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Owner's Manual

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Contents

1.0 General Uses

THANK YOU AND CONGRATULATIONS!

You are the proud new owner of America's #1 low volume Mist Sprayer from Northern Ag Mist Sprayer. Please take the time to read this operator's manual carefully to ensure your understanding of the proper OPERATION and MAINTANENCE of your Mist Sprayer.

SOME GENERAL USES FOR NORTHERN AG MIST SPRAYERS

1) **Spraying pasture and range for weed and brush control.**
2) **Beef cattle spraying and cow-calf herds, no penning and no hassle.**
3) **Dairy spraying for pests and flies.**
4) **Disinfecting of farrowing sheds and confinements as well as fly control in swine.**
5) **Fruit, shade and wind-break trees.**
6) **Vine crops (grapes)**
7) **All types of vegetable crops.**
8) **Corn borer control, ear worm control, aphid and green bug control in corn and alfalfa.**
9) **Fence rows, road right ways and ditches for weed and brush control.**
10) **Parks and playgrounds**

2.0 Safety Precautions.

Safety Precautions (Industrial and Agricultural Chemicals)

1. **Always keep chemicals out the reach of children, irresponsible people, livestock and pets. Always store industrial and agricultural chemicals away from your home, groundwater sources, feed, and food products. When possible, place under lock and key.**

2. **Please read the Manufacturer's label with care. Always choose the correct industrial or agricultural chemical for your application. Remember, before opening any chemical container, pay close attention to the Manufacturer's warnings and cautions.**

3. **Always store chemicals in their original containers.**

4. **Never eat, drink, smoke or take medication while applying any chemicals.**

5. **Always avoid direct contact and inhalation of any chemical.**

6. **Avoid spills when possible. When and if a spill does occur, please follow the Manufacturer's decontamination procedures on their label.**

7. **Always avoid contamination of all water supplies.**

8. **Avoid chemical contamination of livestock, feed, and water supplies when spraying chemicals. We recommend covering containers when possible.**

9. **Always bathe and change to clean clothing after every chemical application.**

10. **Never apply chemicals under any wind conditions, which could create a chemical drift to a no-target area.**

11. **Always empty chemical containers and rinse 3 or 4 times before disposing of them. Always add the rinse to the mist sprayer tank and dispose of excess chemicals and their containers according to federal, state and local regulations to avoid chemical hazards to animals, environment and most importantly mankind.**

12. **Never enter the chemical application area! Always check local, state and federal requirements for the correct reentry time period.**

13. **Northern Ag Mist Sprayer are engineered and designed to provide maximum safety and efficiency to the chemical applicator. However, the user MUST exercise reasonable care when using the mist sprayer to achieve desired results.**

2.1 Safety Precautions.

⚠ SAFETY PRECAUTIONS ⚠

All agricultural and industrial chemicals can be Hazardous! Always select the proper chemical for the job. Any improper selection or use of agricultural or industrial chemicals may seriously injure animals, water sources, plants, soil, neighbors, property and man himself. Always follow MFG instructions on the chemical container label. BE SAFE!!

All farm equipment may be inherently dangerous to children and adults unfamiliar with the machinery operation. All mist sprayers contain various moving parts that can be extremely hazardous. All necessary precautions should be taken to assure the safety of the operator and people around the equipment. Northern Ag Mist Sprayer recommends that no one person or persons be permitted to operate the mist sprayer unless they have read the operators instructions completely and understand how the mist sprayer works and have observed all safety precautions.

BE SAFE! Northern Ag Mist Sprayer prime consideration is the safety of its operator(s). Northern Ag Mist Sprayers follows the ASAE guidelines for guarding its mist sprayers for safe use by our customers. Guards and shields are provided for your safety and protection and should never be removed. If removed for maintenance, replace immediately or prior to any mist sprayer operation.

BE SAFE! Your best insurance against accidents or property damage is a capable, responsible adult operator. Any careless operator is a liability to himself and all the surroundings.

BE SAFE! Northern Ag Mist Sprayers strongly recommends that any and ALL operators read and thoroughly understand our operator's manual prior to operating our mist sprayer. If any portion of our operator's manual or any phase of our mist sprayer operation is difficult to understand, please contact your local distributor or dealer.

BEFORE OPERATION

A. Before use, carefully read, study and understand the owner/operator's manual for your Northern Ag Mist Sprayer and the gasoline engine operator's manual.

B. Check to make sure all guards and safety shields are in place and properly functioning.

C. Be ABSOLUTELY sure that there are no foreign objects or tools lying in or on the Mist Sprayer

D. DO NOT wear loose fitting clothing as it may catch in the PTO shaft or other moving parts.

E. Make sure the mist sprayer is hitched or mounted correctly to the tractor or truck.

F. Do not start the mist sprayer until you are SURE everyone is clear of the machine and away from the VOLUTE.

G. Inspect the flywheel and the blower wheel daily. Any accumulations of foreign material and/or dirt may cause excessive vibrations or imbalance. Clean thoroughly daily.

H. The switch next to engine ignition can only be in the "ON" position when the engine is running.

I. When charging or boosting unit with switch in "ON" position will damage the module and will void warranty. Switch in "ON" position when not in use will drain battery.

DURING OPERATION

1. NOTICE: Keep hands, feet and clothing away from all moving parts, especially the PTO shaft, and the air intake area of the fan.

2. Do not step over or around the PTO Shaft while the machine is running.

3. Stay clear of the mist sprayer fan discharge area.

4. Do not adjust, clean, or lubricate your mist sprayer while it is running.

5. Do not stand, sit or ride on the mist sprayer while it is running.

6. Never leave any running mist sprayer unattended.

7. Do not wear loose clothing.

3.1 Before Operation During Operation

Northern Ag Mist Sprayer cannot be held liable for spraying conditions in relationship to Acts of God, natural disasters, and/or weather conditions not limited to rain, wind, air inversion etc. Please note that there are certain times when Mother Nature does not cooperate and conditions are not favorable for spraying. Again, we cannot be held responsible for any such conditions.

Wind speed is a major factor affecting distance and coverage. We do not recommend spraying in high wind conditions for any reason.

Wind velocities are lower and closer to the ground; therefore, careful attention to spraying is necessary to maintain uniform application.

Air is generally not as turbulent before sunrise and after sunset. Air tends to be the gustiest around mid-day. Air turbulence is determined by the difference between ground level temperatures and the temperature of the air above it. Average daytime heating of the soil causes the air nearest the soil surface to be warmer than the air aloft. Warmer air rises and is replaced by cooler air, creating air currents. Temperature differentials during early morning or late evenings are usually at its least. What this means is that the air near the soil with the air above it is gentler. This is referred to as a slight lapse. Temperature differences increase after sunrise and the mix becomes more turbulent.

If the air is cooler near the soil surface, the warmer overhead air stays on top and no mixing occurs. This is known as inversion. If the ground air is 2-5 degrees cooler than the air above it, and wind conditions are low, spray may remain suspended in the layer of cold, undisturbed air. We do not recommend spraying during inversion conditions.

Temperature and humidity also affect spraying and distance.

Before spraying, it is best to locate sloping areas or other special areas that require extra precautions. Always follow label directions and precautions.

All spraying is affected by application equipment, weather conditions and spraying techniques. Spraying is also influenced by the herbicide formulations, size, density and evaporation times of the droplets. Certain formulations prevent the spray from reaching greater distances.

Droplet size affects spraying distance. Small droplets fall more slowly than do larger ones, therefore the smaller airborne droplets will reach farther. Sometimes smaller droplets are necessary for thorough coverage of dense foliage. If necessary, retreatments can be used to reach maximum control.

Temperature affects the rate at which evaporation changes the droplet size. Evaporation is greater on hot days resulting in smaller droplets. Water droplets evaporate faster than oil droplets. Oil droplets are lighter than water droplets and therefore tend to stay airborne longer. Oil is often added to a spray mixture as a sticking agent or surfactant.

