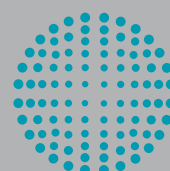




EFFICIENCY FOR TABLET MANUFACTURING

www.fette-compacting.com



**FETTE
COMPACTING**
be efficient

Fette Compacting – be efficient!

In the years to come, billions of people throughout the world can be expected to gain access to basic health care for the first time in their lives – an enormous and inspiring challenge for all involved. And the needs of patients in established markets will continue to increase at the same time. For the industry this means that it will have to produce more, and produce it more quickly, more flexibly and, above all, more cheaply than at present – in short: more efficiently.

Fette Compacting, a member of the LMT Group, is global market leader in tableting techniques and other technology and will be helping to shape this development process. Tablets are the form in which the greatest volumes of medicines are administered. This means that efficient tablet production with high quality standards makes a major contribution to the healthcare of people all over the world. Fette Compacting accepts the challenge involved and has made its corporate slogan: "Be efficient!"

Fette Compacting is a technologically-established international company that sees itself as a developer and manufacturer of systems that encompass all of the technical equipment used in tableting – from tableting punches and computer-controlled tableting machines to isolators. This product range is rounded off by a wide selection of specially tested peripheral devices. With its ultramodern technology and 60 years' experience, the company is constantly available to its customers as a reliable, competent and innovative source of advice and help.



Competence Center at global level



Fette Compacting has its head office and principal production plant in Schwarzenbek near Hamburg. A global network consisting of subsidiaries in China (Nanjing), France (Fontenay-sous-Bois), India (Goa), Latin America (Campinas, Brazil), South-east Asia (Singapore), Spain (Madrid), the USA (Rockaway, New Jersey) and over 40 agencies in other countries ensure that local customers get the products and after-sales service they need. Fette Compacting has specially equipped Competence Centers in various cities with training units where customers' staff can acquire the sort of practical know-how that enhances production safety.

Fette Compacting is also the only manufacturer employing a technical sales force with specialist knowledge on all aspects of tableting. With its 50 globe-trotting salesmen backed by 30 other staff members at its national agencies, Fette Compacting always has qualified service technicians close at hand for every single one of its customers.

- 1 USA (Rockaway, New Jersey)
- 2 Latin America (Campinas, Brazil)
- 3 India (Goa)
- 4 China (Nanjing)
- 5 South-east Asia (Singapore)

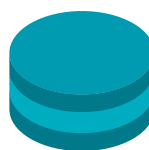
R&D



102i

The 102i tableting machine is the ideal solution for tablet production in the lab and for galenic applications. Scaling-up is simple because the structure of the compression rolls is identical to those of the production tableting machines. All parameters obtained in the lab can be transposed directly to the productionscale machines.

102i



max.
8,5 mm (11)

max. 25 mm

Dies (D) Segments (S)	32 D	30 D	24 D	20 D	20 D	8+8 D	6 D	6 D	45 S	30 S	24 S	21 S
Punch type	EU19	EU 19 / TSM 19	EU 19 / TSM 19	EU 1" – 441	EU 1" / TSM 1"	EU 19 / EU 1" TSM 19 / TSM 1"	EU 1" TSM 1"	EU 19 TSM 19	FS12	EU19	EU1"	EU 1" – 441
Tablet output max. tablets/h	230,400	216,000	172,800	120,000	120,000	48,000	36,000	43,200	324,000	216,000	144,000	126,000
Pre-compr. force max. kN	80*	80	80	80	80	80	80	80	80**	80	80	80
Compr. force max. kN	80*	80	80	80	80	80	80	80	80**	80	80	80
Tablet diameter mm	11	13	16	25	25	16 / 25	25	16	11	18	25	25
Filling depth max. mm	18	18	18	22	22	22	22	18	18	22	22	22
Tablet thickness max. mm	8.5	8.5	8.5	8.5 (11)	8.5 (11)	8.5 (11)	8.5 (11)	8.5 (11)	8.5	8.5	8.5 (11)	8.5 (11)
Weight kg	2,500											
Dimensions mm	900 × 1,160 × 1,875											

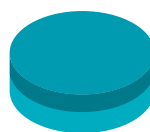
* Tools only permit a max. of 70 kN. If tools are large and filling depths are high, the machine cannot be run at the highest capacity.

