

GS1 Semi-Automatic Needle Seeder



Owners Manual and Operating Guide

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Introduction

The GS1 Semi-Automatic Needle Seeder was designed for the small greenhouse grower, but is also useful in a larger growing environment.

The speed at which this machine will sow varies greatly upon several factors including:

- Size of tray
- Seed type
- Operator

You should expect to sow UP TO 120 size 288 trays, or 80 size 512 trays per hour.

This machine will accommodate plug trays from 50 to 512 cells. The operator can change the sowing kit from one plug tray to another in less than 5 minutes.

Seederman offers a 14-day return policy, and a 2-year warranty on all parts (except needles).

Space, environment and air requirements

The GS1 Semi-Automatic Needle Seeder is designed as a tabletop model. The space requirements are as follows:

Length = 66 inches

Width = 32 inches

Height = 24 inches

Weight = approx. 80 lbs.

A working table allowing at least 4 inches in excess of length and width is suggested to support this machine. The table should be able to withstand the weight of the machine and 3 filled trays at a minimum.

As this machine is manufactured using high grade aluminum it is perfectly capable of withstanding the hot and humid conditions of most greenhouses, however you should avoid running this machine in or under a water source.

The GS1 Semi-Automatic Needle Seeder was engineered to operate using only compressed air as its source of power. **No electricity is required.** This machine requires 80 PSI at 5 CFM to operate all components.

Connecting the air source

Connect your air source to the regulator connector being careful to make a secure connection. The gauge is preset to 70 psi. If the fitting that comes with the machine is not correct to your air source, you can purchase a ¼ inch NPT fitting at most supply stores.

The regulator is located at the top of the masthead on the left side as the operator is facing the machine.

The regulator is auto drain but please note, this is not a water drain, it is designed to reduce moisture.



Figure 1. Filter regulator in off position. Airline connects to fitting below blue handle.

Inserting Needles

Your machine came equipped with a set of needles. Each needle has qualities that are more suited to different types of seed. Below are some examples of seeds and the needles you should use for each. Use this as a general guide to help determine the proper needle for the seed you are sowing. If you have questions, or need another needle size, please contact us.

Color	Size	Seed type
Clear	.008	Petunias, Dusty Miller, Coleus
Red	.010	Impatiens, Tomatoes (small), Carnations
Orange	.013	Marigold, Salvia, Vinca, Peppers
Blue	.016	Alyssum, Kale, Zinnia, Dahlias, Pansies
Purple	.020	Geraniums, Pelletized seed, Brassicas
Pink	.023	Large palletized seed
Green	.033	Cyclamen, cucumber
Orange		Blanks



Figure 2. Tray inserted under the indexing arm and the drop tube bar.

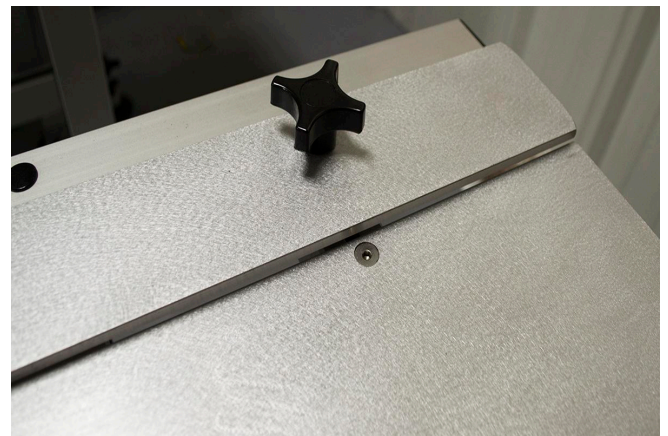


Figure 3. Right rear guide rail and handle.