Nozzle types and operating conditions influence droplet size as well. The angle of the spray pattern can also affect the size of the droplets. The angle of the volute is also a factor in the distance possible. It is important to note that spraying uphill will usually result in a decrease of distance sprayed.

Again, please read and follow label directions on ALL chemicals. Spraying equipment should be cleaned thoroughly after each use and especially when changing chemicals. For best results, cross contamination should be avoided so it is best to use separate tanks for herbicide, fungicide, insecticide, foliar fertilizing and growth regulatory applications. If this is not possible, it is recommended to clean tank, as well as the entire line of equipment.

3.2 Before Operation Checklist

INSPECTION CHECK LIST FOR DISTRIBUTOR, DEALER & OPERATOR

This inspection checklist must be made on all new Northern Ag Mist Sprayer prior to any operation. Please check each item listed. Some adjustment may be necessary before application.

A. ( ) Check PTO shaft and shield to make sure it turns freely and is in good operating order.

B. ( ) Check and make sure all guards and shields are in their proper place and secure.

C. ( ) Check all mist sprayer belts for cracks and alignments.

D. ( ) Check all hydraulic connections for any loose connections or missing parts.

E. ( ) Check all nuts and bolts and tighten if necessary.

F. ( ) Check volute and blower wheel for any loose connections or foreign material.

G. ( ) Check all sheaves, sprockets, and setscrews for proper tightness and for loose or missing parts.

H. ( ) Check hydraulic cylinder, hydraulic cylinder hoses, and electric actuator (if applicable) for proper alignment or loose connections.

I. ( ) Check hydraulic cylinder set screw bolt to make sure it is OUT when you install your hydraulic cylinder (Very Important).

J. ( ) Check your poly tank for foreign material.

K. ( ) Check your gasoline engine to make sure it is bolted down and secured in proper working order. (See gasoline operator's manual)

L. ( ) Check PTO shaft for right length! If the PTO shaft has to be shortened, make sure to cut both ends the same length.

M. ( ) Check blower fan for proper timing. If the fan needs to be timed, refer to page 7 for necessary adjustments.

Northern Ag Mist Sprayers are engineered and designed for easy serviceability and maintenance. During the break-in period, always check the PTO, nuts, bolts, belts, and all shields for looseness and proper alignment. Some additional adjustments could be necessary during the break-in period. All nozzles, belts and strainer screens should be checked and cleaned daily.

PROPER HOOK-UP

Skid Units- 3 Point Units-Trailer Units

SKID UNITS- Make sure your skid unit is centered on your truck bed and properly bolted down before operations.

3 POINT UNITS- When attaching the Northern Ag Mist Sprayer to the 3-point hitch of a tractor, make sure the center link and forged steel pins are properly secured. Next, attach the PTO shaft to the tractor PTO. Be sure the PTO and its shield are properly locked in place before operation. Always keep your Mist Sprayer as level as possible during operation.

NOTICE!!!!

A. When attaching an 8-inch stroke cylinder to a 3-point unit, make sure the air is out of the hoses. We highly recommend putting in one (1) restrictor to slow down oil flow. (They are not standard equipment).

B. Be sure to remove slide lock bolt and attach 8-inch stroke cylinder and hoses to the stationary mounting bracket. Operate the cylinder slowly to make sure chain linkage is in time. Timing may be changed by loosening bolt on chain bracket, raising chain off sprocket, and turning blower fan to the correct position. The blower fan should rotate 210 degrees on full stroke of 8-inch cylinder without coming in contact with the frame or damage may result.

C. TRAILER UNITS- ALL Northern Ag Mist Sprayer trailer units are engineered to connect to all SAE-ASAE standard tractor drawbars. Always adjust the drawbar so that the horizontal distance for the end of the tractor PTO shaft to the center of the hitch pinhole is approximately 14 inches for 540 RPM PTO. All drawbars in the crossbar need to be parallel with tractor centerline. Place either the proper bolts or locking pins on both sides of drawbar for proper trailing and stabilization.

⚠ NOTICE!! ⚠

(VERY IMPORTANT)

An incorrectly located trailer hitch (drawbar) point may cause damage to the trailer tongue and/or power take-off shaft which may lead to personal injury.

4.1 Hook-Up and Startup

BE SAFE! Any accumulation of foreign material or dirt in the fan or blower wheel may cause excessive vibration or wheel imbalance. Thoroughly clean and inspect daily.

STARTING UP PHASE

BE SAFE! Northern Ag Mist Sprayers should NEVER be operated without liquid in the tank! Premature, excessive heating and wear for the pump may occur. When you have selected the proper agricultural or industrial chemical for the job and the mist sprayer tank is filled with the correct amount of water and concentration leveler, the Northern Ag Mist Sprayers can then be put to use. Northern Ag Mist Sprayers should be run at the correct 540 RPM PTO speed for PTO units. For gas engine models, see the operator's manual. When this is done, set the correct pressure on the pressure regulator. 30 PSI to 60 PSI in most cases is sufficient. This can be done by loosening the lock nut on the pressure regulator "T" handle. Next turn the "T" handle clockwise until the correct pressure is reached. After the correct pressure has been reached, remember to re-tighten the lock nut on the pressure regulator. Don't forget to adjust the volute to the correct spraying direction. You then turn on your supply valve and you are ready to start mist spraying.

BLOCKAGE
BE SAFE! Most blockages can be detected early. If there is a blockage, remove and clean the nozzles, screen and lines (with mist sprayer turned OFF)

IMPORTANT
DECONTAMINATION OF SPRAYERS

BE SAFE! Most chemicals can be effectively cleaned and flushed out of a sprayer (Check federal, state and local regulations). If in doubt about any chemical, call your chemical supplier or your local agricultural agent and inquire about the latest decontamination procedures.

NOTICE!!!

Never run a 3-point PTO Hitch Mounted Northern Ag Mist Sprayer over 540 RPM!! THEY ARE NOT DESIGNED TO RUN OVER 540 RPM.

Skid mount units can be run full throttle.
Make sure solenoid is in the OFF position when not in use on skid mount units.

CALIBRATING SPRAYER ADVICE

To effectively determine the application rate, use the following procedure:

A. Select the GPA (gallons per acre) of spray mixture required by referring to chemical manufacturer label directions and recommendations.

Example: 1.5 GPA

B. Select suitable sprayer speed. For tractors, decide which gear will be used: then determine the exact speed for that gear when traveling at an engine speed that turns the PTO 540 RPM. It may be necessary to drive the tractor in a straight line for one minute at 540 PTO speed and measure the feet traveled. The number of feet traveled in one minute divided by 88 equals MPH (miles per hour).

Example: $\frac{440 \text{ ft}}{88 \text{ (factor)}} = 5 \text{ MPH}$

For truck mounted or trailered gas-engine powered sprayers, decide on a gear and read the speedometer or check (refer to above) if in doubt of the accuracy of the speedometer.

NOTE: Normal PTO operating speed is 540 RPM: However, with fragile crops susceptible to wind damage, the sprayer should be calibrated at a lower PTO speed.

C. Select the swath width to be used. Example: 50 ft.

D. Calculate the total flow rate on GPM required using the following formula:

$$\frac{\text{GPA} \times \text{MPH} \times \text{SWATH WIDTH (ft)}}{495} = \text{TOTAL FLOW RATE IN GPM}$$

Example: $\frac{1.5 \text{ GPM} \times 5 \text{ MPH} \times 50 \text{ Ft}}{495} = \frac{375}{} = .75 \text{ GPM}$

E. Calculate flow rate of each nozzle using the following formula:

$$\frac{\text{Total flow rate in GPM}}{\text{Number of nozzles}} = \text{Flow rate of each nozzle}$$

Example: $\frac{.75 \text{ GPM}}{3 \text{ nozzles}} = .25 \text{ GPM per nozzle}$

NOTE: Some volutes use 5 flat nozzles or 8 flood-jet tips.

