

Tablet Compression - R150^e



Courtoy™

With **Exchangeable Turret** for maximum flexibility

where inspiration meets technology

GEA Pharma Systems supplies advanced technologies for the preparation and processing of Active Pharmaceutical Ingredients (API) for the production of oral and parenteral dosage forms.

GEA Pharma Systems strives for *Price/Performance Leadership* providing its customers with highly cost effective, integrated systems for the pharmaceutical industry. GEA Pharma Systems is dedicated to innovation and thereby providing durable quality through its well-established brands: Aeromatic-Fielder™ and Collette™ - batch and continuous granulation, drying, pelletizing and coating; Buck® - contained materials handling; Courtoy™ – tablet compression; Lyophil™ - pharmaceutical freeze drying and automated vial handling systems; and Diessel™ - fermentation and liquid formulation.

GEA Pharma Systems' activities include partnering with customers to develop new products and enhance clinical effectiveness; the supply of R&D-scale and stand-alone production equipment; and the installation of complete integrated production lines aiming at maximum operational reliability.

Financial Strength with GEA Group

As an internationally operating technology group the company focuses on process technology and components for demanding production processes in various end markets. GEA Group is a market and technology leader in the majority of its business lines, with over 20,000 employees worldwide, serving customers in 50 countries and a EUR 4.4 billion revenue in 2010.

The company is listed in the MDAX index (G1A, WKN 660200). In addition GEA Group has a sponsored level I ADR program in the USA.

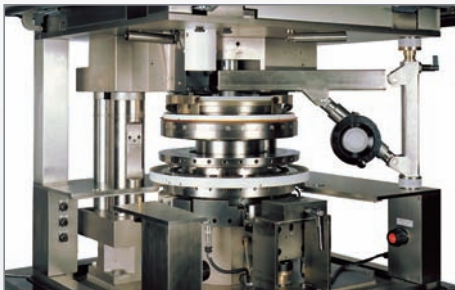
Flexible – Accessible – Compact

The Courtoy™ R150° – Maximum flexibility

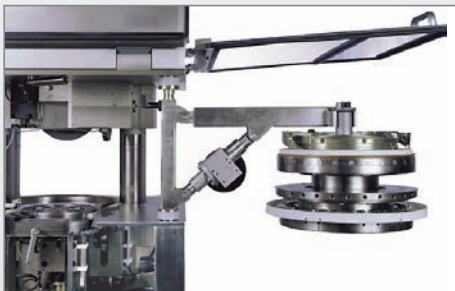
The R150° has an optional machine-incorporated hoisting arm with separate trolley for easy and rapid turret exchange. The semi-automatic exchange sequence ensures a turret exchange in 20 minutes.

The most flexible way to a quality tablet.

1



2



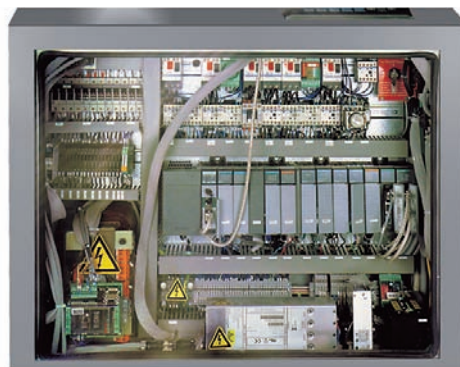
3



The Courtoy™ R150° – Maximum accessibility

Thanks to its four large spring-loaded doors and the elimination of corner pillars or columns, all parts of the compression zone are easily accessible for cleaning and maintenance.

The easiest way to a quality tablet.



The Courtoy™ R150° – Compact and mobile design

The electrical cabinet, incorporated in the tablet press body, demands minimal space and makes the Courtoy™ R150° very easy to install and move around.

The most compact way to a quality tablet.

Courtoy™ R150^e

Robust – Fully Automatic – High Yield – Economical



The Courtoy™ R150^e – Extremely robust design

- The machine frame is made of heavy cast iron parts for maximal absorption of vibrations.
- The turret is made of extremely strong forged steel and is entirely nickel coated.
- The die table's working surface has a chrome finish for optimal protection.
- The upper punch guides are fitted with exchangeable guide bushes with key ways for shaped tooling.

The most reliable and robust way to a quality tablet.



The Courtoy™ R150^e – Maximum yield

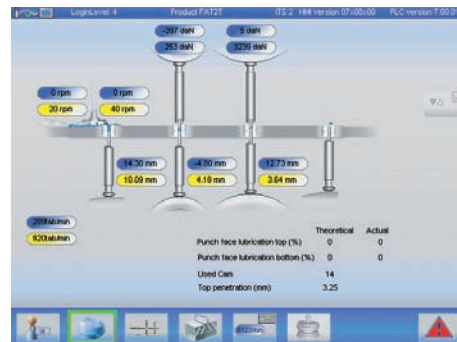
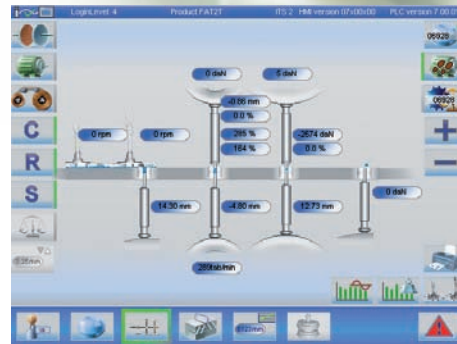
The R150^e is available with a special paddle feeder for minimal powder loss and maximal yield.

The most economical way to a quality tablet.

The Courtoy™ R150^e – The most economical Rotary Tablet Press for any type of batch size

The Courtoy™ R150^e includes many standard features, offering outstanding performance in *flexibility, productivity, yield* and *reliability* at an incomparably low price.

