

SCHMIDT® PneumaticPress

Maximum Pressing Force from 1.6 kN to 60 kN

The **SCHMIDT® PneumaticPress** range consists of a modular system suitable for transforming, joining and assembling operations optimally within the pressing capacities of 1.6 – 60 kN.

With the addition of the **SCHMIDT® PressControl 75** or **600** and the optional process monitoring, these presses become EC type-approved, CE-conformed workstations. Therefore these press systems can be used in either single cycle mode or automatic mode.

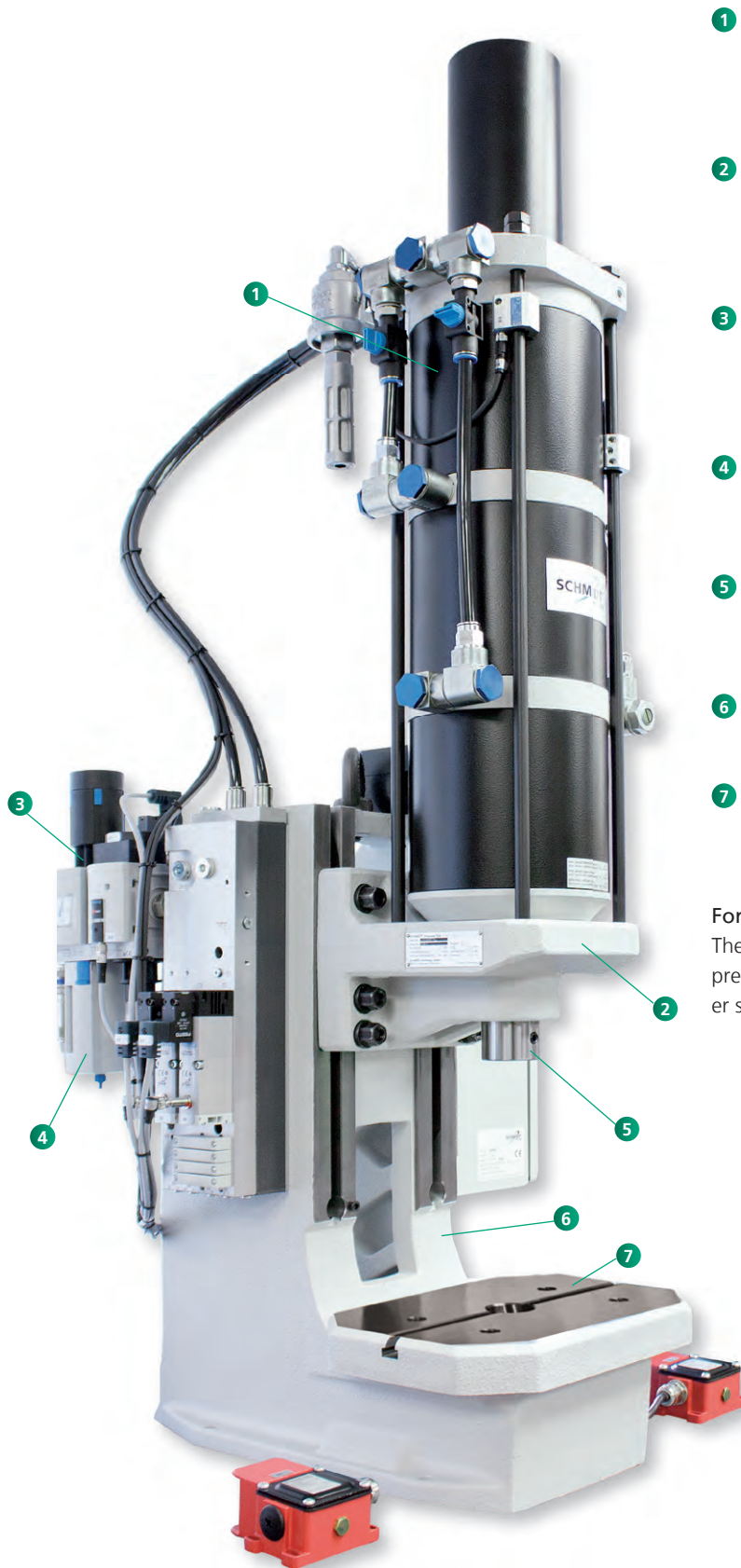
The application determines the selection of the press system. Consideration is given to the flexible design of the assembly location taking into account the ergonomic and safety aspects. These characteristics are achieved by means of a finely adjusted, modular type product range. The efficiency and increased process reliability of these press systems have been proven many thousands of times, in single applications, semi-automated assembly systems and have been integrated into automated production lines.

Safety Concepts see page 72



SCHMIDT® PneumaticPress

Example of a System Design with a Direct Acting Press



1 Cylinder Unit

Maintenance-free specially developed for the assembly technology; with flow control for speed regulation of the down-stroke.

2 Press Head Unit

The working height can be rapidly & accurately adjusted due to the height adjustment's ease of use. Can be used without the frame as processing station in automated installations.

3 Pneumatic Control Package

Two-channel pneumatic package (as shown) is based on a modular valve block, designed to operate with filtered, non-lubricated air, supply pressure range of 3 – 6 bar.

4 Force Control

The press force output can easily be controlled via a separate pressure regulator and pressure gauge (not shown).

5 Ram

With precision bore for tool holding and built-in adjustable stop.

6 Frame

With precision machined press head guide rails.

7 Fixture Mounting Plate

With precision T-slot and bore for tool location.

Force output Preselector (optional)

The press force output can easily be controlled via a separate pressure regulator and pressure gauge. The pressure for the power stroke can be reduced to 1 bar

SCHMIDT® PneumaticPress

Principle of Operation

Functional Description considering the Example of a 3-chamber Pneumatic Cylinder

In working stroke, three pistons **7** connected by the piston rod **6** are pressurized with compressed air via the air connection **1** and move downward. The air below the pistons exhausts from the cylinder chambers via the depressurized connection **2** and the breather vents **3** and **4**. The ram **5** extends up to the maximum working stroke.