5.1 Calibrating Remote RE3 & RE6 pairing procedure

Auto-Tune Learn Process (Pairing)

2) Place a strong magnet, such as a pick-up tool magnet near the receiver light. Move slowly in a circular motion until the light becomes a steady red. Keep the magnet in that position and press any button on the remote, just one button, and hold. Remove the magnet significantly away from the receiver. As soon as the light turns green release the key-fob button. Disconnect power to the receiver after the green light has completely extinguished (approx. 3 seconds). Wait approx. 5 seconds then re-apply power. The remote key fob should now be functional.

If at any time you see a alternating red/green light, the signal was not received properly. Disconnect power to the receiver and after approx. 5 seconds re-apply power. Repeat the process above. If you do not obtain a green light after two cycles, either the key-fob or receiver is malfunctioning

Troubleshooting Tips:

- When the receiver is active you will see a faint red flash through the small circle near the "L". Ifyou do not see the flash, the receiver may not be powered on.
- If you do not see a red light on the transmitter when a button is pushed, change the batteries
- If you do not see a green light flash on the receiver after successfully pairing the transmitter,repeat the learn process.
- If you cannot pair the transmitter to the receiver, clear the receiver memory and try again
- If you get a green light on the receiver when the transmitter button is pushed but you do not getany output, check the wire harness for any issues like cut wire, loose terminal, loose connector or bad relay. If nothing is wrong with the wire harness, check the main battery to ensure it is fully charged. A typically battery at full charge will read 12.8V. Less than 12.8V may result in poor performance of the system.

Learn

For further assistance please contact Rowe Electronics at 515-981-5504.
You may also e-mail us at info@Rowe-Electronics.com

Rowe Electronics

Troubleshooting Guide RE6 System

System limitations – Do not exceed the system design parameters!!

The maximum draw on any single output should be limited to 3 amps,
With a total power handling capacity\limit of 5.5 Amps. If you wish to drive higher amperage loads, install a relay and use the RF system to control the relay. User induced damage is not covered by warranty.

a) If you are using the wireless system in combination with a manual control (toggle switch, wired pendant, etc)you must either install diodes on the RF unit's outputs, or have a switch to disconnect\isolate the RF unit during manual control operation. Failure to do so will allow back-feed current into the RF unit's outputs, and cause permanent damage to the system. Damage caused by electrical feedback is not covered by warranty.

b) Incorrectly connecting the power and ground leads, or output circuit wires will damage the system. Do not reverse polarity on the power & ground wires. Do not connect output wires to any live voltage source. Damage will occur. Damage caused by incorrect wiring\reverse polarity is not covered by warranty.

Basic troubleshooting actions and important information.

To quickly and effectively test\troubleshoot the system, the use of a voltage meter is suggested. It will
allow you to quickly and efficiently locate and rectify any problems you are having.

#1 rule in troubleshooting:

Insufficient power supply = Insufficient performance

Important note: The LED indicators, on both the transmitter and receiver, will function in low/insufficient powerconditions. They are not indicators of ample supply voltage, and should not be viewed as such. Test battery voltage, and replace or fully charge batteries as needed.

5.2 Calibrating Troubleshooting Guide RE6 System (continued)

1. Replace the transmitter battery - (Type CR2032 – 3 Volt) Bar none, the most common cause of erratic, or faulty system operation is low transmitter (remote) battery voltage. This should be the first action taken if/when system behavior issues arise.

Any time the transmitter battery voltage drops below 2.85 volts, the battery needs replaced.

Important information:

a) Even in newly purchased units, the installed battery may be partially discharged. Like a car battery, orany other, the battery will slowly discharge over time, even when sitting idle.

b) Any unit sent in for warranty service, where the only problem found is a discharged battery, will not be covered under warranty; service charges will apply. Change your transmitter battery prior to making anyother troubleshooting efforts.

2. Verify adequate supply voltage \ power to the receiver – The second most common cause of erratic, or faulty system operation is low power supply voltage. Test and or charge the vehicle 12V battery if/when system behavior issues arise.

3. The radio system requires a constant power supply of 10+Volts. Any time the vehicle battery voltage drops below 10 volts (under load), the battery should be recharged, or replaced.

Important information:

c) a 12V battery may be able to start a small engine, yet not be able to maintain an adequate, constant supply of voltage to the radio unit. A battery's ability to start a small engine SHOULD NOT be taken as evidence of adequate battery power/voltage.

d) If a permanent battery charging system is not on your piece of machinery, and you're having trouble, it's likely thatyou have a low battery voltage situation. (a battery tender should be used to keep the battery fully charged) Charge your battery.

Any unit sent in for warranty service where, after a full-service inspection, evaluation and performance testing procedure, no problem is found, service charges will be applied. Test, charge, or change your vehicle battery prior to pursuing additional other troubleshooting efforts.

5.3 Calibrating Troubleshooting Action Guide

Troubleshooting Action Guide

If, after testing\changing the keyfob battery (2.85V +), and verifying adequate vehicle battery voltage (10+ Volts), you are still having difficulties, proceed as instructed; your owners/instruction manual will instruct you on battery replacement, clearing memory, and learning.

Does the Receiver LED (light) momentarily flash on power-up?? You must look closely for the LED, and do so quickly after applying power?

- Yes
  - Does the receiver LED respond when you push a transmitter button?
    - Yes
      - Using a voltage meter, check the output wires while pressing the related key fob buttons. Is there power on all outputs as designed?
        - Yes → The wireless system is working properly; the problem is outside of the wireless system. Conduct tests on item you're trying to drive with the RF to identify the part needing replaced. (apply direct voltage to them)
        - No → Test the item you are trying to drive (solenoid, valve, actuator) with direct battery power to rule it out as a cause of the faulty operation. - Examine the wiring harness, and harness connections on the outputs. (double-check your tester connections\ground to make sure that you're getting solid connections) Still no voltage on the outputs?
          - Send the system in for service. It's likely that the outputs have suffered damage. -- Over current (drawing more than 3 Amps on an individual output, or more than 5.5 Amps total) will cause this type of failure, as will allowing electrical feedback into the outputs. (most often found in aftermarket situations where a manual control switch has been installed, and no protective diodes have been installed on the outputs.) -- While the RE6 units are highly dependable, highly durable units, it is possible that a simple system failure has occurred, with the exact cause unknown. A thorough service evaluation will yield information as to the cause of failure.
    - No
      - Clear the receiver memory, and relearn the transmitter unit. Is the problem resolved?
        - No
          - Do you have two transmitter\key-fobs?
            - Yes
              - Learn a second keyfob transmitter into the receiver unit, and test functioning. Did the unit respond?
                - Yes → Send the faulty transmitter in for service
                - No → Send the receiver in for service.
            - No → Order a replacement transmitter, or send the complete Rx/Tx unit in for service
- No
  - Test voltage at the receiver harness connector. Is there 10+ Volts on the power lead? (Pin #1)
    - No → Your problem is in the wiring harness
      - Check the fuse \ Check ON/OFF Toggle Switch (if installed) \ inspect power & ground connections at the battery – inspect Pins in the receiver connector. -- Did this solve your problem?
        - No → Replace Wire Harness
    - Yes
      - Perform a continuity test on the ground lead - from the receiver connector (pin 7) to the battery.
        - No Continuity → The problem is in the ground wire circuit – Check the ground connection, all the way to the battery - replace harness if necessary.
        - Yes - Continuity is present
          - No
            Again inspect all wire connections at battery and receiver. If all is in order,