** Tools only permit a max. of 25 kN.

For production operation are additional options needed



52i



max. 22 mm

*2 layers only for 52i Bi-Layer

	52i				52i-bi-layer			
Number of punch stations	10	8	4 + 4	FlexAdapt X-8	20	16	8	FlexAdapt X-16
Punch type	EU19 / TSM19	EU 1"	EU19 / TSM19 EU 1" / TSM 1"	EU 19 / EU 1" TSM 19	EU19 / TSM19	EU 1"	EU19 / TSM19 EU 1" / TSM 1"	EU 19 / EU 1" TSM 19 /
Tablet output max. tablets/h	42,000	33,600	16,800	33,600	60,000	48,000	24,000	48,000
Pre-compr. force max. kN	5 (10)	5 (10)	5 (10)	5 (10)	10	10	10	10
Compr. force max. kN	-	-	-	-	10	10	10	10
Tablet diameter mm	60	60	60	60	60 (80)	60 (80)	60 (80)	60 (80)
Filling depth max. mm	16	25	16 / 25	25	16	25	16 / 25	25
Tablet thickness max. mm	20	20	20	20	20 / 10	20 / 10	20 / 10	20 / 10
Weight kg	440				950			
Dimensions mm	1,200 × 600 × 1,600				1,465 × 800 × 1,805			



Medium

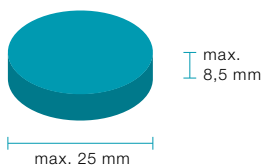
The 1200i, 2200i and 3200i tableting machines of the Medium range are ideal as workhorses for production of mono- and bi-layer tablets manufactured by standardized processes. They have a manually-operated turret exchange system.

1200i

Pitch circle diameter 280 mm
 Weight approx. 2,500 kg
 Footprint 920 × 920 mm

Tablet

Number of layer 1 layer
 Max. tablet output 230,400 tablets/h
 Max. tablet output Pmax 324,000 tablets/h
 Max. tablet diameter 25 mm
 Max. tablet thickness 8.5 mm (11)



Dies (D) Segments (S)	32 D	30 D	24 D	20 D	20 D	45 S	30 S	24 S	21 S
Punch type	EU19	EU 19 / IPT 19	EU 19 / IPT 19	EU 1" – 441	EU 1" / IPT 1"	FS12	EU19	EU1"	EU 1" – 441
Tablet output max. tablets/h	230,400	216,000	172,800	120,000	120,000	324,000	216,000	144,000	126,000
Pre-compr. force max. kN	80*	80	80	80	80	80**	80	80	80
Compression force max. kN	80*	80	80	80	80	80**	80	80	80
Tablet diameter mm	11	13	16	25	25	11	18	25	25
Filling depth max. mm	18	18	18	22	22	18	22	22	22
Tablet thickness max. mm	8.5	8.5	8.5	8.5 (11)	8.5 (11)	8.5	8.5	8.5 (11)	8.5 (11)
Weight kg	2,500								
Dimensions mm	900 × 1,160 × 1,875								

* Tools only permit a max. of 70 kN. If tools are large and filling depths are high, the machine cannot be run at the highest capacity.

** Tools only permit a max. of 25 kN.

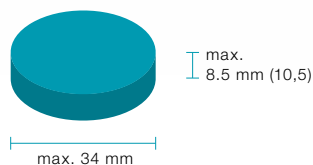


2200i

Pitch circle diameter 410 mm
Weight approx. 3,500 kg
Footprint 1220 × 1220 mm

Tablet

Number of layer 1 layer
Max. tablet output 324,300 tablets/h
Max. tablet output Pmax 455,400 tablets/h
Max. tablet diameter 34 mm
Max. tablet thickness 8.5 mm (10.5)



