

AMPD

Seed Treater

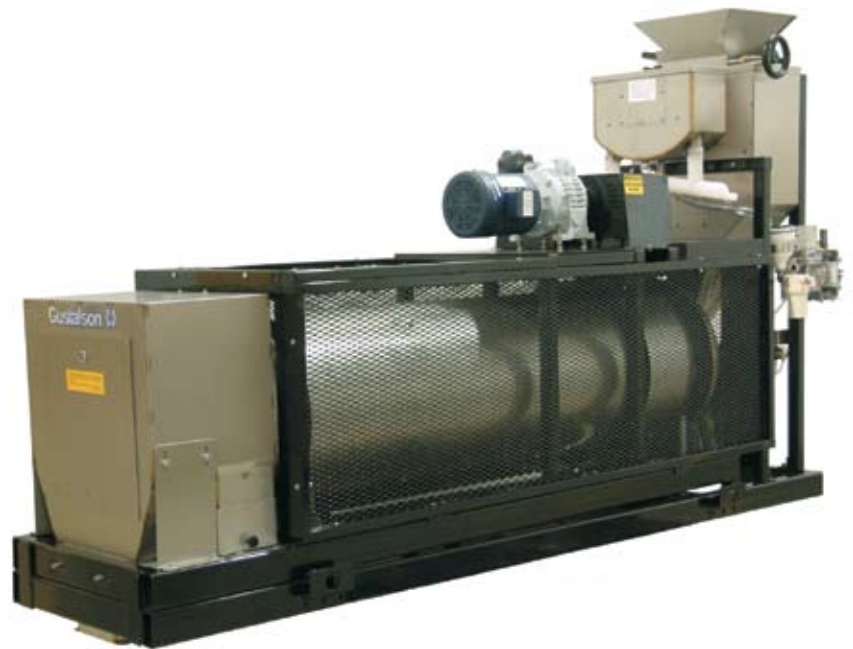
*Installation and
Operation Manual*



Advanced
Seed Treatment
Technology



Gustafson 



Bayer CropScience

Table of Contents

The following **AMPD** manual contains installation, operation, parts list and technical drawing information.

Please read and understand these instructions completely before proceeding to install and operate the equipment.

Bayer CropScience reserves the right to change specifications, models, components, or materials at any time without notice.

For further detailed information, contact the Bayer CropScience technical representative for your area.

Please have this operation manual available when contacting Bayer CropScience.

Contact Information:

Bayer CropScience
4895 12th Avenue East
Shakopee, MN 55379
(800)634-6738
FAX: (952)445-8282
www.bayercropscienceus.com

General Categories

- ▶ 4.0 - Installation
- ▶ 5.0 - Treatment Line Connection & Supply
- ▶ 6.0 - Treatment Supply

Calibration

- ▶ 7.0 - Powder Calibration
- ▶ 8.0 - Liquid Calibration
- ▶ 12.0 - Positive Pressure System
- ▶ 13.0 - Maintenance
- ▶ 14.0 - Guidelines for Successful Treating
- ▶ 16.0 - Limited Warranty

USE CAUTION!

Always use caution and common sense when working with any chemical. Read the product label and MSDS carefully and follow their instructions exactly as described.

Installation

1. Remove from the treater any additional items that were shipped with the unit.
Check and report any damage.
 2. Locate the treater high enough for the liquid treatment product to flow from the metering tank to the supply container. Ensure the lines are as vertical as possible and that there are no restricting elbows or bends.
Note: Enclose hoses that pass through floors, walls, or roofs in PVC pipe (or a suitable substitute), to protect them from damage and weathering, and as an aid in spill containment.
 3. Choose a method of supplying a constant source of seed to the treater. A seed holding bin with a manual open/close seed gate and a two-way diverter is the recommended system. An alternative is a 3 to 10 bushel surge seed hopper above the treater with a plexiglass monitoring panel installed on the front of the hopper.
Note: The seed must fall vertically into the treater. If seed comes in at an angle the treater will work erratically.
 4. Have a licensed electrician wire the system, following the National Electrical Codes for the area. The motor should rotate in the direction the sticker on the motor indicates.
 5. Install an electrical start/stop station with lockout on or near the treater and easily accessible to the operator. Always follow lock out-tag out procedures when operating equipment. Report any damage IMMEDIATELY
Note: For optimum results seed should be discharged directly into a bin or bulk outlet rather than into an elevator leg. Damp treated seed may adhere to the elevator cups and increase the seed cleanup and maintenance and cause contamination.
-

