



Courtoy Rotary Tablet Presses

Versatile – Efficient – Superior



Courtoy Rotary Tablet Presses

Courtoy has been designing and building superior and versatile rotary tablet presses for over 80 years.

From pharmaceuticals to powder metallurgy, from confectionery to ceramics, from batteries to detergents, Courtoy's technological expertise and manufacturing know-how results in a range of extremely reliable and flexible tablet presses.

Down-time has been reduced to an absolute minimum thanks to the "Fast Change-Over" design; dedicated powder infeed systems permits high production levels even under the most demanding conditions.

The provision of the unique Courtoy "Air Compensator" ensures consistently high tablet quality, even with difficult formulations and direct compression powders.

R090F - Fully automatic small single-sided rotary tablet press

- For development purposes, pilot scale and flexible, low volume production
- Fast change over design reduces set-up and cleaning time
- Available with a data acquisition system for force and displacement analysis



R190FT - Fully automatic single-sided rotary tablet press

- For medium volume production
- Fast change over design reduces set-up and cleaning time
- Exchangeable turret for maximum tooling flexibility

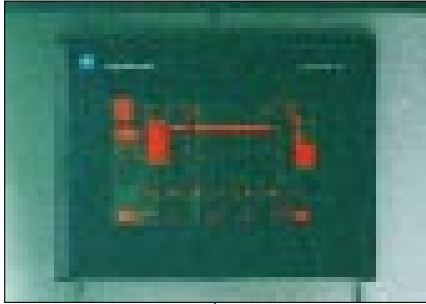


R290F - Fully automatic double-sided rotary tablet press

- For high to very high volume production
- Fast change over design reduces set-up and cleaning time



Courtoy Control Systems

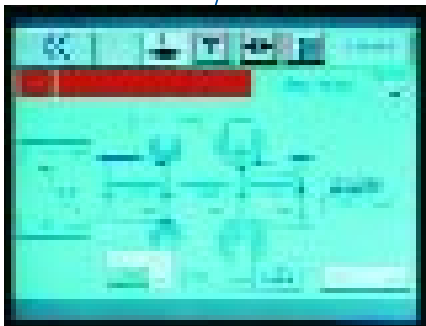
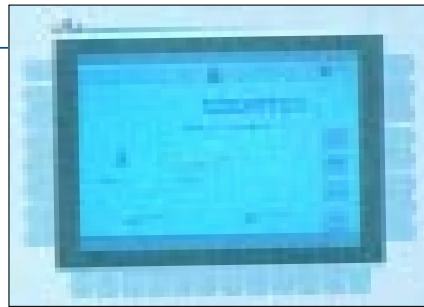


ITS - Integrated Tableting Supervisor

- State-of-the-art control system
- For fully automatic high speed tablet production
- Based on a standard industrial PLC
- One single processor performs all machine and production control functions
- Standard interface panel allows for easy use of the system
- Short start-up-to-automatic time for minimal powder loss
- All product definition data memorized by the system
- Automatic print-out of batch report data

MC3 - Multi-Control

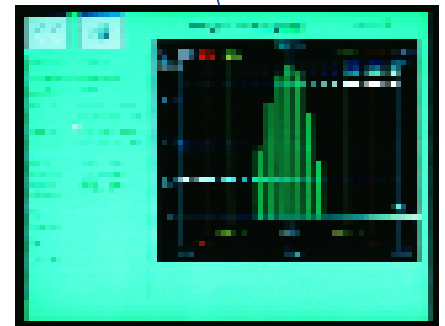
- The most complete control system offered by Courtoy
- Based on a PC/PLC hardware configuration
- The PLC performs all machine and production control functions, while the PC provides:
 - 1) Graphical colour “touch-screen” operator interface
 - 2) User management with individual user ID’s and passwords
 - 3) Easy integration into a local network
 - 4) Extensive batch data analysis capabilities



Graphical “touch screen” interface



Batch trending analysis



Batch distribution analysis

Special Courtoy Technologies

Modular machine construction and fast change over design

Modular design and dust-tight seals on turret and individual punches ensures total isolation of the compression zone from the upper and lower cam modules, resulting in excellent product containment.



