pbt
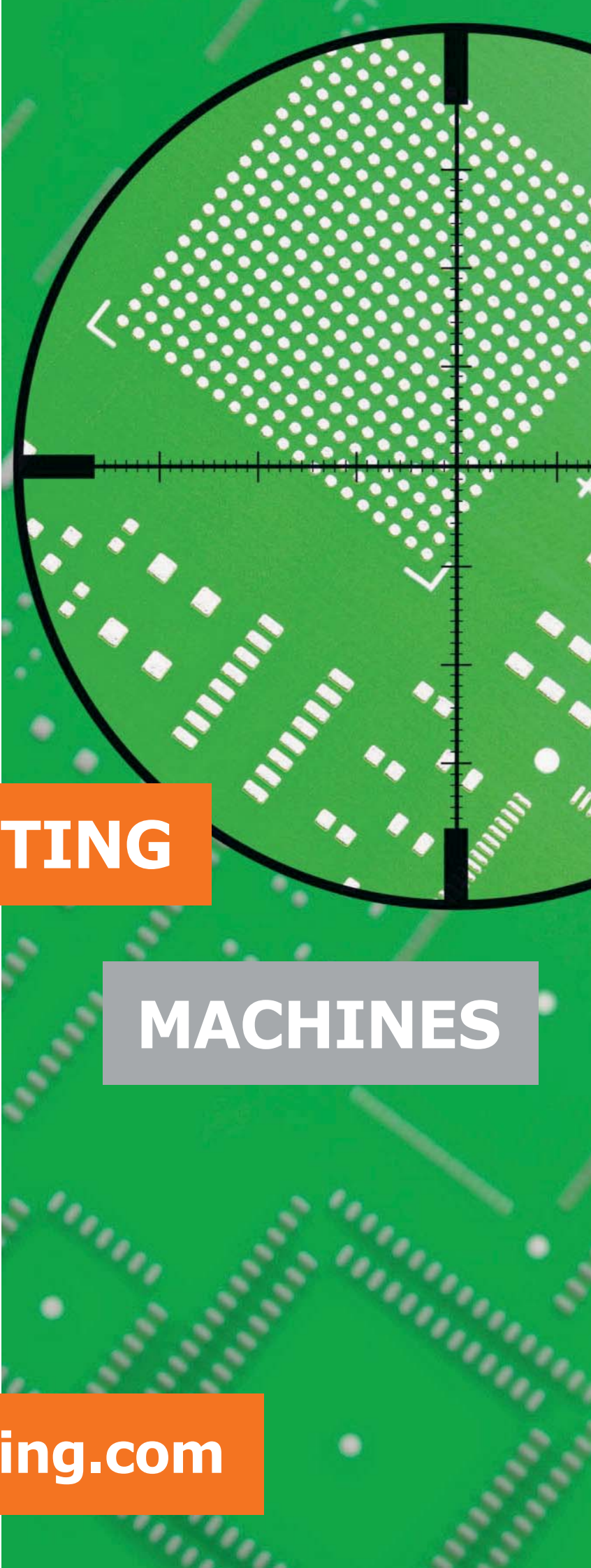
ACCURATE

PRINTING

MACHINES

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ABOUT PBT COMPANY

PBT Rožnov p.R., s.r.o. is the biggest process integrator for the SMT assemblies in the Czech Republic and Slovak Republic. Deep knowledge is applied in its own daughter plant MEAS CZ. The company with more than 20 years tradition of manufacturing printing systems for the electronic assembly solutions.

- Since 1992
- More than 3000 printers installations wordwide
- 85 employees work permanently to satisfy our customer´s needs
- More than 50 representatives worldwide
- 2500 m2 company facility
- ISO 9001 and ISO 14001 conform

- Our design team converts research ideas into the most up-to date equipment
- Complete in-house mechanical, hardware and software design
- Flexibility in customer specific requirements

- Complete pre-assembly manufacturing
- Self-reliant precise production

- Entire machine building and final quality check within our company
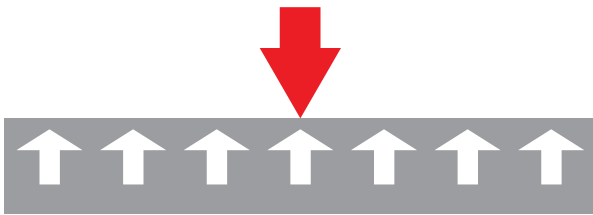- SPC during the complete production process

