DTP 12® Tablet Press 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 press dry raw materials into tablet form.
Potential misuse of this machine includes:

- Applying too much force to the powder.
- Trying to fill the Die with powder by hand.
- Inserting Tooling that is too big for the machine.
- Not properly mounting the machine.
- Using powders that could explode under pressure.
- Using wet or damp material.

Personal Protection

For personal protection while transporting the DTP 12®, abide by these actions:

- Use an engine hoist to lift the machine.
- 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 DTP 12®, 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 away from all moving parts.
- Ensure that it is secured to a workbench to prevent from falling.
- 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.
- Turn off and unplug the machine before conducting cleaning and maintenance.

Safety Assessment

It is critical to conduct a safety assessment to ensure that it complies with all local laws and industry accepted safety regulations.

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

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 manual operation, immediately stop turning the Hand Wheel and remove yourself from the DTP 12®.

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

Prop. 65 Warning for CA Residents

WARNING: This product can expose you to chemicals including nickel (metallic), which is known to the State of California to cause cancer, and chromium, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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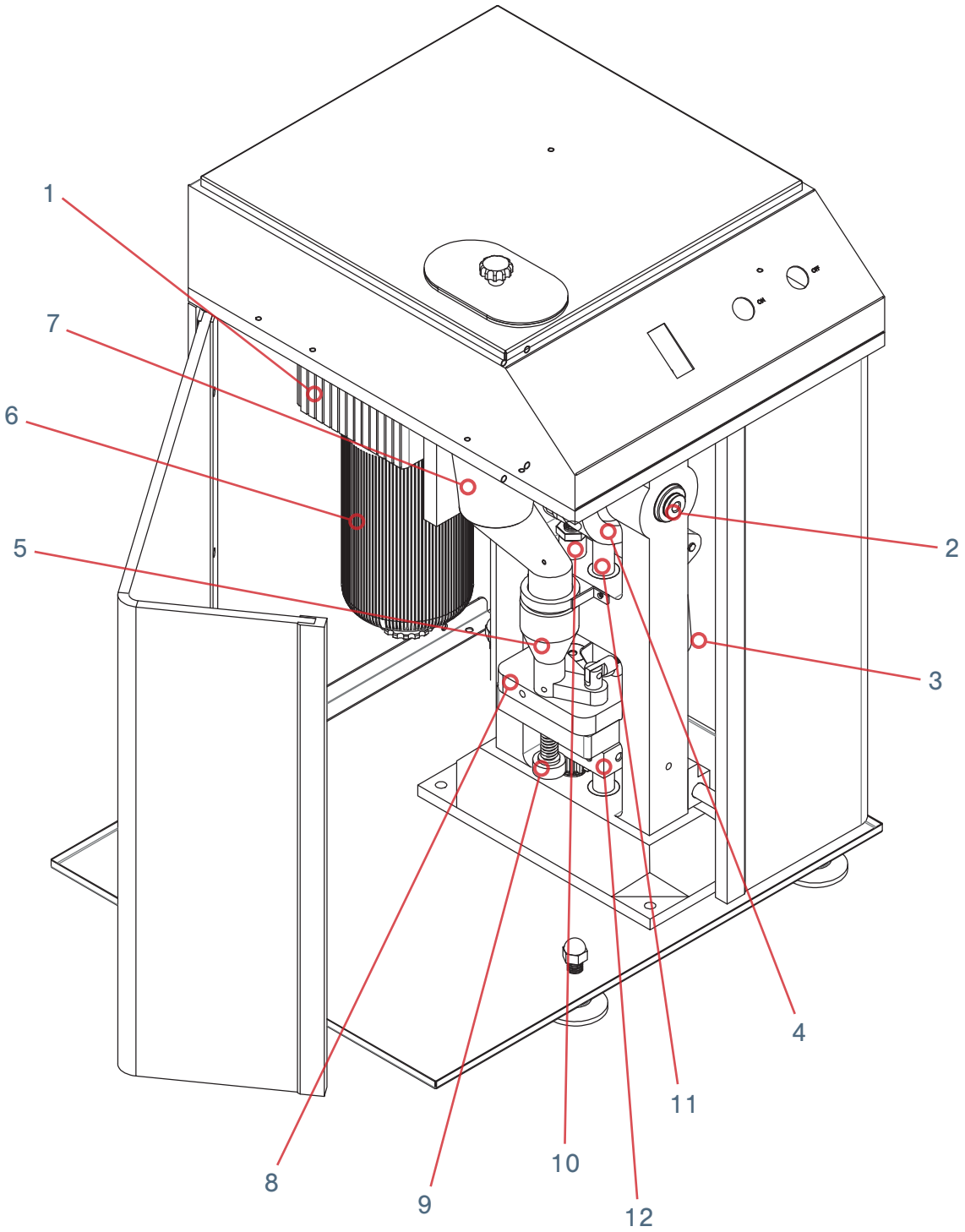
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DTP 12® Parts List

1. Gearbox
2. Top Cam
3. Boot Timing Bar
4. Boot Timing Cam
5. Boot
6. Motor
7. Hopper
8. Base Plate
9. Boot Bolt and Spring
10. Upper Drift Pin Assembly Locking Nut
11. Lower Drift Pin Assembly Timing Rod
12. Lower Drift Pin Assembly Lifting Bar

Preface

The DTP 12® is an advanced, single-headed press that makes tablet compression fast, easy, efficient, and safe. This compact machine is lightweight but able to exert 50 kN of pressure to produce tablets up to 12 mm in diameter. With its features of protective casing, electronic control panel, and advanced feeder mechanism, the DTP 12® provides safety for operators, simple adjustments of parameters, and a maximum production of 3,600 tablets per hour. Ideal for use in the pharmaceutical, chemical, electronic, foodstuff, and other industries, this tablet press is a cost-effective solution for users seeking moderate quanitites of tablet production with an emphasis on convenience and ease of use.

The purpose of this document is to support your understanding of the DTP 12®'s components, features, functions, and design. With this manual, you will be able to successfully operate and maintain your DTP 12® machine.

The user manual's content includes:

- Important safety information
- DTP 12® installation instructions
- Description of the DTP 12®'s operation
- DTP 12® maintenance information
- Appendix with supplemental information

Training

DTP 12® training is essential for the machine's successful operation and your personal safety. There are several methods to prepare you for working with the DTP 12®.

On-Site/Off-Site Training

LFA technicians can travel and train you at your own facility with your own machines. LFA also 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:

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LFA Articles

LFA writes informative articles about desktop tablet presses, 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 the DTP 12® and other desktop tablet presses. 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 DTP 12®, it is best to have the following tools and materials on hand for general operation and maintenance:

- Engine hoist or lift and lifting strap
- Hammer
- Rubber mallet
- Metric wrench set and adjustable wrench
- Circlip pliers
- Power drill
- Pliers/grippers
- Flathead screwdriver
- Crosshead screwdriver
- Set of metric Allen keys with ball ends
- Permanent marker
- Long wire pipe cleaner
- Lubricant (NSF approved for food grade products)
- Grease gun
- Toothbrush
- Bagless vacuum
- 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 surface that supports the DTP 12®'s 150 kg (about 330 lbs) weight, such as a wooden bench (use stainless steel if for food grade industry). Another important thing to consider is to find a bench that has a suitable working height for you.

Environmental Conditions

It is important that the environment in which you operate and store the DTP 12® has the appropriate temperature and relative humidity levels. These two environmental factors can potentially cause the machine to rust and/or cause the tablets to have a lower quality. The table below shows the acceptable temperature and relative humidity levels:

Machine	Temperature		Humidity
DTP 12®	°C	°F	20-80% RH
	0-40	32-104	

The shipping crate will contain the following:
1. The assembled DTP 12®

2. The Tooling (already installed)

Unpacking the DTP 12®

Tools Needed

- Crowbar
- Hammer

Instructions

1. Pry open each of the shipping container's paneling at the bottom with a crowbar and hammer to loosen it from the base.

2. Pry off the wooden panels from around the base with a crowbar and hammer.

Positioning the DTP 12®

WARNING: To prevent personal injury, wear steel toe boots and heavy duty grip gloves while transporting the DTP 12®.

