1/2"
6	T-26	HEX NUT, 1/2"
7	T-24	LOCKWASHER, 5/8"
8	T-22	HEX NUT, 5/8"
9		SCRAPER BAR
10	T-265	REGULAR SCRAPER BLADE
11		FRICTION OR PB HANGER

FIG. 4
REGULAR SCRAPER KIT (RSK)
PILLOW BLOCK or FRICTION GANG HANGERS

Figure 5 is for mounting scrapers on units with flangette hangers. The scraper mounting bracket is clamped directly onto the gang beam completely independent of the gang hanger. Place the mounting bracket, Ref. 1, underneath the gang beam with the 5/8" U-bolt, Ref. 2, going over the gang beam and into the mounting bracket. Use the same procedure for mounting the scraper bar and scraper blades as stated above for the pillow block hangers.



REF. NO.	PART NO.	DESCRIPTION
1	12889	SCRAPER BAR MTG. BRACKET
2	11139	U-BOLT, 5/8" for 3 x 3 GANG BEAM
	12038	U-BOLT, 5/8" for 2 x 3 GANG BEAM
3		GANG BEAM
4	T-805	CARRIAGE BOLT, 1/2" x 2"
5	T-25	LOCKWASHER, 1/2"
6	T-26	HEX NUT, 1/2"
7	T-24	LOCKWASHER, 5/8"
8	T-22	HEX NUT, 5/8"
9		SCRAPER BAR
10	T-265	REGULAR SCRAPER BLADE

FIG. 5
REGULAR SCRAPER KIT
FOR MODELS WITH BF GANG HANGERS

SK - HEAVY SCRAPER KIT:

The heavy scraper kit assembly is shown in Fig. 6. As with the regular kit, the scraper mounting bracket, Ref. 1, is clamped underneath the gang beam with the top clamp plate, Ref. 2, using the 5/8" hex bolts, Ref. 3. The mounting bracket is placed so that the scraper bar is on the rear of the gang beam. Place the scraper bar, Ref. 13, on top of the mounting bracket and secure with the one hole clamp, Ref. 11, and the 1/2" x 2 1/2" hex bolts, Ref. 6. Scraper arm and blade assemblies, Ref. 16, come assembled from the factory with half being right hand and the other half left hand. Bolt the scraper arm and blade assembly, Ref. 16, underneath the scraper bar using a two hole clamp, Ref. 12, and two 1/2" x 2 1/2" hex bolts, Ref. 6. Mount a scaper blade to each disc blade except the outside front and the inside rear disc blades. Position each scraper as near to the disc blade as possible at the center without touching it. The mounting arm, Ref. 14, has a slotted hole for angular adjustment to more closely fit the blade concavity. Turning the gang after mounting is recommended to prevent dragging or binding of the gang. After all scrapers are correctly adjusted, tighten the bolts to approximately 50 ft./lb.

