

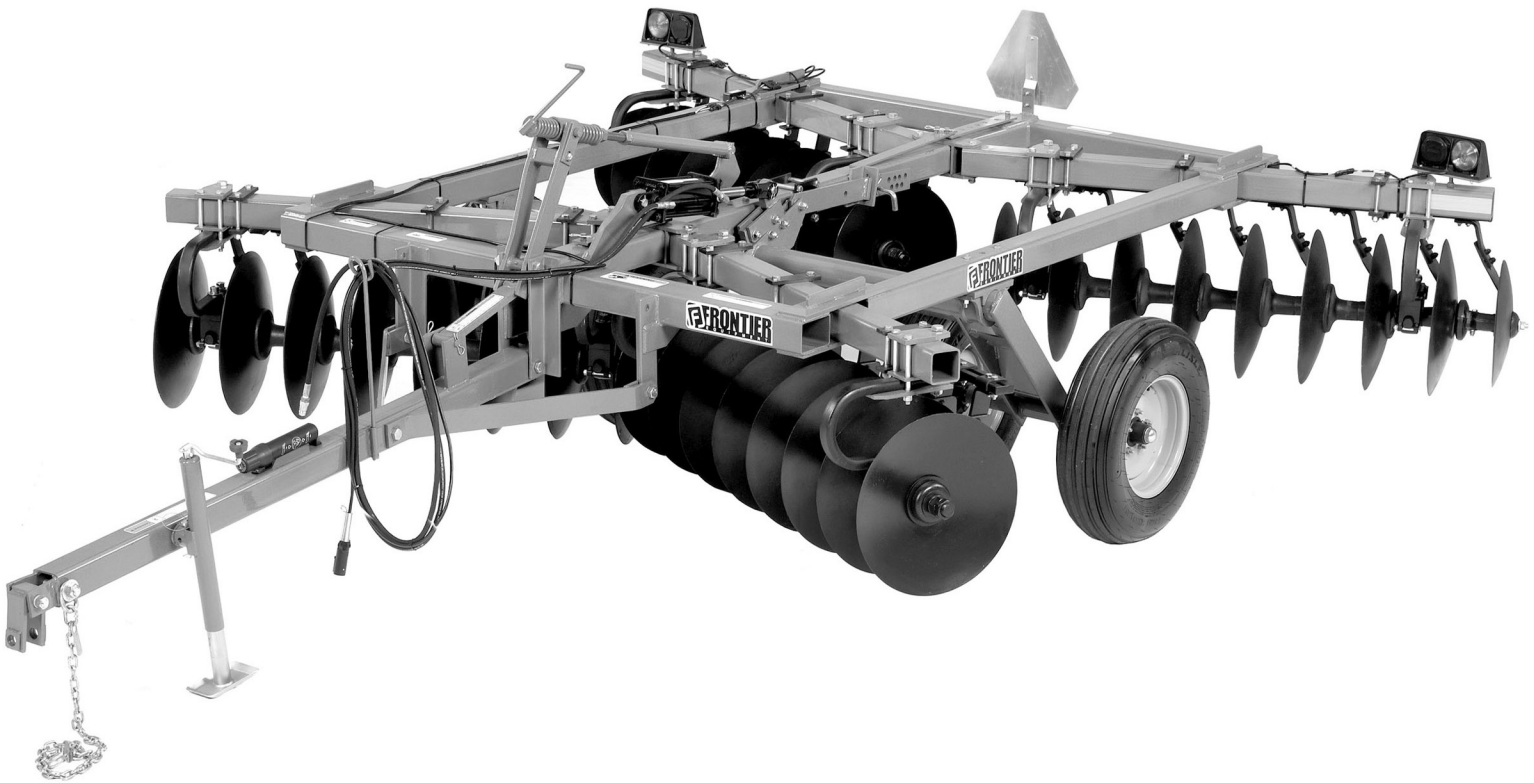
# DISK HARROWS

**DH1610**

**DH1613**

**DH1612**

**DH1615**



## TO THE DEALER:

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

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

## TO THE OWNER:

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

Use only genuine Frontier 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.

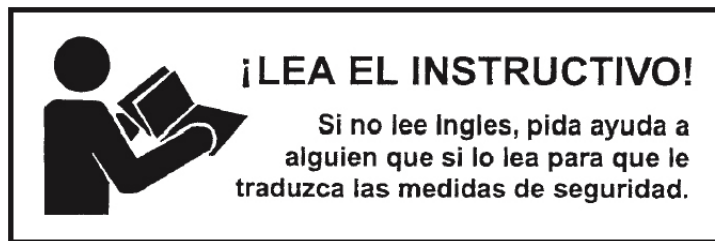
## **IMPORTANT NOTE**

Indicates that failure to observe can cause damage to equipment.

Indicates helpful information.

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# SPECIFICATIONS

| <b>MODEL</b>                        | <b>DH1610</b>                                       | <b>DH1612</b>                                       | <b>DH1613</b>                                       | <b>DH1615</b>                                       |
|-------------------------------------|---|---|---|---|
| <b>Dimensions</b>                   |   |   |   |   |
| Working width, ft. in. (cm)         | 10'6"   | 12'   | 13'6"   | 15'   |
| <b>Weight</b>                       |   |   |   |   |
| Operating, lb (kg)                  | 4185-4851   | 4538-5237   | 4950-5857   | 5291-6236   |
| Shipping, lb (kg)                   | 4585-5251   | 4938-5637   | 5350-6257   | 5691-6636   |
| <b>Tractor requirements</b>         |   |   |   |   |
| Horsepower range, hp (kW)           | 60-80   | 75-115  | 75-125  | 80-140  |
| <b>Hitch</b>                        |   |   |   |   |
| Type                                | Level lift drawn with clevis                        | Level lift drawn with clevis                        | Level lift drawn with clevis                        | Level lift drawn with clevis                        |
| Category                            | NA  | NA  | NA  | NA  |
| Quick coupler compatibility         | NA  | NA  | NA  | NA  |
| <b>Blade</b>                        |   |   |   |   |
| Spacing                             |   |   |   |   |
| Front, in. (cm)                     | 9"  | 9"  | 9"  | 9"  |
| Rear, in. (cm)                      | 9"  | 9"  | 9"  | 9"  |
| Size, in. (cm)                      | 22"   | 22"   | 22"   | 22"   |
| Thickness, in. (mm)                 | 0.177 (4.5mm)<br>Standard<br>0.236(6mm)<br>Optional | 0.177 (4.5mm)<br>Standard<br>0.236(6mm)<br>Optional | 0.177 (4.5mm)<br>Standard<br>0.236(6mm)<br>Optional | 0.177 (4.5mm)<br>Standard<br>0.236(6mm)<br>Optional |
| Quantity                            | 28  | 32  | 36  | 40  |
| Weight/Blade(lbs/blade)             | 149-173 lbs.  | 142-164 lbs.  | 138-163 lbs.  | 132-156 lbs.  |
| Type                                | ---   | ---   | ---   | ---   |
| Notched (front) /<br>Notched (rear) | Available   | Available   | Available   | Available   |
| Smooth (front)/<br>Smooth (rear)    | Standard  | Standard  | Standard  | Standard  |
| Notched (front) /<br>Smooth (rear)  | Available   | Available   | Available   | Available   |
| <b>Gang axle</b>                    |   |   |   |   |
| Diameter, in. (mm)                  | 1.5   | 1.5   | 1.5   | 1.5   |
| Type                                | Square  | Square  | Square  | Square  |
| Material                            | C1045   | C1045   | C1045   | C1045   |



# SPECIFICATIONS, Con't.

| MODEL                      | DH1610  | DH1612  | DH1613  | DH1615  |
|----------------------------|---|---|---|---|
| <b>Gang angles</b>         |   |   |   |   |
| Front (degrees)            | 5, 8, 9, 11, 13, 14, 16, 18, 19, 21, 22, 25                     | 5, 8, 9, 11, 13, 14, 16, 18, 19, 21, 22, 25                     | 6, 8, 10, 12, 14, 16, 17, 19, 22                                | 6, 8, 10, 12, 14, 16, 17, 19, 22                                |
| Rear (degrees)             | 5, 8, 10, 12, 13, 14, 16, 17, 19, 20, 21, 24                    | 5, 8, 10, 12, 13, 14, 16, 17, 19, 20, 21, 24                    | 8, 11, 12, 14, 16, 17, 19, 20, 22, 24                           | 8, 11, 12, 14, 16, 17, 19, 20, 22, 24                           |
| <b>Tubing</b>              |   |   |   |   |
| Frame, in. (mm)            | 4x4x0.25 and 6x4x0.25   | 4x4x0.25 and 6x4x0.25   | 4x4x0.25 and 6x4x0.25   | 4x4x0.25 and 6x4x0.25   |
| Gang, in. (mm)             | 4x4x0.25  | 4x4x0.25  | 4x4x0.25  | 4x4x0.25  |
| <b>Bearing hanger</b>      |   |   |   |   |
| Material                   | Steel   | Steel   | Steel   | Steel   |
| Rigid Tubular Hanger       | Standard  | Standard  | Standard  | Standard  |
| C-Spring Hanger            | Optional  | Optional  | Optional  | Optional  |
| Bearing type               | Self aligning trunion mount, sealed or lubricated ball bearings | Self aligning trunion mount, sealed or lubricated ball bearings | Self aligning trunion mount, sealed or lubricated ball bearings | Self aligning trunion mount, sealed or lubricated ball bearings |
| <b>Depth control</b>       |   |   |   |   |
| Type                       | Pin adjust, center mount  | Pin adjust, center mount  | Pin adjust, center mount  | Pin adjust, center mount  |
| <b>Lighting and safety</b> |   |   |   |   |
| Transport lights           | Standard  | Standard  | Standard  | Standard  |
| Safety chain               | Standard  | Standard  | Standard  | Standard  |
| Jack                       | Standard  | Standard  | Standard  | Standard  |
| <b>Hydraulics</b>          |   |   |   |   |
| Cylinder size, in. (cm)    | 4x8   | 4x8   | 4x8   | 4x8   |
| Hose length, in. (cm)      | 160"  | 160"  | 160"  | 160"  |
| <b>Tires</b>               |   |   |   |   |
| Type                       | Pneumatic   | Pneumatic   | Pneumatic   | Pneumatic   |
| Size                       | 9.5L-15 6 ply   | 9.5L-15 6 ply   | 9.5L-15 6 ply   | 9.5L-15 6 ply   |
| <b>Set-up time</b>         |   |   |   |   |
| Labor hours                | 4 hrs   | 4 hrs   | 4 hrs   | 4 hrs   |
| <b>Warranty</b>            |   |   |   |   |
| Time period                | One year  | One year  | One year  | One year  |

## 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!**

|   |   |
|---|---|
|   | <b>WARNING</b>  |
| <b>CRUSHING AND PINCHING HAZARD</b>   |   |
| <ul style="list-style-type: none"> <li>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.</li> <li>Operate tractor controls from tractor seat only.</li> </ul> | <ul style="list-style-type: none"> <li>Do not stand between tractor and implement when tractor is in gear.</li> <li>Make sure parking brake is engaged before going between tractor and implement.</li> <li>Stand clear of machine when in operation or being raised or lowered.</li> </ul> |
| 15194A  |   |

1

5TL15194A

|   |                |
|---|----------------|
|   | <b>WARNING</b> |
| <b>FALLING BLADE HAZARD</b>   |                |
| <ul style="list-style-type: none"> <li>Can cause serious injury or death.</li> <li>Keep hands and feet from under raised blade.</li> <li>Always put disc in the lowered position and chock gangs to prevent rolling when disconnecting disc gangs for maintenance or repair.</li> </ul> |                |
| 15194B  |                |

2

5TL15194B

|   |
|---|
| <b>WARNING</b>  |
| TO AVOID INJURY INSTALL CYLINDER LOCKUP(S) BEFORE TRANSPORTING OR SERVICING MACHINE |
| 15362   |

3

5TL15362

|                               |
|-------------------------------|
| PRODUCT IDENTIFICATION NUMBER |
|                               |
| Serial Number Plate           |

4

Serial Number Plate

|  |                |
|--|----------------|
|  | <b>WARNING</b> |
| <b>TO PREVENT SERIOUS INJURY OR DEATH:</b>   |                |
| <ul style="list-style-type: none"> <li>Avoid unsafe operation and maintenance. Do not operate or work on this machine without reading and understanding the operator's manual.</li> <li>If manual is lost, contact your dealer.</li> </ul> |                |
| 15194C   |                |

5

5TL15194C

|  |
|--|
| <b>WARNING</b>   |
|  |
| Avoid serious injury from injection of pressurized hydraulic fluid.  |
| Always relieve pressure before performing service or maintenance on any hydraulic components. Refer to tractor and implement Operator's Manuals. |
| Do not use hand to search for leaks. Use cardboard or similar material.  |
| 15364  |

6

5TL15364

5TL15194D

7

|   |  |
|---|--|
| <b>WARNING</b>  |  |
|   |  |
| <ul style="list-style-type: none"> <li>DO NOT allow others to ride on the machine or tractor.</li> <li>Park or block disc so it will not roll when disconnecting from tractor drawbar.</li> <li>Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured.</li> </ul> | <ul style="list-style-type: none"> <li>Never place any part of the body underneath equipment or between movable parts even when the engine has been turned off.</li> <li>Be sure that everyone is standing clear before operating the machine.</li> <li>DO NOT operate or transport at high speeds.</li> <li>DO NOT operate or transport on steep slopes.</li> </ul> |
| 15194D  |  |

5TL15363

8

|                |  |   |  |
|----------------|--|---|--|
| <b>WARNING</b> |  | <p>Do not exceed this implement's maximum transport speed of 32 km/h (20 mph).</p> <p>Exceeding this speed may result in loss of control during transport or braking and serious injury or death.</p> | <p>Transport only with a properly ballasted tractor and a properly attached safety tow chain.</p> <p>Do not transport with a motor vehicle.</p> <p>Reduce speed and use additional caution when on inclines, towing under adverse surface conditions, and turning.</p> |
| 15363          |  |   |  |

