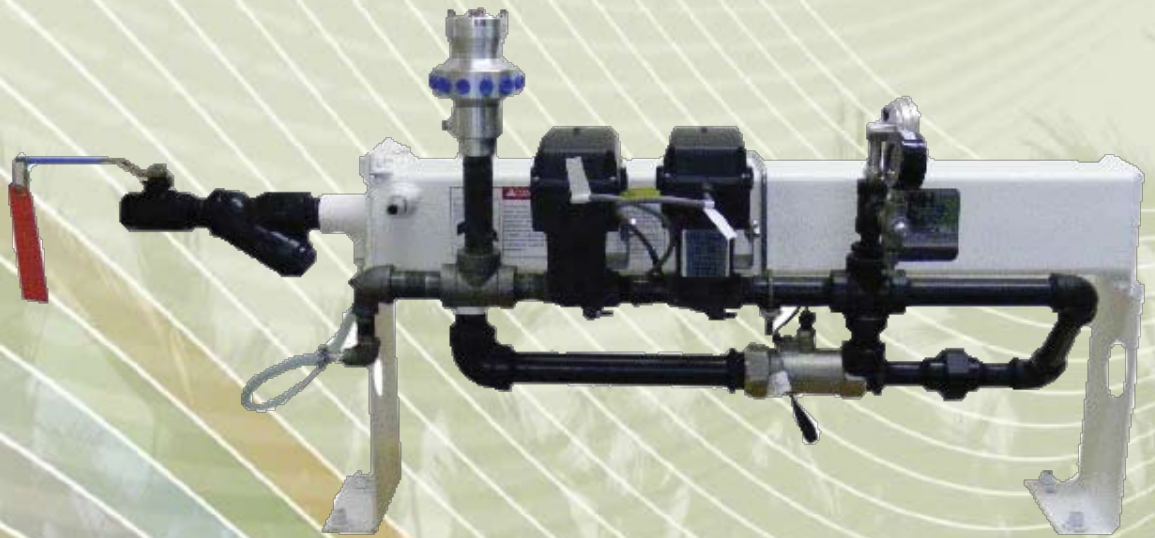


RAVEN

Simply improving your position.SM

Assembly Instructions



AccuFlow™

Disclaimer

While every effort has been made to ensure the accuracy of this document, Raven Industries assumes no responsibility for omissions and errors. Nor is any liability assumed for damages resulting from the use of information contained herein.

Raven Industries shall not be held responsible or liable for the effects of atmospheric conditions and sunspot activity on the performance of our products.

Raven Industries cannot guarantee the accuracy, integrity, continuity, or availability of the GPS signal from the U.S. Department of Defense/NAVSTAR GPS satellites, the OmniSTAR correction service or the WAAS correction service.

Raven Industries accepts no responsibility for the use of the signal for other than the stated purpose. Raven Industries shall not be responsible or liable for incidental or consequential damages or a loss of anticipated benefits or profits, work stoppage or loss or impairment of data arising out of the use, or inability to use, the SmarTrax or any of its components.

NOTICE

- Read this manual carefully and the operation and safety instructions included with the implement and/or controller.
 - Follow safety information presented within this manual and review operation with your dealer.
 - Contact your dealer for additional assistance or support with any portion of the installation or service of Raven equipment or to obtain replacement parts, manuals, or labels.
- Follow all safety labels affixed to components. Be sure to keep safety labels in good condition and replace any missing or damaged labels.
- Review procedures for safe handling and use of anhydrous ammonia (NH₃) and properties of NH₃ with your NH₃ supplier. If you are not trained to handle, transfer, apply, transport, install, operate, or service NH₃ equipment, contact your dealer, NH₃ supplier, or the appropriate agricultural department for training information.
- NH₃ can be harmful to the environment if not used properly. Follow all local, state, and federal regulations regarding proper handling of NH₃.
- Follow all label instructions for chemical mixing, handling, and NH₃ container disposal methods.
- When operating the machine:
 - Be alert and aware of surroundings.
 - Do not operate the device while under the influence of alcohol or illegal substances.
 - Ensure the device is disabled prior to starting maintenance work on the machine.
 - Follow all label instructions for chemical mixing, handling, and container disposal methods.
- Only NH₃ harness systems, control systems, and on/off valves approved by Raven Industries are recommended for use with this system. Raven shall not be liable for any damages and this warranty shall not cover defects from:
 - The use of a system with a harness not approved by Raven.
 - The use of a control system not approved by Raven.
 - The use of an on/off switch not approved by Raven.
 - The use of the system in a manner that is inconsistent with the instructions.
 - Unauthorized modification to the system or products used in the system.