Before you insert the needles, select the tray you are going to use to sow. Adjust the front and rear slide rails to fit the tray width (if necessary). To adjust the slide rails, unlock the left and right handles, slide the rail to the desired width, and then relock the handles. Insert the tray into the machine far enough so that the tray slides under the drop tube bar. If necessary,

replace the drop tube bar to match the tray you are using (see next chapter for instructions to replace drop tube bar). Having the tray in place will aid you in correctly placing the needles into the proper slots to match the holes to the cells.

Insert needles into the tip on the needle bar and turn clockwise until secured. Do not over tighten as this can damage the tip. Place needles in tips to align to the cells in the tray you are planting. You may not fit needles into all the needle tips. Your needle kit came complete with a set of blank needles, and you should insert these in the same fashion into tips that do not align to cells in your tray.

IMPORTANT NOTE: Make sure to place the orange “blanks” into any needle tip that does not have a needle in it. Failure to do so will create negative vacuum through the empty tips and you will not pick up seed with your needles.

Attaching the sowing kit

The sowing kit is comprised of several drop tubes and a drop tube bar located at the base of the machine.



Figure 3. CE288 sowing kit attached and in place on the machine.

To attach a kit to the machine, first remove the tubes from the upper bar by pulling the tubes downward. Next, remove the handles and washers from the front and back of the lower drop tube bar, and place the handles and washers in a safe place. **DO NOT REMOVE THE TUBES FROM THE BOTTOM BAR.**

Insert a new drop tube bar onto the threaded rod, place the washers over the rod and screw the handles into position tightening them. Lastly, insert the tubes into the top bar. Make sure to fit the tube to the uppermost position inside the tube bar to insure there are no gaps where seed can collect. You may need to twist the tubes **SLIGHTLY** to insert them.

Depending on the type of tray you are using, there may be more holes on the top bar than there are drop tubes. The machine was designed this way so that only one tube needs to be changed to switch sowing kits. When placing the tubes into the holes, insure that you are placing it into a hole that has a needle in the same position.

Leveling the machine

To insure maximum precision seeding of your trays, it is necessary to insure that your machine is level on each surface that you place it. The machine is equipped with locking leveling pads to aid in leveling.



Figure 4. One of four leveling pads located at each outside corner of base of machine.

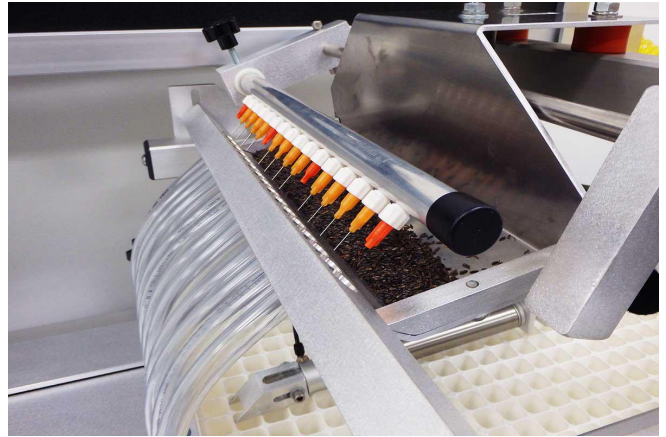


Figure 5. Seed in pan showing properly leveled machine.

The best way to level this machine is to place a small amount of round seed into the seed pan, turn the vibrator on, and watch where the seed locates itself. It may be necessary to adjust the amount of vibration by turning the vibrator knob to the left or the right. The seed should lightly "dance" over the surface of the pan without undue bouncing. A properly leveled machine will distribute the seed forward of the pan (near the needles) and evenly from front to back with the majority of the seed centrally located. If the seed falls too far to the back of the machine, raise the rear leveling pads. If the seed falls too far forward of the machine, raise the front leveling pads. If the seed falls too far from the needle section, raise the front and rear leveling pads on the right hand side of the machine (as you are facing it).

Checking the Index length

Make sure the air is connected, but vacuum pressure is set to zero. Place your tray onto the bed of the machine from the right hand side and under the indexing arm, until the indexing arm fits into the second cell row of your tray. Air should be connected at this point, so slide the operating handle upwards and to the right to index to the next cell. If the indexing arm is not moving the tray to the next complete cell you will need to adjust the index.