Dies (D) Segments (S)	47 D	43 D	36 D	30 D	30 D	22 D	66 S	45 S	36 S	33 S
Punch type	EU 19	EU 19 / IPT19	EU 19 / IPT 19	EU 1" / IPT 1"	EU 1"– 441	EU 35	FS12	EU 19	EU 1"	EU 1"– 441
Tablet output max. tablets/h	324,300	296,700	248,400	180,000	180,000	105,600	455,400	310,500	216,000	198,000
Pre-compr. force max. kN	100*	100	100	100	100	100	100**	100	100	100
Compr. force max. kN	100*	100	100	100	100	100	100**	100	100	100
Tablet diameter mm	11	13	16	25	25	34	11	18	25	25
Filling depth max. mm	18	18	18	22	22	26	18	22	22	22
Tablet thickness max. mm	8.5	8.5	8.5	8.5	8.5	8.5(10.5)	8.5	8.5	8.5 (11)	8.5 (11)
Weight kg	3,500									
Dimensions mm	1,200 × 1,200 × 2,022									

* Tools only permit a max. of 70 kN. If tools are large and filling depths are high, the machine cannot be run at the highest capacity.

** Tools only permit a max. of 25 kN.



Compression compartment with
compression stations

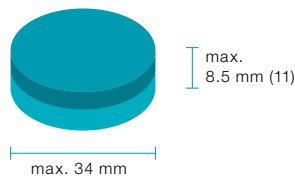
+

3200i

Pitch circle diameter 680 mm
Weight approx. 4,500 kg
Footprint 1390 × 1390 mm

Tablet

Number of layer 2 layer
Max. tablet output 1,137,600 tablets/h
Max. tablet output Pmax 1,584,000 tablets/h
Max. tablet diameter 34 mm
Max. tablet thickness 8.5 mm (11)



Dies (D) Segments (S)	79 D	73 D	61 D	49 D	49 D	37 D	110 S	75 S	55 S	45 S
Punch type	EU 19 BBS	EU 19 (IPT 19) BB	EU 19 (IPT 19) B	EU1" (IPT 1") D	EU1"– 441	EU 35	FS12	EU 19 (IPT 19)	EU1"/ EU1"–441 (IPT 1")	EU 35
Tablet output max. tablets/h	1,137,600	700,800	585,600	470,400	470,400	355,200	1,584,000	1,080,000	528,000	432,000
Pre-compr. force max. kN	100*	100	100	100	100	100	100**	100	100	100
Compression force max. kN	100*	100	100	100	100	100	100**	100	100	100
Tablet diameter mm	11	13	16	25	25	34	11	11 (18)	25	34
Filling depth max. mm	18	18	18	22	22	26	18	22	22	26
Tablet thickness max. mm	8.5	8.5	8.5	8.5	8.5	8.5 (11)	8.5	8.5	8.5	8.5 (11)
Weight kg	4,500									
Dimensions mm	1,370 × 1,370 × 2,022									

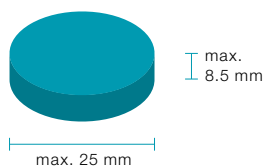
* Tools only permit a max. of 70 kN. If tools are large and filling depths are high, the machine cannot be run at the highest capacity.

** Tools only permit a max. of 25 kN.

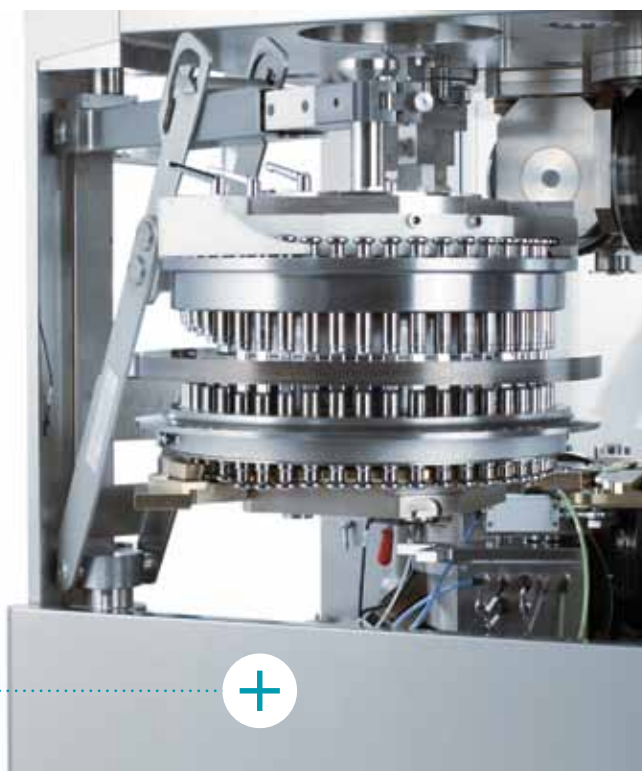
Premium

The tableting machines of the Premium range are the ideal solution for the production of high unit quantities of mono-layer (2090i) and bi-layer (3090i) tablets. These machines have an automatic turret clamping system and maintenance free servomotors for the adjustment of pressure rollers.

