41’ Double Fold Draw Bar Type Tool Bar

Owner’s Manual

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PATRIOT

E Q U I P M E N T

1302 K ROAD

Table of Contents

INTRODUCTION

Thank you for purchasing a Patriot Equipment tool bar. We hope you will get many years of productive use from it. This tool bar is designed to be pulled by a ROPS protected tractor of proper size. The purpose of this tool bar is to provide a means to perform a tillage operation or supply fertilizer for your crops. All product users must read and understand this manual prior to equipment operation. This manual is considered part of your machine and should remain with the machine at all times. Do not allow anyone to operate or maintain this equipment who has not fully read and comprehended this manual. Failure to follow the recommended procedures may result in personal injury, death or equipment damage.

Information in this manual is designed to help owners and operators to obtain the best results and safe operation from their investment. The life of any machine depends largely on the care it is given and we suggest that the manual should be read and understood and referred to frequently. If for any reason you do not understand the instructions and safety requirements, please contact your authorized dealer. The intent of this manual is to provide guidelines to cover general use and to assist in avoiding accidents and injuries.

There may be times when circumstances occur that are not covered in the manual. At those times it is best to use common sense and contact your authorized dealer or our factory.

The requirements of safety cannot be emphasized enough in this publication. We urge you to make safety your top priority when using and maintaining the equipment. We strongly advise that anyone allowed to operate this equipment be thoroughly trained and tested, to prove they understand the fundamentals of safe operation.

Some photographs, diagrams or illustrations in this manual may show doors, guards and shields opened or removed to aid in clarity and understanding of a particular procedure. All guards, shields and safety devices must be in their proper position prior to operation.

SAFETY AND OPERATION RULES

General Safety Statements

Safety precautions are essential when the use of any mechanical equipment is involved. These precautions are necessary when using, storing, and servicing mechanical equipment. Using this equipment with the respect and caution demanded will considerably lessen the possibilities of personal injury. If safety precautions are overlooked or ignored, personal injury or property damage may occur.

The machine was designed for a specific application. It should not be modified and/or used for any application other than which it was designed. If there are any questions regarding its application, please write or call. Do not use this unit until you have been advised. For more information, call 1-800-264-6587.

Read this entire manual carefully. Know your equipment. Consider the application, limitations, and the potential hazards specific to your unit. Occupational safety is of prime concern to us. This manual was written with the safety of the operator and others who come in contact with the equipment. This manual was written to help you understand the safe operating procedures of the tool bar. We want you as our partner in safety. A copy of this manual should be available to all persons who may operate this machine.

It is your responsibility as an owner, operator, or supervisor to know what specific requirements, precautions, and work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required. Avoid any alterations of the equipment. Such alterations may create a dangerous situation where serious injury or death may occur and will void warranty.

Why is SAFETY important? Three reasons:

1. Accidents disable and kill
2. Accidents cost money
3. Accidents can be avoided

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

DANGER – An immediate and specific hazard which will result in severe personal injury or death if proper precautions are not taken.

WARNING – A specific hazard or unsafe practice which could result in severe personal injury or death if proper precautions are not taken.

CAUTION – Unsafe practices which could result in personal injury if proper precautions are not taken or a reminder of good safety practices.

Safety Alert Symbol

BE ALERT! YOUR SAFETY IS INVOLVED!

The Symbol Shown Above Is Used To Call Your Attention To Instructions Concerning Your Personal Safety. Watch for This Symbol - It Points Out Important Safety Precautions. It Means ATTENTION! Become Alert! Your Personal Safety Is Involved! Read The Message That Follows And Be Alert To The Possibility Of Personal Injury Or Death.

Read this manual before operating or working around a Crop Sweeper! This manual must be delivered with the equipment to its owner and operator. Failure to read this manual and its safety instructions is a misuse of equipment.

Safety Equipment

Please, remember safety equipment provides important protection for persons around a tool bar that is in operation. Be sure ALL safety shields and protective devices are installed and properly maintained. If you find any shields or guards damaged or missing, contact Patriot Equipment for the correct items.

Safety Procedures

1. Use only lifting equipment with the proper capacity when assembling, removing, or servicing the tool bar. Forklifts with too little capacity may tip towards the front where the lifted weight is.
2. Always support the tool bar when mounting or working of the attachments or the tool bar itself.
3. Hydraulics:
    a. Be sure all connections are tight and cylinders are full of hydraulic oil when installing the hydraulic hose and cylinders.
    b. Relieve pressure in the hydraulic lines before uncoupling hoses from the source.
    c. Inspect hydraulic lines and replace any worn or damaged lines. Do not use a partially damaged hose!
4. Do not operate unit without safety shields or guards in place.
5. IMPORTANT: Use caution when transporting. Be alert of the transport unit's overall width when approaching obstacles, such as post sign and poles, along the road. Check the transport width of the unit to ensure clearance before entering. Check the unit's overall height to avoid contact with power lines and overhead obstructions.
6. Comply with all safety warnings and cautions in this manual and in the tractor operator's manuals.
7. Do not allow any riders on the tool bar or near the tool bar when in use or in storage.
8. Be sure work area is clear before folding or unfolding wings.
9. Use the raise/lower cylinder stops when transporting or storing the tool bar.
10. Drive slowly over rough ground.
11. Always slow down with turning.

12. Never attempt to adjust the equipment that is attached to the tool bar while in motion.
13. Periodically check bolts replace worn ones.
14. Use caution around the tool bar attachments as they may become sharp as they wear from use.
15. Never allow children to play on or near the tool bar while in use or in storage.
16. In case of any defect or awareness of potential danger, please contact Patriot Equipment at 1-800-264-6587 immediately.

Pre-Assembly Instructions

1. All references to right hand and left hand sides are determined by sitting in the operator's seat facing forward.
2. Check the packing lists and report any missing parts within 30 days.
3. Lubricate all moving parts and bearings as recommended.
4. Follow assembly instructions in the order shown

Shutdown and Storage

1. Avoid Crushing!
2. Make sure personnel are clear of the machine.
3. Lower the machine to the ground.
4. Place the tow vehicle in park.
5. Turn off the engine.
6. Remove the key.

Use bar stands and cylinder stops to support the machine. Store the machine on a clean, dry, and level surface. An uneven surface could cause the machine to shift or fall which could result in an injury or death as well as damage to the machine. Securely support the machine components that must be raised. Be sure the machine is stored away from human activity.

Transport Safety

- Engage transport locking devices prior to transport
- Plan your route to avoid traffic and yield to traffic in all situations
- Maximum transport speed is 20 mph (32 kph). Various conditions will require speed to be reduced. Be sure to travel at a speed that will allow for complete control of stopping and steering.
- Avoid electrocution and be aware of overhead power lines. Use extreme caution when operating the machine near power lines. Injury or death can occur if power lines come in contact with or are in close proximity of the machine.
- Know the machine width, height, and weight so to avoid narrow roads and bridges. Be sure bridges are rated to hold the load of the machine and tow vehicle.
- Be sure the Slow Moving Vehicle (SMV) placard is mounted to the machine and is clearly visible to other motorists.
- Allow for the size of the machine to avoid sudden stops which can lead to loss of control. If the machine does not have brakes, reduce towing speed. Sudden stopping can cause machine to swerve or rollover and result in injury or death.
- Never coast! The towing vehicle needs to be in gear to provide engine braking when traveling downhill.

- Always follow state and local laws the govern implement transport.

Lighting and Marking

- It is the responsibility of the customer to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility if necessary.
- Oversized machines and moving vehicles create a hazard when being transported on public roadways.
- Be sure all warning, safety lights, and turning signals are working and clean. Replace any missing or damaged lighting immediately. Comply with all state and local laws governing implement safety lighting.

Safe Operation

Read and understand the entire contents of this manual before operating or servicing the machine. The machine is to be operated by qualified personnel only. Never let children operate the machine. A full understanding of the safety precautions, operation, and maintenance is required before using the machine.