- Regular sales meetings and service trainings take place in PBT company
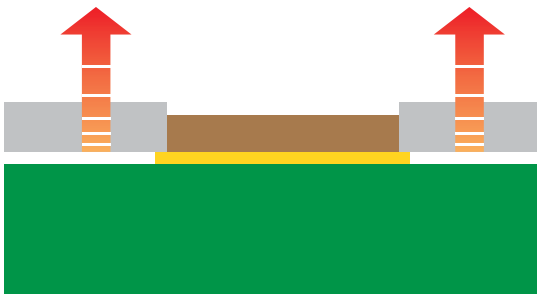- Product presentations in all important exhibitons
- Live machines demonstrations

UNIQUE FEATURES OF OUR SYSTEMS

Rigid machine body

- ❑ Smart design
- ❑ Suitable for heavy duty
- ❑ High lifetime accuracy

Precise fit of movable parts

- ❑ Wearing resistant design
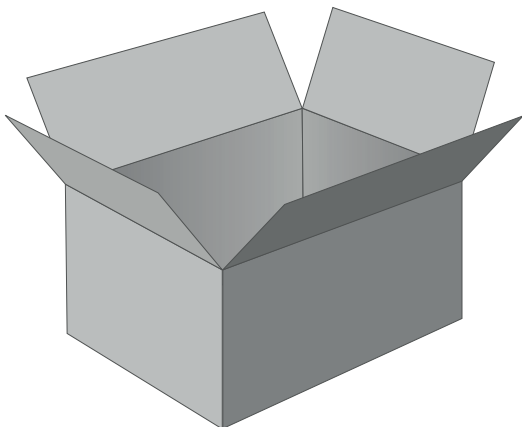- ❑ Stability of adjusted stencil-to-board position
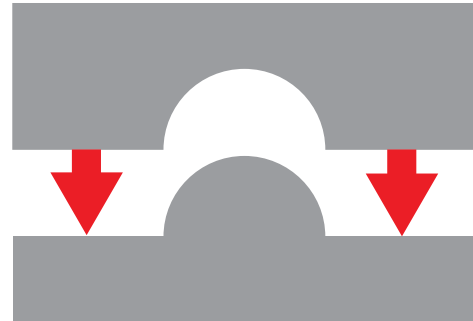
Smooth stencil separation

- ❑ Strictly parallel separation of stencil from board
- ❑ Controlled double speed of table for high throughput

Compact machines

- ❑ Outstanding but simple design
- ❑ Great features in standard configuration
- ❑ Magnetic and vacuum tooling kit included
- ❑ Wide range of customized toolings

Printing under cameras
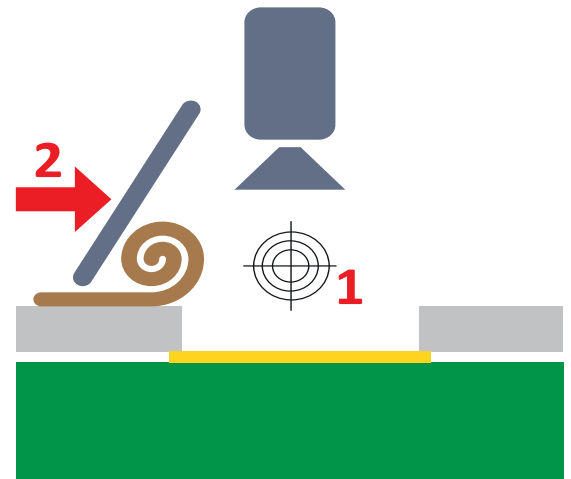
- ❑ Unique alignment system through stencil-to-board
- ❑ No movement of board and stencil after alignment
- ❑ Laser-guided vision for fast product changeover
- ❑ Automatic alignment system accepts reduced apertures

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PRINTING MACHINES OVERVIEW

		23" Printers		≥ 29" printers	
		FA23 / A23	Go23	Go29	GoLED

Printing data

		FA23 / A23	Go23	Go29	GoLED
Frame size (WxLxH) mm (orientation: W-left/right, L-front/rear, H-at clamping)	Max	584 x 680 x 40	650 x 610 x 33	762 x 780 x 40	1500 x 600 x 40
	Min	584 x 584 x 18	300 x 300 x 18	300 x 300 x 25	300 x 300 x 25
Stencil frame weight	Max	No limit	8 kg	8 kg	10 kg
Board size (WxL) mm	Max	460 x 410	510 x 420	620 x 550	1400 x 420
	Min	50 x 60	50 x 60	50 x 60	50 x 60
Board thickness (adjusted) mm	Max	4	4	4	4
	Min	0.5	0.5	0.5	0.5 (thinner board on request)
Print area (mm)	Max	410 x 390 (on request 440 x 390)	480 x 400	600 x 540	1200 x 350 (on request 1200 x 410)
Component height (mm)	Max	63.5	23.5	23.5	0
Printing accuracy		±20 μm in 3δ (FA23)			
Print capability		01005 (0402 metric) chip	01005 (0402 metric) chip	01005 (0402 metric) chip	0402 (1005 metric) chip
Typical cycle time (without printing)		10 - 20 s	10 - 20 s	10 - 20 s	10 - 20 s