Used together with the Pmax turret the 3090i can yield an output of more than 1.3 million tablets per hour.



2090i

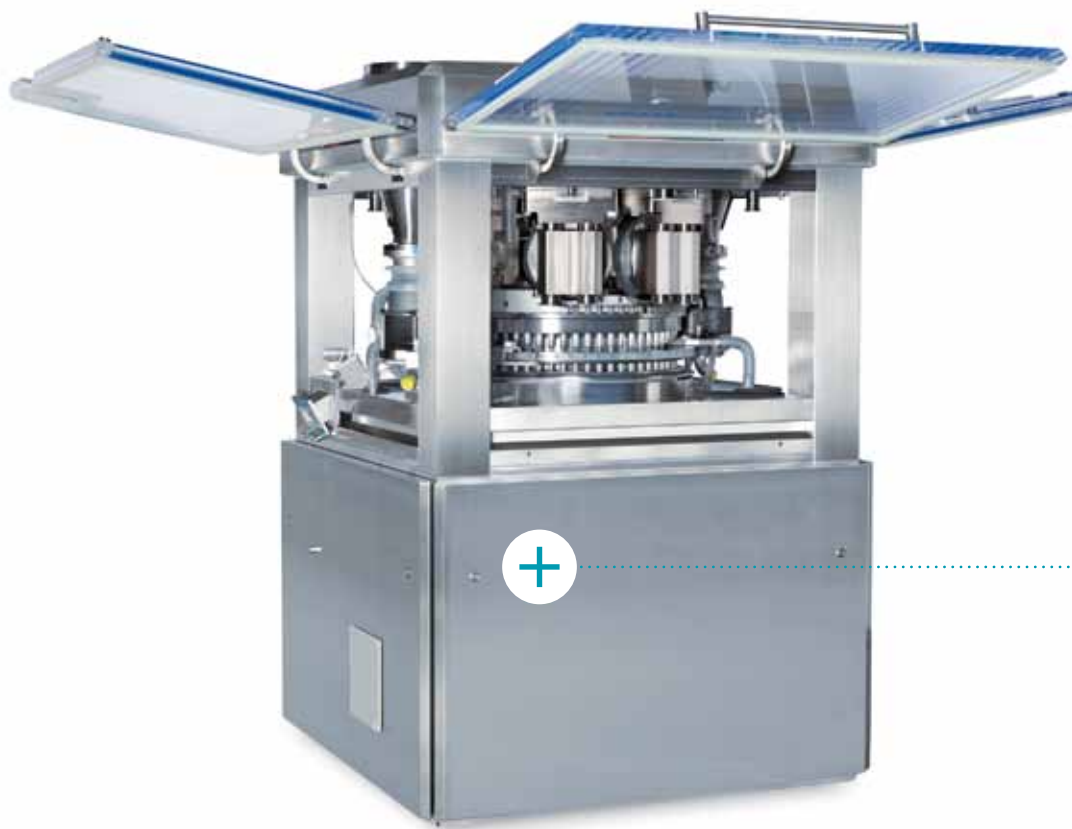


Dismantling arm with segment turret

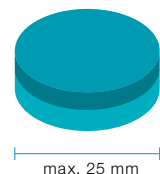
Dies (D) Segments (S)	47 D	43 D	36 D	30 D	30 D	66 S	45 S	36 S	33 S
Punch type	EU 19	EU 19 / IPT19	EU 19 / IPT 19	EU 1" / IPT 1"	EU 1"-441	FS12	EU 19	EU 1"	EU 1"-441
Tablet output max. tablets/h	32,300	296,700	248,400	180,000	180,000	455,400	310,500	216,000	198,000
Pre-compr. force max. kN	100*	100	100	100	100	100**	100	100	100
Compr. force max. kN	100*	100	100	100	100	100**	100	100	100
Tablet diameter mm	11	13	16	25	25	11	18	25	25
Filling depth max. mm	18	18	18	22	22	18	22	22	22
Tablet thickness max. mm	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5 (11)	8.5 (11)
Weight kg	3,500								
Dimensions mm	1,200 × 1,200 × 2,022								

* Tools only permit a max. of 70 kN. If tools are large and filling depths are high, the machine cannot be run at the highest capacity.

