COMPRIMA

CENTRIFUGAL DIE FILLING TABLET PRESSES

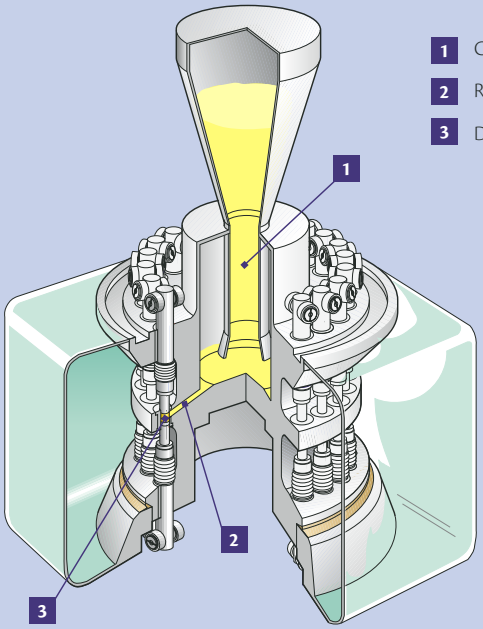
IMA ACTIVE

Solid Dose Solutions

COMPRIMA SYSTEM

IMA's tablet press machines of the Comprima Series are the result of many years of experience in the field of design and construction of machines for the processing of pharmaceuticals products in powder form.

CENTRIFUGAL DIE FILLING GUARANTEES HIGH YIELDS AND IMPROVES POWDER FEEDING, ALLOWING MAXIMUM PRODUCTION SPEEDS EVEN WITH SHAPED TABLETS AND DIFFICULT TO HANDLE PRODUCTS



1 Central rotor area
2 Radial channels
3 Dies

CENTRIFUGAL DIE FILLING

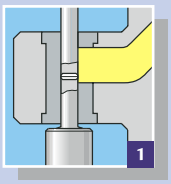
The powder is fed from an upper loading hopper into the central rotor area and moves towards the dies through the specially shaped radial channels. The centrifugal force generated by the rotation of the turret ensures accurate feeding of the dies without the risk of powder mix segregation.

The absence of rotary distributors means no risk of product contamination with metal particles and no segregation problems. The product is fed to the dies in a "packed settling" and it is always contained in a closed path: this minimizes product losses and ensures higher yield even with oblong or shaped punches.

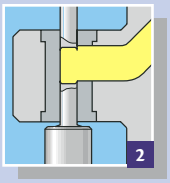
The centrifugal force improves powder feeding even at high production speeds and difficult-to-handle products. The actual production speed of Comprima tablet presses agrees with the theoretical one for the majority of products processed and with all tablet sizes.

Inner view of the turret and openings of the radial channels for powder feeding to the dies: one feeding channel each pressing station.

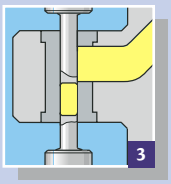
COMPRIMA SERIES



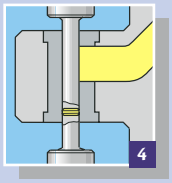
A very narrow space separates the upper and lower punch



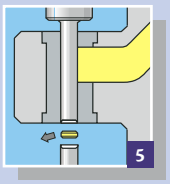
The upper punch move upwards, and the dies are filled through the lateral opening by centrifugal force: the quantity of dosed product depends on the position of the upper punch



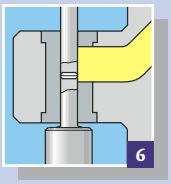
Both punches move downwards, thus conveying the powder to the lower, closed section of the die



The tablet is formed, through compaction, pre-compression and main compression



The tablet is ejected by the upper punch through the lower section of the die



The punches are re-positioned and the cycle starts again

COMPRESSION TOOLS ARE MADE UP OF TWO PARTS

The punch shaft is part of the basic machine and the punch tip, the size of which varies depending on the size of tablet to be processed. The semi-automatic size change device allows two stations to be changed concurrently and a complete change-over can be achieved in as little as an hour (30 minutes for removal and another 30 for re-fitting).

R&D

All Comprima machines can operate with a reduced number of stations, this is enabled by fitting the machine with special dies with spring damping to reduce vibratory movement for upper punches. These special size parts, together with the relevant software, allow tests to be carried out for R&D or set-up purposes. Even when running with a minimum product quantity, the machine is working in a "production configuration", therefore set-up parameters can be used for real production.