LFA does NOT recommend carrying the machine manually but rather with an engine hoist. At least two people should be involved (one operating the engine hoist and one stabilizing the machine) in removing the machine from the shipping container and placing it in the workspace.

Transporting the DTP 12®

Tools and Materials Needed

- Engine hoist and lifting strap

Instructions

1. Wrap the lifting strap around the top and bottom of the Perspex Casing.

2. Attach the lifting strap to the engine hoist and carefully guide the DTP 12® to the desired workspace.

Manual and Electrical Controls

Basic Components

A description of the principal components follows:

- The **Top Cam** guides the punches' movement.
- The **Hopper** holds the dry materials that will be compressed.
- The **Boot** moves the materials from the Hopper to the Tooling and ejects the tablets.
- The **Die** defines or molds the size and shape of the powder.
- The **Upper Punch** and **Lower Punch** compress the materials within the Die.

DTP 12® Process

The basic mechanism of the DTP 12® involves filling the Tooling (Die, Upper Punch, and Lower Punch) with powder, compressing the powder, and ejecting the tablet.

Filling the Tooling with Powder

The dry materials are poured into the Hopper, which funnels the powder into the Boot. As the Hand Wheel is manually operated, the Top Cam withdraws the Upper Punch from the Die.

When the machine is operated by the motor, the Gearbox initiates the movement of the Top Cam, which withdraws the Upper Punch from the Die.

Compressing the Powder

After the powder is filled in the Tooling, the Top Cam drives the Upper Punch into the Die and the Lower Punch. Both punches then come together to compress the powder under high pressure.

Ejecting the Tablet

After both punches compress the powder into a tablet, the Top Cam withdraws the Upper Punch while the Lower Punch is pushed upward to expel the tablet. The tablet is then pushed out of the way by the Boot to prepare for the next tablet compression.

How to Create Tablets with the DTP 12®

Tools and Materials Needed

- Raw material formulation
- DTP 12®
- 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 DTP 12®, 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. Remove the Hopper's lid from the top of the machine.
2. Pour the dry materials into the Hopper.
    2.1 Note: Ensure that the DTP 12® is unplugged from the electrical outlet.
3. Open the Perspex Doors and rotate the Hand Wheel in the direction indicated by the arrow located on the Motor.
    3.1 Note: Always manually operate the DTP 12® for one rotation before running the machine.

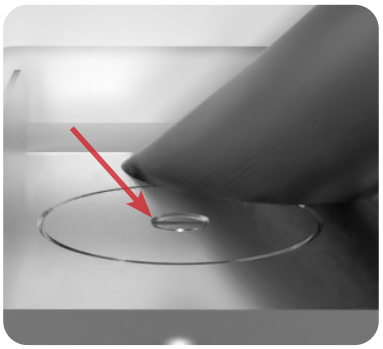
4. Plug in the DTP 12® to an electrical outlet.
5. Press the green button (ON) to start operation and the red button (OFF) to stop.

Settings and Adjustment

The DTP 12®'s settings can be adjusted. Tuning the Tooling and adjusting the motor speed can help with changing the tablets' characteristics and how they are ejected from the machine.

Ejection Height

When the Upper Punch is fully lifted, the Lower Punch in its highest position should be flush with the Die:



If the Lower Punch is above or below the Die's face, it will affect how smoothly the tablet is ejected. Adjusting the ejection height will help with this and can vary with different forms of Tooling.

Tools and Materials Needed

- Set of metric Allen keys with ball ends
- 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)

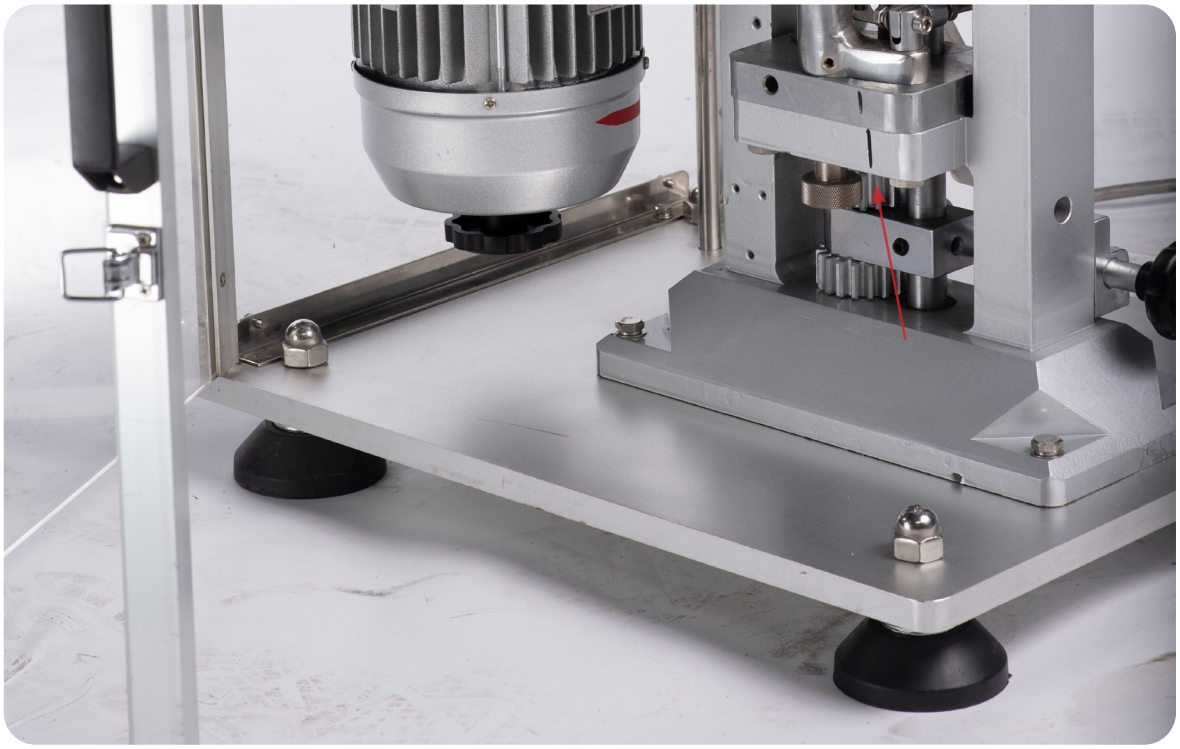
WARNING: To prevent any potential personal injury, unplug the DTP 12® from the electrical outlet

Instructions

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

1. Produce a test tablet to determine how the Tooling should be adjusted.
2. Open the Perspex Doors.

3. Rotate the machine until the Lower Drift Pin Assembly is at its highest position and the Boot is at the position to eject the tablet.
4. Remove the ejection height adjustment locking screw located on the Upper Cog on the Lower Drift Pin Assembly.



5. Rotate the top Upper Cog on the Lower Drift Pin Assembly to adjust the ejection height.
    5.1 Note: To raise the ejection height, turn clockwise. To decrease the ejection height, turn counterclockwise.
6. Tighten the ejection height adjustment locking screw back on the Upper Cog on the Lower Drift Pin Assembly with an Allen key.
7. Close the Perspex Doors.

Fill Depth

At times, a tablet will be too small or too large, and its weight must change. Adjusting the fill depth determines the tablet's thickness and weight. This can be controlled by changing how high or low the Lower Punch sits.

Tools and Materials Needed

- Set of metric Allen keys with ball ends
- 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 DTP 12® from the electrical outlet.

Instructions

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

1. Open the Perspex Doors and produce a test tablet to determine how the Tooling should be adjusted.
2. Loosen the fill depth adjustment's locking screw with an Allen key.
3. Rotate the fill depth adjustment wheel to change the tablet's weight.
    3.1 Note: To increase the tablet weight, turn clockwise. To decrease the tablet weight, turn counterclockwise.

4. Retighten the fill depth adjustment's locking screw with an Allen key.
5. Close the Perspex Doors.

Motor Speed

The DTP 12®'s control console has a variable frequency drive (VFD) that can adjust the DTP 12®'s motor speed, which affects how quickly the machine operates and therefore tablet production speed.

Tools and Materials Needed

- 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)

Instructions

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

1. Produce test tablets to determine how the motor speed should be adjusted.
2. Turn the dial on the VFD to adjust the production speed.
    2.1 Note: Rotate the dial clockwise to increase the production speed. Rotate the dial counterclockwise to decrease the production speed.

