



OWNERS MANUAL

VCU HEAVY DUTY WING



EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL.

TO MAINTAIN OUR ON-GOING PRODUCT DEVELOPMENT AND IMPROVEMENT PROGRAM, VIKING-CIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.



INTRODUCTION- VCU HEAVY DUTY WING

CONGRATULATIONS AND THANK YOU FOR YOUR PURCHASE OF NEW VIKING-CIVES SNOW & ICE CONTROL EQUIPMENT. THIS MANUAL HAS BEEN CREATED TO PROVIDE YOU WITH INSTALLATION, SET-UP, OPERATION, AND MAINTENANCE INFORMATION FOR THE VIKING-CIVES **HEAVY DUTY WING**. IT HAS BEEN PREPARED TO FAMILIARIZE YOU OR ANY OTHER PERSON WHO WILL BE ASSEMBLING, OPERATING, MAINTAINING, OR WORKING WITH THIS PRODUCT WITH THE DESIGN FEATURES, AND TO INSTRUCT YOU IN THE RECOMMENDED OPERATION AND MAINTENANCE OF THE UNIT.

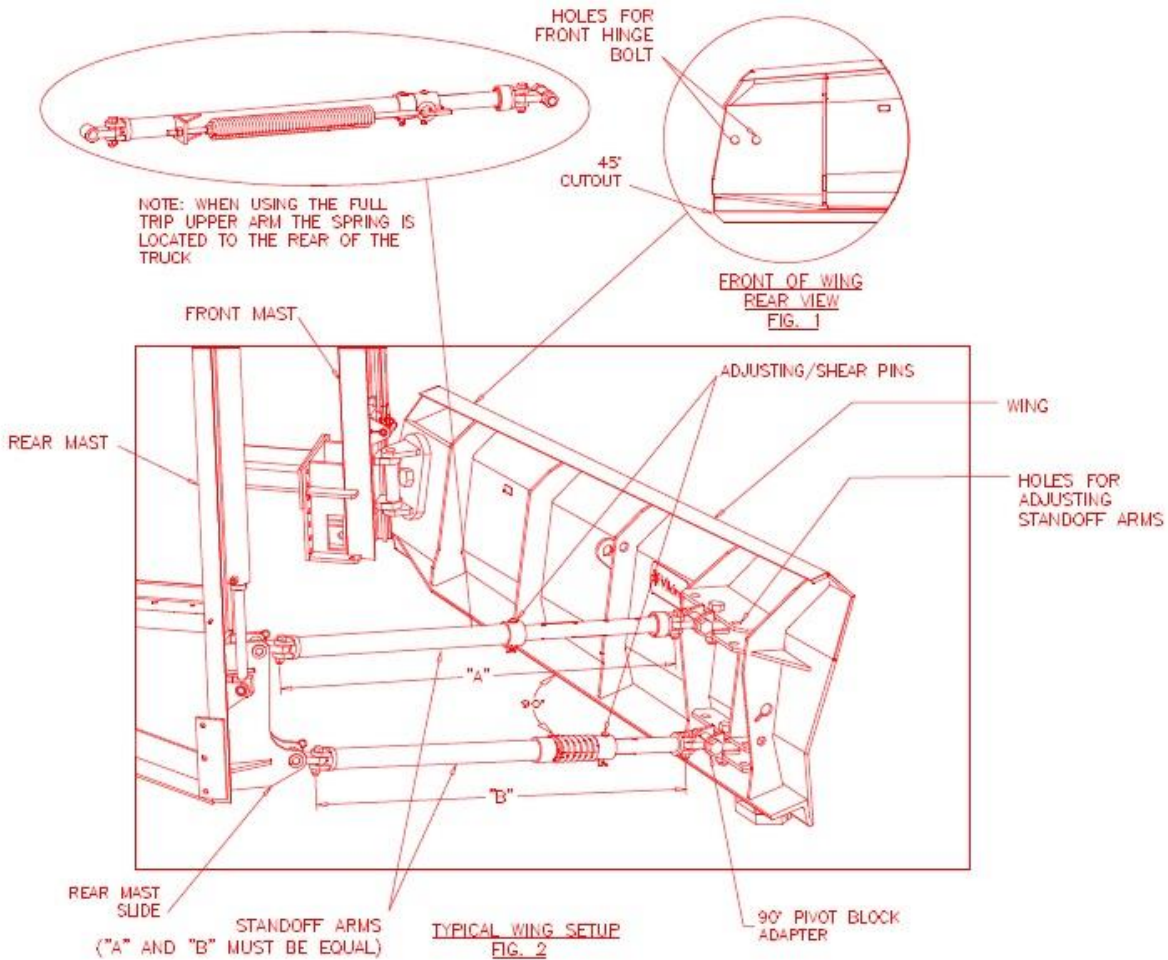
READ THIS MANUAL CAREFULLY BEFORE YOU OPERATE OR SERVICE YOUR **HEAVY DUTY WING**. REMEMBER THAT YOU'RE WORKING WITH HEAVY EQUIPMENT THAT CAN INJURE YOU OR SOMEONE ELSE. YOU CAN HELP LESSEN THE CHANCE OF INJURY BY FOLLOWING THE PROCEDURES IN THIS MANUAL, CAREFULLY.