Treatment Line Connection

The AMPD seed treater may be used with liquid treatment products or dry powder compounds (with the optional powder attachment).

These instructions refer to liquid treatment products only.

The AMPD treaters are equipped with single or dual metering tanks.

1. Attach the fill hose to the 90 degree elbow at the bottom center of the metering tank and secure with a hose clamp.
 2. Attach the chemical return hose to the overflow assembly of the metering tank. If you use the large return hose - cut off the reducing end of the crossover tube and 1-3/4" hose adapted.
 3. Connect the liquid treatment hose to the nipples on the bottom of the metering tank and secure with hose clamps.
-

Treatment Supply

Note: Read chemical label caution section prior to filling the metering tank.

1. To fill the metering tank, turn the treatment supply pump **ON** and close the **bypass valve** until only a small amount of chemical enters the overflow outlet.

Note: When using chemicals that require pre-mixing, it will be necessary to maintain agitation in the metering tank.

2. When the determined level of treatment is established in the metering tank, close the cover to avoid contamination and splashing. Turn **OFF** the treatment supply pump.



Treatment supply tank
valve and bypass system

Powder Calibration

1. The calibration procedure for treating with powder is similar to that for treating with a liquid chemical. Open the gates to the feed hopper by turning the hand crank. Place a calibration cup or beaker under the powder trough. Turn the powder switch to OFF.

The instruction label provided on your chemical container lists application rates. For best results convert application rate to oz. per CWT. To convert oz. per bushel, divide the average weight per bushel of your seed into hundred weight (CWT). Then multiply that figure times the application rate of oz. per bushel.

2. The vibrator provides a flow of powder which spreads evenly to a 3/16" to 1/4" deep blanket. A thumb nut located at the bottom of the powder hopper regulates the flow of chemical.

3. Adjust the vibrator speed with the dial on the control box. The vibrator speed will regulate the number of ounces required for treating.

If the weighpan stops dumping due to discontinuance of flow from the feed hopper, the limit switch will disconnect power to the agitator and vibrator until feed flow resumes.

4. Turn the powder switch to ON and run the seed through the hopper, counting the number of dumps. After the CWT of seed has run through, the powder should be weighed to determine how much is being applied to that amount of seed. The vibrator speed can be adjusted accordingly. Run a test for each setting on the weighpan arm to determine each correct coverage.

The powder gate opening determines the depth of chemical in the powder trough. A deeper layer of chemical (opening the gate by turning the thumb screw clockwise) will deliver more powder at each vibration.

Once a week during treating, remove all chemical from the powder trough to prevent a buildup of powder that may change your treater's calibration. The chemical removed may be put back in the powder hopper.

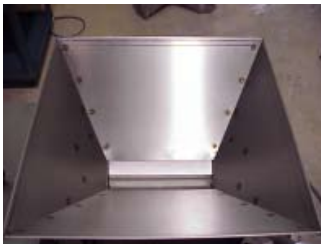
8.0 Calibration

Calibration



Hand Wheel

1. Turn the hand wheel to open the seed gates of the feed hopper about $\frac{3}{4}$ open to start.



Seed Gate

2. The seed gates determine the capacity of the treater. Once adjusted, leave them open.



ON/OFF Slide Gate

3. If you are using a holding bin or surge hopper, the manual bin slide gate or hopper slide gate is the feed mechanism for the treater, otherwise use the treater on/off slide gate.



