Efficiency for

Tablet Manufacturing

www.fette-compacting.com

TECHNOLOGY

COMPETENCE

SERVICE

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 is the only manufacturer of tablet presses, operating a global competence network with five fully-equipped and digitally-networked competence centres in Germany, the USA, Brazil, India and China.

Fette Compacting is part of the LMT Group – a medium-sized, family-owned group of companies. The group also includes LMT Tools, a leading manufacturer of pre-cision tools for industrial processing of construction materials, and the LMT Finance & Shared Service, which is responsible globally for the company's central functions.

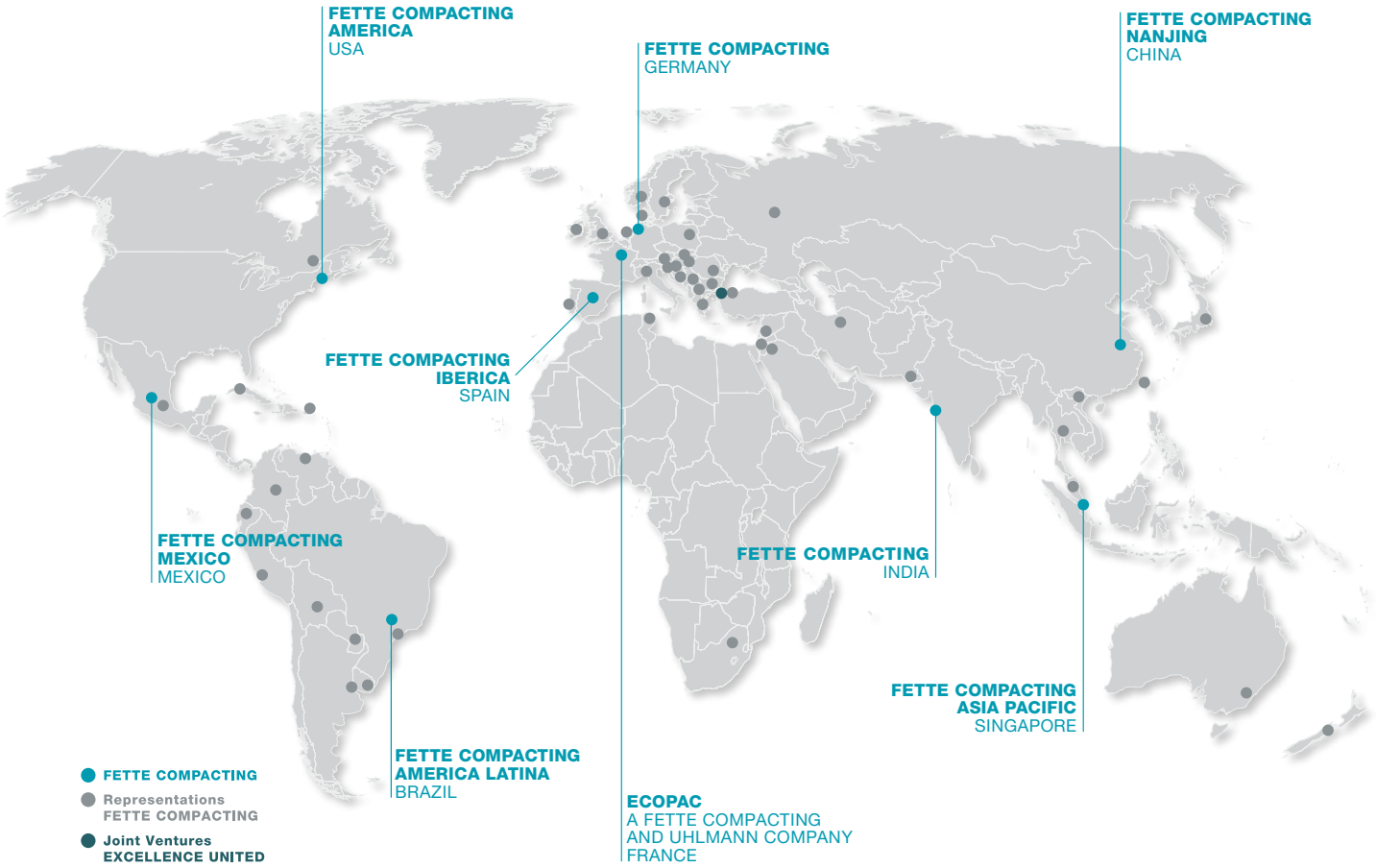
EFFICIENCY GUIDE

TECHNOLOGY covers all products in the tableting technology; from tablet presses, to process equipment and tableting tools.

SERVICE includes all services related to machinery and equipment, such as: spare parts supply, installation, system upgrades and technical field service.

COMPETENCE is the generic term for our process-related services. This includes our training programs and compression trials, as well as application and OEE consulting, and engineering.

Competence Centers on a global level

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Fette Compacting has its head office and principal production plant in Schwarzenbek near Hamburg. A global network consisting of subsidiaries in Latin America (Campinas, Brazil), China (Nanjing), France (Noisy Le Grand), India (Goa), Spain (Madrid), South-east Asia (Singapore), the USA (Rockaway, New Jersey), Mexico (Mexico, DF) 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 facilities 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 specialized knowledge in all aspects of tableting. With its 80 globe-trotting salesmen backed by 40 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 Brazil (Campinas)
3 India (Goa)
4 China (Nanjing)
5 Germany (Schwarzenbek)

FETTE COMPACTING

FE Series

Flexibility and constistens availability are key factors for successful and efficient pharmaceutical production. The FE35 combines all the benefits of Fette Compacting's new FE Series with the shortest product changeover time in its class. User benefit from the highest system availability and maximum investment security for its size.