DANGER: IF INCORRECTLY USED, THIS EQUIPMENT CAN CAUSE SEVERE INJURY. YOUR CHANCE OF INJURY CAN BE GREATLY REDUCED BY FOLLOWING ALL SAFETY DECAL NOTIFICATIONS. ALL DECALS MUST BE KEPT CLEAN AND COMPLETE. REPLACE ANY DECALS THAT ARE UNREADABLE. DECALS MAY BE PURCHASED DIRECTLY FROM VIKING-CIVES AND/OR YOUR NEAREST AUTHORIZED DEALER. ALL OPERATOR/SERVICE SHOULD REVIEW THIS MANUAL CAREFULLY AND BECOME FAMILIAR WITH ITS CONTENTS. **IF ANYONE ELSE BESIDE YOU OPERATES OR SERVICES THIS EQUIPMENT, MAKE SURE THEY READ THIS MANUAL AND ARE INSTRUCTED TO FOLLOW ALL THE SAFETY PROCEDURES RELATED TO THIS EQUIPMENT. KEEP THIS MANUAL AVAILABLE FOR REFERENCE WHENEVER THIS PRODUCT IS BEING HANDLED OR USED. PROVIDE THIS MANUAL TO ANY NEW OWNERS AND/OR OPERATORS.**

GENERAL OPERATION DESCRIPTION: THE **HEAVY DUTY WING** IS DESIGNED WITH A VARIETY OF ATTACH POINTS ACCOMMODATE A WIDE RANGE OF APPLICATIONS SUCH AS SHELVING OR EXTENDING THE SNOW PATH CLEARANCE WHEN PAIRED WITH A VIKING-CIVES SNOW PLOW.

INSTALLATION (CABLE)

Figures 1 – 2 (General Wing Set-up)





NOTE: THE INITIAL INSTALLATION OF THE WING MUST BE PERFORMED ON A REASONABLY SMOOTH AND LEVEL SURFACE TO INSURE PROPER INSTALLATION AND AVOID UNNECESSARY ADJUSTMENT

ADJUSTING WING (CABLE)

1. BEGINNING AT THE FRONT OF THE WING (SEE FIG 1), TWO HOLES ARE PROVIDED FOR ATTACHING THE FRONT HINGE BOLT TO THE WING. DEPENDING ON THE HOLE SELECTED, FOR THE SPECIFIC APPLICATION, SHOULD POSITION THE WING TO PROVIDE A SMALL OVERLAP FROM THE PLOW CUTTING EDGE TO THE WING CUTTING EDGE. **NOTE: CARE MUST BE TAKEN NOT TO POSITION THE WING TOO FAR FORWARD. THE WING SHOULD BE ABLE TO OPERATE THROUGH ITS ENTIRE RANGE OF MOTION WITHOUT STRIKING THE PLOW, EVEN WITH THE PLOW IN A RAISED POSITION.**

THIS CONDITION CAN SOMETIMES OCCUR IF THE PLOW IS SET-UP IS INCORRECT. EXCESSIVE PLOW LIFT CAN REDUCE PLOW/WING CLEARANCE EVEN IF WING SET-UP IS CORRECT. CHECK THE PLOW SET-UP BEFORE MAKING ANY CORRECTIONS TO THE WING.