# SAFETY REFLECTOR DECALS

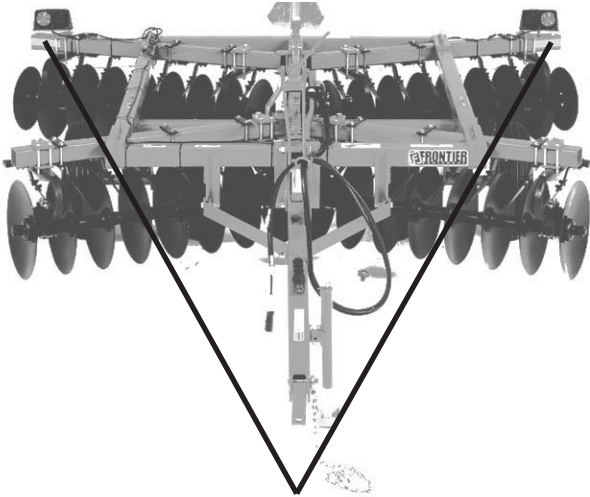
**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

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

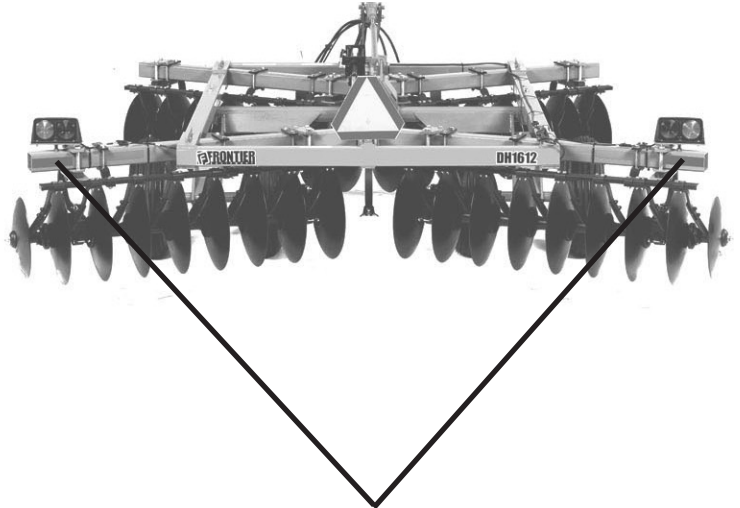
**Replace Decals Immediately If Damaged!**

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

## **DH1610, DH1612 and DH1613 Reflector Decals**

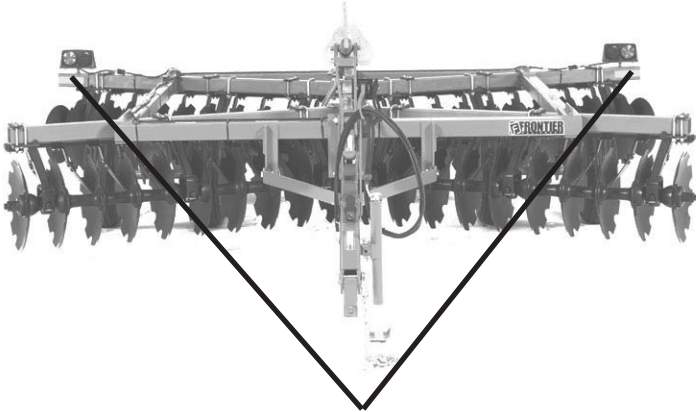


9" YELLOW REFLECTORS  
5TL15200

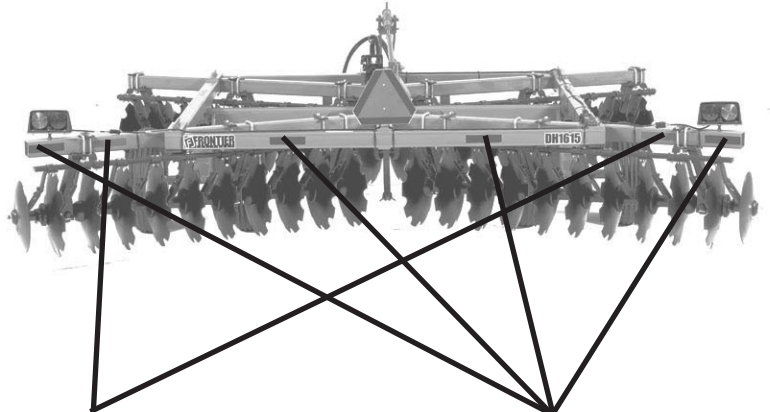


9" RED REFLECTORS  
5TL15199

## **DH1615 Reflector Decals**



9" YELLOW REFLECTORS  
5TL15200



9" ORANGE REFLECTORS  
5TL15361

9" RED REFLECTORS  
5TL15199





# SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

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

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

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

## TRAINING

- Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from selling dealer.) Failure to follow instructions or safety rules can result in serious injury or death.
- If you do not understand any part of this manual and need assistance, see your dealer.
- Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
- Never allow children or untrained persons to operate equipment.
- Train all new personnel and review instruction's frequently with existing workers. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety

goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result.

**CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

## PREPARATION

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





# SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

## PREPARATION (cont'd.)

- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in “locked up” position at all times.
- Do not exceed this implements transport speed of 20 mph (32 kmh). Exceeding this speed may cause loss of control during transport or braking and serious injury or death.
- Transport only with a properly ballasted tractor and a properly attached safety tow chain.
- Do not transport with a motor vehicle.
- Reduce speed and use additional caution when on inclines, towing when on adverse surface conditions, and turning.

## 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 in the raised or transport position unless the transport lock is in place. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off.
- Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement

of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

- Always comply with all state and local laws governing highway safety and lighting and marking requirements.
- Do not exceed this implements transport speed of 20 mph (32 kmh). Exceeding this speed may cause loss of control during transport or braking and serious injury or death.
- Transport only with a properly ballasted tractor and a properly attached safety tow chain.
- Do not transport with a motor vehicle.
- Reduce speed and use additional caution when on inclines, towing when on adverse surface conditions, and turning.
- 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.





# 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 com

# SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

## **MAINTENANCE (cont'd.)**

ponents to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

- Route hydraulic hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hose immediately.
- Do not connect a low-pressure hydraulic hose into a high-pressure system—it will burst the hose. Do not use a high-pressure hose in place of a low pressure hose—it is possible to rupture the valve.
- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it

must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result.

**CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Tighten all bolts, nuts, and screws to torque chart specifications (page 41). 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.



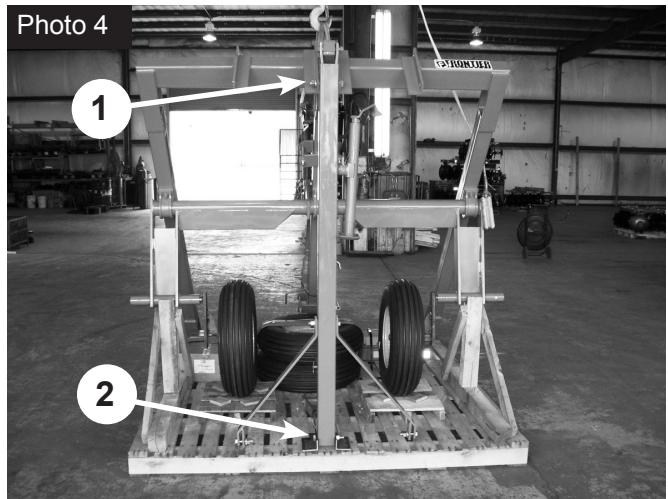
# Dealer Instructions

## Pre-Assembly

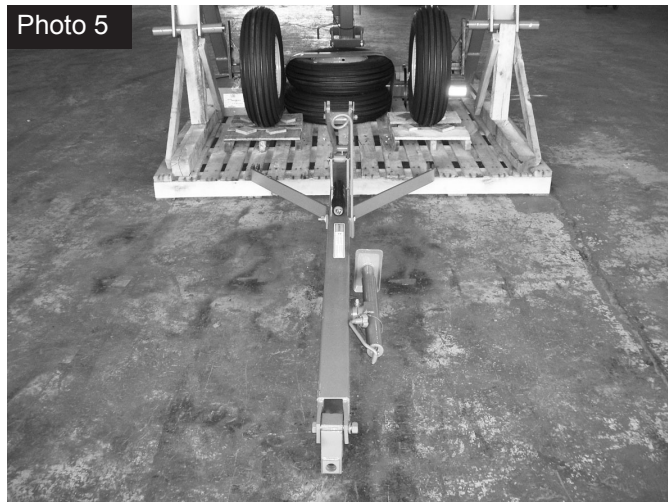
The DH16 is shipped from the factory partially assembled (Photo 1). Move the unit to a suit-



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



which connect the tongue to the frame and pallet. 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,



### CAUTION

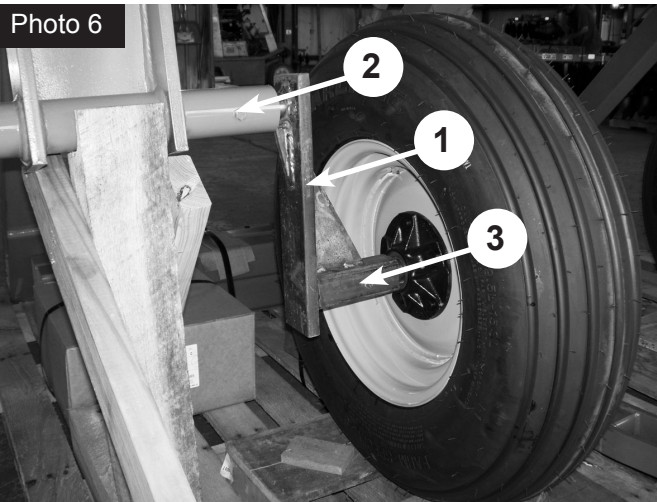
When completing this portion of the assembly process, be careful handling the large parts. They are heavy and dropping them could lead to moderate or serious injury.

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)



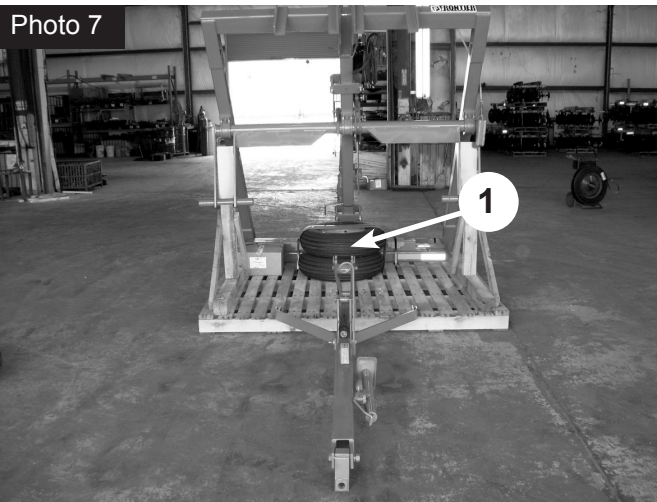
raise the frame until pressure has been removed from the wheels. Remove the wheel extensions (Ref. 1, Photo 6) from the wheel carriage by

Photo 6



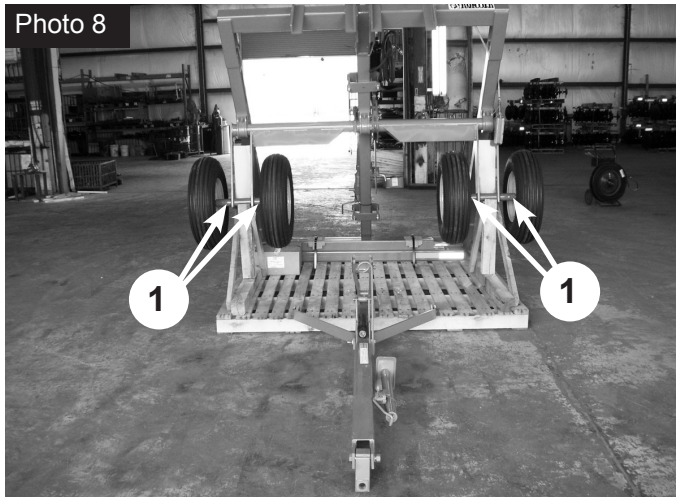
removing the 3/8" x 3" Gr. 5 bolt (Ref. 2, Photo 6). Do not discard 3/8" x 3" Gr. 5 bolts, they will be used again to reapply the wheel & spindle assembly to wheel carriage. Also, remove the 3/8" x 3" Gr. 5 bolt holding the wheel & spindle assembly to the wheel carriage extensions (Ref. 3, Photo 6). 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

Photo 7



the spindle into the wheel carriage where the 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

Photo 8



steps for the three remaining wheels. Once complete, tighten nuts accordingly. Please see Bolt Torque Chart (Page 41) for proper torque information.

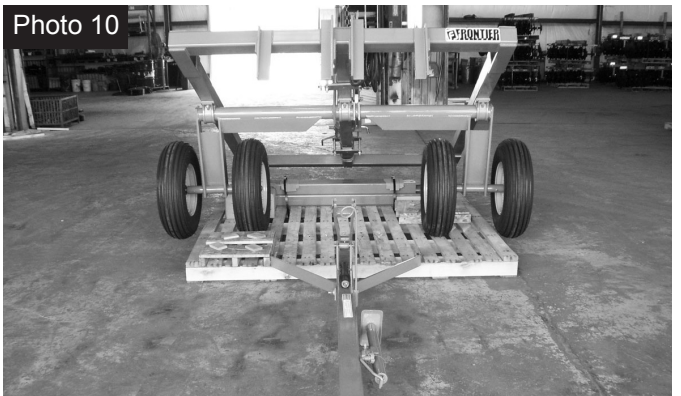
Before unit can be lowered to pallet, remove the bracing the wheel carriage was resting on when shipped (Photo 9). When bracing has been removed, lower frame so that wheels are rest-

Photo 9



ing on pallet (Photo 10). Use the two small pallets, shipped with unit, as chocks for the wheels

Photo 10



Pre-Assembly cont'd on page 11

on the wheel carriage (Photo 11). This will keep the frame from rolling off the pallet and causing



potential serious injury. While the frame is resting 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 later step. Once sling has been relocated, connect to overhead hoist and raise hoist until slack has been removed from sling.

**⚠ WARNING**

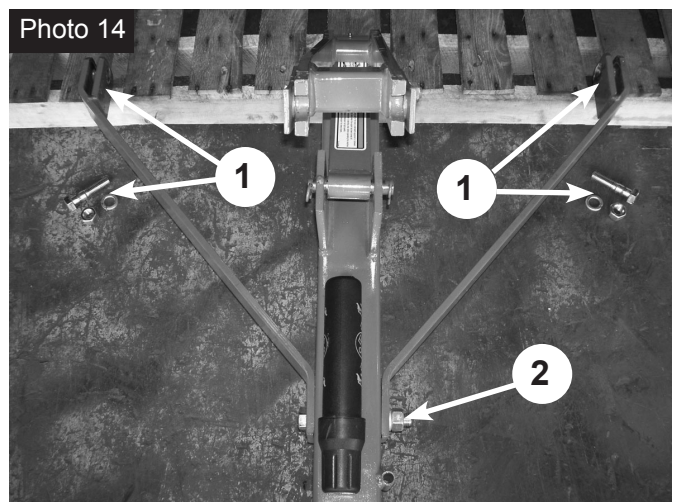
When completing this portion of the assembly process, be careful handling the large parts. They are heavy and dropping them could lead to moderate or serious injury.