Punch Pressure

Sometimes tablets come out too soft and will crumble easily, which happens often after increasing the fill depth. Or, the machine can jam and will not be able to turn over. To correct this, the punch pressure needs to be adjusted in order to increase the tablet's firmness/de-jam the machine.

Tools and Materials Needed

- 22 mm wrenches (2)
- 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 DTP 12® from the electrical outlet.

CAUTION: Overtightening can damage the Tooling and/or Boot.

Instructions

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

1. Open the Perspex Doors and produce a test tablet to determine how the Tooling should be adjusted.
2. Place a 22 mm wrench around the Upper Drift Pin Assembly Locking Nut.
3. Hold the Upper Drift Pin Assembly in place with a wrench.

4. Loosen the Upper Drift Pin Assembly Locking Nut with a wrench.
5. Rotate the Upper Drift Pin Assembly to adjust the punch pressure.
    5.1 Note: Turn clockwise to increase punch pressure. Turn counterclockwise to decrease punch pressure.
6. Retighten the Upper Drift Pin Assembly's Locking Nut.
7. Close the Perspex Doors.

Maintenance

To ensure that the DTP 12® will have a long operational life, maintenance is essential. This section includes methods for replacing parts, troubleshooting solutions, and how often to grease and clean your machines 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. Excess grease can drip into the tablets as they are formed.
- Before reassembling the machine after cleaning, make sure that the parts are dried and oiled.
- Constantly check for any loose nuts and/or screws before, during, and after machine operation.
- If the machine is not used for more than a week, place the Tooling in an air-tight container and cover in lubricant.

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 DTP 12®, which can be found in this section.

Tools and Materials Needed

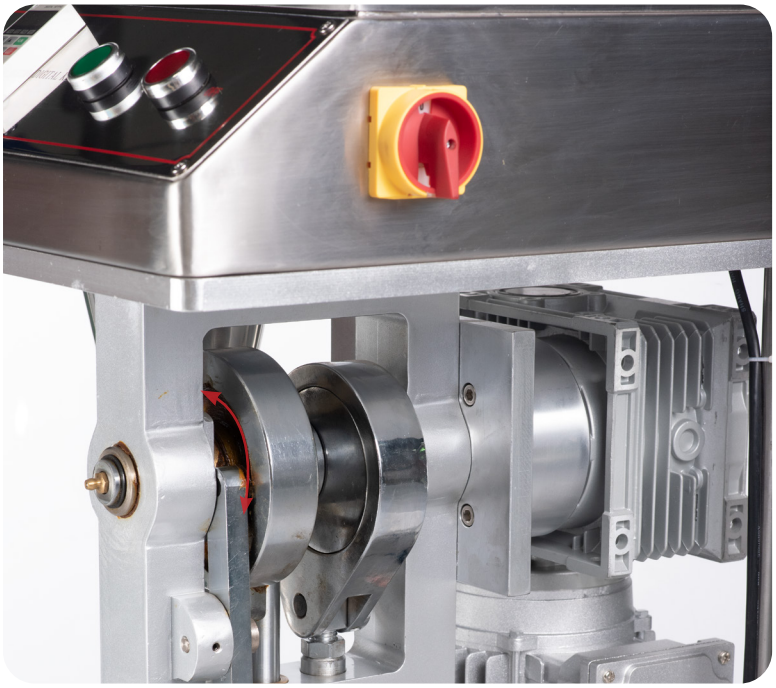
- Grease gun
- Lubricant/grease (food grade if machine has contact with the food or drug product)
- Set of metric Allen keys with ball ends
- Disposable latex/rubber gloves (for food grade products and to protect hands from grease)
- Hairnet and/or beard net (food grade products only)
- Sterile shoe covers (food grade products only)

WARNING: To prevent any potential personal injury, unplug the DTP 12® from the electrical outlet.

Instructions (continued on next page)

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

1. Rub a finger's worth of grease on the Boot Timing Cam's sides.
    1.1 Note: Be sure to lubricate the Boot Timing Cam runner and the Lower Drift Pin Assembly Timing Rod runner.

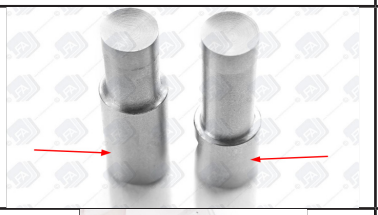
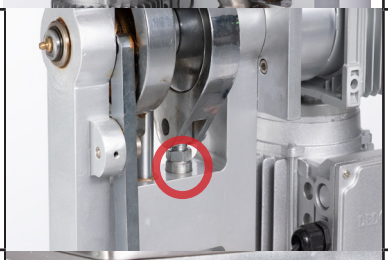
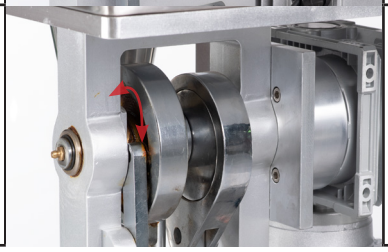


2. Apply grease to the Top Cam with a grease gun.

3. Apply grease to the Upper Drift Pin Assembly.

Lubrication Schedule

LFA recommends the following DTP 12® parts to be lubricated according to the following frequency:

Part	Location	Image	Frequency	Type of Lubricant
Tooling heads	The heads of the Upper Punch and Lower Punch		Visually inspect and apply when dry	Assembly paste
Tooling (after cleaning)	Storage container		Apply after cleaning	Mineral oil
Gearbox	On top of the Motor		Visually inspect every week and top off when needed	460 Grade Worm Gear Oil
Top Cam	The grease nipple on Top Cam		Apply in the following situations: (a) after every 50,000 tablets, (b) after a deep clean, or (c) when the press has not been used for a prolonged period of time	NLGI Grade 2
Upper Drift Pin Assembly	The points at which the Upper Drift Pin Assembly contacts the machine base		Apply in the following situations: (a) after every 50,000 tablets, (b) after a deep clean, or (c) when the press has not been used for a prolonged period of time	NLGI Grade 2
Boot Timing Cam	Cam tracks on both sides and runners on Lower Drift Pin Assembly Timing Rod and Boot Timing Bar		Apply in the following situations: (a) after every 50,000 tablets, (b) after a deep clean, or (c) when the press has not been used for a prolonged period of time	NLGI Grade 2

Dismantling for Repair and Replacement

Eventually due to wear and tear, some parts of the DTP 12® will need to be removed for repair and replacement. To prevent any delays in your tablet production, it is best practice to keep extra parts just in case.

To buy a DTP 12® part replacement, simply go to
https://www.lfatabletpresses.com/products/pill-press-machine-spare-parts/dtp-parts

Warranty
To access LFA's warranty policy, go to https://www.lfatabletpresses.com/warranty
If your part is eligible for warranty, have your part's serial number on hand and please contact LFA:

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Email
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USA
Phone
(682) 312-0309
Email
sales.usa@lfamachines.com

Taiwan
Phone
+886 2773 74704
Email
sales.asia@lfamachines.com

WARNING: To prevent any potential personal injury, ALWAYS unplug the DTP 12® from the electrical outlet when replacing parts.

Wear Parts and Causes of Damage

Wear Part	Cause of Damage
Tooling	The Tooling can become chipped or broken. Lead times for a new set of Tooling can take as long as 6-8 weeks, so LFA recommends having a spare set or two.
Boot	The Boot is formed from a brass casting. This part can become trapped between the Die bore and the Upper Punch, which usually results from user error.

Tooling

If you want to change the shape and diameter of the tablet, or if the Upper Punch, Lower Punch, and/or Die you currently have is damaged, it is necessary to change the Tooling.
To buy new Tooling from LFA, simply go to https://www.lfatabletpresses.com/products/tablet-press-tooling

Tools and Materials Needed

- Set of metric Allen keys with ball ends
- Set of metric wrenches
- Hammer (if Die is difficult to remove)
- 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, ALWAYS unplug the DTP 12® from the electrical outlet when replacing parts.