FE35

Segments (S)		S	S	S	S
Number of punch stations		51	33	27	24
Punch type		FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
Tablet output units/h	min.	45,900	29,700	24,300	21,600
	max.	367,200	237,600	145,800	129,600
Max. compression force 1*	kN	25	80	80	80
Max. compression force 2*	kN	25	80	80	80
Max. tablet diameter	mm	11	18	25	25
Max. filling depth	mm	22	22	22	22
Pitch circle diameter	mm	325	325	325	325
Turret rotation speed min.	mm^{-1}	15	15	15	15
max.	mm^{-1}	120	120	90	90
Die-/segment height	mm	25	25	25	25
Die-/segment height	mm	12	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4	1–4	1–4	1–4
Dimensions	mm	1,026 × 1,042 × 2,043 without integrated switch cabinet 1,336 × 1,042 × 2,043 with integrated switch cabinet			
Weight	kg	Tablet press 2,800–3,000 kg, operating terminal 100 kg, switch cabinet 350 kg			
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 14 kW			

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties

The FE55 is the only machine of its size that produces, as standard, more than 90 percent of all tablet types without additional investments or complex conversions. This is made possible by means of the three compression stations which are integrated in the machine. The press is capable of producing single- and bi-layer tablets, as well as, offering direct compression.

FE55

Segments (S)		S	S	S	S
Number of punch stations		87	60	45	45
Punch type		FS12	FS19/EU19 TSM/IPT 19	EU1" (TSM/IPT 1")	EU1"-441
Tablet output units/h	min.	78,300	54,000	40,500	40,500
	max.	626,400	432,000	243,000	243,000
Max. compression force 1*	kN	25	100	100	100
Max. compression force 2*	kN	25	100	100	100
Max. compression force 3*	kN	25	100	100	100
Max. tablet diameter	mm	11	18	25	25
Max. filling depth 1st layer	mm	22	22	22	22
2nd layer	mm	8	8	8	8
Pitch circle diameter	mm	550	550	550	550
Turret rotation speed min.	mm^{-1}	15	15	15	15
max.	mm^{-1}	120	120	90	90
Die-/segment height	mm	25	25	25	25
Die-/segment height	mm	12	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4 (8**)	1–4 (8**)	1–4 (8**)	1–4 (8**)
Dimensions	mm	1,306 × 1,306 × 2,048 without integrated switch cabinet 1,306 × 1,626 × 2,048 with integrated switch cabinet			
Weight	kg	Tablet press 3,900 kg, operating terminal 100 kg, switch cabinet 250 kg			
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 16 kW			

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties; ** 2-layer-operation

The production of large batches is one of the most demanding tasks in tableting. The FE75 is setting new standards in this area. With a maximum output of more than 1.6 million tablets per hour and a footprint of only 2 m^2, it offers an optimal ratio of production capacity to space.

FE75

Segments (S)		S	S	S	S
Number of punch stations		115	75	55	55
Punch type		FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
Tablet output units/h	min.	207,000	135,000	99,000	99,000
	max.	1,656,000	1,080,000	594,000	594,000
Max. compression force 1*	kN	25	100	100	100
Max. compression force 2*	kN	25	100	100	100
Max. compression force 3*	kN	25	100	100	100
Max. compression force 4*	kN	25	100	100	100
Max. tablet diameter	mm	11	18	25	25
Max. filling depth 1st layer	mm	22	22	22	22
2nd layer	mm	8	8	8	8
Pitch circle diameter	mm	710	710	710	710
Turret rotation speed min.	mm^{-1}	15	15	15	15
max.	mm^{-1}	120	120	90	90
Die-/segment height	mm	25	25	25	25
Die-/segment height	mm	12	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4 (8**)	1–4 (8**)	1–4 (8**)	1–4 (8**)
Dimensions	mm	1,463 × 1,463 × 2,046 without integrated switch cabinet 1,463 × 1,778 × 2,046 with integrated switch cabinet			
Weight	kg	Tablet press 5,500 kg, operating terminal 100 kg, switch cabinet 350 kg			
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 16 kW			

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties; ** 2-layer-operation

FETTE COMPACTING

R&D

The 102i tablet press 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.

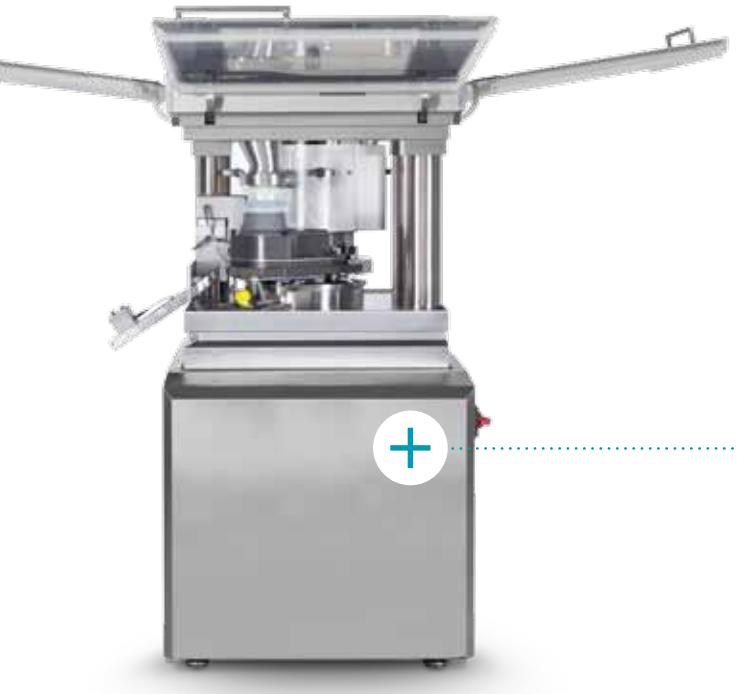
ø max. 25 mm

Tablet

Number of layers	mono-, bi- or triple-layer
Max. tablet output	230,400 tablets/h
Max. tablet output Pmax	324,000 tablets/h
Max. tablet diameter	25 mm