Be aware of overhead power lines and avoid electrocution. Use extreme caution when operating the machine near power lines.

Know the height, width, and weight of the machine that is being operated to avoid overhead obstructions, narrow passage routes, and bridges that are rated below the combined machine and transport vehicle weight.

To avoid rollover, do not fold or unfold the machine and avoid sharp turns on hillsides as a shift in weight can cause a rollover. Operate the machine a safe distance from terrain obstacles and obstructions that can cause a rollover.

To avoid crushing, make sure all personnel are clear of the machine at all times the machine is in motion. Be aware of obstructions above, below, and around the machine when in operation or transport. Injury or death can occur as a result of being struck by the machine.

NO RIDERS are ever allowed on the tow vehicle or the machine as injury or death can occur by being thrown from the machine or struck by a foreign object as well as hindering the visibility of the operator.

Maintenance Safety

Correct maintenance is your responsibility. Neglecting maintenance or poor maintenance practices can result in injury or death. Always use the correct tools when performing maintenance to the machine. When performing maintenance, to avoid crushing, make sure all personnel are clear of the machine, the machine is lowered to the ground, the tow vehicle is in park with the engine off and the key removed.

Store the machine on a clean, dry and level surface using bar stands and cylinder stops to support the machine. An uneven surface could cause the machine to shift or fall, resulting in injury or death as well as implement damage. Any machine components that must be raised are to be securely supported. The machine is to be stored away from human activity.

To avoid entanglements, never lubricate or service the machine while it is in motion. Keep away from power driven parts while in motion and disengage power sources prior to maintaining the machine. Injury or death can result from coming in contact with power driven parts when in motion.

To avoid crushing, never stand between the tow vehicle and the machine when connecting or disconnecting the machine. Injury or death can result from being trapped between the tow vehicle and the machine.

To avoid fluid penetration, relieve hydraulic system pressure before connecting or disconnecting the tow vehicle. Escaping pressurized hydraulic fluid can penetrate the skin resulting in injury or death. **NEVER USE BODY PARTS** to check for suspected hydraulic leaks, use cardboard or wood to check for leaks. Always wear protective gloves and safety eyewear (glasses or goggles) when working with the hydraulic system. If an accident occurs, see a doctor immediately for correct treatment.

Other safe maintenance practices:

- Never operate a combustion engine in an enclosed area. Exhaust fumes can cause asphyxiation. Always be sure there is adequate ventilation.
- Be careful when working around unshielded sharp edges to avoid injury by coming in contact with sharp edges.
- Keep all parts in good condition and correctly installed, replace damaged or broken parts immediately.
- Remove tools and unused parts before using the machine.
- Be prepared for fires by having a readily accessible fire extinguisher at all times.
- Keep a readily stocked first aid kit available at all times as well as having emergency numbers posted.
- Wear protective clothing and equipment.
- Service tires safely. Tire and rim separation can result in serious injury or death. Never overinflate tires. Only mount and dismount tires if you have the correct equipment, otherwise contact a trained professional. Always maintain correct tire pressure. Inspect tires and wheels daily and never operate tires with inadequate pressure, cuts, visible damage or missing hardware.

Operator Qualifications

Operation of the tool bar shall be limited to competent and experienced persons. In addition anyone who will operate or work around a tool bar must use good common sense. In order to be qualified, they must also know and meet all other requirements, such as:

1. Some regulations specify that no one under the age of 18 may operate power machinery. This may include the tool bar. It is your responsibility to know what these regulations are in your own area or situation.
2. Current Occupational Safety Health Administration regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee or user in the safe operation and servicing of all equipment with which the employee or user is, or will be involved."
3. Unqualified persons are to stay out of the work area.
4. A person who has not read and understood all operating and safety instruction is not qualified to operate the machine.

Safety Overview

YOU are responsible for SAFE operation and maintenance of the tool bar. YOU must ensure that you and anyone who is going to operate and maintain or work around the tool bar must be familiar with the operating, maintenance, and safety information contained in the manual.

Remember YOU are the key to safety. GOOD PRACTICES protect not only you but also the people around you. Make these practices a working part of your safety program. Be certain EVERYONE operating this machine is familiar with the procedures recommended and follows safety precautions. Remember, most accidents can be prevented. Do not risk injury or death by ignoring any information addressed.

Tool bar owners must give operating instructions to operators before allowing them to operate the tool bar. They must be reviewed at least annually thereafter per OSHA regulation 1928.57.

The most important safety device on the equipment is a SAFE OPERATOR. It is the operator's responsibility to read and understand ALL instructions in the manual and to follow them. All accidents can be avoided!

Any person who has not read and understood all operation and safety instructions is not qualified to operate the tool bar. An untrained operator exposes himself and bystanders to possible serious injury or death.

Do not modify the equipment in any way. Unauthorized modifications may impair the functions and/or safety and could affect the life of the equipment.

Safety Affirmation

1. I have read and understand the operator's manual and all safety signs before operation, maintenance, adjusting, or unplugging the tool bar.
2. I will allow only trained persons to operate the tool bar. *An untrained operator is not qualified to operate this equipment.
3. I have access to a fire extinguisher.
4. I have all guards in place and will not operate the tool bar without them.
5. I will not allow riders on the tool bar.
6. I understand the danger of moving parts and will stop engine before servicing.
7. I recognize the danger of the tool bar coming in contact with power lines.
8. I have the safety lock up pins and know and understand where and when to use them.
9. I understand that any accidents that occur with the tool bar are my responsibilities.
10. I understand that Patriot Equipment will not be held responsible for any accidents that involve the tool bar.

Sign Off Sheet

(This sheet should be signed annually as part of your safety program)

As a requirement of OSHA, it is necessary for the owner/employer to train the employee in the safe operation and safety procedures with the tool bar. We include this sign off sheet for your convenience and personal record keeping.

DATE	EMPLOYER SIGNATURE	EMPLOYEE SIGNATURE

Machine Inspection

After delivery of your new tool bar and/or completion of assembly, and before each use, inspection of the machine is mandatory. This inspection should include, but not be limited to:

1. Check to see that all guards are in place, secured and functional.
2. That all fasteners are tight.
3. That all Hydraulic lines are free from leaks and defects.
4. That all electronics are working properly and wires are in good condition.

Serial Number

To ensure efficient and prompt service, please furnish us with the model and serial number of your toolbar in all correspondence or other contact. The serial number is located near the center link of the tool bar.

