



CH Series Carted Chain Harrow



Operator's Manual

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TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Tar River 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.

TO THE OWNER:

Read this manual before operating your Tar River 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 Tar River dealer has trained mechanics, genuine Tar River service parts, and the necessary tools and equipment to handle all your needs. Use only genuine Tar River service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation.

Record your implement model and serial number in the space provide below. Your dealer will need this information to give you prompt, efficient service.

Model Number: _____

Serial Number: _____

Date Purchased: _____

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Introduction

Thank you for purchasing your CH Carted Chain Harrow. Dethatch dead growth and rejuvenate grass and pasture fields. Available in 20' and 24' working widths, the heavy 5/8" harrow tines keep your pasture healthy and vibrant. The sturdy design of the CH Carted Chain Harrow which easily folds into transport position makes it the obvious choice for your pasture renovation needs.

Technical Specifications

	CH-20	CH-24
Min. Working Width	19' 6"	22' 6"
Center Sections	2 each 4' x 6'	2 each 4' x 6'
Wing Sections	1 each 6' x 6'	2 each 4' x 6'
Wing Fold	Hydraulic	Hydraulic

Important Safety Information

Safety

It is important that you read the entire manual and to become familiar with this product before you begin using it. This product is designed for certain applications only. The manufacturer cannot be responsible for issues arising from modification. We strongly recommend this product not be modified and /or used for any application other than that for which it is designed. If you have any questions relative to a particular application, DO NOT use the product until you have first contacted us to determine if it can or should be performed on the product.

Read and understand this manual and all safety signs before operating and maintaining . Review the safety instructions and precautions annually.

Safety Signal Words

TAKE NOTE! This safety alert symbol found though out this manual is used to call you attention to instructions involving you personal safety and the safety of others. Failure to follow these instructions can result in injury or death.



**This symbol means:
Attention!
Become alert!
Your safety is involved!**

Note the use of the signal words, DANGER, WARNING and CAUTION with the safety messages. The appropriate signal word for each has been selected using the following guidelines:



DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.



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. It may also be used to alert against unsafe practices.



CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Important Safety Information

General Safety Guidelines

Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers and manufacturers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury, study the following precautions and insist those working with you, or for you, follow them.

Replace any DANGER, WARNING, CAUTION or instruction safety decal that is not readable or is missing. Location of such decals are indicated in this manual. Do not attempt to operate this equipment under the influence of drugs or alcohol.

Review the safety instructions with all users annually.

This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this equipment's operations. **Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.**

To prevent injury of death, use a tractor equipped with a Roll Over Protection System (ROPS). Do not paint over, remove or deface any signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question, **Don't try it!**



Safety Decal Care

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current safety sign
- Safety signs are available from your Distributor or Dealer Parts Department or the factory.

Important Safety Information

How to install Safety Signs:

- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.



Before Operation

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing, which may catch in moving parts.
- Always wear protective clothing and substantial shoes.
- Assure that all tires are inflated evenly.
- Give the unit a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included with this manual.
- Be sure that there are no tools lying on or in the equipment.
- Do not use the unit until you are sure that the area is clear, especially of children and animals.
- Don't hurry the learning process or take the unit for granted. Ease into it and become familiar with your new equipment.
- Practice operation of your equipment and its attachments. Completely familiarize yourself and other operators with its operation before using.
- Use a tractor equipped with a Roll Over Protection System (ROPS) and fasten your seat belt prior to starting engine.
- The manufacturer does not recommend usage of tractor with ROPS removed.
- Move tractor wheels to the widest recommended settings to increase stability.
- Securely attach to towing unit. Use a high strength, appropriately sized hitch pin with a mechanical retainer and attach safety chain.
- Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the equipment.
- Do not use the unit until you are sure that the area is clear, especially of children and animals.

Important Safety Information



During Operation

- Children should not be allowed on the product.
- Clear the area of small children and bystanders before moving the implement.
- If using a towing unit, securely attach implement by using a hardened 3/4" pin, a metal retainer, and safety chains if required. Shift towing unit to a lower gear before going down steep downgrades, thus using the engine as a retarding force. Keep towing vehicle in gear at all times. Slow down for corners and rough terrain.
- Make sure you are in compliance with all local and state regulations regarding transporting equipment on public roads and highways. Lights and slow moving signs must be clean and visible by overtaking or oncoming traffic when implement is transported.
- Beware of bystanders, **particularly children!** Always look around to make sure that it is safe to start the engine of the towing vehicle or move the unit. This is particularly important with higher noise levels and quiet cabs, as you may not hear people shouting.
- **NO PASSENGERS ALLOWED!** Do not carry passengers anywhere on, or in, the tractor or equipment, except as required for operation.
- Keep hands and clothing clear of moving parts.
- Do not clean, lubricate or adjust your equipment while it is moving.
- When halting operation, even periodically, set the tractor or towing vehicle brakes, disengage the PTO, shut off the engine and **remove the ignition key.**
- Be especially observant of the operating area and terrain. Watch for holes, rocks or hidden hazards. Always inspect the area prior to operation.
- **DO NOT** operate near the edge of drop-offs or banks.
- **DO NOT** operate on steep slopes as overturns may result.
- Operate up and down (not across) intermediate slopes. Avoid sudden starts and stops.

Important Safety Information



Highway and Transport Operations

- Adopt safe driving practices.
- Keep the brake pedals latched together at all times. **Never use independent braking with machine in tow as loss of control and/or upset of unit can result.**
- Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed at a minimum.
- Reduce speed prior to turns to avoid the risk of overturning.
- Avoid sudden uphill turns on steep slopes.
- Always keep the tractor or towing vehicle in gear to provide engine braking when going downhill. Do not coast.
- Do not drink and drive!
- Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- Use approved accessory lighting flags and necessary warning devices to protect operators of other vehicles on the highway during daylight and nighttime transport. Various safety lights and devices are available from your dealer.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway and marking requirements.
- When driving the tractor and equipment on the road or highway under 40 kph (20 mph) at night or during the day, use the amber warning lights and a slow moving vehicle (SMV) identification emblem.
- Plan your route to avoid heavy traffic.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- Be observant of bridge loading ratings. Do not cross bridges rated at lower than the gross weight at which you are operating.
- Watch for obstructions overhead and to the side while transporting.
- Always operate in a position to provide maximum visibility at all times. Make allowances for increased length and weight of the equipment when making turns, stopping the unit, etc.
- Pick the most level route when transporting across fields. Avoid the edges of ditches or gullies and steep hillsides.
- Be extra careful when working in inclines.

Important Safety Information

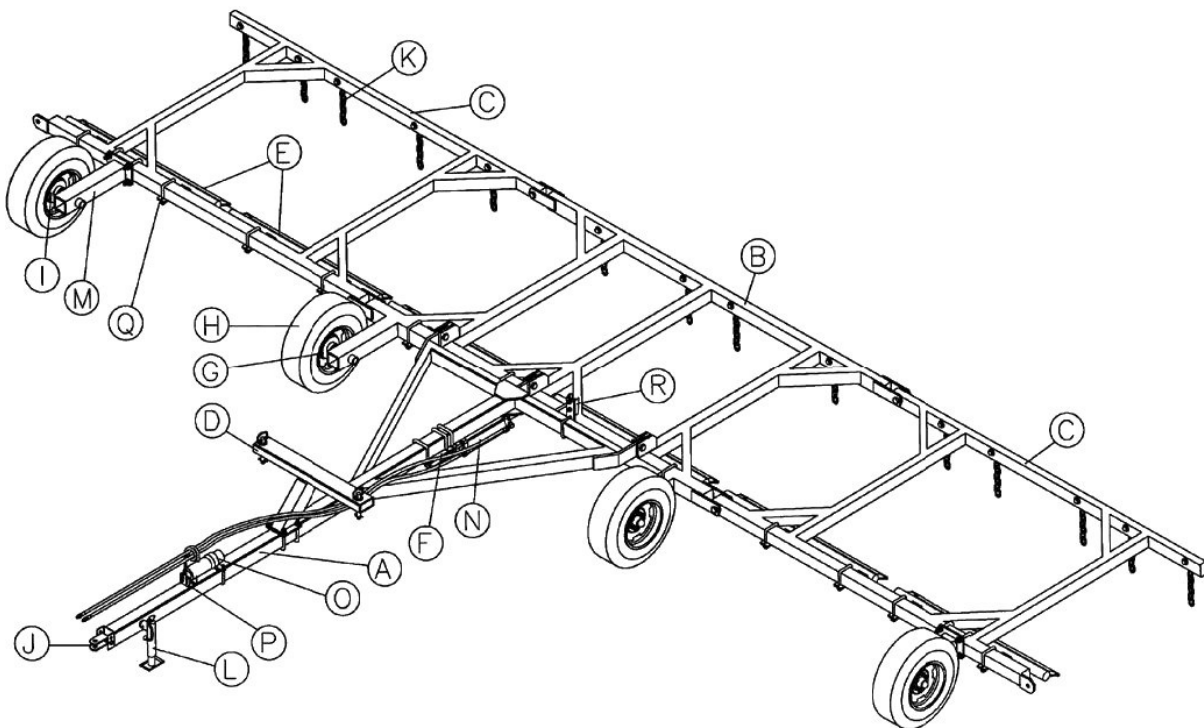


Highway and Transport Operations

- Maneuver the tractor or towing vehicle at safe speeds.
- Avoid overhead wires or other obstacles. Contact with overhead lines could cause serious injury or death.
- Avoid loose fill, rocks and holes, they can be dangerous for equipment operation or movement.
- Allow for unit length when making turns,
- Operate the towing vehicle from the operator's seat only.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- Never leave running equipment attachments unattended.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation.
Correct all problems. Follow the maintenance safety procedures.