Die (D) / Segments (S)		D	D	D	D	D
Number of punch stations		6	6	16 (8+8)	16 (8+8)	20
Punch type		FS19/EU19 TSM/IPT 19 B	EU1" TSM/IPT 1" D	FS19/EU19 TSM/IPT 19 B	EU1" TSM 1" D	EU1" TSM/IPT 1" D
Tablet output units/h	min	9,000	9,000	24,000 (12,000)	24,000 (12,000)	30,000
	max	43,200	36,000	96,000 (48,000)	96,000 (48,000)	120,000
Max. compression force 1*	kN	80	80	80	80	80
Max. compression force 2*	kN	80	80	80	80	80
Max. tablet diameter	mm	16	25	18	25	25
Max. filling depth 1st layer	mm	20	22	20	22	22
Pitch circle diameter	mm	280	280	280	280	280
Turret rotation speed min.	min^{-1}	25	25	25	25	25
max. (laboratory operation)	mm^{-1}	120 (150)	100 (100)	100 (100)	100 (100)	100 (100)
Matrizendurchmesser	mm	30.16	38.1	30.16	38.1	38.1
Die-/segment height	mm	22.225	23.8	22.225	23.8	23.8
Die-/segment height	mm	19	25.35	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)
Upper punch insertion depth	mm	1– 4 (8**)	1– 4 (8**)	1– 4 (8**)	1– 4 (8**)	1– 4 (8**)
Dimensions	mm	920 × 1,136 × 1,875				
Weight	kg	Tablet press 2,500 kg, operating terminal 100 kg				
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 4,5 kW				

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties; ** multi-layer-operation



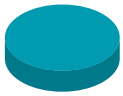
102i

D	D	D	D	S	S	S	S
20	32	30	24	21	24	30	45
EU1"-441 D	FS19/EU19 TSM/IPT 19 BBS	FS19/EU19 TSM/IPT 19 BB	FS19/EU19 TSM/IPT 19 B	EU1"-441	EU1" TSM/IPT 1"	FS19/EU19 TSM/IPT 19	FS12
30,000	48,000	45,000	36,000	31,500	36,000	45,000	67,500
120,000	230,400	216,000	172,800	126,000	144,000	216,000	324,000
80	80	80	80	80	80	80	33
80	80	80	80	80	80	80	33
25	11	13	18	25	25	18	11
22	20	20	20	22	22	22	22
280	280	280	280	280	280	280	280
25	25	25	25	25	25	25	25
100 (100)	120 (150)	120 (150)	120 (150)	100 (150)	100 (150)	120 (150)	120 (150)
38.1	22	24	30.16	–	–	–	–
23.8	22.225	22.225	22.225	25	25	25	25
25.35	19	19	19	25.35	25.35	19	12
133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6	133.6 (133.35)	133.6 (133.35)	133.6
1–4 (8**)	1–4 (8**)	1–4 (8**)	1–4 (8**)	1–4 (8)	1–4 (8)	1–4 (8)	1–4 (8**)

FETTE COMPACTING

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 all have a manually-operated turret exchange system.



Tablet

Number of layers	mono-layer
Max. tablet output	230,400 tablets/h
Max. tablet output Pmax	324,000 tablets/h
Max. tablet diameter	25 mm

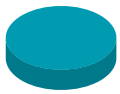
Die (D) / Segments (S)		D	D	D	D	D
Number of punch stations		32	30	24	20	20
Punch type		FS19/EU19 BBS	FS19/EU19 TSM/IPT 19 BB	FS19/EU19 TSM/IPT 19 B	EU1" TSM/IPT 1" D	EU1"-441
Tablet output units/h	min.	48,000	45,000	36,000	30,000	30,000
	max.	230,400	216,000	172,800	120,000	120,000
Max. compression force 1*	kN	80	80	80	80	80
Max. compression force 2*	kN	80	80	80	80	80
Max. tablet diameter	mm	11	13	18	25	25
Max. filling depth 1st layer	mm	20	18	20	22	22
Pitch circle diameter	mm	280	280	280	280	280
Turret rotation speed min.	mm^{-1}	25	25	25	25	25
max. (laboratory operation)	mm^{-1}	120	120	120	100	100
Matrizendurchmesser	mm	22	24	30.16	38.1	38.1
Die-/segment height	mm	22.225	22.225	22.225	23.8	23.8
Die-/segment height	mm	19	19	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1 – 4	1 – 4	1 – 4	1 – 4	1 – 4
Dimensions	mm	920 × 1,136 × 1,875				
Weight	kg	Tablet press 2,500 kg, operating terminal 100 kg				
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 7,7 kW				

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties

1200i

	S	S	S	S
	45	30	24	21
	FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
	67,500	45,000	36,000	31,500
	324,000	216,000	144,000	126,000
	25	80	80	80
	25	80	80	80
	11	18	25	25
	22	22	22	22
	280	280	280	280
	25	25	25	25
	120	12	100	100
	–	–	–	–
	25	25	25	25
	12	19	25.35	25.35
	133.6	133.6 (133.35)	133.6 (133.35)	133.6
	1 – 4	1 – 4	1 – 4	1 – 4

FETTE COMPACTING



ø max. 34 mm

2200i

Tablet

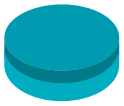
Number of layers	mono-layer
Max. tablet output	324,300 Stk./h
Max. tablet output Pmax	455,400 Stk./h
Max. tablet diameter	34 mm

Die (D) / Segments (S)		D	D	D	D	D
Number of punch stations		47	43	36	30	30
Punch type		FS19/EU19 BBS	FS19/EU19 TSM/IPT 19 BB	FS19/EU19 TSM/IPT 19 B	EU1" TSM/IPT 1" D	EU1"-441
Tablet output units/h	min.	42,300	38,700	32,400	27,000	27,000
	max.	324,300	296,700	248,400	180,000	180,000
Max. compression force 1*	kN	100	100	100	100	100
Max. compression force 2*	kN	100	100	100	100	100
Max. tablet diameter	mm	11	13	18	25	25
Max. filling depth 1st layer	mm	20	20	20	22	22
Pitch circle diameter	mm	410	410	410	410	410
Turret rotation speed min.	min^{-1}	15	15	15	15	15
max.	min^{-1}	115	115	115	100	100
Matrizendurchmesser	mm	22	24	30.16	38.1	38.1
Die-/segment height	mm	22.225	22.225	22.225	23.8	23.8
Punch shaft diameter	mm	19	19	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4	1–4	1–4	1–4	1–4
Dimensions	mm	1,220 × 1,220 × 2,022				
Weight	kg	Tablet press 3,500 kg, operating terminal 100 kg, switch cabinet 350 kg				
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 13 kW				