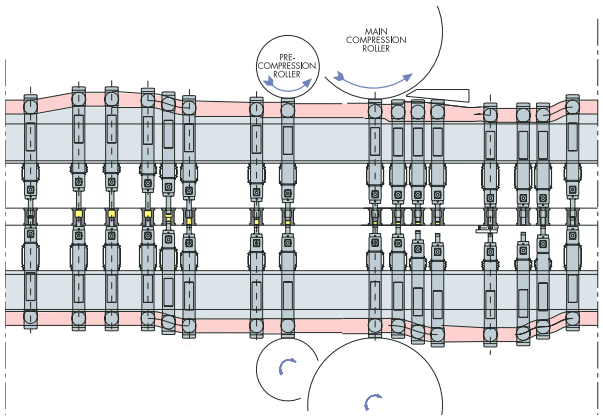
Single tip tooling

Double tip tooling

Multiple tip tooling

TOOLS

Single or multiple tip tooling for enhanced thrughput or microtablets production.



Mobile Head

It is subject to the action of the pre-compression and compression wheels. Turning on itself, it prevents compression from occurring always at the same point. It is made of tool steel and therefore it is more wear resistant.

Upper Punch Shaft

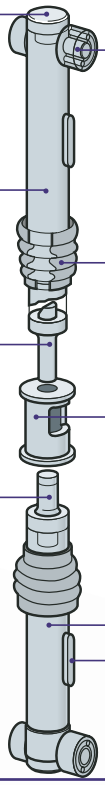
It is made of stainless steel and practically wear-proof. They are no longer size parts but an integral part of the machine base, and are common to all the tablet shapes and sizes.

Upper Punch

Built in stainless steel, the punches are always positioned (thanks to the special engaging system) whatever the tablet shape and do not require any adjustment.

Lower Punch

Built in stainless steel, the punches are always positioned (thanks to the special engaging system) whatever the tablet shape and do not require any adjustment.



Bearings

They determine the position of the punch shaft and transmit the load for compaction and maintenance of pre-compression.

Bellows Seals

They consent the isolation of the compression area.

Forming Die

The stainless steel die includes a wide side opening for powder infeed.

Lower Punch Shaft

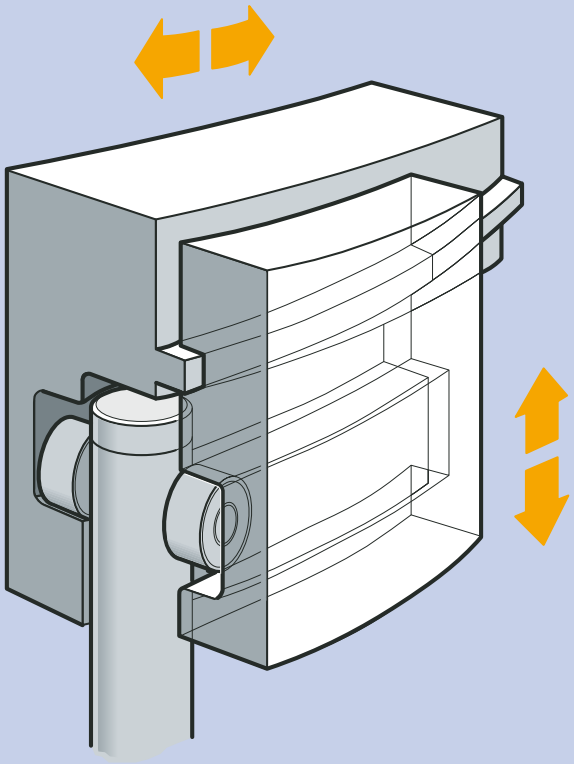
It is made of stainless steel and practically wear-proof. They are no longer size parts but an integral part of the machine base, and are common to all the tablet shapes and sizes.

Phase Notch

It ensures that the punch shaft and therefore the punch is always in phase.

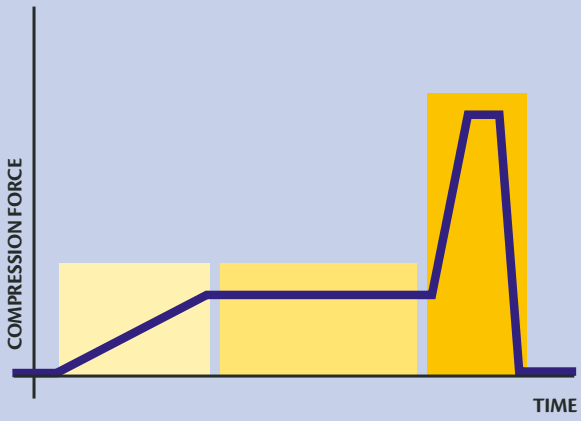
COMPRIMA SERIES

Cams and rollers fitted in the top section of the punch shafts allow the lengthening of the powder compacting and pre-compressing process, improving tablet quality and minimizing capping and lamination problems, even at high speed. Just one dosing cam covers the entire dosing range.