Bumper pad

4. With treatment supply pump turned off, turn the treater on. Dry run several hundred pounds of seed.

5. Count the number of counterweight trips per minute (a complete swing in one direction from bumper to bumper is one trip). The counterweight arm should trip between 45 and 60 times per minute.



Counter weight

6. To lower the trips per minute, loosen the nut on the counter weight and move the counterweight up the shaft. To increase the trips per minute, loosen the nut and lower the counterweight down the shaft.

Calibration

7. In low capacity operations (such as with light weight seed and slow seed flow), 45 dumps per minute may be more than you can achieve, then lower the counterweight as far as possible or remove it completely.
8. In high capacity operations (such as with heavy seed and fast seed flow), you may have 100+ trips per minute with the counterweight at the topmost position.
9. Calibrate the seed treater with this four step process:
 - A. Total pounds per trip = seed weight / number of trips
 - B. Total cc of treatment per 100 pounds of seed = ounces of treatment per 100 pounds of seed X 29.6 cc (ounce)
 - C. cc's per pound of seed = cc required per 100 pounds of seed / 100
 - D. cc's per counterweight trip (chemical cup size) = cc per pound X pounds per trip

Calibration

Choose one of two approaches for your system calibration:

- A. Weigh an amount of seed before putting it through the treater.
- B. Dry run the treater for a minute or so, and weigh the seed after it comes out.

The following is a typical example of **300 pounds of seed**:

- a. Load the seed in the hopper.
- b. Open the slide gate on the bin or treater.
- C. Count the number of times the weighpan arm trips: 36 trips of the weighpan

Formula: 300 pounds / 36 trips = 8.33 pounds per trip

Check the liquid treatment container for the desired application weight. It is typically listed in ounces per 100 pounds of seed. Convert the ounces to cubic centimeters (cc) before calibrating the treater. (1 fl oz = 29.6 cc.) For example we will assume your liquid treatment when mixed and ready is to be applied at a rate of **8 ounces per 100 lb.**

8 (oz) x 29.6 (cc) = 236.8 cc per 100 lbs of seed.

Formula: 236.8 / 100 = 2.37 cc per lb.

10. To get the cc per trip multiply cc per pound x the pounds per trip.

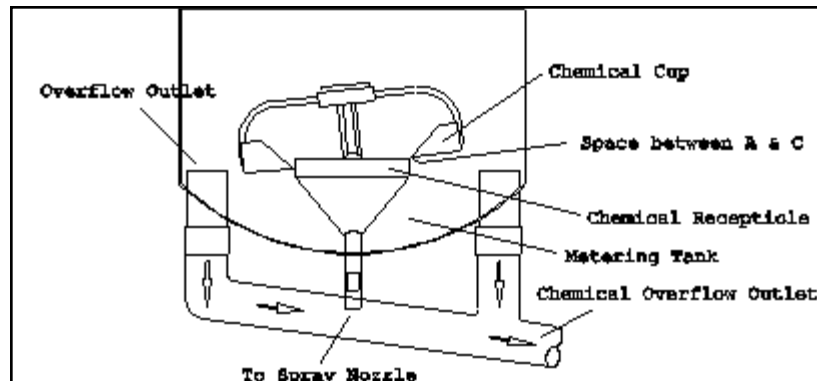
Formula: 2.37 (cc) x 8.33 (lb) = 19.74 cc per trip

**Read the Material Safety
Data Sheet (MSDS) for the
proper protective clothing
and equipment.**

10.0 Calibration

Calibration

11. Choose a corresponding cup size for the weighpan, or if your cc's per trip is in between cup sizes, choose the next size up. Choose the 20 cc cup
12. Install the chemical cups in the cup arm. Allow about 1/16" space between the chemical cups and the receptacle.



13. Open the bypass valve completely on the supply container pump.



14. Start the pump and slowly close the bypass valve to regulate the flow into the metering tank.

Note: Opening or closing this valve will regulate the volume of liquid seed treatment pumped into the metering tank. A balance is reached when some liquid seed treatment enters the overflow outlet while the treater is operating.