Programmable parameters

	FA23 / A23	Go23	Go29	GoLED
Print pressure (manual control)	1-5 bar (10 – 140 N)	2-5 bar (40-120 N)	2-5 bar (40-120 N)	2-5 bar (40-100 N)
Print pressure (electronic control)	1-3 N/cm			
Separation speed control	0.1 - 3.5 mm/s	0.5-6 mm/s	0.5-6 mm/s	0.5-6 mm/s
Print speed range	10 – 99 mm/s	20-150 mm/s	20-150 mm/s	30-200 mm/s

Alignment conditions

	FA23 / A23	Go23	Go29	GoLED
Alignment solder pad shape	square or rectangle with max. rate 2:1			
Table X/Y adjustment	X, Y, (theta): +/- 5 mm (+/- 2.5°)	X, Y ±10 mm, Theta ±3°	X, Y ±10 mm, Theta ±3°	X, Y, (theta): ±10 mm (± 1.5°)

Installation data

	FA23 / A23	Go23	Go29	GoLED
Machine dimension (mm)	860 (+448 control console) x 846 x 1416	745 x 985 x 695	895 x 1135 x 695	1730 x 930 x 720
Weight	220 kg	100 kg	128 kg	160 kg
Power supply	230 V/50 Hz, 150 VA	230 V/50 Hz, 150 VA	230 V/50 Hz, 150 VA	230 V/50 Hz, 150 VA
Compressed air (oil free air)	0.6 – 0.80 Mpa	0.6 – 0.80 Mpa	0.6 – 0.80 Mpa	0.6 – 0.80 Mpa
Control system	PC with Windows®7 OS	PLC Touchscreen	PLC Touchscreen	PLC Touchscreen

		≥ 29" Printer	20-23" Manual Printers		
		A29	UNIPRINT	UNIPRINT P	UNIPRINT P 300

Printing data

Frame size (WxLxH) mm (orientation: W-left/right, L-front/rear, H-at clamping)	Max	737 x 890 x 40	497 x 438 x 33	608 x 608 x 33	608 x 608 x 33
	Min	508 x 508 x 18	220 x 310 x 18	370 x 280 x 18	370 x 280 x 18
Stencil frame weight	Max	No limit	5 kg	8 kg	8 kg
Board size (WxL) mm	Max	510 x 660 (on request 620 x 660)	320 x 300	410 x 405 (on request 450 x 450 only for V, G, S table)	410 x 405 (on request 500 x 500 only for V, G, S table)
	Min	55 x 55			
Board thickness (adjusted) mm	Max	4	1.5	1.5	300
	Min	0.8	1 (thinner board on request)	1 (thinner board on request)	1
Print area (mm)	Max	480 x 650 (on request 590 x 650)	290 x 280	390 x 370 (on request 420 x 370 only for V, G, S table)	390 x 370 (on request 420 x 370 only for V, G, S table)
Component height (mm)	Max	63.5	23.5 (only M table)	23.5 (only M table)	
Printing accuracy					
Print capability		01005 (0402 metric) chip	01005 (0402 metric) chip	01005 (0402 metric) chip	0402 (1005 metric) chip
Typical cycle time (without printing)		10 - 20 s			

Programmable parameters

Print pressure (manual control)	1-5 bar, 4-240 N	10–50 N	10–50 N	10–50 N
Print pressure (electronic control)				
Separation speed control	0.1-5 mm/s	1-6 mm/s (with lift)	1-6 mm/s (with lift)	1-6 mm/s (with lift)
Print speed range	10-99 mm/s			

Alignment conditions

Alignment solder pad shape	square or rectangle with max. rate 2:2			
Table X/Y adjustment	X ±8 mm, Y ±15 mm (Theta ±2°)	X,Y +/-6 mm, +/-2.5°	X,Y +/-6 mm, +/-2.5°	X,Y +/-6 mm, +/-2.5°