The most cost-effective way to a quality tablet.



The Courtoy™ R150^e – fully automatic tablet press

The recently upgraded control system ITS.2 (Integrated Tableting Supervisor) with full-colour graphical touch-screen interface is even more user-friendly and easier to use than its predecessor ITS. One simple industrial PLC, using readily available components, controls the entire tableting process. The automatic production control functions guarantee tablet production to the highest quality standards.

The ITS.2's new features include:

- Large (10-inch) screen on pending arm
- Enhanced menu-driven software
- Monitoring of all process parameters at all times
- Four access levels for tightly controlled, secure production
- Adjustable dwell-time at pre-compression (optional): this feature enables better de-aeration of the powder bed and improves particle rearrangement, reducing the risk of capping
- Electronic recording of printed data (optional)

The surest way to a quality tablet.

Specifications

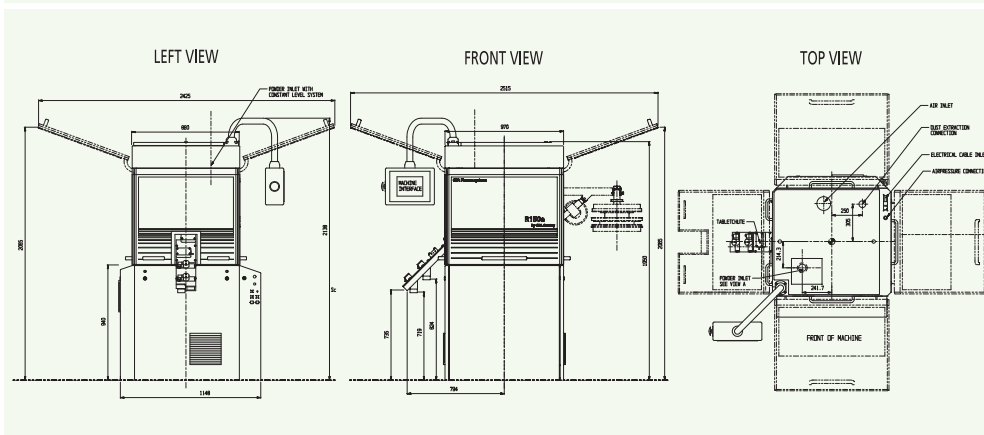
Technical data and layout

TOOLING	EU type D TSM type D	EU type B TSM type B	EU type BB TSM type BB	EU type BBS TSM type BBS
Number of stations	24	30	36	39
Maximum tablet diameter / length ¹	25,4 mm	16 mm (L = 19 mm)	13 mm (L = 14,3 mm)	11 mm
Punch body diameter	25,4 mm	19 mm	19 mm	19 mm
Outside diameter of the die	38,1 mm	30,16 mm	24 mm	22 mm
Die height	23,81 mm	22,22 mm	22,22 mm	22,22 mm
Maximum fill	20 mm	19 mm	19 mm	19 mm
Maximum precompression force	10 kN under extended dwell-time by air compensator			
Maximum main compression force ²	100 kN			
Variable top punch penetration	1 to 4 mm	1 to 4 mm	1 to 4 mm	1 to 4 mm
Production ³ x 1000	7 to 157 tab/h	11 to 220 tab/h	14 to 264 tab/h	24 to 320 tab/h
Electrical requirements	3phase + PE - 380 V / 400 V / 415 V / 460 V - 50 Hz / 60 Hz - 9 kVA			
Machine height	2000 mm			
Floor space	Basic machine: 970 x 1148 mm			
Net weight	2500 kg			

¹The maximum size of the tablet varies with the shape. For odd shapes it is recommended to contact GEA Pharma Systems - Courtoy™.

²The maximum compression force will vary for each application. When the force will be more than 70% of the maximum it is recommended to contact GEA Courtoy.

³Depending on the application: product, size, shape,...



Standard machine features

- Automatic tablet weight control, including rejection of out-of-tolerance tablets
- Automatic tablet sampling and weight correction at adjustable interval
- Double paddle feeder with 2 independent drive motors
- Hard chromium coated die table
- Air compensator system for extended dwell time and maximal punch protection
- Electromagnetic valve in tablet chute for rejection of uncontrolled tablets at start-up
- Electromagnetic valve in tablet chute for automatic or manual tablet sampling
- Automatic & adjustable punch lubrication based on oil mist system
- Identification of bad punch
- Bottom and top punch tightness detectors
- ITS.2 menu for easy and fast sensor off-set & calibration
- Tablet and time counters
- Prewired for connection with automatic tablet checking system (AWS or Combi-Test)
- Prewired for connection of tablet deduster and metal detector

Maintenance and Remote Service & Support

- All electrical components and control system hardware (including PLC, I/O cards and frequency drives) are standard industrial components, sourced from major suppliers worldwide. These components can be sourced locally at low prices and with very short delivery time.
- An optional modem allows Courtoy™ software engineers to perform remote system troubleshooting and software upgrades.





Central Know-How on a Global Scale

Based on a strong commitment to research and development, pharmaceutical technology centres in Belgium, Denmark, Switzerland, the UK, Singapore, and USA provide global technical support and know-how to the pharmaceutical industry. These centres

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 optimise processes and evaluate their products, enabling them to achieve their process and production goals.



Contracting Profitable Experience

A world leader in supplying pharmaceutical equipment, GEA Pharma Systems offers manufacturers all over the world the opportunity to enter into a profitable partnership for development and contract. GPS combine advanced in-house technology with a thorough

understanding of the pharmaceutical industry to help customers maximize their development results.



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