DANGER

- Anhydrous Ammonia (NH₃) Under Pressure. NH₃ can cause severe burning, blindness, sickness, or death. Understand all safety instructions and warnings before operating or servicing equipment. Review safety requirements associated with NH₃ with your supplier.

- Seek immediate medical attention if symptoms of illness occur during, or shortly after, use of NH₃ products.
- In case of leak or accidental release of NH₃, immediately evacuate the area, contact your local fire department, and identify sources of clean water on the unit.

CAUTION

-
- Use caution when handling anhydrous ammonia (NH₃) products. Always wear personal protective equipment (PPE) when working with anhydrous ammonia. Appropriate PPE includes, but is not limited to:
 - Indirect vent chemical splash goggles or indirect vent chemical splash goggles with full face shield.
 - Liquid proof gauntlet-style gloves impervious to NH₃.
 - Long sleeved shirt and long pants or protective suit.
- Stand 'up wind' when working around NH₃ and related equipment. Never work on NH₃ equipment in confined spaces. Always keep NH₃ equipment away from buildings, livestock, and other people.
- Keep a full source of clean water (at least five gallons in addition to and separate from the water source on the nurse tank) readily available while working with NH₃. In case of exposure, flush exposed skin or eyes immediately with large quantities of water for at least 15 minutes and seek immediate medical attention.
- Never uncouple an NH₃ applicator or intermediate towing vehicle without appropriate parking stands, wheel chocks, or other braking systems if a nurse tank wagon is attached.
- Always remove the system from NH₃ service before performing maintenance.
 - Thoroughly bleed all system lines and disconnect nurse tank hose before beginning service or maintenance.
 - Remove all NH₃ from the system before disassembling or servicing.
- Use extreme caution when opening a previously pressurized system.
 - Pressure gauges can fail, become plugged, or display incorrect pressure. Every section where NH₃ can be trapped should be treated as if it were pressurized.
- Before performing service or maintenance on the system, read and follow the instructions provided with the equipment to properly discharge NH₃.

Important: Use RectorSeal™ or equivalent thread sealant on all pipe joints.

1. Remove heat exchanger and brackets from box (Figure 1).



Figure 1

2. Install cooler brackets to heat exchanger using 3/8" bolts, lock washers and nuts (Figure 2).



Figure 2

3. Assembly the Y-strainer assembly to the inlet port of the heat exchanger (Figure 3).



Figure 3

4. Install the 1/4" hose barb to heat exchanger (Figure 4).



Figure 4

5. Install two 1/2" hose barbs to the sides of the exchanger (Figure 5).



Figure 5

6. Thread the 1 1/4" x 2" long pipe nipple, the 1 1/4" elbow, and the 1 1/4" x 12" long pipe nipple into the outlet port of the heat exchanger (Figure 6).



Figure 6

7. Remove the flow meter from the box and thread the 1 1/2" x 1 1/4" reducing bushing into the inlet of the flow meter. Also, thread the 1 1/2" x 1" reducing bushing into the outlet of the flow meter (Figure 7).