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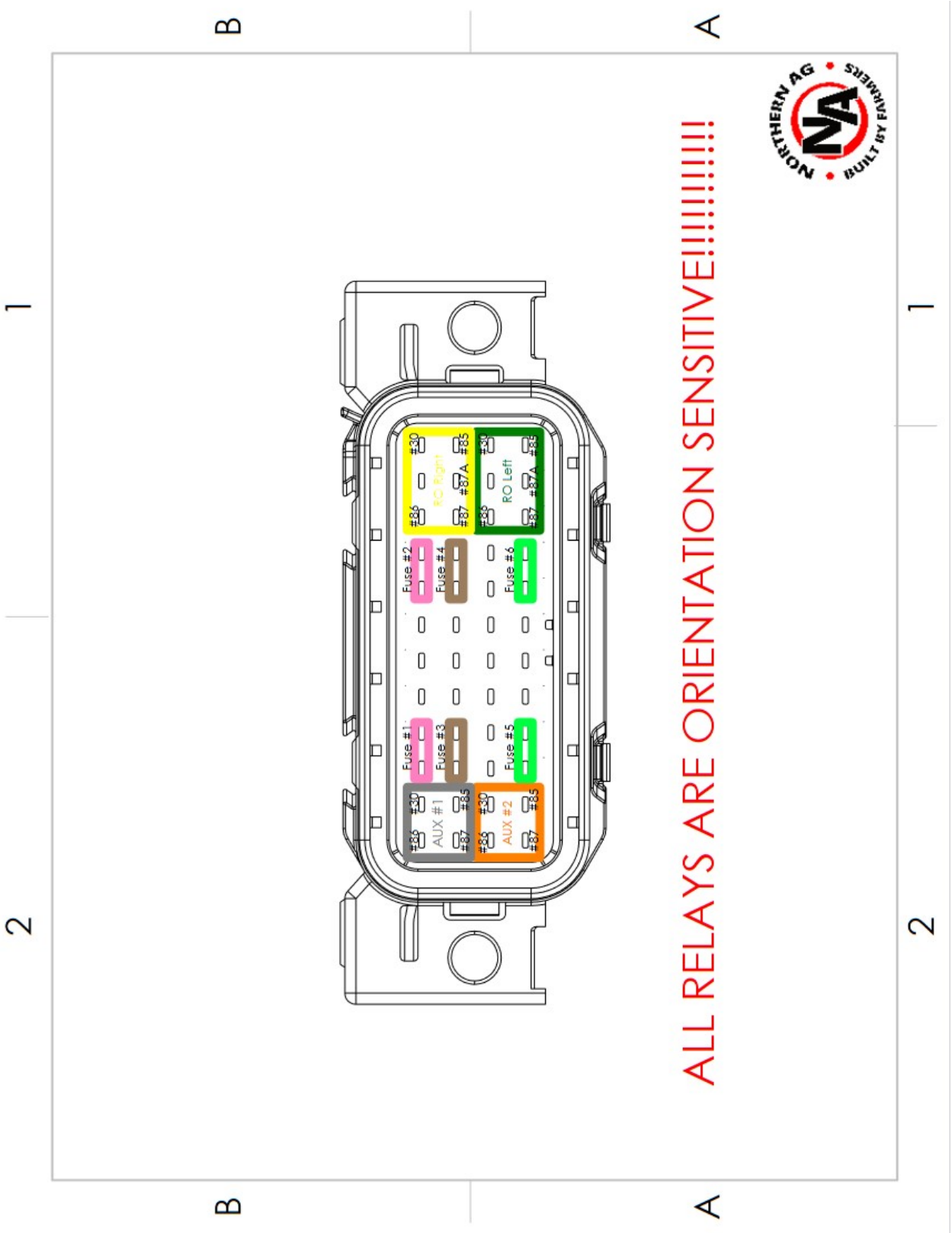
*The RE6 RF systems have a one-year manufacturer warranty. If your system is less than one year old, contact the vendor\OEM you purchased the unit from for **warranty** service. Per their standard warranty procedure/process, the vendor will provide specific instructions as to how you should proceed.*

*If your system is over one year old, contact your vendor for the purchase of a replacement unit, or contact Rowe Electronics directly for **non-warranty** service. We're able to repair most units, and restore them to full functionality and dependability.*

5.4 Sprayer Wiring and Fuse

Wiring schematic will be provided upon request.



OPERATION

FLAT NOZZLES

Our mist sprayers have nozzles and strainers installed at the factory. Additional orifices, cores, nozzles and strainers can be provided to obtain various calibration rates.

Orifices, cores, nozzles and strainers should be removed and thoroughly cleaned at regular intervals to ensure accuracy and prevent blockages. Once daily is recommended.

FILLING THE SPRAYER

Determine the chemical concentration required according to chemical label directions. Generally, these directions give a range of low to high concentrations for a specific use. Northern Ag Mist Sprayers perform well using the light to medium concentrations.

Wettable powders should be strained with water to eliminate lumps. This premixed solution should be strained through no larger than a 40-mesh screen when adding to the tank.

When filling the spray tank, be sure to have the tank half full of water then add the required chemical and finish filling the tank to the desired capacity. Use only clean water and fresh chemicals for best results.

Most chemicals deteriorate rapidly after mixing; therefore, mix only the amount you intend to use immediately. Never leave unused chemicals in the tank or lines of the sprayer. Drain and flush after each use.

The exterior and interior of the spray equipment should be cleaned regularly

6.1 Operation

Northern Ag Mist Sprayer use a high velocity AIR STREAM instead of water to transport the Chemical to the targeted area being sprayed. The chemical is pumped through nozzles into the air stream creating a mist, which envelops the targeted area being sprayed.

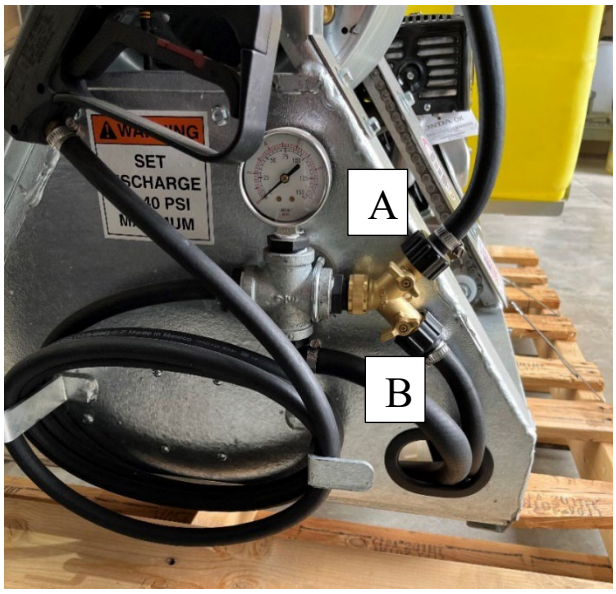
NOTICE: The nozzle size, number of nozzles, chemical concentration and pressure determine the amount of chemical to be delivered.

OPERATING HINTS:

Engage 540 RPM PTO shaft only at a SLOWER RPM. Then increase the RPM to an operating speed of 540 RPM.

1. **Keep the Northern Ag Mist Sprayer as level as possible.**
2. **NOTICE!!! Make sure PTO drive shaft is connected and that shields are in place. Make sure fan rotation is correct. Be sure volute does not hit frame.**
3. **Keep nozzles, strainers, filters and hoses CLEAN!**
4. **Always flush sprayer after each use. This will add to the life of the pump and is in accordance with Local, State and Federal regulations.**
5. **Never allow mixed solution and water to freeze in the Northern Ag Mist Sprayer during cold weather.**
6. **NEVER ALLOW ANY PUMP TO RUN DRY.**
7. **Keep children and all personnel away from fan discharge area!**
8. **Not recommended for use with STRONG WINDS.**

6.2 Operation Skid Units & Trailer Units



ATVM-14 & UTV-50 Units:

As pictured above, top valve(A) is the open-close valve for the Hand Wand. Bottom Valve (B) is the throttling valve. Set to desired pressure (40-50 PSI)

ON ALL UNITS WITH ENGINES:

Power switch (C) can only be in "ON" position when engine is running!