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 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

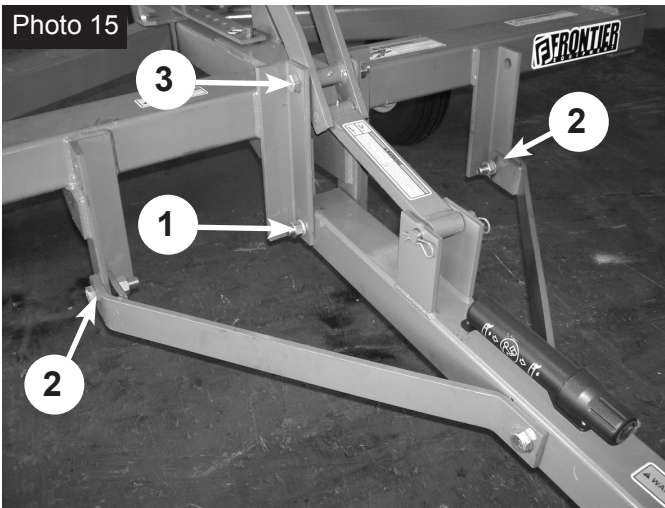


bolt which connects the tongue side braces to the tongue (Ref. 2, Photo 14). Do not remove! Using one of the 7/8" x 6 1/2" Gr. 5 bolts removed earlier connect the tongue to the main frame (Ref. 1, Photo 15). Use the two 7/8" x 3 1/2" Gr. 5 bolts, to connect the tongue side braces to the



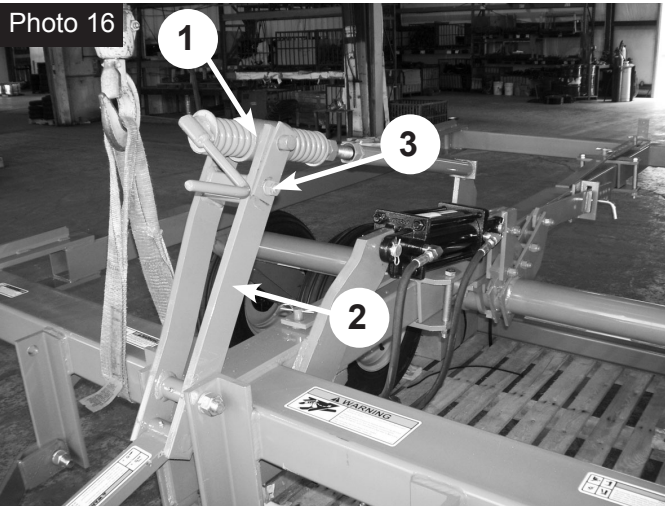
frame (Ref. 2, Photo 15). Use the remaining 7/8" x 6 1/2" Gr. 5 bolt to connect the rocker arm & link bar to the frame (Ref. 3, Photo 15). Once

Photo 15



tongue has been connected to frame, fold the spring rod assembly (Ref. 1, Photo 16) over to

Photo 16



meet the rocker arm & link bar (Ref. 2, Photo 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

Photo 17

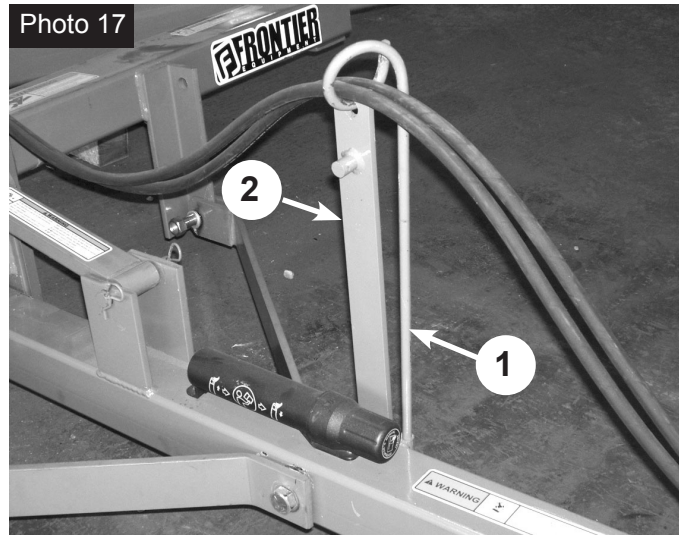


Photo 18



Photo 19



from box (Photo 19). Once all bolts are applied, tighten all nuts. Please see Bolt Torque Chart (Page 41) for proper torque information. The unit should now look like Photo 20 on Page 13.

Pre-Assembly cont'd on page 13

Photo 20



Chocks should now be removed and frame should be rolled off of pallet. Leave in open area for further assembly.

Photo 21



The next steps will be attaching the gang beams & gangs to frame. Determine which beams are

Photo 22



front and which are rear by looking at Figures 7 & 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 23



(Photo 22) till they meet the rear slide plate in center of frame. Repeat the same procedure for the front gang beams. Insert the 5/8" x 4 1/16"

Photo 24



bushing into the hole at the inside end of the gang beam (Photo 23). Reinsert the 5/8" x 6" Gr. 2 bolt downward through the hole in the

**⚠ CAUTION**

slide plate and through the bushing in the gang beam. Attach nut & washer and tighten (Photo 24). Please see Bolt Torque Chart (Page 41) 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

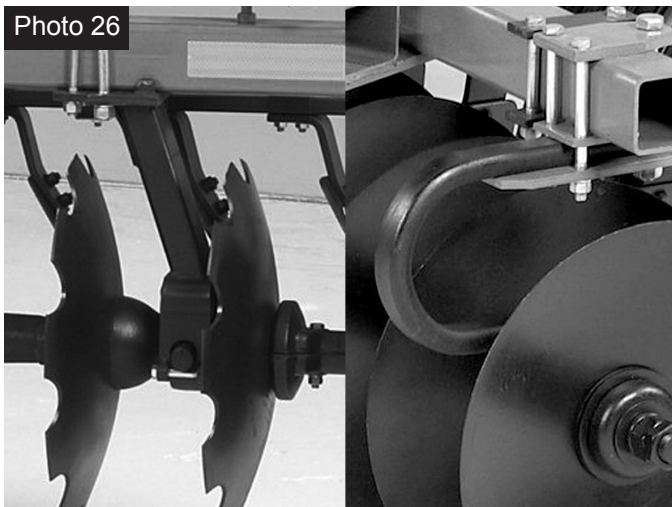
Photo 25



to moderate or serious injury.

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

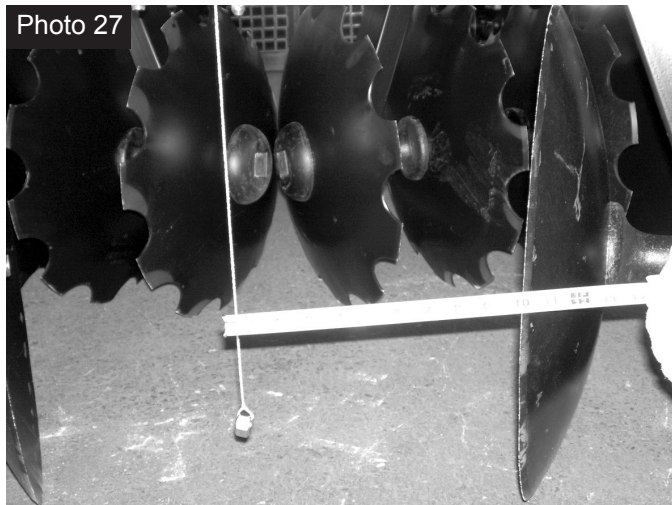
Photo 26



beams with the washer facing outward. Gangs 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 correctly adjust the spacing between the rear gang

Photo 27



assemblies, drop a plumb bob from the rear of the main frame directly under the center of the center beam. The proper distance from the cen-

Photo 28



ter of the center beam to the rear tip of a 22" 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 41) for proper torque information.

**Pre-Assembly cont'd on page 15**

Photo 28

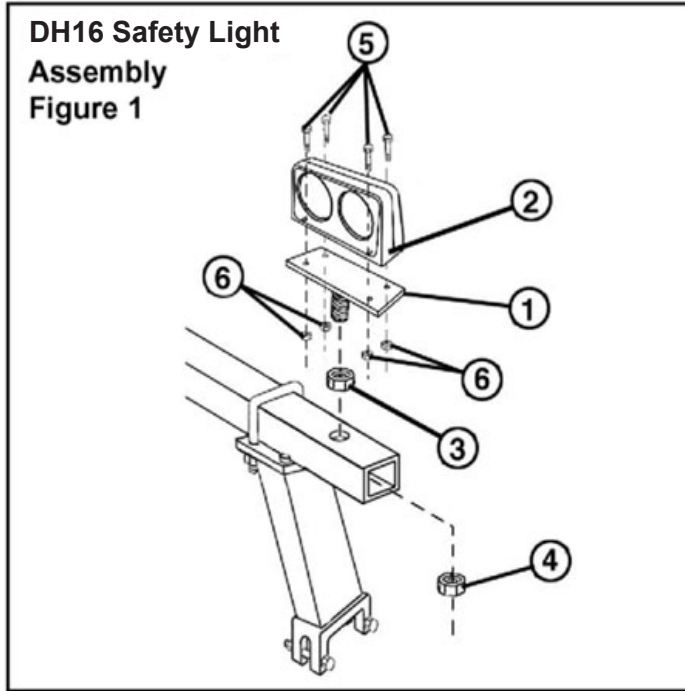


Remove the SMV sign & mounting bracket from the cardboard box in Photo 18. Mount the SMV sign to the mounting bracket using 1/8" x 1/2" Gr. 2 round head machine screws. Now mount the mounting bracket to the rear of frame using 5/16" x 1" Gr. 2 carriage bolts (Photo 29). When mounted, tighten nuts accordingly.

### Safety Light Assembly DH16

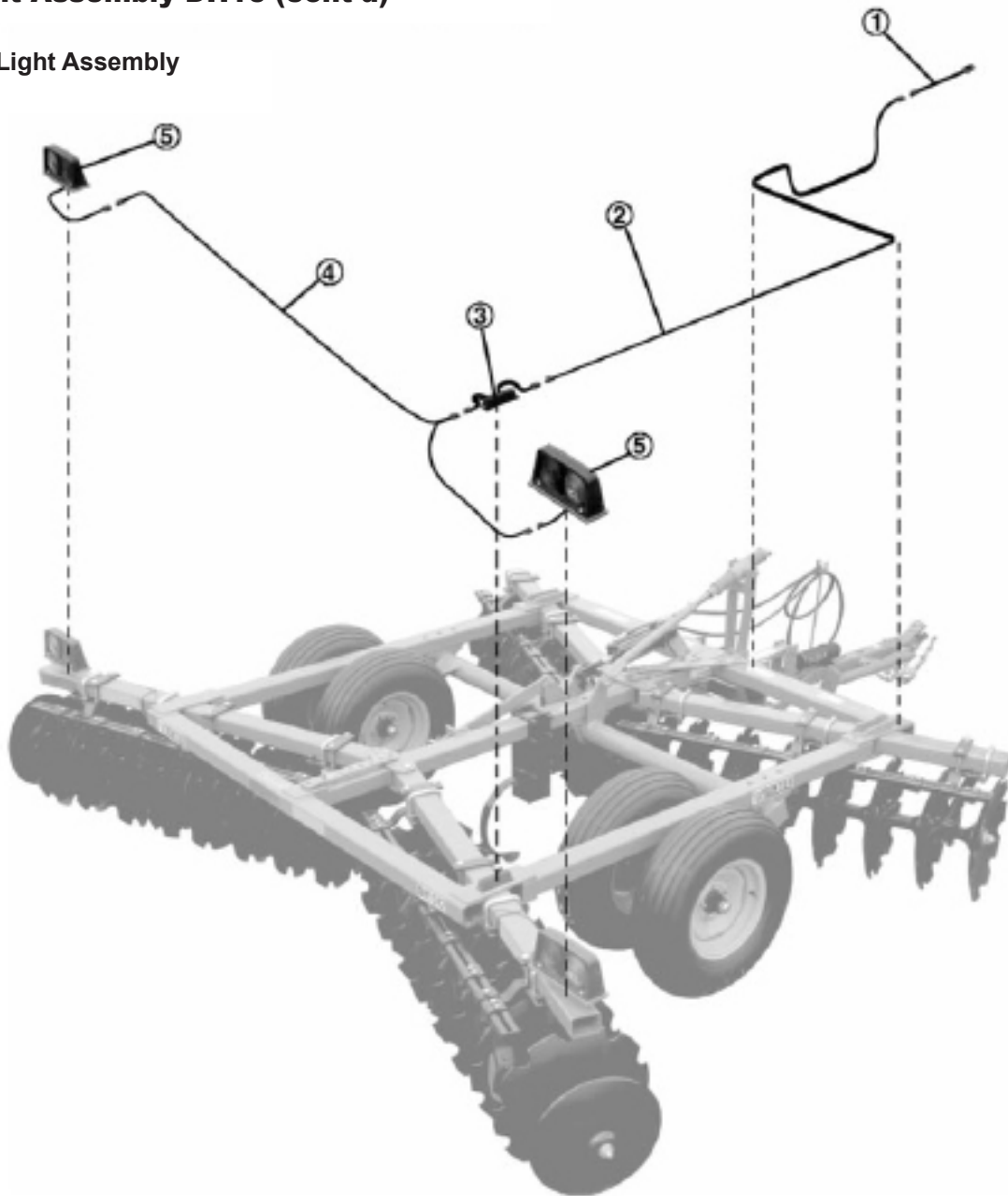
The light mount brackets (Ref.1) are attached to the rear gang beams from the factory. It may be necessary to loosen the 5/8" nylon hex nut(Ref.4) in order to rotate the light mount bracket and attach the light fixture. Attach the light fixture to the light mount bracket using the 1/4" X 1 1/2" Gr. 2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

Chart (Page 41) 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 41) for proper torque information.