The F-series machines allow for an extremely short cleaning and format change-over time:

- Disassembly and re-assembly of all removable parts without the use of tools
- All removable parts are designed for easy cleaning and can be cleaned in an automatic washing machine
- Use of light materials allows fast, easy removal and handling
- The isolated compression zone considerably reduces the area to clean
- A double set of all removable parts - "Fast Change Over Kit" - one set is being cleaned while the other is in use

Controlled Powder In-feed

A combination of a specially designed rotary valve and powder level sensor allows for accurate control of the powder column above the feeder. This 'constant level' system allows for a reduced and constant powder pressure inside the rotary feeder.

It eliminates risk of feeder jamming and guarantees constant powder feed flow into the dies, even at very high compression speeds.



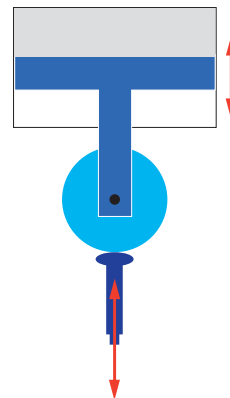
A double rotary feeder with separate drive motors allows for independent speed setting of both paddles. This offers maximum flexibility to find the optimal feeding parameters for a wide range of powders with different flow characteristics. The paddle speeds are memorized as product recipe parameters in the control system. The simple construction inside the feeder, with no drive belts, gears or bearings, makes it lightweight and easy to clean. It can be immersed in water or washed in a washing machine.

Pneumatic Compensation

The use of a pneumatic compensator at pre-compression allows for extended dwell time and an extremely accurate weight control system.

The movement of the top compression roller in an air cushion generates an extended compression profile at pre-compression resulting in better de-aeration of the powder and more uniform granule distribution in the die prior to final compression. This results in better quality tablets and eliminates the risk for tablet capping.

The tablet weight control system is very accurate, based on the measurement of thickness variations under constant force, and allows the quickest reaction to any weight or density variation in the granulate.



A turret with lifetime guarantee

Each Courtoy rotary press turret is made of forged steel for maximum strength and is entirely Nickel-coated for full stainless protection. Moreover, the turret has a standard hard chromium plated die table. The top punch guides feature replaceable bushes, eliminating the need to replace the entire turret when punch guides wear out. These features guarantee maximum resistance to turret damage and wear, eliminating the need to replace the turret.



Exchangeable turret for maximum tooling flexibility

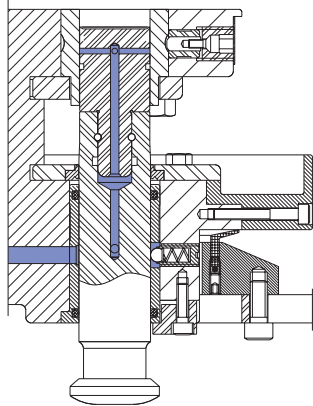


The R190FT is the most flexible single-sided production machine available on the market, featuring an exchangeable turret allowing the use of different tooling standards on one machine. The turret change procedure is fully automatic, handled by the machine's control system, and assures maximum protection for both operator and machine. The control system gives the operator a step-by-step report and prompts actions requiring operator intervention. The ITS system gives text support, while the Multi-Control system uses text and pictures.

Peripherals

Die Wall Lubrication System

The Courtoy die wall lubrication system allows for the application of an accurately controlled oil or grease lubrication film on the inside wall of the die prior to die filling. Die wall lubrication allows an easy ejection of the tablet from the die after compression eliminating ejection problems, even with the most difficult formulations, and guaranteeing optimal tablet quality.



Punch Face Lubrication

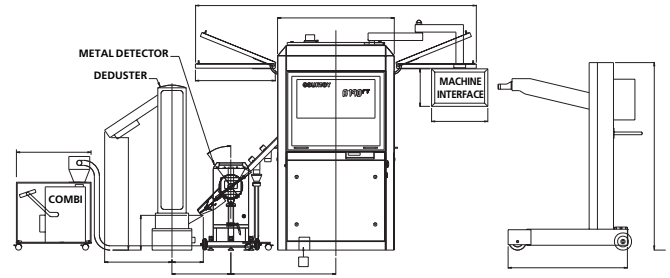
In order to eliminate material sticking on the active faces of the punches, Courtoy developed a state-of-the-art lubrication system for the upper and lower punch faces.