SK - HEAVY SCRAPER KIT

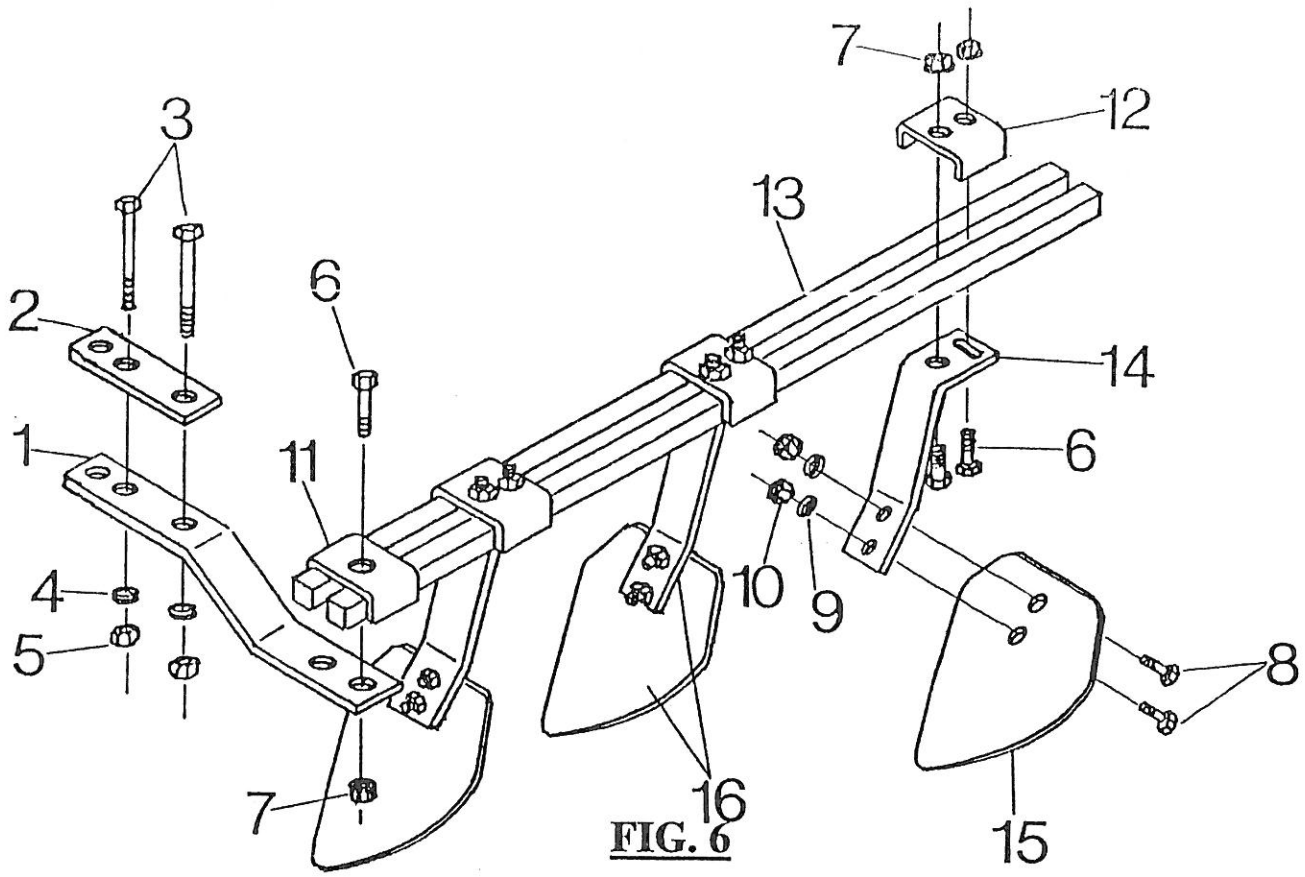


FIG. 6

REF. NO.	PART NO.	DESCRIPTION
1	12892	SCRAPER BAR MOUNTING BRACKET
2	12894	TOP CLAMP PLATE
3	T-745	HEX BOLT, 5/8" x 5", GR. 2 FOR 3 x 3 TUBE
4	T-24	LOCKWASHER, 5/8"
5	T-22	HEX NUT, 5/8"
6	11082	HEX BOLT, 1/2" x 2 1/2", GR. 2
7	9226	FLANGE LOCK NUT, 1/2"
8	T-733	HEX BOLT, 1/2" x 1 1/2", GR. 2
9	T-25	LOCKWASHER, 1/2"
10	T-26	HEX NUT, 1/2"
11	T-803	CLAMP, 1 HOLE
12	9356	CLAMP, 2 HOLE
13		SCRAPER BAR, 1" SQ.
14	10151	SCRAPER ARM
15	11081	SCRAPER BLADE
16	T-8023	ARM & BLADE ASSY. (RH FRONT, LH REAR)
	T-8024	ARM & BLADE ASSY. (LH FRONT, RH REAR)

LUBRICATION

All Tufline ball bearing harrows are shipped with triple sealed ball bearings unless specifically ordered with regreasible type bearings. Sealed bearings require no lubrication since they are pre-lubricated by the manufacturer. All friction bearings should be thoroughly lubricated before each use and again after every five hours of use. Regular lubrication is essential to the life of the bearing. Failure to lubricate will result in promoting bearing failure.