## Safety Light Assembly DH16 (cont'd)

DH16 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). Line the holes in 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 possible pinch points that might damage the wiring. Allow room from the front of the mainframe to the tractor for right and left turning radius.



## **DEALER INSTRUCTIONS(cont'd.)**

(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 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.

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

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

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

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

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

## Operation

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

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

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

The operator is responsible for the safe operation of this equipment. The operator must be properly trained. Operators should be familiar with the equipment, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on pages 3-8.

Owner should check and tighten all hardware after the first hour of operation. The break in stage of your new disk harrow can cause minimal loosening of disk gangs and other hardware as the new paint wears. Please see Bolt Torque Chart (page 36) 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.
- 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.

- 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

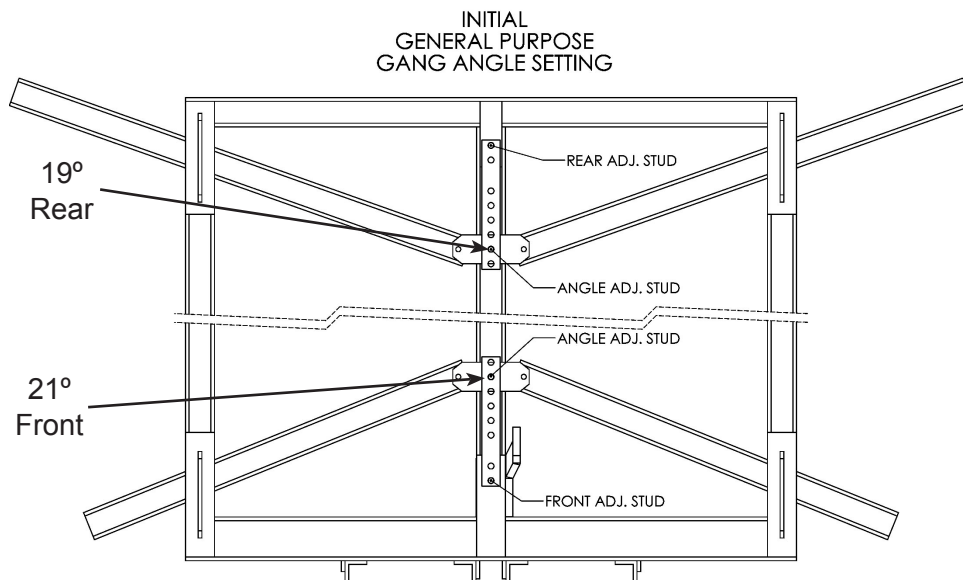


Figure B

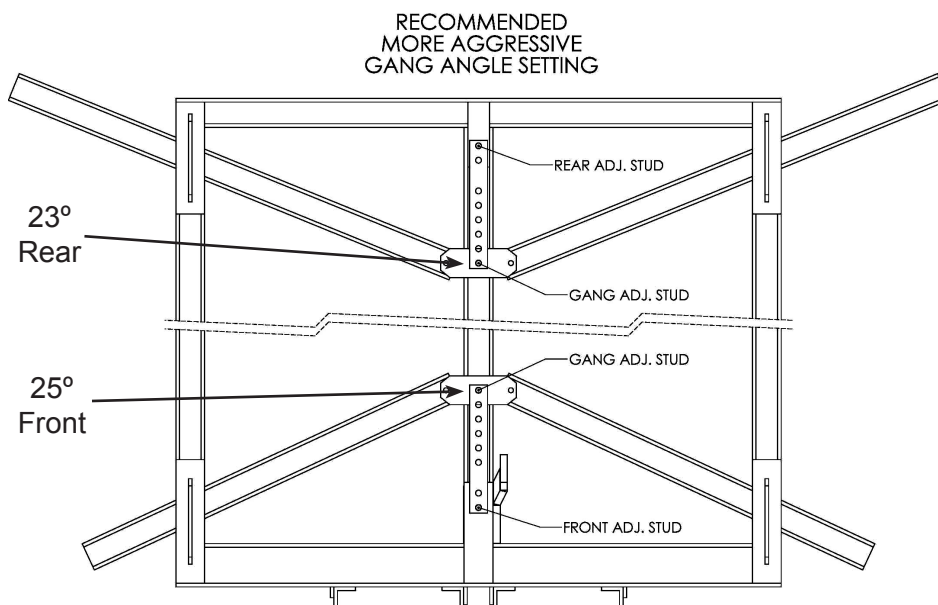
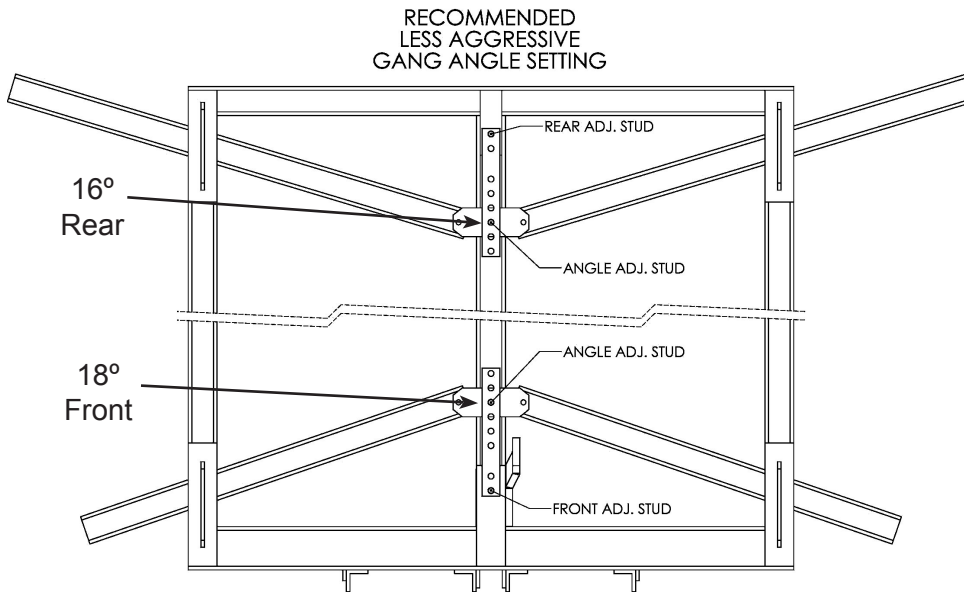
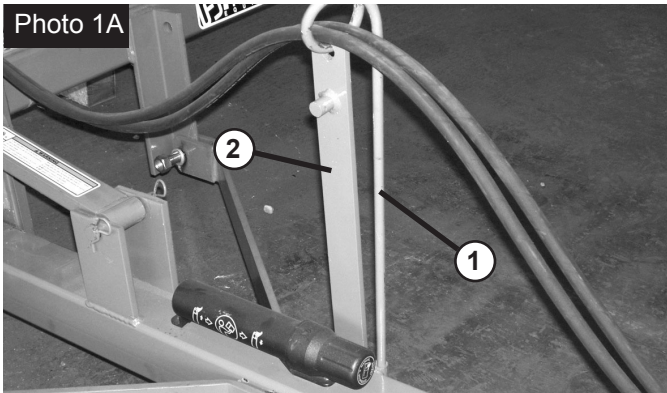




Figure C



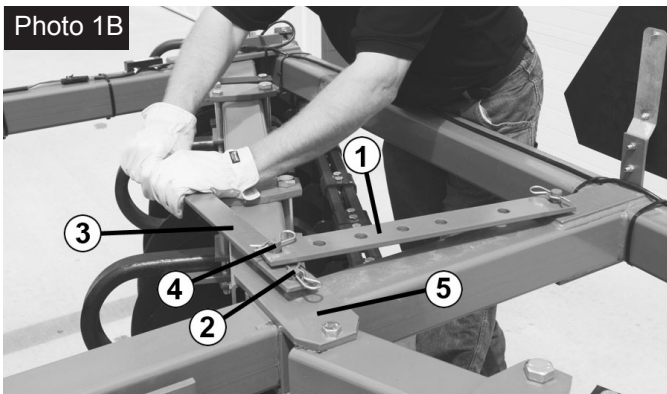
To adjust the front or rear gang angles remove the angle adjusting lever (Ref. 2, Photo 1A) from the hose holder (Ref. 1, Photo 1A) which



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.



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

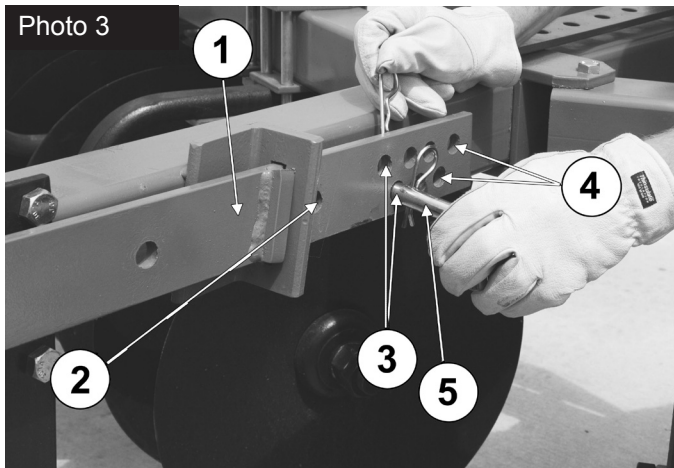


## Operation 21

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 DH16 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<br>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<br>B. Reduce speed.<br>C. Reduce gang angle.   |
| 3. Unit leaving water furrow in center.  | A. Disk not level. Lower rear gangs or raise front gangs.<br>B. Increase speed.<br>C. Increase angle on rear gangs.<br>D. Decrease angle on front gangs.<br>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.<br>B. Decrease speed.<br>C. Decrease angle on rear gangs<br>D. Increase angle on front gangs.<br>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.<br>If already equipped, re-adjust them.<br>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.<br>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**

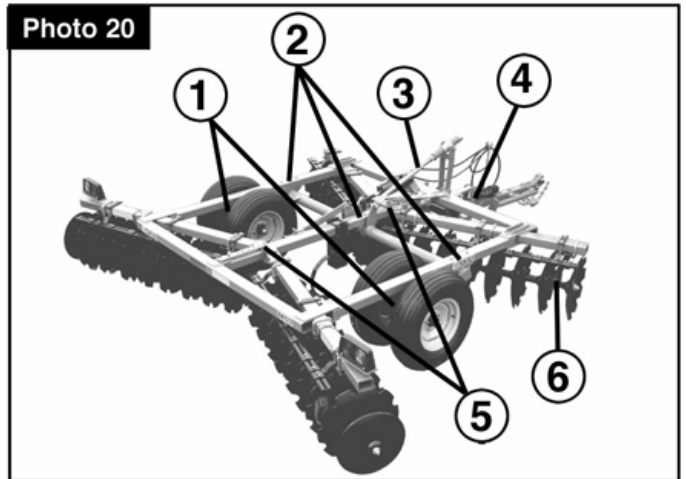
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. 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 41) for proper torque information.

Check gang hanger bolts periodically. Please see Bolt Torque Chart (Page 41) 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 41) for proper torque information.