Assembly

ID Letter	Description	Sizes
A	Standard Tongue Long Tongue HD Long Tongue	16'-32' Carts 34'-38" Carts 38'-42' Carts
B	Center Section	8', 8HD, 10', 12', or 14' widths
C	Wing Section	4', 6', 8', 10', 12', or 14' widths
D	Wing Rest	16'-18' Carts, 2 pieces 20'-22' Carts, 2 pieces 24'-26' Carts 28' 36' Carts 38'-42' Carts
E	Pull Bars	4' and 6'
F	Cylinder Bracket HD Cylinder Bracket	16'-36' Carts 38'-42' Carts
G	Center Section Hub & Spindle Assembly Center Section Dual Hub & Spindle Assembly	16'-36' Carts, 38' & 42' Carts 38'-42' Carts
H	Center Section Wheel	Same on all Carts
I	Wing Hub & Spindle Assembly	Same on all Carts
J	Tongue Clevis	Same on all Carts
K	Lift Chain	Same on all Carts
L	Tongue Jack	Same on all Carts
M	Wing Wheel Assembly HD Wing Wheel Assembly	16'-36' Carts 42' Cart
N	Hydraulic Cylinder, 3"x 16" Hydraulic Cylinder, 3 1/2"x 16"	16'-36' Carts 38'-42' Carts
O	Manual Canister	Same on all Carts
P	Hydraulic Tip Holder	Same on all Carts
Q	Pull Bar Mounting Bracket HD Pull Bar Mounting Bracket	16'-36' Carts 14' Center only
R	SMV Mounting Bracket	Same on all Carts

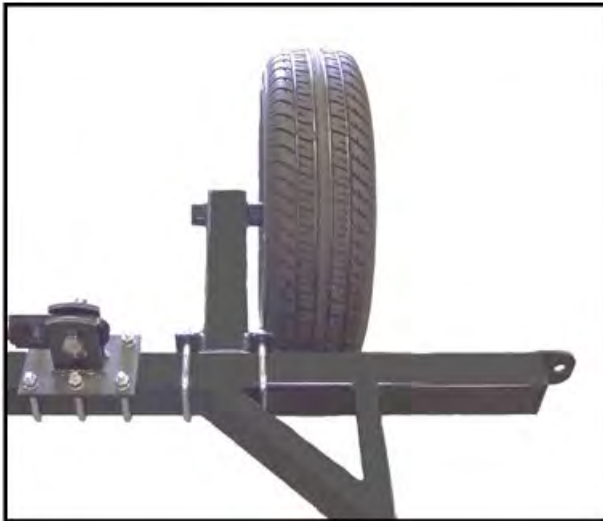


Assembly



Caution: Wear proper protective equipment such as safety glasses and protective shoes when assembling.

1. Place Center Section (B) with welded Cylinder Bracket on the bottom side, closest to the ground.
2. Bolt Wing Sections (C) to Center Section (B) using 5/8"x 5" Bolts on the front bar and 5/8" x 3-1/2" Bolts on the backbar with Self-Locking nuts.
3. Slide Hub and Spindles (G) into Center Section (B) Spindle Mounts. Tighten 1/2" Set Screws into divot on Spindle and tighten locking nut. For Harrow Cart sizes 20' to 42' slide Wing Section Spindles (I) into Wing Wheel Assemblies (M). Tighten 1/2" Set Screw into divot on Spindle and tighten Locking Nut. For 20' Carts and larger Mount Wing Wheel Assemblies (M) onto Wing Sections (C). Wing Wheel Assemblies usually can be mounted so they straddle the outside tube of the Wing Section except on the 20' Cart. *(See picture below)* Mount all Rims (H) with Tires, P195-75 or P205-75, and mount to Spindle Hubs.



20' Cart



Most Carts

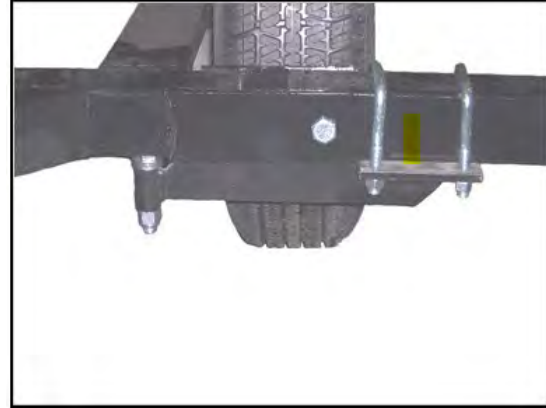


Wing Wheel Assembly Location

NOTE: Be sure to tighten set screw and jam nut.

Assembly

4. 16' and 18' Harrow Carts Wing Support Brackets are supplied since these carts do not have wheels on the wings. Attach these Brackets to the bottom side of the Wing Section (C) at the front hinge point. These Brackets extend under the Center Section (B) and will support the Wing in the working position. (See pictures below)

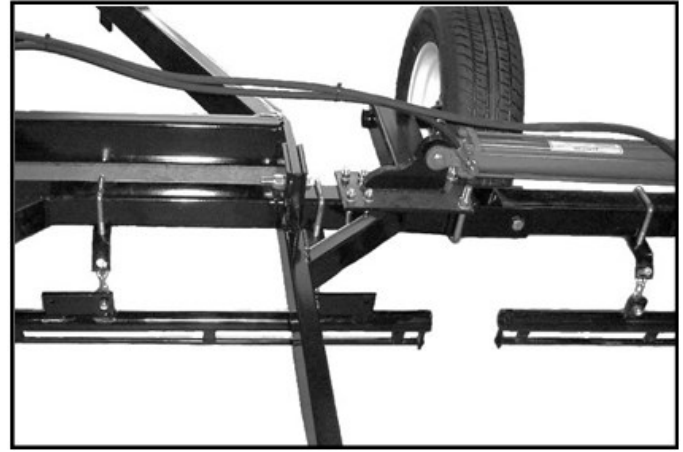


5. Attach Tongue (A) onto Center Section (B) with $\frac{3}{4}$ " x $3\frac{1}{2}$ " Bolts and Locknuts. Attach Jack (L) to Tongue (A) and secure with Locking Pin. Attach Tongue Clevis (J) to Tongue using $\frac{3}{4}$ " x 5" Bolt and Self-Locking nut.

6. Attach the Pull Bars (E) to the Mounting Brackets (Q) using $\frac{1}{2}$ " Bolts, Flat Washers and Self-Locking Nuts. (See picture below) Attach Pull Bar Mount to the bottom side of the Center and Wing Sections using $\frac{1}{2}$ " U Bolts, lock washers and nuts. Start by installing the Pull Bars on the Center Section first. Install the Pull Bars in the middle first and keep the end of the Pull Bars approximately 7" from each other OR $3\frac{1}{2}$ " off of center. Use the correct number of 4' and 6' Pull Bars according to the size of Center or Wing. Mount 1 – 4' on a 4' section, 1 – 6' on a 6' section, 2 – 4' Pull Bars on an 8' section, 1 – 4' and 1 – 6' on a 10' section, 2 – 6' on a 12' section and 2 – 4', 1 – 6' on a 14' section. Allow a 7" space, depending on the hook spacing of the Harrow Section, between the ends of the Pull Bars.



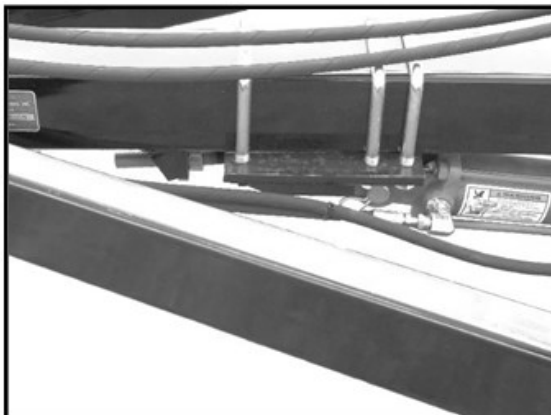
Assembly



Note: When mounting 1 – 4’ and 1 – 6’ Pull Bar on a Wing Section, always mount the 6’ Pull Bar to the outside. When mounting 1 – 4’ and 1 – 6’ Pull Bar on the Center Section always mount the 6’ Pull Bar on the RH side standing behind the Cart and looking toward the tractor. In this scenario, the Pull Bars will not meet up in the middle of the center section. You want to make sure to keep the same spacing on each side from the end of the Pull Bar to the end of the center section. When mounting the Pull Bars on a 14’ Center Section use HD Pull Bar Mounting Brackets and 5/8” U Bolts, Lock Washers and Nuts. Attach the HD Pull Bar Mounting Bracket to the backside of the tube and install in the vertical position. Mount the 6’ Pull Bar in the Center with a 4’ Pull Bar on each side of it. When mounting the Pull Bars on a 14’ Wing the 6’ Pull Bar should be on the outside and the 4’ Pull Bars in the center and on the inside.

7. Attach Cylinder Mounting Bracket (F) to the Tongue (A) with (3) 5/8” U Bolts, Lock Washers and Nuts. Before installing, thread (1) 3/4” Nut to the threaded rod on the Cylinder Mounting Bracket. Next, place threaded rod on Cylinder Mounting Bracket through the welded ear on the bottom side of the tongue. Now, install (1) 3/4” nut on the threaded rod to hold the Cylinder Mounting Bracket in place. Start with the welded ear on the bottom side of the tongue in the center of the threaded rod. The Cylinder Mounting Bracket will need adjusted using the 3/4” nuts on the rod after cart is folded up so that the wings sit about 1/2” above the Wing Rests.

Install the Flow Restrictor on the tractor end of one of the Hydraulic Hoses. Attach Hydraulic Couplers to the Hydraulic Hoses and attach to the Hydraulic Cylinder (N). **Important:** Attach the Hoses to a Tractor and run the Hydraulic Cylinder in and out several times on the ground before installing to purge the air out of the system. Failure to purge the air may result in the Harrow Cart dropping rapidly which can cause serious injury and or DEATH.