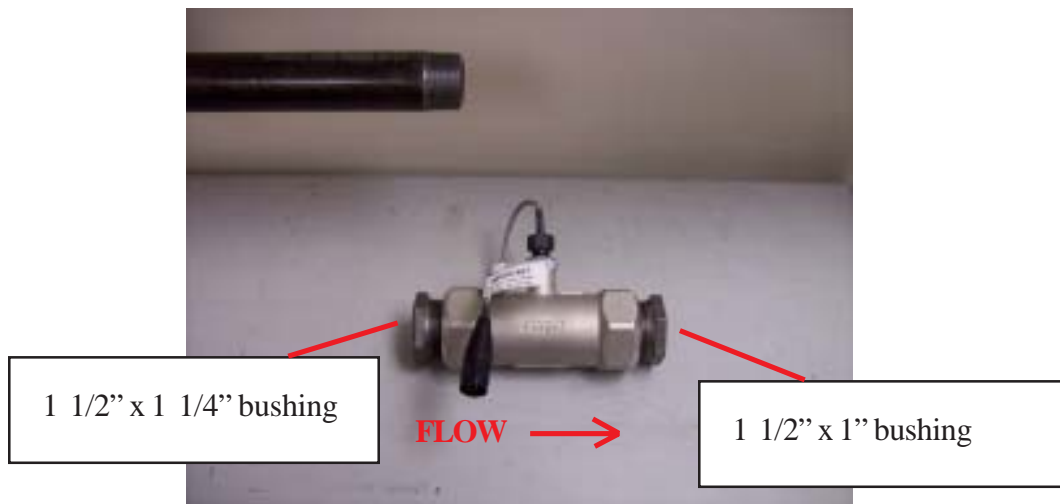


Figure 7

8. Install the flow meter to the 1 1/4" pipe nipple (Figure 8).



Figure 8

9. Unscrew union assembly. Install half of the union assembly to the outlet side of the flow meter (Figure 9).



Figure 9

10. Next, remove the control valve and the on/off valve from their box. Install a 1" x 3" long pipe nipple between the outlet of the control valve and the inlet of the on/off valve. *Do not use the valve motor housing as a wrench.* Align the valves as shown in Figure 10.



Figure 10

11. Install the gauge assembly to the inlet side of the control valve (Figure 11a). Orient the gauge assembly as shown in Figure 11b.

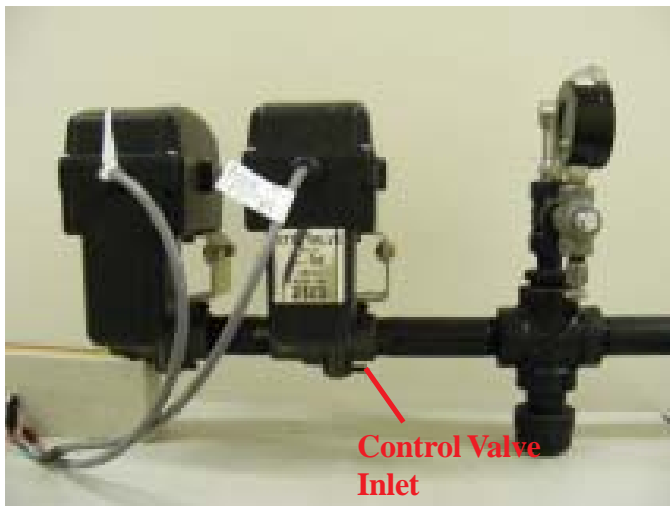


Figure 11a

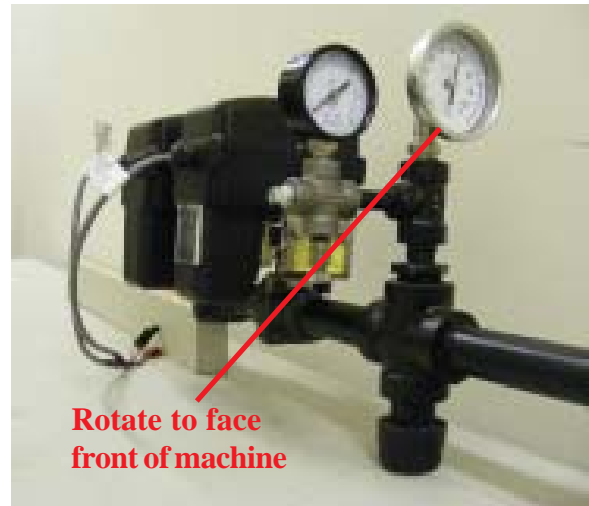


Figure 11b

12. Remove the remaining assembled fittings from the box and install to the outlet side of the on/off valve (Figure 12).



Figure 12

13. Next, thread two 1" elbows and a 1" x 6" pipe nipple into the second half of the union. Make sure the elbows are oriented as shown in Figure 13.



Figure 13

14. Assemble fittings from step 13 onto the gauge assembly (Figure 14). The elbow should be angled at approximately 45 degrees and oriented as shown in Figure 15.