2. AT THE REAR OF THE WING THERE ARE A SERIES OF HOLES FOR ATTACHING THE STAND-OFF ARMS (WING BRACES). THE STAND-OFF ARMS MUST BE ATTACHED TO THE REAR MAST SLIDE (OR PATROL WING REAR SUPPORT) FIRST. THE OUTER END OF THE ARMS ARE THEN ATTACHED TO THE 90° PIVOT BLACK ADAPTER AND POSITIONED IN THE HOLE AT THE REAR OF THE WING WHICH PLACES THE ARMS AT A 90° ANGLE TO THE WING (SEE FIG 2). **NOTE: THE STAND-OFF ARMS MUST BE AS SQUARE AS POSSIBLE TO THE WING IN ORDER TO PERMIT SMOOTH OPERATION OF ALL WING FUNCTIONS.**
3. ADJUSTING THE STAND-OFF ARMS IS ANOTHER CRITICAL PART TO THE WING SET-UP. IT IS **ABSOLUTELY ESSENTIAL** THAT BOTH ARMS ARE **THE SAME LENGTH**. THIS MUST BE CHECKED WITH A TAPE MEASURE FROM PIVOT BLOCK BOLT TO PIVOT BLOCK BOLT ON EACH ARM AND ADJUSTED ACCORDINGLY (SEE FIG 2). **NOTE: DO NOT ASSUME THAT THE STAND-OFF ARMS ARE SET CORRECTLY FROM THE FACTORY. OPERATING THE WING WITH UNEQUAL ARM LENGTHS WILL CAUSE BINDING AND/OR LOCKUP OF THE WING AND MAY RESULT IN BENDING SOME COMPONENTS.** THE WING'S CUTTING EDGE IS POSITION AT APPROXIMATELY 10° FROM VERTICAL.

NOTE: IF ANY ANGLE OTHER THAN 90° IS SET-UP BETWEEN THE WING AND THE STAND-OFF ARMS THEN WELD THE 90° PIVOT BLOCK ADAPTERS TO THE REAR OF THE WING MOUNTING PLATES WITH A MIN. OF 2" OF ¼" FILLET WELD. THIS WILL ENSURE THE PIVOT BLOCK ADAPTERS DO NOT TRY TO WEDGE IN BETWEEN THE WING PLATES WHILE PLOWING.

ATTACHING REAR MAST CABLE TO WING

FIGURE 3A (WHD)

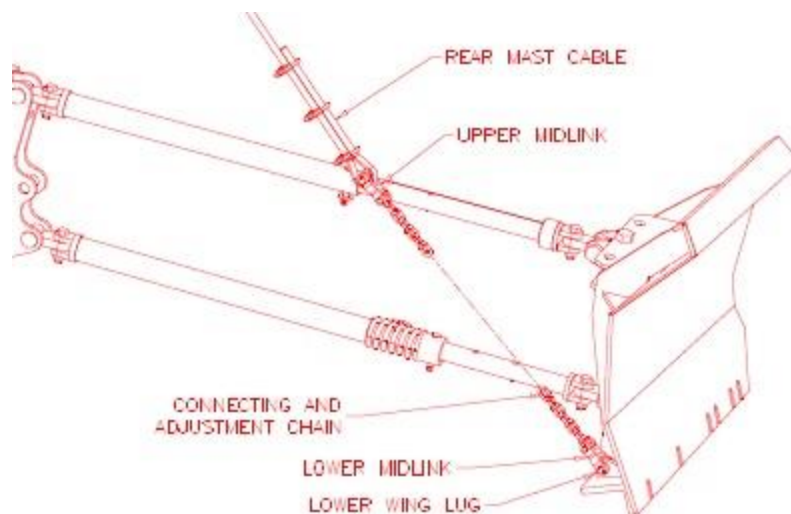
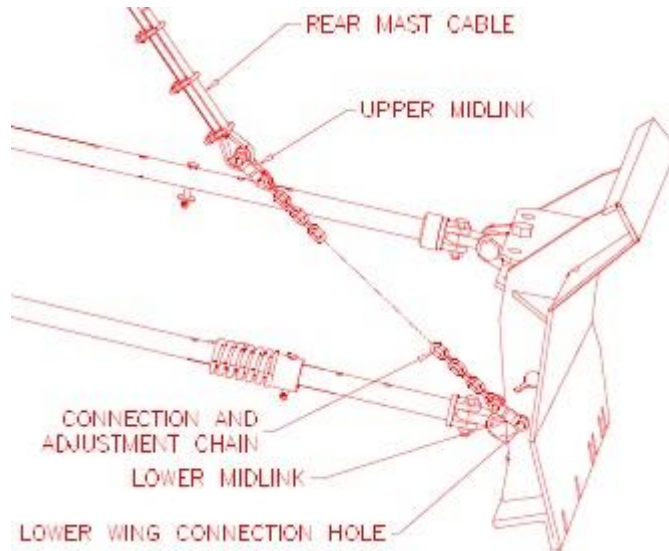


