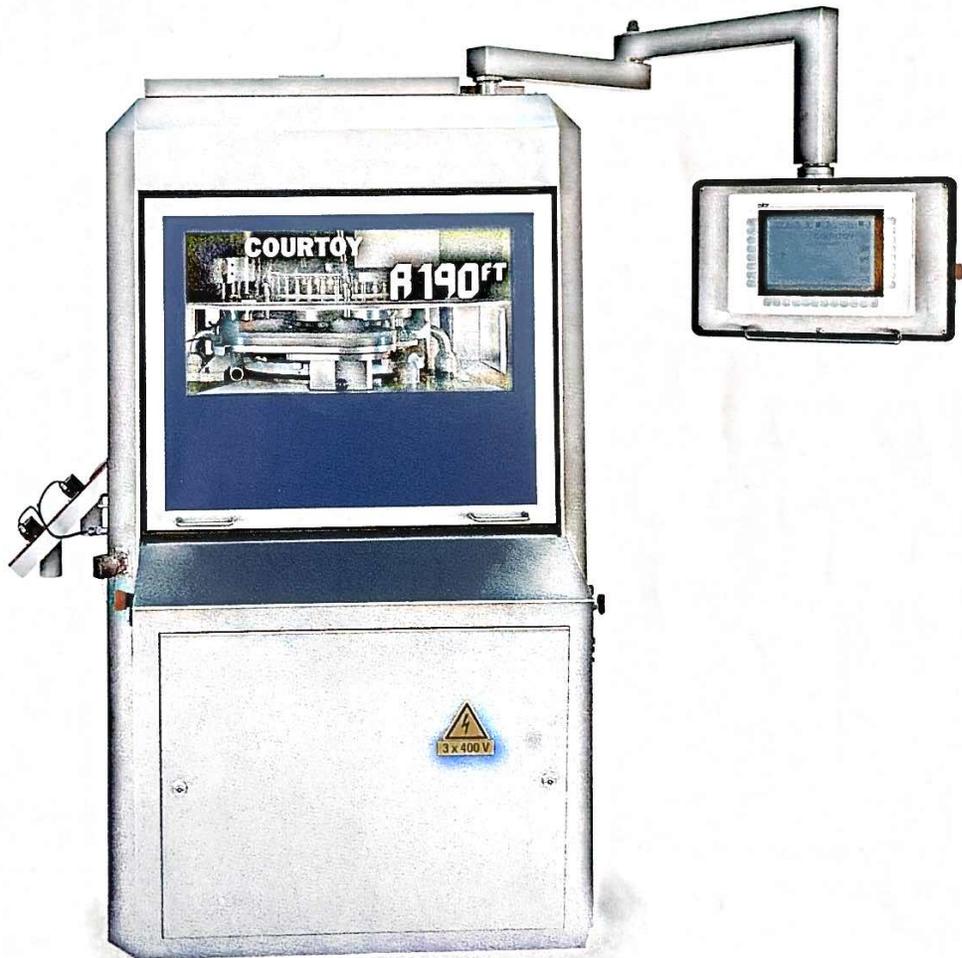




Powder Technology  
Division

Niro Pharma Systems

# Courtoy Rotary Tablet Presses

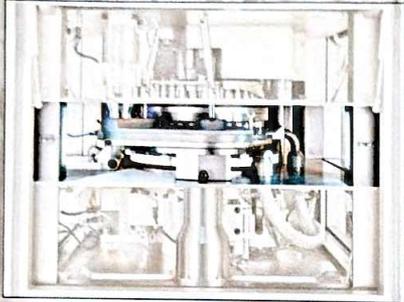


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# Special Courtoy Technologies

## 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 memorised as product recipe parameters in the control system.

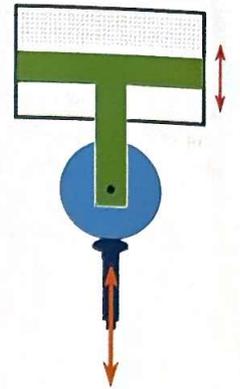
The simple construction inside the feeder, with no drive belts, gears or bearings, makes it lightweight and easy to clean. It can be immersed in water or washed in a washing machine.

## 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.

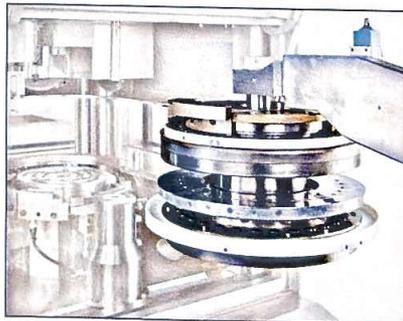


## A turret with lifetime guarantee

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



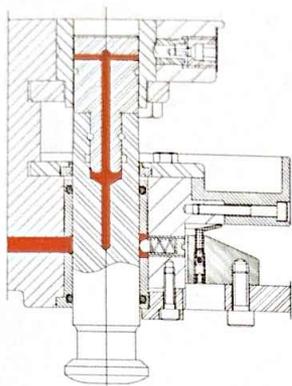
The R190FT is the most flexible single-sided production machine available on the market, featuring an exchangeable turret allowing the use of different tooling standards on one machine.

