

# 301

## SNOW WING

301-10FM Hydraulic Wing  
Assembly owners manual.

Read before operating.

Important safety and operation  
instructions inside.

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## PREFACE

Congratulations on the purchase of your new Craig Manufacturing Ltd. Hydraulic wing assembly. This manual provides safety, operation and maintenance information. To keep your wing in good condition, please read this manual and follow all recommendations. Failure to do so may invalidate your warranty.

When parts or service are necessary contact Craig at 1-800-565-5007 for genuine Craig Parts. Before using your snowplow, make sure your machine is equipped with all the OEM recommended requirements for plowing.

### CRAIG FACTORY ORIGINAL PARTS



The best way to ensure equipment reliability is to use only genuine Craig Manufacturing Ltd. Factory Original Parts. Our parts department can help you not only find the right part for your application but also offer advice and support for the repair. Using aftermarket non-approved parts can alter your plow's performance characteristics and may affect your warranty.

To help ensure that correct parts are ordered, please record the serial number of your plow. In time serial tags can become tarnished or difficult to read. Please supply this serial number to your dealership when ordering parts and it will ensure the correct part gets ordered.

**Serial:** \_\_\_\_\_

**Machine:** \_\_\_\_\_

**Model:** \_\_\_\_\_

**In-Service Date:** \_\_\_\_\_

**Purchased From:** \_\_\_\_\_

## **SAFETY**

### **SAFETY PRECAUTIONS**

Improper installation and/or operation of your Craig Manufacturing Ltd. attachments can cause bodily injury, property damage, and damage to your equipment. Read and understand labels and this booklet before operating or making adjustments. Failure to do so may affect your warranty.

### **HYDRAULIC SAFETY**

Always inspect hydraulic components before operating your Snowplow. Replace any damaged or worn parts immediately.

Lower the blade when the machine is not in use. Temperature changes can change hydraulic pressure, allowing the blade to drop unexpectedly causing injury or damaging hydraulic components.

Hydraulic fluid under pressure can cause bodily harm. If you suspect a hydraulic leak use a piece of wood or cardboard to investigate, **DO NOT** use your hand. If you are injured by hydraulic fluid, seek medical attention immediately.

### **WARNING LABELS**

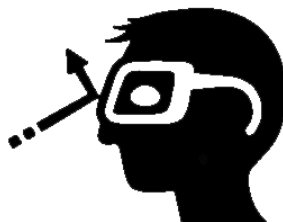
Become familiar with and inform users about all warning and instruction labels on the back of your attachment.

**NOTE:** If labels are missing or cannot be read, call 1-800-565-5007 to get replacements.

### **PERSONAL SAFETY**

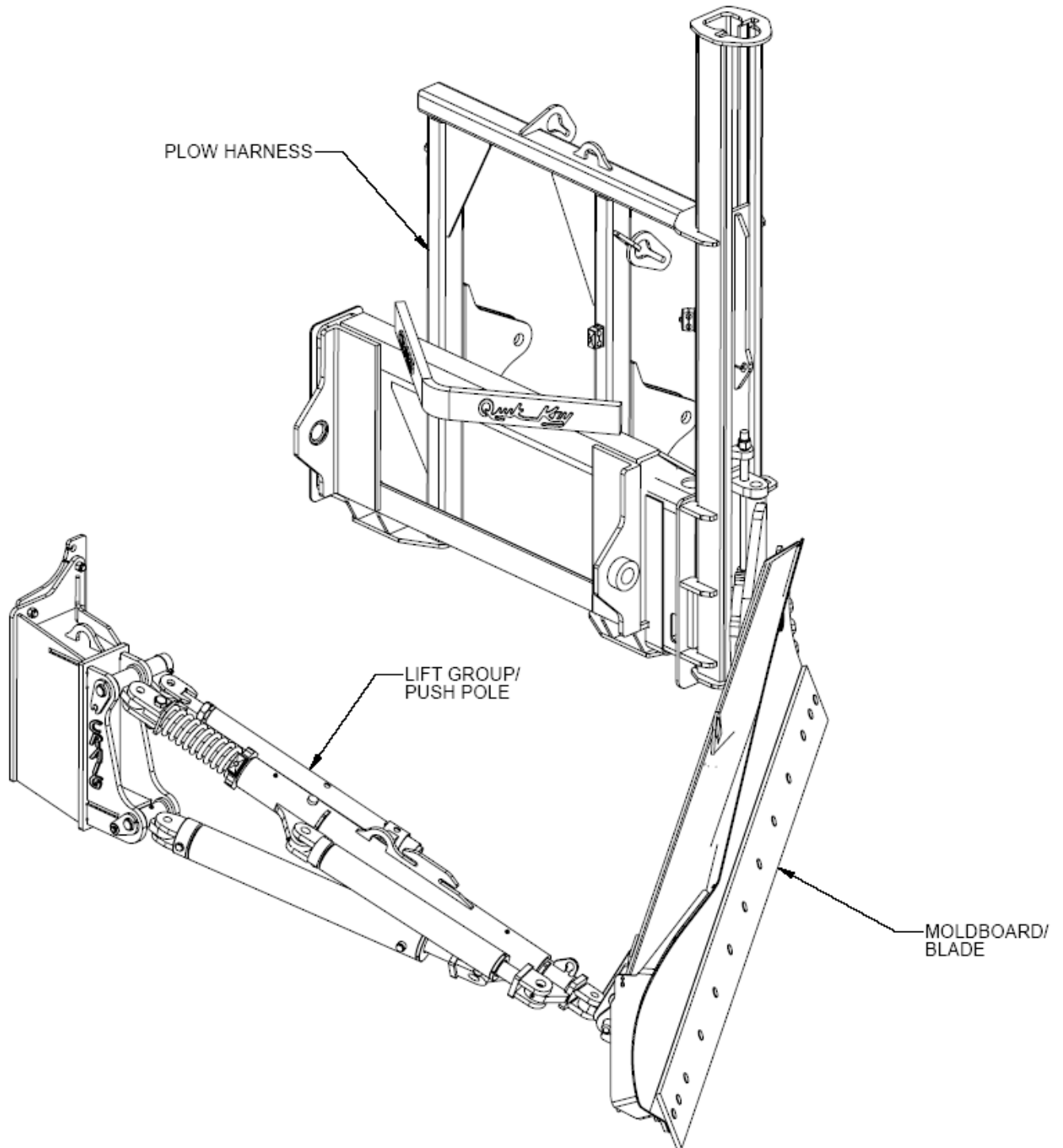
Remove ignition key and immobilize the machine during installation, inspection or service. Always follow safe work practices when installing servicing or inspecting your snowplow by wearing only snug-fitting clothing, removing jewelry, and securing long hair. Wear safety goggles to protect your eyes from hydraulic fluid, sparks, dirt and dust. Always have a fire extinguisher rated BC on hand for flammable liquid and electrical fires.