Instructions

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

Remove the Tooling

1. Open the Perspex Doors and remove the Ejection Tray with an Allen key.
2. Remove the Hopper up through the top of the press.
3. Loosen the Boot's set screw with an Allen key.
4. Remove the Boot Bolt and Spring underneath the Boot.
5. Loosen the Boot Timing Bar Extender from the Boot with an Allen key.
6. Loosen the two bolts underneath the Base Plate with a 17 mm wrench.

7. Remove the Boot and the Base Plate.
8. Manually rotate the machine until the Upper Drift Pin Assembly is lowered.
8. Loosen the Upper Punch Locking Nut with a wrench while keeping the Upper Punch Drift Assembly in place with another wrench.
9. Remove the Upper Punch by hand.

10. Take out the Die from the middle of the Base Plate.
    10.1 Lightly tap the Die with a hammer if it is difficult to remove.
11. Loosen the Lower Punch's bolt with an Allen key and remove the Lower Punch.

Replace the Tooling

12. Insert the new Lower Punch into the Lower Drift Pin Assembly.
13. Reinsert the bolt that locks the Lower Punch with an Allen key.

Note: To help ensure that the Die is inserted correctly, LFA recommends using an Insertion Ring. You can order the Die Seat Cleaner and Insertion Ring on our website at https://www.lfatabletpresses.com/die-seat-cleaner-insertion-ring

14. Place the Base Plate onto the machine.
15. Insert the new Die into the middle of the Base Plate.

16. Insert the new Upper Punch into the Upper Drift Pin Assembly.
17. Tighten the Upper Punch Locking Nut onto the Upper Drift Pin Assembly with a wrench.
18. Rotate the Hand Wheel and carefully lower the Upper Punch into the Die.
    18.1 Note: To watch a video on proper Base Plate alignment, go to https://www.lfatabletpresses.com/videos/how-to-align-a-baseplate-on-a-tdp-5
19. Tighten the Base Plate's bolts with an Allen key.
20. Position the Boot back on the Base Plate.
21. Resecure the Boot Timing Bar extender to the Boot with an Allen key.
22. Resecure the Boot Bolt and Spring underneath the Boot with an Allen key.
23. Tighten the Boot's set screw with an Allen key.
24. Insert the Hopper into the Boot.
25. Close the Perspex Doors.

Troubleshooting

Sometimes unavoidable issues will occur while operating the DTP 12®. Fortunately, there are several methods to remedy these issues.

Common Machine/Part Issues

Symptom	Possible Cause	Possible Solution
Machine freezes or locks up	Grease point areas are dry.	Regularly oil and grease all the Grease Nipple points.
	There is excess pressure on the Upper Drift Pin Assembly.	Rotate the Upper Drift Pin Assembly counterclockwise.
	The press is being started with the Upper Punch at a low point.	Adjust the starting position so that the Upper Punch is at the highest point.
Knocking sounds coming from machine	The Upper Punch and Lower Punch are colliding with the Die.	After loosening its bolts, readjust the Base Plate until it is correctly aligned. After that, tighten the bolts back.
	The Upper Drift Pin Assembly is slightly off.	Adjust the Upper Punch until it is aligned with the Die's bore.
	The Upper Drift Pin Assembly is not dropping smoothly in the powder filling stage of the process.	Check that there is not a buildup of powder between the Lower Punch and the Die. Then check that the Lower Drift Pin Assembly has enough clearance to drop through the hole in the machine's base.
Heavy resistance during production	The high friction areas are either unclean, locked, worn out, or not greased properly.	Apply grease to the Grease Nipple points and all high friction areas on the machine.

Symptom	Possible Cause	Possible Solution
Inability to compact materials to tablet form	Boot is blocked and not enough materials are flowing out.	Check the Boot for a potential clog.
	The Boot Timing Bar is not secured.	Tighten the Boot Timing Bar's screw.
	There is not enough pressure.	Rotate the Upper Drift Pin Assembly clockwise.
	The Lower Punch is broken.	Remove the Lower Drift Pin Assembly to access the broken Lower Punch. After removing it, replace the Tooling.
	The Lower Drift Pin Assembly is not dropping properly during filling.	Check that there is not a buildup of powder between the Lower Punch and the Die. Then check that the Lower Drift Pin Assembly has enough clearance to drop through the hole in the base.
	There are flowing issues with the mix.	If the machine is able to make tablets with LFA's Firmapress®, then the problem is your mix. Adjust your formulation. If still an issue, contact LFA for support.
Powder sticks to the Upper Punch	The punch pressure needs to be adjusted.	Rotate the Upper Drift Pin Assembly to adjust the punch pressure.
	There may be an abnormality with the machine.	Inspect the machine for damage and contact LFA for support if needed.
Powder sticks to the Lower Punch	There are issues with the mix.	Adjust your formulation. If still an issue, contact LFA for support.

Common Tablet Issues

Symptom	Possible Cause	Possible Solution
Double tablets	Previous tablet did not eject correctly.	Remove the double tablet manually from the Die bore.
	Excess granular materials were placed in the Die, which prevented the ejection of the existing tablet.	Clean the Tooling to remove any excess granular materials and make sure that it is clean and completely dry.
Cracked or broken tablets	There are problems with the formulation of the granules and ingredients.	If the machine is able to make tablets with LFA's Firmapress®, then the problem is your mix. Adjust your formulation. If still an issue, contact LFA for support.
	The Boot is not feeding enough material to be pressed in tablet form.	
	There is excess pressure.	Please read our article on Capping at https://www.lfatabletpresses.com/articles/tablet-capping
Shattered tablets	The Boot Timing Bar and the Boot are not adjusted properly.	Adjust the Boot Timing Bar by loosening/tightening its bolt and moving it.
	Air is becoming trapped in the tablet during compression.	Please read our article on Capping at https://www.lfatabletpresses.com/articles/tablet-capping
Inconsistent tablet weight	Not enough pressure is being exerted.	Rotate the Upper Drift Pin Assembly clockwise.
	There are flowing issues with the mix.	If the machine is able to make tablets with LFA's Firmapress®, then the problem is your mix. Adjust your formulation. If still an issue, contact LFA for support.
Soft tablets	There is too little punch pressure.	Rotate the Upper Drift Pin Assembly clockwise.
	There are flowing issues with the mix.	If the machine is able to make tablets with LFA's Firmapress®, then the problem is your mix. Adjust your formulation. If still an issue, contact LFA for support.
Uneven tablets	The Tooling is worn out.	Check the ingredients of your formula before you replace the Die, Upper Punch, and Lower Punch.

De-Jamming the DTP 12®

There are several reasons why a DTP 12® might jam such as:

- The fill depth is set too low and the pressure is set too high.
- There is a build up of powder sticking to the Tooling.
- Any powder buildup on the machine can cause tablets to eject backwards and not forwards, creating potential for a double tablet becoming stuck in the Die's bore.

WARNING: To prevent any potential personal injury, ALWAYS unplug the DTP 12® before de-jamming it.

Tools and Materials Needed

- 22 mm wrench
- 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)

Instructions

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

Method 1: Lower the Pressure

1. Open the Perspex Doors.
2. Place a 22 mm wrench around the Upper Drift Pin Assembly Locking Nut.
3. Hold the Upper Drift Pin Assembly in place with a wrench.

4. Loosen the Upper Drift Pin Assembly Locking Nut with a wrench.
5. Rotate the Upper Drift Pin Assembly counterclockwise to lower the punch pressure.

Method 2: Increase the Fill Depth

1. Open the Perspex Doors.
2. Loosen the fill depth adjustment's locking screw with an Allen key.
3. Rotate the fill depth adjustment wheel clockwise.

Cleaning

During the DTP 12®'s operation, excess powder will find its way into parts of the machine, particularly in the Hopper, Boot, Tooling, and base. It is important to clean the DTP 12® thoroughly to prevent rusting and cross contamination.

LFA recommends that the machine be cleaned after each operation.