Installation data

Machine dimension (mm)	1240 (+460 control console) x 1160 x 1460	485 x 705 x 240 (360 with guided squeegee)	700 x 810 x 240 (350 with guided squeegee)	765 x 810 x 560 (630 with guided squeegee)
Weight	400 kg	25 kg (+5 kg guided squeegee)	33 kg (+6 kg guided squeegee)	40 kg (+6 kg guided squeegee)
Power supply	230 V/50 Hz, 150 VA			
Compressed air (oil free air)	0.6 – 0.80 Mpa	0.6 – 0.80 Mpa	0.6 – 0.80 Mpa	0.6 – 0.80 Mpa
Control system	PC with Windows®7 OS			

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FA23

PRINTER WITH AUTOMATIC ALIGNMENT SYSTEM

APPLICATION

- ❑ Maximal printing area for 23" stencil
- ❑ High flexibile mid-size production
- ❑ Prototyping
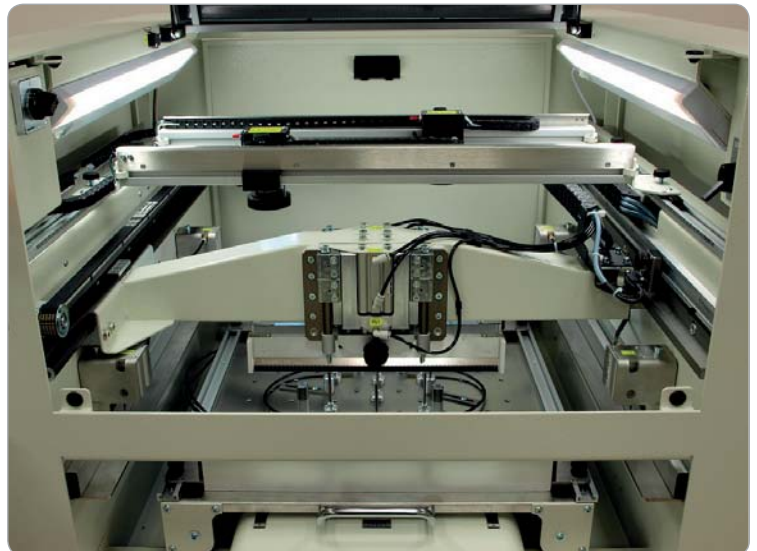- ❑ Research

UNIQUE FEATURES

- ❑ Very fast setup for new and repeated products
- ❑ Unique double squeegee with minimized blades distance
- ❑ Smooth pneumo-hydraulic separation with very low speed, important for printing HI-density structures
- ❑ Integrated underside cleaning system
- ❑ Programmable print gap
- ❑ Programmable print modus

CONTROL SYSTEM

- ❑ PC with WINDOWS®7 OS
- ❑ All print parameters programmable
- ❑ Operator influence eliminated
- ❑ Dual speed of table separation
- ❑ Three password levels
- ❑ Logging of all process parameters
- ❑ Process data transfer to LAN possible

ALIGNMENT SYSTEM

- ❑ Stencil-to-board automatic alignment system with unique through-stencil view technology
- ❑ System can use square solder pads or printable ficucials
- ❑ Alignment system also accepts reduced apertures
- ❑ No table movement after alignment
- ❑ Keeping the accurate position independent on physical and climatic influence

A23

PRINTER WITH SOFTWARE SUPPORTED ALIGNMENT SYSTEM

APPLICATION

❏ Maximal printing area for 23" stencil
❏ High flexibile mid-sized production
❏ Prototyping
❏ Research
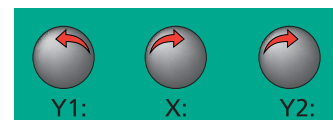
UNIQUE FEATURES

❏ The same as FA23

ALIGNMENT SYSTEM

❏ Stencil-to-board semi automatic alignment system with unique through-stencil view technology
❏ Software guides operator to align stencil-to-board

ALIGNMENT SYSTEM
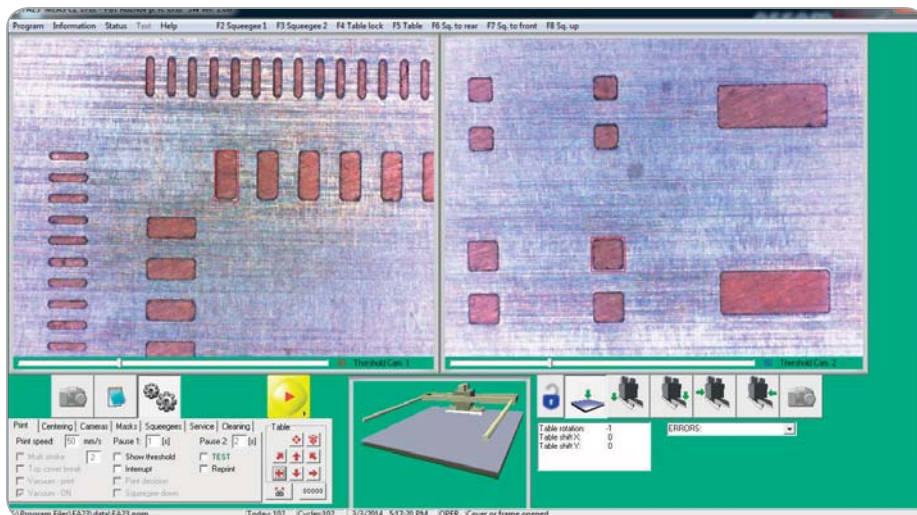
❏ Vision process uses image analysis of pad edges
❏ Filter for surface irregularity integrated