Assembly



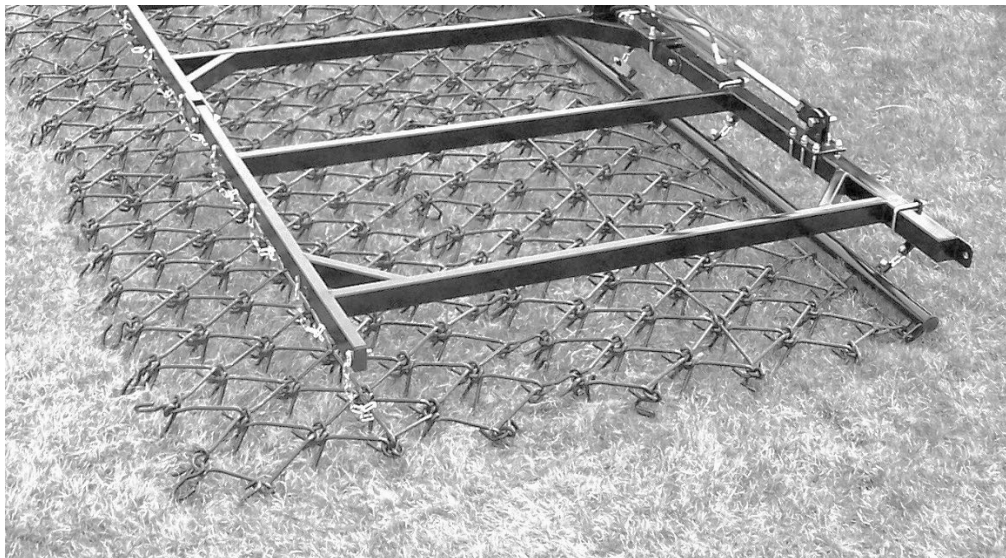
Caution: Do not exceed the manufacturer's maximum hydraulic system pressure of 2500 psi.



Warning: Always wear protective eye goggles and use a magnifying glass or hold a piece of wood on suspected leaks. Pinhole hydraulic leaks can penetrate skin. Do not touch!

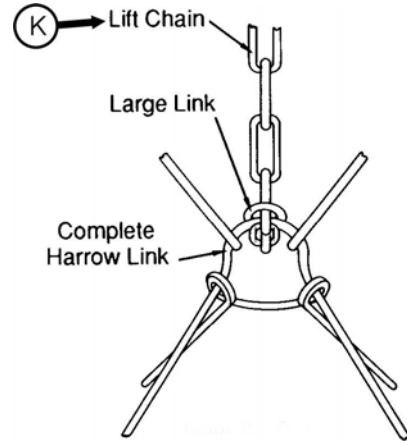
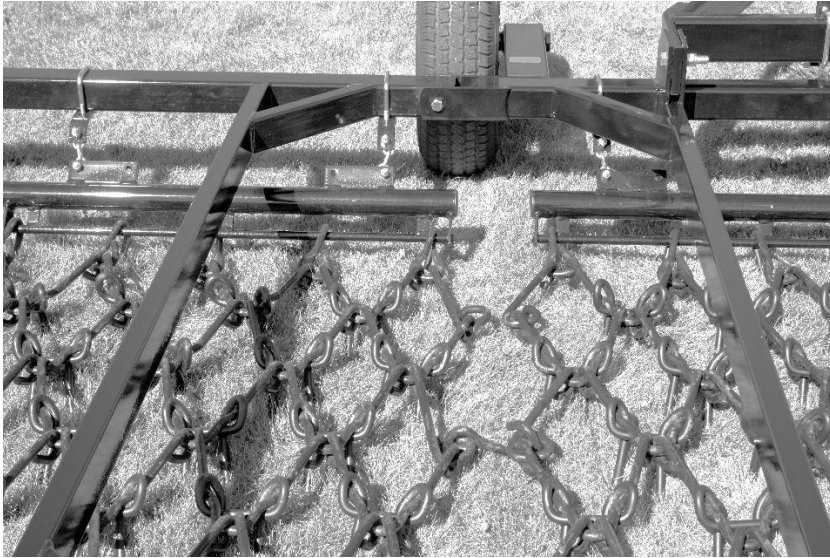
Note: If fluid penetrates the skin, it must be surgically removed within a few hours by a doctor familiar with the form of injury or gangrene may result. Make sure the weight of the machine has been taken off the hydraulic cylinder before disconnecting the hydraulic hoses.

8. When installing the Harrow Sections start on the center section first. Keep the sections as close together as possible. Install the front Harrow Section Hooks over the rod on the back of the Pull Bars. Connect Rear Harrow Section to Front Harrow Section. Total length of 1/2" Harrow Section will be approximately 1 1/2' longer than Harrow Cart Frame. When using 5/8" Harrow Sections the Harrow Sections will extend just slightly past the Harrow Frame. Before attaching Rear Lift Chain, make sure to pull the Harrow tight to the back of the cart. Now you can install the Rear Lift Chain (K) (See picture below) around a Harrow Link approximately 1 1/2' from the end (straight down from the hole on the back of the frame) Then attach the Rear Lift Chain to the Harrow Cart Frame using a 3/8"x 2 1/2" Carriage Bolt, Lock Washer and Nut. One link on the end of each Rear Lift Chain is slightly smashed so that you can loop it around the Harrow Link, and back through itself. After installing all the Harrow Sections the hooks can be squeezed shut to prevent them from coming loose.

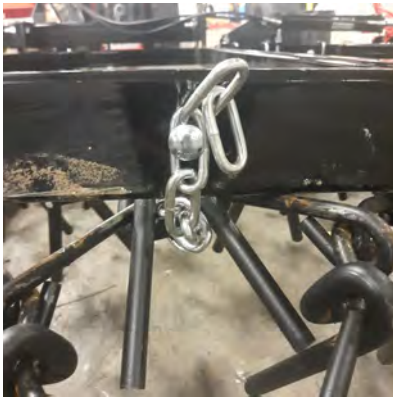


1/2" Harrow

Assembly



5/8" Harrow

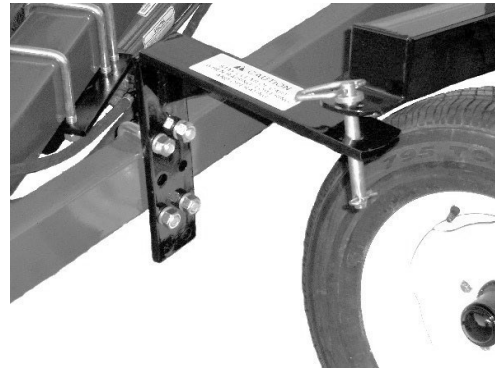


Assembly

9. Install Wing Rest (D) onto Tongue (A) using 5/8" U Bolts, Lock washers and Nuts. Fold up the Harrow Cart using the Hydraulic Cylinder and bring the Wings forward to set Wing Rest (D). After the Wing Rest (D) proper location is determined tighten U Bolts. Adjust Cylinder Bracket location using the threaded rod (F) for proper Wing to Wing Rest positioning. Tighten all Bolts and Nuts. Wing Rests for 16' – 22' Carts are 2 piece and bolt to the tongue. (See pictures below)



Wing Rest for 16' & 18' Carts



Wing Rest for 20' & 22' Carts



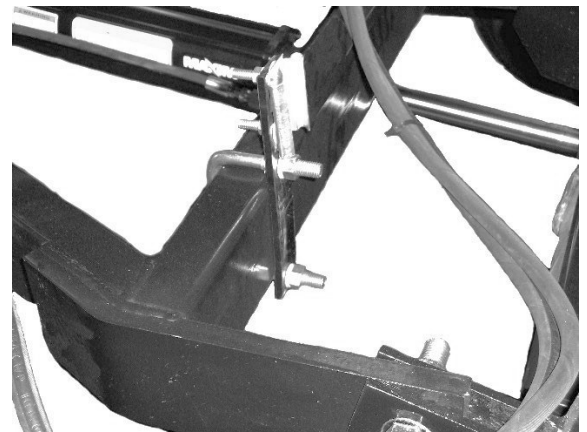
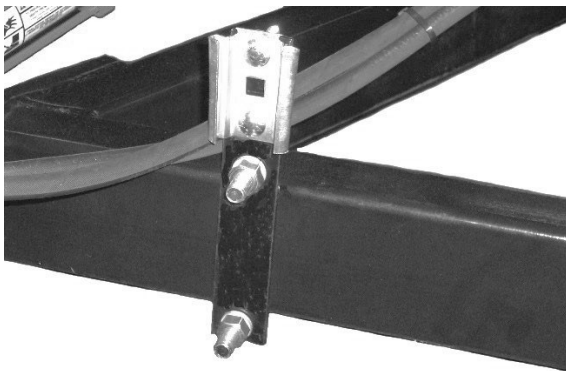
24' - 42' Wing Rest

Assembly

10. Attach Manual Holder Canister (O) to the tongue as shown below using a 3/8" x 1" Hex Cap screw and the Hose Holder. The Hose Holder goes through the Hydraulic Tip Holder (P) and the Manual Holder Canister before screwing into the Tongue. Tighten jam nut to secure Hose Holder.

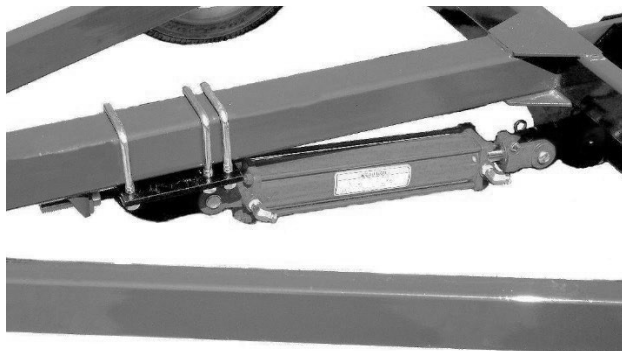


11. Install SMV Mounting Bracket (R) on rear cross brace of the Tongue facing rearward as shown below using 1/2" U Bolt, Lock washers and Nuts. (See pictures below)



Hydraulic Cylinder Adjustment

Install one 3/4" nut on threaded rod on Cylinder Mount Bracket. Insert into bracket welded to tongue and install 3/4" nut on threaded rod. Secure Bracket with U bolts, lock washers and nuts. Slide Cylinder Bracket (F) on Tongue (A) to set Cylinder position for Wings to set on or slightly above the Wing Rest (D). Loosen U Bolts and adjust nuts on threaded rod to move Bracket.