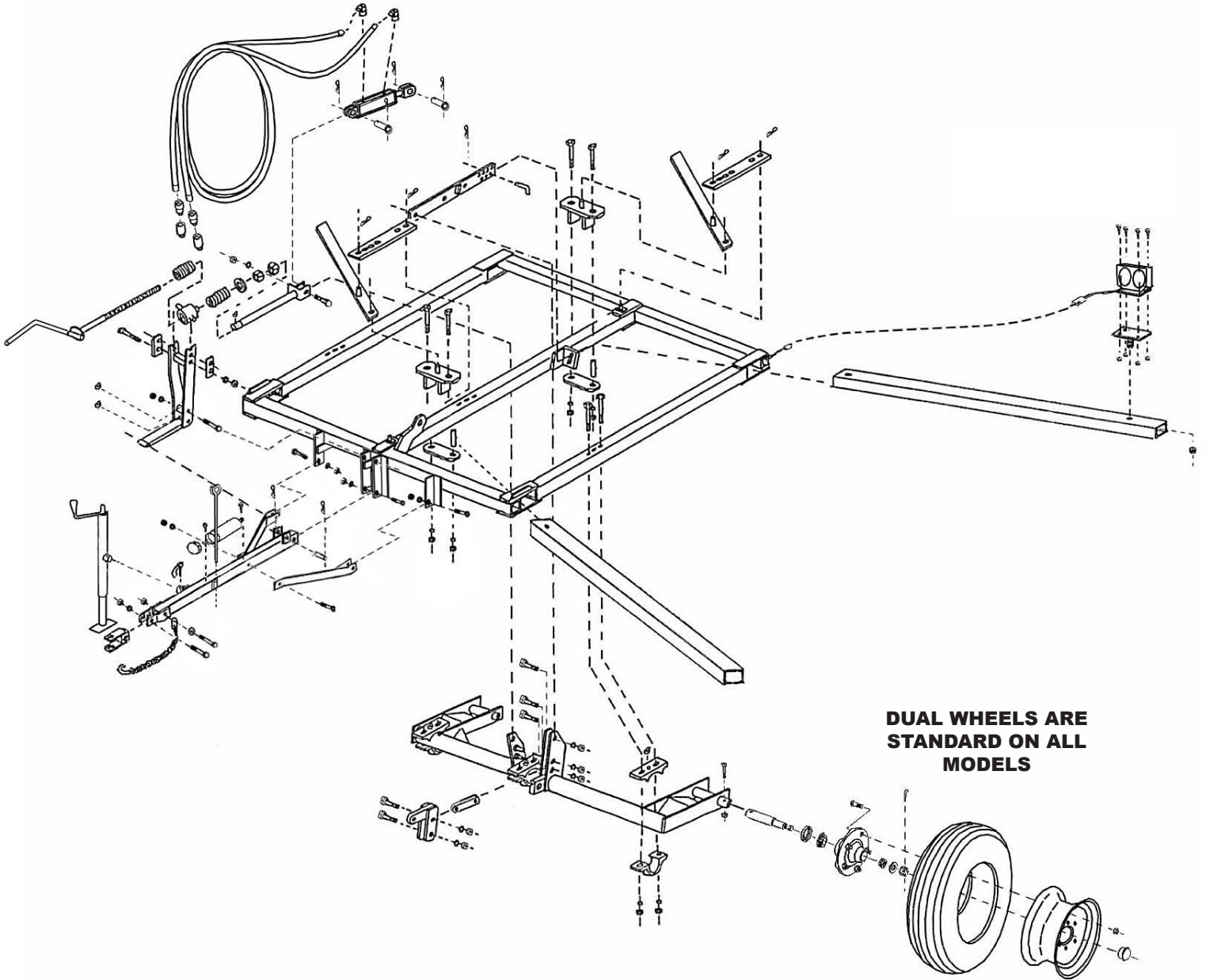
#### **Storage**

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



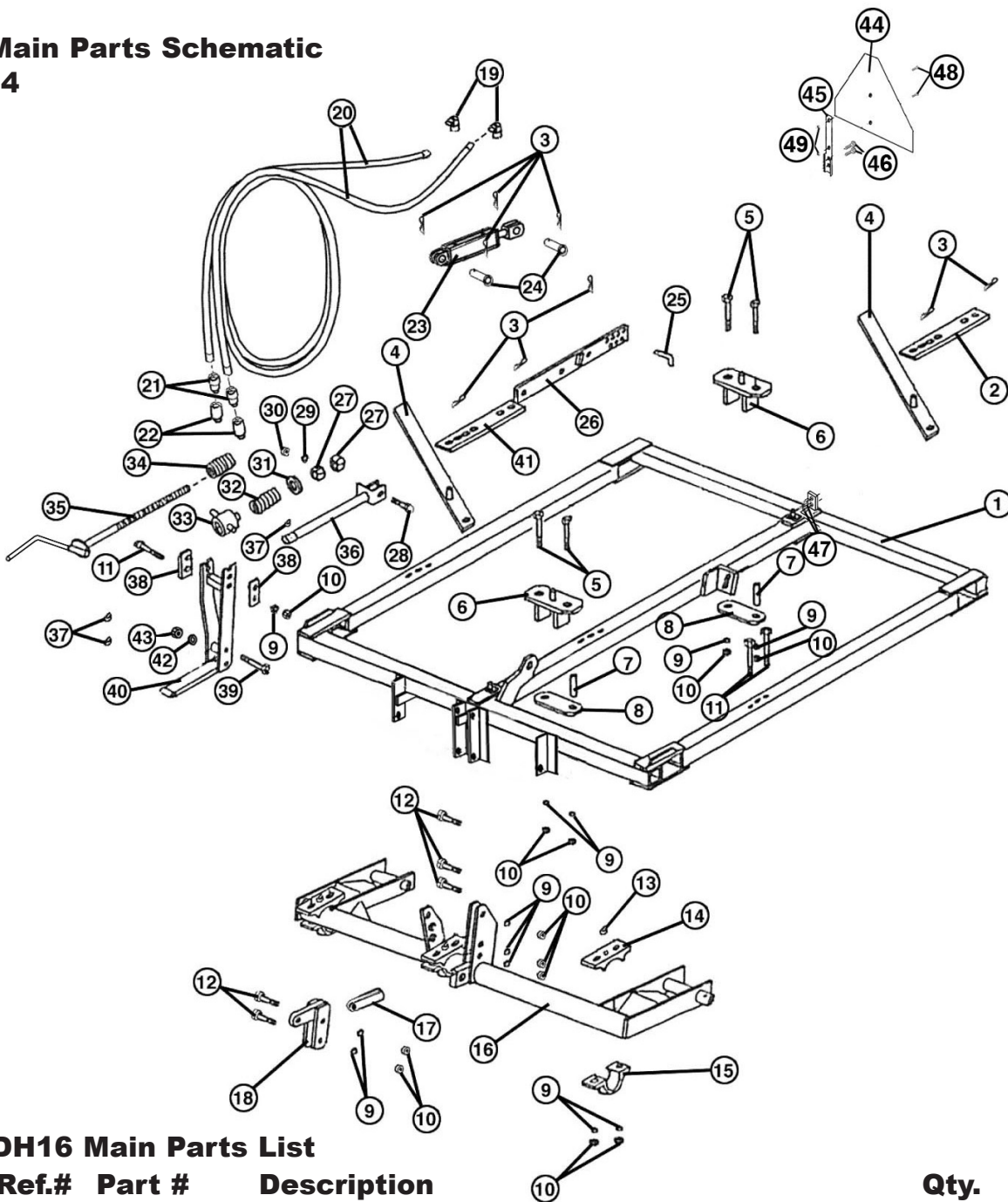
# DH16 Assembly Schematic

Figure 3



*Assembly Schematic 26*

**DH16 Main Parts Schematic**  
**Figure 4**



**DH16 Main Parts List**

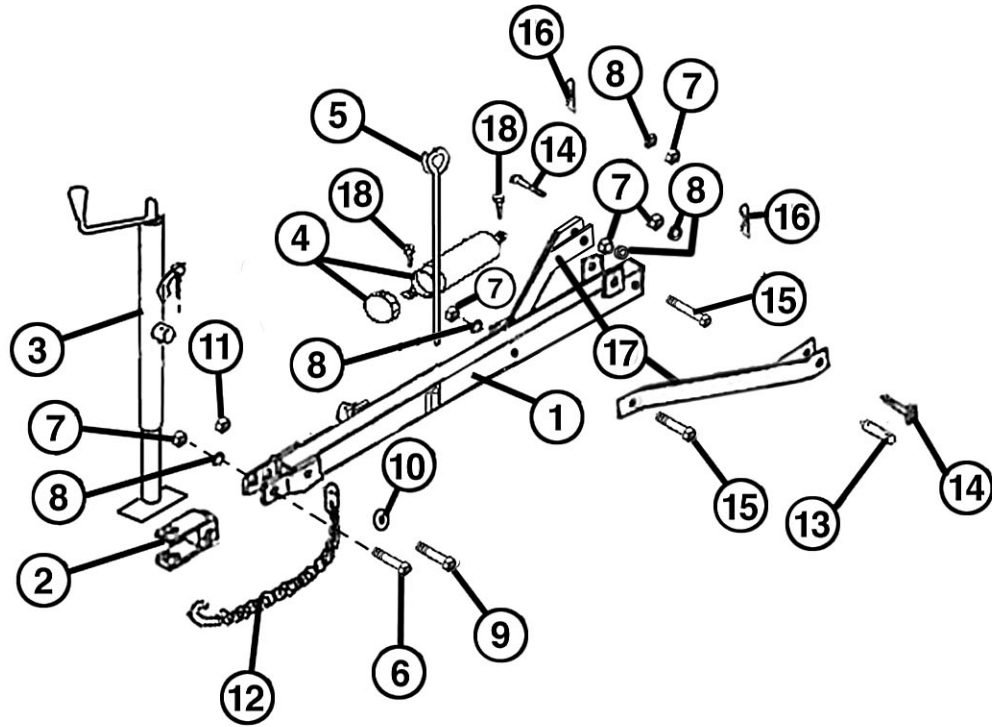
| Ref.# | Part #   | Description                                     | Qty. |
|-------|----------|---|------|
| 1     | 5TL11434 | MAIN FRAME- DH1610, DH1612                      | 1    |
|       | 5TL11436 | MAIN FRAME- DH1613, DH1615                      | 1    |
| 2     | 5TL12413 | GANG ANGLE ADJUSTMENT BAR, REAR- DH1610, DH1612 | 1    |
|       | 5TL12416 | GANG ANGLE ADJUSTMENT BAR, REAR- DH1613, DH1615 | 1    |
| 3     | 5TL9979  | HAIR PIN CLIP                                   | 5    |
| 4     | 5TL12034 | ANGLE ADJUSTING LEVER                           | 1    |
| 5     | 5TLT747  | HEX BOLT, 5/8" X 6" GR. 2                       | 4    |
| 6     | 5TL12409 | SLIDE PLATE TOP                                 | 2    |
| 7     | 5TLT610  | BUSHING, 5/8" X 4 1/16"                         | 4    |
| 8     | 5TL11421 | SLIDE PLATE BOTTOM                              | 2    |

**DH16 Main Parts List (cont'd)**

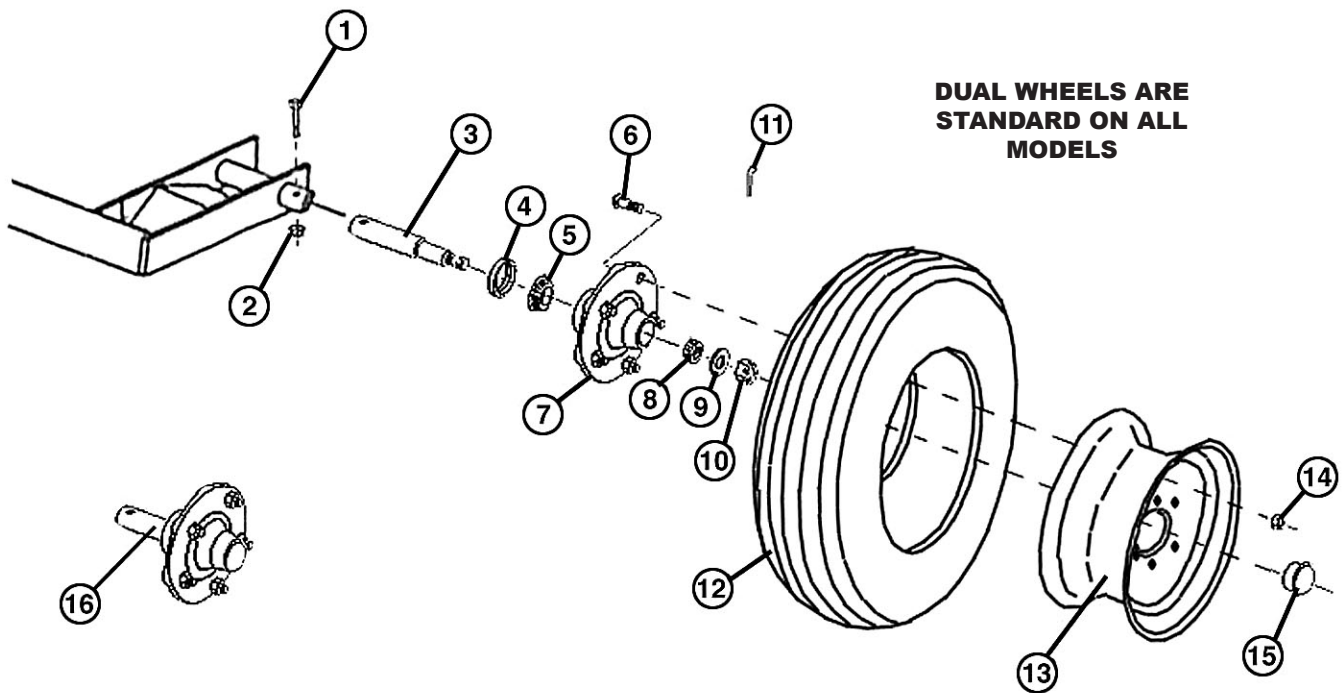
| <b>Ref.#</b> | <b>Part #</b> | <b>Description</b>                               | <b>Qty.</b> |
|--------------|---------------|--|-------------|
| 9            | 5TLT24        | LOCKWASHER, 5/8"                                 | 16          |
| 10           | 5TLT22        | HEX NUT, 5/8"                                    | 16          |
| 11           | 5TL9661       | HEX BOLT, 5/8" X 6 1/2" GR. 2                    | 7           |
| 12           | 5TL9651       | HEX BOLT, 5/8" X 3" GR. 2                        | 5           |
| 13           | 5TL12511      | 1/8" X 1 3/4" STRAIGHT GREASE FITTING            | 3           |
| 14           | 5TLT58        | WHEEL CARRIAGE BEARING TOP                       | 3           |
| 15           | 5TLT57        | WHEEL CARRIAGE BEARING BOTTOM                    | 3           |
| 16           | 5TL10665      | WHEEL CARRIAGE- DH1610, DH1612                   | 1           |
|              | 5TL10667      | WHEEL CARRIAGE- DH1613, DH1615                   | 1           |
| 17           | 5TL9893       | WHEEL LIFT BAR WELDMENT                          | 1           |
| 18           | 5TL9892       | CYLINDER LATCH WELDMENT                          | 1           |
| 19           | 5TL15540      | 3/4" ORB MALE- 3/8" FEMALE SWIVEL ELBOW          | 2           |
| 20           | 5TL13071      | 160" HYDRAULIC HOSE                              | 2           |
| 21           | 5TL15367      | 1/2" MALE- 3/8" FEMALE REDUCER                   | 2           |
| 22           | 5TL15368      | HYDRAULIC QUICK COUPLER                          | 2           |
| 23           | 5TL10610      | 4 X 8 CYLINDER                                   | 1           |
| 24           | 5TL15374      | CYLINDER PINS, 1" X 3 1/2"                       | 2           |
| 25           | 5TL13308      | ADJUSTING PIN, 3/4"                              | 1           |
| 26           | 5TL12387      | DEPTH CONTROL BAR WELDMENT                       | 1           |
| 27           | 5TLT18        | HEX NUT, 1 1/8"                                  | 2           |
| 28           | 5TLT763       | HEX BOLT, 3/4" X 3" GR. 5                        | 1           |
| 29           | 5TLT31        | LOCKWASHER, 3/4"                                 | *MS         |
| 30           | 5TLT27        | HEX NUT, 3/4"                                    | *MS         |
| 31           | 5TLT698       | FLATWASHER, 1 1/8"                               | *MS         |
| 32           | 5TLT511       | ADJUSTING SPRING, 4 1/2"                         | 1           |
| 33           | 5TLT510       | SPRING HOUSING                                   | 1           |
| 34           | 5TLT509       | ADJUSTING SPRING, 8 1/2"                         | 1           |
| 35           | 5TL9011       | ADJUSTING ROD                                    | 1           |
| 36           | 5TL11991      | ADJUSTING TUBE WELDMENT                          | 1           |
| 37           | 5TLT6         | 1/4" GREASE FITTING                              | 3           |
| 38           | 5TL9006       | RETAINER STRAP                                   | 2           |
| 39           | 5TLT773       | HEX BOLT, 7/8" X 6 1/2" GR. 5                    | 1           |
| 40           | 5TL9004       | ROCKER ARM & LINK BAR                            | 1           |
| 41           | 5TL12413      | GANG ANGLE ADJUSTMENT BAR, FRONT- DH1610, DH1612 | 1           |
|              | 5TL12415      | GANG ANGLE ADJUSTMENT BAR, FRONT- DH1613, DH1615 | 1           |
| 42           | 5TLT21        | LOCKWASHER, 7/8"                                 | 1           |
| 43           | 5TLT19        | HEX NUT, 7/8"                                    | 1           |
| 44           | 5TL14996      | SMV SIGN   | 1           |
| 45           | 5TL14997      | SMV MOUNTING BRACKET                             | 1           |
| 46           | 5TL14998      | CARRIAGE BOLT, 5/16" X 1" GR. 2                  | 2           |
| 47           | 5TL15198      | LOCK NUT, 5/16"                                  | 2           |
| 48           | 5TL15212      | ROUND HEAD MACHINE SCREW, 1/8" X 1/2" GR. 2      | 2           |
| 49           | 5TL15213      | HEX NUT, 1/8"                                    | 2           |