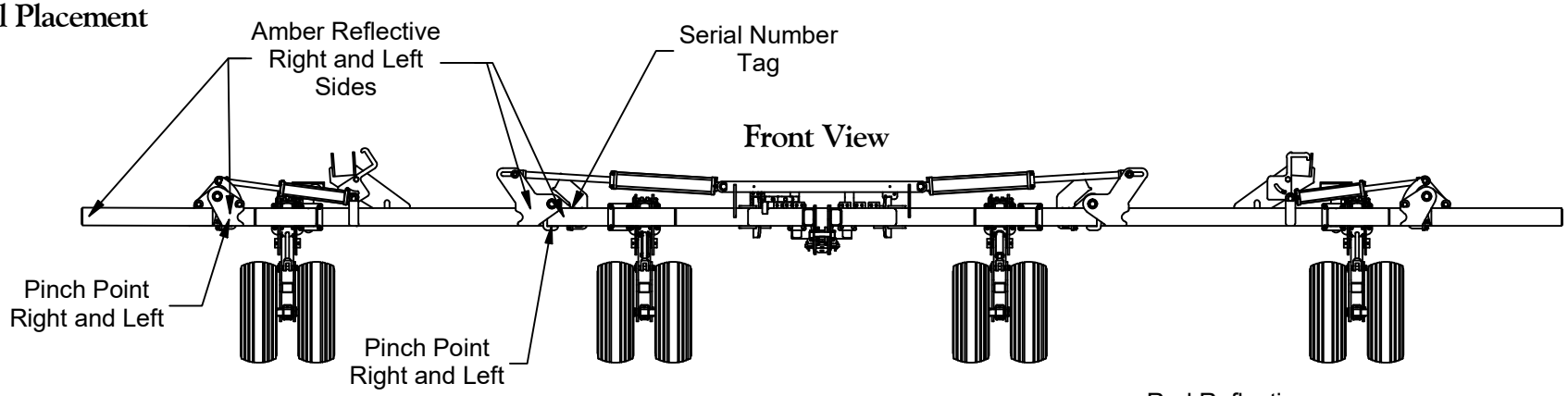
Safety Decals

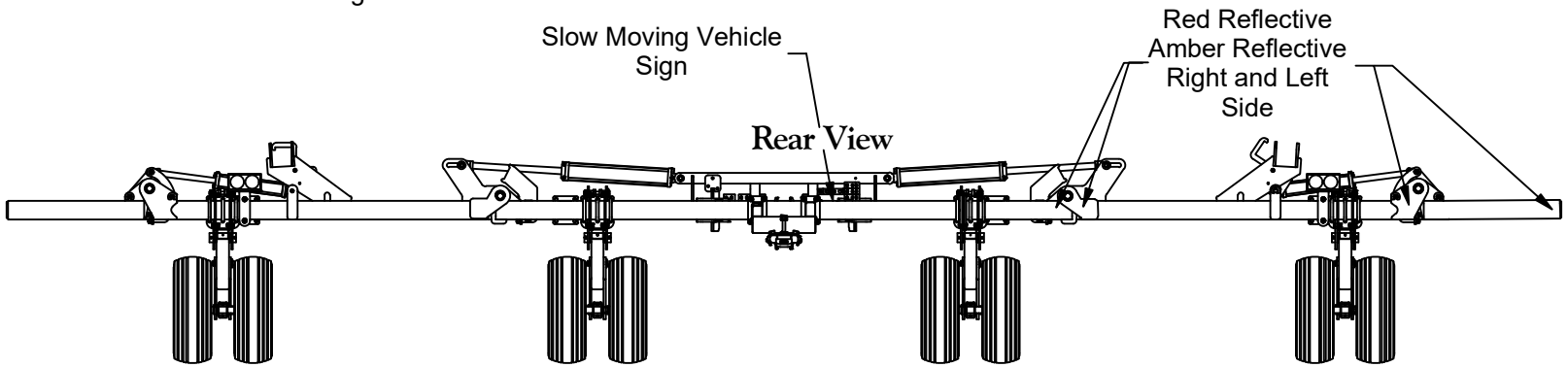
1. Keep safety decals clear and legible at all times.
2. Replace decals and signs that are missing or have become unreadable.
3. Safety signs are available from your Dealer or the Manufacturer.

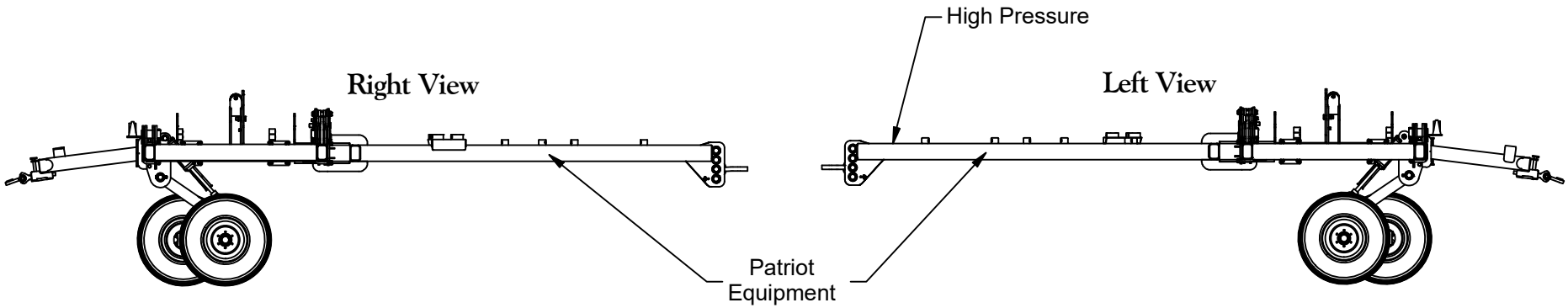
How to install Safety Decals

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

Decal Placement







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Tool Bar Decals

TS2013

TS2002

BC2515

TS2001

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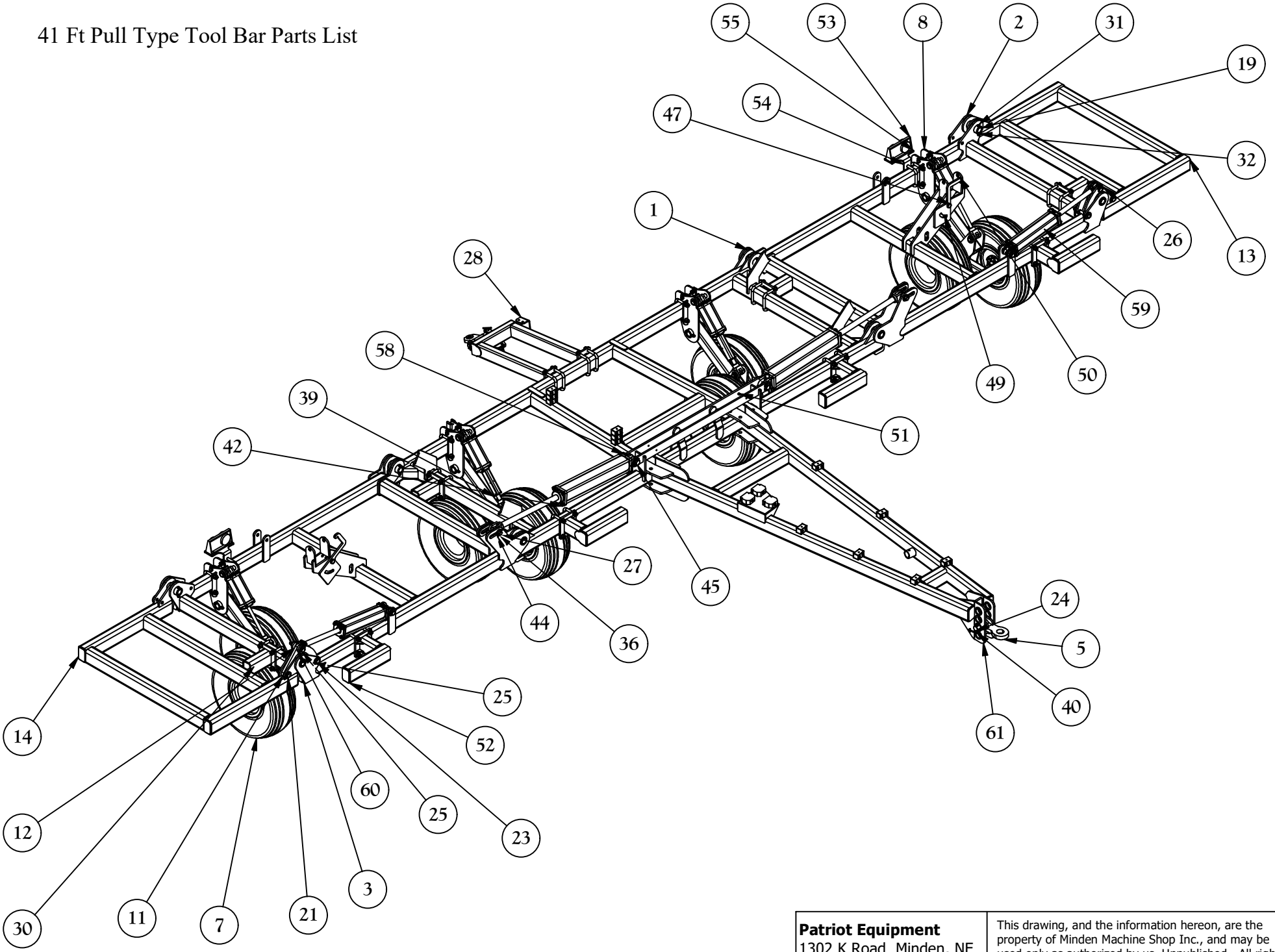
Field Operation