COMPRESSION DIAGRAM

- Compacting
- Pre-compression maintained
- Final compression



SEPARATION OF COMPRESSION AREA

Thanks to bellows and seals, the processing area is completely isolated from the mechanical parts of the machine. Because of the complete separation of the mechanical area, there is no risk of powder contamination with lubrication oil. Furthermore, the oil never gets contaminated with the product, and can therefore be recycled. There is no need to change for wasted oil.

UNIVERSITA' DEGLI STUDI DI PARMA
DIPARTIMENTO FARMACEUTICO

At the Department of Pharmacy of the University of Parma studies have been carried out for validating the tablet manufacturing processes associated with the fundamental and innovative features of the "COMPRIMA 300" machine, namely the centrifugal die filling system, the automatic control of operating parameters & the washing system.

COMPRIMA AND CONTAINMENT

The tablet presses of the Comprima series are particularly suitable to be fitted with isolation technology due to the following features:

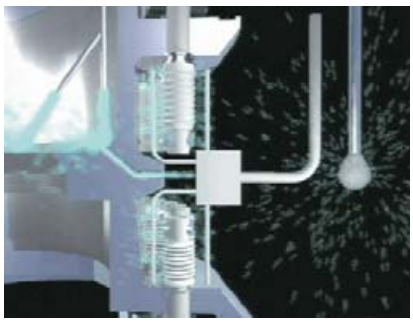
- Minimisation of contaminated parts, due to the isolation of the compression area.
- Safe access to the production area by means of the glove ports fitted on the machine windows
- Clean In Place system for a completely automatic and validatable cleaning.

CLEAN IN PLACE

The standard cleaning cycle lasts three hours and includes the following phases:

- pre-washing (10 minutes)
- washing with detergent (10 minutes)
- rinsing with demineralized water (10 minutes)
- hot air drying (2 hours 30 minutes)

Several functional parameters can be set by the operator for each of the above phases. This allows the adaptation of the work cycle to the specific characteristics of the product to be processed. Several cleaning programs can be stored in the computer so that the operator can simply recall the most appropriate cleaning recipe according to the product.
The use of cleaning in place unit can be optimized by connecting the group with up to three Comprima tablet presses.



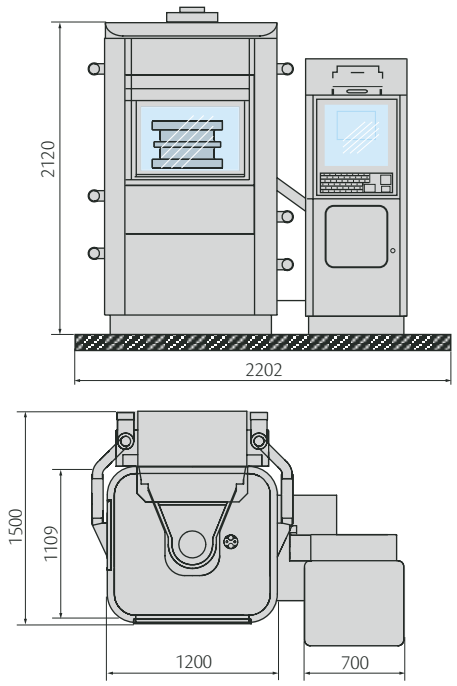
An extra advantage afforded by the fact that the processing area is completely isolated from the mechanical parts of the machine is the possibility of setting up the machine with a fully automatic cleaning system. The operator simply needs to remove the size parts and fit the cleaning devices to start the unattended cleaning cycle.

CONTROL SYSTEM & OPERATOR INTERFACE

Compression force control with automatic feedback on machine working parameters is standard on all Comprima tablet presses. IPC unit is also available as option, for a statistical check of tablets characteristics (weight, thickness, hardness) and machine self-adjustment.

- PC with graphic color touch screen
- 21 CFR part 11 compliance
- batch and CIP recipes storage
- process and event data logging.

COMPRIMA TECHNICAL DATA



	COMPRIMA 150	COMPRIMA 250	COMPRIMA 300
Maximum output (tablets/hour)	150,000	250,000	300,000
Maximum turret speed (rpm)	138		
Number of stations	18	30	36
Round tablet dimensions	5 ÷ 17 mm		5 ÷ 16 mm
Oblong tablet dimensions	5 ÷ 21.5 mm		5 ÷ 17 mm
Compression force (kN)	Up to 80		
Standard voltage	400 V (±10%) - 50Hz		
Maximum installed power	25 kW (50 Hz) - 27 kW (60 Hz)		
Compressed air	300 l/minute at 6 bar		
Minimum water delivery	70 l/minute - 3 bar - 60°		
Weight (kg)	3,400		

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