Lift with your legs. Get help and use lifting equipment when applicable. Never trust that the hydraulic system will not fail. Do not work under or around heavy items not supported by stands, blocks or safety chains.



## OVERVIEW

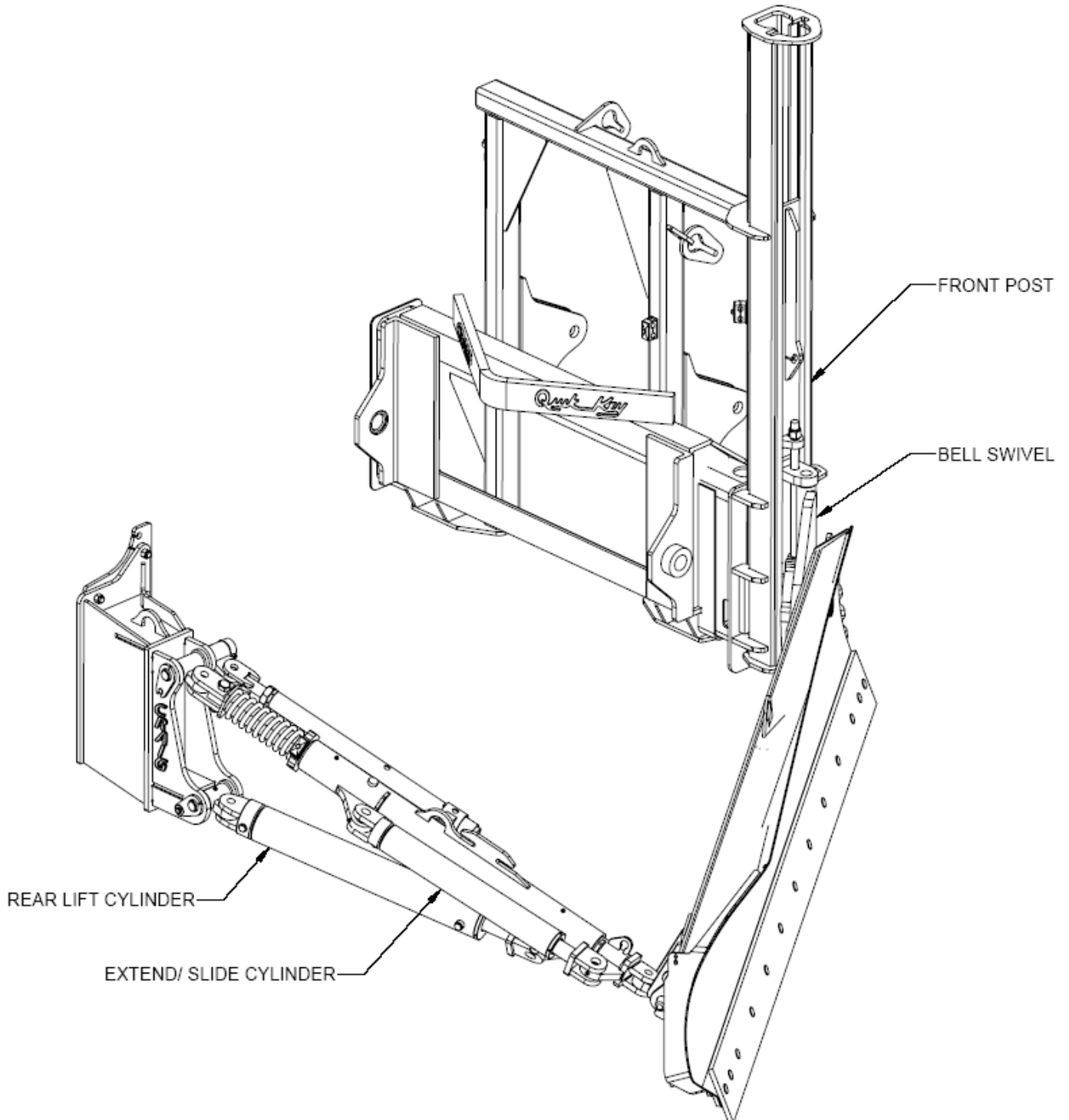
### GETTING TO KNOW YOUR WING ASSEMBLY



NOTE: YOUR WING MAY NOT APPEAR EXACTLY AS SHOWN

## OVERVIEW

### GETTING TO KNOW YOUR WING ASSEMBLY



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## OVERVIEW

### TERMINOLOGY

<b>Moldboard:</b>	This is the plow or blade portion of the wing which pushes snow.
<b>Push Pole/Lift Group:</b>	This is the hydraulic arm on the back of the wing moldboard. It controls the rear height and extension of the wing moldboard.
<b>Plow Harness:</b>	This part attaches onto the loader boom arms via direct pin on or a coupler system. It controls the front height of the wing.
<b>Rear Post Bracket:</b>	This part is attached directly to the loader frame and attaches to the loader push pole.
<b>Front Post:</b>	This is what lifts the front of the wing moldboard and allows for it to float mechanically along with the road surface.