FIGURE 3B (WHDTE)



1. START BY ATTACHING ONE END OF THE CHAIN'S MID LINK TO THE CABLE THIMBLE AND THE OTHER END TO THE WING LUG (OR HOLE PROVIDED IN WING RIB) (SEE FIG. 3A & 3B).
2. RAISE FRONT OF WING TO A HEIGHT OF 10" OFF OF THE GROUND. THEN RAISE REAR OF WING AND CHECK FOR CLEARANCE AROUND THE MIRROR, EXHAUST AND OTHER CHASSIS PROTRUSIONS.
3. IF WING IS NOT CLOSE ENOUGH TO CAB, DROP THE REAR OF THE WING AND ADJUST THE CHAIN MID LINK SET UP AS FOLLOWS; LET SLACK OUT OF THE WIND CABLE. UNHOOK THE MID LINK FROM THE CHAIN ON THE CABLE SIDE (NOT THE WING SIDE). DOUBLE THE CHAIN OVER IN APPROXIMATE LOCATION AND REATTACH THE MID LINK. RE-RAISE THE WING AND REPEAT AS NECESSARY.

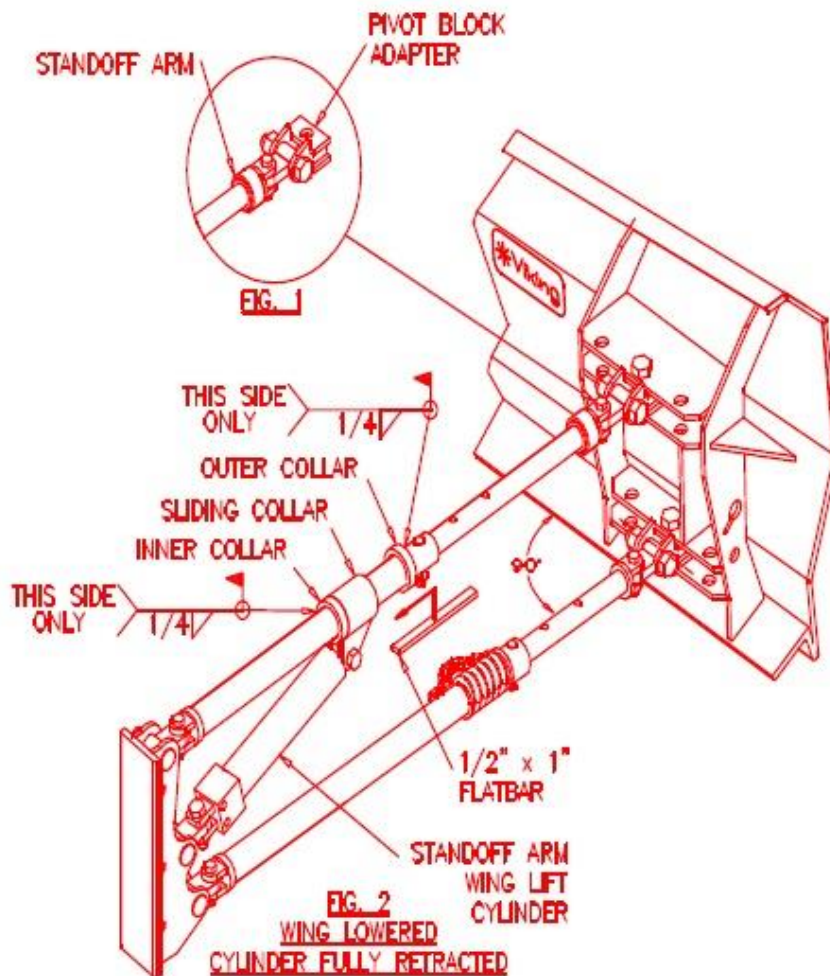
WARNING!!!!

BE SURE ALL PERSONNEL ARE WELL CLEAR OF THE PATH OF THE WING AS IT RISES OR LOWERS. SERIOUS INJURY COULD RESULT.