\* M/S - Model Specific

**DH16 Drawbar Parts Schematic  
Figure 5**



**DH16 Wheel Parts Schematic  
Figure 6**



## DH16 Drawbar Parts List

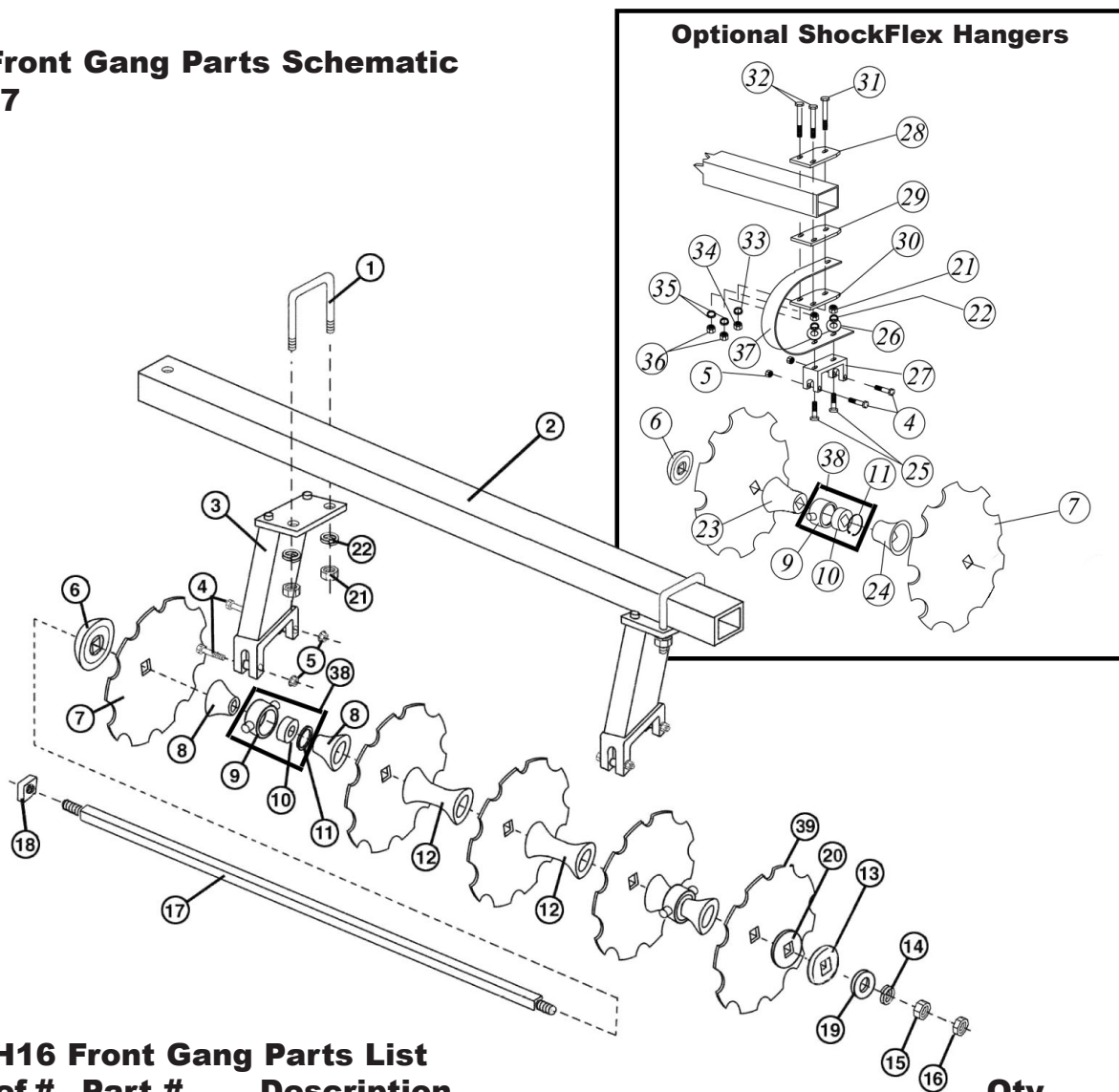
| Ref.# | Part #   | Description                   | Qty. |
|-------|----------|-------------------------------|------|
| 1     | 5TL9027  | TONGUE, DH16                  | 1    |
| 2     | 5TLT2665 | TONGUE CLEVIS                 | 1    |
| 3     | 5TLT933  | TONGUE JACK                   | 1    |
| 4     | 5TL15189 | ASSEMBLY MANUAL TUBE AND CAP  | 1    |
| 5     | 5TLT465  | HOSE HOLDER                   | 1    |
| 6     | 5TLT772  | HEX BOLT, 7/8" X 5" GR. 5     | 1    |
| 7     | 5TLT19   | HEX NUT, 7/8"                 | 4    |
| 8     | 5TLT21   | LOCK WASHER, 7/8"             | 4    |
| 9     | 5TL15349 | HEX BOLT, 1" X 6" GR. 5       | 1    |
| 10    | 5TLT606  | FLATWASHER, 1"                | 1    |
| 11    | 5TL10332 | LOCK NUT, 1"                  | 1    |
| 12    | 5TL15186 | SAFETY CHAIN                  | 1    |
| 13    | 5TL15183 | PIN, 7/8" X 5"                | 1    |
| 14    | 5TLT770  | HEX BOLT, 7/8" X 3 1/2" GR. 5 | 2    |
| 15    | 5TLT773  | HEX BOLT, 7/8" X 6 1/2" GR. 5 | 2    |
| 16    | 5TL9979  | HAIR PIN CLIP                 | 2    |
| 17    | 5TLT970  | TONGUE SIDE BRACE             | 2    |
| 18    | 5TL15348 | SELF TAPPING SCREW            | 2    |

## DH16 Wheel Parts List

| Ref.# | Part #     | Description                           | Qty. |
|-------|------------|---------------------------------------|------|
| 1     | 5TLT892    | HEX BOLT, 3/8" X 3", GR.5             | 4    |
| 2     | 5TL12899   | FLANGE LOCK NUT, 3/8"                 | 4    |
| 3     | 5TLT564    | SPINDLE, 1 5/8"                       | 4    |
| 4     | 5TLT576    | SEAL, 1 1/2"                          | 4    |
| 5     | 5TLT575    | WHEEL BEARING, 1 1/4"                 | 4    |
| 6     | 5TLT562    | LUG STUD, 1/2" X 1 1/2"               | 20   |
| 7     | 5TLT572    | 5- BOLT HUB ASSEMBLY                  | 4    |
| 8     | 5TLT574    | WHEEL BEARING, 3/4                    | 4    |
| 9     | 5TLT603    | SPINDLE WASHER, 3/4"                  | 4    |
| 10    | 5TLT567    | SLOTTED NUT, 3/4"                     | 4    |
| 11    | 5TLT342    | COTTER PIN, 5/32" X 1 1/4"            | 4    |
| 12    | 5TL95L156T | IMPLEMENT TIRE, (9.5L-15/6T TUBELESS) | 4    |
| 13    | 5TLT612    | 15" X 6" X 5-HOLE WHEEL               | 4    |
| 14    | 5TLT23     | LUG NUT, 1/2"                         | 20   |
| 15    | 5TLT577    | HUB CAP                               | 4    |
| 16    | 5TL13630   | 5 BOLT HUB & SPINDLE ASSY.            | 4    |
| N/S   | 5TLT582    | OUTER WHEEL BEARING CUP               | 4    |
| N/S   | 5TLT583    | INNER WHEEL BEARING CUP               | 4    |



**DH16 Front Gang Parts Schematic  
Figure 7**



**DH16 Front Gang Parts List**

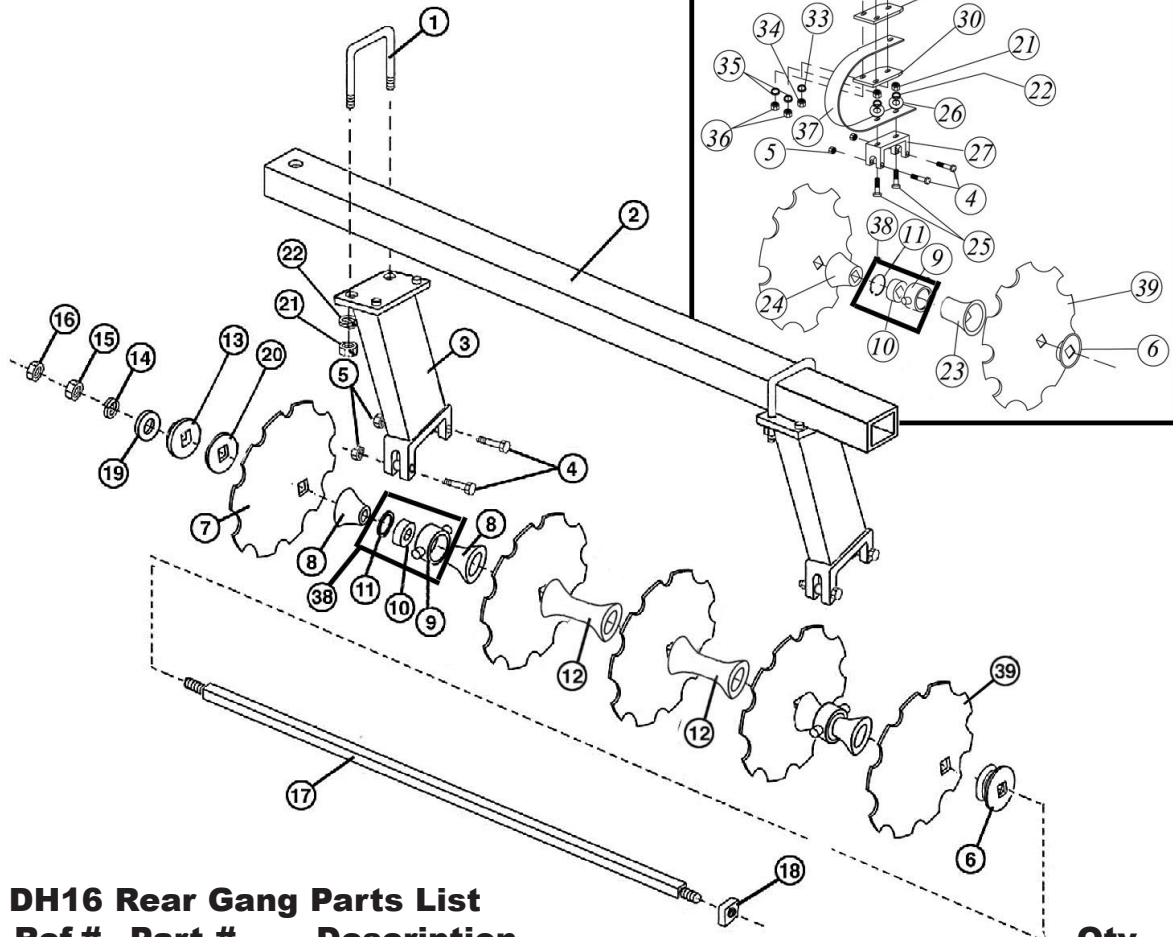
| Ref.# | Part #     | Description                             | Qty. |
|-------|------------|---|------|
| 1     | 5TL11971   | 3/4" U-BOLT FOR 4 X 4 BEAM              | *MS  |
| 2     | 5TL12449   | 4" X 4" X 56" GANG BEAM- DH1610 FRONT   | 2    |
|       | 5TL12452   | 4" X 4" X 65" GANG BEAM- DH1612 FRONT   | 2    |
|       | 5TL12454   | 4" X 4" X 74" GANG BEAM- DH1613 FRONT   | 2    |
|       | 5TL12458   | 4" X 4" X 83" GANG BEAM- DH1615 FRONT   | 2    |
| 3     | 5TL12164   | TUBULAR GANG HANGER FOR 4X4 BEAM        | *MS  |
| 4     | 5TL12163   | HEX BOLT, 1/2" X 3 1/2" GR. 5           | *MS  |
| 5     | 5TL9226    | FLANGE LOCK NUT, 1/2"                   | *MS  |
| 6     | 5TLT491    | BUMPER WASHER, 1 1/2" SQ.               | 2    |
| 7     | 5TL3221771 | DISK BLADE, 22" X 1 1/2" PLAIN(4.5mm)   | *MS  |
|       | 5TL3221772 | DISK BLADE, 22" X 1 1/2" NOTCHED(4.5mm) | *MS  |
|       | 5TL3222561 | DISK BLADE, 22" X 1 1/2" PLAIN (6MM)    | *MS  |
|       | 5TL3222562 | DISK BLADE, 22" X 1 1/2" NOTCHED (6MM)  | *MS  |
| 8     | 5TLT495    | END SPACER (FOR 9" BLADE SPACING)       | *MS  |
| 9     | 5TLTMD     | TRUNNION BEARING HOUSING                | *MS  |