<b>Bell Swivel:</b>	This part attaches the front post to the wing moldboard. It has the shape of a banjo.
<b>Valve:</b>	The Craig wing assembly usually uses its own valve to operate the three or four hydraulic sections on the wing. This valve can vary in position depending on the loader make and model but is always covered by a steel valve cover.

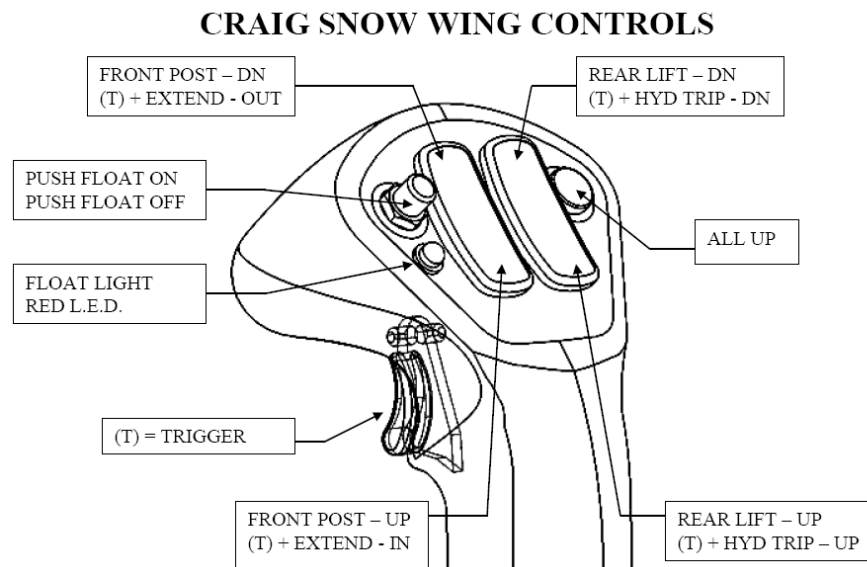
### ACCESSORIES AND OPTIONS

<b>Hydraulic Trip Swivel:</b>	This is a resettable hydraulic circuit that allows the wing moldboard to trip or dump when it hits an obstacle.
<b>Carbide Edge:</b>	Superior wear resistance intended for short passes such as ramp clearing. Prolonged passes can generate heat and premature wear.
<b>High Visibility Kit:</b>	Includes high visibility flag sticks, reflectors and all necessary mounting hardware.
<b>Cast Curb Shoe:</b>	Replaceable and protects the wing moldboard from curbs.
<b>Trip Edge:</b>	Allows the entire cutting edge to trip when hitting an obstacle.
<b>Hydraulic Quick Disconnect:</b>	Allows hosing to be attached and detached quickly via quick disconnects.