Tools and Materials Needed

- Cleaning brush
- Long wire pipe cleaner
- Toothbrush
- Cleaner (e.g. Member's Mark Commercial Lemon Fresh Disinfectant)
- Set of metric Allen keys with ball ends
- Disposable latex/rubber gloves
- Bagless vacuum
- 3 clean cloths
- Potable water
- Bowl of warm soapy water (nothing abrasive)
- Sanitizer (e.g. Member's Mark Commercial Sanitizer)
- Hairnet and/or beard net (food grade products only)
- Safety goggles
- Sterile shoe covers (food grade products only)

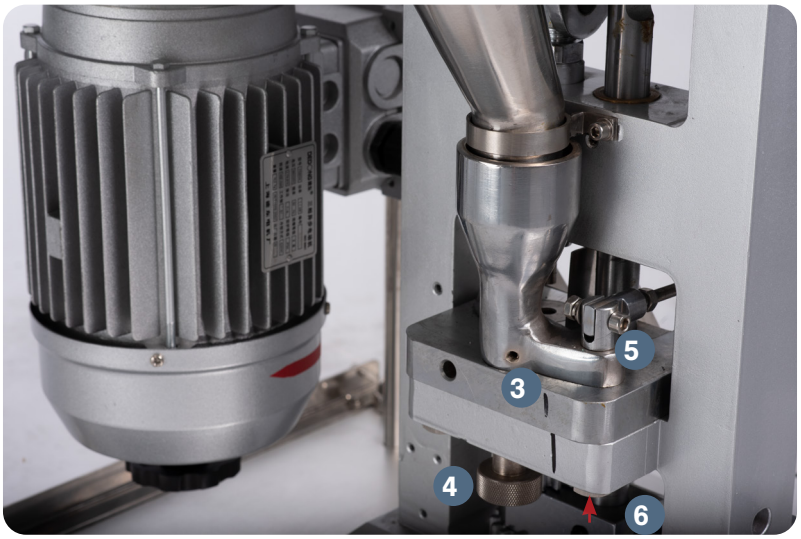
WARNING: To prevent any potential personal injury, ALWAYS unplug the DTP 12® from the electrical outlet when replacing parts.

Instructions

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

Remove Parts

1. Open the Perspex Doors and remove the Ejection Tray with an Allen key.
2. Remove the Hopper up through the top of the press.
3. Loosen the Boot's set screw with an Allen key.
4. Remove the Boot Bolt and Spring underneath the Boot.
5. Loosen the Boot Timing Bar Extender from the Boot with an Allen key.
6. Loosen the two bolts underneath the Base Plate with a 17 mm wrench.



7. Remove the Boot and the Base Plate.
8. Manually rotate the machine until the Upper Drift Pin Assembly is lowered.
8. Loosen the Upper Punch Locking Nut with a wrench while keeping the Upper Punch Drift Assembly in place with another wrench.
9. Remove the Upper Punch by hand.

10. Take out the Die from the middle of the Base Plate.
    10.1 Lightly tap the Die with a hammer if it is difficult to remove.
11. Loosen the Lower Punch's bolt with an Allen key and remove the Lower Punch.

Note: Before washing the Base Plate, LFA recommends using our Die Seat Cleaner. You can order the Die Seat Cleaner and Insertion Ring on our website at https://www.lfatabletpresses.com/die-seat-cleaner-insertion-ring

Clean the Base

12. Vacuum any powder/debris from the machine.
13. Spray the DTP 12® base with the cleaner, particularly in the Tooling's location.
14. Rinse the cleaner off with potable water.
15. Sanitize the DTP 12® base with a clean cloth.

Clean the Parts

16. Take one of the parts removed from the machine and submerge it in the bowl of warm soapy water.
    16.1 Note: To ensure that all dirt and debris are removed, wash one part at a time.
17. Take a clean cloth and carefully wash the part thoroughly.
    17.1 Note: Use the toothbrush for difficult-to-remove debris. When cleaning tooling, use non-abrasive cleaning equipment such as a soft pipe cleaner and soft cloth.
18. Dry part immediately after it is cleaned and rinsed.
19. Sanitize part with a clean cloth.
20. Repeat steps 16-19 for each remaining part until they are all clean.

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
Ejection Tray	Remove from machine	Remove from machine	Install on machine	Remove from machine	N/A	N/A	Remove from machine	Install on machine
Tooling	Remove from machine	Remove from machine	Install into machine	Remove from machine	N/A	N/A	Remove from machine	Install on machine
Boot	Remove from machine	Remove from machine	Install into machine	Remove from machine	N/A	N/A	Remove from machine	Install on machine
Base Plate	Remove from machine	Remove from machine	Install on machine	Remove from machine	N/A	N/A	Remove from machine	Install on machine
Hopper	Remove from machine	Remove from machine	Install on machine	Remove from machine	N/A	N/A	Remove from machine	Install on machine
Top Cam area	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine
Upper Drift Pin Assembly	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine
Motor	Clean on machine	Clean in machine	Clean in machine	N/A	Clean on machine	Clean in machine	Clean on machine	Clean on machine
Upper Drift Pin Assembly Mounting Block	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine
Upper Drift Pin Assembly Threaded Cam	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine	Clean in machine
Lower Drift Pin Assembly	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine	Remove from machine
Perspex Base	Clean on machine	Clean in machine	Clean on machine	Clean on machine	N/A	N/A	Clean in machine	Clean on machine
Base/Frame	Clean on machine	Clean in machine	Remove from machine	Remove from machine	N/A	N/A	Clean in machine	Clean on 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.

Storing the DTP 12®

After its thorough cleaning, the DTP 12® 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 DTP 12®'s high traction areas and the Tooling need to be lubricated separately before you store them.

Tools and Materials Needed

- Plastic wrapping to cover machine
- Airtight container for Tooling (if in storage for more than a week)
- Grease gun
- Lubricant/grease (food grade 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.

Lubricating the Tooling

If you are not using the machine for more than a week, store the Tooling in an airtight container and cover it with lubricant to prevent rust formation. If not, simply lubricate each part of the Tooling and reinsert it back into the machine.

LFA's TDP Tooling Case provides airtight storage and is perfect for transport and protection. Order at https://www.lfatabletpresses.com/tooling-case-tdp

1. Rub a finger's worth of grease on the Boot Timing Cam's sides.
    1.1 Note: Be sure to lubricate the Boot Timing Cam runner and the Lower Drift Pin Assembly Timing Rod runner.

2. Apply grease to the Top Cam with a grease gun.

3. Apply grease to the Upper Drift Pin Assembly.

You can also lubricate any point of traction on the DTP 12 at your own discretion; just be sure not to over-lubricate.

Cover the DTP 12®

5. Carefully cover the DTP 12® with the plastic wrapping.

    5.1 Note: You can use the plastic wrapping that came with the machine in the shipping container.

Appendix

Glossary

Term	Definition
API/Active Pharmaceutical Ingredient	Any substance or mixture of substances used that is an active ingredient in the drug product.
Binding agent	See excipient.
Die	The part of the Tooling that makes up the hole in which the powder is compressed and shaped into a tablet.
Die bore	The cavity inside the middle of the Die.
Die face	The very top flat surface of the Die.
Ejection height	The height at which the Lower Punch is lifted to for a tablet's ejection from the machine.
Excipient	A substance formulated alongside the API that acts as a binding agent in the tablet powder.
Fill depth	The amount of space that the powder can flow into in the Die.
Formulation	Powder mix of the excipient and the API that is compressed to make tablets.
Granular material	See Formulation.
Kilonewton (kN)	The force to accelerate a mass of 1 kg at a constant 1 m per second. The TDP range's pressure is measured in this unit.
Punches	The Upper Punch and Lower Punch have concave endings in the shape of the desired tablet. When the punches meet, they compress the powder between.
Punch pressure	The adjustable amount of force that is used to press tablets.
TDP®	LFA trademarked term for desktop tablet press.
Tooling	Enables a tablet press to form tablets. It consists of a Die, Upper Punch, and Lower Punch.