ABBREVIATIONS AND SPRAYING FORMULAS

A. $\text{MPH} = \frac{\text{Number of feet traveled in one minute}}{88}$

B. $\text{Total GPM} = \frac{\text{GPA} \times \text{MPH} \times \text{swath width}}{495}$

C. $\text{Flow rate per nozzle} = \frac{\text{total GPM}}{\text{Number of nozzles}}$

D. $\text{GPA} = \frac{495 \times \text{GPM (TOTAL)}}{\text{MPH} \times \text{swath width}}$

E. Acres Per Minute = MPH x swath width x .002

F. minutes of spraying time in minutes= (ft x 3600) ÷ (MPH x 5280) ÷ 60 = ____ minutes

G. Circumference of a circle = (3.1416 x Diameter)

H. GPA = Gallons per acre

I. PTO = Power take-off

J. RPM = Revolutions per minute

K. MPH = Miles per hour

L. GPM = Gallons per minute

M. PSI = Pounds per square inch (gauge pressure)

CONVERSION FACTORS

1 yard	=	3 feet	=	0.91 meter
1 meter	=	39.37 inches	=	1.09 yards
1 statute mile	=	0.87 nautical mile	=	1.61 kilometers
1 nautical mile	=	1.15 statute mile	=	1.85 kilometers
1 kilometer	=	0.62 statute mile	=	0.54 nautical mile
1 statute mile	=	1760 yards	=	5280 feet
1 nautical mile	=	2027 yards	=	6081 feet
1 kilometer	=	1094 yards	=	3282 feet
1 acre	=	43560 sq feet	=	4840 yards
1 acre	=	4047 sq meters	=	0.40 hectare
1 hectare	=	107600 sq feet	=	35866 sq yards
1 hectare	=	10000 sq meters	=	2.50 acres
1 sq mile	=	640 acres	=	256 hectares
1 sq kilometer	=	247 acres	=	100 hectares
1 US gal	=	0.83 Imp gal	=	3.78 liters
1 Imp gal	=	1.20 US gal	=	4.54 liters
1 Liter	=	0.26 US gal	=	0.22 Imp gal
1 US pint	=	16 US fl. ounces	=	0.47 liter
1 Imp pint	=	20 Imp fl. ounces	=	0.57 liter
1 US gal/acre	=	8 US pints/acre	=	9.45 liters/hectare
1 Imp gal/acre	=	8 Imp pints/acre	=	11.35 liters/hectare
1 liter/hectare	=	0.11 US gal/acre	=	0.081 Imp gal/acre
1 pound	=	16 ounces	=	0.45 kilogram
1 kilogram	=	2.20 pounds	=	35.2 ounces
1 ounce	=	28.41 grams		
1 pound/sq inch	=	0.068 atmosphere	=	0.067 bar
1 atmosphere	=	14.70 pounds/sq in	=	1.01 bars
1 bar	=	14.50 pounds/sq in	=	0.98 atmosphere

8.0 Spraying Charts

Northern Ag Mist Sprayers APPROXIMATE METERING INFORMATION

Based on tank capacity of 55 gallons with a tractor speed of 4 MPH and using two (2) spray nozzles.

4 MPH / using (2) spray nozzles						
TIP Size	Pressure	GPH	Feet Of Coverage	ACRES Per Tank	*FEET Of Coverage*	*ACRES Per Tank*
8003	60 PSI	42.5	100'	59.74	*75'*	*44*
8003	50 PSI	37.5	100'	67.7	*75'*	*50.6*
8002	50 PSI	22.5	100'	121	*75'*	*83.6*
8002	40 PSI	20.8	100'	127.6	*75'*	*94.6*
8001	30 PSI	7.5	100'	330	*75'*	*246.4*

NOTE: A tractor speed of 2 MPH cuts in half the above coverage per tank. A speed of 3 MPH with 100 ft. coverage equals the same acres per tank as 75 feet at 4 MPH.

NOTE: Most Northern Ag Mists Sprayers are equipped with three (3) 8003 nozzles. To obtain the above results, you must plug the center nozzle.

8.1 Spraying Charts 50 ft Swath.

THIS CHART IS FOR TOTAL APPLICATION WITH A SINGLE PASS OVER THE SWATH WIDTH.

50

SPRAYER VOLUME OUTPUT REQUIRED AT *50 FEET SWATH* WIDTH COVERAGE OUTPUTS ARE IN GALLONS PER MINUTE FOR ALL NOZZLES USED COMBINED

GROUND SPEED IN MPH	GALLONS PER ACRE												
	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
	OUTPUT IN GALLONS PER MINUTE												
1.0	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.51	0.61	0.71	0.81	0.91	1.01
1.5	0.08	0.15	0.23	0.30	0.38	0.45	0.61	0.76	0.91	1.06	1.21	1.36	1.52
2.0	0.10	0.20	0.30	0.40	0.51	0.61	0.81	1.01	1.21	1.41	1.62	1.82	2.02
2.5	0.13	0.25	0.38	0.51	0.63	0.76	1.01	1.26	1.52	1.77	2.02	2.27	2.53
3.0	0.15	0.30	0.45	0.61	0.76	0.91	1.21	1.52	1.82	2.12	2.42	2.73	3.03
3.5	0.18	0.35	0.53	0.71	0.88	1.06	1.41	1.77	2.12	2.47	2.83	3.18	3.54
4.0	0.20	0.40	0.61	0.81	1.01	1.21	1.62	2.02	2.42	2.83	3.23	3.64	4.04
4.5	0.23	0.45	0.68	0.91	1.14	1.36	1.82	2.27	2.73	3.18	3.64	4.09	4.55
5.0	0.25	0.51	0.76	1.01	1.26	1.52	2.02	2.53	3.03	3.54	4.04	4.55	5.05
5.5	0.28	0.56	0.83	1.11	1.39	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.56
6.0	0.30	0.61	0.91	1.21	1.52	1.82	2.42	3.03	3.64	4.24	4.85	5.45	6.06
6.5	0.33	0.66	0.98	1.31	1.64	1.97	2.63	3.28	3.94	4.60	5.25	5.91	6.57
7.0	0.35	0.71	1.06	1.41	1.77	2.12	2.83	3.54	4.24	4.95	5.66	6.36	7.07
7.5	0.38	0.76	1.14	1.52	1.89	2.27	3.03	3.79	4.55	5.30	6.06	6.82	7.58
8.0	0.40	0.81	1.21	1.62	2.02	2.42	3.23	4.04	4.85	5.66	6.46	7.27	8.08
8.5	0.43	0.86	1.29	1.72	2.15	2.58	3.43	4.29	5.15	6.01	6.87	7.73	8.59
9.0	0.45	0.91	1.36	1.82	2.27	2.73	3.64	4.55	5.45	6.36	7.27	8.18	9.09
9.5	0.48	0.96	1.44	1.92	2.40	2.88	3.84	4.80	5.76	6.72	7.68	8.64	9.60
10.0	0.51	1.01	1.52	2.02	2.53	3.03	4.04	5.05	6.06	7.07	8.08	9.09	10.10

REFER TO CHARTS FOR THE TIPS OR NOZZLES TO USE TO DETERMINE PRESSURE NEEDED FOR YOUR RATES

Example: If you want 5.0 Gallons per Acre at 3.0 MPH at 50 ft Swath, the total is 1.5 GPM
1.5 GPM divided by (3) nozzles on volute = 0.5 gpm nozzle size
8005 or 11005 Tips, at 40 psi = 0.50 Capacity

