TABLET PRESSES

TDP 1.5 DESKTOP TABLET PRESS USER MANUAL

LFA Tablet Presses is a trading name of
LFA Machines Oxford LTD

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Introduction

The TDP 1.5 tablet press is a versatile, single punch desktop format tablet press that has been designed to meet the needs of developmental and research laboratories across a wide range of industries.

The principal features of the TDP 1.5 include an ability to run on either electricity or manual power, the ability to operate with as little as 200g of raw materials, and the ability to customise tablets by easily changing the die used to stamp them. Combined, these features allow the user to press small runs of unique tablets for research purposes, or to scale up production to as much as 5,000 tablets an hour.

The TDP 1.5 is very simple to use, and has been designed to require only basic maintenance. It is primarily intended for pressing granular materials, but is compatible with a wide range of raw materials. It is not suited to wet materials or superfine powders.
The machine can be used to produce most types of tablet, including tablets with irregular shapes. Users can also vary the density, thickness and size of the tablets pressed.

Technical Specifications

Maximum Pressure	1.5 T (15Kn)
Maximum Diameter of Tablet	8mm
Maximum .Depth of Fill	16mm
Max. Thickness of Tablet	6mm
Production Capacity	5000pc/h
Power	0.75 Kw (single phase) 0.55 Kw (three-phase)
Overall Size	650x440x650mm

The machine should be installed by fixing it to a secure workbench using three pairs of M12 foot screws. To allow convenient operation, the top of the bench should be at a height of approximately 60 cm above floor level.
An access hole approximately 3.5cm in diameter should be cut into the workbench to allow for maintenance.
Before operating, disassemble the V-belt and ensure the motor is rotating in the direction indicated by the arrow on the gearwheel shield.

BEFORE SWITCHING ON THE MACHINE ALWAYS PEFORM ONE FULL ROTATIONAL CYCLE BY HAND

TURNING ON

The TDP 1.5 is switched on by pressing the on/off switch on the left hand side of the machine.
Filling the Machine
Fill the tablet press by adding granular or powdered raw materials to the hopper. The maximum capacity of the hopper is approximately 1/2kg, depending on the raw material used. Avoid moist or superfine materials.

ADJUSTING TABLET SIZE

Tablet size and shape are determined by the die being used. To change the die, see below.
Tablet thickness is determined by the fill depth. To change the fill depth, see "Adjusting fill depth" below.

CHANGING/INSTALLING A PUNCH DIE

The TDP 1.5 die assembly consists of three separate pieces; the upper and lower punches, and the centre ring. To change an existing die you remove all three parts before reassembling with the new die assembly.

To make access easier, it is helpful before you start to remove the tablet chute. Do this by unscrewing the two Phillips head screws, one on either side. It also helps to remove the metal boot located to the right of the die assembly. Use an allen key to remove the boot's central locking nut, then release the boot by loosening the securing nut beneath the machine. Pliers or metal grips will make this easier.

Next, there are two nuts and a bolt that you need to loosen before you can remove any existing die and install a new one. There is one nut at the front for each of the punches, and a bolt for the centre ring. After removing these, if there is already a die installed, pull out the upper punch.
To remove the centre ring (if already installed) raise the ejection height mechanism to its fullest extent. First remove the bar to the right of the ejection mechanism that secures it, then screw the mechanism clockwise to force the centre ring up.
Remove the lower punch, if it has not come out with the centre ring.

ASSEMBLING AND ADJUSTING THE DIE

To install the new die first insert the lower punch. Ensure the V shape is pointing forward, then securely tighten the nut that holds the punch in place.
Next insert the new centre ring, taking care to ensure that it is seated cleanly and is flush with the die plate. Then tighten the nut holding it in place, and check that it is secure.
Before inserting the new upper punch, slip the locking nut over it, to avoid difficulty fitting it at the end of the installation. Once the punch is in place, securely tighten its bolt.
Use the handwheel to move the machine to a point in its cycle where you can reattach the boot.
Securely tighten the locking nut with the allen key.
Reattach the chute, and tighten both screws securely.

ADJUSTING EJECTION HEIGHT

If the ejection height is too high or low, the tablets will not be ejected cleanly. To adjust the ejection height, first ensure that the machine is at the highest point in its cycle by rotating the handwheel slowly. The ejection height can be raised by removing the bar to the right of the ejection mechanism that secures it, then screwing the mechanism clockwise to raise the centre ring.

