



T A B L E T P R E S S E S

RTP41 ROTARY TABLET PRESS USER MANUAL

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LFA Machines Oxford LTD

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CAUTION.

Please read these operating instructions carefully before installation, starting up and repair. Inappropriate operation not recommended in the instructions may damage the machine or cause personal injury.

Introduction

The RTP41 is a continuous automated rotary tablet press with a maximum production capacity of approximately 180,000 per hour. Its advanced feature set includes a 4 Kw motor powering 41 cutting heads, a semi-automatic lubricating system to reduce servicing time, a powder suction recycling unit that avoids wastage or blockages, stainless steel construction for durability and hygiene, a Perspex turret cover that ensures operator safety and avoids contamination of the tablets, and all-electronic controls that make it fast and simple to adjust the machine's production. The RTP41 also offers an optional double layered, two-colour capacity, and can place carved characters or motifs on the surface of the tablets.

Combined, these features allow for a single operator to achieve mass production of attractive, high quality tablets quickly and easily, with minimal downtime. The RTP41 is therefore a popular choice for major enterprises in the pharmaceutical, chemical and food industries, producing attractive, professionally finished tablets for commercial use.

Technical Specifications

Number of dies	41
Maximum working pressure	80kn
Maximum tablet diameter (mm)	12
Maximum tablet thickness (mm)	6
Maximum filling depth (mm)	15
Maximum production (per hour)	180,000
Working diameter of rotary table (mm)	420
Speed of rotary table (rotations/minute)	14-36
Diameter of stamp (mm)	22
Height of middle stamp (mm)	22
Diameter of upper/lower stamping lever (mm)	22
Length of upper/lower stamping lever (mm)	115
Machine's coverage area (mm)	1230 x 950
Height of machine (mm)	1670
Net weight of machine (kg)	1850
Motor model	Y112M-4
Power (kw)	4
Motor Rotations/minute	1440
Voltage	380

Installation

The RTP41 tablet press is shipped in two boxes, one containing the machine itself and the other containing the powder suction unit.

When opening the wooden case, the top board and side board should be removed first. When the machine is completely uncovered use a crane to hook the top ring bolts. Bear in mind the weight of the machine, and take care to remove all obstructions from the packing materials before attempting to lift. The first lift should only raise the tablet press a few centimetres to ensure it moves cleanly.

The tablet press must be installed on a flat, level surface in a dry, well ventilated and well lit room.

ELECTRICAL INSTALLATION

The machine needs a 3 phase, 380volt AC power supply. The total power consumption is 4kw. The power supply for this machine is a TN-S system.

There is a grounding screw beside the plug-ins of the power system. This must be grounded securely to ensure safe operation. The thickness of the inlet conducting wire should be more than 1 mm.

NOTE The electronics control panel lets you control frequency-conversion, speed adjustment, and rotation.

Operation

NOTE Check that the emergency stop button on the left side of control panel is set to the normal position.

1. Open the glass cover on the electric operation panel (lift the cover mouth slightly and slide it down), use the designated key to turn on the power supply switch. The power supply light will illuminate, and the frequency LCD for the motor will flash.
2. Turn on the lighting switch for the pressing chamber inside the machine.
3. Check there are no fault lights displaying on the control panel.
4. Ensure that 2.5 Hz has been selected, then press the RUN button.
5. Before pressing tablets, check the displayed rotation speed is correct for your tablets. Use the button to change it if required.
6. Press the start button for the powder vacuum auxiliary machine.

To change the displayed content and run program of the frequency converter, read frequency converter operation manual.

To stop the machine, press the "STOP" button under the frequency conversion LCD and the machine will shut down in stages.

In the case of an emergency, strike the red mushroom-shaped emergency stop button on the left side of the control panel. The power supply will cut off and the machine will stop immediately.

NOTE Once the emergency has been dealt with, you must reset the emergency button to its original position to restore the power supply.

Installing or Changing the Dies

Before installing the dies, the working surfaces of the turret, upper/lower die apertures, middle die apertures, and all the dies themselves, should be cleaned thoroughly.

NOTE: There is a revolving inlay tongue at the centre of the parallel rail. To avoid damage, the machine can't start until the inlay tongue has been placed in its original position.

1. Open the turret shield at the back of machine and loosen the fixing bolts of the impact tablet nozzle, dismantle the tablet-output nozzle, then open the lower rear door board, and screw down the stainless steel hexagonal screws fixed on the table board of the tablet-pressing chamber. Then unlock the table board with the key and remove it.

Installing the middle dies

2. Loosen the turret's fixing screws for each middle die to about 1 mm from the turret's surface. (Ensure the middle die will not touch the head of the screw once installed horizontally.) Turn up the inlay tongue, and thread the strike bar into the upper impact hole. Use a hammer to knock it lightly into place, and check that the level of the die is not higher than that of the turret. Then tighten the screws securely.

Installing the upper dies

3. With the inlay tongue of upper rail turned up, grease the tail of the die lightly with vegetable oil, then insert it into the turret's upper impact hole. Turn the lever each way with your finger and thumb to check it moves cleanly.

4. Engage the lever in place by revolving the hand wheel. Once all the dies have been installed, turn down the inlay tongue

Installing the lower dies

5. The installation method is as for the other dies, but first raise the protective cushion. After installation, return the cushion to its position.

6. Once the dies have all been installed, rotate the hand wheel for a few revolutions to test that everything is moving smoothly. Check that the dies enter and leave their respective apertures cleanly. Also check that the lower impact lever has risen to 0.1-0.3mm above the working table of the turret.

Now start the motor and let it idle for five minutes. Check that it is running smoothly, without abnormal sounds.