## OPERATION

### CONTROLS

Before using your new wing, be sure to familiarize yourself with the joystick wing controls. The diagram below shows the Craig joystick and the controls.



### FEATURES

There are some built in features of the Craig wing that may not be obvious. Among them are: hydraulic work port relief, emergency up function, wing float, front mechanical float, and the front post shear bolt.

Hydraulic work port relief allows the extend/slide cylinder to collapse on heavy impacts, like a shock absorber. This is achieved hydraulically via a relief in the hydraulic circuit that activates when the pressure in the extend cylinder gets to 900psi. This feature allows the cylinder to completely collapse in the event of striking a large obstruction, protecting other components in the wing assembly. It is resettable by operating the extend joystick function.

The “all up” or “emergency up” button on the joystick is another important feature of the joystick. Pressing this button will fire the front and rear lift cylinders and pick up the wing. This is an ideal function when coming up to an obstruction (ie. a curb) the entire wing can be raised quickly to avoid damage. Alternatively, the front and rear lift joystick rocker switches can be used to accomplish the same result. Firing the front lift then the rear lift separately will lift the wing slightly quicker but utilizing the “emergency up” button as a reaction button is a good operating practice.

The float button on the joystick is an important wing function as it allows the wing to “float” over the road surface, following its contours up and down. The float button opens up a passage in the Craig valve, allowing the A and B cylinder ports on the rear lift cylinder to extend and retract with the weight of the wing. Pressing the float button with the wing in a raised position will allow the wing to lower slowly. You will notice after pressing the float button that the red light will light up below the float button, this is an indication that the float circuit is active. To turn off the float function, simply press the button again.



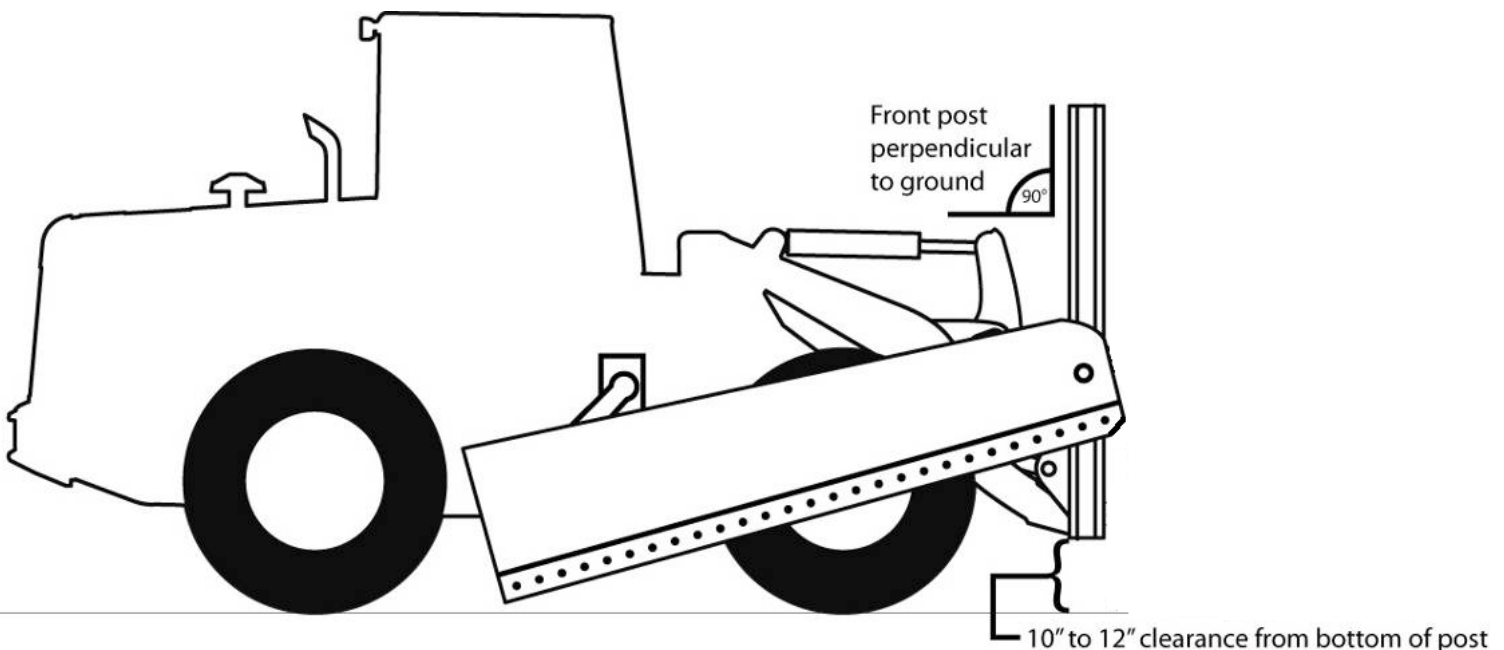
## OPERATION

The front of the wing assembly is equipped with a mechanical float pin, allowing the wing to travel 14-3/4" on the front post as the lower slide moves freely on the lift bolt.