Figure 14



Figure 15

15. Attach the bracket to the heat exchanger with the u-bolt, two split lock washers, two flat washers, and two nuts (Figure 16). The bracket should be placed approximately 19" from the edge of the heat exchanger (Figure 17).



Figure 16



Figure 17

- Verify that there is a white teflon gasket in the union from step 9 (Figure 18). Connect the valves and the gauge assembly to the heat exchanger using the muffler clamp provided along with split lock and flat washers (Figure 19). When this assembly is in position, tighten the union.



Figure 18

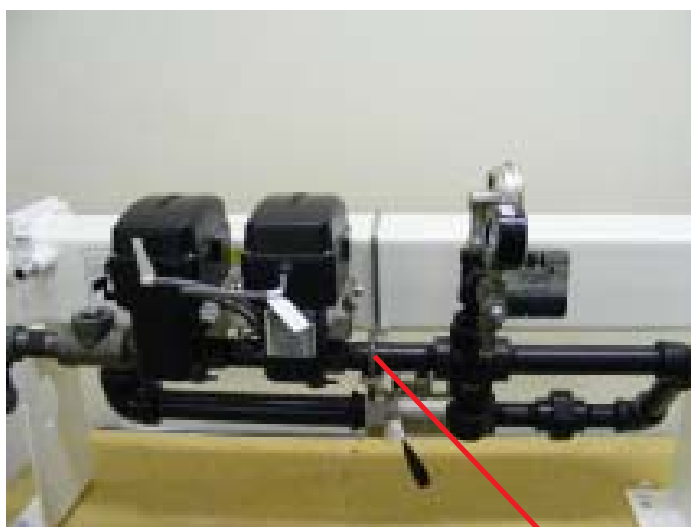


Figure 19

Muffler Clamp

17. Connect the 3/8" EVA hose from the one end of the valve to the heat exchanger and secure using smaller size hose clamps (Figure 20).

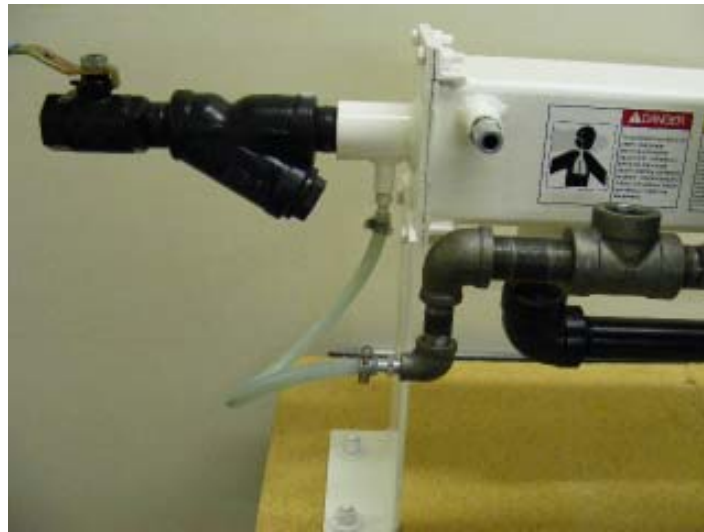


Figure 20

18. Assemble the flow divider system (not provided) to the 1" tee (Figure 21).



Figure 21

19. The system can now be mounted to the implement toolbar.
20. To complete the plumbing of the Accu-Flow system, weld the two steel vapor tubes provided to the two center applicator knives as shown in Figure 21.
21. Connect two 3/4" vapor hoses to the hose barbs in the sides of the heat exchanger. Connect the other end of the hoses to the steel vapor tubes.