INSTALLATION (HYDRAULIC)

FIGURE 1 – 2 (HYD WHD)



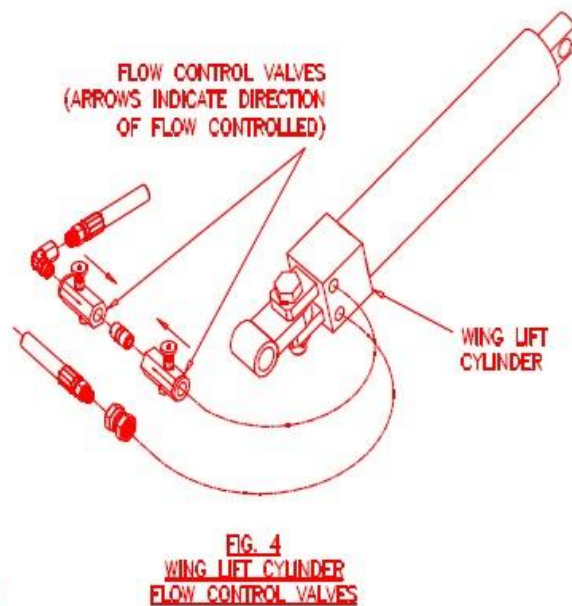
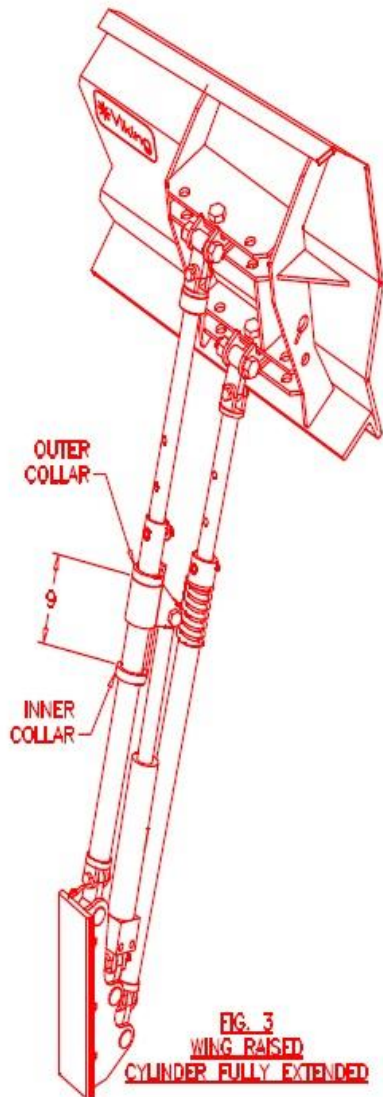
ADJUSTING WING (HYDRAULIC)

FOLLOW INSTRUCTIONS FOR ADJUSTING WING IN PREVIOUS SECTION (ADJUSTING WING (CABLE)) ALONG WITH THESE ADDITIONAL STEPS.

1. CONNECT THE WING LIFT CYLINDER AS SHOWN ABOVE (FIG 2).
2. RAISE THE FRONT OF WING 10" OFF THE GROUND. USING AN OVERHEAD CRANE OR OTHER SAFE LIFTING DEVICE, RAISE THE REAR OF THE WING TO ITS CARRYING POSITION (FIG 3). MAKE SURE THERE IS ADEQUATE CLEARANCE AROUND THE MIRROR AND EXHAUST SHIELD.