The Craig wing contains a 1-1/2" bolt which attaches the wing moldboard to the front bell swivel. This bolt is intended to be a shear bolt and in the event that it does shear it must not be replaced with any bolt above Grade 2.

## PROCEDURES

- Try to set your plow harness in the manner shown in the diagram below. Ensuring that the plow harness is operated at 90° to the ground will help the wing moldboard operate at the correct plowing angle and not chatter or dig into the road shoulder.
- The bottom of the plow harness is intended to operate 10-12" from the ground, which will help to ensure that the harness does not bottom out on the road surface and cause premature wear.
- When raising the wing, raise the front first, then the back. This ensures that the front will not dig into the road surface. When lowering, lower the rear first and then the front for the same reason.
- Operate the wing with the extend cylinder extended. This allows the cylinders work port relief (discussed in the wing features section) to function as a shock absorber.
- Use the float function (float button) when winging on a road surface or the shoulder (discussed in the wing features section).



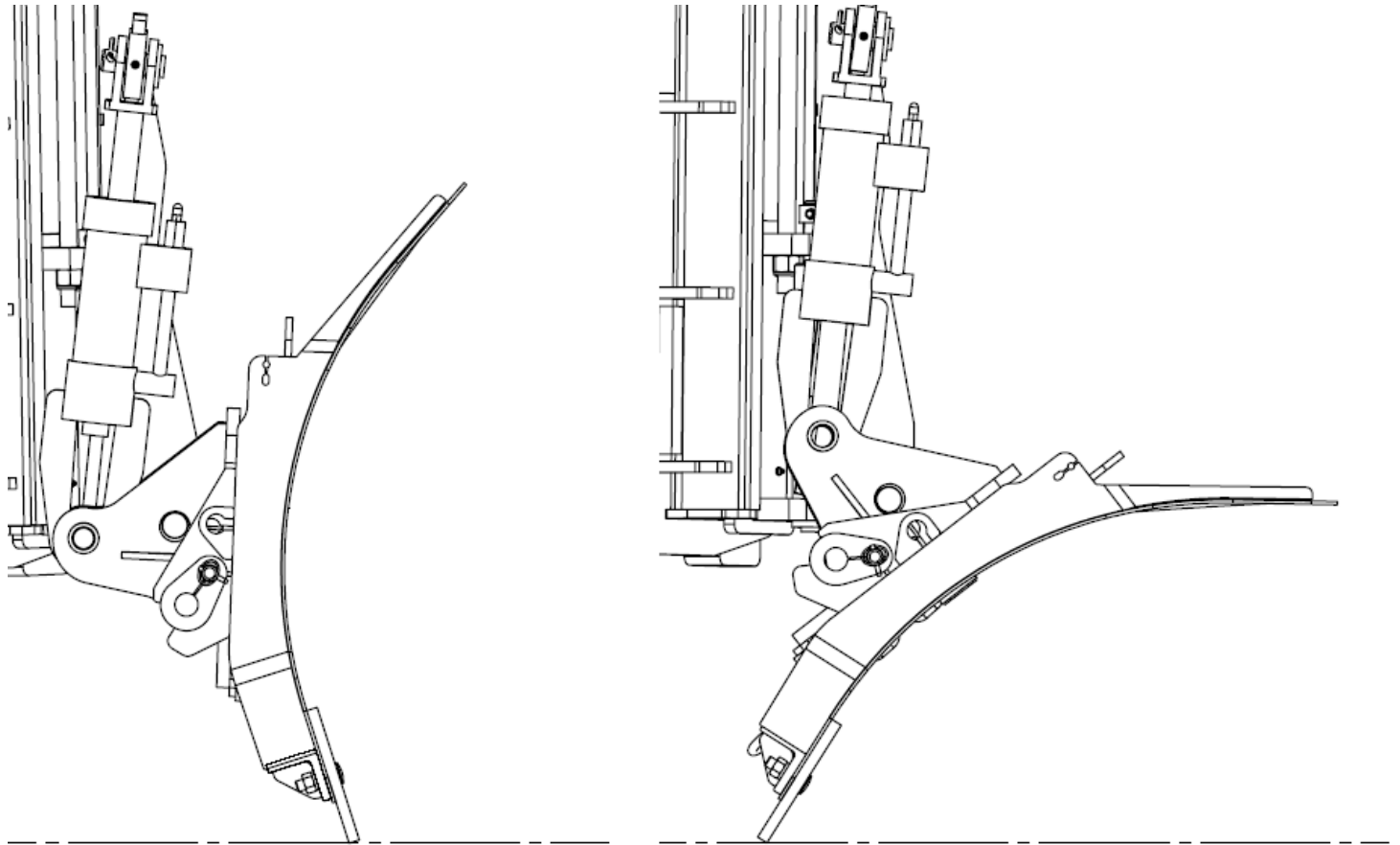
## OPERATION

### HYDRAULIC TRIP SWIVEL

The optional hydraulic trip swivel option adds versatility to your Craig wing assembly. It can be used for adjusting the angle of attack that the wing cutting edge makes with the ground, with its full range of motion shown below. It's important to note that although leaning a wing moldboard ahead can help to scrape the ground, the wing may be prone to "chatter" or bounce on the ground. These adjustments are entirely an operator preference.