Y1:   X: Y2:

❏ Instruction guides operator to quick align

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Go23

SEMI AUTOMATIC SMD STENCIL PRINTER WITH VISION SYSTEM

APPLICATION

❑ Maximal printing area for 23" stencil
❑ Printing of very small chips, BGA, LGA structures
❑ Easy and repeatable print process with low investment costs

UNIQUE FEATURES

❑ Minimal pitch of squeegee edges
❑ Fine control of snap-off process (speed, uniformity)
❑ Special stand for the machine available to save shopfloor space

PLC CONTROLLER WITH TOUCH SCREEN AND PROGRAMMING CAPABILITY

SETUP / MANUAL				MENU
SQ. REAR POSITION:	400	THICKNESS BOARD:	4.0	
SQ. FRONT POSITION:	0	OVERLAP STENCIL POS.	1.5	▲
PRINT SPEED:	150	SNAP-OFF SPEED:	6	
PRINT STROKE Nr.:	10	SNAP-OFF DISTANCE:	2.0	▼
SQUEEGEE HOME POSITION		TABLE HOME POSITION		FRAME POSITION:
SQ. REAR	SQ. UP		TABLE UP	OPEN
SQ. FRONT	SQ.1	SQ.1	TABLE DOWN	

❑ Adjustable magnetic board support to compensate board thickness

❑ Easy opening with pneumatic servo-system
❑ Stops at any angle
❑ Fully weight ballance

❑ Pneumatic lock of print frame

❑ Quick squeegee clamping
❑ Springloaded paste deflectors

Go29

SEMI AUTOMATIC SMD STENCIL PRINTER WITH VISION SYSTEM

APPLICATION

- ❑ Maximal printing area for 29" stencil
- ❑ Printing of very small chips, BGA, LGA structures
- ❑ Easy and repeatable print process with low investment costs

UNIQUE FEATURES

- ❑ Minimal pitch of squeegee edges
- ❑ Fine control of snap-off process (speed, uniformity)
- ❑ Special stand for the machine available to save shopfloor space

- ❑ Easy opening with pneumatic servo- system Stops at any angle.
- ❑ Extra wide opening angle for easy stencil cleaning and tooling adjustment
- ❑ Frame clamping with adjustable width
- ❑ Easy access to printing area for solder paste application
- ❑ Pneumatic lock of print frame
- ❑ Fast squeege exchange - no tool needed
- ❑ Automatic squeegee lift for frame exchange and paste refill
- ❑ Laser-guided and movable vision system for quick setup
- ❑ Fast board changeover Only partial opening needed for handling
- ❑ Adjustable magnetic board support tooling

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GoLED

SEMI AUTOMATIC AUTO DRIVE STENCIL PRINTER

APPLICATION

- ❑ LED and other large-format printing tasks
- ❑ For frame with size up to 1500x600x40mm
- ❑ Max printed board size 1400x420x4mm

UNIQUE FEATURES

- ❑ Based on printers Go23 and Go29
- ❑ Pneumatic lifting of upper part with stencil frame
- ❑ Synchronous separation of table
- ❑ Fast changeover and very easy operation
- ❑ Robust solution for harsh conditions in 24/7 production

CONTROL SYSTEM

- ❑ PLC touchscreen
- ❑ Programmable range or squeegee
- ❑ Controlled separation speed of table
- ❑ Password protection in three levels

A29

ROBUST LARGE FORMAT SMT PRINTER

APPLICATION

- ❑ Printing area for 29" x 35" stencil
- ❑ Prototyping for large complex PCB assemblies
- ❑ Capacity backup for inline system

UNIQUE FEATURES

- ❑ Extraordinary stable steel sheet – frame of machine
- ❑ Unique double squeegee with minimised blades distance
- ❑ Smooth pneumo-hydraulic separation with very low speed, important for printing of HI-density structures
- ❑ Integrated underside cleaning system
- ❑ Programmable print gap
- ❑ Programmable print modus