In return stroke, the upper cylinder chambers are depressurized via the connection **1** and only the bottom piston is pressurized with compressed air via the air connection **2**. Ambient air enters in both remaining cylinder chambers via the breather vents **3** and **4**. The ram with the three pistons moves upward.

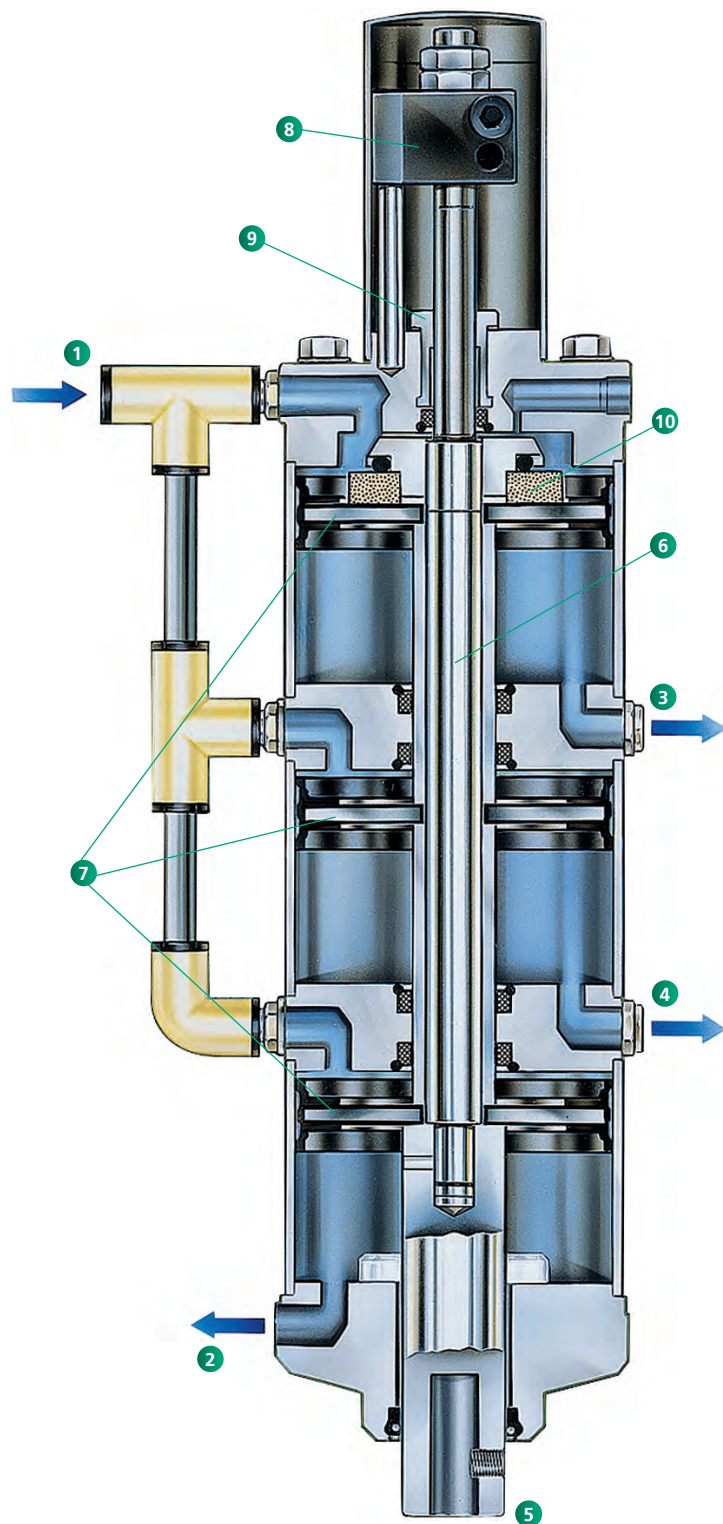
This construction has the same effect as a parallel connection of three cylinders. Thus, a powerful working stroke is achieved with a compact design as well as an economic use due to the low air consumption in the return stroke.

The stroke can be limited by setting the Stroke Limit Block **8** to an approximate, desired position. The gap between Stroke Limit Block and Stroke Fine Adjustment **9** now determines the maximum stroke that the ram can travel. In order to fine-tune this stroke, the stop screw **9** can be adjusted.

All direct acting presses have a built-in permanent magnet **10**. This magnet facilitates sensing of the ram position via tie rod mounted sensors.

Features

- Optimally adapted to individual requirements due to its modular design
- Process optimization by means of adjustable parameters (stroke, force, speed)
- Easy adaptation to different tool and part heights because of simplistic stroke and height adjustment
- Additional safety measures when using heavy tools due to the optional device for retention of ram in home position
- Optional end position request via cylinder switch as signal transmitter for peripheral processes
- Low noise level (< 75 dBA)
- Double-acting, wear-resistant cylinders with low air consumption for the return stroke
- High flexibility due to short changeover time
- Long service life and high precision due to wear-resistant Teflon coated bushings at top & bottom of cylinder
- Precision ground ram
- Precision double ram guides

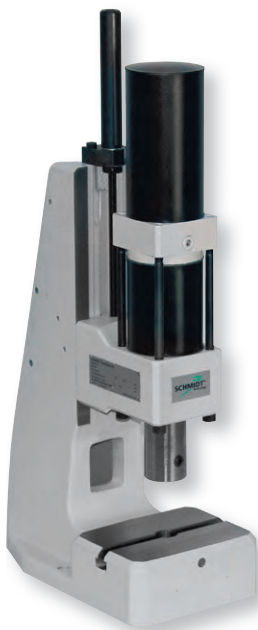


SCHMIDT® PneumaticPress

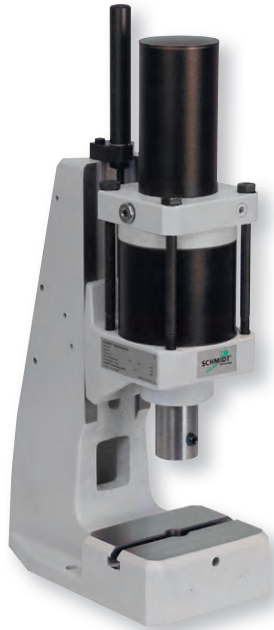
Direct Acting with constant Force over the entire Stroke