** Tools only permit a max. of 25 kN.



3090i



Dies (D) Segments (S)	79 D	73 D	61 D	49 D	49 D	37 D	110 S	75 S	55 S
Punch type	EU 1 BBS	EU 19 (IPT 19) BB	EU 19 (IPT 19) B	EU1" (IPT 1") D	EU1"- 441	EU 35	FS12	EU 19 (IPT 19)	EU1"/ EU1"-441 (IPT 1")
Tablet output max. tablets/h	1,137,600	700,800	585,600	470,400	470,400	355,200	1,584,000	1,080,000	528,000
Pre-compr. force max. kN	100*	100	100	100	100	100	100**	100	100
Compression force max. kN	100*	100	100	100	100	100	100**	100	100
Tablet diameter mm	11	13	16	25	25	34	11	11 (18)	25
Filling depth max. mm	18	18	18	22	22	26	18	22	22
Tablet thickness max. mm	8.5	8.5	8.5	8.5	8.5	8.5 (11)	8.5	8.5	8.5
Weight kg	4,500								
Dimensions mm	1,370 × 1,370 × 2,022								

* Tools only permit a max. of 70 kN. If tools are large and filling depths are high, the machine cannot be run at the highest capacity.

** Tools only permit a max. of 25 kN.

WiP & Containment

WiP

When highly active and toxic pharmaceutical substances have to be compressed, the use of Wash in Place (WiP) systems reduces the exposure of the machine operators and enables them to achieve significant cuts in downtime for product changeovers. Another feature reducing machine downtime is the semi-automatic cleaning function. These machines can be equipped with accessories to the customer's exact specification.

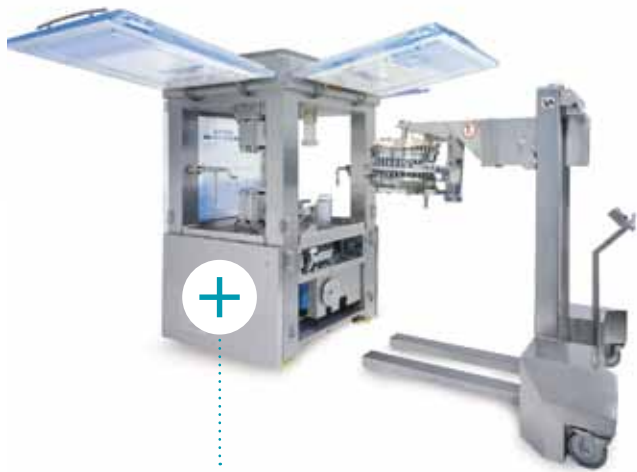
Containment

If a WiP press is also fitted with a containment package, this will open up new opportunities for handling toxic granulation. Emission-free cleaning procedures make it possible to complete product changeovers quickly and safely.

In order to eliminate problems with removal of stubborn product residues from the compression area, the containment package for the basic 1090i, 2090i and 3090i WiP & Containment press are fitted with a manually-operated spray gun and suction nozzle for pre-cleaning. There is an integrated rapid transfer port (RTP) for insertion of tools.



3090i WiP & Containment



1090i WiP



max.
8,5 mm (11)

max. 25 mm

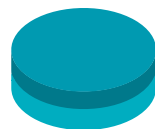
2090i WiP



max.
8,5 mm (10.5)

max. 34 mm

3090i WiP



max.
8.5 mm

max. 25 mm

	1090i WiP			2090i WiP			3090i WiP	
Segments (S)	30 S	24 S	21 S	45 S	36 S	33 S	75 S	55 S
Punch type	EU19	EU1"	EU 1" – 441	EU19	EU 1"	EU 1" – 441	EU 19 (TSM 19)	EU 1" -441
Tablet output max. tablets/h	216,000	144,000	126,000	310,500	216,000	198,000	720,000	528,000
Pre-compr. force max. kN	80	80	80	100	100	100	100	100
Compression force max. kN	80	80	80	100	100	100	100	100
Tablet diameter mm	18	25	25	18	13	16	18	25
Filling depth max. mm	22	22	22	22	18	18	22	18
Tablet thickness max. mm	8.5	8.5 (11)	8.5 (11)	8.5	8.5	8.5	8.5	8.5
Weight kg	2,000			3,500			4,500	
Dimensions mm	960 × 960 × 2,014			1,200 × 1,200 × 2,040			1,370 × 1,780 × 2,059	