Formula

GPA x MPH x Swath Width(ft)
495

5.0 x 3.0 x 50 =750
750 ÷ 495= 1.51 GPM

Tip (mesh)	PSI	DROP SIZE		CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN
		80 degrees	110 degrees		
TP8005 TP11005 (50)	30	M	M	0.43	55
	35	M	M	0.47	60
	40	M	M	0.50	64
	50	M	M	0.56	72
	60	M	M	0.61	78

8.2 Spraying Charts 75 ft Swath.

THIS CHART IS FOR TOTAL APPLICATION WITH A SINGLE PASS OVER THE SWATH WIDTH. 75

SPRAYER VOLUME OUTPUT REQUIRED AT 75 FEET SWATH WIDTH COVERAGE OUTPUTS ARE IN GALLONS PER MINUTE FOR ALL NOZZLES USED COMBINED

GROUND SPEED IN MPH	GALLONS PER ACRE												
	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
	OUTPUT IN GALLONS PER MINUTE												
1.0	0.08	0.15	0.23	0.30	0.38	0.45	0.61	0.76	0.91	1.06	1.21	1.36	1.52
1.5	0.11	0.23	0.34	0.45	0.57	0.68	0.91	1.14	1.36	1.59	1.82	2.05	2.27
2.0	0.15	0.30	0.45	0.61	0.76	0.91	1.21	1.52	1.82	2.12	2.42	2.73	3.03
2.5	0.19	0.38	0.57	0.76	0.95	1.14	1.52	1.89	2.27	2.65	3.03	3.41	3.79
3.0	0.23	0.45	0.68	0.91	1.14	1.36	1.82	2.27	2.73	3.18	3.64	4.09	4.55
3.5	0.27	0.53	0.80	1.06	1.33	1.59	2.12	2.65	3.18	3.71	4.24	4.77	5.30
4.0	0.30	0.61	0.91	1.21	1.52	1.82	2.42	3.03	3.64	4.24	4.85	5.45	6.06
4.5	0.34	0.68	1.02	1.36	1.70	2.05	2.73	3.41	4.09	4.77	5.45	6.14	6.82
5.0	0.38	0.76	1.14	1.52	1.89	2.27	3.03	3.79	4.55	5.30	6.06	6.82	7.58
5.5	0.42	0.83	1.25	1.67	2.08	2.50	3.33	4.17	5.00	5.83	6.67	7.50	8.33
6.0	0.45	0.91	1.36	1.82	2.27	2.73	3.64	4.55	5.45	6.36	7.27	8.18	9.09
6.5	0.49	0.98	1.48	1.97	2.46	2.95	3.94	4.92	5.91	6.89	7.88	8.86	9.85
7.0	0.53	1.06	1.59	2.12	2.65	3.18	4.24	5.30	6.36	7.42	8.48	9.55	10.61
7.5	0.57	1.14	1.70	2.27	2.84	3.41	4.55	5.68	6.82	7.95	9.09	10.23	11.36
8.0	0.61	1.21	1.82	2.42	3.03	3.64	4.85	6.06	7.27	8.48	9.70	10.91	12.12
8.5	0.64	1.29	1.93	2.58	3.22	3.86	5.15	6.44	7.73	9.02	10.30	11.59	12.88
9.0	0.68	1.36	2.05	2.73	3.41	4.09	5.45	6.82	8.18	9.55	10.91	12.27	13.64
9.5	0.72	1.44	2.16	2.88	3.60	4.32	5.76	7.20	8.64	10.08	11.52	12.95	14.39
10.0	0.76	1.52	2.27	3.03	3.79	4.55	6.06	7.58	9.09	10.61	12.12	13.64	15.15

REFER TO CHARTS FOR THE TIPS OR NOZZLES TO USE TO DETERMINE PRESSURE NEEDED FOR YOUR RATES

Example: If you want 2.0 Gallons per Acre at 4.0 MPH at 75 ft Swath, the total is 1.21 GPM
1.21 GPM divided by (2) nozzles on volute = 0.60 gpm nozzle size
8006 or 11006 Tips, at 40 psi = 0.60 Capacity

Formula:

GPA x MPH x Swath Width(ft)
495

2.0 x 4.0 x 75 =600
600 ÷ 495= 1.21 GPM

Tip (mesh)	PSI	DROP SIZE		CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN
		80 degree	110 degree		
	30	C	M	0.52	67
TP8006	35	C	M	0.56	72
TP11006	40	M	M	0.60	77
(50)	50	M	M	0.67	86
	60	M	M	0.73	93

8.3 Spraying Charts 100 ft Swath.

THIS CHART IS FOR TOTAL APPLICATION WITH A SINGLE PASS OVER THE SWATH WIDTH.

100

SPRAYER VOLUME OUTPUT REQUIRED AT 100 FEET SWATH WIDTH COVERAGE OUTPUTS ARE IN GALLONS PER MINUTE FOR ALL NOZZLES USED COMBINED

GROUND SPEED IN MPH	GALLONS PER ACRE												
	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
	OUTPUT IN GALLONS PER MINUTE												
1.0	0.10	0.20	0.30	0.40	0.51	0.61	0.81	1.01	1.21	1.41	1.62	1.82	2.02
1.5	0.15	0.30	0.45	0.61	0.76	0.91	1.21	1.52	1.82	2.12	2.42	2.73	3.03
2.0	0.20	0.40	0.61	0.81	1.01	1.21	1.62	2.02	2.42	2.83	3.23	3.64	4.04
2.5	0.25	0.51	0.76	1.01	1.26	1.52	2.02	2.53	3.03	3.54	4.04	4.55	5.05
3.0	0.30	0.61	0.91	1.21	1.52	1.82	2.42	3.03	3.64	4.24	4.85	5.45	6.06
3.5	0.35	0.71	1.06	1.41	1.77	2.12	2.83	3.54	4.24	4.95	5.66	6.36	7.07
4.0	0.40	0.81	1.21	1.62	2.02	2.42	3.23	4.04	4.85	5.66	6.46	7.27	8.08
4.5	0.45	0.91	1.36	1.82	2.27	2.73	3.64	4.55	5.45	6.36	7.27	8.18	9.09
5.0	0.51	1.01	1.52	2.02	2.53	3.03	4.04	5.05	6.06	7.07	8.08	9.09	10.10
5.5	0.56	1.11	1.67	2.22	2.78	3.33	4.44	5.56	6.67	7.78	8.89	10.00	11.11
6.0	0.61	1.21	1.82	2.42	3.03	3.64	4.85	6.06	7.27	8.48	9.70	10.91	12.12
6.5	0.66	1.31	1.97	2.63	3.28	3.94	5.25	6.57	7.88	9.19	10.51	11.82	13.13
7.0	0.71	1.41	2.12	2.83	3.54	4.24	5.66	7.07	8.48	9.90	11.31	12.73	14.14
7.5	0.76	1.52	2.27	3.03	3.79	4.55	6.06	7.58	9.09	10.61	12.12	13.64	15.15
8.0	0.81	1.62	2.42	3.23	4.04	4.85	6.46	8.08	9.70	11.31	12.93	14.55	16.16
8.5	0.86	1.72	2.58	3.43	4.29	5.15	6.87	8.59	10.30	12.02	13.74	15.45	17.17
9.0	0.91	1.82	2.73	3.64	4.55	5.45	7.27	9.09	10.91	12.73	14.55	16.36	18.18
9.5	0.96	1.92	2.88	3.84	4.80	5.76	7.68	9.60	11.52	13.43	15.35	17.27	19.19
10.0	1.01	2.02	3.03	4.04	5.05	6.06	8.08	10.10	12.12	14.14	16.16	18.18	20.20

REFER TO CHARTS FOR THE TIPS OR NOZZLES TO USE TO DETERMINE PRESSURE NEEDED FOR YOUR RATES

Example: If you want 4.0 Gallons per Acre at 3.0 MPH at 100 ft Swath, the total is 2.42 GPM
2.42 GPM divided by (3) nozzles on volute = 0.80 gpm nozzle size.
8008 or 11008 Tips, at 40 psi = 0.80 Capacity each nozzle.