The system features lubricant spray nozzles integrated in the tablet ejection finger and powder scraper finger which apply the solid lubricant in the right dosage and at the right moment during the compression cycle.



Any solid lubricant can be used as long as the correct particle size is used. Solid lubricant and air are mixed in a controlled and repeatable way in an external unit and carried to the machine through flexible tubes. The dosage and mixing units for top and bottom punches are separated, allowing independent and optimal set-up for top and bottom.

The combination of "Punch Face Lubrication" and "Die Wall Lubrication" is often used in the production of effervescent tablets because it allows the compression of the most difficult formulations at high speed, while guaranteeing optimal physical and cosmetic tablet quality.



Peripheral devices such as tablet de-dusters, metal checkers and automatic in-process control systems (AWS or Combi-Test) can easily be connected to any Courtoy tablet press and integrated in the press control system.

The Automatic Weighing System (AWS) allows for automatic sampling and measurement of the individual tablet weights, while the Combi-Test also allows for measurement of individual hardness and thickness values.

To assist customers, Courtoy will produce a layout drawing incorporating the different units into a complete system, showing overall dimensions and installation requirements.

Material handling



Systems for powder in-feeding and tablet handling can be custom-designed, engineered and built in collaboration with our sister company, Buck, which specialize in material handling systems for normal and high toxic applications.

Other Machine Types

R100M - Manual or semi-automatic single-sided rotary tablet press

- For medium volume production
- Low cost machine for pharmaceutical and confectionery applications
- Constant level powder in-feed system available as an option
- Special tooling enables the production of ring tablets
- Can be equipped with the OC3: a basic, easy-to-use PLC-based control system
- Works in fully manual or semi-automatic mode



R292F - Automatic double-sided rotary tablet press for single-layer and double-layer tablet production

- Highly flexible machine can be used both as single layer/double output machine and as double layer/single output machine
- Extremely fast change over from single layer to double layer mode
- The ITS or Multi-Control system allows for fully automatic machine set-up from memorized product definition and for extensive batch reporting and statistical analysis.
- Extremely short start-up time even for double-layer tablets, resulting in minimal powder loss
- Fast change over design reduces set-up and cleaning time



R233 and R253 - Heavy duty tablet presses

- For heavy duty applications such as nutrition tablets and veterinary products, requiring very high compression forces
- Equipped with special 'heavy duty' punch holders for optimal pressure distribution
- Pre-compression up to 10 kN is performed on a pre-compression cam for extended dwell time; resulting in better powder de-aeration and more uniform granule distribution in the die prior to final compression
- Final compression force up to 200 kN
- Fully GMP design compliant for use in pharmaceutical, food and confectionery production
- Can be equipped with the Multi-Control or ITS control system
- When equipped with the unique Courtoy die wall and punch face lubrication systems, the R233 is the ideal machine for high speed compression of effervescent tablets.