**DH16 Front Gang Parts List (cont'd)**

| <b>Ref.#</b> | <b>Part #</b> | <b>Description</b>                                  | <b>Qty.</b> |
|--------------|---------------|---|-------------|
|              | 5TLTMDR       | RELUBE TRUNNION BEARING HOUSING                     | *MS         |
| 10           | 5TLT604       | SEALED BEARING, 1 1/2"                              | *MS         |
|              | 5TLT604R      | RELUBE BEARING, 1 1/2"                              | *MS         |
| 11           | 5TLT729       | SNAP RING, 4"                                       | *MS         |
| 12           | 5TLT103       | SPACER SPOOL, 1 1/2" X 9"                           | *MS         |
| 13           | 5TLT492       | END WASHER, 1 1/2"                                  | 2           |
| 14           | 5TLT728       | LOCKWASHER, 1 1/2"                                  | 2           |
| 15           | 5TL9472       | JAM NUT, 1 1/2"                                     | 2           |
| 16           | 5TLT727A      | LOCK NUT, 1 1/2"                                    | 2           |
| 17           | 5TL15719      | AXLE, 1 1/2" X 60 1/2"- DH1610                      | 2           |
|              | 5TL15762      | AXLE, 1 1/2" X 61"- DH1610 w/ 1/4" DISK BLADES      | 2           |
|              | 5TL15720      | AXLE, 1 1/2" X 69 1/2"- DH1612                      | 2           |
|              | 5TL15763      | AXLE, 1 1/2" X 70"- DH1612 w/ 1/4" DISK BLADES      | 2           |
|              | 5TL15716      | AXLE, 1 1/2" X 78 1/2"- DH1613                      | 2           |
|              | 5TL15764      | AXLE, 1 1/2" X 79 1/8"- DH1613 w/ 1/4" DISK BLADES  | 2           |
|              | 5TL15717      | AXLE, 1 1/2" X 87 1/2"- DH1615                      | 2           |
|              | 5TL15765      | AXLE, 1 1/2" X 88 1/4"- DH1615 w/ 1/4" DISK BLADES  | 2           |
| 18           | 5TL11397      | SQ. AXLE NUT, 1 1/2"                                | 2           |
| 19           | 5TLT605       | FLATWASHER, 1 1/2"                                  | 2           |
| 20           | 5TL15376      | 1 1/2" SPACER WASHER (IF NEEDED)                    | *MS         |
| 21           | 5TLT27        | HEX NUT, 3/4"                                       | *MS         |
| 22           | 5TLT31        | LOCKWASHER, 3/4"                                    | *MS         |
| 23           | 5TLT108       | OFFSET BEARING SPACER, 1 1/2" X 5 9/16"             | *MS         |
| 24           | 5TLT107       | OFFSET BEARING SPACER, 1 1/2" X 2 5/16"             | *MS         |
| 25           | 5TLT763       | HEX BOLT, 3/4" X 3" GR. 5                           | *MS         |
| 26           | 5TLT723       | FLATWASHER, 3/4"                                    | *MS         |
| 27           | 5TL12159      | TRUNNION MOUNT WELDMENT                             | *MS         |
| 28           | 5TL10054      | SPRING MOUNT TOP PLATE                              | *MS         |
| 29           | 5TL10055      | SPRING MOUNT ALIGNMENT PLATE                        | *MS         |
| 30           | 5TL10056      | SPRING MOUNT BOTTOM PLATE                           | *MS         |
| 31           | 5TL10483      | HEX BOLT, 7/8" X 8" GR. 5                           | *MS         |
| 32           | 5TLT753       | HEX BOLT, 5/8" X 8" GR. 5                           | *MS         |
| 33           | 5TLT21        | LOCKWASHER, 7/8"                                    | *MS         |
| 34           | 5TLT19        | HEX NUT, 7/8"                                       | *MS         |
| 35           | 5TLT24        | LOCKWASHER, 5/8"                                    | *MS         |
| 36           | 5TLT22        | HEX NUT, 5/8"                                       | *MS         |
| 37           | 5TL9553       | SPRING HANGER SHANK                                 | *MS         |
| 38           | 5TLTMDT604    | TRUNNION BEARING, HOUSING & SNAP RING ASSY.         | *MS         |
|              | 5TLTMDRT604R  | RELUBE TRUNNION BEARING, RELUBE HOUSING & SNAP RING | *MS         |
| 39           | 5TL3201771    | DISK BLADE, 20" X 1 1/2" PLAIN                      | *MS         |
|              | 5TL3201772    | DISK BLADE, 20" X 1 1/2" NOTCHED                    | *MS         |

\* M/S - Model Specific

**DH16 Rear Gang Parts Schematic  
Figure 8**



**DH16 Rear Gang Parts List**

| Ref.# | Part #     | Description                             | Qty. |
|-------|------------|---|------|
| 1     | 5TL11971   | 3/4" U-BOLT FOR 4X4 BEAM                | *MS  |
| 2     | 5TL12450   | 4" X 4" X 66" GANG BEAM- DH1610 REAR    | 2    |
|       | 5TL12453   | 4" X 4" X 75" GANG BEAM- DH1612 REAR    | 2    |
|       | 5TL12455   | 4" X 4" X 84" GANG BEAM- DH1613 REAR    | 2    |
|       | 5TL12459   | 4" X 4" X 93" GANG BEAM- DH1615 REAR    | 2    |
| 3     | 5TL12164   | TUBULAR GANG HANGER FOR 4X4 BEAM        | *MS  |
| 4     | 5TL12163   | HEX BOLT, 1/2" X 3 1/2" GR. 5           | *MS  |
| 5     | 5TL9226    | FLANGE LOCK NUT, 1/2"                   | *MS  |
| 6     | 5TLTOR15   | OUTRIGGER WASHER, 1 1/2" SQ.            | 2    |
| 7     | 5TL3221771 | DISK BLADE, 22" X 1 1/2" PLAIN(4.5mm)   | *MS  |
|       | 5TL3221772 | DISK BLADE, 22" X 1 1/2" NOTCHED(4.5mm) | *MS  |
|       | 5TL3222561 | DISK BLADE, 22" X 1 1/2" PLAIN (6MM)    | *MS  |
|       | 5TL3222562 | DISK BLADE, 22" X 1 1/2" NOTCHED (6MM)  | *MS  |
| 8     | 5TLT495    | END SPACER (FOR 9" BLADE SPACING)       | *MS  |
| 9     | 5TLTMD     | TRUNNION BEARING HOUSING                | *MS  |

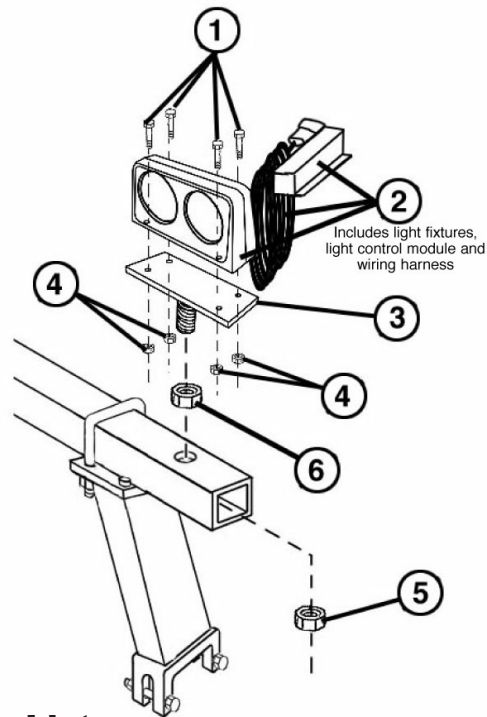


## DH16 Rear Gang Parts List (cont'd)

| Ref.# | Part #       | Description   | Qty. |
|-------|--------------|---|------|
|       | 5TLTMDR      | RELUBE TRUNNION BEARING HOUSING                     | *MS  |
| 10    | 5TLT604      | SEALED BEARING, 1 1/2"                              | *MS  |
|       | 5TLT604R     | RELUBE BEARING, 1 1/2"                              | *MS  |
| 11    | 5TLT729      | SNAP RING, 4"                                       | *MS  |
| 12    | 5TLT103      | SPACER SPOOL, 1 1/2" X 9"                           | *MS  |
| 13    | 5TLT492      | END WASHER, 1 1/2"                                  | 2    |
| 14    | 5TLT728      | LOCKWASHER, 1 1/2"                                  | 2    |
| 15    | 5TL9472      | JAM NUT, 1 1/2"                                     | 2    |
| 16    | 5TLT727A     | LOCK NUT, 1 1/2"                                    | 2    |
| 17    | 5TL15719     | AXLE, 1 1/2" X 60 1/2"- DH1610                      | 2    |
|       | 5TL15762     | AXLE, 1 1/2" X 61"- DH1610 w/ 1/4" DISK BLADES      | 2    |
|       | 5TL15720     | AXLE, 1 1/2" X 69 1/2"- DH1612                      | 2    |
|       | 5TL15763     | AXLE, 1 1/2" X 70"- DH1612 w/ 1/4" DISK BLADES      | 2    |
|       | 5TL15716     | AXLE, 1 1/2" X 78 1/2"- DH1613                      | 2    |
|       | 5TL15764     | AXLE, 1 1/2" X 79 1/8"- DH1613 w/ 1/4" DISK BLADES  | 2    |
|       | 5TL15717     | AXLE, 1 1/2" X 87 1/2"- DH1615                      | 2    |
|       | 5TL15765     | AXLE, 1 1/2" X 88 1/4"- DH1615 w/ 1/4" DISK BLADES  | 2    |
| 18    | 5TL11397     | SQ. AXLE NUT, 1 1/2"                                | 2    |
| 19    | 5TLT605      | FLATWASHER, 1 1/2"                                  | 2    |
| 20    | 5TL15376     | 1 1/2" SPACER WASHER (IF NEEDED)                    | *MS  |
| 21    | 5TLT27       | HEX NUT, 3/4"                                       | *MS  |
| 22    | 5TLT31       | LOCKWASHER, 3/4"                                    | *MS  |
| 23    | 5TLT108      | OFFSET BEARING SPACER, 1 1/2" X 5 9/16"             | *MS  |
| 24    | 5TLT107      | OFFSET BEARING SPACER, 1 1/2" X 2 5/16"             | *MS  |
| 25    | 5TLT763      | HEX BOLT, 3/4" X 3" GR. 5                           | *MS  |
| 26    | 5TLT723      | FLATWASHER, 3/4"                                    | *MS  |
| 27    | 5TL12159     | TRUNNION MOUNT WELDMENT                             | *MS  |
| 28    | 5TL10054     | SPRING MOUNT TOP PLATE                              | *MS  |
| 29    | 5TL10055     | SPRING MOUNT ALIGNMENT PLATE                        | *MS  |
| 30    | 5TL10056     | SPRING MOUNT BOTTOM PLATE                           | *MS  |
| 31    | 5TL10483     | HEX BOLT, 7/8" X 8" GR. 5                           | *MS  |
| 32    | 5TLT753      | HEX BOLT, 5/8" X 8" GR. 5                           | *MS  |
| 33    | 5TLT21       | LOCKWASHER, 7/8"                                    | *MS  |
| 34    | 5TLT19       | HEX NUT, 7/8"                                       | *MS  |
| 35    | 5TLT24       | LOCKWASHER, 5/8"                                    | *MS  |
| 36    | 5TLT22       | HEX NUT, 5/8"                                       | *MS  |
| 37    | 5TL9553      | SPRING HANGER SHANK                                 | *MS  |
| 38    | 5TLTMDT604   | TRUNNION BEARING, HOUSING & SNAP RING ASSY.         | *MS  |
|       | 5TLTMDRT604R | RELUBE TRUNNION BEARING, RELUBE HOUSING & SNAP RING | *MS  |
| 39    | 5TL3201771   | DISK BLADE, 20" X 1 1/2" PLAIN                      | *MS  |
|       | 5TL3201772   | DISK BLADE, 20" X 1 1/2" NOTCHED                    | *MS  |

\* M/S - Model Specific

**DH16 Safety light Kit Assembly**  
**Figure 9**



**DH16 Safety Light Kit Parts List**

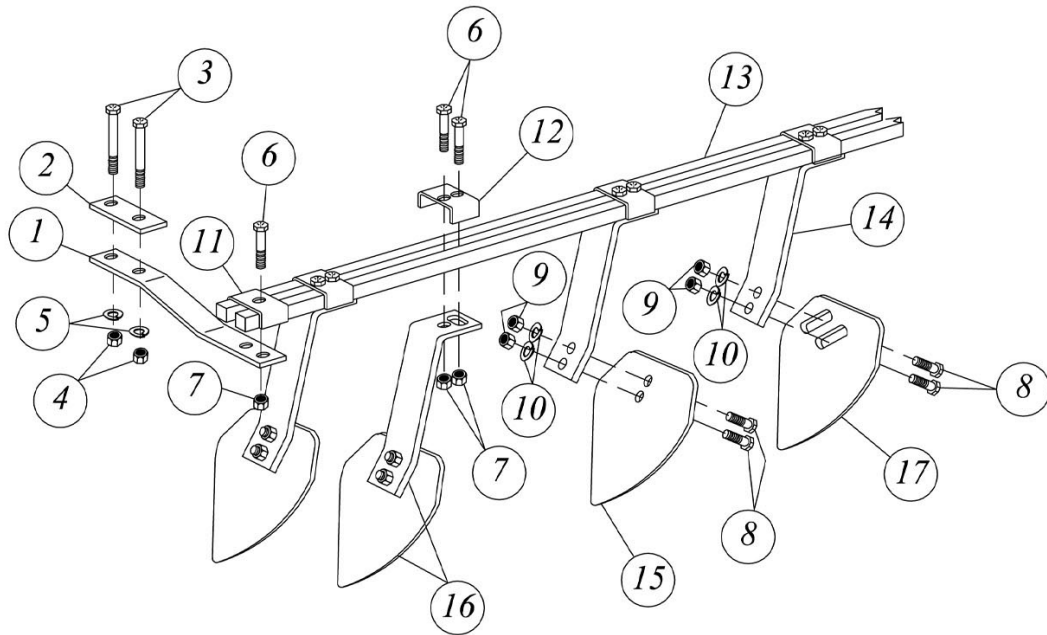
| Ref.# | Part #   | Description                    | Qty. |
|-------|----------|--------------------------------|------|
| 1     | 5TL15365 | HEX BOLT, 1/4" x 1 1/2", GR. 2 | 8    |
| 2     | 5TL15346 | LIGHT KIT                      | 1    |
| 3     | 5TL15347 | LIGHT MOUNT BRACKET            | 2    |
| 4     | 5TL15366 | NYLON INSERT LOCK NUT, 1/4"    | 8    |
| 5     | 5TL15132 | NYLON INSERT LOCK NUT, 5/8"    | 2    |
| 6     | 5TLT22   | HEX NUT, 5/8" HEX NUT, 5/8"    | 2    |

**Parts Not Shown in Figures 4 - 9**

| Ref.# | Part #   | Description                            | Qty. |
|-------|----------|--|------|
| N/S   | 5TL15194 | SAFETY DECAL SHEET                     | 1    |
| N/S   | 5TL15362 | WARNING DECAL (CYLINDER LOCKUPS)       | 1    |
| N/S   | 5TL15363 | WARNING DECAL (TRANSPORTING)           | 1    |
| N/S   | 5TL15364 | WARNING DECAL (PRESSURIZED HYD. FLUID) | 1    |
| N/S   | 5TL15707 | MODEL DH1610 DECAL                     | 1    |
| N/S   | 5TL15708 | MODEL DH1612 DECAL                     | 1    |
| N/S   | 5TL15709 | MODEL DH1613 DECAL                     | 1    |
| N/S   | 5TL15710 | MODEL DH1615 DECAL                     | 1    |
| N/S   | 5TL15658 | 3 1/2" FRONTIER LOGO DECAL             | 3    |
| N/S   | 5TL15715 | DH16 OPERATORS MANUAL                  | 1    |
| N/S   | 5TL15199 | 9" RED REFLECTOR                       | *MS  |
| N/S   | 5TL15200 | 9" YELLOW REFLECTOR                    | 2    |
| N/S   | 5TL15361 | 9" FLUORESCENT ORANGE DECAL            | 2    |
| N/S   | 5TL15718 | 4X8 CYLINDER SEAL KIT                  | 1    |