- Inspect hitch pin and be sure it is not worn excessively
- Make sure the machine is securely attached to the tow vehicle hitch
- Check that the tow vehicle cab hydraulic control configuration is easily accessible and to the preference of the operator.
    - The tool bar uses flow dividers to evenly distribute the hydraulic oil to evenly raise and lower the tool bar. See the hydraulic section.
- Be sure the tow vehicle is correctly ballasted for safe operation. Refer to the tow vehicle operator's manual.
- After the machine is attached to the tow vehicle, raise the toolbar and raise the bar stands. Any cylinder lock mechanisms will have to be set in operation mode before operating in the field.
- Wing lock pins will have to be removed and placed in the storage position to allow the wings to be raised and lowered.
- Once in the field, the wings can be pinned so they are rigid. The pins will have to be removed if the wings are to be raised.
- Level the wings
    - Loosen the jam nut
    - Adjust the bolt in or out to desired level of the wing
    - Tighten the jam nut
- Correct depth of the machine can be set with cylinder stops (purchased separately) or from your tractor cab by adjusting the time the hydraulic valve is open.

Parts Diagrams

41 Ft Pull Type Tool Bar Parts List



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41' Drawbar Type Tool Bar			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	126 center section 15ft	Weldment
2	1	128 LH inside wing 41ft bar	Weldment
3	1	129 RH inside wing 41ft bar	Weldment
4	1	07 tongue weldment	Weldment
5	1	18 hitch tongue weldment	Weldment
7	2	93 walking tandom lift group	Assembly
11	2	141 inside link OUTSIDE WING	Part
12	2	142 outside link OUTSIDE WING	Part
13	1	134 LH outer wing 41ft bar	Weldment
14	1	133 RH outer wing 41ft bar	Weldment
17	4	N3/4N	Nut
18	4	B3/4x2.5	Bolt
19	8	65 2in hinge pin	Part
21	2	B1x5.0	Bolt
22	2	B1x6.0	Bolt
23	4	B1x6.5	Bolt
24	1	70 2in hitch pin	Pin
25	1	153 outside link OUTSIDE WING w bolt lock LH	Part
26	1	152 outside link OUTSIDE WING w bolt lock	Part
27	2	66 1in fold cyl pin	Pin
28	1	155 nurse tank hitch	Weldment
30	4	156 short straight row unit mount	Weldment
31	8	B1/2x4	Bolt
32	27	Nylock Nut	*Varies*
36	4	B3/8x2	Bolt
39	3	159 lift lock weldment TANDOM TIRE	Weldment
40	2	N1/2N	Nut

41' Drawbar Type Tool Bar			
ITEM	QTY	PART NUMBER	DESCRIPTION
41	1	22166 cross fitting bracket	Bracket
42	2	5x30 Hyd Cyl Main Body Assembly	Cylinder
44	4	W1.25F	Flat Washer
45	2	B1.25x7	Bolt
47	2	B1x3	Bolt
49	2	B1/2x1.25	Bolt
50	2	22167 wing latch	Latch
51	1	B3/8x1.5	Bolt
52	4	158 short L bracket mount	Bracket
53	2	PFT4007-1	Light Kit
54	2	U Bolt Std 4x6x_875 in	7/8" U bolt x 10"
55	2	22186 tail light bracket	Bracket
56	4	N7/8N	Nut
57	4	W7/8F	Washer
58	2	N1.25N	Nut
59	2	B400180ABACA07B	Cylinder
60	1	Rod and Clevis	Part
61	1	22007-1R tongue weldment	Weldment

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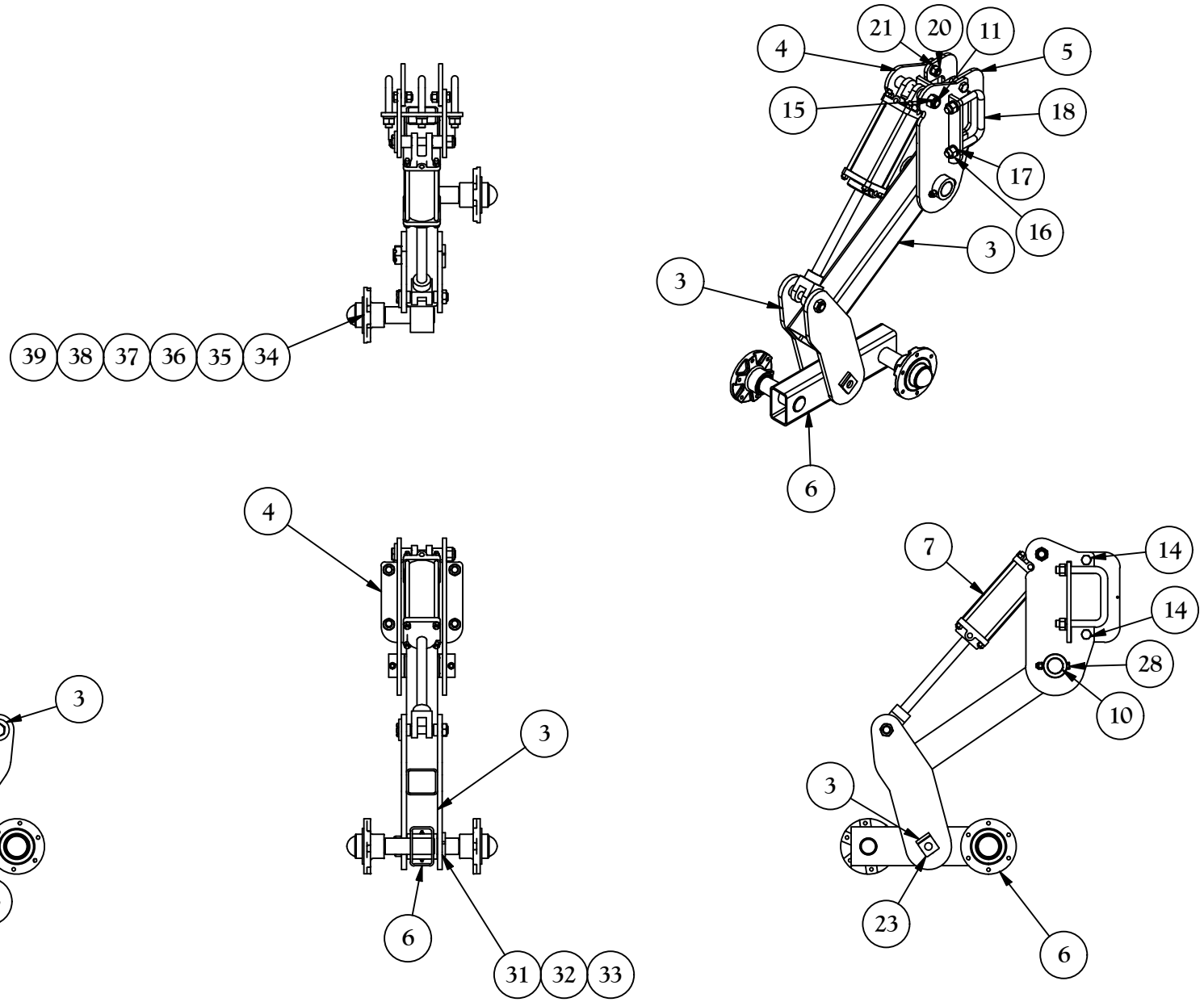
Walking Tandem Parts List