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties

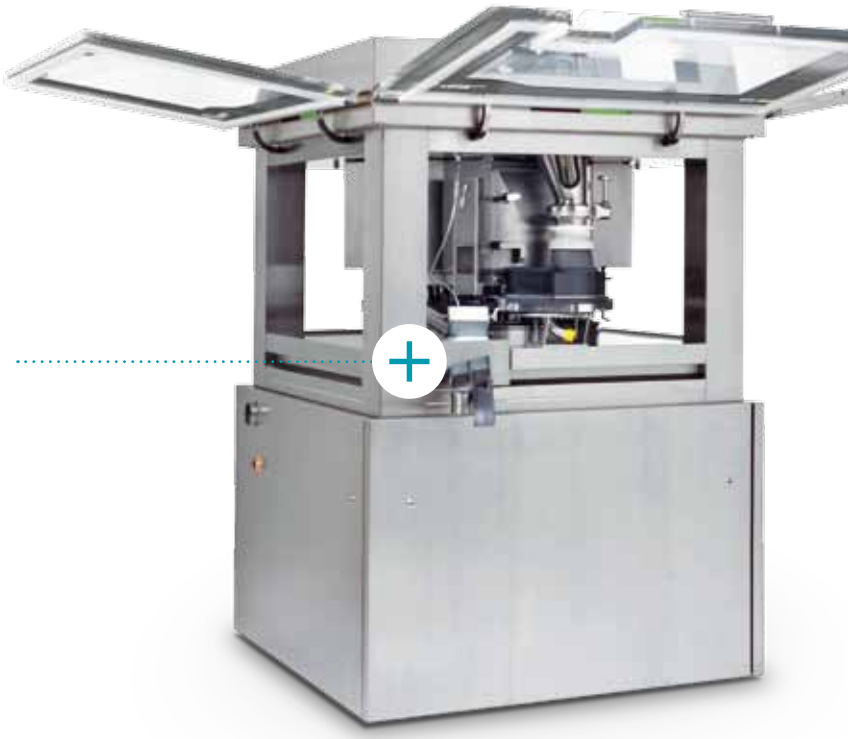
	D	S	S	S	S
	22	66	45	36	33
	EU35	FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
	19,800	59,400	40,500	32,400	29,700
	105,600	455,400	310,500	216,000	198,000
	100	25	100	100	100
	100	25	100	100	100
	34	11	18	25	25
	26	22	22	22	22
	410	410	410	410	410
	15	15	15	15	15
	80	115	115	100	100
	52	–	–	–	–
	30	25	25	25	25
	35	12	19	25.35	25.35
	133.6	133.6	133.6 (133.35)	133.6 (133.35)	133.6
	1–4	1–4	1–4	1–4	1–4

FETTE COMPACTING



ø max. 34 mm

3200i



Tablet

Number of layers	mono- or bi-layer
Max. tablet output	1,137,600 tablets/h
Max. tablet output Pmax	1,584,000 tablets/h
Max. tablet diameter	34 mm

Die (D) / Segments (S)		D	D	D	D	D
Number of punch stations		79	73	61	49	49
Punch type		FS19/EU19 BBS	FS19/EU19 TSM/IPT 19 BB	FS19/EU19 TSM/IPT 19 B	EU1" TSM/IPT 1" D	EU1"-441
Tablet output units/h	min.	142,200	131,400	109,800	88,200	88,200
	max.	1,137,600	1,051,200	878,400	470,400	470,400
Max. compression force 1*	kN	100	100	100	100	100
Max. compression force 2*	kN	100	100	100	100	100
Max. compression force 3*	kN	100	100	100	100	100
Max. compression force 4*	kN	100	100	100	100	100
Max. Tablettendurchm.	mm	11	13	18	25	25
Max. filling depth 1st layer	mm	20	20	20	22	22
Pitch circle diameter	mm	680	680	680	680	680
Turret rotation speed min.	min^{-1}	15	15	15	15	15
max.	min^{-1}	120	120	120	80	80
Matrizendurchmesser	mm	22	24	30.16	38.1	38.1
Die-/segment height	mm	22.225	22.225	22.225	23.8	23.8
Punch shaft diameter	mm	19	19	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)
Dimensions	mm	1,390 × 1,390 × 2,024				
Weight	kg	Tablet press 4,500 kg, operating terminal 100 kg, switch cabinet 350 kg				
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 18 kW				

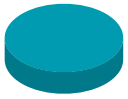
Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties; ** 2-layer-operation

	D	S	S	S	S	S
	49	110	75	55	55	45
	EU35	FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441	EU35
	66,600	396,000	135,000	99,000	99,000	81,000
	355,200	1,584,000	1,080,000	528,000	528,000	432,000
	100	25	100	100	100	100
	100	25	100	100	100	100
	100	25	100	100	100	100
	100	25	100	100	100	100
	34	11	18	25	25	34
	26	22	22	22	22	22
	680	680	680	680	680	680
	15	15	15	15	15	15
	80	120	120	80	80	80
	52	–	–	–	–	–
	30	25	25	25	25	25
	35	19	19	25.35	25.35	35
	133.6	133.6	133.6 (133.35)	133.6 (133.35)	133.6	133.6
	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4

FETTE COMPACTING

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 the pressure rollers. Used together with the Pmax turret, the 3090i can produce more than 1.3 million tablets per hour.