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.



## Die Wall Lubrication System

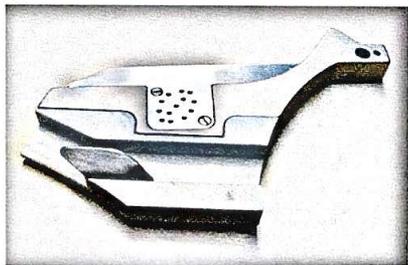
The Courtoy die wall lubrication system allows for the application of an accurately controlled oil or grease lubrication film on the inside wall of the die prior to die filling. Die wall lubrication allows an easy ejection of the tablet from the die after compression eliminating ejection problems, even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

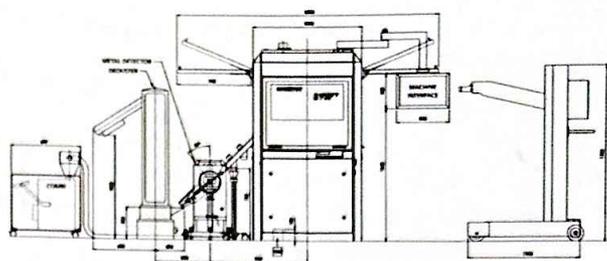


Any solid lubricant can be used as long as the correct particle size is used. Solid lubricant and air are mixed in a controlled and repeatable way in an external unit and carried to the machine through flexible tubes. The dosage and mixing units for top and bottom punches are separated, allowing independent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



## Peripherals



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 companies, Gallay and Buck, which specialise 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 memorised 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.



## Automated Video Inspection: Kanebo VSD

Courtoy is the exclusive European distributor for the market-leading Kanebo Automated Video Inspection Systems for pharmaceuticals: tablets, capsules, vials and granules.

The Osaka-Japan based Kanebo company develops, designs and constructs these high precision, high-speed inspection systems since 1975, and prides itself on the machines' high repeatability, reliability, easy set-up and operation, and extremely fast cleaning and change-over.

Various Kanebo machines are available at Courtoy for demonstrations and trials on customer's products. Courtoy offers full project management, assistance during installation and validation, as well as commissioning and start-up. A detailed training program is available for operators and technicians, while all after-sales services are co-ordinated from Courtoy in Brussels.

# 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
<b>R090F single-sided</b>					
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			
<b>R190FT single-sided</b>					
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			
<b>R290F double-sided</b>					
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			
<b>R292F double-layer</b>					
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			
<b>R100M single-sided</b>					
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 dependant on the application, the product and tablet size & shape.

# Niro Pharma Systems

## Courtoy nv

Bergensesteenweg 186  
B-1500 Halle  
Belgium  
Telephone: +32 2 363 8300  
Telefax: +32 2 356 0516  
E-mail: [courtoy@niro-pharma-systems.com](mailto:courtoy@niro-pharma-systems.com)  
[www.courtoy.be](http://www.courtoy.be)

## Niro Inc.

9165 Rumsey Road  
Columbia  
Maryland 21045, USA  
Telephone: +1 410 997 7010  
Telefax: +1 410 997 5021  
E-mail: [niro.inc@niro-pharma-systems.com](mailto:niro.inc@niro-pharma-systems.com)



## Courtoy Services

Courtoy Engineering has many years' experience in customised machine design. The team carries out detailed analysis of technical user requirements and generates a complete tailored proposal.

Our dedicated, highly skilled customer care team offers:

- Customised evaluation of user requirements
- In-house machine evaluation trials and process development
- Full machine documentation including detailed IQ/OQ test results and software validation
- Comprehensive project management
- Factory acceptance testing and initial in-house training
- Full on-site installation, start-up and commissioning
- Detailed training programmes for operators and maintenance personnel
- Technical support by phone and e-mail
- On-site preventative maintenance and repair work
- Spare part management

## Total solutions for processing pharmaceutical solid dosage forms from one supplier

Niro Pharma Systems was formed by the fusion of Aeromatic-Fielder, Buck, Collette, Courtoy and Gallay. Each of these companies offers you equipment that defines the state-of-the-art. Additionally Niro Pharma Systems is able to guide you in the selection of the process best fulfilling your specific requirements and in the complete realisation of the entire project. Niro spray drying systems and the contract manufacturing capabilities of Atlantic Pharmaceutical Services completes the scope.



[www.Niro-Pharma-Systems.com](http://www.Niro-Pharma-Systems.com)