GPA x MPH x Swath Width(ft)
495
4.0 x 3.0 x 100 =1200 1200 ÷ 495= 2.42 GPM

Tip (mesh)	PSI	DROP SIZE 80 degree	DROP SIZE 110 degree	CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN
TP8008 TP11008 (50)	30	C	M	0.69	88
	35	C	M	0.75	96
	40	C	M	0.80	102
	50	M	M	0.89	114
	60	M	M	0.98	125

8.4 Spraying Charts Floodjet Nozzles

	FLOODJET NOZZLE NUMBER	 PSI	CAPACITY ONE TIP IN GPM
TK-SS-.50 (100)	1/8K-SS-.50	10	0.05
		20	0.071
		30	0.087
		40	1.00
TK-SS-.75 (100)	1/8K-SS-.75	10	0.08
		20	0.11
		30	0.13
		40	0.15
TK-SS-1 (100)	1/8K-SS-1	10	0.10
		20	0.14
		30	0.17
		40	0.20
TK-SS-1.5 (50)	1/8K-SS-1.5	10	0.15
		20	0.21
		30	0.26
		40	0.30
TK-VS-2 (50)	1/8K-SS-2	10	0.20
		20	0.28
		30	0.35
		40	0.40
TK-VS-2.5 (50)	1/8K-SS-2.5	10	0.25
		20	0.35
		30	0.43
		40	0.50
TK-VS-3 (50)	1/8K-SS-3	10	0.30
		20	0.42
		30	0.52
		40	0.60

	FLOODJET NOZZLE NUMBER	 PSI	CAPACITY ONE TIP IN GPM
TK-VS-4 (50)	1/8K-SS-4	10	0.40
		20	0.57
		30	0.69
		40	0.80
TK-VS-5 (50)	1/8K-SS-5	10	0.50
		20	0.71
		30	0.87
		40	1.00
TK-7.5 (50)		10	0.75
		20	1.06
		30	1.30
		40	1.50
TK-10 (50)		10	1.00
		20	1.41
		30	1.73
		40	2.00
TK-12		10	1.20
		20	1.70
		30	2.08
		40	2.40
TK-15		10	1.50
		20	2.12
		30	2.60
		40	3.00
TK-18		10	1.80
		20	2.55
		30	3.12
		40	3.60
TK-20		10	2.00
		20	2.83
		30	3.46
		40	4.00

8.5 Spraying Charts TeeJet Nozzles

	PSI	DROP SIZE 80 degree	DROP SIZE 110 degree	CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN
TP8001 TP11001 (100)	30	F	F	0.09	11
	35	F	F	0.09	12
	40	F	F	0.10	13
	45	F	F	0.11	13.5
	50	F	VF	0.11	14
	60	VF	VF	0.12	15
TP80015 TP11015 (100)	30	F	F	0.13	17
	35	F	F	0.14	18
	40	F	F	0.15	19
	45	F	F	0.16	21
	50	F	F	0.17	22
	60	F	F	0.18	23
TP8002 TP11002 (50)	30	M	F	0.17	22
	35	F	F	0.19	24
	40	F	F	0.20	26
	45	F	F	0.21	27
	50	F	F	0.22	28
	60	F	F	0.24	31
TP8003 TP11003 (50)	30	M	M	0.26	33
	35	M	F	0.28	36
	40	M	F	0.30	38
	45	F	F	0.32	41
	50	F	F	0.34	44
	60	F	F	0.37	47
TP8004 TP11004 (50)	30	M	M	0.35	45
	35	M	M	0.37	47
	40	M	F	0.40	51
	50	M	F	0.45	58
	60	F	F	0.49	63
TP8005 TP11005 (50)	30	M	M	0.43	55
	35	M	M	0.47	60
	40	M	M	0.50	64
	50	M	M	0.56	72
	60	M	M	0.61	78

	PSI	DROP SIZE 80 degree	DROP SIZE 110 degree	CAPACITY ONE NOZZLE IN GPM	CAPACITY ONE NOZZLE IN OZ./MIN
TP8006 TP11006 (50)	30	C	M	0.52	67
	35	C	M	0.56	72
	40	M	M	0.60	77
	50	M	M	0.67	86
	60	M	M	0.73	93
TP8008 TP11008 (50)	30	C	M	0.69	88
	35	C	M	0.75	96
	40	C	M	0.80	102
	50	M	M	0.89	114
	60	M	M	0.98	125
TP8010 TP11010	30	C	M	0.87	111
	35	C	M	0.94	120
	40	C	M	1.00	128
	50	M	M	1.12	143
	60	M	M	1.22	156
TP8015 TP11015	30	VC	C	1.30	166
	35	C	C	1.40	179
	40	C	C	1.50	192
	50	C	M	1.68	215
	60	C	M	1.84	236
TP8020 TP11020	30	VC	VC	1.73	221
	35	C	VC	1.87	239
	40	C	C	2.00	256
	50	C	C	2.24	287
	60	C	C	2.45	314

****

TeeJet SpraySelect Mobile App
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Example 1.

Permethrin 10
Livestock & Premise Spray

ACTIVE INGREDIENT:
Permethrin 10.0%
INERT INGREDIENTS: 90.0%
TOTAL 100.0%

Directions for Dairy or Beef Cattle, Horses, Sheep, and Goats			
Pests Controlled	**Use Directions**	**Dilutions Rate (parts product to parts water)**	**Spray Preparation**
Horn Flies, House Flies, and Mosquitoes.	Spray to cover entire animal. Spray lactating dairy cows only after milking is completed. Repeat treatment at 5 to 12 days for small populations or as needed for large populations.	1:100	Amount Product per Water Volume 1.33 fl. oz. 1.0 gal 8.0 fl. oz. 6.25 gal 16 fl. oz. (1pt) 12.5 gal 32 fl. oz. (1qt) 25.0 gal 1 gallon 100.0 gal

Let's assume you want to use the Mist Sprayer to spray your Beef Cattle for fly control with Permethrin 10 Livestock & Premise Spray, and it has an Active ingredient of 10%.

Question 1: How am I going to mix up my spray solution according to label?

Question 2: What size area do I want to treat or spray?

Question 3: How much spray solution will I need?

Question 4: What size nozzles will I use?

Question 5: What speed will I drive?

Let's figure out the area first.
Let's assume at feeding time, all my cattle will be at the feed trough. The feed trough is 1000 ft long. I should be able to cover them all in a 50 ft wide spray swath. I will be driving at 3 MPH with my Mist Blower.

Formula:
(ft x 3600) ÷ (MPH x 5280) ÷ 60 = ____ minutes of drive time.

(1000 ft x 3600) ÷ (3 MPH x 5280) ÷ 60 =
3,600,000 ÷ 15,840 ÷ 60 =
3.78 minutes of drive-time to cover 1000 ft at 3 MPH

My mist blower has 3 nozzles. I am using the (8005) nozzle size.

Reference Chart: section 8.1.

At **40 PSI** (one 8005 nozzle) output is **0.50** gal per minute.
3 nozzles = 1.5 gal per minute (3 nozzles combined).

3. 78 minutes of spray time, 1.5 gallons output per minute, amounts to:
5.67 gallons of spray solution. Round off to: **6.25 gallons**

Permethrin 10 label calls for 8 fl. ounces per 6.25 gallons of water.
That is enough for one pass on my cattle next to 1000 ft feed bunk.

