



VOLVO G900 SERIES SNOW WING INSTALLATION MANUAL



Model: _____

Serial Number: _____

Rev. 01/14

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- Thank you for purchasing a Rybind Attachment. For proper installation and operation for your Rybind Attachment this book **SHOULD BE READ COMPLETELY BEFORE BEGINNING INSTALLATION OR OPERATION OF THE EQUIPMENT.**
- Your safety and the safety of others depend on the proper installation, operation, maintenance, and understanding in the use of this equipment.
- Some photographs and installations in this manual may show details of this attachment that may be slightly different from your unit.
- Continuing improvements and advancements of this product may occur at any time.
- Any unauthorized modification to this product or lack of maintenance, proper use, or unsafe operating techniques will not be covered under warranty, further more Rybind Manufacturing reserves the right to void the warranty on some or all the equipment installed on that unit.
- If any questions arise during installation or maintenance of your product please consult your dealer or contact Rybind Manufacturing's corporate offices.

Thank you for your business.

Inventory

- A. (Belly Mount) (4) M24 x 3 -1/2 Bolts, and (4) 7/8 SAE washers
- B. (Wing Pivot) 5/8 x 3 Grade 5 bolt, with Torque Nut
- C. (Tilt Cylinder) 1 x 7 Grade 5 bolt, with Torque Nut.
- D. (Front Mast) (6) – 3/4 x 2-1/2 Grade 8 bolts, lock washers, and nuts
- E. (Rear Brace Pipe Mount) (2) 3/4 x 2 Grade 5 bolts, with lock washers and nuts
- F. (Rear Brace Pipe) (1) 7/8 x 4 Grade 8 bolt with torque nut
- G. (Front Brace Pipe) (1) 3/4 x 2 Grade 5 bolt with lock washer and nut, (1) 7/8 x 3-1/2 Grade 5 Bolt with lock washer and nut
- H. (Wing Moldboard to Wing Pivot) 2" Moldboard Pin/Nut, with 2" Castle Nut and Cotter Pin
- I. (Float Link to Push Pipe) 1 x 6 Grade 5 bolt with torque nut
- J. Tilt Cylinder – attaches to Float Link with 1 x 3-1/2 Grade 5 bolt with Torque Nut, attaches to Tilt Cylinder Bracket on Mast using 1 x 3-1/2 Grade 5 bolt with torque nut
- K. (Push Pipe) Rear Pivot Mount to push pipe uses (1) 7/16 x 3-1/2 Grade 8 shear bolt with torque nut, Push Pipe to Wing Pivot uses (1) 7/8 x 4 Grade 5 bolt with torque nut
- L. 1 – Push Pipe Safety Cable
- M. 1 – Wing Safety Cable
- N. (Rear Ripper Mount)– Rear Ripper Mount Lock Pin and Rear Ripper Push Pipe Pivot uses 1 x 6 Grade 5 bolt with Torque Nut

Hydraulics

Counter Balance Valve

- A. C1 - 3/8 x 24" hose connected to 3/8 x 44" with QC Fittings
- B. C2 - 3/8 x 24" hose connected to 3/8 x 77" hose with QC Fittings
- C. T – 3/8 x 44" hose connected to 3/8 x 108" hose with QC Fittings, T-Fitting on opposite end
- D. V1 - 3/8 x 48" hose with QC Fittings
- E. V2 - 3/8 x 48" hose with QC Fittings

Cushion Valve

- F. Top 1 – 3/8 x 24" hose with QC Fittings
- G. Top 2 – 3/8 x 24" hose connected to mast lift cylinder
- H. Bottom 1 – 3/8 x 14" hose with QC Fittings
- I. Bottom 2 – 3/8 x 45" hose connected to mast lift cylinder

Signature: _____

Snow Wing Installation

(HYDRAULIC REAR MAST)