Technical Data

Tooling		D (EU or IPT)	B (EU or IPT)	BB (EU or IPT)	special (EU or IPT)
Maximum tablet diameter (1)	mm	25.4	16 (L=19)	13 (L=14,3)	8
Punch body diameter	mm	25.4	19	19	16
Die outside diameter	mm	38.1	30.16	24	22
Die height	mm	23.81	22.22	22.22	22.22
R090F single-sided					
Number of stations		18	22	26	30
Maximum fill depth	mm	20	19	19	16
Top punch penetration: Fixed	mm	3.25	3.25	3.25	3.25
Maximum pre-compression force	kN	10	3 (10)	3 (10)	3 (10)
Maximum compression force (2)	kN	100	100	100	100
Maximum production capacity (3)	tab/hr	85,000	143,000	169,000	212,000
Electrical requirements		3phase + PE - 380V / 400V / 415 V / 460 V - 50Hz / 60Hz - 8,5 kVa			
Machine dimensions & weight		W = 850mm x D = 1060mm x H = 2050mm - 1800 kg			
R190FT single-sided					
Number of stations		24	30	36	40
Maximum fill depth	mm	20	19	19	16
Top punch penetration: Variable	mm	1 to 4	1 to 4	1 to 4	1 to 4
Maximum pre-compression force	kN	10	3 (10)	3 (10)	3 (10)
Maximum compression force (2)	kN	100	100	100	100
Maximum production capacity (3)	tab/hr	157,000	220,000	264,000	320,000
Electrical requirements		3phase + PE - 380V / 400V / 415 V / 460 V - 50Hz / 60Hz - 6,5 kVa			
Machine dimensions & weight		W = 1090mm x D = 1340mm x H = 2000mm - 2500 kg			
R290F double-sided					
Number of stations		43	55	65	71
Maximum fill depth	mm	20	19	19	16
Top punch penetration: Variable	mm	1 to 4	1 to 4	1 to 4	1 to 4
Maximum pre-compression force	kN	10	3 (10)	3 (10)	3 (10)
Maximum compression force (2)	kN	100	100	100	100
Maximum production capacity (3)	tab/hr	420,000	610,000	720,000	850,000
Electrical requirements		3phase + PE - 380V / 400V / 415 V / 460 V - 50Hz / 60Hz - 14 kVa			
Machine dimensions & weight		W = 1290mm x D = 1410mm x H = 2200mm - 4500 kg			
R292F double-layer					
Number of stations		43	55	65	71
Maximum fill depth 1° layer	mm	20	19	19	16
Maximum fill depth 2° layer	mm	11	11	11	11
Maximum pre-compression force	kN	10	3 (10)	3 (10)	3 (10)
Maximum compression force (2)	kN	100	100	100	100
Maximum production capacity (3)	tab/hr	210,000	305,000	360,000	425,000
Electrical requirements		3phase + PE - 380V / 400V / 415 V / 460 V - 50Hz / 60Hz - 14 kVa			
Machine dimensions & weight		W = 1290mm x D = 1410mm x H = 2200mm - 4500 kg			
R100M single-sided					
Number of stations		24	30	36	40
Maximum fill depth	mm	20	19	19	16
Top punch penetration: Fixed	mm	3.25	3.25	3.25	3.25
Maximum pre-compression force	kN	10	3 (10)	3 (10)	3 (10)
Maximum compression force (2)	kN	100	100	100	100
Maximum production capacity (3)	tab/hr	135,000	220,000	264,000	295,000
Electrical requirements		3phase + PE - 380V / 400V / 415 V / 460 V - 50Hz / 60Hz - 6,5 kVa			
Machine dimensions & weight		W = 1260mm x D = 1470mm x H = 2000mm - 2500 kg			

- (1) The maximum allowable tablet dimensions depend on the tablet shape. For odd shapes, it is recommended to contact Courtoy.
- (2) The maximum compression force will depend on the application. In case the effective compression force is higher than 70% of the indicated maximum it is recommended to contact Courtoy.
- (3) Effective maximum production capacity is dependent on the application, the product and tablet size & shape.

Niro Pharma Systems

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Central Know-How on a Global Scale

Based on a strong commitment to research and development, pharmaceutical technology centers in Belgium, Denmark,

Switzerland, the UK, Singapore, and USA provide global technical support and know-how to the pharmaceutical industry. These centers of excellence give customers access to a range of test facilities and expert teams with technical and process know-how.

Our teams work closely with our customers to optimize processes and evaluate their products, enabling them to achieve their process and production goals.



Contracting Profitable Experience

A world leader in supplying pharmaceutical equipment, Niro Pharma Systems offers manufacturers all over the world the

opportunity to enter into a profitable partnership for development and contract. The company combines advanced in-house technology with a thorough understanding of the pharmaceutical industry to help customers maximize their development results.

Niro Pharma Systems is world leader in providing advanced processing solutions for solid dosage forms to the pharmaceutical industry. Based on a dedication to research and durable quality, Niro Pharma Systems offers a wide range of solutions, from individual pieces of equipment to complete integrated plants, by uniting the state-of-the-art technologies of Aromatic, Buck, Collette, Courtoy, Fielder, Nica and Niro.

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