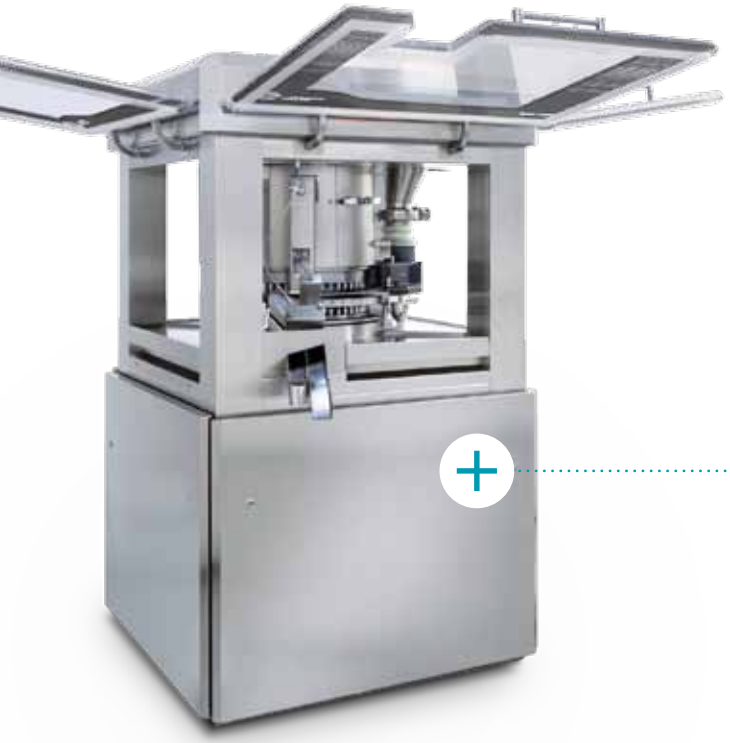
ø max. 25 mm

Tablet

Number of layers	mono-layer
Max. tablet output	324,300 tablets/h
Max. tablet output Pmax	455,400 tablets/h
Max. tablet diameter	25 mm

Die (D) / Segments (S)		D	D	D	D	D
Number of punch stations		47	43	36	30	30
Punch type		FS19/EU19 BBS	FS19/EU19 TSM/IPT 19 BB	FS19/EU19 TSM/IPT 19 B	EU1" TSM/IPT 1" D	EU1"-441
Tablet output units/h	min.	42,300	38,700	32,400	27,000	27,000
	max.	324,300	296,700	248,400	180,000	180,000
Max. compression force 1*	kN	100	100	100	100	100
Max. compression force 2*	kN	100	100	100	100	100
Max. tablet diameter	mm	11	13	18	25	25
Max. filling depth 1st layer	mm	18	18	18	22	22
Pitch circle diameter	mm	410	410	410	410	410
Turret rotation speed min.	mm^{-1}	15	15	15	15	15
max.	mm^{-1}	120	115	120	100	100
Matrizendurchmesser	mm	22	24	30.16	38.1	38.1
Die-/segment height	mm	22.225	22.225	22.225	23.8	23.8
Die-/segment height	mm	19	19	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4	1–4	1–4	1–4	1–4
Dimensions	mm	1,220 × 1,220 × 2,022				
Weight	kg	Tablet press 3,500 kg, operating terminal 100 kg, switch cabinet 250 kg				
Electrical supply parameters		Operating voltage 400–480 V, 50/60 Hz, power consumption 13 kW				

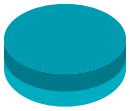
Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties



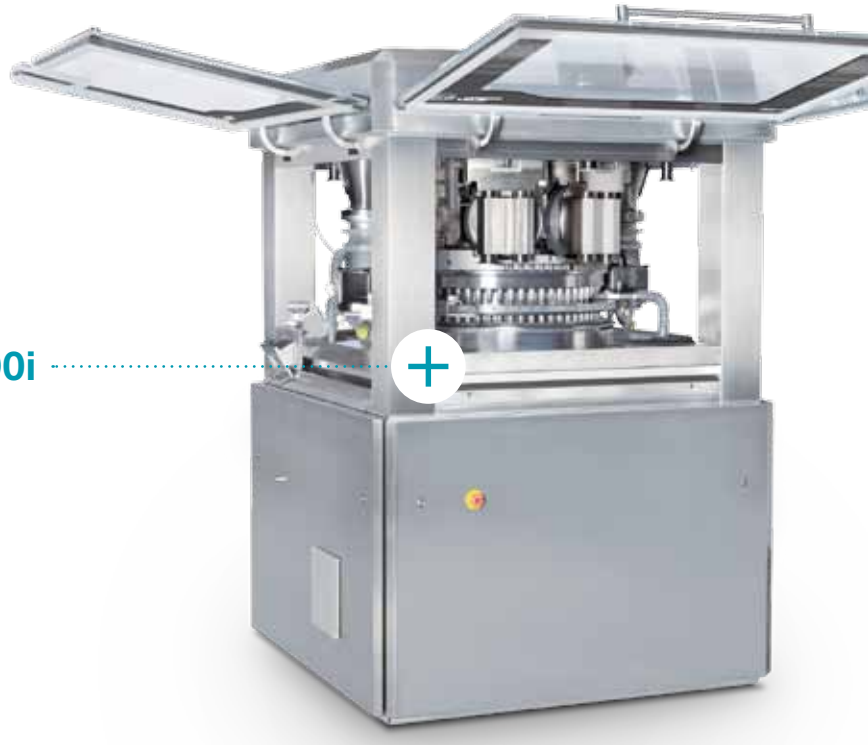
+ 2090i

	S	S	S	S
	66	45	36	33
	FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
	59,400	40,500	32,400	29,700
	455,400	310,500	216,000	198,000
	25	100	100	100
	25	100	100	100
	11	18	25	25
	22	22	22	22
	410	410	410	410
	15	15	15	15
	115	115	100	100
	–	–	–	–
	25	25	25	25
	12	19	25.35	25.35
	133.6	133.6 (133.35)	133.6 (133.35)	133.6
	1–4	1–4	1–4	1–4