Assembly

Tongue Clevis Adjustment

The Tongue has an adjustable Clevis which has 2 position settings to accommodate different tractor Drawbar heights. (See picture below) After adjusting the Clevis be sure to tighten bolts and nuts before using the Harrow Cart.



Adjustable Clevis

Before using the Harrow Cart Check the Following

Check and retighten all bolts and nuts, including lug bolts.

Check Hydraulic System for leaks before using.

Purge air from Hydraulic System before lowering or if equipped with Hydraulic Wing Fold before opening the wings.

Operation

Operation

Important: Before operation, the operator should be familiar with these operation instructions and the operation of the tractor. Do not allow an unqualified person or one under the influence of medication or intoxicating substances to operate the tractor.

1. Connect the Harrow Cart to the tractor tongue using a ¾” hitch pin with retaining clip. The adjustable jack will allow the tongue to be raised or lowered during hook up. After hook up to the tractor store the jack in the horizontal position.
2. Connect the hydraulic hoses to the tractor hydraulic system.



Caution: Make sure a restrictor is installed in one of the hydraulic lines. Failure to use a restrictor will allow the machine to raise and lower rapidly and could result in damage to the machine and injury to bystanders.

3. To lower the Harrow Cart to the working position, remove the transport pin for each wing and manually open the wings or if the Cart is equipped with Hydraulic Wing Fold Cylinders, use the tractor hydraulics to open the wings.



Caution: Make sure area around Harrow Cart is clear before lowering. Do not lower when people or pets are near.

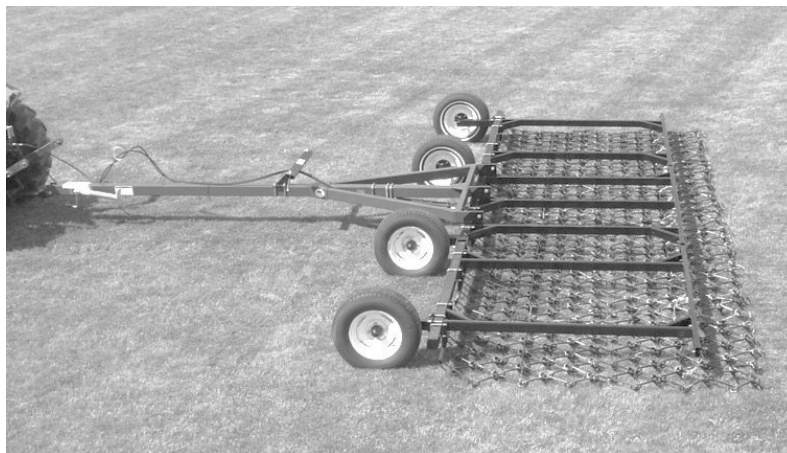


Caution: Operate the cylinders through the cycle a few times to expel air from the system. Failure to fully charge the hydraulic system could result in injury when the Cart or Wings fall abruptly to the ground.



Caution: The Hydraulic Wing fold system should only be used when the Harrow Cart is in the raised transport position.

4. Working speed is normally 5 to 10 mph. Speed varies with different conditions or terrain.
5. Use Hydraulic Cylinder Stop Blocks or an adjustable screw stop type Hydraulic Cylinder to set the field operating position. When in field operating position the frame should be level or slightly higher in the rear. Note: Do not operate the Harrow Cart with the rear frame dragging on top of the harrow.

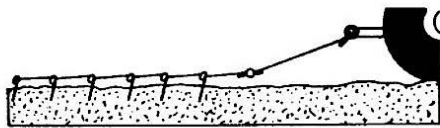


Operation

Choose the degree of penetration

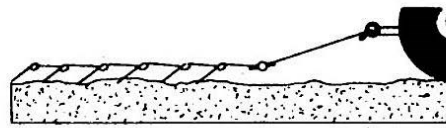
Depending on the direction in which the Harrow Section is pulled, the Tines can become passive or aggressive. The Front and Rear Sections are independently adjustable allowing you to choose the degree of penetration.

ADJUSTABLE PENETRATION FOR GREATER VERSATILITY



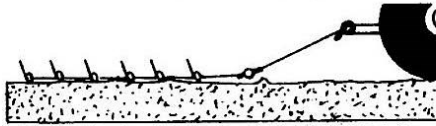
MAXIMUM PENETRATION

Tines down, pointed slightly back.



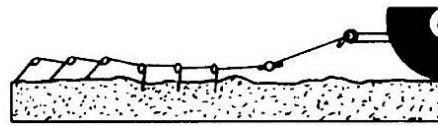
LIGHT PENETRATION

Tines down, pointed further back.



SMOOTHING, FLOATING

Tines up, pull in either direction.



TWO JOBS IN ONE PASS

Front section — maximum penetration.
Rear section — light penetration or floating.

Transporting

Transporting

To transport, raise the Harrow Cart using the Hydraulic Lift Cylinder. Manually walk the Wings forward towards the Tongue and Wing Rest or use the Hydraulic Wing Fold Cylinders if equipped. Secure the Wings in place with the Transport Lock Pins and hairpin cotter pins.



Caution: To transport, raise the Harrow Cart using the Hydraulic Lift Cylinder. Manually walk the Wings forward towards the Tongue and Wing Rest or use the Hydraulic Wing Fold Cylinders if equipped. Secure the Wings in place with the Transport Lock Pins and hairpin cotter pins.



Caution: Never transport the Harrow Cart without locking pins in place. Never transport faster than road surface conditions allow.

Maintenance

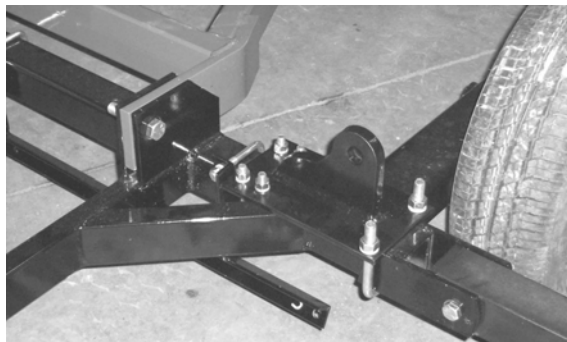
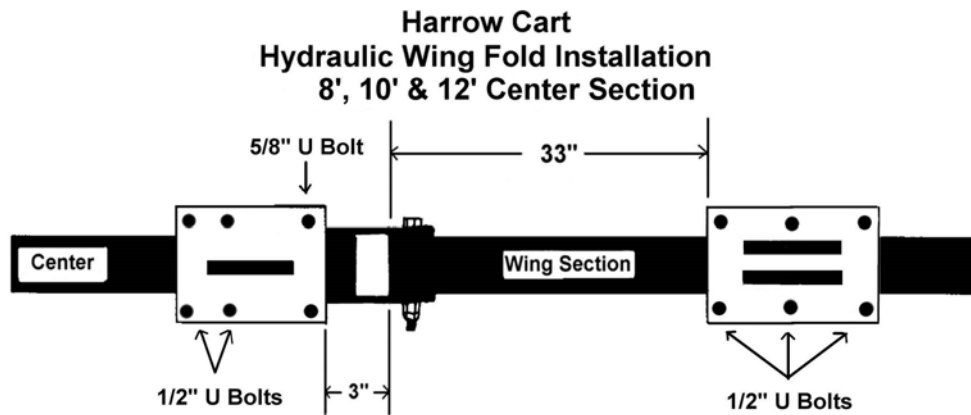
1. **Caution:** Make sure Wings are *locked* whenever they are in the folded position before working around the machine or for transporting.
2. Check hydraulic hoses periodically for cracks, abrasions or leaks. Replace defective hose immediately. Replace worn or broken hoses and fittings with factory replacement parts only.
3. To extend the life of the cylinder and hoses, store the Harrow Cart under cover. If cover is not available, remove the cylinder and hoses and store under cover.
4. Check tightness of lug bolts and spindle setscrews after one hour of operation and every six months thereafter. Check tire pressure whenever maintenance is performed.
5. Lubricate hinge points as needed.
6. Repack wheel bearings every six months.

Hydraulic Wing Fold Kit

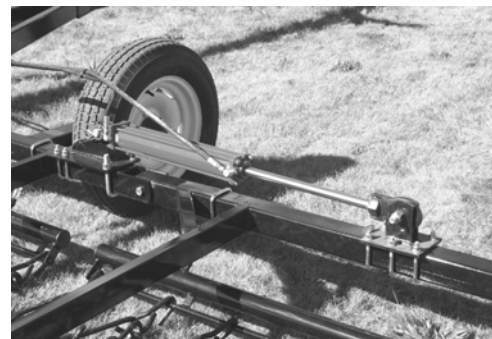
Hydraulic Wing Fold Kit (8', 10', & 12' Center)

Note: The Hydraulic Wing Fold Kit is designed to fold the wings in after the Harrow Cart has been raised to the transport position.