## Optional Equipment

### Heavy Scraper Kit Figure 10 DH16 Series



### DH16 Series Heavy Scraper Kit Model Numbers

**5TLSK9286 for the DH1610**

**5TLSK9326 for the DH1612**

**5TLSK9366 for the DH1613**

**5TLSK9406 for the DH1615**



## Heavy Scraper Kit Parts List

| Ref.# | Part #      | Description                                       | Qty. |
|-------|-------------|---|------|
| 1     | 5TL12891    | SCRAPER MOUNT BRACKET                             | 12   |
| 2     | 5TL12894    | SCRAPER BAR TOP PLATE                             | 12   |
| 3     | 5TLT747     | HEX BOLT, 5/8" X 6" GR. 2                         | 24   |
| 4     | 5TLT22      | HEX NUT, 5/8"                                     | 24   |
| 5     | 5TLT24      | LOCKWASHER, 5/8"                                  | 24   |
| 6     | 5TL11082    | HEX BOLT, 1/2" X 2 1/2" GR. 2                     | *MS  |
| 7     | 5TL9226     | FLANGE LOCK NUT, 1/2"                             | *MS  |
| 8     | 5TLT733     | HEX BOLT, 1/2" X 1 1/2" GR. 2                     | *MS  |
| 9     | 5TLT26      | HEX NUT, 1/2"                                     | *MS  |
| 10    | 5TLT25      | LOCK WASHER, 1/2"                                 | *MS  |
| 11    | 5TLT803     | SCRAPER BAR CLAMP, "U" CLAMP- 1 HOLE              | 12   |
| 12    | 5TL9356     | 2- HOLE CLAMP                                     | *MS  |
| 13    | 5TL12344    | HEAVY SCRAPER BAR, 55"- DH1610 FRONT              | 2    |
|       | 5TL12462    | HEAVY SCRAPER BAR, 59"- DH1610 REAR               | 2    |
|       | 5TL12347    | HEAVY SCRAPER BAR, 64"- DH1612 FRONT              | 2    |
|       | 5TL12463    | HEAVY SCRAPER BAR, 68"- DH1612 REAR               | 2    |
|       | 5TLT2581    | HEAVY SCRAPER BAR, 73"- DH1613 FRONT              | 2    |
|       | 5TL12348    | HEAVY SCRAPER BAR, 77"- DH1613 REAR               | 2    |
|       | 5TL11731    | HEAVY SCRAPER BAR, 82"- DH1615 FRONT              | 2    |
|       | 5TL12466    | HEAVY SCRAPER BAR, 86"- DH1615 REAR               | 2    |
| 14    | 5TL10151    | SCRAPER ARM                                       | *MS  |
| 15    | 5TL11081    | UNIVERSAL SCRAPER BLADE                           | *MS  |
| 16    | 5TL11027 or | ARM & BLADE ASSEMBLY FOR RIGHT FRONT OR LEFT REAR | *MS  |
|       | 5TL11028    | ARM & BLADE ASSEMBLY FOR LEFT FRONT OR RIGHT REAR | *MS  |
| 17    | 5TL11065    | FURROW FILLER BLADE                               | 2    |

## 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.

\*\*NOTE- When mounting outrigger scraper blades make sure 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

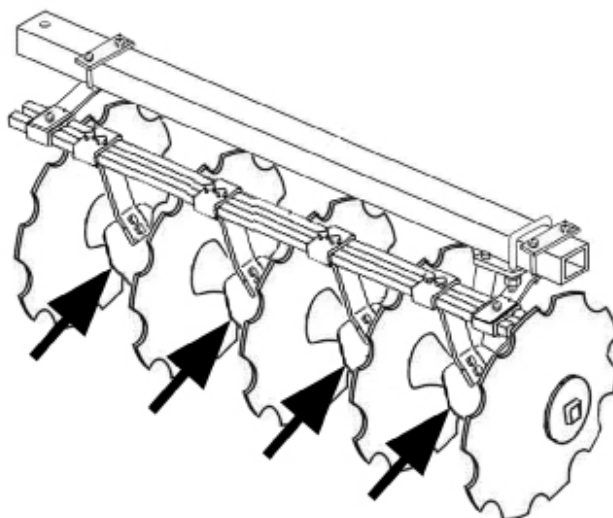
To attach heavy scraper kit to disk, place scraper bar top plate (ref. #2) on top of gang beam and scraper mount bracket (ref. #1) on bottom of gang beam. Using 5/8" x 6" Gr. 2 bolts (ref. #3), fasten both pieces together around gang beam with 5/8" lock washer and hex nut (ref. #4 & #5). There should 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 right front and left rear, the other side fits the left front and right 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 locknut (ref. #7). Scraper arm & blade assemblies are not provided for outside front and inside 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 disk 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 41) for proper torque information.

\*NOTE- Re-tighten all fasteners after first operational use. Please see Bolt Torque Chart (page 41) for proper torque information.

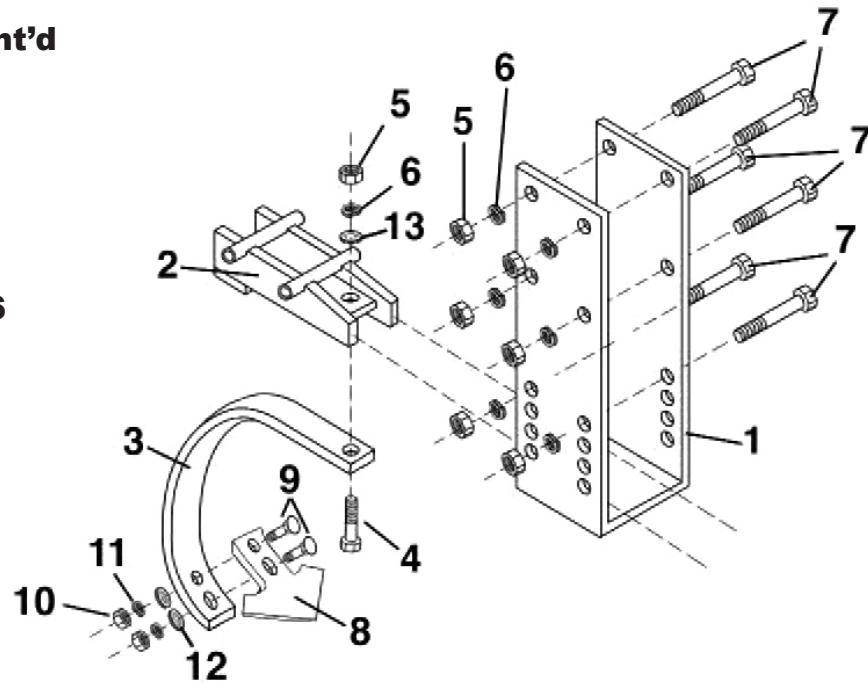
Regardless of model or configuration, scrapers are only located between two disk blades (Refer to the diagram to the right). There is no need for a scraper on the far outside blades on the front gangs or the far inside blades on the rear gangs.



## Optional Equipment Cont'd

### Center Sweep Kit Figure 11

**DH1610, DH1612,  
DH1613, DH1615  
Part Number 5TL11476**



| Ref.# | Part #   | Description                    | Qty. |
|-------|----------|--------------------------------|------|
| 1     | 5TL10388 | SHANK BRACKET 4" BEAM          | 1    |
| 2     | 5TL9175  | SHANK HOLDER 4" BEAM           | 1    |
| 3     | 5TL10602 | BALK BREAKER SHANK             | 1    |
| 4     | 5TL9192  | HEX BOLT, 5/8" X 2 1/2", GR. 5 | 1    |
| 5     | 5TLT22   | HEX NUT, 5/8"                  | 7    |
| 6     | 5TLT24   | LOCK WASHER, 5/8"              | 7    |
| 7     | 5TLT746  | HEX BOLT, 5/8" X 5 1/2"        | 6    |
| 8     | 5TL13614 | 4" SWEEP POINT                 | 1    |
| 9     | 5TL14984 | PLOW BOLT, 7/16" X 1 1/2"      | 2    |
| 10    | 5TL14986 | HEX NUT, 7/16"                 | 2    |
| 11    | 5TL14987 | LOCK WASHER, 7/16"             | 2    |
| 12    | 5TL14985 | FLAT WASHER, 7/16"             | 2    |
| 13    | 5TL9354  | 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 41) for proper torque information.

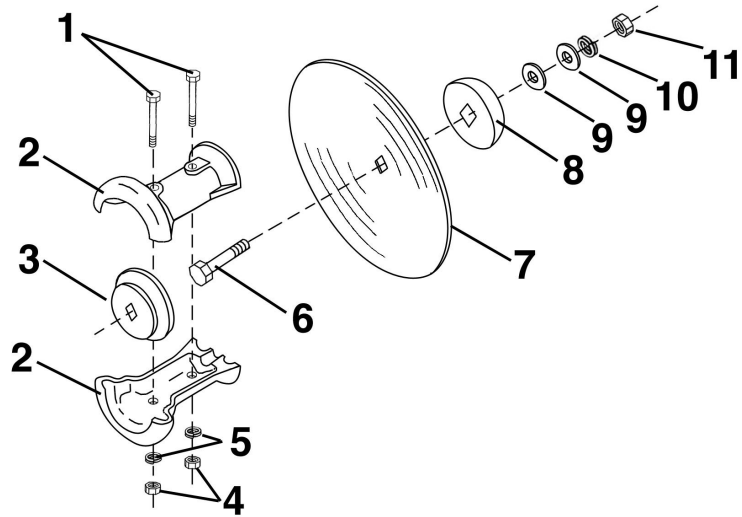
\*NOTE- Retighten all fasteners after first operational use. Please see Bolt Torque Chart (Page 41) for proper torque information.



## Optional Equipment Cont'd

### Outrigger Kit Figure 12

**DH1610, DH1612,  
DH1613, DH1615  
Part Number 5TLT70318**



| Ref.# | Part #     | Description                        | Qty.  |
|-------|------------|------------------------------------|-------|
| 1     | 5TL12163   | HEX BOLT, 1/2" X 3 1/2" GR. 5      | 4     |
| 2     | 5TLTOR2    | OUTRIGGER HALF                     | 4     |
| 3*    | 5TLTOR15   | OUTRIGGER WASHER, 1 1/2"           | *Note |
| 4     | 5TLT26     | HEX NUT, 1/2"                      | 4     |
| 5     | 5TLT25     | LOCK WASHER, 1/2"                  | 4     |
| 6     | 5TLT760    | HEX BOLT, 3/4" X 3 1/2" GR. 5      | 2     |
| 7     | 5TL5181381 | DISK BLADE, 18" X 1" PLAIN for 22" | 2     |
| 8     | 5TLT1      | END WASHER, 1 1/8"                 | 2     |
| 9     | 5TLT723    | FLAT WASHER, 3/4"                  | 2     |
| 10    | 5TLT31     | LOCK WASHER, 3/4"                  | 2     |
| 11    | 5TLT27     | HEX NUT, 3/4"                      | 2     |

\*Note: Item #3, Part# 5TLTOR15 is not included with this assembly. The 5TLTOR15 is standard equipment on the rear gangs of the DH16 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 DH16 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

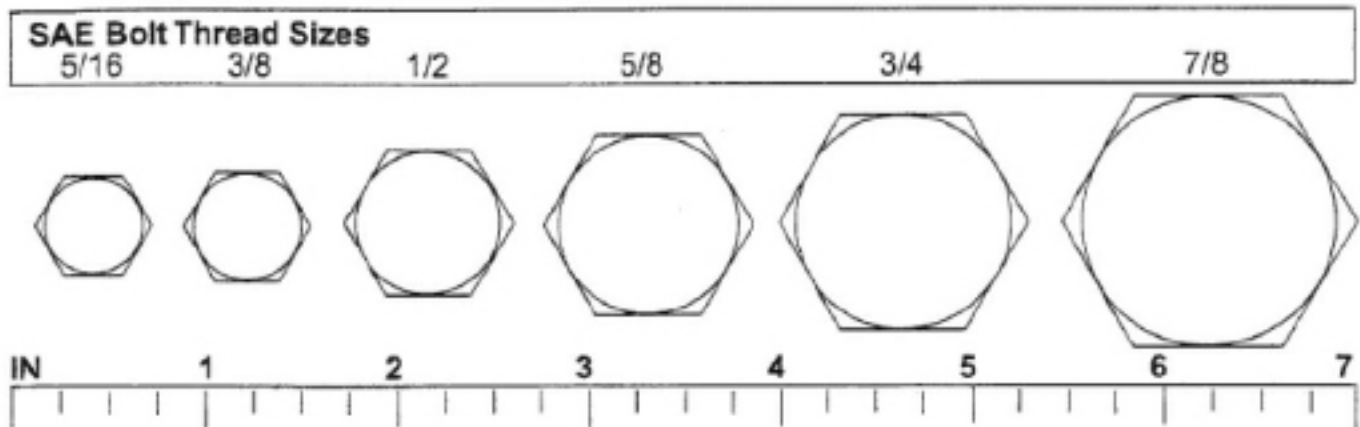
sure the 3/4" x 3 1/2" Gr. 5 bolt (Ref. #6) is pulled out as far as possible before tightening. Once tightened, apply the outrigger disk blade (Ref. #7) on the 3/4" x 3 1/2" Gr. 5 bolt (Ref. #6), followed by the cast iron end washer (Ref. #8), 3/4" flat washer (Ref. #9), 3/4" lock washer (Ref. #10), and 3/4" hex nut (Ref. #11). Tighten and outrigger is ready for operation. Please see Bolt Torque Chart (Page 41) for proper torque information.

\*NOTE- DH16 models use 18" outrigger blades for 22" disk blades.

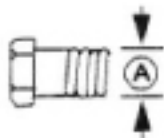
\*NOTE- Retighten all fasteners after first operational use. Please see Bolt Torque Chart (Page 41) for proper torque information.

## 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<br>Diameter<br>(Inches) | Wrench<br>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 |

DH16 Series gang bolt torque 2100 lbs-ft 2850 N-m

## Notes



**PART NO.  
5TL15715**