When plowing with a wing equipped with a hydraulic trip swivel, the swivel will trip or dump when the wing hits an obstruction. This is intentional and is a safety feature to protect the rest of your equipment. A joystick function resets the trip swivel as shown in the controls section of this manual.

It is important to note **DO NOT RAISE THE WING WHILE IN A TRIPPED POSITION – THIS CAN DAMAGE THE FRONT POST AND WING MOLDBOARD.**

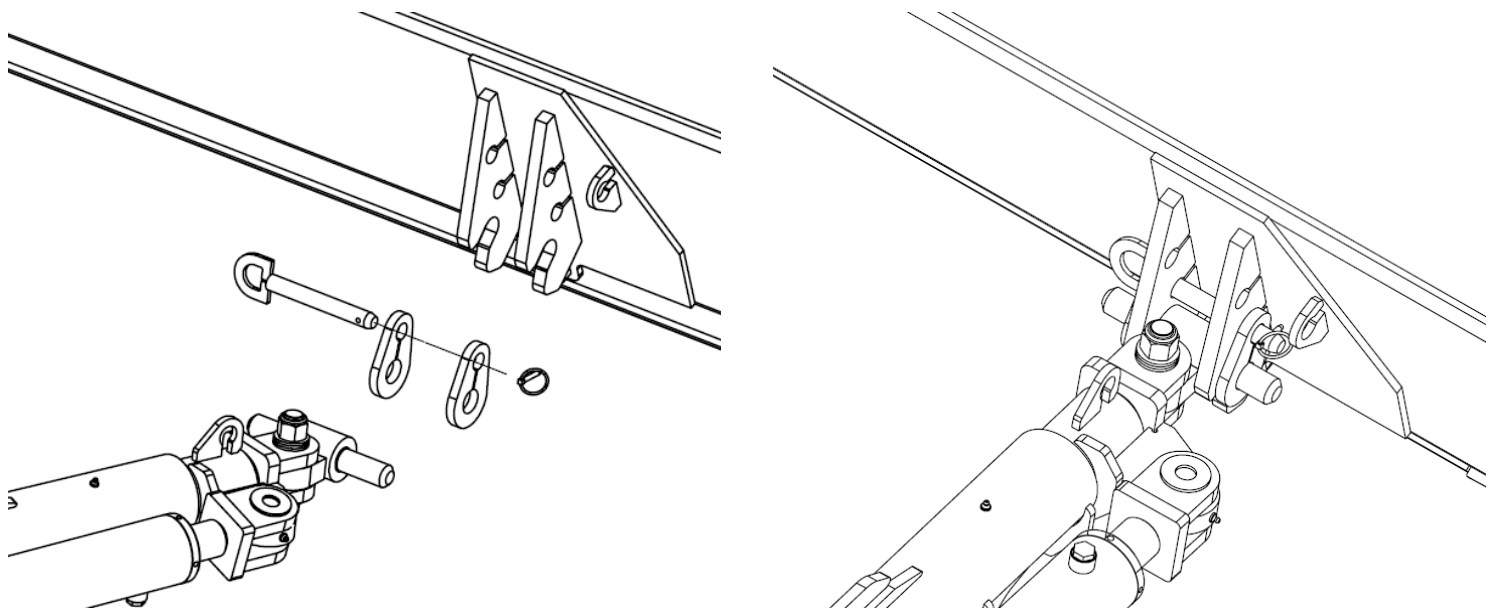


## OPERATION

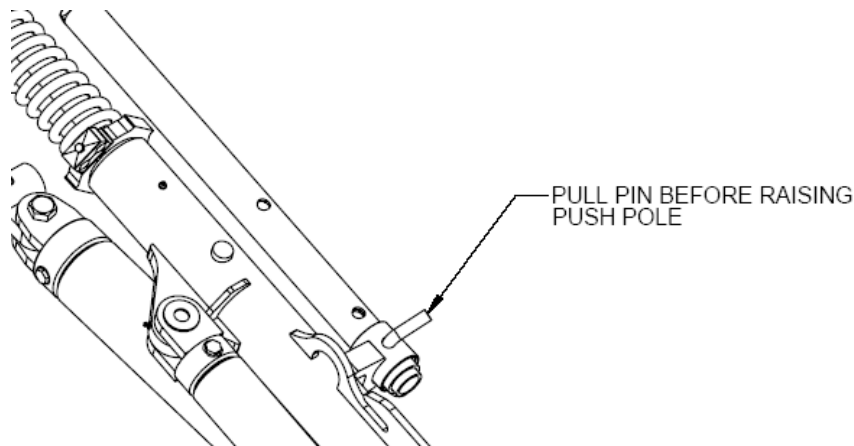
### ATTACHING THE WING

Attaching and detaching the wing from your loader is a common practice throughout the winter months. Craig recommends the following practice for attaching the wing to the loader.