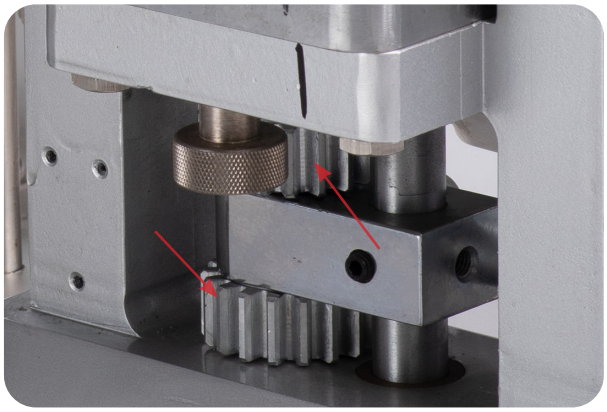
Description of DTP 12® Parts

Tooling

The Tooling consists of the Die, the Upper Punch, and the Lower Punch. This die set compresses the powder into the tablet. Order at https://www.lfatabletpresses.com/tdp-tooling

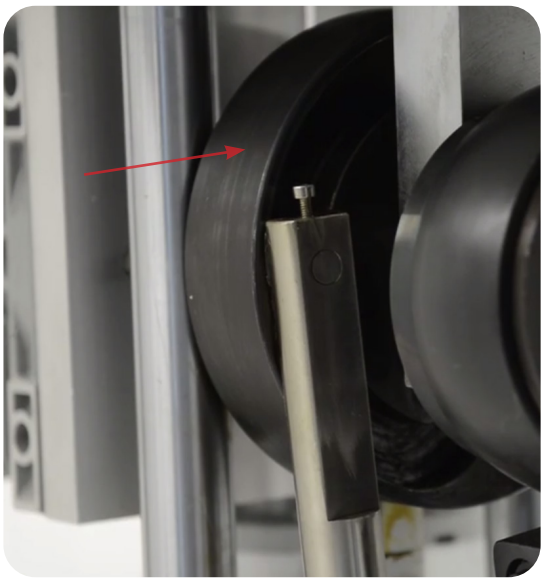
Lower Drift Pin Assembly Cogs

The Lower Drift Pin Assembly Cog are used to adjust the tablet's ejection height and fill depth. They are located on the Lower Drift Pin Assembly.



Boot Timing Cam

The Boot Timing Cam is responsible for the movement of the Boot Timing Bar, which allows the Boot to fill the Die bore with the dry granular materials needed to form the tablet.

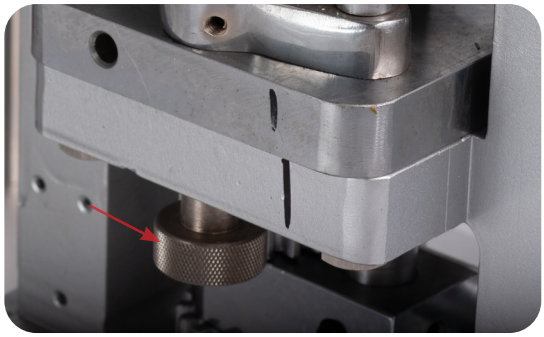


Boot

The Boot is where the dry granular materials are held for pressing. It fills the Die bore with the dry granular material and moves the finished tablet out of the Die before refilling it with the next batch of materials. Order at https://www.lfatabletpresses.com/boot-dtp-25

Boot Bolt and Spring

The Boot Bolt and Spring holds the Boot in place while the press is running and allows it to move back and forth.

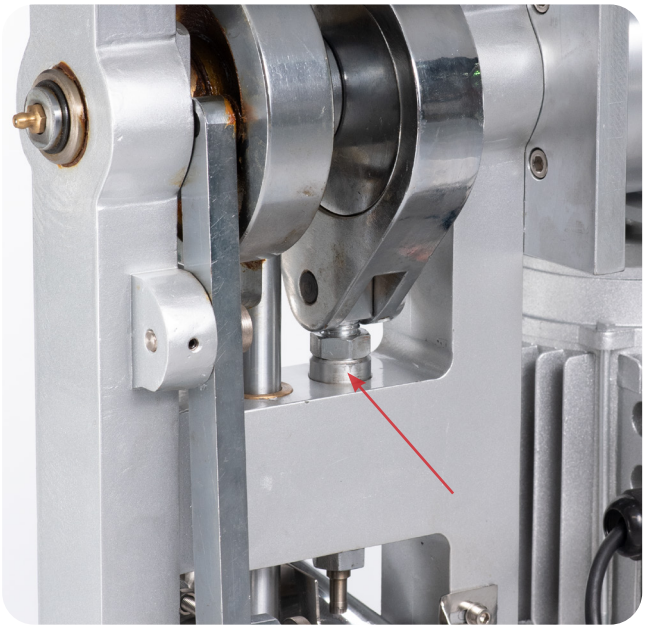


Hopper

The Hopper is the funnel that holds the granular materials before it moves into the Boot to be pressed.

Upper Drift Pin Assembly

The Upper Drift Pin Assembly holds the Upper Punch in place.

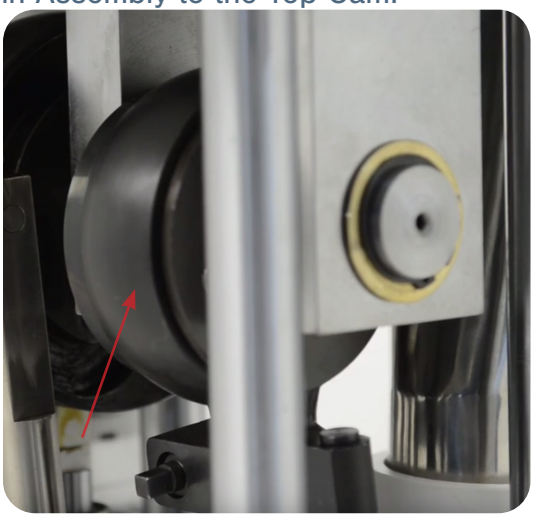


Lower Drift Pin Assembly Timing Rod

The Lower Assembly Timing Rod raises the finished tablet out of the Die.

Eccentric Sheave Strap

The Eccentric Sheave Strap attaches the Upper Drift Pin Assembly to the Top Cam.

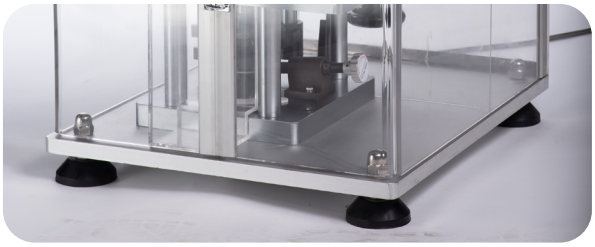


Hand Wheel

The Hand Wheel can be used to turn over the DTP 12® manually.

Anti-Vibration Feet

The Anti-Vibration Feet are located on the machine's bottom four corners. They absorb noise and vibration produced by the machine.



Boot Timing Bar

The Boot Timing Bar moves the Boot and is timed by the Boot Timing Cam track. The rocking motion that the arm provides helps the Boot to fill the Die bore with the dry granular material for the next tablet.

Material of Contact Parts

Contact Part	Material
Boot	304 SS
Frame	304 SS
Tooling (Upper Punch, Lower Punch, and Die)	User specified
Ejection Tray	304 SS
Hopper	304 SS