Skip to #5 if Hydraulic Rear Mast wasn't ordered

1. Mount rear mast mount on back of grader to the right of the brackets. Use existing bolts, flat washers and locks. **See figure 1**
2. Bolt on rear mast using 6- 5/8" x 2" bolts and lock washers and nuts. **See figure 1**
3. Bolt on 54" rear brace pipe to the mast with 2- 3/4" x 2" bolts, lock washers and nuts. **See figure 1**
4. Bolt on the 48" brace pipe onto the mast and the grader with 3/4" x 2" bolts, lock washers and nuts. Take up the existing space in hole with 1-1/4"OD x 3/4"ID x 7/8" long bushing. **See figure 2**







FIGURE 1



FIGURE 2

5. Remove the ladder from the right hand side of grader.

<p>6. Bolt the front mast mount to the right hand side of the grader using the four Grade 8 M24x3-1/2" metric bolts and flat washers.</p>	
<p>7. Bolt the wing mast onto the side mount using six Grade 8 (3/4"x2-1/2") bolts, lock washers, and nuts.</p> <p><i>(Some die grinding may be necessary to line all six bolt holes up)</i></p>	
<p>8. Bolt 8" rear brace mount in grader access panel using a 3/4"x2" bolt lock washer and nut</p>	
<p>9. Bolt the 57" front brace pipe onto bottom of mast and mounting hole on grader using (1) 3/4"x2" lock washer/nut on the mast and (1) 7/8 x 3-1/2 lock washer/nut on the grader</p> <p><i>*Leave bolts loose and tighten at end of install.</i></p>	

10. Plum return to tank line from bulkhead to the top of the graders neck with provided "T" Fitting.

Rylind recommends running the hydraulic lines under the cab just below the wind shield wiper motors to the quick coupler bulkhead panel.



11. After all the internal hydraulic lines are plumbed into the grader there are two options for plumbing the quick couplers into the graders hydraulic system.

Option A has the quick couplers mounted just below the windshield and is used if customer is worried about hydraulic lines interfering with rear axle wheel chains.

Option B can be used by drilling holes in the stock cover plate to create a bulkhead for the fittings make sure you have clearance for the rear mast brace bracket.




**None of the internal hydraulic lines are provided. Rylind only plumbs snow wings to the QC bulkhead*

Option A



Option B



<p>12. Bolt 36" rear brace pipe and snow wing mast, onto rear side of mast using 3/4" x 2" bolt lock washer and nut.</p> <p><i>*Install bulkhead before brace pipe.</i></p>	
<p>13. Tighten all 4 nuts and bolts for the two brace pipes</p>	
<p>14. Mount moldboard to front mast swivel assembly. By using the 2" moldboard pin and slotted castle nut and insert cotter pin. Leave just enough slack for moldboard to move freely.</p>	
<p>15. Mount tilt cylinder to front mast using a 1"x3" bolt and lock nut.</p> <p><i>Make sure cylinder ports are facing up. Mount the cylinder rod end to float lever using a 1"x3" bolt and lock nut.</i></p>	
<p>16. Mount the push arm pivot to the rear mast or ripper mounts using 1"x3-1/2" bolt. Mount the rear push arm to the push arm pivot using 7/16" grade 8 shear bolt.</p> <p><i>Make sure safety clevis loop is between the grader and the push pipe itself not on the outside. On a rear ripper mount make sure bracket is able to swivel when ripper is lowered or raised to avoid damage.</i></p>	

17. Mount the other end of the push pipe to the moldboard using 7/8" x 3-1/2" bolt and lock nut, with 7/8" lock nut facing up.



18. Mount 1/2" safety cable to the back push pipe and rear ripper, rear manual pin mast, or rear hydraulic elevating mast. The rear push pipe should be position with the safety cable on the inside toward the machine and if the bolt should shear the mast will move away from the grader.



19. Run hoses "C1 & C2" on the counter balance valve along the outside of the tilt cylinder into the hose clamp on the cylinder itself. Install the shorter 64" hose to the first port on the tilt cylinder. Install the longer 98" hose to far port of the tilt cylinder.