Use 12.5L X 15 Tire
15 x 10 6-6/ + 1-1/8" OS/OWAG GKN W 50534P10 Rim

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Walking Tandem			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	Rim 15x8 5 bolt	Rim
2	2	Tire 12.5L-15SL 12ply	12.5L-15 12ply 3860 lbs rated
3	1	89 tandom lift weldment	Weldment
4	1	92 tandom cyl base weldment	Weldment
5	2	85 lift group lock bar	Weldment
6	1	03 walking tandom spindle weldment	Weldment
7	1	4x10 Cylinder	Hydraulic Cylinder
9	2	95 1.5 id x 2.0 od	Bushing
10	1	98 1.5 in tandom pin	Pin
11	1	B1x7.5	Bolt
14	4	B3/4x2	Bolt
15	3	Nylock Nut	*Varies*
16	6	N7/8N	Nut
17	6	W7/8L	Lock Washer
18	3	U Bolt Std 4x6x_875 in	7/8" U bolt x 10"
20	4	N3/4N	Nut
21	4	W3/4L	Lock Washer
22	3	Grease Zerk	1/8 NPT ST Zerk
23	1	101 tandom pin weldment	Weldment
24	1	N1.5C	7/8" Tall Castle Nut
25	1	B1x6.0	Bolt
26	1	N1J	Jam Nut
27	1	COTTER .25 X 2.0	Split Pin
28	2	B1/2x4	Bolt
30	2	22165 1.02 id x 1.5 od bushing	Bushing
31	4	LM29749	Bearing
32	4	LM29710	Race
33	4	331301N	Seal
34	8	803 Hub	Wheel Hub
39	8	25520 (910265)	Inner Cup
35	8	25821 (910266)	Outer Cup
36	8	25590 (910267)	Inner Cone
37	8	25877 (910268)	Outer Cone
38	8	906285	Seal

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TORQUE DATA FOR STANDARD NUTS, BOLTS, AND CAPSCREWS.

Tighten all bolts to torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt chart as guide. Replace hardware with same grade bolt.

NOTE: Unless otherwise specified, high-strength Grade 5 hex bolts are used throughout assembly of equipment.

Torque Specifications

Bolt Torque for Standard bolts *

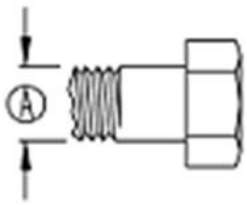
	GRADE 2		GRADE 5		GRADE 8	
"A"	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
1/4"	6	(8)	9	(12)	12	(16)
5/16"	10	(13)	18	(25)	25	(35)
3/8"	20	(27)	30	(40)	45	(60)
7/16"	30	(40)	50	(70)	80	(110)
1/2"	45	(60)	75	(100)	115	(155)
9/16"	70	(95)	115	(155)	165	(220)
5/8"	95	(130)	150	(200)	225	(300)
3/4"	165	(225)	290	(390)	400	(540)
7/8"	170	(230)	420	(570)	650	(880)
1"	225	(300)	630	(850)	970	(1310)

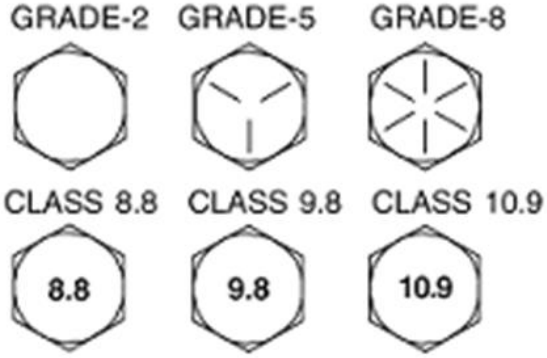
Bolt Torque for Metric bolts *

	CLASS 8.8		CLASS 9.8		CLASS 10.9	
"A"	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
6	9	(13)	10	(14)	13	(17)
7	15	(21)	18	(24)	21	(29)
8	23	(31)	25	(34)	31	(42)
10	45	(61)	50	(68)	61	(83)
12	78	(106)	88	(118)	106	(144)
14	125	(169)	140	(189)	170	(230)
16	194	(263)	216	(293)	263	(357)
18	268	(363)	--	--	364	(493)
20	378	(513)	--	--	515	(689)
22	516	(699)	--	--	702	(952)
24	654	(886)	--	--	890	(1206)

Torque figures indicated are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

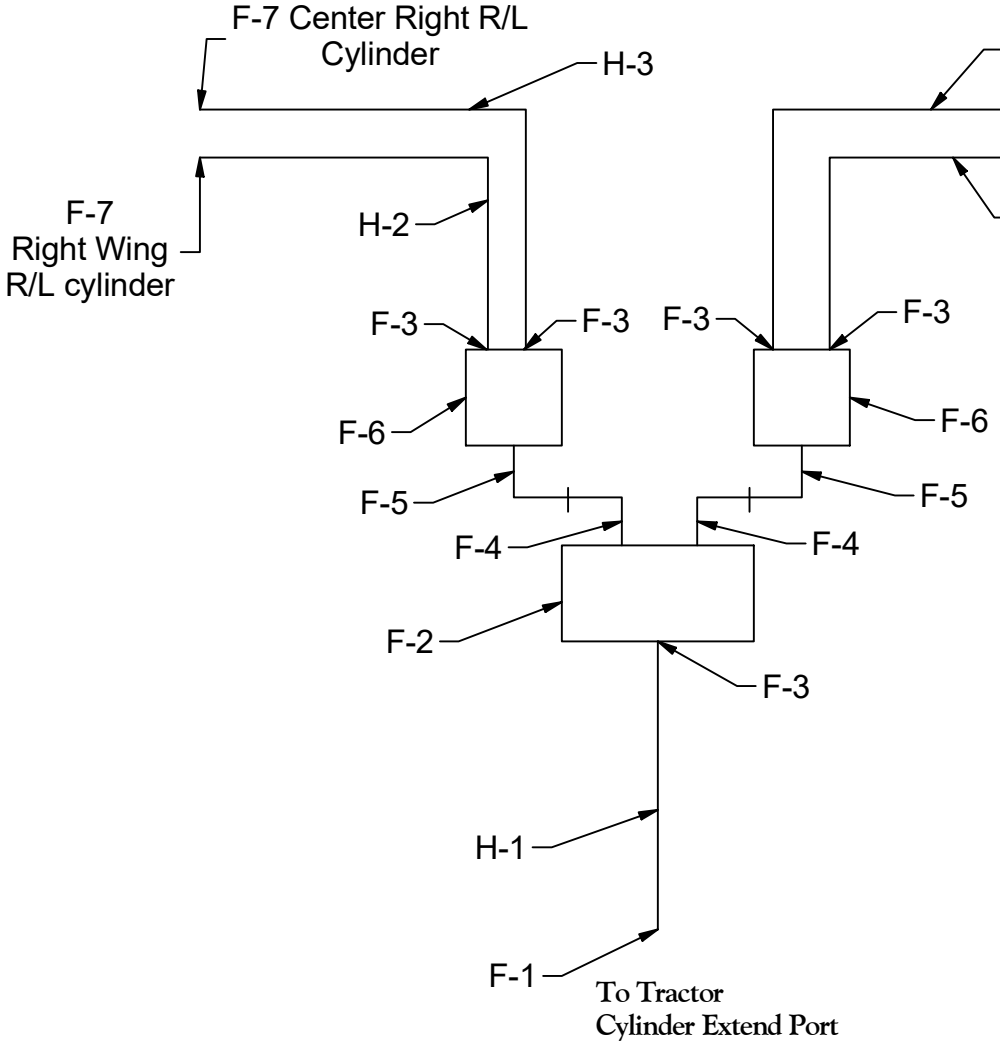
*GRADE or CLASS value for bolts and capscrews are identified by their head markings.