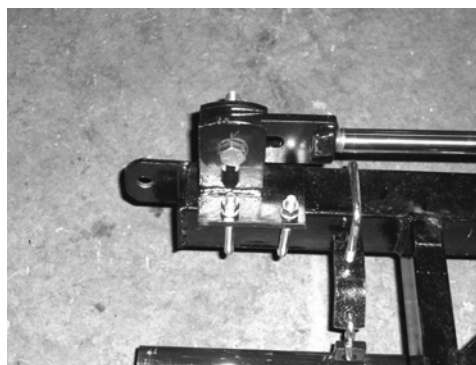
The Hydraulic Wing Fold Kit should be installed on the Harrow Cart with the Cart lowered to the ground or in the working position. Install the Mounting Brackets on the Center Section and Wing Sections according to the diagram on this page. Mount the Hydraulic Cylinders on the Brackets with the ports to the rear. The ram end of the Cylinder with the slotted bracket will attach to the mounting bracket on the Wing using a 3/4" x 3 1/2" capscrew and nylock nut. Do not tighten the capscrew completely. The slotted bracket on the ram must be able to move. When assembling the Hoses install the Flow Restrictor in the tractor end of one of the Hoses. Prior to installing operate the Hydraulic Cylinders in and out several times to purge the air out of the system. Failure to do so may result in the Wings dropping abruptly. The Hoses should be secured to the frame so they do not become entangled or come in contact with the tires.



Center Section Cylinder Mounting Bracket



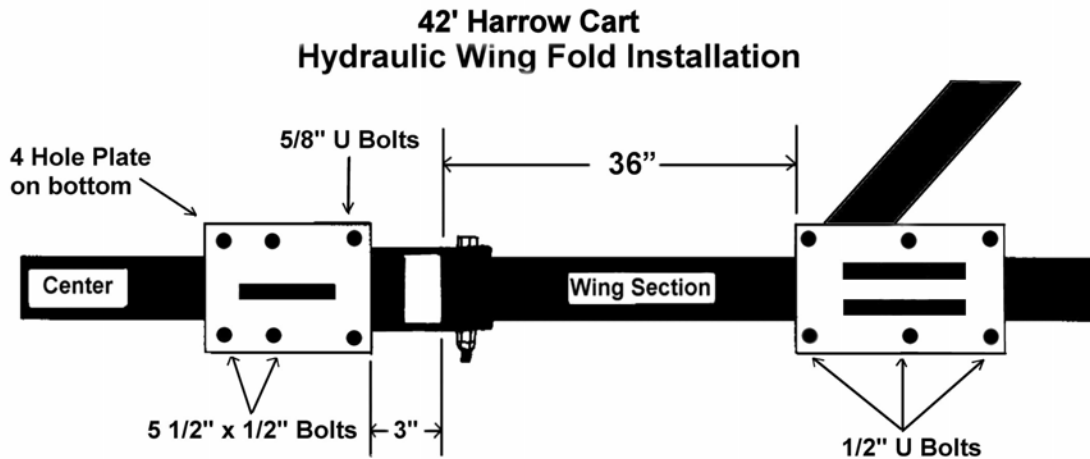
Typical Wing Bracket Installation



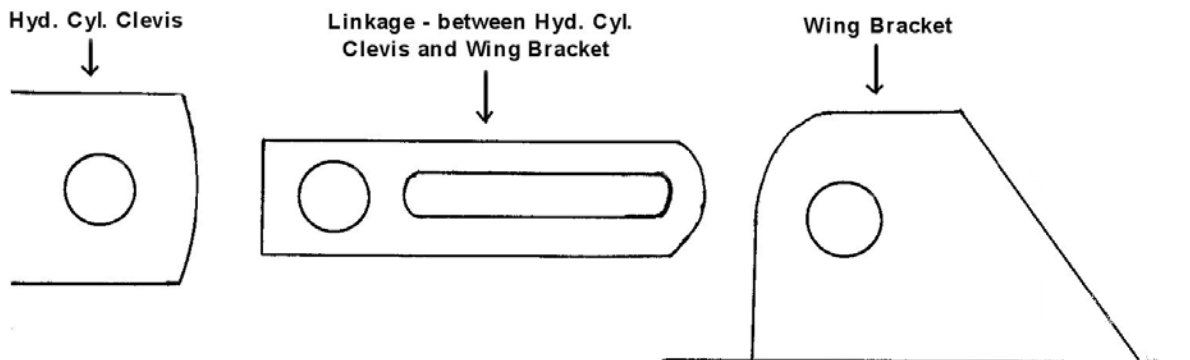
4' Wing Bracket Installation

Hydraulic Wing Fold Kit

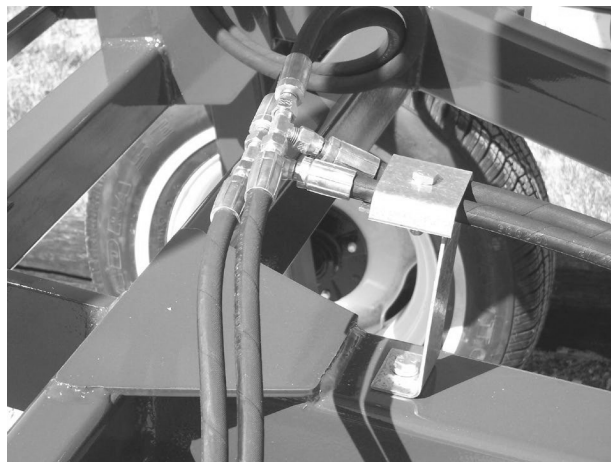
Note: The Hydraulic Wing Fold Kit is designed to fold the wings in after the Harrow Cart has been raised to the transport position.



When installing the Hydraulic Cylinder follow diagram below. Attach the Clevis on the Cylinder Rod to the Linkage using the Cylinder Pin. Then attach the Linkage to the Wing Bracket using a $\frac{3}{4}$ " x 4" Capscrew and Nylock Nut. Do not tighten the capscrew completely. The Linkage must be able to move.



Install the Hose Holder for the Hydraulic Wing Fold Kit as shown below. It may be necessary to drill and tap a hole in the tongue for the Hose Holder. Drill a $\frac{5}{16}$ " hole and use a $\frac{3}{8}$ " NC tap. Attach Hose Holder with a $\frac{3}{8}$ " x 1" cap screw and lock washer.



Torque Specifications

Torque Specifications for Common Bolt Sizes															
Inches		Bolt Head Identification						Metric		Bolt Head Identification					
										5.8		8.8		10.9	
Bolt size (inches)	Thread pitch	Grade 2		Grade 5		Grade 8		Class 5.8		Class 8.8		Class 10.9			
		N.m	ft-lb	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb		
1/4"	20	7	5	11	8	16	12	M5	0.08	4	3	6	4	9	7
1/4"	28	8	6	13	10	19	14	M6	1	6	4	10	7	15	11
5/16"	18	15	11	24	17	33	25	M8	1.25	16	12	25	18	36	27
5/16"	24	17	13	26	19	37	27	M8	1	17	13	26	19	38	28
3/8"	16	27	20	42	31	59	44	M10	1.5	31	23	48	35	71	52
3/8"	24	31	23	47	35	67	49	M10	1.25	33	24	51	38	75	55
7/16"	14	43	32	67	49	95	70	M10	1	35	26	53	39	78	58
7/16"	20	48	36	75	55	106	78	M12	1.75	54	40	84	62	123	91
1/2"	13	66	48	102	75	144	106	M12	1.5	56	41	87	64	128	94
1/2"	20	75	55	115	85	163	120	M12	1.25	59	44	90	66	133	98
9/16"	12	95	70	147	109	208	154	M14	2	84	62	133	98	195	144
9/16"	18	106	79	164	121	232	171	M14	1.5	94	69	142	105	209	154
5/8"	11	132	97	203	150	287	212	M16	2	131	97	206	152	302	223
5/8"	18	149	110	230	170	325	240	M16	1.5	141	104	218	161	320	236
3/4"	10	233	172	361	266	509	376	M18	2.5	181	133	295	218	421	310
3/4"	16	261	192	403	297	569	420	M18	2	196	145	311	229	443	327
7/8"	9	226	167	582	430	822	606	M18	1.5	203	150	327	241	465	343
7/8"	14	249	184	642	473	906	668	M20	2.5	256	189	415	306	592	437
1"	8	339	250	873	644	1232	909	M20	1.5	288	212	454	335	646	476
1"	12	371	273	955	704	1348	995	M22	2.5	344	254	567	418	807	595
1-1/8"	7	480	354	1077	794	1746	1288	M22	1.5	381	281	613	452	873	644
1-1/8"	12	539	397	1208	891	1958	1445	M24	3	444	327	714	526	1017	750
1-1/4"	7	677	500	1519	1120	2463	1817	M24	2	488	360	769	567	1095	808
1-1/4"	12	750	553	1682	1241	2728	2012	M27	3	656	484	1050	774	1496	1103
1-3/8"	6	888	655	1992	1469	3230	2382	M27	2	719	530	1119	825	1594	1176
1-3/8"	12	1011	746	2268	1673	3677	2712	M30	3.5	906	668	1420	1047	2033	1499
1-1/2"	6	1179	869	2643	1949	4286	3161	M30	2	1000	738	1600	1180	2250	1659
1-1/2"	12	1326	978	2974	2194	4823	3557	M36	4	1534	1131	2482	1830	3535	2607

Notes:

This chart is an approximate estimate of torque values.

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for Metric hardware.

Make sure that fastener threads are clean and that you properly start thread engagement.