Installing The Powder Feeder

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1. There are two feeder units, each consisting of the feeder itself, the hopper rack, column, adjustable screw and the hopper. To install, loosen the supporting column's fixing screw then install the feeder onto the column.
2. Place a layer of paper (about 0.05-0.1mm) on the working surface of the turret, tighten the screws on the tablet guard and powder scraper, and ensure close contact between the feeder and the paper. Then tighten the embossed screws fixing the feeder in place, ensuring close contact between the tablet guard and the paper.
3. Screw down the M4 fixing screws, then tighten the inner hexagonal screw on the supporting column, making sure there is enough clearance between the bottom of the feeder and tablet guard and the working surface of the turret. Then loosen the embossed screws, pull out the paper and tighten it up. Adjust the height of the rubber powder-scraper, making sure it is in close contact with the working surface of the turret.

NOTE To keep the powder flowing smoothly, you may need to check and adjust the height of the feeder from time to time, thereby changing the distance between the feeder outlet and the turret. To do this, loosen the screws on the hopper rack, raise or lower the hopper, then tighten the screws again.

Powder Vacuum

This machine is equipped with a special vacuum auxiliary unit which sucks up flying powder from the pressing chamber, keeping the pressing chamber under constant negative pressure. This reduces wastage and the risk of blockage.

Output Adjustments

Filling-adjustment

The filling adjustment wheels (one for each hopper) are located on the control panel. Turn them clockwise to increase the tablet weight, or counter clockwise to reduce tablet weight.

Tablet-thickness adjustment

There are two tablet thickness controls on the control panel, one for the left hand pressing wheel, and one for the right.

Turn the tablet thickness wheel clockwise to increase tablet thickness, or counter clockwise to reduce it.

NOTE After adjusting filling volume, check the hardness of the tablets. You may need to adjust tablet thickness too.

NOTE After adjusting the tablet fill or thickness, the nut on the adjustment wheel must be locked securely.

Speed Adjustment

To adjust speed, just press the up or down buttons on the operation panel of the frequency converter.

NOTE The choice of speed has a direct influence on the service life of the machine, the tablet weight, and tablet quality. Different raw materials, as well as humidity and viscosity all affect speed.

Ideally, choose a low speed to press herbal or mineral substances, or for large tablets.

Adjusting Pressure

Different materials, tablet shapes and sizes may each require a different working pressure. The pressure must be hard enough to press a durable tablet, but not so hard as to damage the die. If the pressure is too hard, the machine's cut-off will kick in and the machine will stop (see below).

To reset the pressure open the hand hole cover on the top of the machine. Tighten the nut after working pressure has been adjusted.

Warnings and Errors

Over Pressure

If the over pressure alarm cuts in, a warning signal will light and the machine will stop. This means the actual pressure is over the designated operation pressure.

NOTE Before examining the machine, press the emergency stop button to disengage the power.

Check the raw material grains are correct, and check the weight and rigidity of the tablets being produced. Then check the working pressure setting on the top of the machine. Adjust the setting if required.

Main motor malfunction indication

If the machine is running improperly or the frequency converter stops working and a malfunction indicator lights up, the type of malfunction will be displayed on the frequency converter's LCD. Correct the issue that is indicated, then restart the machine.

Lubrication

Establish a regular lubrication schedule to safeguard the long term life of the machine.

1. The worm and worm wheel are lubricated by passing through the soak, thereby dissipating heat and reducing wear. The level of oil can be observed through the worm wheel box visual window. Refill using 20# mechanic oil until 1/3-2/3 of the worm is covered. There is an oil-draining bolt installed on the side of the worm wheel box.
2. To lubricate other components, fill the oil nozzles for each component part of the machine once before starting a shift, and again during operation as required if the temperature starts to rise.
3. To add mechanic oil to the worm wheel head, use N46 in summer and N32 in winter. The oil should be changed every half year.
4. There are two round covers at the top of the machine to give access to oil the surface of the upper press wheel. Take care not to allow the oil to overflow.
5. To lubricate the lower bearing of the main shaft, open the right hand panel of the
6. machine, and add oil to the extended nozzle near the lower press wheel. This should be refilled twice a year.
7. Impact levers and the rail should be lightly oiled with N32 oil. Take great care not to allow this to contaminate the powder. The amount used must therefore be carefully controlled.

Maintenance

1. Check the machine components once or twice a month and immediately replace any damaged or worn parts. In particular, examine the flexibility of the worm, wheel, bearing, press wheel, upper and lower rail etc, to see whether they run smoothly.
2. After use, clean away all powder both inside and outside the machine. If the machine will be unused for a lengthy period, the dies must be removed. Apply grease to the machine and cover with a dust cloth.
3. The dies should be cleaned and kept in oil in their metal box to guard against damp.
4. In the event that the frequency converter malfunctions, it must be returned to the manufacturer for repair.

NOTE Before making an insulation check to the machine's electric components, you must remove the main loop and controlling circuit, which are connected to the frequency converter, to avoid them being damaged by a high voltage test.

List of Rolling Bearings and Installation Locations

Name of Bearing	Standard no.	Model	Quantity	Installation Location
Single column centripetal Cylinder roller bearing	GB 283-64	32508	8	Upper pressing wheel unloading unit
Single-way push force ball Bearing	GB301-64	8106	2	Upper end of main shaft
Single column centripetal	GB279-64	214	1	Upper end of main shaft
Single-way push force ball bearing	GB276-64	8126	1	Lower end of main shaft
Single-column centripetal ball bearing	GB276-64	316	1	Lower end of main shaft
Single-column cone roller bearing	GB297-64	7316	1	Lower end of main shaft
Single-column cone roller bearing	GB276-64	408	2	Drive shaft
Single-column cone roller bearing	GB297-64	7308	2	Drive shaft
Single-column cone roller bearing	GB301-64	8201	4	Thickness-adjusting unit for tablet