Hydraulics

Raise/Lower Hydraulics with Flow Dividers



Fittings (F-#)

F-1: 2286034 - 1/2" Tip; #8 SAE O-ring; Poppet Style; 12 gpm - Qty 1

F-2: 9501679 - 12 gpm flow divider - Qty 1

F-3: 6400-08-06 (1212345) #8 Male JIC x #6 Male SAE - Qty 5

F-4: 6801-06-06 (1216835) #6 Male JIC x #6 Male SAE 90 - Qty 2

F-5: 6809-06-06 (1218487) #6 Male ORB x #6 female JIC - Qty 2

F-6: 9501675 - 6 gpm flow divider - Qty 2

F-7: 6801-08-08 (1216919) #8 Male JIC x #8 SAE 90 - Qty 4

Hoses (H-#)

H-1: R1708A-P08608-15600 Qty 1

H-2: R1708A-608608-28000 Qty 1

H-3: R1708A-608608-16800 Qty 1

H-4: R1708A-608608-20400 Qty 1

H-5: R1708A-608608-32400 Qty 1

Connect hoses to the bottom port of raise/lower cylinders.

When installing F-4, have it turned so fittings will miss each other and allow them to be tightened.

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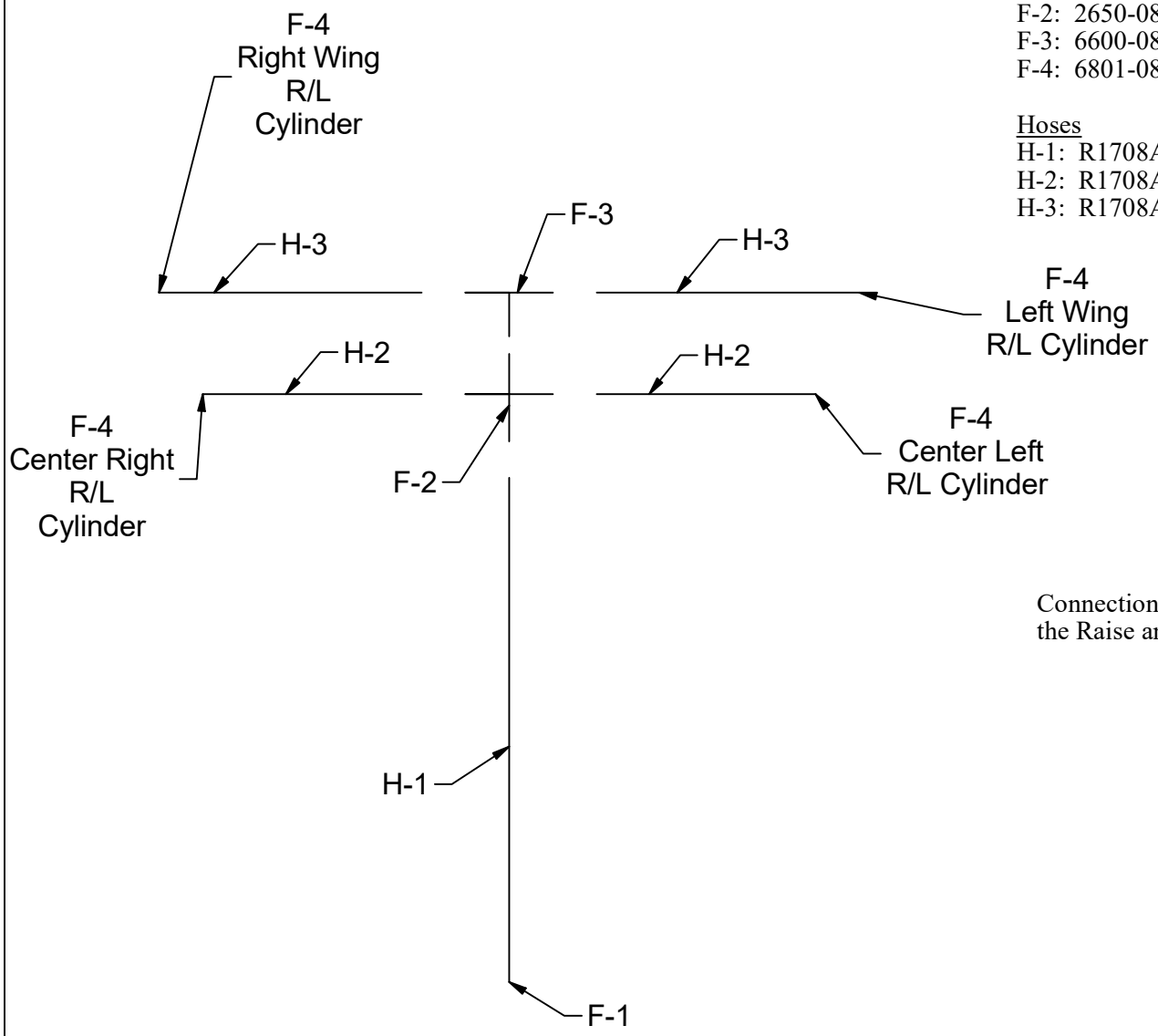
Raise/Lower Circuit No Flow Dividers



Fittings
F-1: 2286034 - 1/2" Tip, #8 ORB, 12gpm - Qty. 1
F-2: 2650-08-08-08-08 (1207026) #8 Male JIC Cross - Qty. 1
F-3: 6600-08-08-08 (1216298) #8 JIC Tee - Qty. 1
F-4: 6801-08-08 (1216919) #8 Male JIC x #8 Male ORB x 90 - Qty. 4

Hoses
H-1: R1708A-P08608-28800 Qty. 1
H-2: R1708A-608608-08400 Qty. 2
H-3: R1708A-608608-20400 Qty. 2

Connections will be at the Ram end of the Raise and Lower Cylinders

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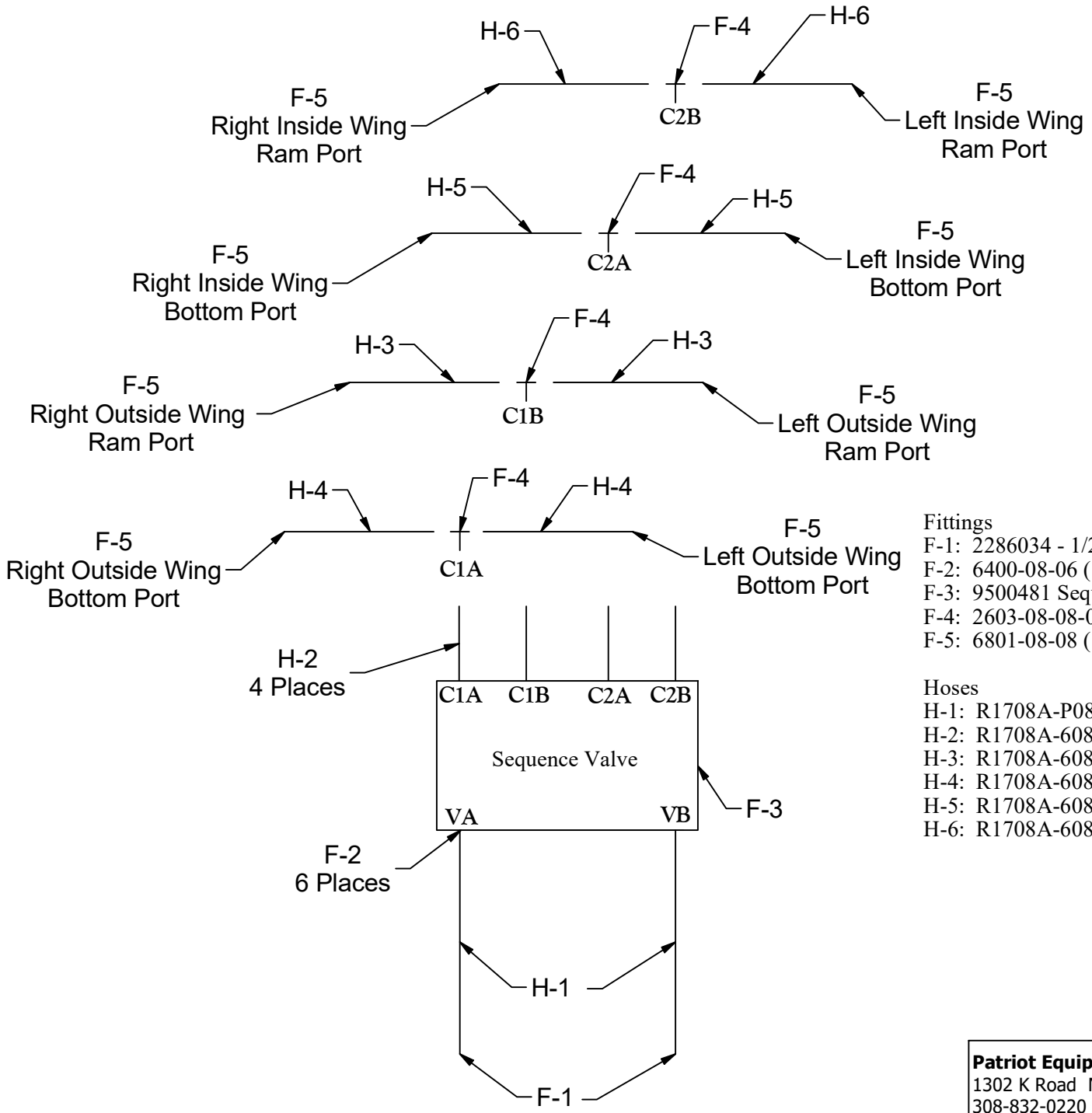
Double Fold Wings