Features

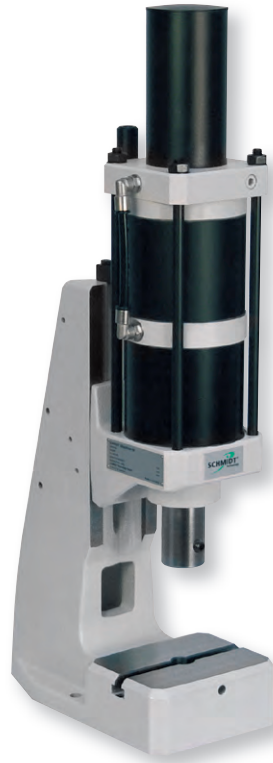
- Round anti-rotational ram
- Adjustable ram position in BDC by means of precision lower stop (1 division line = 0.05 mm) on scale
- T-slot with locking set screw in fixture mounting plate



Press Type 20



Press Type 23



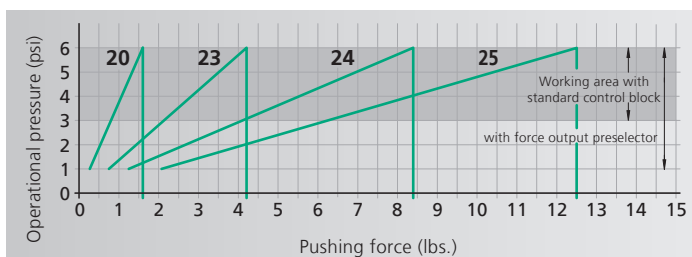
Press Type 24



Press Type 25



Pneumatic Cylinder
with piston and magnet kit
for ram position via cylinder
switch.



From 1.6 kN to 12.5 kN

Press Type			20	23	24	25
Working stroke	A	mm	50, 75 100, 125 160, 200 250, 300	50, 75 100, 125 160, 200 250, 300	50, 75 100, 125 160	50, 75 100
Nominal force at 6 bar		kN	1.6	4.2	8.4	12.5
Throat depth	C	mm	86	86	86	86
Throat depth frame o		mm	111, 131 160, 200	111, 131 160, 200	111, 131 160, 200	111, 131
Additional fixture mounting plate suitable for throat depth frame			o	o	o	o
Ram bore	Ø	mm	20H7	20H7	20H7	20H7
Ram diameter	Ø	mm	40	40	40	40
Working height ¹⁾	F					
Frame No. 3		mm	80-220	90-210	90-210	90-210
Frame No. 2 o		mm	110-360	120-350	120-350	120-350
Frame No. 2-600 o		mm	200-600	210-580	210-580	210-580
Frame No. 2-1000 o		mm	330-1040	335-1020	335-1020	335-1020
Weight	approx. kg		30	35	40	45
Flange model			20-FL	23-FL	24-FL	25-FL
Cylinder	Z	Ø mm	69	106	106	106
Flange	FL	Ø mm	110	140	140	140
Width across flats	SW	mm	80	112	112	112
Centering shoulder	ZA	Ø mm	60	68	68	68

Frame Overview	Press Type	Frame Height M (mm)	Table Size B x T (mm)	Table Bore D Ø mm	Table Height K (mm)	Mounting Surface B x L (mm)
No. 3	20, 23, 24, 25	540	150 x 110	20H7	60	150 x 260
No. 2	20, 23, 24, 25	700	185 x 110	20H7	60	185 x 280
No. 2-600 o	20, 23, 24, 25	974	200 x 160	20H7	98	200 x 290
No. 2-1000 o	20, 23, 24, 25	1410	200 x 160	20H7	98	200 x 290

Options

- o Additional charge applies

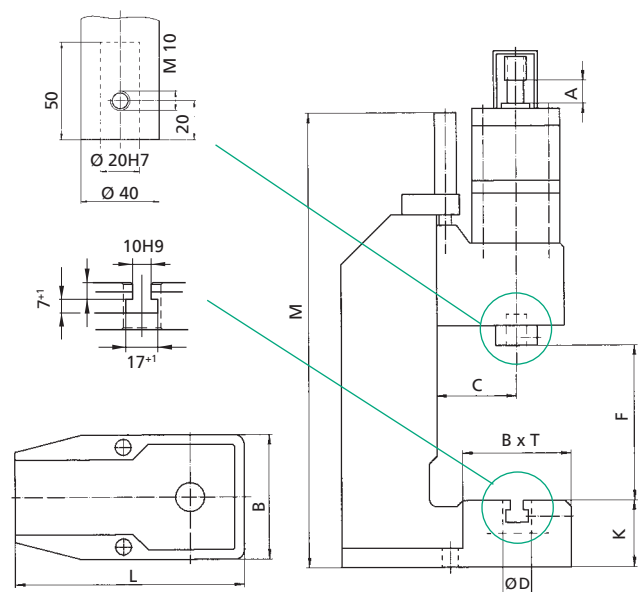
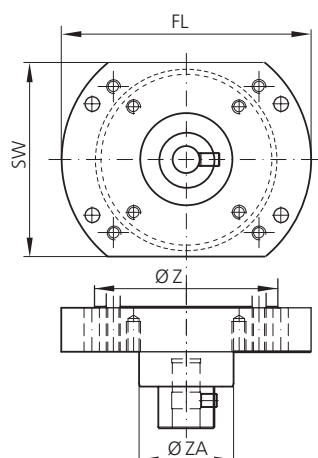
¹⁾ Typical values; can vary ± 3 mm due to cast and production tolerances