1. Engage the loader coupler into the plow harness and roll back the coupler until the hookup has seated then extend the locking pins. Visually check the pins to ensure they are securely attached, and then attach hydraulic lines running to the plow harness and front plow.
2. Attach the push pole swivel into the wing bracket slot as shown below. This is easiest when the extend cylinder has been extended about 12". Insert the lock pin, locking lugs, and lynch pin. Then connect the safety chain.



3. Before raising the wing ensure that the pin holding the adjustable brace onto the push pole is pulled as shown below. Failing to do so can cause the adjustable brace to bend or break. This brace is only intended to provide stability to the push pole when detached from the wing moldboard. Once connected to the wing moldboard it should be free to move.



## MAINTENANCE

### INSPECTION BEFORE USE

- Check all bolts and nuts. Tighten any loose bolts or replace if they are worn or missing. When replacing worn or missing bolts, do not replace with bolts that are smaller or of a different grade.
- Check the cutting edge for wear. When replacing the cutting edges, the bolts, nuts and lock washers should be replaced with new ones.
- Check pins for excessive play or wear.
- Check hosing for frayed braiding or abrasive wear.

Craig wing assemblies require some maintenance to ensure a long and trouble-free life. A wing assembly is a complex piece of machinery and operates in a harsh environment where road salt, dirt and grime can wreak havoc on moving parts if they are not lubricated regularly. Greasing all the fittings on your wing is crucial for longevity.

### GREASE LOCATIONS

#### Front Post:

Paint on grease along the area shown in the diagram below. The lower slide also contains two grease fittings to help ensure this area is always well lubricated.

#### Bell Swivel:

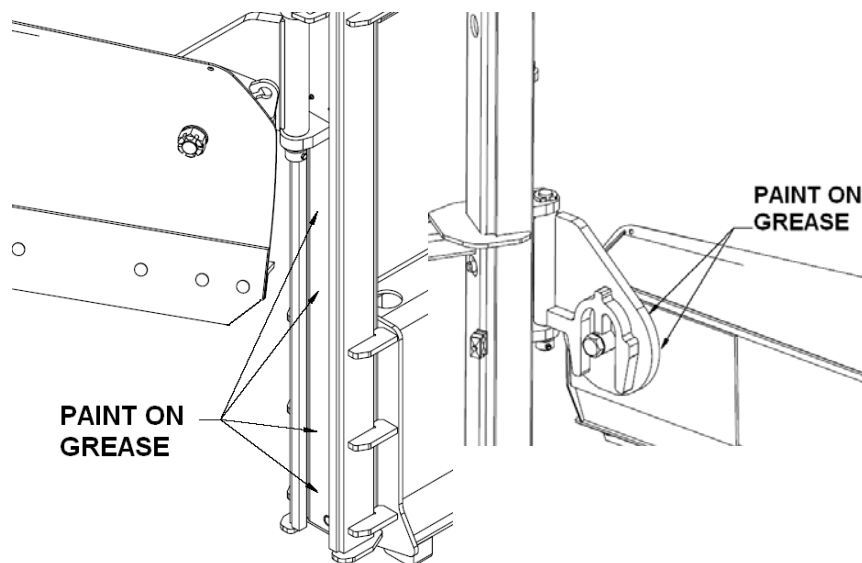
The area where the bell swivel attaches to the wing moldboard should also get painted on grease to prevent wear.

#### Hydraulic Trip Swivel:

If using a trip swivel be sure to grease all fittings along the faces of the wing and the bell swivel in contact.

#### Rear Lift Group:

Grease all fittings weekly, and be certain to operate the wing through its full range of motion in order to ensure there are no areas sticking or binding..