Fittings
F-1: 2286034 - 1/2" Tip, #8 ORB, 12 gpm, Qty. 2
F-2: 6400-08-06 (1212345) #8 Male JIC x #6 Male SAE, Qty. 6
F-3: 9500481 Sequence Valve Qty. 1
F-4: 2603-08-08-08 (1206576) #8 Male JIC Tee, Qty. 4
F-5: 6801-08-08 (1216919) #8 Male JIC x #8 Male SAE x 90, Qty. 8

Hoses
H-1: R1708A-P08608-22800 Qty 2
H-2: R1708A-608608-00800 Qty 4
H-3: R1708A-608608-18000 Qty 2
H-4: R1708A-608608-16800 Qty 2
H-5: R1708A-608608-03800 Qty 2
H-6: R1708A-608608-07200 Qty 2

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Raise and Lower Cylinders
4 x 8; 1" Diameter Pins; #8 SAE O-Ring Ports; Tie Rod; Qty 4

Wing Cylinders
Inner Wing: 5 x 30; 1-1/4" Diameter Pins; Tie Rod; #8 SAE O-Ring Ports; Qty 2

Outer Wing: 3.5 x 18; 1" Diameter Pins; Tie Rod; #8 SAE O-Ring Ports; Qty 2

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Wheel Attachment and Torque Requirements

Patriot Equipment would like to reiterate the extreme importance of properly matching your axles, wheels, and tires when specifying or replacing your trailer wheels. It is of equal importance that you apply and maintain proper wheel mounting torque on your trailer axle. Please follow the wheel selection, torque requirement, and torque sequence guidelines that follow.

Wheel Selection

Wheels are a very important and critical component of your running gear system. When specifying or replacing your trailer wheels it is important that the wheels, tires, and axle are properly matched. The following characteristics are extremely important and should be thoroughly checked when replacement wheels are considered.

1. **Bolt Circle:** Many bolt circle dimensions are available and some vary by so little that it might be possible to attach an improper wheel that does not match the axle hub. Be sure to match your wheel to the axle hub, bolts circle, hub pilot and wheel mount surface to hub face. Also, confirm that proper studs stick out.
2. **Capacity:** Make sure that the wheels have enough load carrying capacity and pressure rating to match the maximum load of the axle tire and trailer.
3. **Offset:** This refers to the relationship of the center line of the tire to the hub face of the axle. Care should be taken to match any replacement wheel with the same offset wheel as originally equipped. Failure to match offset can result in reducing the load carrying capacity of your axle.
4. **Rim Contour.**

CAUTION

Replacement tires must meet the same specifications as the originals. Mismatched tires and rims may come apart with explosive force and cause personal injury to yourself and others. Mismatched tires and rims can also blow out and cause you to lose control and have an accident which can result in serious injury or death.

CAUTION

Do not attempt to repair or modify a wheel. Even minor modifications can have a great effect. Do not install a tube to correct a leak through the rim. If the rim is cracked, the air pressure in the tube may cause the pieces of the rim to explode with great force and can cause serious injury or death.

Torque Requirements

You should always consult with the wheel manufacturer to determine the appropriate torque level for your wheels. It is extremely important to apply and maintain proper wheel mounting torque on your trailer axle. Torque is a measure of the amount of tightening applied to a fastener (nut or bolt) and is expressed as length times force. For example, a force of 90 pounds applied at the end of a wrench one foot long will yield 90 Ft Lbs. of torque. Torque wrenches are the proper method to ensure torque is applied correctly to a fastener.

CAUTION

Wheel nuts or bolts must be tightened and maintained at the proper torque levels to prevent loose wheels, broken studs, and possible dangerous separation of wheels from your axle, which can lead to an accident, personal injuries or death.

Be sure to use only the fasteners matched to the cone angle of your wheel (usually 60 degrees or 90 degrees). The proper procedure for attaching your wheels is as follows:

1. Start all nuts/bolts by hand to prevent cross threading.
2. The tightening should be done in stages;
    a. Initially snug (10 ft-lb) the nuts/bolts to align and seat the wheel to the hub, in the order described in the torque sequence diagram below.
    b. Tighten the nuts/bolts performing the wheel torque sequence below.
3. Wheel nuts/bolts should be torqued before first road use and after each wheel removal. Check and re-torque after the first 10 miles, 25 miles and again at 50 miles. Check periodically thereafter, THIS IS VERY IMPORTANT.
4. Wheel nuts are designed to have full thread engagement with the wheel stud. Wheel stud threads should be visible outside the wheel nut. There will be varying amounts of thread stick out depending on variables such as center disc thickness and nut thickness. In general, there should be approximately three threads visible past the end of the nut.

Wheel Attachment and Torque Requirements

Wheel Installation Torque Sequence (Ft. Lbs.)					
Wheel Size	Stud Size	1st Stage	2nd Stage	Final Torque	Cone Nut Degree
12" - 440 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
12" - 545 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
13" - 440 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
13" - 545 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
14" - 545 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
15" - 545 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
15" - 655 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
16" - 655 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
16" - 865 BC	9/16"-18	20-25	50-60	140-170	60 Degree Cone Nut
16.5" - 655 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
16.5" - 865 BC	9/16"-18	20-25	50-60	140-170	60 Degree Cone Nut
16.5" x 9.75" 865 BC	5/8"-18	50-60	120-125	175-225	Special Stud Piloted with 90 degree Cone Nuts
17.5" Hub Pilot 865 BC	5/8"-18	50-60	100-120	190-210	Hub piloted with clamp ring. 90 degree cone nuts and greased threads.
17.5" Hub Pilot 865 BC	5/8"-18	50-60	90-200	275-325	Hub piloted with flange nut
17.5" Hub Pilot 865 BC	5/8"-18	50-60	60-110	150-175	Hub piloted with swivel flange nut

Medium and Heavy Duty Torque Requirements (Ft. Lbs.)				
Description	Part Number	Application	Torque Min. Ft. Lbs.	Torque Max. Ft. Lbs
5/8-19 90 degree Cone	006-109-00	Clamp Ring 033-052-01	190	210 Grease Threads
3/4-10 Hex Nut	006-117-00	Demountable Rim Clamp	210	260
3/4-16 Sherical Nut	006-064-01, 02 006-069-01, 02	Single Wheel Inner Dual	450 450	500 500
1-1/8 - 16 Spherical Nut	006-070-01, 02	Outer Dual	450	500
5/8-18 Non-swiveling Flange Nut	006-058-00	Wheels	275	325
5/8-18 Swiveling Flange Nut	006-209-00	Wheels	150	175
M22-1.5	006-118-00	Swiveling Flange Nut	450	500