INITIAL ADJUSTMENT

Your harrow should be ready for use after proper assembly and lubrication. As in any new machine, all bolts and nuts should be checked to insure that they are tight prior to use. Pay special attention to axle nuts and gang hanger bolts. If the harrow has been in storage for a lengthy period of time, it is recommended that it be lubricated before use. It is important that only one adjustment be made at a time and then try the harrow between each adjustment. Remember each adjustment affects another; therefore, extreme care should be used when adjusting. Keep in mind that any disc with 7 1/2" spacing is primarily a pulverizing disc and will perform much better in tilled soil. Normally a blade spacing of 9" or 10 1/2" is recommended for cutting untilled soil.

Each trial run should be made with the tractor in the same gear and approximately the same RPM. Changing disking speed while attempting to adjust will result only in excessive time and labor loss due to changing conditions.

While making your first trial run, observe the disc closely as it travels. It should be level from front to rear. If not, level it by adjusting the tractor top link. After making the necessary adjustments, the disc should pull level with both front and rear gangs penetrating the soil at approximately the same depth.

Now observe the soil behind the disc. It should be level and smooth. If after making above adjustments and the disc leaves a water furrow in the center (example: ⟩⟨), it 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 disc is ridging, that is leaving a ridge behind it (example: ⟨⟩), this would indicate that the rear gang is more agressive than the front gang. To correct this problem, either decrease the angle of the rear gangs or increase the angle of the front gangs.

Keep in mind that many variables affect the operation of your disc. These include, but are not limited to, penetration, speed, soil conditions, etc. Ant changes in one of these could cause a need for further adjustments. The final adjustment will be the one that best meets the requirement of the user.

TUFLINE BOLT TIGHTENING TORQUE CHART

BOLT or AXLE SIZE	DESCRIPTION	FT./LBS. TIGHTENING TORQUE LUBRICATED THREADS, SAE OR ASTM GRADE 2	3	5
1/2"	HEX BOLT	45		75
5/8"	HEX BOLT	93		150
3/4"	HEX BOLT	150		250
7/8"	HEX BOLT	202		378
7/8"	GANG AXLE	250		
1"	HEX BOLT	300		583
1 1/8"	HEX BOLT	474		782-78*
1 1/8"	GANG AXLE		700-70*	

* Torque wrenches are not ordinarily available for these torques. Complete tightening process with a 10 ft. lever measure from the center of the wrench using the last figure shown as pounds of force at the end of the lever. Spring scales may be used to check.

QUICK REFERENCE TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE SOLUTION
1. Unit nor tracking or is fishtailing	A. Adjust top link to increase weight on the rear of the disc. B. Disc assembled incorrectly. Refer to assembly instructions.
2. Unit not tracking: skipping, jumping, and fishtailing (In untilled, hard soil)	A. Insure equal depth of cut on front and rear. B. Reduce speed. C. Reduce gang angle. D. Reduce depth of cut by carrying on 3 pt. lift disking shallow first time over. NOTE: Some experimentation may be required by trial and error to arrive at the proper solution.
3. Unit leaving water furrow.	A. Increase speed. B. Increase angle on rear gangs. C. Decrease angle on front gangs. D. Disc not level. Lower rear gangs or raise the front gangs. E. Any combination of the above.
4. Unit ridging or leaving behind a high spot.	A. Decrease speed. B. Decrease angle on rear gangs. C. Increase angle on front gangs. D. Disc not level. Raise rear gangs or lower front gangs. E. Any combination of the above.
5. Unit leaving water furrows on outside of each rear gang.	A. Add optional T-703 outrigger attachments with a round disc blade about 4" smaller than stock blades. B. Taper the outside blade size on last one or two blades of each gang by replacing blades with blades decreasing in size.
6. Blades plugging with soil or trash.	A. Add optional regular or heavy scraper kit. If already equipped, readjust them. B. Soil conditions not suitable for disking due to excessive moisture content.
7. Unit leaving a balk between front inside gangs.	A. Add optional balkbreaker assembly.

SAFETY DECAL PLACEMENT

** **NOTE:** If safety decals have been damaged, removed, or become illegible, new decals must be applied. New decals are available from your distributor or dealer parts department or the factory.