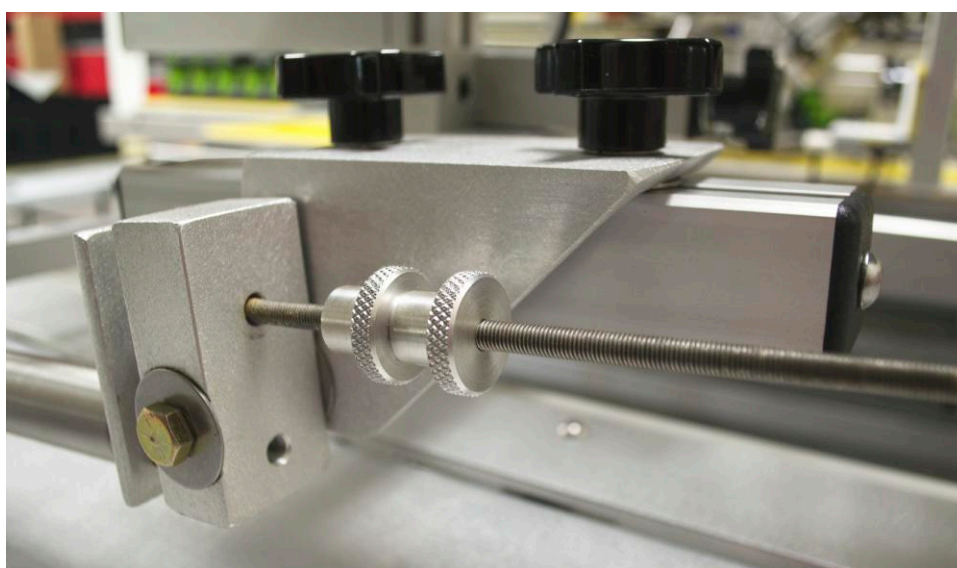


Figure 6. Indexing adjustment rod and thumbscrews.

Your machine should be pre-marked on the indexing bar with the placement for the size trays you are using. If the bar is off the mark, or if you are using a different size tray, you can adjust the indexing by using the silver and black thumbscrews on the adjustment rod. To shorten the index, move the silver thumbscrew inward toward the drop tube bar, and then tighten the black thumbscrew. To lengthen the index, tighten the silver thumbscrew. If you plan on using this setup again in the future we suggest you mark the indexing bar as shown in the picture above.

Operating the Machine

Before beginning operation, complete the following checklist:

- Seed is in the pan and the machine has been leveled.
- The correct sowing kit has been attached.
- The correct needles have been inserted to match the cells.
- The rails have been adjusted to the correct width for the tray.
- The indexing has been adjusted to the correct length.
- Air is connected to the machine.

You are now ready to begin sowing.

Place your first tray into the machine from the right hand side and offer it so that the indexing arm is in the second cell row. Turn the handle upwards and to the right to index the cell once until the first cell is directly under the drop tube bar.

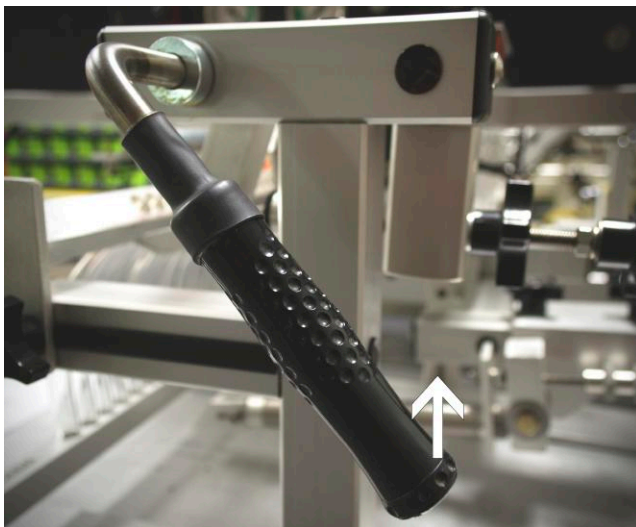


Figure 7. Operators handle showing direction of movement.