To lower the ejection height, carry out the same procedure but turn counter clockwise.
After adjusting, raise the lower punch and check it is level with the die surface. Then rotate the handwheel for several revolutions, to check the ejection mechanism is running cleanly.

ADJUSTING FILL DEPTH

The fill depth determines the weight of the tablet. To change the depth, unscrew the adjusting pinion and bolt, and rotate clockwise to slightly raise the lower plunger. This will reduce the fill depth, and therefore tablet weight.
To increase fill depth and weight, simply lower the plunger by rotating counter clockwise.
Then re-tighten all parts.

ADJUSTING TABLET HARDNESS

Greater pressure produces a denser and therefore harder tablet. To increase the pressure applied, unscrew the connecting rod nut and rotate the upper plunger clockwise. To reduce the pressure, rotate it counter clockwise.
Replace nuts and tighten securely with a wrench.

Disassembling and Reassembling Main Parts

DIE PLATE

To remove the die plate pull out the powder baffle, remove the hopper, unscrew the feeder set-screw, remove the feeder stud and spring, then take the feeder out and unscrew the die plate.

To reassemble, simply apply the above in reverse. When assembling, take care to align the feeder screws, to avoid damaging their thread.

PULLEY, PINION AND PINION SHAFT

Disassemble the pressing plate, then remove the V-belt, and the nut and washer on the pinion shaft. Grasping the pulley, remove the pinion shaft from its hole. When disassembling, always take care with the pinion copper brushing.

To reassemble, repeat in reverse.

MAIN SHAFT

Remove the gearwheel shield, pulley, and gearwheel gland, strike a non-active surface on the inside of the gearwheel with a wooden mallet to loosen it, and remove the gearwheel. Remove the tapered gland and handwheel, then the feeder rod and feeder cam. Loosen the pitman pin, catch the bolt and remove the pin. Strike the end of the gearwheel shaft with a wooden mallet (taking care not to damage the thread). Grasping the other end of the main shaft, pull it out.

Note: When in operation, monitor the quality of the tablets being produced. If they are of uneven thickness, have raw edges, or other defects, inspect the die carefully.

Maintenance & Lubrication

PRE-USE INSPECTION

Before using the machine each time, check that the handwheel turns freely.

Visually inspect the machine and check that all parts are securely attached, and all nuts and bolts are completely secure.

Pay particular attention to moving parts. If they appear worn, repair or replace them before using the tablet press.

MAINTENANCE AFTER USE.

When you have finished using the machine clan away all remaining powder, and remove and clean the die.

If the machine is going to be left unused for an extended period, place the die in safe storage to avoid rust, clean the machine thoroughly and apply an anti-corrosive grease to protect it.

Note: To clean the die when in use without disassembling, or when changing between different tablet materials, apply magnesium stearate powder and operate by hand slowly to work it through.

LUBRICATION

To ensure safe operation and the long life of the machine, care must be taken to properly lubricate moving parts, friction surfaces and oil holes. After lubricating, run the machine at idle to allow the oil to properly circulate.

Avoid applying too much lubricant in one go, as this may cause leakage and damage tablet quality.

The main shaft, eccentric wheel housing, top end of the pinion shaft, groove and roller inside the gearwheel, groove and roller of the feeding cam, and gearwheel surface should all be lubricated using grease.

The connecting rod oil hole, vibrating pivot of the feeding rod, surface of the upper punch mandrel, and surface of the lifting rod should all be lubricated using a suitable engine oil.

Trouble Shooting

Vibration	Check all lubrication points are properly lubricated, and all bolts and nuts are securely tightened.
Jumping or broken tablet	Check tablet ejection is clean, and if not, increase ejection clearance by adjusting the lower punch.
Rough or damaged tablet	The tablet may be sticking. Ensure the raw material is dry and contains only proper ingredients. Alternatively, check that the die is not damaged or worn.
Loose tablet	Either increase the pressure to improve compaction; or adjust the raw materials to ensure sufficient binding material.
Tablet weight is inconsistent	This could be due to a loose lower punch – check and tighten.

Caution

- Never feed wet material into the tablet press.
- If blockage or other problems arise during operation, never remove tablets by hand when the machine is running, as this may cause personal injury.
- Avoid wearing loose clothing when operating the machine.
- If the machine becomes damaged, stop using it at once until properly repaired.