## MAINTENANCE

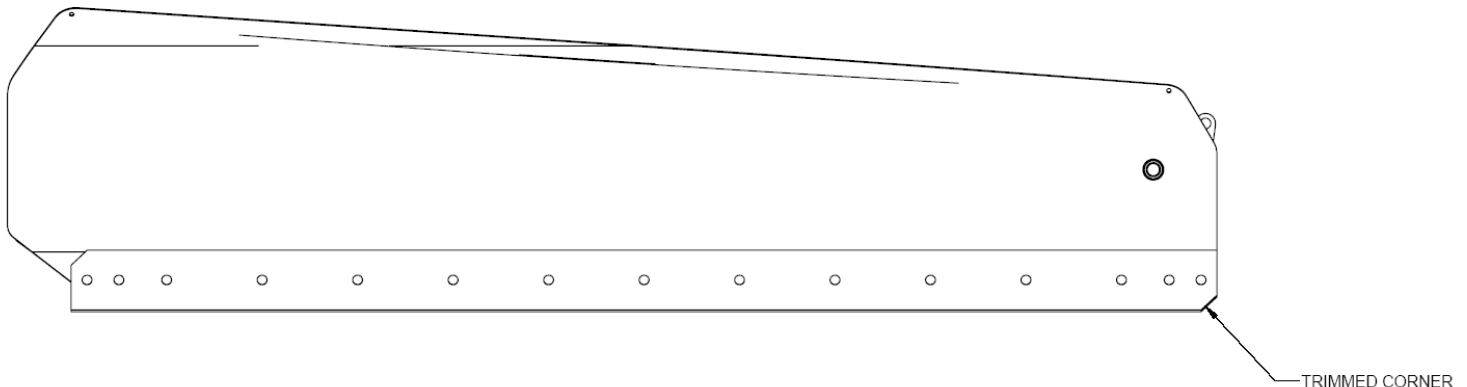
### CLEANING

Often snow equipment is pressure washed after usage, and washing grime from your wing assembly is a good practice. However it's important to take note of where the Craig valve is located - **do not pressure wash the valve.** Pressure washing the valve can damage electric components and hosing. Instead of pressure washing the valve area, washing it with a low pressure hose is suggested.



Do not pressure wash decal found on the Craig valve cover.

The Craig valve is vital to the performance of your wing assembly and requires very little maintenance. With the harsh environment that loaders work in, corrosion on the valve is commonplace. Ensure that your valve cover is always on to protect the valve from debris which can damage electrical solenoid connections and refrain from pressure washing the valve itself or chipping out ice buildup on the valve.

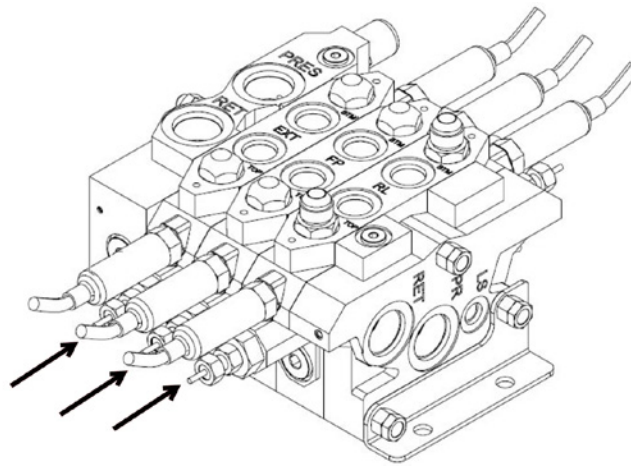


Wear items should always be checked and replaced when worn out. The standard cutting edges on a Craig wing are reversible, doubling the life of your edge. When flipping a cutting edge or replacing your edge with a new one, ensure that the leading edge is trimmed at a 45° angle as shown below. This helps keep the wing moldboard from digging into the ground when it is lowered.

## MAINTENANCE

### TROUBLESHOOTING

In the event that you experience trouble with your joystick during plowing, it is important to note that there are manual overrides on the Craig valve itself. These are designed to enable the operator to raise/lower the wing manually. These overrides are shown in the figure below. They are spring loaded push pins and they allow an operator to manually bypass the joystick system. The overrides are located on either side of the valve.



### STORING THE WING ASSEMBLY

When storing your wing for extended periods of time the following precautions should be taken to avoid unnecessary damage.

- Thoroughly clean your snowplow to remove all salt and grime.
- Grease all fittings to ensure that the pins are protected.
- Store your wing off the ground. Laying the wing on a simple set of 4" x 4" blocks can keep your wing assembly from sitting in water or damp ground.

### PAINT

The finish on your Craig attachment has been applied with a special primer and adhesion enhancer to promote a durable finish. Because of the nature of heavy equipment attachments scuffing and wear are normal. **The finish on your Craig attachment is not covered under warranty.** For best results your Craig wing assembly should be cleaned, inspected and re-painted at the end of each season. Matching paint and primer can be purchased from your local original equipment dealer.



## **MAINTENANCE**

### **TECHNICAL SUPPORT**

If you have followed the maintenance instructions contained in this manual you should have years of trouble-free operation from your Craig attachment.

If you would like more information on any features of this attachment, visit our website and be sure to check if your manual edition is current. If the information you are seeking is not in the most current manual, please contact us at 1-800-565-5007 and ask for technical support.









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