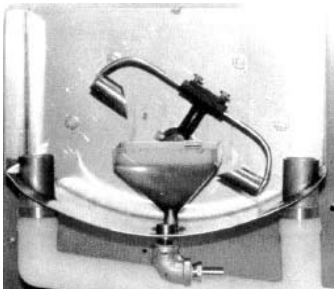
Calibration



Liquid treatment hose



Weighpan arm



Metering tank interior

15. Disconnect the spray nozzle end of the liquid treatment hose and place it in a large measuring container with volume marks in cc's.

16. Manually trip the weighpan arm at the rate it was tripping during your dry run. Measure the liquid seed treatment in the container. As an example assume you have tripped it 12 times and accumulated 240 cc's of liquid seed treatment

$$12 \text{ trips} = 240 \text{ cc's}$$

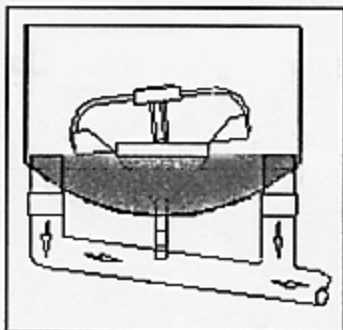
The calculation indicates you need $12 \times 19.74 \text{ cc's} = 236.9 \text{ cc's}$

You are 3.1 cc over the needed application rate.

17. To lower the application rate, you may decrease the liquid seed treatment by moving the chemical cups further from the cup arm. To increase the application rate reverse this step. If this doesn't provide enough decrease or increase, change the chemical cup size.

18. Check the liquid seed treatment level in the metering tank. There should be a constant overflow back to the supply container. If there is no overflow, increase your application rate.

Note: Because of variables, such as seed flow, starting/stopping, temperatures, etc. you should regularly measure the amount of seed treated and the amount of liquid seed treatment used. Calibration checks should be made on a seed lot basis. Fine tune as needed.



← Chemical Level

Positive Pressure System (PPS)

Gate Valve Adjustment



The Positive Pressure Gate Valve controls the output of treatment flow when the level on the supply pump reaches less than one gallon per minute and helps reduce cavitation and excess wear on the supply pump valve seats.

Adjustments can be made with the Positive Pressure System Gate Valve located on the discharge side of the expansion chamber.



1. Close the Positive Pressure System gate Valve (shipped in the "closed" position)



2. Adjust the Positive Pressure System Pump air pressure to 50-60psi
 3. Turn the air on going to the Positive Pressure System Pump (the pump will not begin running until the gate valve is reopened)
 4. Begin metering treatment to the pump



5. Open the Positive Pressure System Gate Valve until the pump begins cavitation (due to lack of treatment in line). With the treatment going through the pump, close the Positive Pressure System Gate Valve until there is some overflow in the coating chamber. Then open the gate valve slightly preventing treatment from going into the coating chamber. Allow treatment and pump to run for a few minutes to stabilize and reset as needed

6. The output from the pump to the nozzle or applicator should be smooth with minimal air bubbles and a steady flow of chemical. The pump will typically be pumping with low pulses or strokes per minute.

Maintenance

Set up an inspection schedule to check:

- Drive belts for wear
- Bearings for wear and lubrication
- Bumper pads for wear
- Hoses for cracks and/or breaks
- Cleanliness

Maintenance Tasks

1. At the end of a treating period, shut off the seed supply to the treater by closing the on/off gate on the treater or the holding bin.
2. Turn off the pumping systems to drain the liquid seed treatment metering tank. If the metering tank does not drain, open the bypass valve on the pump.
3. Manually trip the weighpan to remove the remaining seed and to empty the chemical cups. Trip the weighpan SLOWLY to allow the liquid to flow into the metering tank and not into the receptacle.
4. Clean out remaining seed and liquid from the film coater. Wipe out the film coater to remove buildup.
5. Flush the metering tank reservoir with water and retain the solution for the next day's treating.
6. Wipe down all surfaces when you are finished.
7. Flush all liquid treatment pumping systems daily to prevent buildup or corrosion.
8. Replace hoses frequently to reduce possible hose failure.