Technical Specifications

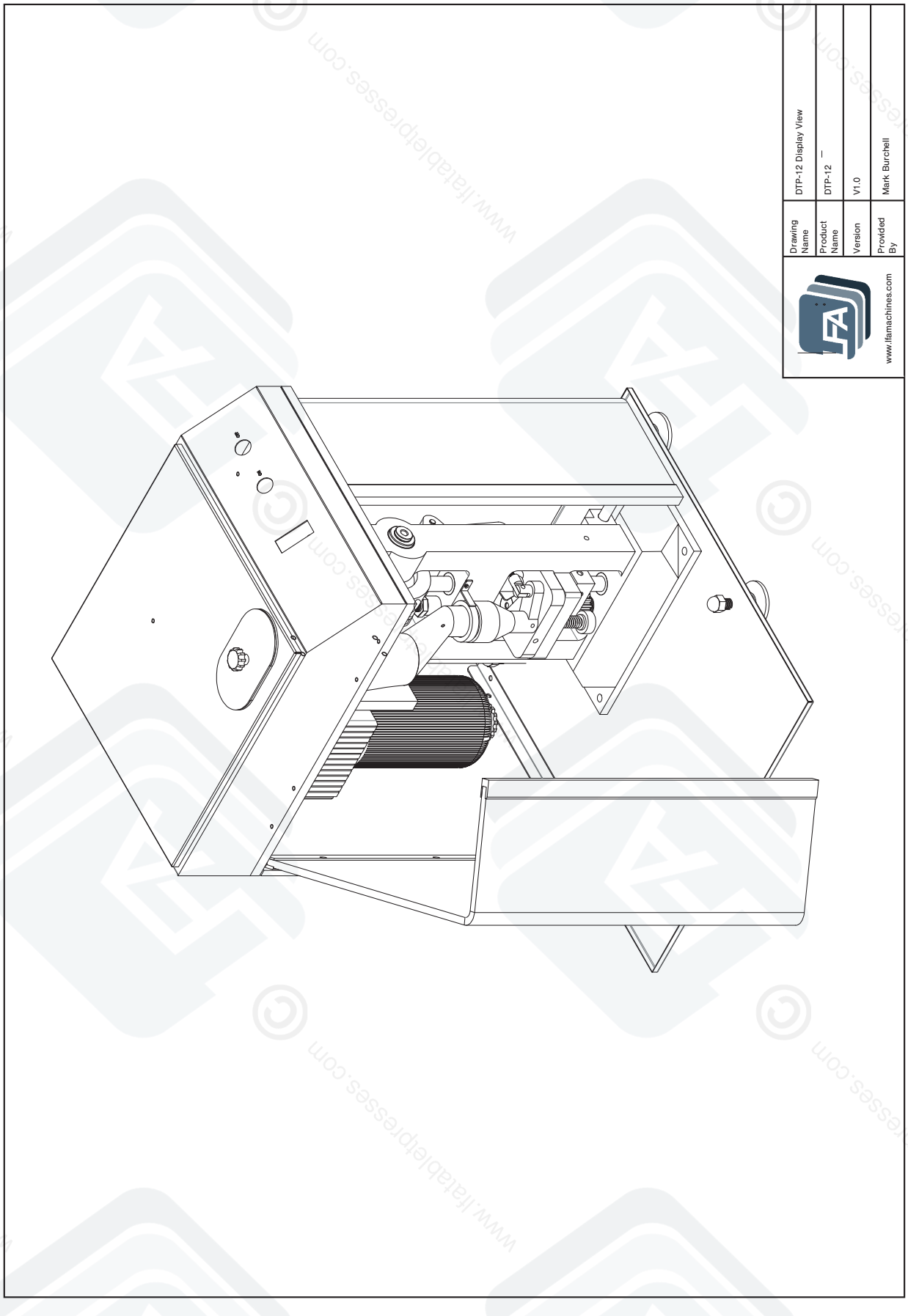
Number of dies	1
Max production capacity	3,600/hour
Max diameter of tablet	12 mm
Max thickness of tablet	8 mm
Max fill depth	20 mm
Max pressure	50 kN
Number of filling stations	1
Double layered tablet	No
Motor power	1.5 kW
Volts	220 V/110 V
Overall size	550 mm x 450 mm x 750 mm
Weight	100 kg (220 lbs)

Maintenance Checklist

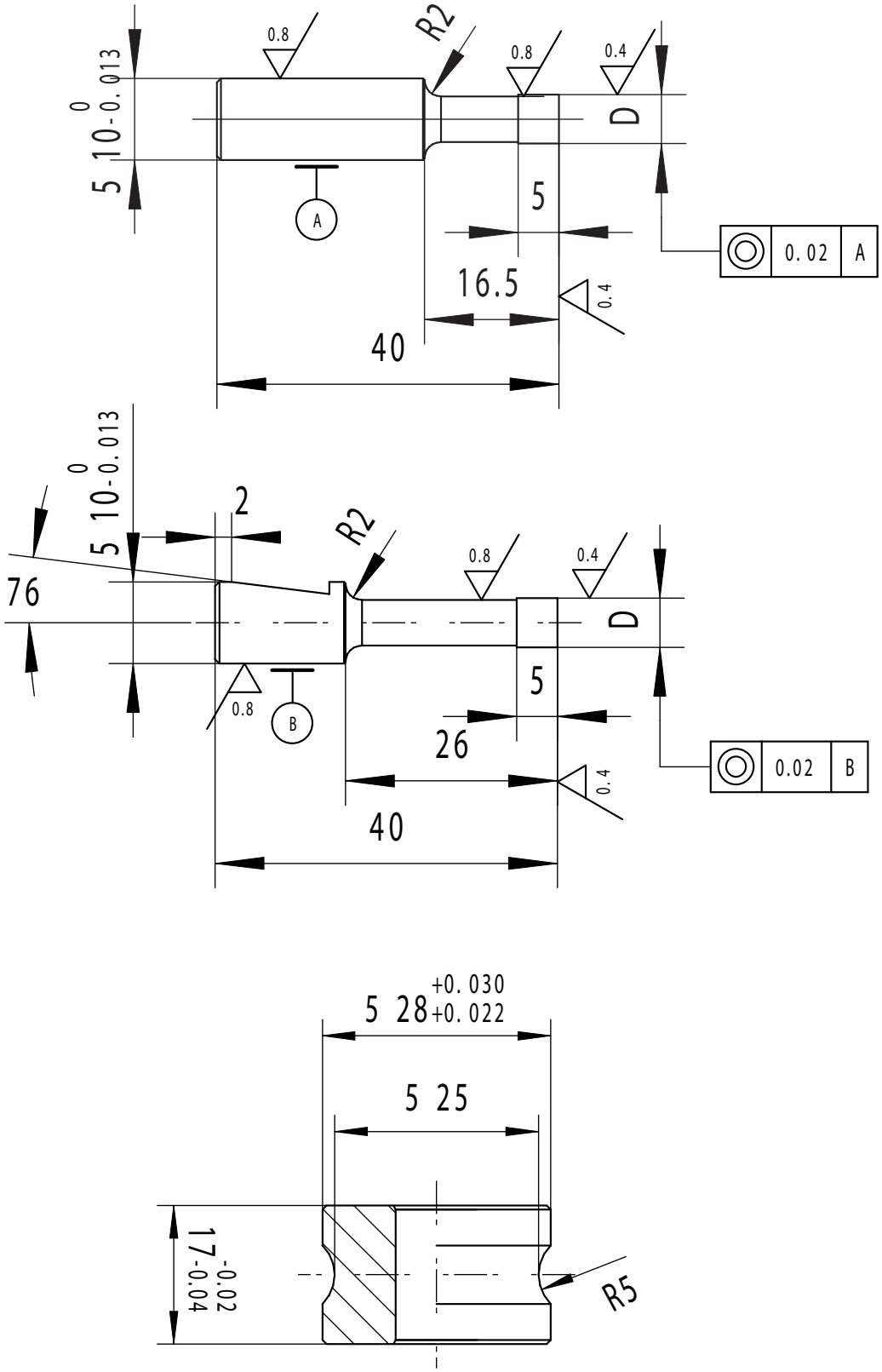
Before Operation	
☐	Visually inspect the tablet press and the parts.
☐	Ensure all locking nuts are tight.
☐	Visually inspect grease nipples and regrease where necessary.
☐	Tune the tablet press by hand to get the tablet size and weight correct.
☐	Manually operate the machine for at least two full rotations to ensure it is not jammed.
During Operation	
☐	Listen for irregular knocking or clicking sounds. If heard, stop operation and lubricate the desktop press.
☐	Watch for buildup of powder in front of the Boot. If occurring, either (a) make mix more granular, (b) check the Boot's base for damage, or (c) clear the buildup with a paintbrush.
☐	Occassionally check the Motor's temperature. If it starts to overheat, turn off the machine, let it cool down, and grease it to ensure smooth operation.
☐	Ensure that the Hopper does not run out of powder.
☐	Weigh a sample tablet and test for its hardness.
After Operation	
☐	Unplug machine and remove all excess powder with a bagless vacuum.
☐	Remove the Boot and the Tooling and clean the inside of the tablet press.
☐	Wipe down the other surfaces with a damp cloth.
☐	Apply a layer of food grade grease to the entire desktop tablet press.
☐	Lubricate all grease nipples.
☐	Store Tooling in an air-tight box with a small amount of grease.