Figure 8. Vibrator switch and adjustment knob.

Turn the vibrator switch to the on position and adjust if necessary. Turn the vacuum switch to the left until the vacuum gauge reads -5. Turn the eject switch by pulling the knob outward and turning until the pressure gauge reads between 15 and 20.



Figure 9. Vacuum knob and pressure gauge.



Figure 10. Eject pressure gauge and knob. Note: knob pulls out then turns right/left.

Move the handle to the seed pan and pick up seed. You may find you need to readjust the vacuum pressure or vibrator to insure that all needles are picking up seed. Next move the handle back to the starting position until it "clicks" into position on the far left above the drop tubes so that the seeds eject. Failure to bring the lever back to the full stop position will prevent seeds from dropping into the tubes.

Note that the handle operation is very easy and does not require any undue pressure on the part of the operator. It is in fact easy to operate this handle with the finger tips alone it requires so little strength.

Repeat sowing until the full tray is sowed.

After you have finished sowing all your trays, you can use the seed collector to neatly and completely collect any remaining seed left in the pan.



Figure 11. Seed collector & switch.

The seed collector is located on the operators panel at the left hand side. Turn the vibrator pan on as it is easier to collect the seed while vibrating. Remove the hose from the holder, and turn the knob counterclockwise until you hear vacuum pressure in the hose. Place hose into seed pan and vacuum seed until all is removed.

To remove seed from seed collector, grasp the lower (clear) container and turn in clockwise until it separates from the unit.

Cleaning the Needles

If a seed, soil, or other debris should collect in the needle and block it, this machine is equipped with a needle cleaner.

Remove the blocked needle turning counterclockwise. Place needle onto needle cleaner located at the base of the operator control panel in the lower right corner.

Hold needle into place but **DO NOT PUT FINGERS OR HANDS ON TOP OF THE NEEDLE** as it is positive air and can cause injury. Proceed to turn the needle cleaner switch located on the control panel to the active position. Within a few seconds, debris should be clear from the needle.

If the needle fails to clear on the needle cleaner, it may be necessary to soak the needle in warm water for about one hour, then try cleaning it on the needle cleaner again. The needle cleaner is located at the back and to the right of the machine to prevent any blowing debris from blowing into operator's eyes. For this reason, operator should not move from his normal operating position when cleaning needles.



Figure 12. Needle cleaner switch.



Figure 13. Needle cleaner located at base of operator panel

Vibrator Lubricator

When first receiving your needle seeder, you will notice a vibrator lubricator on the operator's right side of the control panel. This must be filled to the appropriate level with the oil provided.

First, remove all air from the machine, disconnecting your airline from the filter regulator and using the needle cleaner to drain the remaining air.

Firmly grasp the bowl of the vibrator lubricator and turn clockwise until the bowl is released from its housing. Keep unscrewing until the bowl is completely removed from the fitting. When removing the bowl, make sure the insert is with it and not left on the machine.

Fill with the provided oil until the level line marked on the side of the bowl is met. Before replacing, ensure that the rubber "O" ring is in the correct place. Once this is complete and your vibrator lubricator is filled with the provided oil, attach the bowl to its original position on the machine.



Figure 14. Vibrator lubricator on operator's right side of the machine

Maintenance

Your seeder will require very little regular preventive maintenance. We have outlined maintenance items you should perform and should not perform, as well as a checklist you should go through before each operation and at the beginning of each season.

Prior to first use and at the beginning of each season...