Wear protective glasses, mask, rubber gloves, etc. when you come in contact with liquid seed treatment. Always follow Material Safety Data sheets for proper handling and/or disposal of all treatment products.

14.0 Guidelines

GUIDELINES FOR HANDLING SEED-APPLIED PRODUCTS AND RECOMMENDED EQUIPMENT INSPECTION AND MAINTENANCE PROCEDURES

The following are general recommendations for handling seed-applied products, equipment inspection and maintenance on most Gustafson application equipment used in commercial treating facilities. There may be situations that occur outside the scope of this document that can be addressed on a case-by-case basis by contacting the appropriate Bayer Crop-Science personnel.

Products: Flowables and Custom Blends with Flowables

In many cases, custom bulk blends of some products are provided to our customers. The following are general recommendations for handling the liquid (flowables) products and the blends made from them:

- Products and blends are best utilized when stored between 40-90 degrees Fahrenheit. Exposure to temperatures above and below this range for prolonged periods of time may cause the products and or blends to stratify in their containers.
 - Thoroughly mix all liquid products prior to use and prior to transferring into work tanks. Bulk shuttles are equipped with top and bottom ports to allow for recirculation agitation, and returnable kegs and drums have manual stirring devices inserted. 15-20 minutes of recirculation is recommended for 200 and 400 gallon bulk shuttles. If the system is not set up for recirculation agitation then a mechanical agitation system will need to be installed. On returnable containers, manually rotate a minimum of 25-30 times clockwise and then a minimum of 25-30 times counterclockwise.
 - Where products and or blends are transferred to work tanks, any mechanical agitation devices in those tanks should be shut off to reduce the amount of product that can splash up on the sidewalls and tops of those tanks. If compressed air is used to purge lines after product transfer, use the minimum amount of air pressure necessary and make sure the work tank is vented to reduce product splashing.
 - After products have been transferred to their respective work tanks, resume mechanical agitation.
 - Do not allow the liquid level in work tanks to be pulled below two-thirds capacity so that the products and or blends have minimal exposure to air and do not dry and or cake prematurely.
-

General Equipment

- Check filters daily at least once. Clean rinse off as necessary. The filter assemblies are intended to keep agglomerates, plant debris and other foreign substances from going through the system and plugging lines. If an accumulation of material is found, the filter basket should be removed and rinsed free of the debris.
- Clean pump and product lines frequently to avoid an accumulation of product buildup over time.
- Avoid low spots or bows on hoses and supply lines where products may have a tendency to accumulate and or settle.
- If the treating system is being shut down for a weekend or more, fill the work tanks to their maximum level and flush any product from the lines to avoid any potential product settling.
- Product supply lines running from a pump to the application equipment should be installed so they run laterally and up to the treater to ensure constant flow and complete product removal when the lines are drained.

Electronic and CBT Treating Systems

- Conduct 'on-the-go' calibration checks frequently by checking the amount of product being pumped from the closed calibration cylinder versus the product delivery rates that the computer is indicating. GLCPS systems rely on peristaltic pump hose integrity; wear and tear on it will affect the calibration. Periodic inspection and recalibration should help improve calibration accuracy.
 - Make routine 'loss-in-weight' calibration inspections when product supply tanks are mounted on weighing scales. While the machine is running, a loss in weight should be observed. The elapsed time for this weight loss can be used to cross check accuracy against the rate per minute displayed on the computer screen.
 - On the CBT-200 batch treaters, inspect the 20-l batch weighing tank used to receive and dispense any products. If an accumulation of product is visible it should be removed and cleaned.
-