Other available Options

- Nickel plated – cast parts are electroless nickel plated, steel components black oxide finished, aluminum anodized, precision steel surfaces are untreated
- Custom Paint – press and column can be painted to customer's color specification
- Bores for adapting tooling – customer specific sizes can be supplied

Bottom View of the Press Head, Flange Model

Mounting drill pattern flange/ram



Please consult our Sales Department or Representative.
Detailed dimensional drawings can be downloaded: www.schmidttechnology.de

SCHMIDT® PneumaticPress

Direct Acting with constant Force over the entire Stroke

Features

- Round anti-rotational ram
- Adjustable ram position in BDC by means of precision lower stop (1 division line = 0.05 mm) on scale



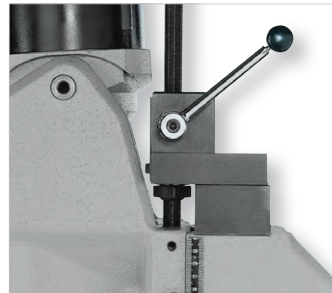
Press Type 27



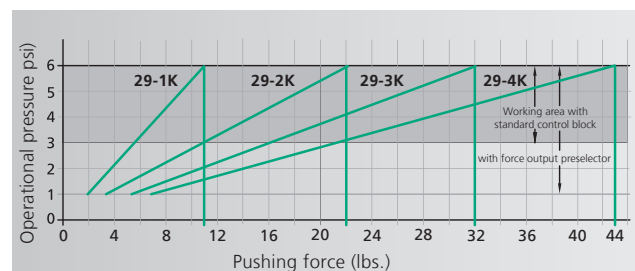
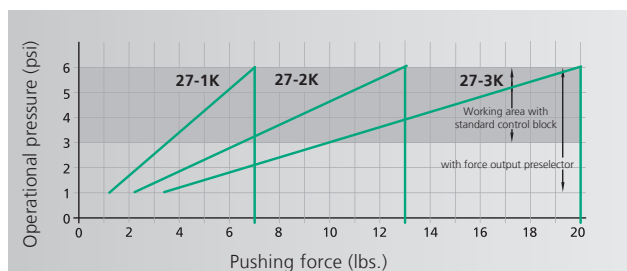
Press Type 29



Precision lower Stop



Height Adjustment
Fast, accurate setting of the work height.



From 7 kN to 43 kN

Press Type			27-1K	27-2K	27-3K	29-1K	29-2K	29-3K	29-4K
Working stroke	A	mm	50, 75, 100 160, 200 250, 300	50, 75 100, 125 160, 200	50, 75 100, 125 160	50, 75 100, 160 200, 300	50, 75 100, 125 160, 200	50, 75 100, 125 160	50, 75 100
Nominal force at 6 bar		kN	7	13	20	11	22	32	43
Throat depth	C	mm	131	131	131	140	140	140	140
Throat depth frame o		mm	151	151	151	160, 185	160, 185	160, 185	160
Additional fixture mounting plate suitable for throat depth frame			o	o	o	o	o	o	o
Ram bore	Ø	mm	20H7	20H7	20H7	20H7	20H7	20H7	20H7
Ram diameter	Ø	mm	40	40	40	50	50	50	50
Working height ¹⁾	F								
Frame No. 34		mm	90-270	90-270	90-270				
Frame No. 301 o		mm	160-400	160-400	160-400				
Frame No. 301-500 o		mm	310-550	310-550	310-550				
Frame No. 29		mm				80-290	80-290	80-290	80-290
Frame No. 29-500 o		mm				150-500	150-500	150-500	150-500
Frame No. 29-600 o		mm				250-600	250-600	250-600	250-600
Weight (standard)	approx. kg		85	85	85	120	120	120	120
Flange model			27-1K-FL	27-2K-FL	27-3K-FL	29-1K-FL	29-2K-FL	29-3K-FL	29-4K-FL
Cylinder	Z	Ømm	132	132	132	170	170	170	170
Flange	FL	Ømm	180	180	180	220	220	220	220
Width across flats	SW	mm	140	140	140	180	180	180	180
Centering shoulder	ZA	Ømm	68	68	68	80	80	80	80

Frame Overview	Press Type	Frame Height M (mm)	Table Size B x T (mm)	Table Bore D Ø mm	Table Height K (mm)	Mounting Surface B x L (mm)
No. 34	27	630	200 x 160	25H7	111	200 x 370
No. 301	27	830	250 x 200	40H7	145	250 x 460
Frame No. 301-500 o	27	990	250 x 200	40H7	145	250 x 480
Special fixture mounting plate with 3 longitudinal slots o			300 x 220 400 x 230	40H7 40H7		
Frame No. 29	29	690	300 x 220	40H7	141	300 x 460
Frame No. 29-500 o	29	990	300 x 220	40H7	166	300 x 540
Frame No. 29-600 o	29	1110	300 x 220	40H7	166	300 x 565
Special fixture mounting plate with 3 longitudinal slots o			355 x 225 400 x 230	40H7 40H7		