CONTROL SYSTEM

- ❑ PC with WINDOWS®7 OS
- ❑ All print parameters programmable
- ❑ Operator influence eliminated
- ❑ Dual speed of table separation
- ❑ Three password levels
- ❑ Logging all process parameters
- ❑ Process data transfer to LAN possible

ALIGNMENT SYSTEM

- ❑ Stencil-to-board automatic alignment system with unique through-stencil view technology
- ❑ System can use fiducials, or any suitable solder pads
- ❑ Alignment system also accepts reduced apertures
- ❑ No table movement after alignment
- ❑ Stable accurate position independent from physical and climatic influence

UNIPRINT

**MANUAL AND SEMI-MANUAL STENCIL/SCREEN PRINTERS**

TWO SIZES: SMALLER UNIPRINT AND LARGER UNIPRINT P

- ❑ Full lifetime reliability
- ❑ Smart modular design
- ❑ Suitable for heavy duty
- ❑ Printing of solder paste, glue and ink in electronic production
- ❑ High dimensional stability and rigid framework
- ❑ Advanced pre-loaded mechanism for precise adjustment

LIFT - PNEUMATIC SEPARATION OF BOARD FROM STENCIL

- ❑ Pneumatic moving of table
- ❑ Smooth and uniform separation
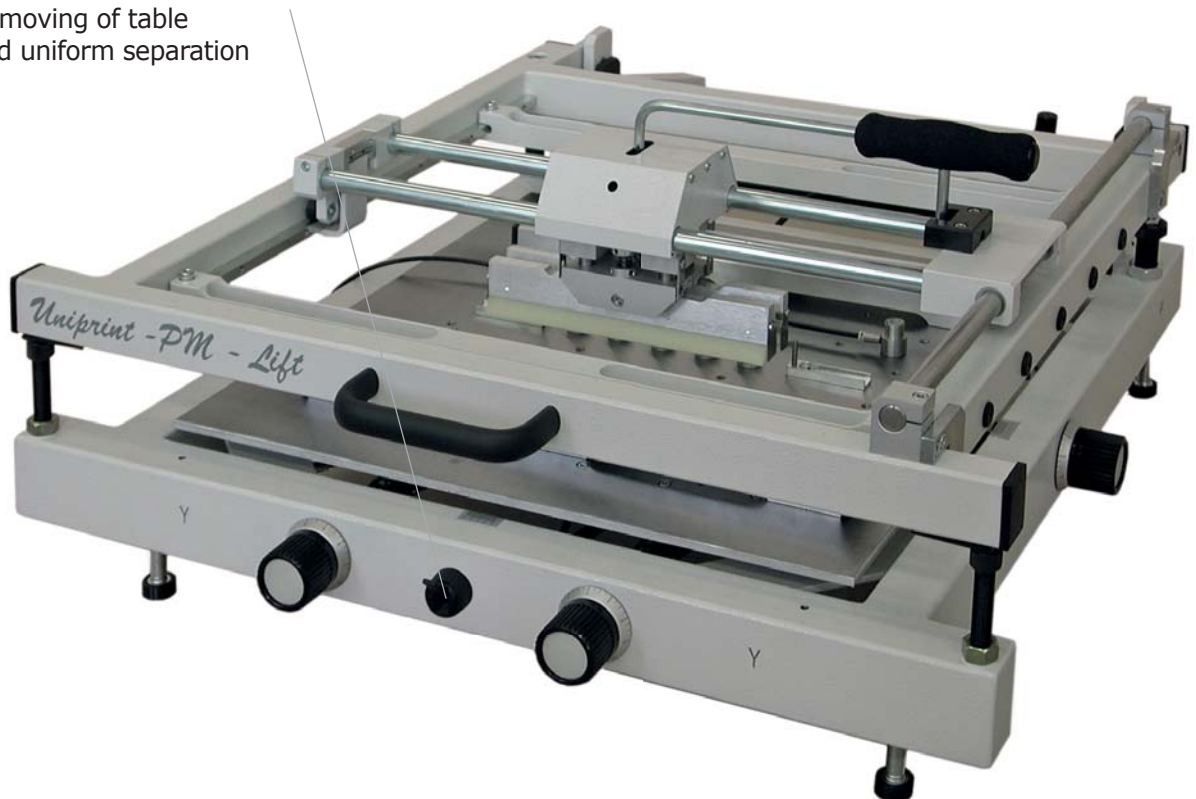
GUIDED SQUEEGEE SYSTEM

❏ Better printing result
❏ Uniform and balanced squeegee pressure
❏ Easy moving

❏ Simple models upgradable by guided squeegee

❏ Pressure spring for easy opening of upper frame

UNIPRINT P 300

❏ Height of printed subject up to 300 mm

UNIPRINT TABLE AND CLAMPING

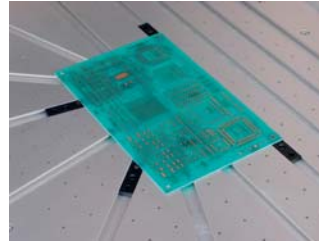## FOUR DIFFERENT PRINT TABLE TYPES FOR PCB FIXING

Magnetic table (M)
- ❑ Solution for both side boards
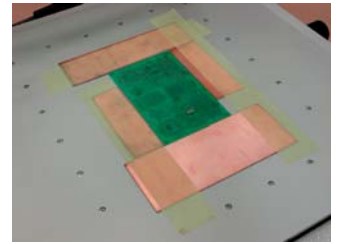- ❑ Support bars, pins, vacuum cups
- ❑ Hole and edge fixation pins
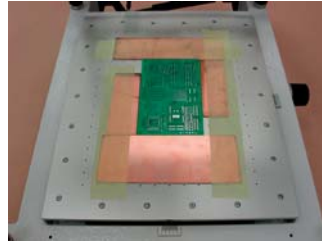
Vacuum table (V)
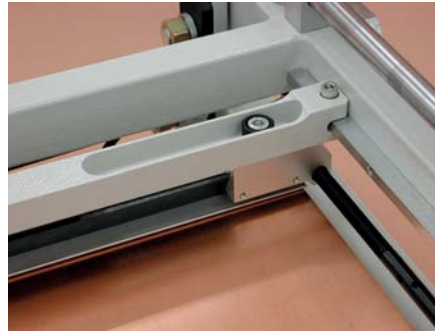

Grooved table (G)
- ❑ Fixing pins

Simple table (S)

DIFFERENT CLAMPING SYSTEMS FOR STENCIL FRAMES

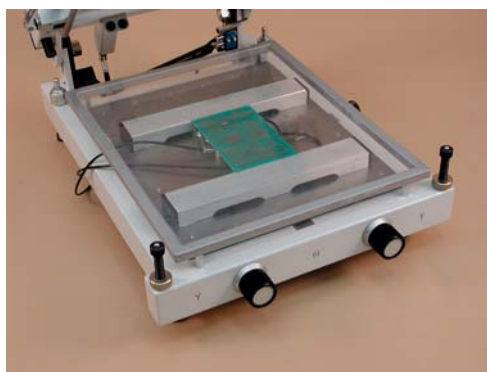
Fast slide-in with fixed width

Adjustable screw bars
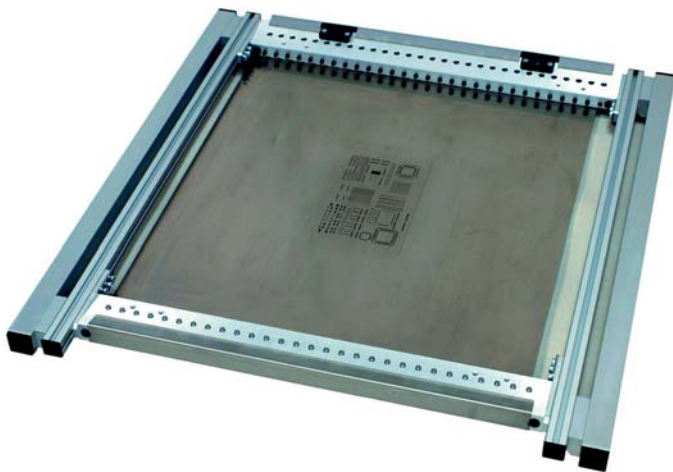

Slide-in adapters for screw bars

REGISTRATION FRAMES

- ❑ Registration frame increases the accuracy for print alignment
- ❑ Tested printing to check alignment

PBT TENSIONING FRAMES

TENSIONING SPRING LOADED (SPRUNG) STENCIL FRAME 20"/23"

- ❑ Suitable for all PBT printer 23"
- ❑ Available for other printers on market
- ❑ Springy pins on one side
- ❑ Defined by springs sitting under of each pin
- ❑ Stencil is fixed by stainless comb
- ❑ Stability and low weight of frame
- ❑ Easy readjustment