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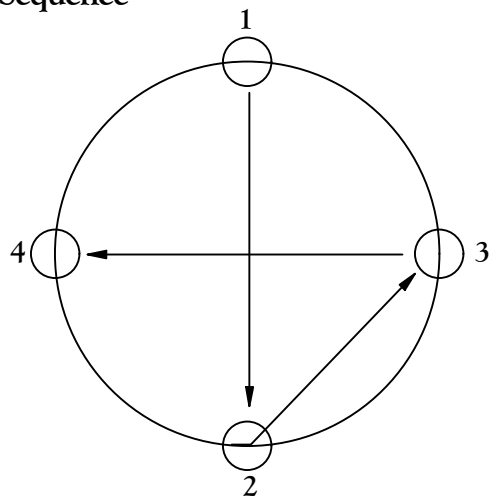
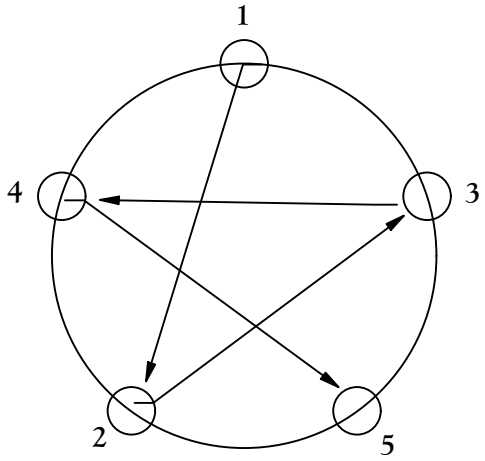
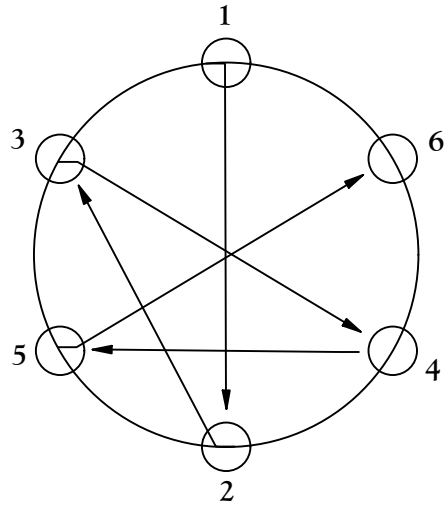
Torque Sequence



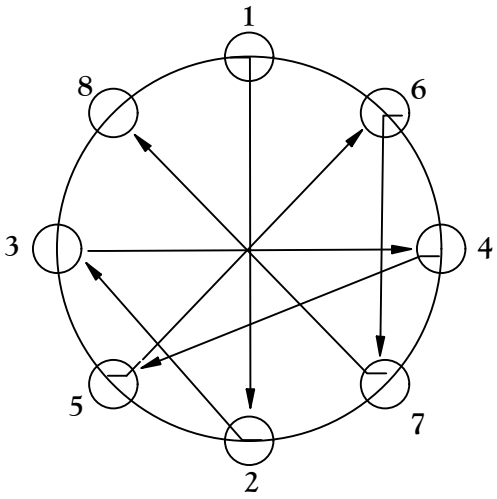
4 Bolt



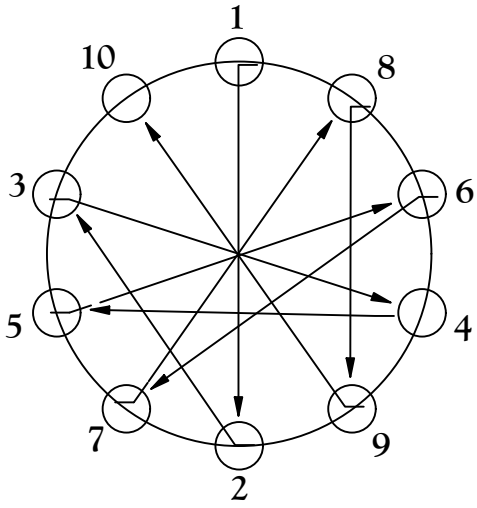
5 Bolt



6 Bolt



8 Bolt



10 Bolt

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Minden Machine Shop Inc
LIMITED WARRANTY

Minden Machine Shop Inc warrants all products manufactured by it to be free of defect in material and workmanship for a period of one (1) year from the date of purchase.

This Minden Machine Shop Inc. warranty does not cover:

1. Parts and accessories supplied by Minden Machine Shop Inc. but manufactured by others. Minden Machine Shop Inc. will facilitate the other manufacturer warranty for the benefit of the purchaser but will not be bound thereby (example: augers, motors, trailers, tanks, etc.).
2. Products that have been altered by anyone other than a Minden Machine Shop Inc. employee or are used by the purchaser, for purposes other than what was intended at time of manufacture or used in excess of the "built specifications".
3. Products that are custom manufactured by Minden Machine Shop Inc. utilizing the purchaser's design which deviates from Minden Machine Shop Inc. normal production line manufactured or customized features of the products.
4. Malfunctions or damages to the product from misuse, negligence, customer alteration, accidents or product abuse due to incoming material or poor material flow ability or lack of required performance or required maintenance (e.g., poor material flow ability caused by incoming wet fertilizer or hot soybean meal, etc).
5. Loss of time, inconvenience, loss of material, down time or any other consequential damage.
6. Product use for a function that is different than designed intent (e.g., storing soybean meal in grain bin, unacceptable material in the bin such as hot bean meal when product originally designed for other application, etc).
7. Minden Machine Shop Inc is not responsible for any equipment that this product is attached to or mounted on.

To activate this warranty, the purchaser must make contact in writing with Minden Machine Shop Inc. with in one (1) year of date of purchase. After contact, Minden Machine Shop Inc. has the right to determine the cause and qualify the legitimacy of the claim. Minden Machine Shop Inc., upon acceptance of a warranty claim, shall have a reasonable time to plan any repair or replacement and may affect repair or replacement out of its factory or through contract with a local repair service. If a purchaser after warranty notice is made, chooses to make the repair itself, Minden Machine Shop Inc. must approve any expenses before they are incurred to be responsible for customer reimbursement. Minden Machine Shop Inc. shall be liable on a warranty claim for repair or replacement of any defective products and this is the purchaser's sole and exclusive remedy. Minden Machine Shop Inc. will not be liable for any other or further remedy including claims for personal injury, property damage or consequential damage. The law of the Sate of Nebraska shall govern and any such claim and any issues with regard to the same shall be resolved in the Nebraska District Court for the county of Kearney.

RETURN OF MERCHANDISE

Merchandise may not be returned without written approval from the factory. All returns must have a return authorization number. Obtain this number before the return and show it on all return items. A 15% restocking charge is made on merchandise returned. Returned merchandise must be shipped pre-paid.

RECEIVING MERCHANDISE AND FILING CLAIMS

When receiving merchandise it is important to check both the number of parts and their description with packing slip. The consignee must make all claims for freight damage or shortage within 10 days from the date of delivery.

When the material leaves the factory it becomes the property of the consignee. It is the responsibility of the consignee to file a claim on any possible damage or loss. Please list your preferred routing on purchase orders.

MODIFICATIONS

It is the policy of Minden Machine Shop Inc. to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring the obligation to make such changes, improvements and modifications on any equipment sold previously.

WARRANTY REGISTRATION

To register equipment, or file a claim, copy and paste the words on this page into an email or word document, fill out the appropriate information completely, and email it to larry@mindenmachine.com with the subject as EQUIPMENT WARRANTY, or fill it out and fax it to 308-832-1340.

Dealer Information: Not Applicable, check here: [ ]

Dealer Name:

Address:

City:

State:

Zip Code:

Phone #:

Email:

End User Information:

Purchaser:

Address:

City:

State:

Zip Code:

Phone #:

Email:

Equipment:

Serial #:

Date Of Purchase: / /