****

Example 2.
Let's assume your cattle are out in pasture. During the heat of the day, they bunch up in a group, creating a perfect opportunity for spraying them for flies with a mist blower. You estimate they are in a 100 ft diameter circle.

Let try to figure out how much spray solution we will need.

The area we want to spray is a 100 ft circle. The circumference of a circle formula is:
(Circumference= Pi x Diameter) or (3.1416 x 100)
You estimated the herd to be in a 100 ft circle.
3.1416 x 100 = 315 ft in circumference

How many minutes of spraying with the mist blower is that?

(ft x 3600) ÷ (MPH x 5280) ÷ 60 = ____ minutes of drive time.

(315 x 3600) ÷ (3 x 5280-) ÷ 60 =

1134000 ÷ 15840 = 71.59 ÷ 60 = 1.20 minutes

Reference Chart: Section 8.1.

3 (8005) nozzles at .50 GPM each, at 40 PSI = 1.5 GPM x 1.20 minutes =

1.8 gallons spray solution to spray one 50 ft. pass around the herd.

2.66 oz of Permethrin 10 Livestock & Premise Spray in 2 gallons of water is enough for the job.

LUBRICATION

CAUTION

Never attempt to lubricate or service this machine until the PTO has been disengaged, the tractor engine has been turned off and all motion has stopped.

VOLUTE ROTATION ROLLER CHAIN

The roller chain of the fan rotation should be oiled daily on all units.

Northern Ag Mist Sprayers --BEARINGS

(PTO models) There are SIX (6) bearings located on the PTO mist sprayer, two on each side of the fan and two on the main shaft located under the tank and fan.

(GPS-50 and TPT-50 Units) There are four bearings located on the gas engine mist sprayer: two on each side of the fan.

(ATVM-14 and UTV-50 Units): There are three bearings located on the gas engine mist sprayer: two on the side of the fan with the belt, and one on the opposite side.

These are sealed bearings and as a general rule require no lubrication, however the bearing manufacturer recommends regreasing before one third (1/3) of the bearing calculated life elapses.

Usually just a pump of grease per bearing before starting up each season will be sufficient. DO NOT OVER GREASE!! Over-greasing can cause damage to the bearing seals.

Mist Sprayers PTO

Telescoping sections should be greased semi-annually.

GAS ENGINE:

See engine owner's manual for proper lubrication.

SPRAYER STORAGE

When the Northern Ag Mist Sprayer will be stored for any period of time, use the following procedure to ensure proper operation when it needs to be used again.

A. Follow federal, state and local decontamination regulations.

B. Wash all foreign materials: dirt, debris, chemicals, etc. from the outside of the sprayer.

C. To prevent corrosion, drain first and then flush the entire Northern Ag Mist Sprayer system with two gallons RV anti- freeze and two ounces (2 oz) mineral oil, leaving some in the system during storage

D. Fill the pump with RV antifreeze and mineral oil and turn it over 2 or 3 times to make sure the anti-freeze is all through the pump.

E. Lubricate all greaseable fittings.

F. Brush the fan rotation gear and roller chain with a light oil.

G. Remove nozzles or spray head and cover or plug openings. The nozzles or spray heads should be cleaned and stored separately.

H. Store the Northern Ag Mist Sprayer in a dry place. If stored outside, it will need to be covered.

WARRANTY

Northern Ag Mist Sprayer warrants is products to be free from defects in material and workmanship under normal use and service for which the machine was intended.

WARRANTY - The manufacturer will furnish replacement parts or repair material for any portion of the Mist Sprayer found to be defective within 6 months from delivery date. Such replacement parts or material shall be furnished without cost to the owner or the user through an authorized dealer or distributor FOB factory at manufacturer's discretion. At no time shall the warranty liability exceed the purchase price of the item. Northern Ag Mist Sprayer's liability under this warranty is only for parts but not for labor charges involved in removing and replacing defective parts. The warranty repair period for equipment used for commercial or rental purposes is limited to 60 days from delivery date to the first retail purchaser.

This warranty does not apply to any part of a Northern Ag Mist Sprayer which has been subject to misuse, neglect, alteration, accident, damage caused by fire, flood, or other damage beyond control of the manufacturer. IN NO EVENT SHALL THE OWNER BE ENTITLED TO RECOVER FOR INCIDENTAL OR CONSEQUENTIAL DAMAGE SUCH AS, BUT NOT LIMITED TO, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE OR COST OF RENTAL OR REPLACEMENT EQUIPMENT.

No responsibility is assumed for delays or failure caused by strikes, Government regulations, or other circumstances beyond the control of the manufacturer or authorized dealer and distributor.

Furthermore, rubber, tires, tubes, batteries, engine and electric motors are warranted directly by the RESPECTIVE MANUFACTURER ONLY and not by Northern Ag Mist Sprayer

Northern Ag Mist Sprayer assumes no liability for any damages from either bodily injury or injury from chemicals used in this machine or for any cause whatsoever that might be inflicted on the operator, spectator, or general area while this machine is in operation.

Removal of original Serial Number voids the warranty in its entirety.

12.1 Warranty

Northern Ag Mist Sprayer provides warranty on all of our new Mist Sprayers. Warranty registration cards must be completed and returned to Northern Ag Mist Sprayer within 30 days of delivery date.

If you do not have a warranty card, contact your distributor or dealer. Before any claims are honored, the completed warranty card must be on file with:

Northern Ag Mist Sprayer
80391 330th Street
Clinton, MN 56225

Northern Ag Mist Sprayers will not provide warranty on any mist sprayer that has been altered in any way or damaged by misuse or damaged in shipment.

Northern Ag Mist Sprayers products and mist sprayers/blowers are warranted to be free of defects in material and workmanship.

VENDOR ITEMS ARE WARRANTED BY VENDOR.

Northern Ag Mist Sprayers reserves the right to make changes to price, design, materials and specifications, or to withdraw any product without notice or liability thereof.

12.2 Warranty Form

Northern Ag Mist Sprayer
80391 330th Street
Clinton, MN 56225

Visit us at:
northernagmistsprayer.com
info@northernagmistsprayer.com

WARRANTY REGISTRATION

COMPANY/CUSTOMER NAME: _____

ADDITIONAL NAME (S): _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ FAX: _____

PRODUCT NAME: Northern Ag Mist Sprayer SERIAL #: _____

TYPE OF SPRAYER PURCHASED: _____

NAME OF DEALER WHERE PURCHASED: _____

STATE OF PURCHASE: _____ DATE OF PURCHASE: _____

COMMENTS & RECOMMENDATIONS: _____

PLEASE RETURN THIS SHEET WITHIN 30 DAYS OF PURCHASE. OUR RECORD OF YOUR PURCHASE ASSURES YOU WARRANTY COVERAGE AS EXPLAINED PREVIOUSLY IN OWNER/OPERATOR MANUAL.

Northern Ag Mist Sprayer
80391 330th Street
Clinton, MN 56225

13.0 Return Policy

Northern Ag Mist Sprayer
80391 330th Street
Clinton, MN 56225

northernagmistsprayer.com
info@northernagmistsprayer.com

OFFICIAL RETURN POLICY

RESTOCKING FEES AND CHARGES

Northern Ag Mist Sprayer will charge a 30% restocking fee and will assess freight charges as well as charges for damage and or unreasonable use prior to the products return. Any sprayer or sprayer part that has been used with or exposed to any chemical will NOT be considered new under any circumstance as defined by EPA Rules and Regulations.

Return Date_____ **Model # Equipment**_____

Serial # _____

Reason for return: _____

_____

_____

_____

_____

Return authorized by: _____

Refund check # and amount: _____

Product received by and damage assessed by_____

Refund received by (signature)_____

Please enclose a copy of this form with your return and the original invoice.

14.0 Notes

Notes: