



GR™ Powder Granulator Range User Manual



We don't just sell machines—
we provide service.

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Important Safety Information

READ THIS BEFORE OPERATING MACHINE

Intended Use

The intended use of this machine is to granulate agglomerated dry raw materials.

Potential misuse of this machine includes:

- Completely filling the granulator with material (over 70% full).
- Filling the granulator with materials before conducting a test run.
- Using materials that have large pieces of solid material.
- Using materials that are liquids or pastes.
- Using the machine for pulverizing.

Personal Protection

For personal protection while transporting the GR™ Powder Granulator, abide by these actions:

- Use a forklift to lift the machine (for heavier machines in range).
- Wear steel toe boots to prevent foot injury.
- Wear heavy duty grip gloves to ensure firm grasp on machine.
- Wear back support belt to prevent injury if needed.

For personal protection while operating the GR™ Powder Granulator, abide by these actions:

- Avoid wearing loose jewelry to prevent machine entanglement.
- Contain long hair to prevent machine entanglement.
- Wear safety goggles.
- Wear disposable latex/rubber gloves.
- Wear a hairnet (food grade products only).
- Wear a beard net if needed (food grade products only).

General Hazards

- Be aware of risk of entanglement and pinch point due to moving parts.
- Do not operate in a wet environment or with wet hands due to risk of electrical shock or burn.
- Do not operate if any wires are damaged, pinched, or frayed due to risk of electrical shock or burn.
- Keep out of reach of children.
- Keep fingers and head away from all moving parts.
- Ensure that the machine is on stable, level ground.
- Inspect machine before use.
- Check that nuts and bolts are suitably tightened.
- Use this machine only for its intended use as described in this manual.
- Turn off and unplug the machine before conducting cleaning and maintenance.
- Do not modify the machine in any way.

Important Safety Information

READ THIS BEFORE OPERATING MACHINE

Symbols



WARNING

This signals potential risk for personal injury.



WARNING

This signals potential risk for electrical shock.



CAUTION

This signals potential risk for damage to the machine or other parts.

Modes for Stopping

In the case of an emergency during operation, immediately push the Emergency Stop button and unplug.



Prop. 65 Statement for CA Residents

Based on LFA's current level of knowledge of our machines, the GR™ Powder Granulators do not require a Proposition 65 warning label.

Warning for Explosive Material

This machine is not explosion proof. LFA recommends that you test your materials' explosivity before running them through this machine. If your materials are indeed explosive, do not use them with this machine.

Important Safety Information

READ THIS BEFORE OPERATING MACHINE

Installation and Safety Assessment

Due to the nature and design of this machine and its intended use in an industrial environment, it is important that before use it is installed in a cage with a mode of stopping on the outside of the cage. LFA Machines has decided that we can not possibly foresee all of the environments or situations in which this machine could be used or installed and therefore have determined that the end user must install the machine in a way that is appropriate and safe for its use.

Once the machine has been installed, it is critical that you conduct a safety assessment to ensure that it complies with all local and industry accepted safety regulations.

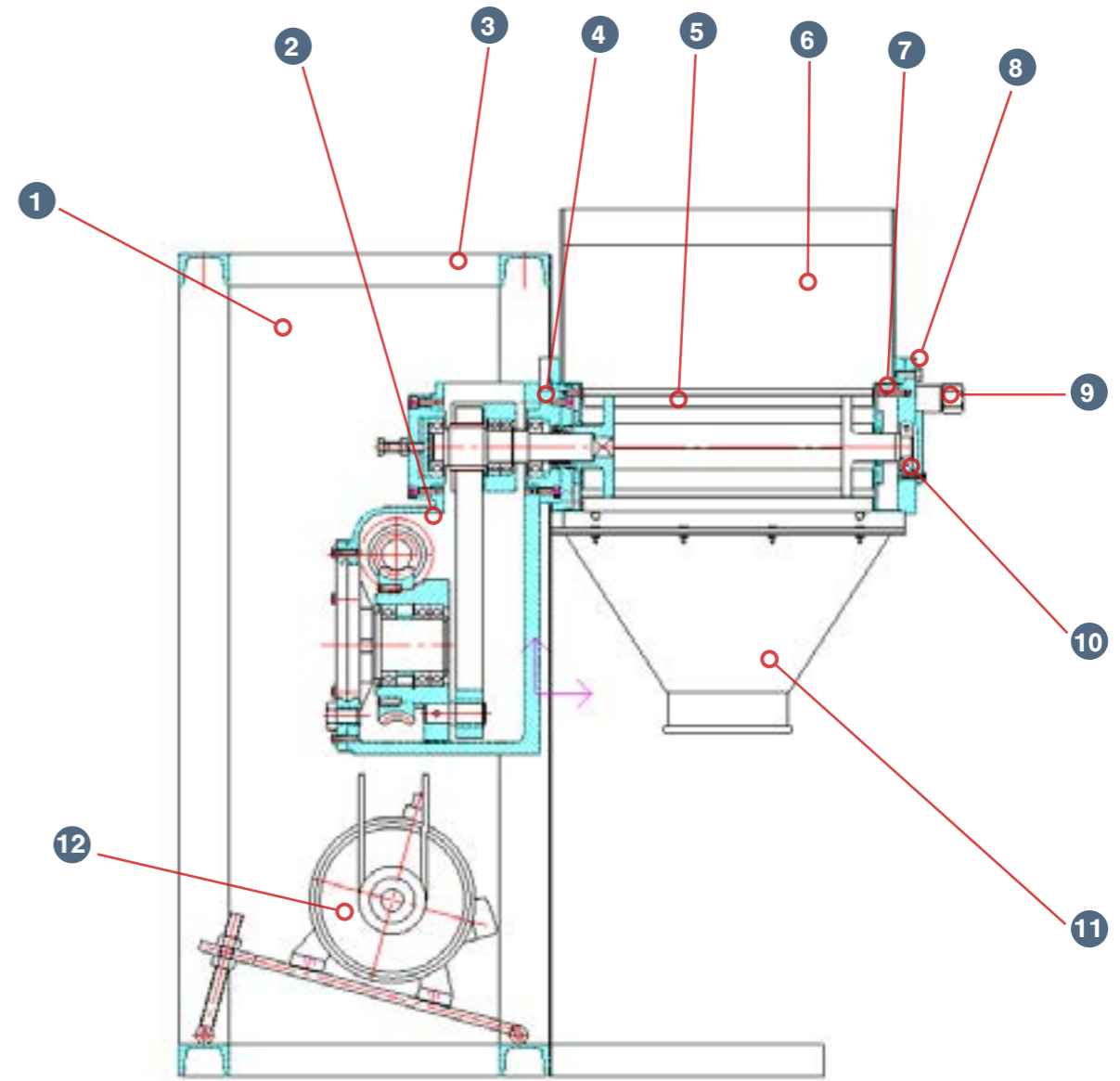
If you require guidance on the installation of the machine or conducting a safety assessment, please contact LFA Machines.

This machine is sold as an Unfinished Machine under the Machinery Directive (2006/42/EC) Article 13.

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GR™ Powder Granulator Parts List



- | | |
|-------------------------------|-----------------------------------------|
| 1. Base | 8. Ratchet and Pawl |
| 2. Gearbox | 9. Hand Wheel |
| 3. Cover | 10. Knurling Screw |
| 4. Middle Bearing Caps | 11. Lower Hopper (larger models) |
| 5. Oscillating Rotor | 12. Motor |
| 6. Hopper | |
| 7. Front Bearing | |

Preface



The GR™ Powder Granulator range contains four oscillating granulators that have a full range of powder granulation capacities from 30 kg up to 300 kg an hour. This range of machines provides a convenient and cost-effective way of breaking down agglomerates.

The purpose of this document is to support your understanding of the GR™ Powder Granulator range's components, features, functions, and design. With this manual, you will be able to successfully operate and maintain your GR™ Powder Granulator machine.

The user manual's content includes:

- Important safety information
- GR™ Powder Granulator installation instructions
- Description of the GR™ Powder Granulator's operation
- GR™ Powder Granulator maintenance information
- Appendix with supplemental information

Training

GR™ Powder Granulator training is essential for the machine's successful operation and your personal safety. There are several methods to prepare you for working with the GR™ Powder Granulator.

Off-Site Training

LFA offers free training at our UK, USA, and Taiwan facilities for all our customers and their teams. For more information, go to <https://www.lfatabletpresses.com/services>

Training via Video Chat/Phone

Using an online video chat system, an LFA technician can interact face-to-face with you and assist with your understanding of the machine. Or, if you prefer, LFA can provide training via phone for all customers who call the office. To set up a training, call or email your local LFA office:

UK

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LFA Articles

LFA writes informative articles about our machines, which includes instructions, procedures, and guides. To access the articles, go to <https://www.lfatabletpresses.com/articles>

LFA Videos

LFA has created several videos involving our machines. To access the videos, go to <https://www.lfatabletpresses.com/videos> or <https://www.youtube.com/user/TabletPilPress>

Installation

Tools and Materials Needed

Before you install and operate the GR™ Powder Granulator, it is best to have the following tools and materials on hand for general operation and maintenance:

- Pallet jack
- Metric wrench set
- Set of metric Allen keys with ball ends
- Lubricant (NSF approved for food grade products)
- Grease gun
- Bagless vacuum
- Ladder (larger machine range)
- Cleaner (e.g. Member's Mark Commercial Lemon Disinfectant)
- Sanitizer (e.g. Member's Mark Commercial Sanitizer)
- Cleaning brush set
- Plastic sheet or something similar to cover machine
- Safety goggles
- Disposable latex/rubber gloves
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)



The Appropriate Workstation for the Machine

Find a stable workspace that supports the GR™ Powder Granulator's weight.

Machine Weight and Floor Loading (Static)		
GR 60™	75.5 kg (166 lbs)	0.107 kN/m ²
GR 90™	150 kg (331 lbs)	0.426 kN/m ²
GR 100™	280 kg (617 lbs)	0.807 kN/m ²
GR 160™	280 kg (617 lbs)	1.850 kN/m ²

Ensure to position the machine near an appropriate electrical plug.

Machine Power Requirements		
Machine	US	UK
GR 60™	110 V 1 phase 0.25 kW 60 Hz	240 V 1 phase 0.25 kW 50 Hz
GR 90™	220 V 3 phase 0.55 kW 60 Hz	415 V 1 phase 0.55 kW 50 Hz
GR 100™	220 V 3 phase 1.1 kW 60 Hz	415 V 3 phase 1.1 kW 50 Hz
GR 160™	220 V 3 phase 2.2 kW 60 Hz	415 V 3 phase 2.2 kW 50 Hz

Environmental Conditions

It is important that the environment in which you operate and store the GR™ Powder Granulator has the appropriate temperature and relative humidity levels. These two environmental factors can potentially cause the machine to rust and/or cause the granulated materials to have a lower quality. The table below shows the acceptable temperature and relative humidity levels:

Machine	Temperature		Humidity
	°C	°F	
GR™ Powder Granulator	18-24	64-75	45-65% RH

The shipping crate will contain the following:
1. The fully assembled GR™ Powder Granulator



Unpacking the GR™ Powder Granulator

Tools Needed

- Hammer
- Crowbar

Instructions

1. Pry open the top panel and side panel of the shipping container with a hammer and crowbar.
2. Remove the plastic wrapping.
 - 2.1 Note: Save the wrapping for future transport and/or storage.

READ BEFORE INSTALLATION:

Depending on local health and safety laws, the GR™ Powder Granulator may be required to be installed in a cage. A risk assessment is required to be conducted before installation and operation of the machine.

LFA Machines is able to advise on this. Please contact us for more information:

UK

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support.asia@lfamachines.com

Positioning the GR™ Powder Granulator



WARNING: To prevent personal injury, wear steel toe boots and heavy duty grip gloves while transporting the GR™ Powder Granulator.

Moving the GR™ Powder Granulator with a Pallet Jack

Tools and Materials Needed

- Pallet jack
- Heavy duty grip gloves
- Steel toe boots

Instructions

1. Position the pallet jack underneath the machine.
2. Carefully lift the machine off the pallet.
3. Position the machine in the desired location and carefully lower the machine.
4. Plug the machine into the appropriate electrical outlet.

In accordance with Article 13 of the European Directive 2006/42/EC, LFA Machines sells the GR™ Powder Granulator as a partly finished machine, and it is meant to be installed into and function as a part in a production line.



After the installation of this machine, the following measures need to be taken:

- Shields must be installed in order to cover moving parts, in particular the Oscillating Rotor inside the Hopper.
- An emergency stop/emergency lockout/isolator switch must be installed on the outside of the machine.
- A risk assessment must be conducted on the entire production line.

If you require guidance on the installation of the machine or conducting a safety assessment, please contact LFA Machines.

Electrical Controls Basic Components



A description of the principal components follows:

- The **Hopper** contains the materials that are granulated.
- The **Oscillating Rotor** works against the mesh screen inside of the Hopper.
- The **Mesh Screen** acts as a sieve and granulates the materials when making contact with the Oscillating Rotor.
- The **Control Panel** allows the user to turn operation on or off.
- The **Lower Hopper** funnels the granulated materials out of the machine (larger models).

Control Panel



1. Start machine operation

2. Stop machine operation

GR™ Powder Granulator Process

The basic mechanism of the GR™ Powder Granulator involves filling the Hopper with ingredients and powering the machine to move the Oscillating Rotor against the Mesh Screen.

Filling the Hopper with Materials and Granulating Them

The materials are poured into the Hopper. As the machine operates, the Oscillating Rotor moves and works against the Mesh Screen, which pushes the materials through the sieve resulting in granulation.



Discharging the Granulated Materials

The granulated materials are then pushed through the Mesh Screen and caught in a container. For larger models of the machine, the Lower Hopper funnels the granulated materials out of the machine.

How to Granulate Materials with the GR™ Powder Granulator

Tools and Materials Needed

- Raw ingredients
- GR™ Powder Granulator
- Receptacle for granulated material
- Safety goggles
- Disposable latex/rubber gloves (for food grade products and to protect hands from grease)
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)



WARNING: For personal protection while operating the GR™ Powder Granulator, contain long hair and do not wear loose jewelry

Instructions

Note: Wear latex/rubber gloves (and appropriate food grade attire if applicable) during this process.

1. Place a receptacle for granulated material underneath the Hopper.
2. Pour the raw ingredients into the Hopper.
 - 2.1 Note: If you are using the granulator to crush small lumps of material, avoid adding too much as this may result in damage to the Mesh Screen or excessive pressure.
3. Press the green button to start operation.
4. Press the red button to stop operation when all materials have passed through the Mesh Screen.

Settings and Adjustment

The GR™ Powder Granulator's time settings can be adjusted.

Mesh Size

The GR™ Powder Granulator's Mesh Screen dictates the size of the granules produced. In order to change the size of the granules, the Mesh Screen has to be removed and a new one needs to be installed.

Tools and Materials Needed

- New Mesh Screen
- Crosshead screwdriver
- Disposable latex/rubber gloves (for food grade products and to protect hands from grease)
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)



WARNING: To prevent any potential personal injury, unplug the GR™ Powder Granulator from the electrical outlet.

Instructions

Note: Wear latex/rubber gloves (and appropriate food grade attire if applicable) during this process.

1. Loosen the pawls' screws and raise up the pawls.



2. Loosen one of the Hand Wheel Bars' screws with a crosshead screwdriver.

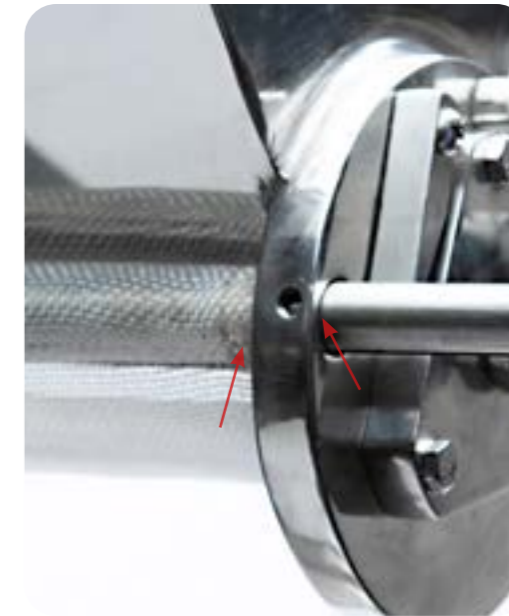


3. Rotate and pull out the Hand Wheel bar from the machine.

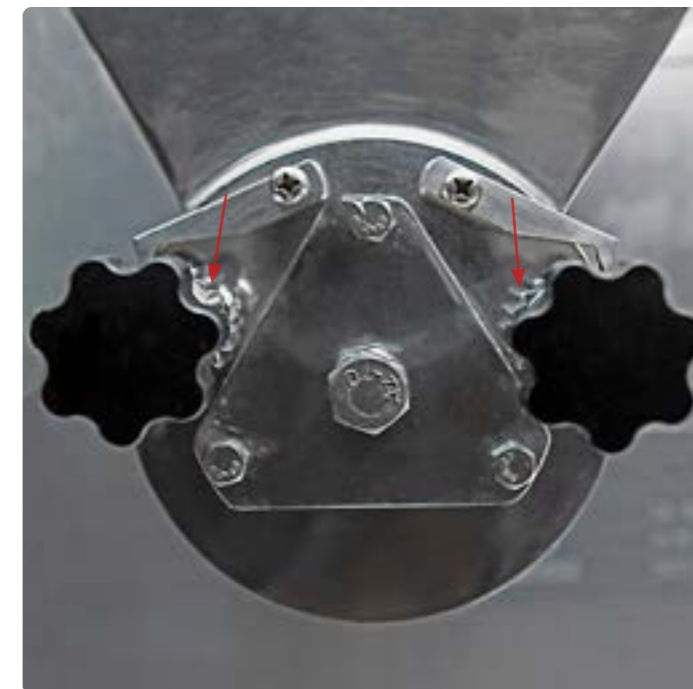


- 4. Loosen the other Hand Wheel bar's screw with a crosshead screwdriver.
- 5. Rotate and pull out the other Hand Wheel bar from the machine.
- 6. Remove the Mesh Screen from the machine.
- 7. Place the new Mesh Screen into the machine.

8. Reinsert each Hand Wheel bar into the machine and the curled edges of Mesh Screen.



- 8.1 Note: Ensure that the ratchets on the Hand Wheel bar are facing in the correct direction so that they can be rotated smoothly with the pawls.
- 9. Tighten the Mesh Screen to the fullest capacity by turning the Hand Wheel Bars.
- 10. Leave the machine for 10-15 minutes.
 - 10.1 Note: This allows the Mesh Screen to stretch.
- 11. Slightly loosen the Mesh Screen by turning the Hand Wheel Bars until it is at the desired tension.
 - 11.1 Note: Ensure that there is a slight gap between the Mesh Screen and Oscillating Rotor.
- 12. Lower each ratchet's pawls and tighten their screws with a crosshead screwdriver.



Maintenance

To ensure that the GR™ Powder Granulator will have a long operational life, maintenance is essential. This section includes methods for troubleshooting solutions and how often to grease and clean your machine to keep its performance optimal.

General Maintenance Prescriptions

- Use the maintenance checklist (found in the Appendix) before, during, and after machine operation.
- Make sure all grease points are maintained and regularly lubricated.
- Use an appropriate amount of lubricant.
- After cleaning the machine, make sure that the parts are dried and oiled.
- Constantly check for any loose nuts and/or screws before, during, and after machine operation.

Lubrication

Regularly greasing your machine is vital to prolonging its operational life. Parts that are not greased properly can make the machine seize up and cause major problems later. LFA recommends maintaining a lubrication schedule for your GR™ Powder Granulator, which can be found in this section.

Tools and Materials Needed

- NLGI Grade 2 grease
- #20 machine oil or WA 460 oil
- Disposable latex/rubber gloves (for food grade products and to protect hands from grease)
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)



WARNING: To prevent any potential personal injury, unplug the GR™ Powder Granulator from the electrical outlet.

Instructions

Note: Wear latex/rubber gloves (and appropriate food grade attire if applicable) during this process.

1. Open the top of the machine's cabinet.



2. Open the oil inlet's cover on the Gearbox and if needed top up with #20 machine oil or WA 460 oil.



3. Grease the bearing on the front end of the machine.



4. Grease the middle bearing.







5. Grease the back bearing.



Lubrication Schedule

LFA recommends the following GR™ Powder Granulator parts to be lubricated according to the following frequency:

Part	Location	Image	Frequency	Type of Lubricant
Gearbox	Oil inlet topped with cap on the Gearbox		Visually inspect and top up when dry. Check weekly or every 100 hours of use (whichever comes first).	#20 machine oil or WA 460 oil
Front Bearing	On the front end of the machine.		Every 100 hours/once per week.	NLGI Grade 2
Middle Bearing	At the point which the Hopper and paneled Base meet in the middle.		Every 100 hours/once per week.	NLGI Grade 2
Back Bearing	Located inside the paneled Base.		Every 100 hours/once per week.	NLGI Grade 2

Cleaning

After the GR™ Powder Granulator's operation, powder may accumulate in the Hopper and Mesh Screen. It is important to clean the GR™ Powder Granulator thoroughly to prevent rusting and cross contamination.

LFA recommends that the machine be cleaned after each operation.

Tools and Materials Needed

- Bagless vacuum
- Cleaner (e.g. Member's Mark Commercial Lemon Fresh Disinfectant)
- Sanitizer (e.g. Member's Mark Commercial Sanitizer)
- Potable water
- Clean cloths
- Disposable latex/rubber gloves
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)



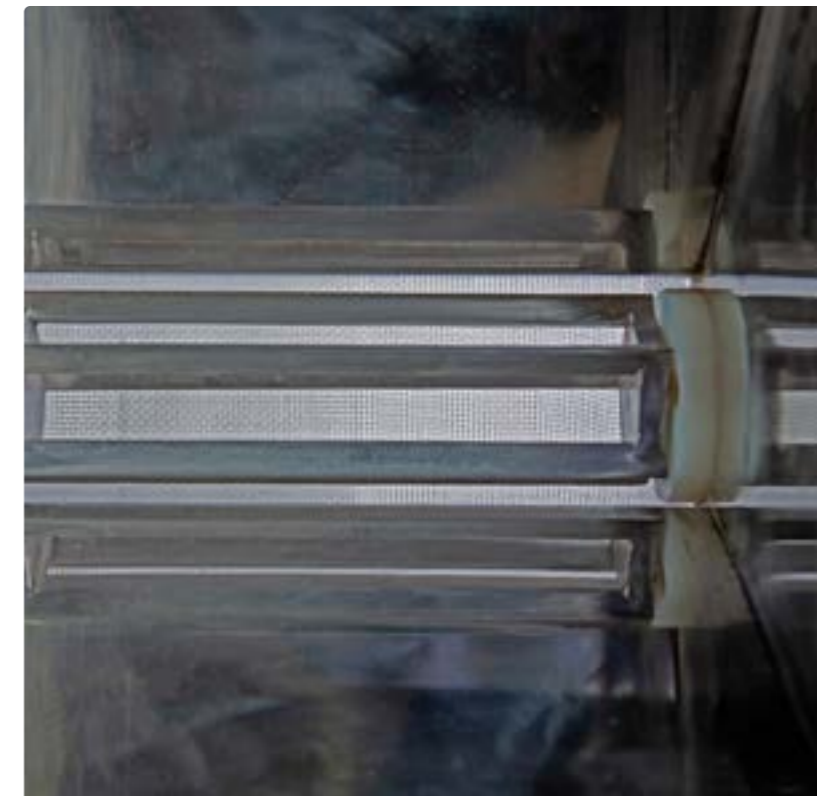
WARNING: To prevent any potential personal injury, ALWAYS unplug the GR™ Powder Granulator from the electrical outlet when replacing parts.

Instructions

Note: Wear safety goggles and latex/rubber gloves (and appropriate food grade attire if applicable) during this process.

Clean the Machine

1. Remove all residual material from the machine's exterior with a bagless vacuum.
2. Vacuum the Hopper's interior until all residual material is gone.



4. Remove the Mesh Screen.

4.1 Note: Please refer to the instructions on page 19 for more information.

5. Clean the Hopper's interior with a clean cloth, potable water, and cleaner.

5.1 Note: Ensure to clean all sides of the Hopper.

6. Dry the Hopper's interior with a clean cloth.

7. Clean the Oscillating Rotor and Hand Wheel Bars with a clean cloth, potable water, and cleaner.

8. Dry the Oscillating Rotor and Hand Wheel Bars with a clean cloth.

9. Clean the Mesh Screen with a clean cloth, potable water, and cleaner.

10. Dry the Mesh Screen with a clean cloth.

11. Reinstall the Mesh Screen in the machine.

11.1 Note: Please refer to the instructions on page 19 for more information.

12. Sanitize the Hopper's interior, Oscillating Rotor, Hand Wheel Bars, and Mesh Screen.

Cleaning Schedule Matrix

Part	Frequency							
	After installing machine	After every use	Before every use	In between products that present a cross contamination risk	Weekly	Monthly	Before placing in storage	After removing from storage
Hopper (exterior)	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine
Hopper (interior)	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine
Oscillating Rotor	Clean on machine	Clean on machine	Clean on machine	Clean on machine	N/A	N/A	Clean on machine	Clean on machine
Hand Wheel Bars	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine	Clean on machine
Mesh Screen	Remove from machine	Remove from machine	Remove from machine	Remove from machine	N/A	N/A	Remove from machine	Remove from machine

Cleaning Level Key	
Level 1 - Remove powder	
Level 2 - Dry clean with cloth	
Level 3 - Dry clean and re-lubricate if specified in lubrication schedule	
Level 4 - Wet clean and re-lubricate if specified in lubrication schedule	
Remove from machine - Take part out of machine and clean if required. Store it correctly or install back into machine.	
Install into machine - Install part into the machine and make sure that it has been cleaned. If needed, lubricate to the level required.	
Clean on/in machine - Clean the part while in the machine and do not remove it. Make sure that all contact surfaces are clean to the level required.	

This cleaning matrix is intended as a guide only and is not an exhaustive list. All cleaning schedules will need to be adapted to the industry and product, following industry regulations and the material safety data sheets that come with specific products. Please check with your Food Safety Manager/Department, Quality Control Manager/Department, or other relevant internal departments at your company before using.

Troubleshooting

Sometimes unavoidable issues will occur while operating the GR™ Powder Granulator. Fortunately, there are several methods to remedy these issues.

Common Issues

Symptom	Possible Cause	Possible Solution
There are too many fines in the batch	Material is not fully granulated.	Remove the fines or granulate the material again.
Uneven distribution of fines in the batch	The material was over-granulated.	Reduce the machine's operation time.
Uneven color distribution throughout batch		

Storing the GR™ Powder Granulator

After its thorough cleaning, the GR™ Powder Granulator needs to be stored in the proper conditions. It is important to store it in an environment in which the machine is safe from rusting. The machine's high traction areas need to be lubricated before storing it.

Tools and Materials Needed

- Plastic wrapping to cover machine
- Lubricant/grease (NSF approved lubricant if machine has a high chance of contact with the food or drug product)
- Disposable latex/rubber gloves (for food grade products and to protect hands from lubricant)
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)

Instructions

Note: Wear latex/rubber gloves (and appropriate food grade attire if applicable) during this process.

Lubricate the Gearbox

Check the Gearbox's oil level. If needed, fill with #20 machine oil or WA 460 oil.

Lubricate the Bearings

Apply grease to the bearings in front of the machine, in the middle of the machine, and at the back end of the machine.

Cover the GR™ Powder Granulator

Carefully cover the GR™ Powder Granulator with the plastic wrapping. You can use the plastic wrapping that came with the machine in the shipping container.

Environmental Conditions

It is important that the environment in which you store the GR™ Powder Granulator has the appropriate temperature and relative humidity levels. These two environmental factors can potentially cause the machine to rust and/or cause the granulated materials to have a lower quality. The table below shows the acceptable temperature and relative humidity levels:

Machine	Temperature		Humidity
GR™ Powder Granulator	°C	°F	45-65% RH
	18-24	64-75	

Appendix

Glossary

Term	Definition
Agglomerates	Particles of materials that stick together.
Granulation	The process by which granules are formed from a powdered material. In the case of GR™ Powder Granulator, granulation happens through compaction to densify the powder.
Ingredients/Materials	Raw formulation to be granulated in the machine.
Mesh Screen	A metal or nylon screen that sieves the powder into granules.
Oscillating Rotor	Bar inside the machine that the powder is processed through and into the Mesh Screen.

Material of Contact Parts

Contact Part	Material
Hopper	304 SS
Mesh Screen	304 SS or nylon
Oscillating Rotor	304 SS
Lower Hopper (for larger models)	304 SS

Technical Specifications

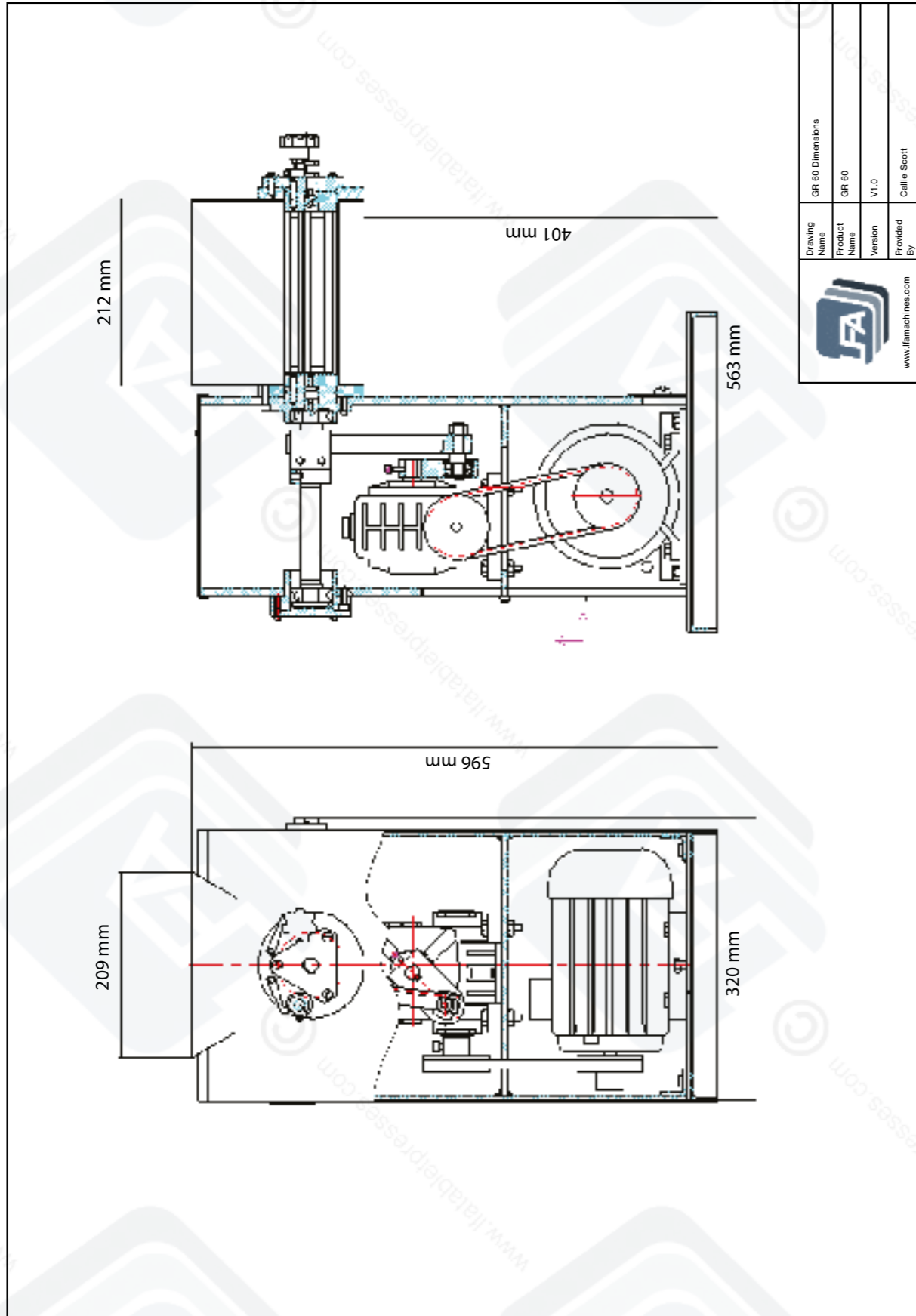
Model	GR 60	GR 90	GR 100	GR 160
Diameter of rotor (mm)	60	90	100	160
Capacity (kg/h)	20-30	50-100	30-200	200-300
Rotation angle	360°	360°	360°	360°
Rotation speed per min	46	50	55	55
Power US	110 V 1 phase 60 Hz	220 V 3 phase 60 Hz	220 V 3 phase 60 Hz	220 V 3 phase 60 Hz
Power UK	240 V 1 phase 50 Hz	415 V 3 phase 50 Hz	415 V 3 phase 50 Hz	415 V 3 phase 50 Hz
Dimensions (mm)	460 x 550 x 570	750 x 460 x 840	700 x 400 x 1050	970 x 560 x 1240
Dimensions with suggested working clearance (mm)	1360 x 1450 x 1470	1650 x 1360 x 1740	1600 x 1300 x 1950	1870 x 1460 x 2140
Weight	75.5 kg / 166 lbs	150 kg / 331 lbs	280 kg / 617 lbs	280 kg / 617 lbs

Maintenance Checklist

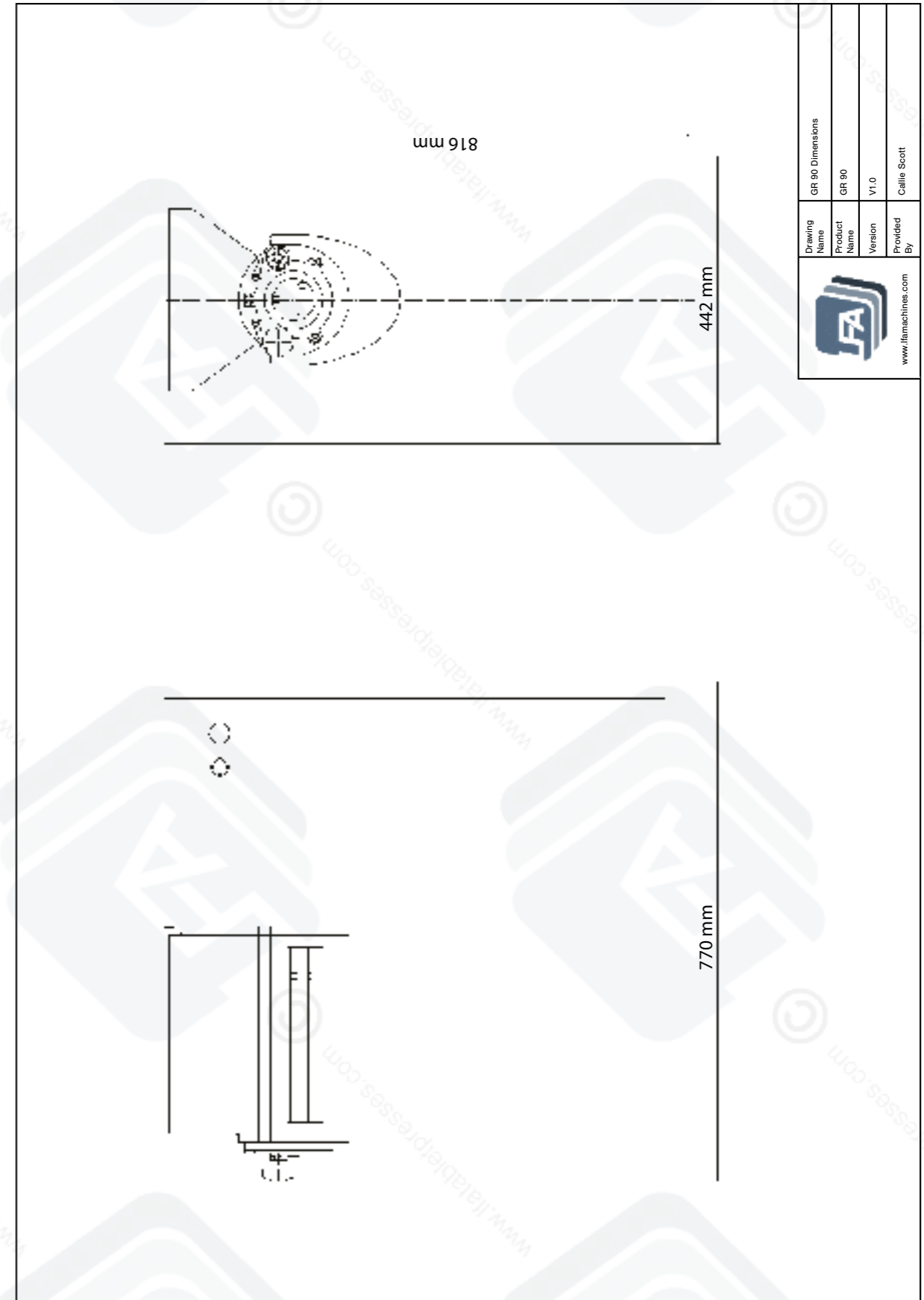
Before Operation	
<input type="checkbox"/>	Ensure all seals, nuts, and bolts are tight.
<input type="checkbox"/>	Ensure that the Gearbox has enough oil.
<input type="checkbox"/>	Ensure that the cabinet doors are shut and secured.
During Operation	
<input type="checkbox"/>	Watch out for excessive vibration or noise coming from the Hopper and ensure that the Oscillating Rotor and Mesh Screen are not grating against each other.
<input type="checkbox"/>	Ensure that granules are being sieved through the Mesh Screen at the proper tension.
After Operation	
<input type="checkbox"/>	Unplug machine and remove all excess powder with a bagless vacuum.
<input type="checkbox"/>	Clean the inside of the Hopper, Mesh Screen, and Oscillating Rotor.
<input type="checkbox"/>	Wipe down the other surfaces with a damp cloth.
<input type="checkbox"/>	Check the oil level in the Gearbox.
<input type="checkbox"/>	Ensure all seals, nuts, and bolts are tight.
<input type="checkbox"/>	Ensure that the Oscillating Rotor and Hand Wheel Bars are in alignment.

Diagrams

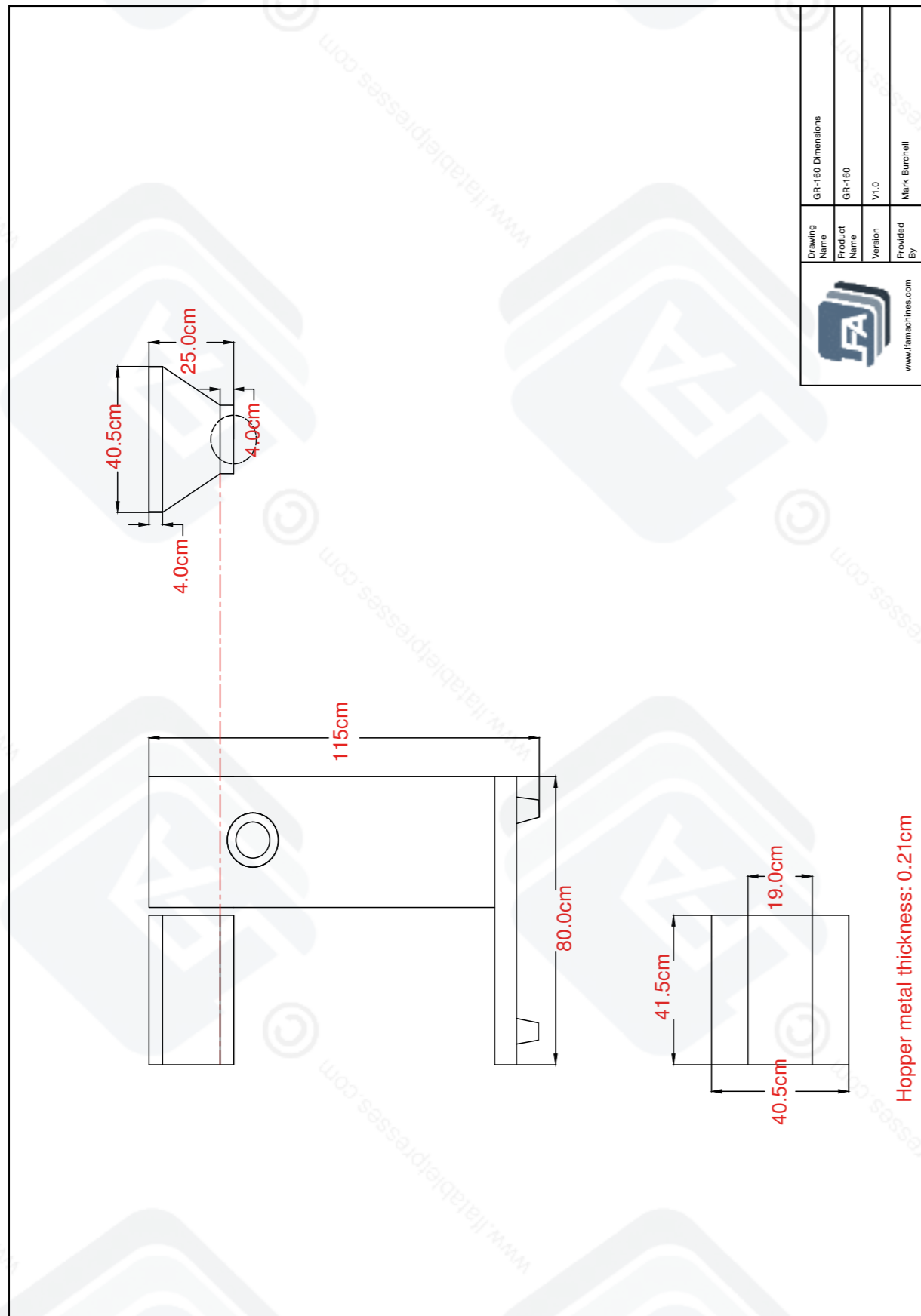
GR™ 60 Dimensions



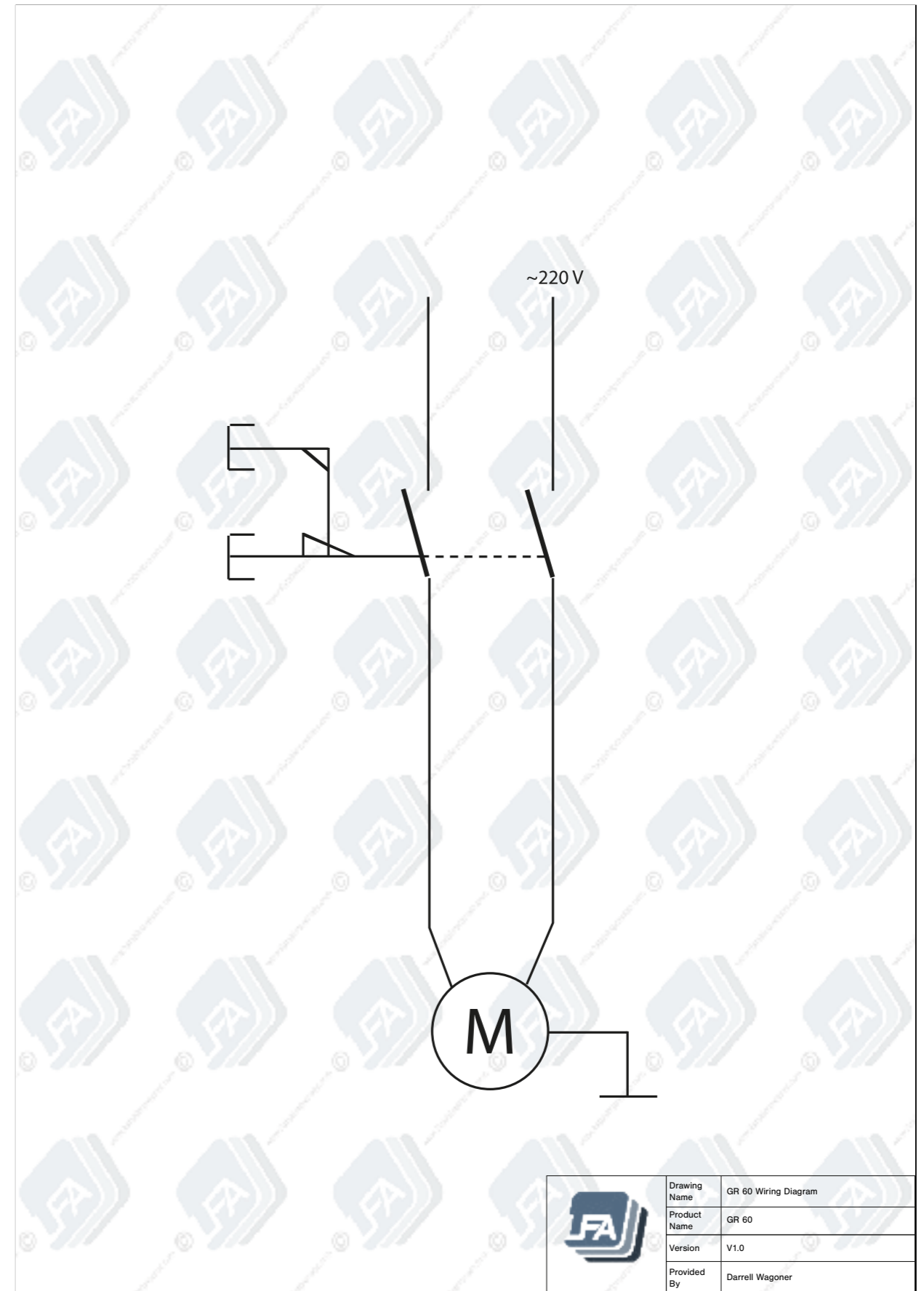
GR™ 90 Dimensions



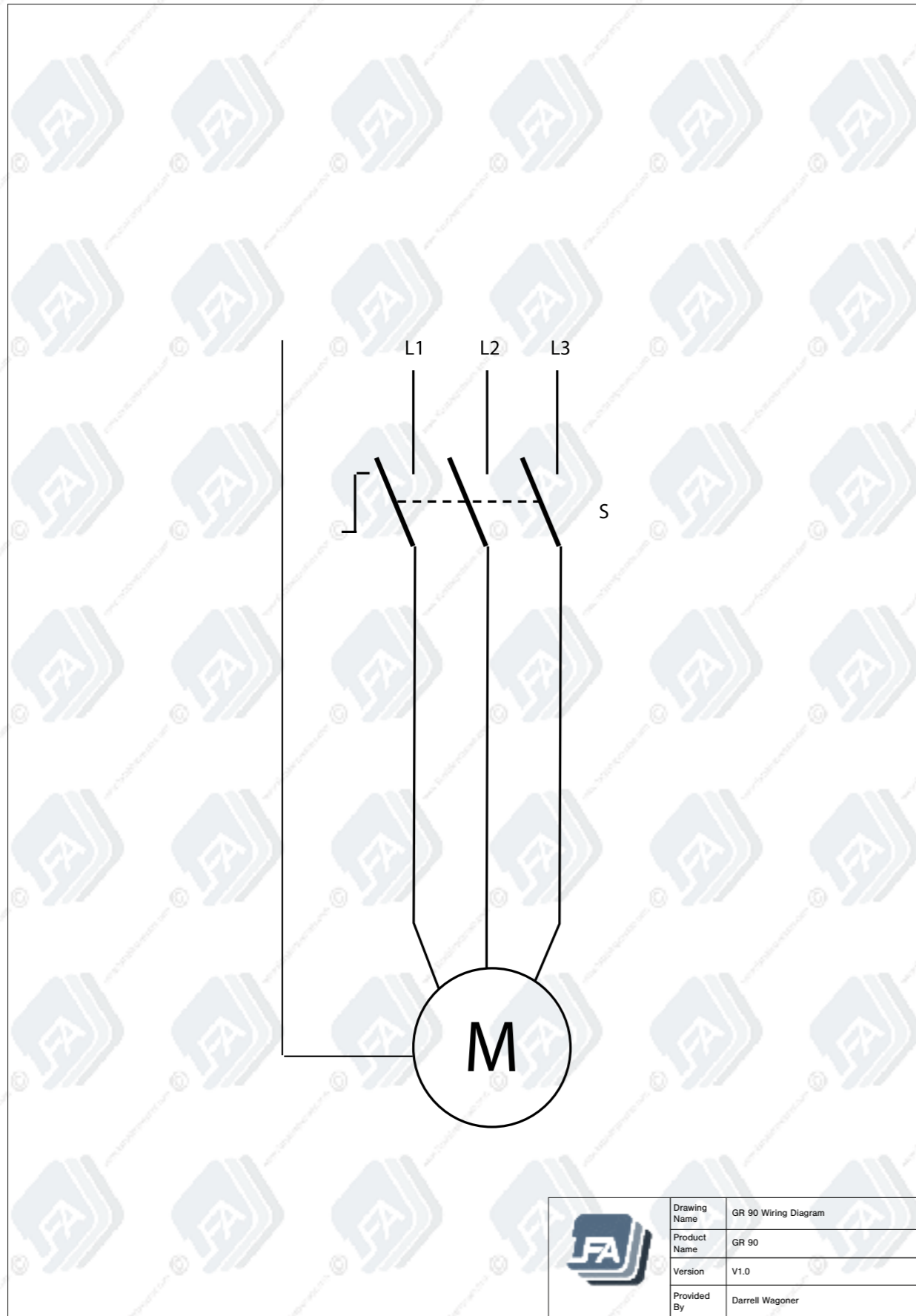
GR™ 160 Dimensions



GR™ 60 Wiring Diagram



GR™ 90 Wiring Diagram



Resources

Helpful Links

Warranty

For information regarding the warranty policy of the GR™ Powder Granulator and other LFA products, please visit <https://www.lfatabletpresses.com/warranty>

LFA Website

In order to aid you in your mixing production, LFA Machines maintains a website that offers a breadth of useful information about the GR™ Powder Granulator and other machines.

Visit the LFA homepage at <https://www.lfatabletpresses.com>

LFA Machines YouTube Channel

Our YouTube videos provide you an opportunity to see how to use our machines, common troubleshooting tips, and other LFA products such as capsule fillers and tablet presses. We regularly upload videos to give you a visual aid that will hopefully support you in your production efforts. To watch our videos, please visit <https://www.youtube.com/channel/UCwtbcwja77ai7vX2o34FUkQ>

LFA Machines Social Media

Social media is a great way to keep yourself updated on new developments and exciting things happening at LFA Machines. The list below contains our current social media pages:

Twitter: @lfatabletpress

Instagram: @lfatabletpresses

Facebook: <https://www.facebook.com/lfatabletpresses>

LinkedIn: <https://www.linkedin.com/company/lfa-machines-oxford-ltd/>

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