20. Connect the 51" hose plumbed to "V2" on the counter balance valve to the aux valve plumbed to the bulkhead of the grader. Either "TC" ports can be used.

21. Connect the 53" hose plumbed to "V1" on the counter balance valve to the other aux valve on the bulkhead.

22. Install 72" hoses from bottom of front mast lift cylinder to the bulkhead quick coupler.

23. The return line to connected to the marked port "T" on the counter balance valve, should connect to the quick coupler valve plumbed during step 10

Jam or Nylock Nut Torque Specs			Non Locking Nut Torque Specs		
Nut Size and Threads per inch	Grade 5	Grade 8	Nut Size and Threads per inch	Grade 5	Grade 8
1/4-20	6	8	1/4-20	9	12.5
5/16-18	11	13	5/16-18	18	26
3/8-16	17	24	3/8-16	33	46
1/2-13	44	55	1/2-13	80	115
5/8-11	84	110	5/8-11	160	225
3/4-10	150	185	3/4-10	280	400
7/8-9	220	270	7/8-9	450	650
1-8	330	430	1-8	675	975

*All values in FT/LBS

START UP- INSPECTION- OPERATION

1. Be sure to grease all pivot points. Use either graphite grease or anti seize material to lubricate the mast slides.
2. Check all hoses to make sure they are tight.
3. Start grader and allow it to run for awhile. Do not articulate grader at this time. Then move all cylinders up and down just a few inches to make sure levers are pulled that either end of wing moves upward.
4. Move front mast lift cylinder up and down. Move rear mast lift cylinder up and down.
5. To raise the wing into "Roding" position raise the front about 16" to 20" off the ground with the rear mast down. Then fold wing up against the side of grader.
6. With the wing up check to see if it falls past center toward grader. If it does or acts. If the wings falls or act like it might fall. It may be necessary to shim up the bar stop on the moldboard where the push pipe hits.
7. Before articulation of the grader it is wise to check the pressure on counterbalance valve, which is a lock valve and a by-pass valve in one. To do this, insert a gauge between counterbalance valve and rod end of tilt cylinder. It must be on cylinder side of counter balance valve. Start the grader having wing in road position. Start articulating to left, pressure gauge should build to about 1500 to 1700 PSI then start to bypass. If pressure builds above this then adjust. Check the other port. (Above valve is usually set at factory. This is only a precaution to prevent damage.)
8. On some models it may be necessary to move moldboard away from side of grader 2' to 3' ft when completely articulating.

9. Install safety chain with a double end clevis on front mast sling ring. Screw clevis attaches to the moldboard. Chain must always have enough slack to let grader articulate. Always remove safety cable when moving moldboard down to prevent damage.
10. When operating wing remember that it has a mechanical float at both the leading edge and outer edge of moldboard. This can be over-ridden by extending tilt cylinder out. When over-riding the float, caution should be used.
11. When using wing, position rear push pipe assembly so that it is generally in a straight push with moldboard.
12. Only use a 7/16" grade 8 bolt as a shear bolt.
13. Smooth and even movement of your all hydraulic wing will give you better performance and lasting durability.
14. Lubricate all pivot points and slides daily. It may be necessary to wash out slide areas to remove sand and grit before lubricating.
15. Check and tighten bolts, hydraulic hoses and adjustments daily.
16. Caution: when this wing is folded into "Rooding" position, movement of front and rear mast cylinders may cause damage. Some movement is possible, use caution.
17. Use care when rotating grader moldboard not to cause damage to wing structures by contact with grader moldboard.
18. You're safety and the safety of others depends on the care and judgment in the operation of this attachment. A careful operator is good insurance against an accident.
19. Unauthorized modification of this unit or lack of maintenance and operating techniques may void the warranty.