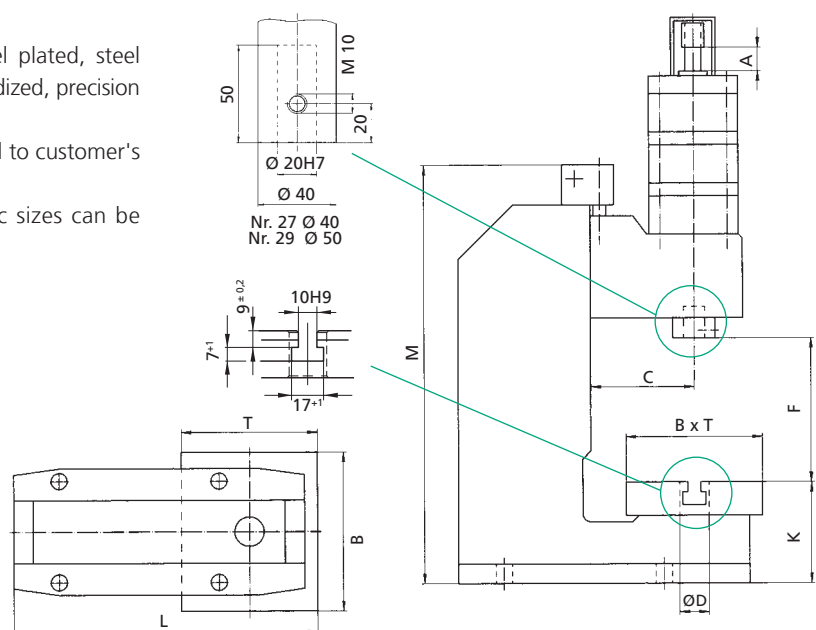
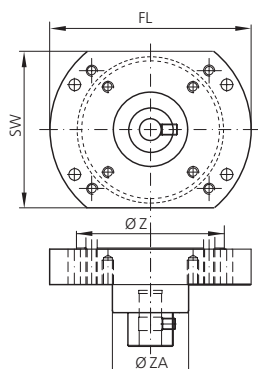
¹⁾ Typical values; can vary ± 3 mm due to cast and production tolerances

Options

o Additional charge applies

Other available Options

- Nickel plated – cast parts are electroless nickel plated, steel components black oxide finished, aluminum anodized, precision steel surfaces are untreated
- Custom Paint – press and column can be painted to customer's color specification
- Bores for adapting tooling – customer specific sizes can be supplied



Please consult our Sales Department or Representative.
Detailed dimensional drawings can be downloaded: www.schmidttechnology.de

SCHMIDT® PneumaticPress

Pneumatic Toggle Presses with maximum Force at the End of Stroke

Features

- Cross hole with locking screw in the press table for safe fixture of tool
- Accurate adjustable ram position via fine adjustment (type 33)
- T-slot with set screw in fixture mounting platen to secure bottom tool



Press Type 32



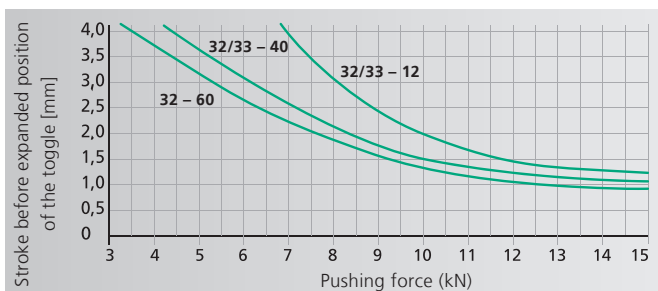
Press Type 33



Fine Adjustment
for press No. 33 with scale
1 division line = 0.02 mm.



Flexible Stroke Adjustment
reduces the air consumption
for shorter strokes.



Up to 15 kN

Press Type			32	33
Working stroke	A	mm	0-12 4-40 6-60	0-12 4-40
Nominal force at 6 bar		kN	15	15
Throat depth	C	mm	86	86
Throat depth frame o		mm	111, 131	111, 131
Additional fixture mounting plate suitable for throat depth frame			o	o
Ram bore	Ø	mm	20H7	20H7
External ram dimensions	Ø	mm	40	40
Fine adjustment				•
Working height ¹⁾	F			
Frame No. 3		mm	90-210	
Frame No. 2		mm	120-340	70-290
Frame No. 2-600 o		mm	210-580	160-530
Frame No. 2-1000 o		mm	340-1020	290-970
Weight		approx. kg	45	50

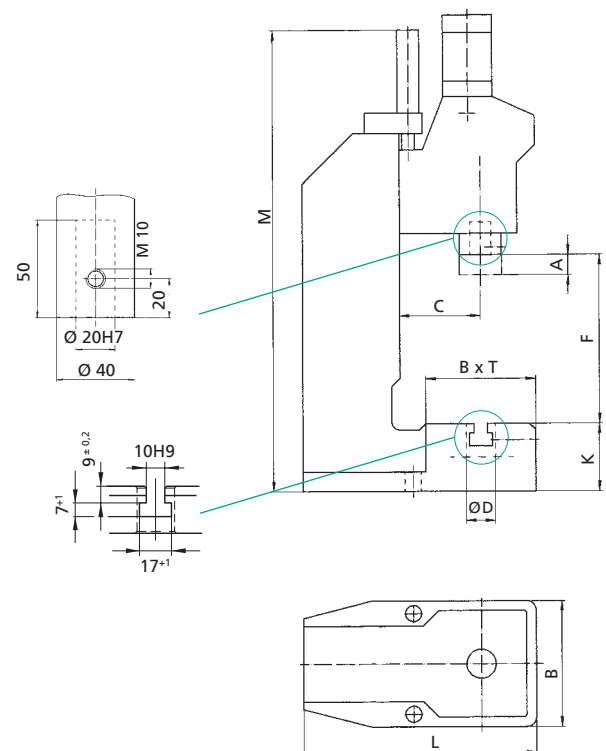
Frame Overview	Press Type	Frame Height M (mm)	Table Size B x T (mm)	Table Bore D Ø (mm)	Table Height K (mm)	Mounting Surface B x L (mm)
No. 3	32	540	150 x 110	20H7	60	150 x 260
No. 2	32, 33	700	185 x 110	20H7	60	185 x 280
Frame No. 2-600 o	32, 33	810	200 x 160	20H7	98	200 x 290
Frame No. 2-1000 o	32, 33	1248	200 x 160	20H7	98	200 x 290