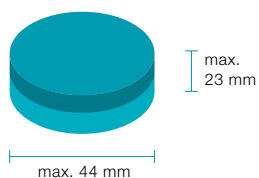
Food & Chemicals

3090i H2

The "H" suffix indicates that the machine has an especially high structure, which is an important feature for production of very large tablets such as bouillon cubes for the food sector or detergent tablets for dishwashers.

The 3090i H2 is specially designed for the technical chemical industry and combines higher productivity with enhanced operating safety, even when abrasive substances are being processed. Its segment technology and direct-torque drive guarantee very high productivity with mono-layer, multi-layer and ring tablets, for example catalysts and annular battery cores.

3090i H2



Dies (D) Segments (S)	57 D	37 D	56 S	40 S
Punch type	EU32	EU45	EU32	EU45
Tablet output max. tablets/h	342,000*	222,000*	336,000*	240,000*
Pre-compr. force max. kN	160	160	160	160
Compr. force max. kN	160	160	160	160
Tablet diameter mm	31	44	31	44
Filling depth max. mm	56	40	56	40
Tablet thickness max. mm				
Weight kg	7500			
Dimensions mm	1560 × 1560 × 2900			

* max. tablet output depends on the properties of the product



Peripheral Devices

Downstream processes



- + Vertical dedusters
High-quality production solutions through the use of dedusting and soft deburring – also available in combination with a metal detector



- + Metal detectors
Maximum running time of tablet presses due to reliable and fully automatic rejection of metallic contaminated products



- + Gratex
Soft dedusting and deburring directly at the tablet press



- + Loading center
The efficient organization of tablet production allows a continuously controlled tablet production and a fully automatic drum or tote filling of the finished products



- + Fette Compacting Leanmaster
Fully automatic filling of finished products via vertically and horizontally movable conveyor bands into up to 99 packaging units

In-process control



- + Weightmaster
Cost-optimized peripheral device for in-process control of tablet weight



- + Checkmaster
Excellent tablet quality through fully automatic measurement of the most important tablet characteristics: weight, thickness, hardness and diameter – completely integrable into the production process



- + NIR-Checkmaster
In-line measurement of API (active pharmaceutical ingredient) through NIR-Checkmaster defines new standards for in-process control



- + Autotest 4 with "EasyTouch"
Tablet testing system that can fully be validated and automatically positions the tablet for measurement of weight, thickness, diameter and hardness



Peripherie Devices

Process technology



- + Magnesium Stearate Spraying System (PKB) Peripheral device to coat the pressing tools with magnesium stearate or similar lubricant instead of including the lubricant in the tablet formulation itself

WiP & Containment



- + Isolator
Completely sealed and safe use of in-process-control and peripheral devices when compressing highly active and toxic pharmaceutical ingredients

Supplies



- + Handling system
This motorized turret handler allows a single operator to exchange the turret ergonomically and safely



- + Service carts
The accurately fitting turret holder ensures secure fastening, allowing the operator to carry out all the work required on the turret which is freely accessible from every side



- + Parts butler
The job of Fette Compacting's parts butler is the classic task of holding dismantled parts during servicing and product changeover cycles, while saving space and maintaining good order at the same time

Tableting tools and retrofit kits

In addition to tableting machines, Fette Compacting also produces the actual tableting tools. This gives the company invaluable knowledge on interactions between tableting machines and the compression punches used in them, which is essential for efficient production and optimization of processes.

Fette Compacting naturally manufactures punches conforming to all of the common internationally-used standards, and also its own proven solutions for special requirements.



Compression tools for tablet manufacturing

Fette Compacting distinguishes its standard tools by the EU "B" (EU19/TSM19) and the EU "D" (EU1"/TSM1") standards.