16.0 Warranty

LIMITED WARRANTY, LIMITATION OF LIABILITY & CLAIMS

Bayer CropScience warrants that the Gustafson application equipment shipped hereunder shall be free of defects in materials or workmanship for a period of one (1) year from the date of delivery. BAYER CROPSCIENCE MAKES NO OTHER WARRANTY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, WHETHER EXPRESSED OR IMPLIED. IN NO EVENT SHALL BAYER CROPSCIENCE BE LIABLE TO CUSTOMER FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES REGARDLESS OF WHETHER ARISING IN CONTRACT, STRICT LIABILITY, OTHER TORT OR OTHERWISE. THE EXCLUSIVE REMEDY OF CUSTOMER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE SALE, USE OR HANDLING OF THE GUSTAFSON APPLICATION EQUIPMENT WHETHER IN CONTRACT, WARRANTY TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT BAYER CROPSCIENCE'S SOLE ELECTION, THE REPAIR OR REPLACEMENT OF APPLICATION EQUIPMENT.

No shipment of Gustafson application equipment, or any portion thereof, is returnable by customer, unless such shipment or portion thereof is defective in one or more of its components. In the event that customer believes that the Gustafson application equipment is defective, written notice must be provided to Bayer CropScience by customer within one (1) year after the date of delivery of the equipment. Failure to provide such notice shall constitute customer's irrevocable acceptance of the Gustafson application equipment and waiver of any claims for errors, deficiencies, or imperfections therein. Any attempt to return a shipment of Gustafson application equipment, or portion thereof, for any other reason after the expiration of the time period set forth herein shall be an ineffective rejection of such Gustafson application equipment, and customer shall be invoiced by Bayer CropScience and shall pay the invoice in full, including any storage, freight, or other costs for returned Gustafson application equipment or any portion thereof.

Upon notice to Bayer CropScience that the application equipment is defective, Bayer CropScience shall have the right to send a representative to customer's facility, or inspect the equipment after having received it from customer. If Bayer CropScience determines that any Gustafson application equipment is defective, Bayer CropScience shall replace such application equipment at its expense.

If Bayer CropScience disagrees with customer's conclusion that the Gustafson application equipment is in any way defective, or if the defect or damage was caused, directly or indirectly, by customer's action or inaction, customer shall be charged for all costs associated with sending the equipment or replacement parts to customer.

Notwithstanding the foregoing, the limited warranty contained herein does not apply to the following:

Maintenance - This includes, but is not limited to, such things as cleaning, flushing systems, corrosion prevention, mechanical or electrical adjustments, or repairs which become necessary through normal wear and tear; or periodic maintenance such as lubrication and gear or variable speed oil changes.

Service and wear items - This includes, but is not limited to, the replacement of belts, drive chains, sprockets, fasteners, bulbs, fuses, ball bearings, bushings and other electrical or mechanical components that have a useful life based on how much these components are used.

Lack of service - This includes, but is not limited to, damage attributable to failure to perform maintenance in services in accordance with the manufacturer of the component.

Damage - This includes, but is not limited to, damage resulting from negligence, improper installation, the installation process, improper or incorrect wiring, corrosion, construction welding, or freight damage.

Controls - Systems without Bayer CropScience supplied control packages or systems using other controls are not covered under the terms of this warranty.

TRAINING, CALIBRATION ASSISTANCE AND SERVICE CALLS

Bayer CropScience trained employees may assist in the training and calibration of equipment - Due to factors such as temperature variations, seed flow changes, improper mixing procedures and other factors that are out of Bayer CropScience's control, Bayer CropScience does not accept responsibility for the calibration of the system. Electronic controlled seed and chemical proportioning systems - Infield training and calibration assistance of up to 15 hours or 1 trip to the purchaser's location is included in the price of qualified electronic controlled seed and chemical proportioning system. Additional hours will be billed to the purchaser at \$60 per hour plus travel expenses for units in the continental United States. Electronic controlled seed and chemical proportioning systems purchased outside of the continental United States \$60.00 per hour portal to portal will be billed to the purchaser. Service calls for non-warranty items will be charged at \$60.00 per hour portal to portal plus expenses. All other standard application equipment - Service calls for non-warranty items will be charged at \$60.00 per hour port to port.



Bayer CropScience

Bayer CropScience
4895 12th Avenue East
Shakopee, Minnesota, 55379
USA

www.bayercropscienceus.com