Options

- Series standard with no additional charge
- o Additional charge applies
- ¹⁾ Typical values; can vary ± 3 mm due to cast and production tolerances

Other available Options

- Nickel plated – cast parts are electroless nickel plated, steel components black oxide finished, aluminum anodized, precision steel surfaces are untreated
- Custom Paint – press and column can be painted to customer's color specification
- Bores for adapting tooling – customer specific sizes can be supplied



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SCHMIDT® PneumaticPress

Pneumatic Toggle Presses with maximum Force at the End of Stroke

Features

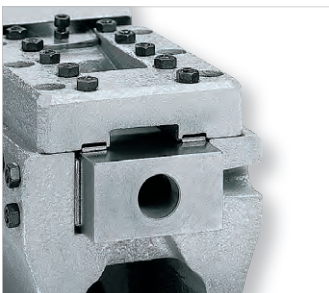
- Anti-rotational square ram with fully adjustable, Teflon lined gibs for precise travel, no die set required
- Exact positioning due to fine adjustment scale (1 division line = 0.05 mm)



Press Type 34



Press Type 36



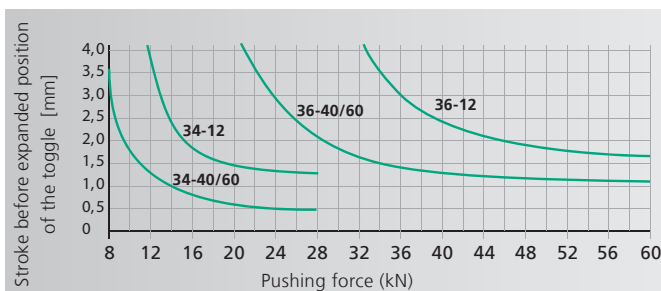
SquareRam



Fine Adjustment

Pushing Force Diagram

Operational pressure: 6 bar



From 28 kN to 60 kN

Press Type			34	36
Working stroke	A	mm	0-12 4-40 6-60	0-12 4-40 6-60
Nominal force at 6 bar		kN	28	60
Throat depth	C	mm	131	160
Throat depth frame o		mm	151, 170	185
Fixture mounting platen suitable for throat depth frame			o	o
Ram bore	Ø	mm	20H7	20H7
External ram dimensions	G x H	mm	36 x 63	46 x 86
Working height ¹⁾	F			
Frame No. 34		mm	100-250	
Frame No. 301		mm	160-400	
Frame No. 301-500		mm	310-550	
Frame No. 35		mm		100 - 250
Frame No. 35-500		mm		150-500
Frame No. 35-600		mm		250-600
Weight		approx. kg	90	150

Frame Overview	Press Type	Frame Height M (mm)	Table Size B x T (mm)	Table Bore D Ø mm	Table Height K (mm)	Mounting Surface B x L (mm)
No. 34	34	630	200 x 160	25H7	111	200 x 370
No. 301	34	830	250 x 200	40H7	145	250 x 460
No. 301-500	34	990	250 x 200	40H7	145	250 x 480
Special fixture mounting plate with 3 longitudinal slots o			300 x 220 400 x 230	40H7		
No. 35	36	700	300 x 220	40H7	141	300 x 480
No. 35-500	36	990	300 x 220	40H7	166	300 x 560
No. 35-600	36	1110	300 x 220	40H7	166	300 x 585
Special fixture mounting plate with 3 longitudinal slots o			355 x 225 400 x 280	40H7		

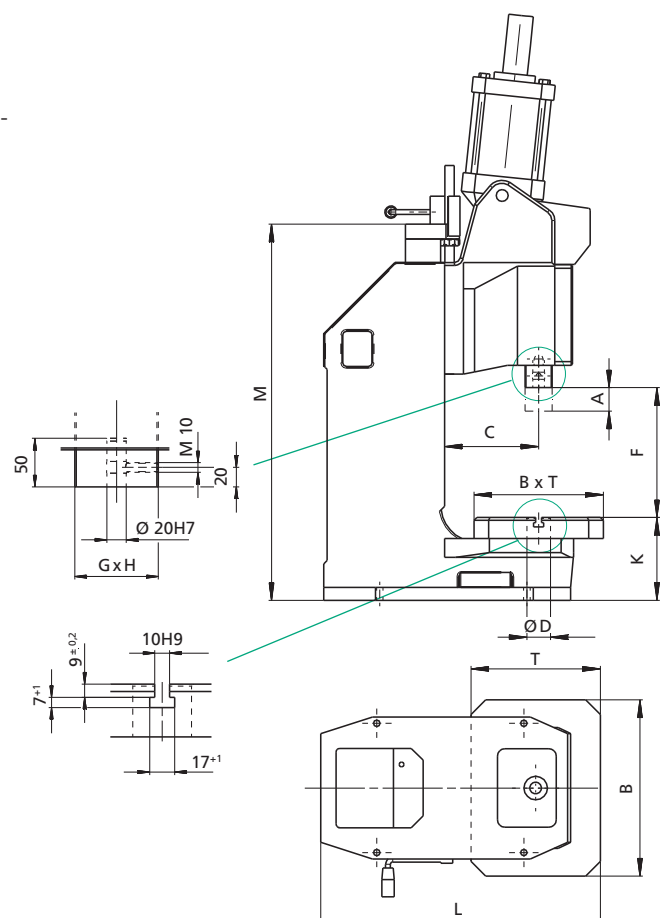
Options

o Additional charge applies

¹⁾ Typical values; can vary ± 3 mm due to cast and production tolerances

Other available Options

- Nickel plated – cast parts are electroless nickel plated, steel components black oxide finished, aluminum anodized, precision steel surfaces are untreated
- Custom Paint – press and column can be painted to customer's color specification
- Bores for adapting tooling – customer specific sizes can be supplied



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SCHMIDT® PneumaticPress

Direct Acting Pneumatic Presses with Force/Stroke Monitoring

SCHMIDT® PneumaticPresses with force/stroke monitoring are offered as complete system with control unit **SCHMIDT® Press-Control 600**. These systems are characterized by sensors and signal amplification integrated in the press head. These signals are evaluated in real time.