FETTE COMPACTING



ø max. 25 mm



3090i

Tablet

Number of layers	mono- or bi-layer
Max. tablet output	1,137,600 tablets/h
Max. tablet output Pmax	1,584,000 tablets/h
Max. tablet diameter	25 mm

Die (D) / Segments (S)		D	D	D	D	D
Number of punch stations		79	73	61	49	49
Punch type		FS19/EU19 BBS	FS19/EU19 TSM/IPT 19 BB	FS19/EU19 TSM/IPT 19 B	EU1" TSM/IPT 1" D	EU1"-441
Tablet output units/h	min.	284,400	131,400	109,800	88,200	88,200
	max.	1,137,600	1,051,200	878,400	470,400	470,400
Max. compression force 1*	kN	100	100	100	100	100
Max. compression force 2*	kN	100	100	100	100	100
Max. compression force 3*	kN	100	100	100	100	100
Max. compression force 4*	kN	100	100	100	100	100
Max. tablet diameter	mm	11	13	18	25	25
Max. filling depth 1st layer	mm	18	18	18	22	22
2nd layer		8	8	8	8	8
Pitch circle diameter	mm	680	680	680	680	680
Turret rotation speed min.	mm^{-1}	15	15	15	15	15
max.	mm^{-1}	120	120	120	80	80
Matrizendurchmesser	mm	22	24	30.16	38.1	38.1
Die-/segment height	mm	22.225	22.225	22.225	23.8	23.8
Die-/segment height	mm	19	19	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6	133.6 (133.35)	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)
Dimensions	mm	1,390 × 1,390 × 2,024				
Weight	kg	Tablet press 4,500 kg, operating terminal 100 kg, switch cabinet 350 kg				
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 18 kW				

	S	S	S	S
	110	75	55	55
	FS12	FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
	396,000	270,000	99,000	99,000
	1,584,000	1,080,000	528,000	528,000
	25	100	100	100
	25	100	100	100
	25	100	100	100
	25	100	100	100
	11	18	25	25
	22	22	22	22
	8	8	8	8
	680	680	680	680
	15	15	15	15
	120	120	80	80
	–	–	–	–
	25	25	25	25
	19	19	25.35	25.35
	133.6	133.6 (133.35)	133.6 (133.35)	133.6
	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)	1 – 4 (8**)

Theoretical values or technical limits: These can vary in practice, according to product and application. Tablet thickness is a size dependent on product and can strongly vary.

* limited by punch properties

** 2-layer-operation

WiP & Containment

WiP

When highly active and toxic pharmaceutical substances have to be compressed, the use of a 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 meet the customer's exact specification.

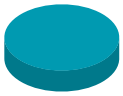
Containment

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.

2090i WiP & Containment

1090i WiP



ø max. 25 mm

Tablet

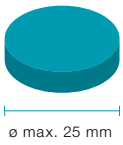
Number of layers	mono-layer
Max. tablet output	216,000 tablets/h
Max. tablet diameter	25 mm

Segments (S)		S	S	S
Number of punch stations		30	24	21
Punch type		FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
Tablet output units/h	min.	45,000	36,000	31,500
	max.	216,000	144,000	126,000
Max. compression force 1*	kN	80	80	80
Max. compression force 2*	kN	80	80	80
Max. tablet diameter	mm	18	25	25
Max. filling depth 1st layer	mm	22	22	22
Pitch circle diameter	mm	280	280	280
Turret rotation speed min.	mm^{-1}	25	25	25
max. (laboratory operation)	mm^{-1}	120	100	100
Die-/segment height	mm	25	25	25
Die-/segment height	mm	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6 (133.35)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4	1–4	1–4
Dimensions	mm	960 × 960 × 2,034		
Weight	kg	Tablet press 2,000 kg, operating terminal 100 kg, switch cabinet 350 kg		
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 7,7 kW		

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties

FETTE COMPACTING

2090i WiP

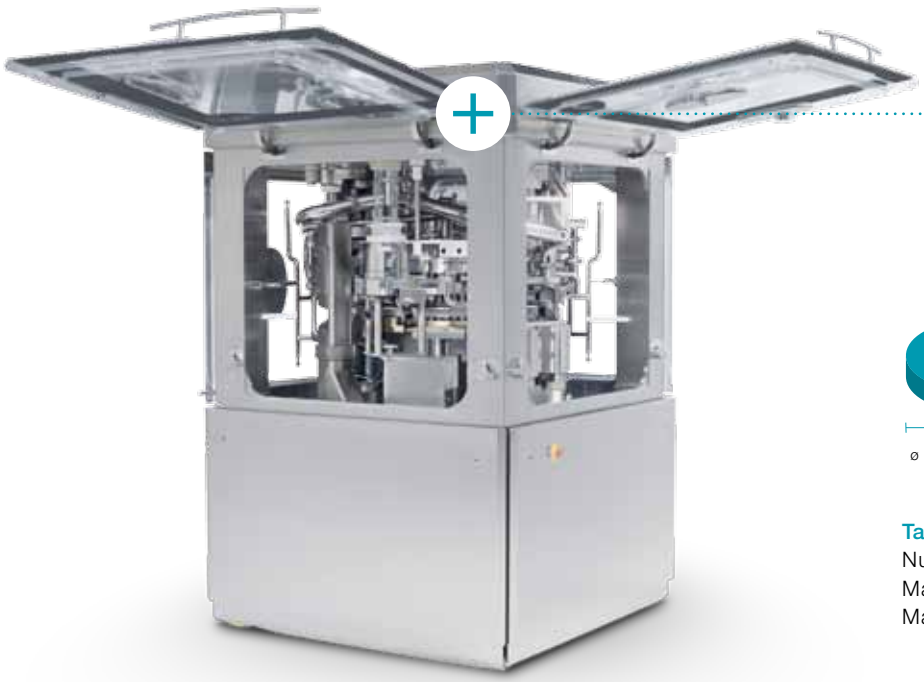


Tablet

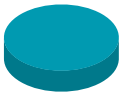
Number of layers	mono-layer
Max. tablet output	310,500 tablets/h
Max. tablet diameter	25 mm