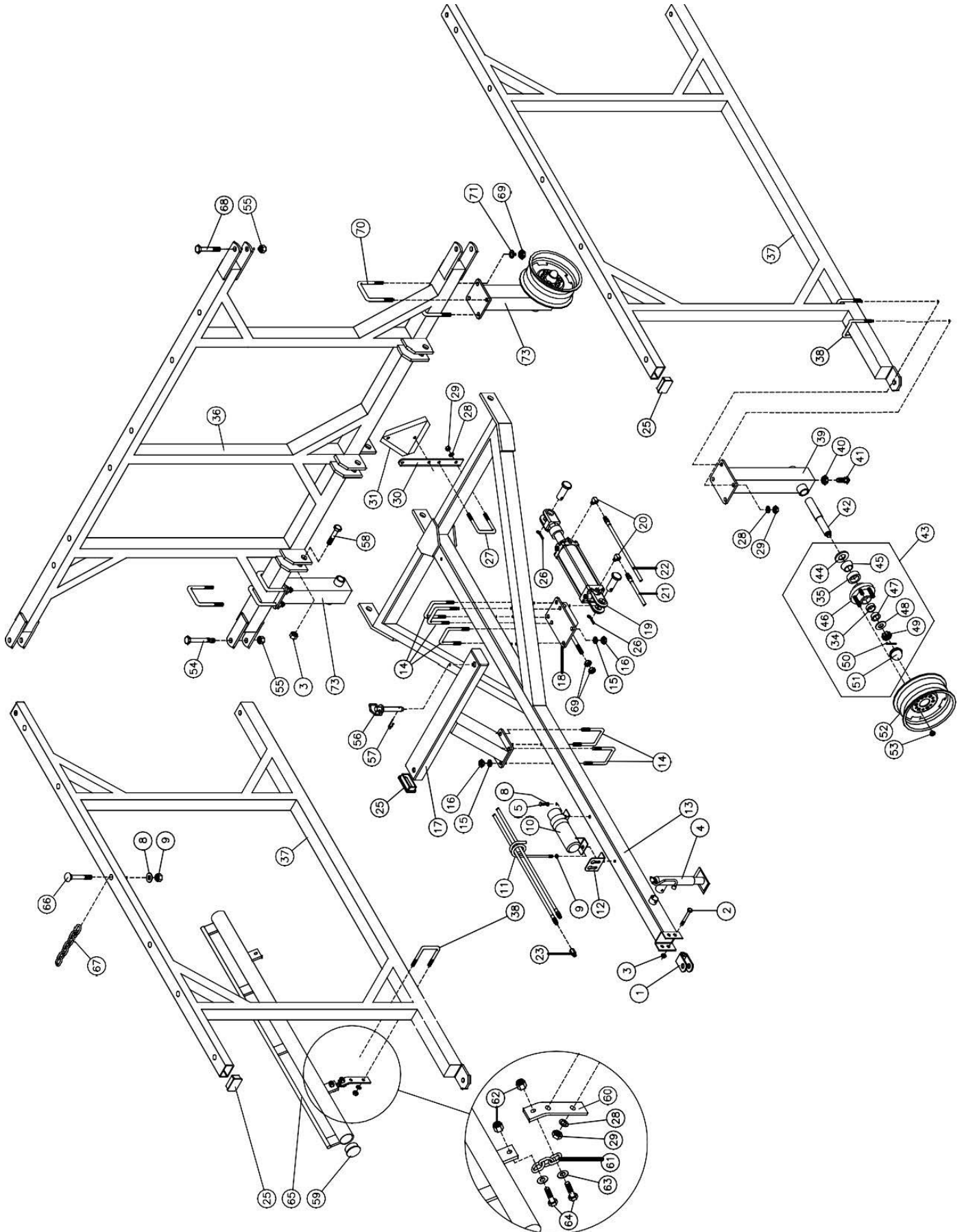


CH Series Carted Chain Harrow



Parts Manual

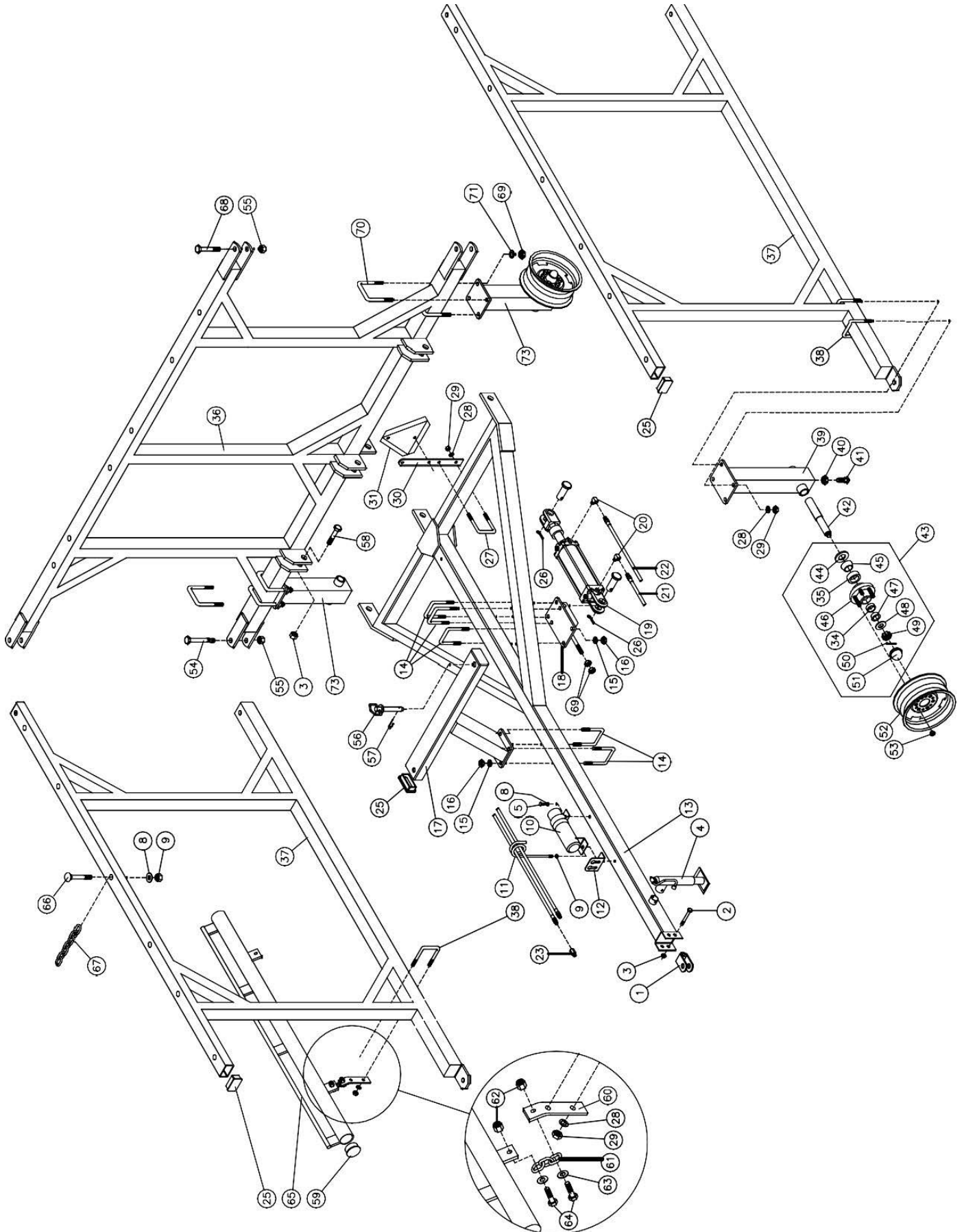
Frame Assembly



Frame Assembly

Item	Part #	Description	Qty.
1	CH	Clevis hitch	1
2	OV-184	Cap screw, 3/4" x 5"	1
3	OV-185	Nylock nut, 3/4"	4
4	0-51	Tongue jack	1
5	0-181	Hex cap screw, 3/8" x 1"	1
8	0-158	Lock washer, 3/8"	-
9	0-159	Hex nut, 3/8"	-
10	MH	Manual canister	1
11	0-53	Hose holder	1
12	HCTH	Tip holder	1
13	LT	Std. tongue, 2014 & after	1
	HDT	HD long tongue, 38'-42'	1
14	0-67	U bolt, 5/8" x 4" x 5-1/4"	-
15	OE-155	Lock washer, 5/8"	-
16	OE-154	Hex nut, 5/8"	-
17	WR-A	Wing rest, 24'-26'	1
	WR-B	Wing rest, 28'-36'	1
	WR-C	Wing rest, 16'-18'	2
	WR-DRH	RH wing rest, 20'-22'	1
	WR-DLH	LH wing rest, 20'-22'	1
	WR-E	Wing rest, 38'-42'	1
18	CMB	Cylinder bracket	1
	HDCMB	HD cyl. Bracket, 38'-42'	1
19	662239	Hyd. Cyl., 3"x16", 16'-36'	1
	662251	Hyd. Cyl., 3-1/2"x16", 38'-42'	1
20	6MJ-8MB90	Hyd. Elbow, 6MJ-8MB90	2
21	HS235-0	Hyd. Hose, 235" 6FJX + 8MP	1
22	HS252-0	Hyd. Hose, 252" 6FJX + 8MP	1
23	0-57	Restrictor, 1/2" NPT, 1/32"	1
25	CAP153	Plastic insert	4
26	CP316-24	Cotter pin, 3/16" x 2-1/4"	2
27	UB24350	U Bolt, 1/2" x 4.06" x 3-1/2"	1
28	0-173	Lock washer, 1/2"	-
29	0-153	Hex nut, 1/2"	-
30	SMV-1	Mounting bracket	1
31	SMVS	SMV sign	1
36	HCCW8	8' center section	1
	HCCW10	10' center section	1
	HCCW12	12' center section	1
	HCCW14	14' center section	1