- Remove the panel from the back of the machine.
- Check all fittings to insure they are secure and replace panel.
- Check regulator for moisture and release if necessary.
- Check regulator connection for debris and remove if necessary.
- It may be necessary to clean drop tubes if they are dirty. Some pelletized seed can leave a chalky residue behind. To clean the tubes soak them in a small amount of mild detergent and let dry completely before use. Note that some operators have found that a small amount of residue from seed (even pelletized) actually assists the seed dropping through the tube even faster, so you may want to try the tubes first.
- Check bolts, and handles to insure they are secure.

Prior to each use...

- Connect air and check vibrator, vacuum pressure, eject pressure and seed cleaner pressure to insure that all air hoses, gauges, and regulator are working properly.
- Spot check drop tubes, seed pan, needles, and needle tips for debris and clean if necessary.

After each use...

- Collect all empty seed and empty seed container.
- Using air gun, clean the machine of all dirt and debris.
- Disconnect air hose from regulator.
- Release all pressure in regulator using air gun.
- Remove needles for safety.



Figure 15. Air gun

Remove the air gun from the holder at the upper right corner of the operator's panel. Grasping gun, use index finger on trigger to activate air through gun.

After each season...

- Prepare machine as indicated in "after each use".
- Store machine in clean dry area and cover with drop cloth if necessary.

Do not do...

- Do not lubricate machine in any way. If you feel there is a part that is sticking, please contact us and we will direct you how to fix it, or make arrangement for repair. This machine should not require any lubrication.
- Clean seed pan except with seed collector. If necessary you can use a clean cloth or paper towel to wipe out seed pan. Do use any cleansers in or on seed pan unless absolutely necessary. If you do spill for example coffee into seed pan, wipe seed pan out with clean cloth using water only. If a sticky liquid is accidentally spilled into pan, it may be necessary to clean with a small amount of mild detergent – dip a rag into solution then clean pan, then rinse pan with clean water. Always make sure pan is dry before use.

Please do not feel it necessary to repair your machine yourself if something should break. Please call us as most of the time we can talk you through a minor problem or repair over the telephone. If the repair is more serious, we can make arrangements to have your machine repaired.

It is always a good idea to check your machine a few weeks before your sowing season begins to make sure that everything is in proper working order. If something is broken and needs repair, you will have time to get the problem fixed before you need to sow. Seederman will make every attempt to not delay your sowing season. Having been growers, we understand that one lost day in sowing can equate to one lost week of growing.

Safety precautions

There are few areas on the GS1 that you should be cautious about when operating the machine.

Compressed air can be dangerous. Caution should be exercised when connecting and especially when disconnecting air hose fittings. Stand well away and do not directly face the connector when connecting or disconnecting fittings. **Do not place hands over compressed air supply.** Insure all fittings are tight and leak free, if there is a leak in any fitting; discontinue use of the machine until repaired.

Needles are sharp and will puncture skin. The needles supplied with our kits are surgical grade needles and can puncture skin. Operator should use caution and not place hands or other body parts near needles during operation of machine. When the machine is not in operation it is suggested that needles be removed not only for safety reasons but to keep needles clean and free of debris. Care should be exercised in handling needles when off of machine. Needles should be kept in a safe place away from children.

There are pinch points on this machine. Caution should be exercised to avoid placing hands or other body parts on or near the indexing arm or the indexing cylinder. Also, keep fingers and clothing out of the way when adjusting the side guide rails (see figure 3) to avoid pinching when moving these into position.

Use air gun safely. Do not point air gun at yourself or others. Pressure from air can cause serious injury.

Use seed collector safely. Do not press seed collector up against any part of your body as vacuum pressure could cause injury. Do not use seed collector to vacuum anything other than seed as it may damage unit.

As with all machinery, operation should not be conducted while under the influence of alcohol or other drugs that can impair vision, memory, coordination, or judgment, nor should one operate the machine under duress of fatigue, or working conditions that would impair mental or physical faculties. Machinery should never be operated by children.

Owner should insure that all operators have read or are aware of all operating instructions and safety considerations before use.

Contact

Should you need any assistance, or have any questions about your Seederman Seeder, please contact us.

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