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LIMITED WARRANTY

Rylind Manufacturing Inc. is a company related to and having the responsibility for the manufacturing, marketing, and distribution of the product line known by the registered trade name "Rylind"

Rylind Manufacturing, Inc. warrants these products to be free of defects in material and/or workmanship for a period of one (1) year or 2,000 hours from the date of purchase under normal use and service providing that:

- A. All products and related components are installed properly according to instructions and that proper maintenance and greasing of movable parts is completed on a regular basis.
- B. The attachment products and related components are used only for the purpose for which they were intended as designated by the manufacturer and that the rated capacities are not exceeded.
- C. This is a "PARTS ONLY" warranty for defects in hydraulic components not typical maintenance parts (i.e. seal kits, hydraulic hoses, cylinders, hydraulic fluid, or vendor supplied valves). This means the hydraulic part will be replaced freight prepaid from the factory. Travel time or labor to replace the defective component is "NOT" included in this warranty. Return of the defective parts for inspection may be requested.
- D. Hydraulic kits and components are warranted for one (1) year from invoice date. Cylinders must be returned in their entirety and not have been disassembled to be considered for warranty. After warranty replacement parts include cylinders, hydraulic valves, seal kits, electric components, and wear parts are warranted for 90 days from the date of purchase. Disassembly, modification or welding of any kind without the written permission of Rylind Manufacturing voids the warranty on the cylinder and seals. All warranty components must be packaged and sealed to avoid contaminants from entering during shipping. Improperly packaged components will not be considered for warranty. Hydraulic hoses are warranted against failure due to workmanship. Improper installation, ripping, cutting, or wear due to rubbing is not covered under warranty.
- E. Defects in materials and/or workmanship with respect to welding or structural failures will be paid at a rate not to exceed 70% of the advertised charge out rate. Repairs must be authorized by Rylind before work proceeds. Travel time or mileage is "NOT" included. All warranty work to be performed must be authorized by Rylind Manufacturing, Inc. Repair or replacement will be at our discretion. Estimates of the total costs involved must be given to us before proceeding with any work involving a Rylind product. No warranty will apply to products that have been modified or repaired without our authorization. Normal wear and tear will not be considered as

a defect. Accidents, misuse or negligence does not justify warranty. This warranty does not include or cover purchased subassemblies including, but not limited to, teeth, fork tines, cylinders, wear plates, edges, etc... Such purchased subassemblies are covered only by the OEM's warranty, if any, of their respective manufacturer, and not Rybind Manufacturing.

F. Limitations

- a. This limited warranty does not cover product, which in the opinion of Rybind, is damaged due to abuse, misuse, misapplication, prohibited operation, improper maintenance, alteration, unauthorized service, contamination by the base machine, or normal wear and tear. This warranty is null and void if the product is modified in any way without the written consent or instruction of Rybind.
 - b. This limited warranty is null and void if the product is used in a prohibited operation, or unauthorized adjustment/assembly/disassembly has occurred.
 - c. Dealers or Agents of Rybind have no authority to make any type of representation or warranties on behalf of Rybind Manufacturing beyond those expressly set forth in this document.
 - d. This warranty is in lieu of and excluding all other warranties preceding it including and without limitation to any implied warranties of merchantability or fitness for a particular purpose.
- G. In no event shall Rybind be liable to any party, including but not limited to buyer for any direct, incidental, consequential, punitive, or special damages, including but not limited to loss of profits, loss of productivity, in any way related to or arising, directly or indirectly from the product. The liability of Rybind for any and all losses and damage to buyer, its successors and assigns, resulting from any cause whatsoever, including the negligence of Rybind, irrespective of whether such defects are discoverable or latent, shall in no event exceed the purchase price of the product with respect to which such losses or damages are claimed.
- H. All returned products must be shipped to the following address to avoid any delay or expense in the warranty process:

Rybind Manufacturing, Inc.
Warranty/Service Department
16178 Front Ave
Atwood, CO 80722