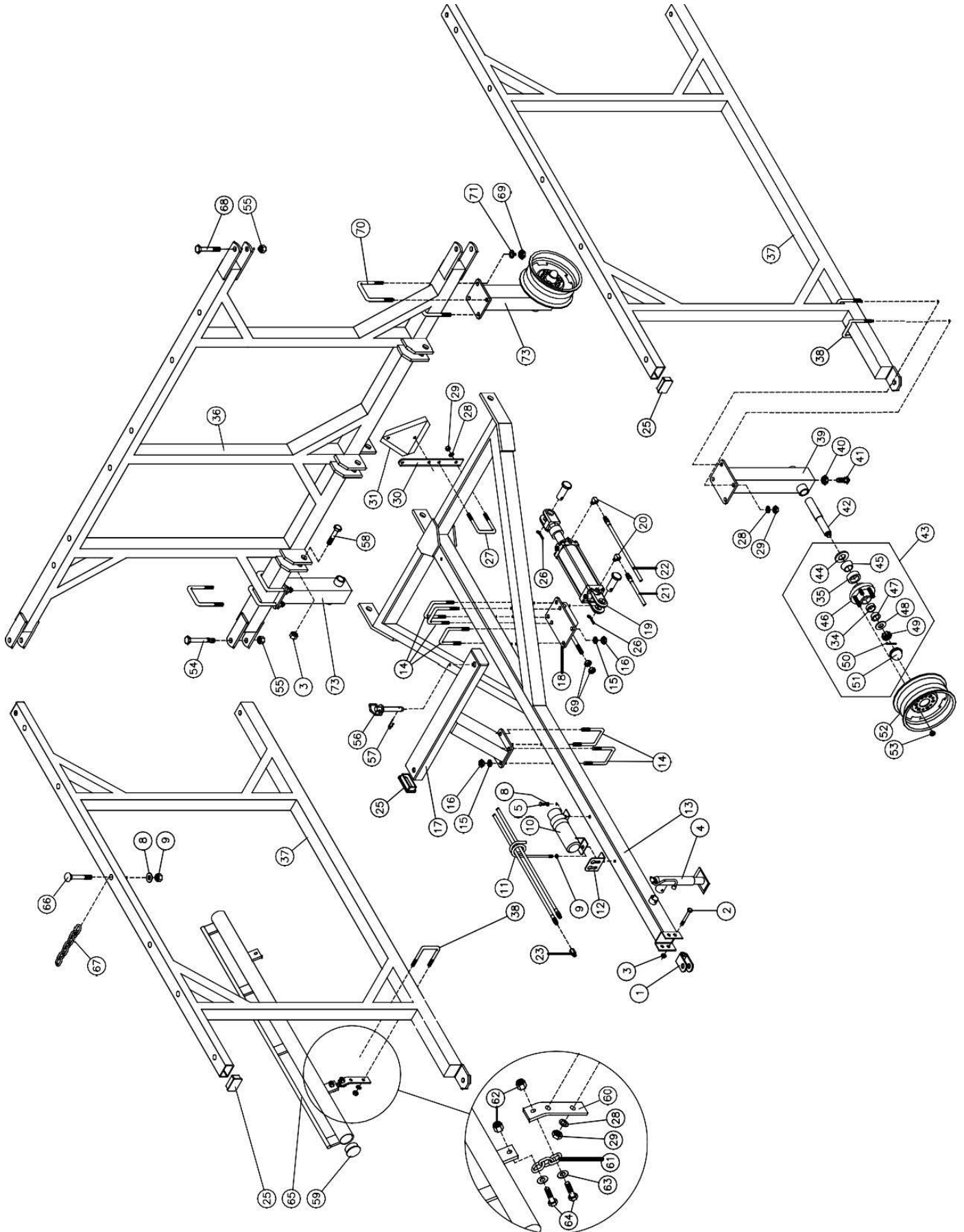
Frame Assembly



Frame Assembly

Item	Part #	Description	Qty.
37	W4	4' wing weldment	2
	W6	6' wing weldment	2
	W8	8' wing weldment	2
	W10	10' wing weldment	2
	W12	12' wing weldment	2
	W14	14' wing weldment	2
38	U Bolt	U bolt, 1/2" x 3.06" x 4-1/4"	-
	0-67	U bolt, 5/8" x 5-1/4", 38'-42'	6
39	WWA	Wing wheel mount	2
	WWAHD	Wing wheel mount, 14' wing	2
40	0-179	Jam nut, 1/2"	-
41	0-178	Set screw 1/2" x 1-1/4"	-
42	286926L	Spindle, 16'-36'	-
43	283545L	Hub/spindle assembly	-
44	906281	Grease seal	-
45	910252	Inner cone	-
47	910253	Outer cone	-
48	951801	SAE flat washer, 3/4	-
49	953005	Hex slotted nut, 3/4"-16	-
50	905936	Cotter pin, 5/32 x 1-3/4"	-
51	909900	Hub cap, 1.958 dia.	-
52	HR133	Tire wheel	-
53	912919	Lug nut, 1/2"-20	-
54	OE-156	Cap screw, 5/8" x 5"	2
55	OC-76	Nylock nut, 5/8"	4
56	HC586H	Locking pin, 5/8" x 6"	2
57	0-56	Hairpin clip	2
58	0-168	Cap screw, 3/4"-10 x 3-1/2"	3
60	PBMB	Pull bar mounting bracket	-
	PBMB14	Pull bar mounting bracket, 14 center	6
61	HCPC	Chain, 7mm, 3 links	-
62	0-161	Nylock nut, 1/2"	-
63	K-322	Flat washer, 1/2"	-
64	HHC2175	Cap screw, 1/2" x 1-3/4"	-
65	HD4	Pull bar, 4'	-
	HD6	Pull bar, 6'	-
66	CB38250	Carriage bolt, 3/8" x 2-1/2"	-
	CB383	Carriage bolt, 3/8" x 3", 38'-42'	10

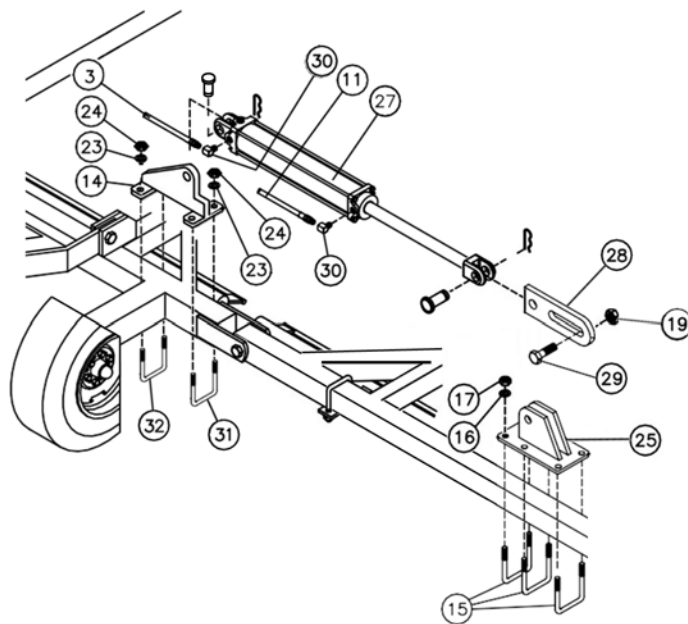
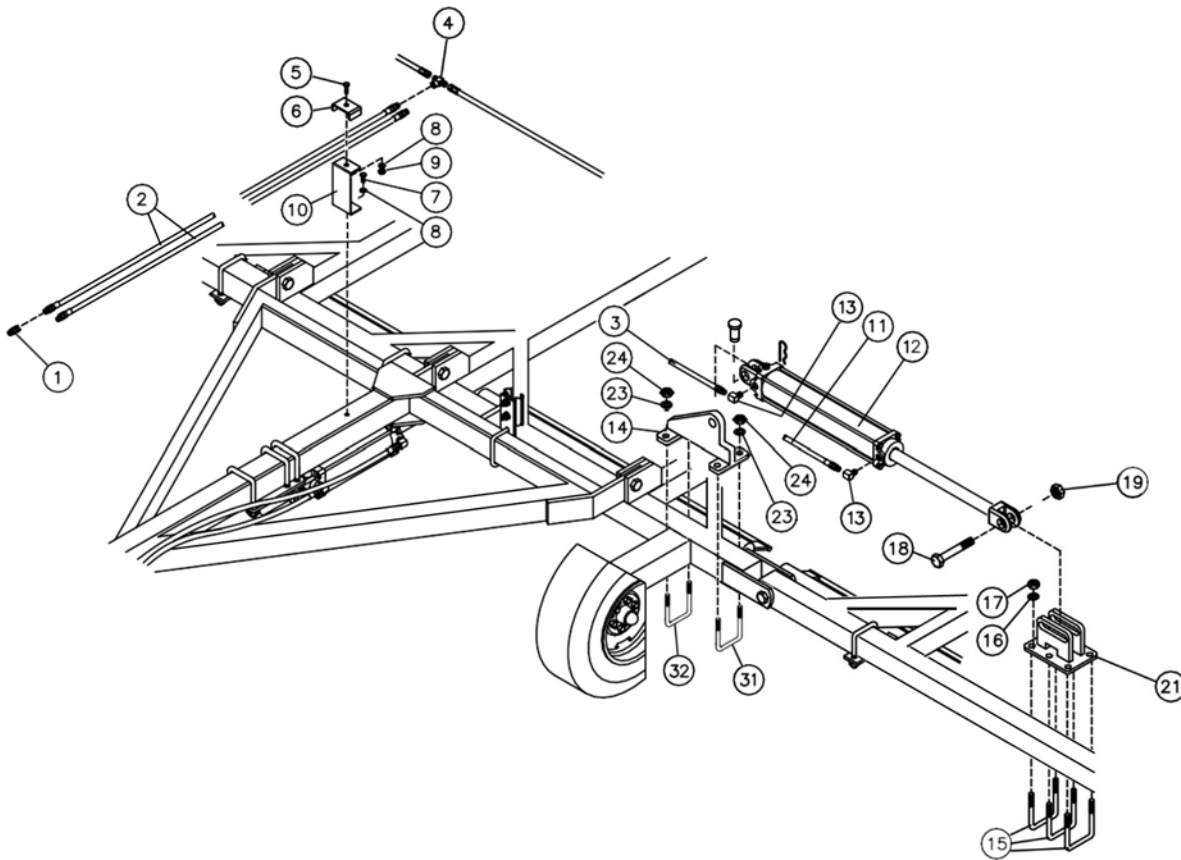
Frame Assembly



Frame Assembly

Item	Part #	Description	Qty.
67	HCLC	Lift chain	-
68	K-327	Cap screw, 5/8" x 3-1/2"	2
	HRH584	Cap screw, 5/8" x 4", 38'-42'	2
69	0-170	Hex nut, 3/4"	10
70	H34-3-514	U bolt, 3/4" x 3" x 5-1/4"	4
71	H34LW	Lock washer, 3/4"	8
73	HCCWA	Center wheel mount	2