Diagrams

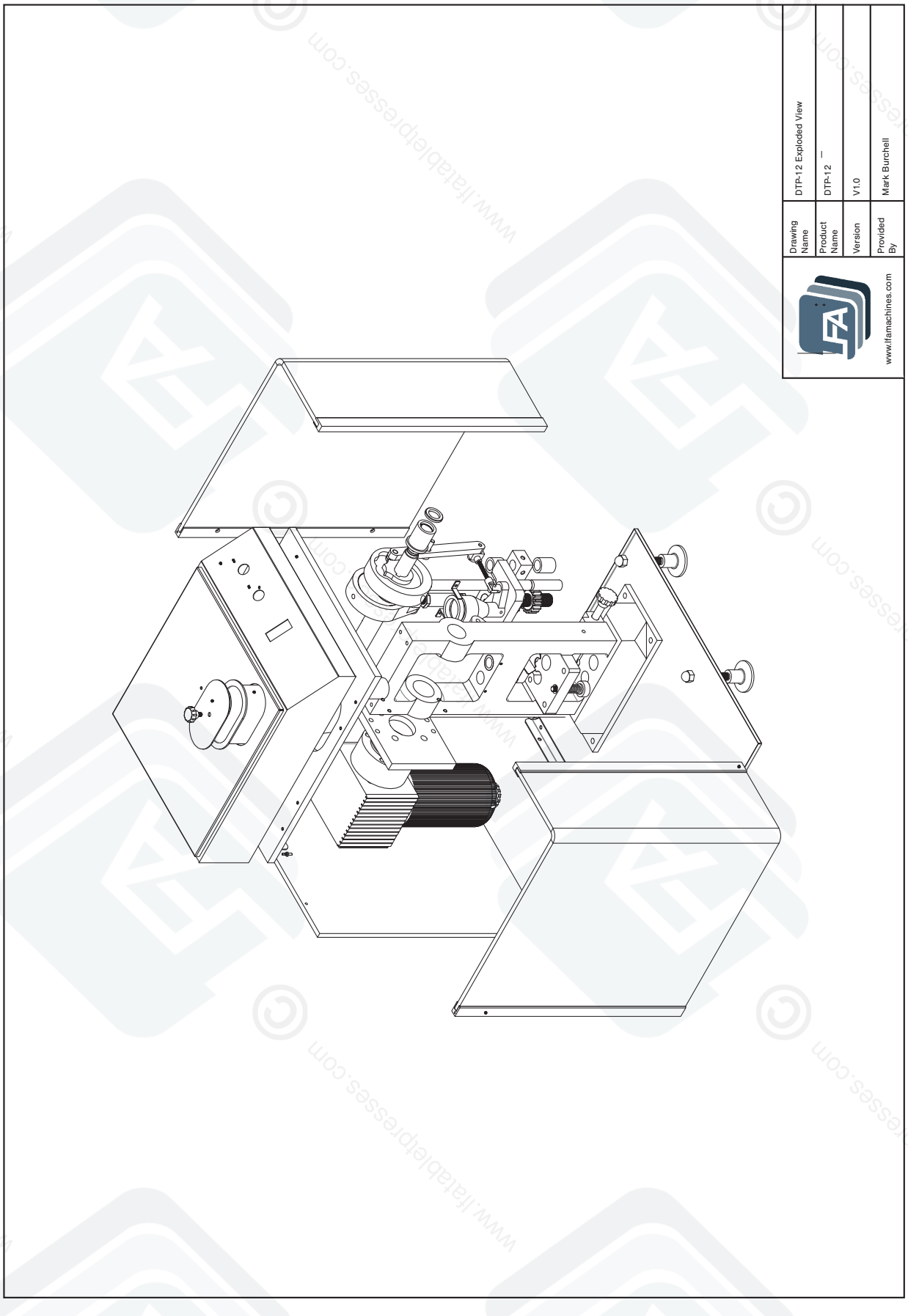
DTP 12® Display View



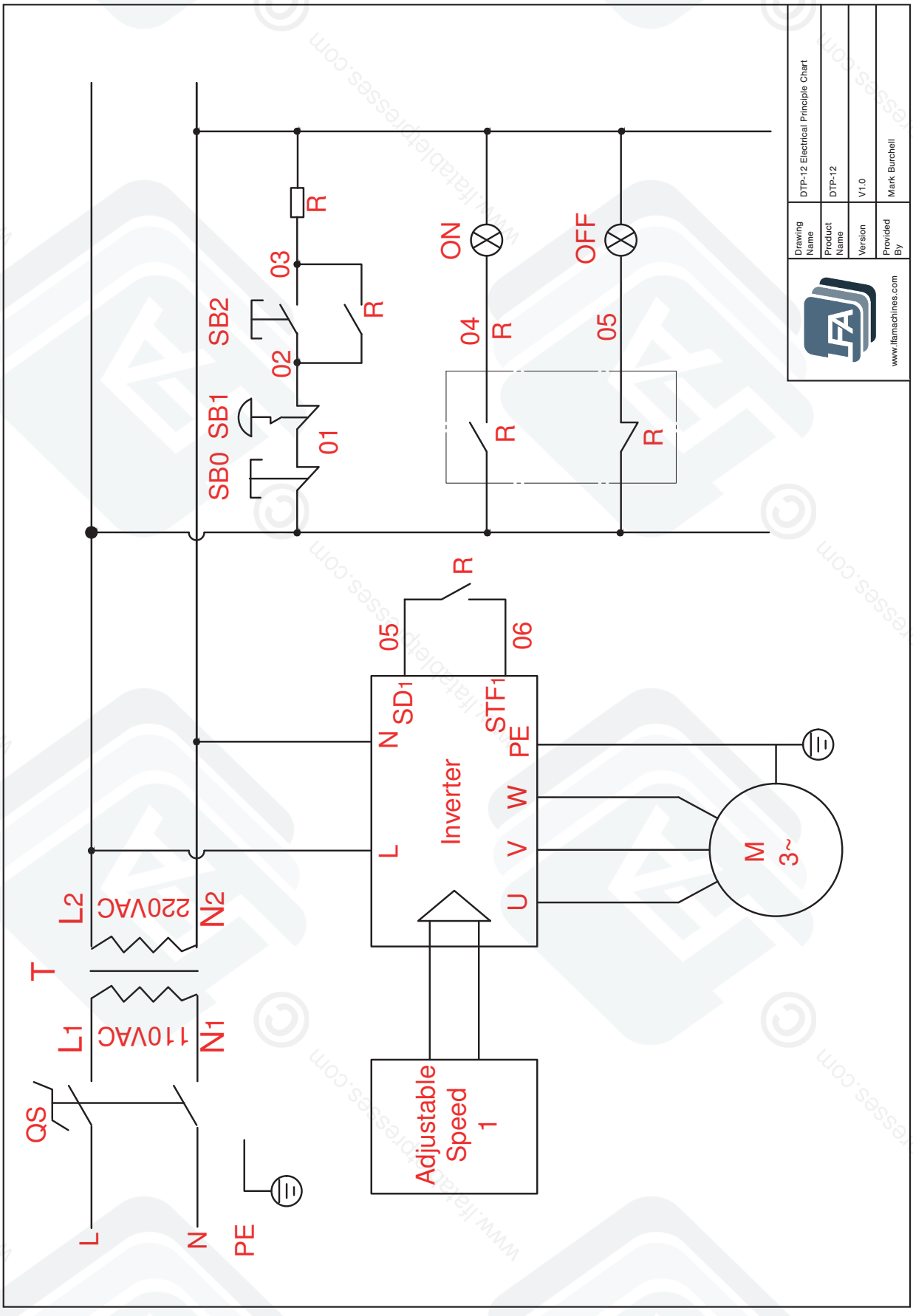
DTP 12® Tooling Dimensions



DTP 12® Exploding Diagram



DTP 12® Wiring Diagram



Resources

Helpful Links

Warranty
For information regarding the warranty policy of the DTP 12® and other LFA products, please visit https://www.lfatabletpresses.com/warranty

LFA Website
In order to aid you in your tablet production, LFA Machines maintains a website that offers a breadth of useful information about the DTP 12® and other tablet presses. Use our online tools such as the Tablet Mix Calculator to help you in your formulation production or read our regularly published articles that cover a whole range of topics about tablet presses and tablet production.

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 tablet presses, common troubleshooting tips, and other LFA products such as capsule fillers and mixers. We regularly upload videos to give you a visual aid that will hopefully support you in your tablet production efforts. To watch our videos, 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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