Features

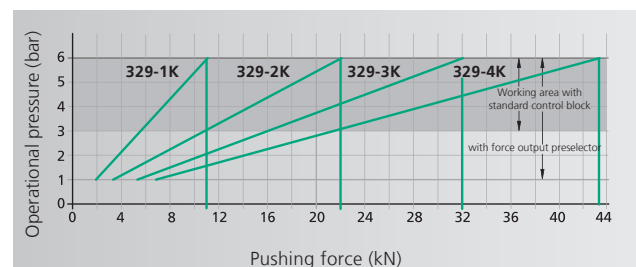
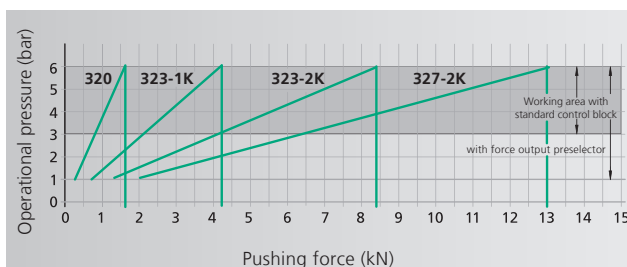
- Direct forces are measured due to the force sensor integrated in the ram. Insensitive against side loads
- Force and displacement sensors are immun to EMI and environmental conterminaton
- A measuring data amplification integrated in the press head provides short transmission paths of unamplified signals
- Anti-rotational square ram with two fully adjustable guiding gibs for precise work, also with tools without guide (not for **type 320**, here special anti-twist protection in the roller-guided round ram)



Press Type 323, 327, 329



Press Type 320



From 1.6 kN to 43 kN

Press Type			320	323-1K	323-2K	327-2K	327-3K	329-2K	329-3K	329-4K
Working stroke	A	mm	100	50, 75, 100, 125, 150	50, 75, 100	50, 75, 100, 125, 150	50, 75, 100	50, 75, 100, 150	50, 75, 100, 125, 150	50, 75, 100
Nominal force at 6 bar		kN	1.6	4.2	8.4	13	20	22	32	43
Resolution, process data acquisition										
- stroke		µm/inc	5	5	5	5	5	5	5	5
- force		N/inc	0.5	1.25	2.5	4	6.25	6.25	10	12.5
Throat depth	C	mm	129	131	131	131	131	160	160	160
Throat depth frame o		mm		151	151	151	151			
Fixture mounting plate suitable for throat depth frame				o	o	o	o			
Ram bore	Ø	mm	20H7	20H7	20H7	20H7	20H7	20H7	20H7	20H7
External ram dimensions	G x H	mm	Ø 40	70 x 50	70 x 50	70 x 50	70 x 50	90 x 60	90 x 60	90 x 60
Working height ¹⁾	F									
Frame No. 7		mm	50-270							
Frame No. 7-600 o		mm	85-600							
Frame No. 301		mm		140-350	140-350	140-350	140-350			
Frame No. 301-500 o		mm		310-500	310-500	310-500	310-500			
Frame No. 329		mm						130-300	130-300	130-300
Frame No. 329-460 o		mm						190-460	190-460	190-460
Weight (standard)	approx. kg		70	170	170	170	170	320	325	330

Frame Overview	Press Type	Frame Height M (mm)	Table Size B x T (mm)	Table Bore D Ø mm	Table Height K (mm)	Mounting Surface B x L (mm)
No. 7	320	600	180 x 150	20H7	90	330 x 361
No. 7-600	320	960	180 x 280	20H7	110	330 x 465-505
No. 301	323, 327	830	250 x 200	40H7	145	250 x 460
No. 301-500	323, 327	990	250 x 200	40H7	145	250 x 480
Special fixture mounting plate with 3 longitudinal slots ²⁾ o			300 x 220 400 x 230	40H7		
No. 329	329	810	300 x 230	40H7	147	300 x 550
No. 329-460	329	990	300 x 230	40H7	147	300 x 620
Special fixture mounting plate with 3 longitudinal slots ²⁾ o			400 x 280 500 x 280	40H7		

Options

o Additional charge applies

¹⁾ Typical values; can vary ± 3 mm due to cast and production tolerances

²⁾ With Press type 320 only in combination with Frame type

No. 7-600 with 168 mm, 208 mm or 248 mm

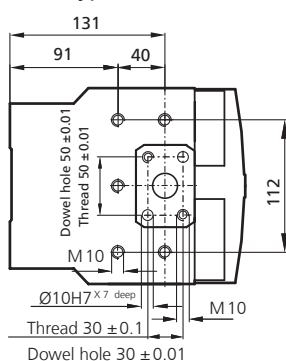
Other available Options

- Nickel plated – cast parts are electroless nickel plated, steel components black oxide finished, aluminum anodized, precision steel surfaces are untreated
- Custom Paint – press and column can be painted to customer's color specification
- Bores for adapting tooling – customer specific sizes can be supplied

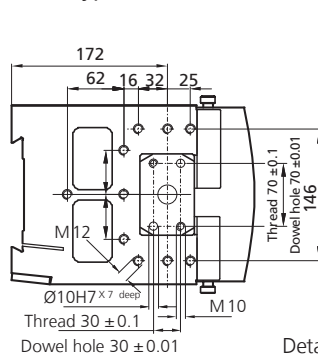
Bottom View of the Press Head

Fastening drill pattern flange/ram

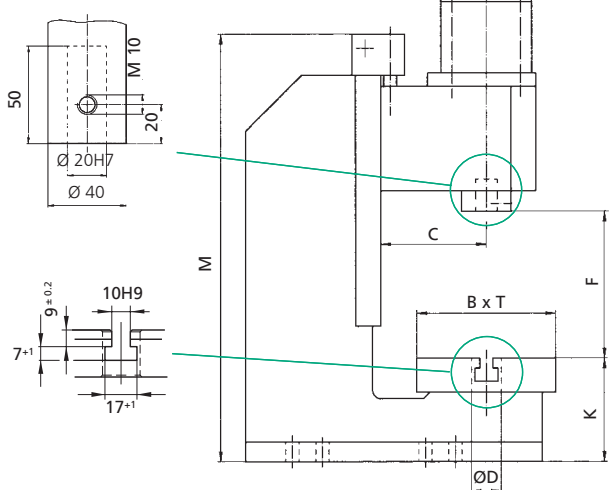
Press Type 323/327



Press Type 329



Press Type 320



Please consult our Sales Department or Representative.