3. EXTEND THE STAND-OFF ARM WING LIFT CYLINDER TO ITS MAXIMUM LENGTH. MAKE A MARK ON OUTER ARM AROUND THE OUTER END OF THE SLIDING COLLAR.
4. LOWER THE WING, FRONT END INITIALLY THEN THE REAR, TO THE FLOOR. RETRACT THE STAND-OFF ARM CYLINDER COMPLETELY (FIG 2). POSITION THE OUTER COLLAR APPROX. $\frac{1}{2}$ " INSIDE THE MARK MADE IN STEP 3. TACK OUTER COLLAR ON SIDE AWAY FROM TRUCK. RAISE WING USING HYDRAULIC CYLINDER. ADJUST OUTER COLLAR POSITION AS NEEDED TO ACHIEVE ADEQUATE CLEARANCE AROUND THE MIRROR AND EXHAUST.
5. WITH THE WING BACK ON THE FLOOR AND THE OUTER COLLAR CORRECTLY LOCATED, WELD $\frac{1}{4}$ " FILLET AROUND THE OUTSIDE (TOWARD WING) EDGE OF THE OUTER COLLAR (FIG 2), POSITION THE INNER COLLAR SO THAT THERE IS 9" BETWEEN THE COLLARS AS SHOWN (FIG 3) AND WELD $\frac{1}{4}$ " FILLET AROUND TRUCK SIDE OF THE COLLAR (FIG 2).
6. POSITION SLIDING COLLAR APPROXIMATELY HALF WAY BETWEEN INNER AND OUTER COLLARS. MAKE SURE THE LUGS ON THE SLIDE COLLAR ARE POINTING DOWN. PLACE $\frac{1}{2}$ " X 1" FLAT BAR BETWEEN LUGS ON SLIDING COLLAR AND WELD TO INNER AND OUTER COLLARS. THIS PREVENTS THE SLIDING COLLAR FROM ROTATING AND POSSIBLE DAMAGE TO THE LIFT CYLINDER WHILE LIFTING THE WING.
7. ADJUST THE VARIABLE FLOW CONTROL VALVES ON THE LIFT CYLINDER HOSES TO OBTAIN THE SPEED YOU WISH THE WING TO RAISE AND LOWER (FIG 4).





OPERATION

WHEN ALL CONDITIONS OF INSTALLATION HAVE BEEN MET, THE WING IS READY TO OPERATE. THIS WING WAS DESIGNED TO OPERATE IN THE FORWARD PLOWING DIRECTION ONLY. **NOTE: ALWAYS LIFT THE WING BEFORE REVERSING THE PRIME MOVER.** THE LEVERS FOR CONTROLLING THE WING LIFT FUNCTIONS ARE LOCATED IN THE CAB OF THE PRIME MOVER.

TO LIFT THE WING

THE WING LIFT LEVERS ACTIVATES A THREE-POSITION VALVE.

1. NORMALLY TO RAISE THE FRONT OF THE WING, PULL THE FRONT OF WING LIFT LEVER. WHEN YOU RELEASE THE LEVER THE VALVE WILL RETURN TO A NEUTRAL HOLD POSITION AND THE WING WILL REMAIN IN THAT POSITION.
2. NORMALLY TO RAISE THE REAR OF THE WING, PULL THE REAR OF WING LIFT LEVER. WHEN YOU RELEASE THE LEVER THE VALVE WILL RETURN TO A NEUTRAL HOLD POSITION AND THE WING WILL REMAIN IN THAT POSITION.
3. TO LOWER THE FRONT OR REAR OF THE WING, PUSH THE FRONT OF WING LIFT LEVER. WHEN YOU RELEASE THE LEVER THE VALVE WILL RETURN TO A NEUTRAL HOLD POSITION AND THE WING WILL REMAIN IN THAT POSITION.

NOTE: FOR WINGS WITH THIS LIFT VALVE ARRANGEMENT, IT IS NECESSARY TO HOLD THE WING LIFT LEVER IN THE DOWN POSITION FOR A FEW MOMENTS WHILE PLOWING TO ALLOW THE WING TO SEEK ITS LOWEST LEVEL. AFTER THIS HAS BEEN ACCOMPLISHED YOU CAN RELEASE THE LEVER AND THE WING WILL PROPERLY SET TO FOLLOW THE CONTOUR OF THE PLOWING SURFACE. HOWEVER, SOME UNITS ARE EQUIPPED WITH A THREE-POSITION PLOW LIFT VALVE WITH A DETENT IN THE DOWN POSITION. THIS VALVE WILL LOCK IN A FLOAT POSITION WHEN THE WING IS LOWERED. THE WING WILL THEN AUTOMATICALLY SEEK ITS LOWEST LEVEL ALLOWING IT TO FOLLOW THE CONTOUR OF THE PLOWING SURFACE.