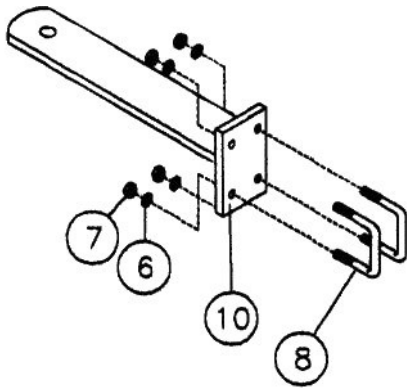
Hydraulics



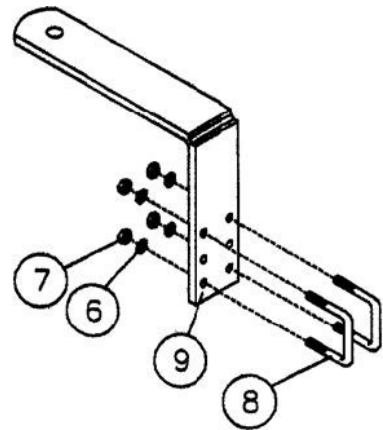
Hydraulics

Item	Part #	Description	HYD8	HYD	HYD	HYD	HYD
			16	8	10	12	14
1	0-57	Swivel restrictor, 1/2" NPT, 1/32"	1	1	1	1	1
2	HF102-0	252" Hyd. Hose, 6FJX + 8MP	2	2	2	2	2
3	HF104-0	48" Hyd. Hose, 3/8" JIC F X 3/8" JIC F	2	2			
	HF105-0	48" Hyd. Hose, 3/8" JIC F X 3/8" JIC F			2		
	HF106-0	48" Hyd. Hose, 3/8" JIC F X 3/8" JIC F				2	
	HF107-0	48" Hyd. Hose, 3/8" JIC F X 3/8" JIC F					2
4	HF103-0	3/8" JIC M tee	2	2	2	2	2
5	0-157	Cap screw, 3/8" x 1-1/2 Gr 5	1	1	1	1	1
6	0-302	Hose holder clip	1	1	1	1	1
7	0-181	Cap screw, 3/8" x 1"	1	1	1	1	1
8	0-158	Lock washer, 3/8"	2	2	2	2	2
9	0-159	Hex nut, 3/8"	1	1	1	1	1
10	0-303	Hose holder, 3/8" hole	1	1	1	1	1
11	HF105-0	66" hydraulic hose, 3/8" JIC F x 3/8" JIC F	2	2			
	HF106-0	78" hydraulic hose, 3/8" JIC F x 3/8" JIC F			2		
	HF107-0	94" hydraulic hose, 3/8" JIC F x 3/8" JIC F				2	
	HF108-0	106" hydraulic hose, 3/8" JIC F x 3/8" JIC F					2
12	662227	Hydraulic cylinder, 2-1/2" x 16" 3000 psi	2	2	2	2	
13	6MJ-8MB90	90 degree DG elbow, 3/8" JIC M x 1/2" MP	4	4	4	4	
14	HF-122	Mounting bracket, center section	2	2	2	2	2
15	U bolt	U bolt, 1/2" x 3" x 4-1/4"	4	6	6	6	6
16	0-173	Lock washer, 1/2"	8	12	12	12	20
17	0-153	Hex nut, 1/2"	8	12	12	12	20
18	HRH150	Cap screw, 1" x 5"	2	2	2	2	
19	HRH10N	Nut, nylock 1"	2	2	2	2	
21	HF120	Bracket, wing mounting		2	2	2	
	HF120-4	Bracket, 4' cart wing mounting	2				
23	H34LW	Lock washer, 3/4"	8	8	8	8	8
24	0-170	Hex nut, 3/4"	8	8	8	8	8
25	HF100-14	Bracket, wing mounting					2
27	662239	Hydraulic cylinder, 3" x 16" 3000 psi					2
28	CYLEND-14	Bracket, slotted cylinder rod					2
29	H34-4	Hex cap screw, 3/4" x 4"					2
30	6MJ-8MB90	90 degree elbow, 3/8" JIC M x 1/2" MP					4
31	H34-4-534	U bolt, 3/4" x 4" x 5-3/4"	2	2	2	2	2
32	H34-3-514	U bolt, 3/4" x 3" x 5-1/4"	2	2	2	2	2

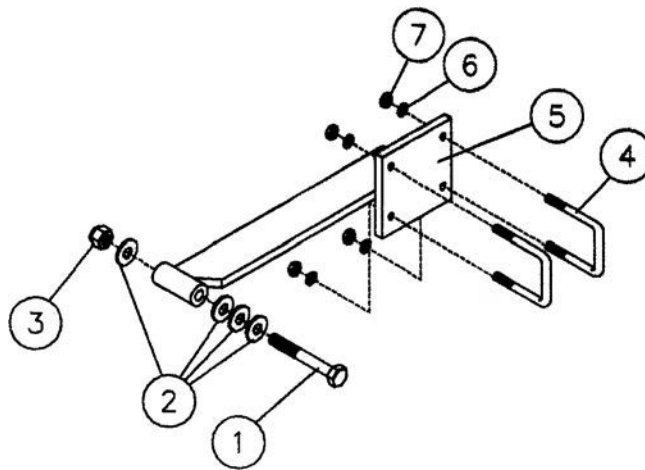
Wing Support Bracket & Wing Rest



Wing Rest, 16' & 18' Cart



Wing Rest, 16' & 18' Cart



Wing Rest, 16' & 18' Cart

Wing Support Bracket & Wing Rest

Item	Part #	Description	Qty.
1	K-327	Hex cap screw, 5/8" x 3-1/2" Gr5	2
2	FW58	Flat washer, 5/8"	-
3	OC-76	Nylock nut, 5/8"	2
4	U Bolt	U bolt, 1/2" x 3.06" x 4-1/2"	4
5	WSB	Wing support bracket	2
6	0-173	Lock washer, 1/2"	-
7	0-153	Hex nut, 1/2"	-
8	UB24350	U bolt, 1/2" x 4.06" x 3-1/2"	4
9	WR-DRH	RH wing rest, 20' & 22" cart	1
	WR-DLH	LH wing rest, 20' & 22' cart	1
10	WR-C	Wing rest, 16' & 18' cart	2

Decals

1.

	WARNING
<p>1. Stay clear of cart when raising, lowering and operating.</p> <p>2. When using a new cylinder - first run cylinder in and out before mounting to cart. Air in the lines may result in lift mechanism dropping abruptly.</p> <p>3. Before unfolding wings from transport position - be certain cylinder is properly installed and cart tongue is hitched to implement.</p> <p>4. Use cart to carry original equipment only.</p> <p>5. Always pin wings to wing rest when in transport.</p> <p>6. Never pull cart in transport position unless wings are folded to wing rest and pinned.</p> <p>7. Failure to follow these cautions could result in injury or fatality.</p> <p style="text-align: center;"><small>Not responsible for negligent use.</small></p>	

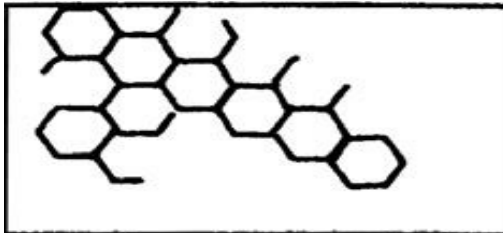
2.

	CAUTION
<p>STAY CLEAR OF CART WHEN RAISING, LOWERING AND OPERATING</p>	

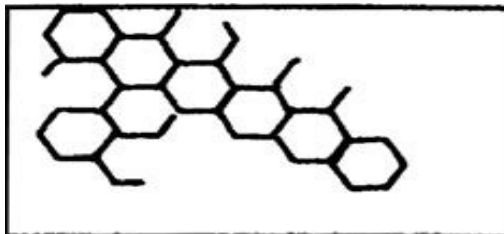
3.

	CAUTION
<p>HIGH PRESSURE OIL LEAKS CAN PENETRATE SKIN CAUSING SERIOUS INJURY AND GANGRENE. SEE OPERATOR'S MANUAL & CONSULT A PHYSICIAN IMMEDIATELY. DO NOT USE FINGER OR OTHER SKIN TO CHECK FOR LEAKS. LOWER LOAD, RELEASE PRESSURE & BE SURE OIL IS COOL BEFORE LOOSENING FITTING.</p>	

4.



5.



Decals

Item	Part #	Description	Qty.
1	0-52	Decal, Warning Operation	1
2	0-70	Decal, Caution Stay Clear	2
3	0-82	Decal, Caution Hydraulic	1
4	0-71	Decal, Red Reflector	2
5	B489A	Decal, Amber Reflector	2

Warranty

LIMITED WARRANTY

Belco Resources Equipment warrants to the original purchaser of any new piece of machinery from Belco Resources Equipment, purchased from an authorized Belco Resources Equipment dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state, and municipalities' use, ninety (90) days for commercial use from date of retail sale. Warranty for rental purposes is thirty (30) days. The obligation of Belco Resources Equipment to the purchaser under this warranty is limited to the repair or replacement of defective parts.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Belco Resources Equipment dealer during regular working hours. Belco Resources Equipment reserves the right to inspect any equipment or parts, which are claimed to have been defective in material or workmanship.

This limited warranty does not apply to and excludes wear items such as shear pins, tires, tubes knives, blades or other wear items. Oil or grease is not covered by this warranty.

All obligations of Belco Resources Equipment under this limited warranty shall be terminated if:

Proper service is not performed on the machine.

The machine is modified or altered in any way.

The machine is being used or has been used for purposes other than those for which the machine was intended.

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

Belco Resources Equipment obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, including implied warranties of merchantability and fitness for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Belco Resources Equipment; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery.

REGISTRATION

The online Warranty Registration must be completed in order to qualify for coverage on this Limited Warranty. Visit br-equipment.com, click on "Warranty Registration" and completely fill out the form to register the new piece of equipment.

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