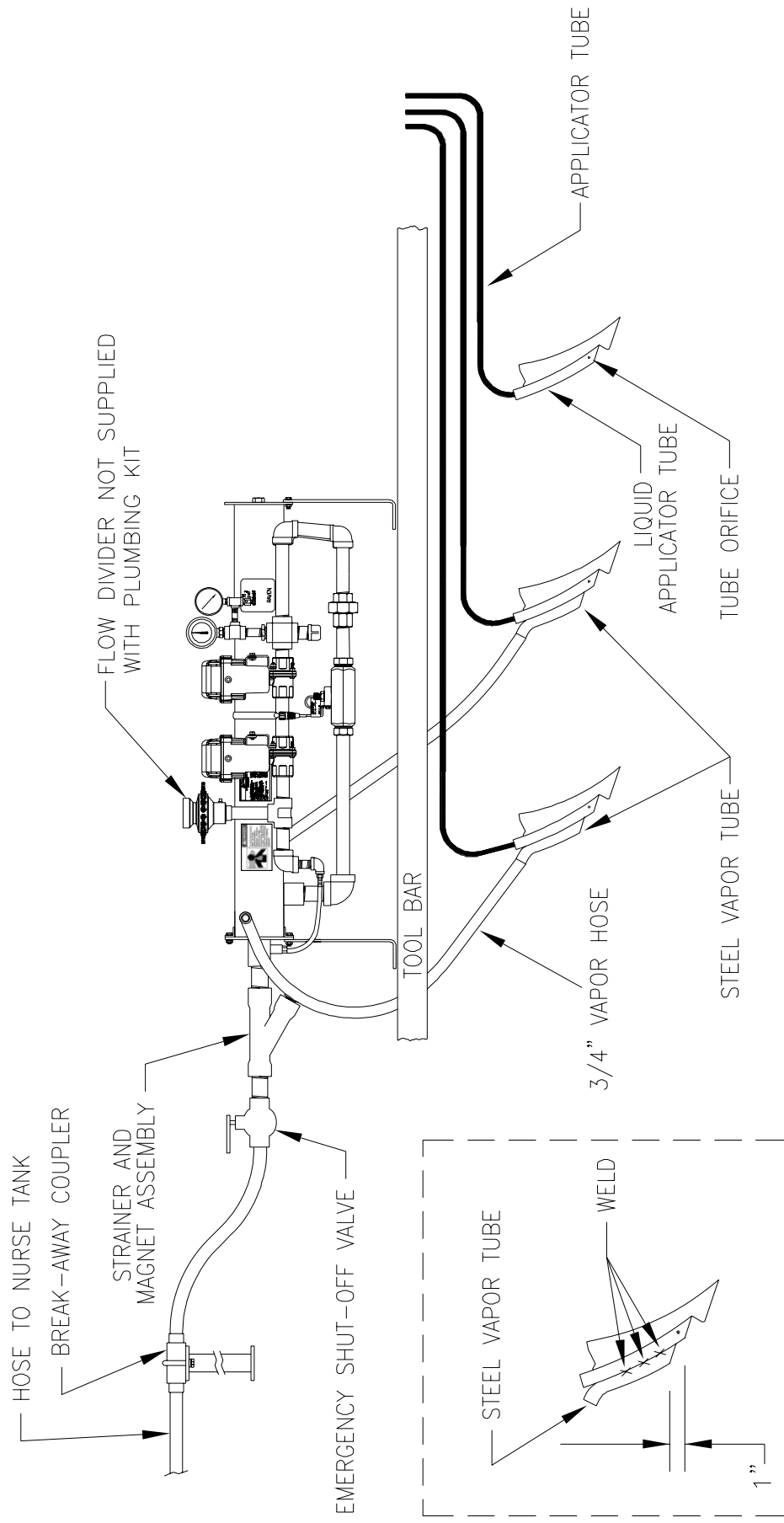


Figure 21

RAVEN

RAVEN INDUSTRIES

Limited Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Flow Control Product under normal use, maintenance, and service.

How Long is the Coverage Period?

Raven Flow Control Products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is non-transferrable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven Dealer. If your Dealer agrees with the warranty claim, the Dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will, at our discretion, repair or replace the defective part and pay for return freight.

What is not Covered by this Warranty?

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit or other special damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty

R A V E N

AccuFlow™
Assembly Instructions
(P/N 016-0171-121 Rev A 7/09)

Simply improving your position.™



Raven Industries
Applied Technology Division
P.O. Box 5107
Sioux Falls, SD 57117-5107

Toll Free (U.S. and Canada): (800)-243-5435
or Outside the U.S. :1 605-575-0722
Fax: 605-331-0426
www.ravenprecision.com
atdinfo@ravenind.com

Notice: This document and the information provided are the property of Raven Industries, Inc. and may only be used as authorized by Raven Industries, Inc. All rights reserved under copyright laws.