Segments (S)		S	S	S
Number of punch stations		45	36	33
Punch type		FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
Tablet output units/h	min.	40,500	32,400	29,700
	max.	310,500	248,400	198,000
Max. compression force 1*	kN	100	100	100
Max. compression force 2*	kN	100	100	100
Max. tablet diameter	mm	18	25	25
Max. filling depth 1st layer	mm	22	22	22
Pitch circle diameter	mm	410	410	410
Turret rotation speed min.	mm^{-1}	15	15	15
max.	mm^{-1}	120	120	100
Die-/segment height	mm	25	25	25
Die-/segment height	mm	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6 (133.5)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4	1–4	1–4
Dimensions	mm	1,220 × 1,220 × 2,022		
Weight	kg	Tablet press 3,500 kg, operating terminal 100 kg, switch cabinet 350 kg		
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 13 kW		

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties



3090i WiP



ø max. 25 mm

Tablet

Number of layers	mono- or bi-layer
Max. tablet output	1,080,000 tablets/h
Max. tablet diameter	25 mm

Segments (S)		S	S	S
Number of punch stations		75	55	55
Punch type		FS19/EU19 TSM/IPT 19	EU1" TSM/IPT 1"	EU1"-441
Tablet output units/h	min.	135,000	99,000	99,000
	max.	1,080,000	528,000	528,000
Max. compression force 1*	kN	100	100	100
Max. compression force 2*	kN	100	100	100
Max. compression force 3*	kN	100	100	100
Max. compression force 4*	kN	100	100	100
Max. tablet diameter	mm	18	25	25
Max. filling depth 1st layer	mm	22	22	22
2nd layer	mm	8	8	8
Pitch circle diameter	mm	680	680	680
Turret rotation speed min.	mm^{-1}	15	15	15
max.	mm^{-1}	120	80	80
Die-/segment height	mm	25	25	25
Die-/segment height	mm	19	25.35	25.35
Punch length Upper/lower punch	mm	133.6 (133.5)	133.6 (133.35)	133.6
Upper punch insertion depth	mm	1–4 (8**)	1–4 (8**)	1–4 (8**)
Dimensions	mm	1,390 × 1,390 × 2,024		
Weight	kg	Tablet press 4,500 kg, operating terminal 100 kg, switch cabinet 350 kg		
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 18 kW		

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties; ** 2-layer-operation

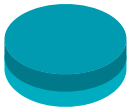
Food & Chemicals

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.

Die (D) / Segments (S)		D	D	D
Number of punch stations		57	45	37
Punch type		EU32	EU35	EU45
Tablet output units/h	min.	34,200	27,000	22,200
	max.	342,000	270,000	222,000
Max. compression force 1*	kN	160	160	160
Max. compression force 2*	kN	160	160	160
Max. compression force 3*	kN	160	160	160
Max. compression force 4*	kN	160	160	160
Max. tablet diameter	mm	31	34	44
Max. filling depth 1st layer	mm	56	56	56
Pitch circle diameter	mm	820	820	820
Turret rotation speed min.	mm^{-1}	5	5	5
max.	mm^{-1}	50**	50**	50**
Die-/segment height	mm	32	35	45
Punch length upper punch	mm	221.6	221.6	221.6
lower punch	mm	435.6	435.6	435.6
Upper punch insertion depth	mm	3–12	3–12	3–12
Dimensions	mm	1,560 × 1,560 × 2,640		
Weight	kg	Tablet press 7,500 kg, operating terminal 100 kg, switch cabinet 350 kg		
Electrical supply parameters		Operating voltage 400 – 480 V, 50/60 Hz, power consumption 18,5 kW		

Theoretical values or technical limits: These can vary in practice, according to product and application.
Tablet thickness is a size dependent on product and can strongly vary.
* limited by punch properties; ** depends on application



ø max. 44 mm

+ 3090i H2

Tablet

Number of layers	mono- or bi-layer
Max. tablet output	336,000 tablets/h
Max. tablet diameter	44 mm

	S	S	S
	56	56	40
	EU32	EU35	EU45
	33,600	33,600	24,000
	336,000	336,000	240,000
	160	160	160
	160	160	160
	160	160	160
	160	160	160
	31	34	44
	40	40	40
	820	820	820
	5	5	5
	50**	50**	50**
	32	35	45
	221.6	221.6	221.6
	435.6	435.6	435.6
	3–12	3–12	3–12

Process Equipment

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

+ Fette Compacting Gratex
  Soft dedusting and deburring directly at the tablet press

+ Fette Compacting loading center
  The efficient organization of tablet production allows for continuously controlled tablet production and a fully automatic drum or tote filling of the finished products

+ Fette Compacting Leanmaster
  Offers fully automatic filling into a maximum of 99 bins, via vertically and horizontally movable conveyor bands.