Whether it is round tablets, special shapes, engravings, concavity or score lines – Fette Compacting can meet many different customer requirements. In the manufacture of pressing tools, quality is of the utmost importance.

For certain products or WiP productions Fette Compacting manufactures punches made from special steel in specially adapted work steps.



EU1"-441

Due to their special material properties, some formulations are very difficult to compound or cannot be compounded at all with conventional punches. For these products in particular, Fette Compacting has developed the EU1"-441 punch. It often enables cost-effective pressing where other manufacturers have given up.

What is special about the EU1"-441 is its adapted head shape with a larger diameter and a larger reflecting surface. With this modification, dwell time can be increased by nearly 50 percent. The running properties of the tablet press are also improved with the use of the EU1"-441. Lower noise levels, less vibration and reduced wear and tear are further advantages of this punch.



Segments

Segments are a new technology at Fette Compacting. They replace the conventional die tables as well as the dies themselves. The drill-holes are made directly into the segments. Unlike the conventional die table, segments can be changed simply by loosening two locking screws. There are either 3, 5 or 7 elements per turret, depending on the pitch circle diameter of the press.

Tableting machines can be modified quickly and easily to include new technical developments. There is no need to change either the production parameters or the filling properties of the granulation, and stored production data can still be used. The shape of the punches is unchanged. They remain standardized and can still be used.

By retrofitting their machines in this way, users can minimize the risk of product loss, attain higher outputs and reduce downtime for product changes by around 90 percent.

FS12 punch



Pmax turret with the FS12 punches

Pmax turrets with the FS12 punches are the heart of the fastest tablet presses in the world. The shaft diameter of the FS12 is with 12 millimeters smaller than that of a conventional punch. This reduces the spaces between the die bore-holes and increases the number of compression stations on the turret. The modified head of the punch optimizes the dwell time and allows the machine to run more smoothly.

Users retrofitting their machines with Pmax turrets can obtain increased outputs of more than 40 percent without having to make any major new investments.

© by Fette Compacting GmbH

This publication may not be reprinted in whole or part without our express permission. All rights reserved. No rights may be derived from any errors in content or from typographical or typesetting errors. Diagrams, features and dimensions represent the current status on the date of issue of this leaflet. We reserve the right to make technical changes. The visual appearance of the products may not necessarily correspond to the actual appearance in all cases or in every detail.


Fette Compacting GmbH

Grabauer Strasse 24
21493 Schwarzenbek
Germany
Phone +49 4151/12-0
Fax +49 4151/3797
tablet@fette-compacting.com

Fette Compacting America, Inc.

400 Forge Way
Rockaway N.J. 07866
USA
Phone +1 973-5868722
Fax +1 973-5860450
sales@fetteamerica.com

Fette Compacting America Latina Ltda.

Av. Cambacica, 1200 módulo 10
Parque Imperador
CEP 13097-104
Campinas/SP – Brazil
Phone/Fax +55 19 3796 9910
contato@fette-compacting.com.br

Fette Compacting Nanjing Machinery Co., Ltd.

8 Phoenix Road Jiangning Development Zone
211100 Nanjing
China
Phone +86 25 52121818
Fax +86 25 52129951
info@fette-compacting.com

Fette Compacting Machinery India Private Limited

Regd Office:
Old No 14, New No 29, IInd Main Road,
Gandhinagar, Adyar, Chennai – 600 020
India
Phone +91 44 24405136/37
Fax +91 44 42337704
sales@fette-compacting.in

Competence Centre:
Plot No S 115, Phase III B
Verna Industrial Estate
Verna, Goa 403 722
India

Fette Compacting Asia Pacific Pte Ltd

1 Kim Seng Promenade #14-04
Great World City East Tower
Singapore 237994
Phone +65 6734 3001
Fax +65 6734 8412
infoasiapacific@fette-compacting.com

Fette Compacting Iberica

Calle Saturno 1
28760 Tres Cantos
Spain
fcib@fette-compacting.com

ECOPAC S.A.
A Fette Compacting and Uhlmann Company

30, rue Roger Salengro
94120 Fontenay-Sous-Bois
France
Phone +33 148 77 63 63
Fax +33 148 77 77 70
ecopac@ecopac.fr

www.fette-compacting.com



**FETTE
COMPACTING**
be efficient