ADDITIONAL OPERATION CONSIDERATIONS

1. BE SURE WHEN CARRYING THE WING IN A RAISED POSITION TO HAVE AT LEAST 20" FROM THE GROUND TO THE WING BLADE TO ENSURE THE TIRE DOES NOT COME INTO CONTACT WITH THE WING.
2. DO NOT TIGHTEN THE HINGE BOLT AT THE FRONT OF THE WING. A SMALL AMOUNT OF CLEARANCE (APPROX. 1/8") IS DESIRABLE TO PROVIDE FREEDOM OF MOVEMENT. **BE SURE THE COTTER PIN IS PROPERLY INSTALLED THROUGH THE SLOTTED NUT AND BOLT.**
3. DOUBLE CHECK THE OTHER SET-UP REQUIREMENTS TO MAKE SURE THEY ARE CORRECT, ESPECIALLY THE STAND-OFF ARM LENGTH.
4. IF EQUIPPED WITH A FULL TRIP WING, MAKE SURE **BOTH** LOCKOUT PINS ARE EITHER IN OR OUT.
5. **NEVER** STAND OR WALK UNDER OR WITHIN THE OPERATING RANGE OF A RAISED WING UNLESS THE SAFETY CHAIN IS PROPERLY ATTACHED.
6. WHEN THE CUTTING EDGE IS REPLACED, BE SURE THAT THE FRONT CORNER OF THE BLADE IS CUT ON A 45° ANGLE. THIS CHAMFER SHOULD BE 2" UP AND 2" BACK (SEE FIG 1). THIS IS IMPORTANT TO HELP THE WING RIDE OVER RIDGES OR PAVEMENT EDGES WITHOUT DIGGING IN. A SQUARE CORNER CAN DIG IN AND CAUSE THE WING TO SWING UP WITH ENOUGH FORCE TO COLLIDE WITH THE TRUCK CAB AND INJURE THE WING OPERATOR.
7. THE 5/8 " DIA ADJUSTING/SHEAR PINS WHICH ARE USED TO ADJUST THE STAND-OFF ARM LENGTHS (SEE FIG 2) ARE ALSO INTENDED TO FUNCTION AS SHEAR PINS. IF THEY ARE BROKEN FOR ANY REASON, BE SURE THEY ARE REPLACED BY THE SAME PART. **DO NOT REPLACE THE SHEAR PINS WITH BOLTS.**
8. WHEN OPERATING A WING UNIT OF ANY TYPE, IT IS ESSENTIAL TO SAFE OPERATION THAT THE VARIOUS MOVEMENTS ARE PERFORMED IN THE CORRECT SEQUENCE.
 - 8.1 THE REAR OF THE WING MUST CONTACT THE GROUND FIRST WHEN LOWERING, FOLLOWED BY THE FRONT OF THE WING. WHEN RAISING THE WING, THE FRONT MUST BE RAISED FIRST, FOLLOWED BY THE REAR.



MAINTENANCE

IN PREPARATION FOR THE SNOWPLOWING SEASON AND **AFTER EVERY EIGHT (8) HOURS OF OPERATION**, A VISUAL EQUIPMENT INSPECTION MUST BE PERFORMED. LOOK FOR ANY DAMAGED COMPONENTS, BENDS, CRACKED WELDS, HYDRAULIC LEAKS, ETC. INSPECT ALL FASTENERS; TIGHTEN ANY THAT HAVE LOOSENED AND REPLACE ANY THAT ARE DAMAGED. CHECK ALL HYDRAULIC HOSES FOR CUTS, CRACKS AND/OR LEAKS. CHECK WING LIFT CABLE(S) FOR LOOSE CLAMPS AND FRAYS. **IMMEDIATELY REPLACE FRAYED CABLES.** INSPECT AND GREASE ALL JOINTED AREAS WITH A GREASE PORT ACCESS TO ENSURE LONGEVITY AND PROPER MOVEMENT OF EQUIPMENT.

PERIODICALLY DURING PLOWING, STOP TO INSPECT WING CUTTING EDGES AND MOLDBOARD/WING SHOES FOR WEAR. AT THE FIRST SIGN OF EXCESSIVE WEAR, DISCARD AND REPLACE WITH NEW PARTS.

WHEN THE WING IS DISCONNECTED FROM THE PRIME MOVER, BE SURE TO COUPLE THE HYDRAULIC HOSES TOGETHER, TO PREVENT DAMAGE TO THE QUICK DISCONNECT HOSE ENDS AND TO HELP PREVENT THE INTRODUCTION OF FOREIGN MATERIAL INTO THE HYDRAULIC SYSTEM (IF APPLICABLE). IF A CABLE REAR MAST IS BEING USED, TIE THE CHAIN UP IN ITS RESPECTIVE HOLDER TO PREVENT THE CABLE FROM FREE MOVEMENT.