In-process control

+ Fette Compacting Weightmaster
  Cost-optimized process equipment 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

Process Equipment

Process

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

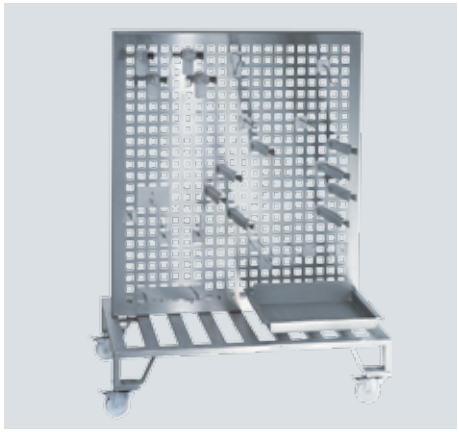
WiP and Containment

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

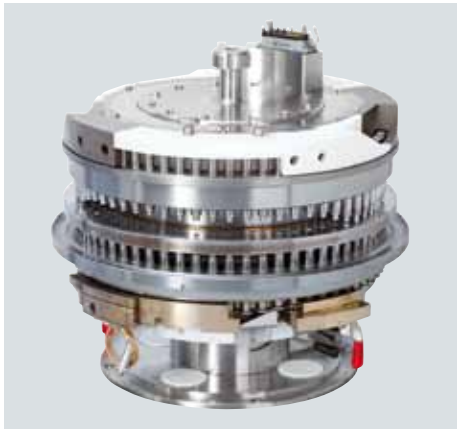
Handling and Turrets

Supplies

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



+ 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



+ Fette Compacting turrets convince through highest quality and can be used flexibly to the respective application

+ 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

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 bisect 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 unique material properties, some formulations are very difficult to compress 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.

FS12 punch

Segments

Segments are a technology at Fette Compacting. They replace the conventional die tables as well as the dies themselves. The die bores 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.

Pmax turret with FS12 punches

Pmax turret with FS12 punches are the heart of the fastest tablet presses in the world. At 12 mm, the shaft diameter of the FS12 punch is smaller than a conventional one. 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.

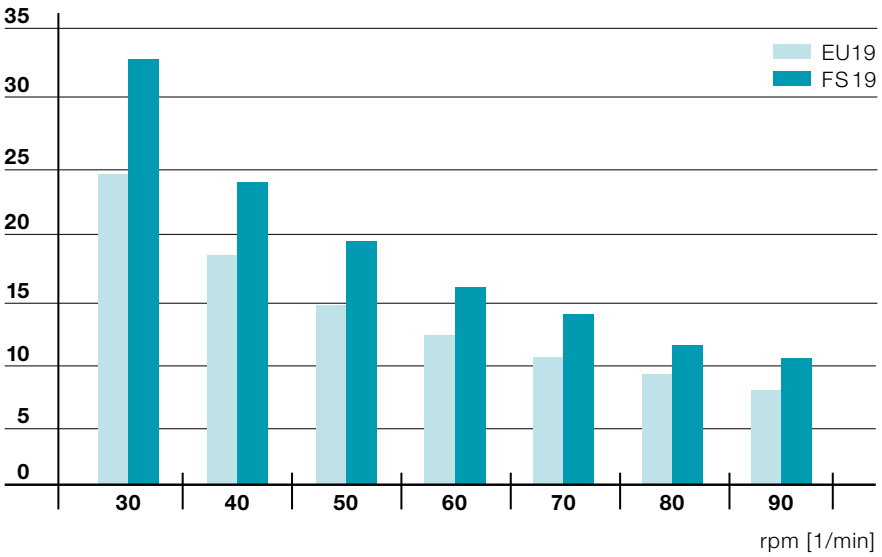
FS19 punch
dwell time redefined

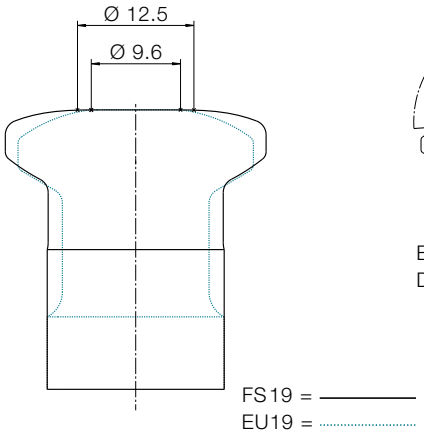
With the novel head design of the FS19 punch, we have been able to increase dwell times by 33% per station.

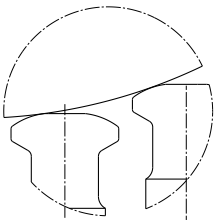
Advantages of the FS19 punch head:
+ 33 % longer compression dwell time
+ Increased output by faster rotation speed
+ Higher compression forces
+ Smooth machine running

+ Punch head diameter 19 mm

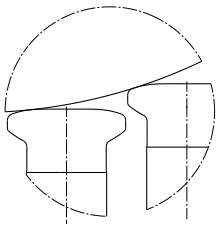
Compression dwell time diagram
[ms]







EU19
DIN ISO 18084



FS19

Rolling based on the punch head

150502 E

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 13097-160 Campinas/SP
Brazil
Phone/Fax +55 19 37969910
contato@fette-compacting.com.br

Fette Compacting Mexico, SA de CV
Adolfo Prieto No. 1638
Colonia Del Valle Sur
03100 Mexico, DF
Mexico
Phone +52 55 4000 0653
tablet@fette-compacting.com

Fette (Nanjing) Compacting Machinery Co., Ltd.
8 Phoenix Road Jiangning Development Zone
211100 Nanjing
China
Phone +86 25 52121818
Fax +86 25 52129951
fcn@fette-compacting.com

Fette Compacting Machinery India Private Limited
Sales Office
A-301/302, Citi Point Co-op Society Premises
Andheri-Kurla Road, J.B Nagar
Andheri East, Mumbai – 400 059
Phone +91 22 61220300
sales@fette-compacting.in

Competence Centre:
Plot No S 115, Phase III B
Verna Industrial Estate
Verna, Goa 403 722
India
Phone +91 832 6690307

Fette Compacting Asia Pacific Pte Ltd.
107 Eunos Avenue 3, #01-01
Singapore 409837
Singapore
Phone +65 6592 5654
Fax +65 6547 1939
infoasiapacific@fette-compacting.com

Fette Compacting Ibérica, SL
Calle Saturno 1
28760 Tres Cantos
Spain
Phone +34 91 8039689
Fax +34 91 1730017
fcib@fette-compacting.com

ECOPAC
A Fette Compacting and Uhlmann Company
1, Rue du Centre
93160 Noisy Le Grand
France
Phone +33 155 812121
Fax +33 155 812120
ecopac@ecopac.fr

www.fette-compacting.com

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