Detailed dimensional drawings can be downloaded: www.schmidttechnology.de

Calculation of the Air Consumption

The air consumption per stroke is calculated in normal litres (NL)¹⁾ at a working pressure of 6 bar.

The entire consumption consists of a constant and a variable part that depends on the stroke.

SCHMIDT® PneumaticPress Air Consumption per Stroke

At 6 bar in normal litres (NL)

Press Type	Constant	Variable (per mm Stroke) ⁴⁾	Air Connection ³⁾
20	= max. stroke / 50 mm x 1 NL	0.02 NL	G 1/4"
23	= max. stroke / 50 mm x 2.5 NL	0.05 NL	G 1/4"
24	= max. stroke / 50 mm x 2.5 NL	0.1 NL	G 1/4"
25	= max. stroke / 50 mm x 2.5 NL	0.15 NL	G 1/4"
27-1K	= max. stroke / 50 mm x 4 NL	0.08 NL	G 3/8"
27-2K	= max. stroke / 50 mm x 4 NL	0.16 NL	G 3/8"
27-3K	= max. stroke / 50 mm x 4 NL	0.24 NL	G 3/8"
29-1K	= max. stroke / 50 mm x 6.5 NL	0.13 NL	G 1/2"
29-2K	= max. stroke / 50 mm x 6.5 NL	0.26 NL	G 1/2"
29-3K	= max. stroke / 50 mm x 6.5 NL	0.39 NL	G 1/2"
29-4K	= max. stroke / 50 mm x 6.5 NL	0.52 NL	G 1/2"
320	= max. stroke / 50 mm x 1 NL	0.02 NL	G 1/4"
323-1K	= max. stroke / 50 mm x 2.5 NL	0.05 NL	G 1/4" 3)
323-2K	= max. stroke / 50 mm x 2.5 NL	0.1 NL	G 1/4" 3)
327-2K	= max. stroke / 50 mm x 4 NL	0.16 NL	G 1/2" 3)
327-3K	= max. stroke / 50 mm x 4 NL	0.32 NL	G 1/2" 3)
329-2K	= (max. stroke +25 mm) / 50 mm x 6.5 NL	0.26 NL	G 1/2" 3)
329-3K	= (max. stroke +25 mm) / 50 mm x 6.5 NL	0.39 NL	G 1/2" 3)
329-4K	= (max. stroke +25 mm) / 50 mm x 6.5 NL	0.52 NL	G 1/2" 3)
32-12	1 NL	0.09 NL	G 1/4"
32-40	1.5 NL	0.045 NL	G 1/4"
32-60	2 NL	0.035 NL	G 1/4"
33-12	1 NL	0.09 NL	G 1/4"
33-40	1.5 NL	0.045 NL	G 1/4"
34-12	1.5 NL	0.12 NL	G 1/4"
34-40	2.2 NL	0.08 NL	G 1/4"
34-60	3 NL	0.06 NL	G 1/4"
36-12	4 NL	0.36 NL	G 3/8"
36-40	6 NL	0.2 NL	G 3/8"
36-60	8 NL	0.18 NL	G 3/8"

Total consumption = constant consumption (liter)²⁾ + variable consumption (liter)

Variable consumption = air consumption per mm of stroke (liter/mm)²⁾ X working stroke (mm)

SCHMIDT® HydroPneumaticPress Air Consumption per Stroke

At 6 bar in normal litres (NL)

Press Type Standard	Rapid Stroke/Return Stroke (constant)	Power Stroke per mm (variabel)	Air Connection ³⁾
61-50-6 / 361-50-6	2 NL	1.25 NL	G 1/4"
61-100-12 / 361-100-12	4 NL	1.9 NL	G 1/4"
62-50-6 / 362-50-6	3 NL	1.85 NL	G 1/4"
62-100-12 / 362-100-12	6 NL	2.6 NL	G 1/4"
65-50-6 / 365-50-6	5 NL	2.1 NL	G 1/4"
65-100-12 / 365-100-12	10 NL	3.1 NL	G 1/4"
64-50-6 / 364-50-6	8 NL	4 NL	G 1/2"
64-100-12 / 364-100-12	16 NL	6 NL	G 1/2"
68-50-6 / 368-50-6	8 NL	3.2 NL	G 1/2"
68-100-12 / 368-100-12	16 NL	5.2 NL	G 1/2"
74-50-6 / 374-50-6	8 NL	4 NL	G 1/2"
74-100-12 / 374-100-12	16 NL	6 NL	G 1/2"
76-100-12 / 376-100-12	26 NL	10 NL	G 1/2"

Total consumption = constant consumption (liter)²⁾ + variable consumption (liter)

Variable consumption = air consumption per mm of stroke (liter/mm)²⁾ X working stroke (mm)

¹⁾ The air volume is measured under standard conditions (1.013 · 10⁵ pascal = 1 atm and a temperature of 25° Celsius [298 Kelvin]) gemessen

²⁾ Value according to table ³⁾ For presses with force/stroke monitoring, the air connection refers to the two-channel control block used by us

⁴⁾ For the determination of the consumption, the single stroke is used, the return stroke is automatically contained in the result