TENSIONING SCREW STENCIL FRAME

- ❑ Specified in two dimension for PBT printers UNIPRINT and UNIPRINT P
- ❑ Stencil is fixed by the stainless combs
- ❑ Frame si fixed in printer on screw bars

STENCIL FRAME DATA

	Tensioning spring loaded stencil frame 20"/23"	Tensioning screw stencil frame	
		UNIPRINT (smaller)	UNIPRINT P (larger)
Available for Printers	PBT printer 23" A29 with adapter	UNIPRINT (smaller)	UNIPRINT P (larger)
Max. stencil format (mm)	564 x 434	390-490 x 320	475-580 x 320
Min. stencil format (mm)	30 x 185	30 x 250	30 x 475
Max. tensioning force	2500 N		
Thickness of stencils	100-300 um		
Weight	4 kg	2 kg	2.6 kg
Max outer dimension (mm)	605 x 584 x 25	490 x 350 x 37	585 x 350 x 37

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More than 50 representatives worldwide
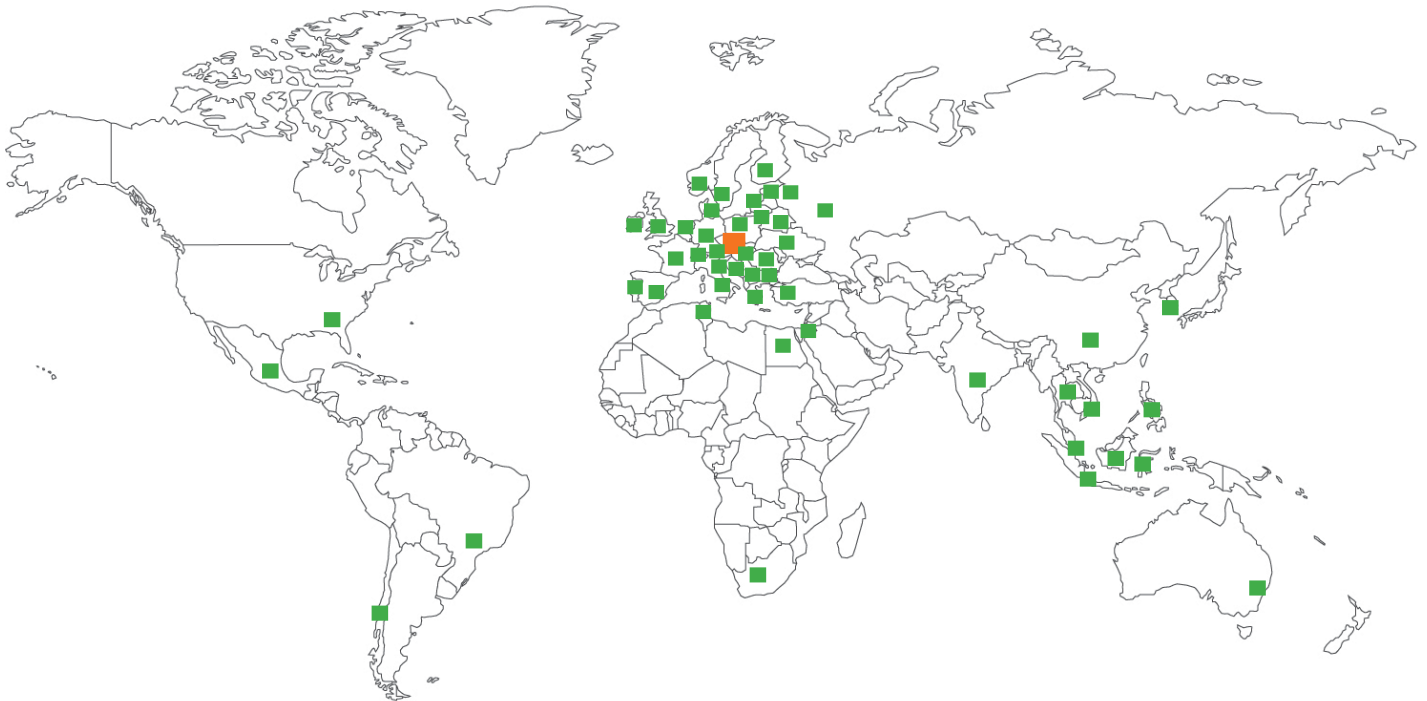
Australia, Austria, Belarus, Brazil, Bulgaria, Denmark, Czech Republic, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Chile, China, India, Indonesia, Ireland, Israel, Italy, Latvia, Lithuania, Malaysia, Mexico, The Netherlands, Norway, Philippines, Poland, Portugal, Romania, Russian Federation, Serbia, Singapore, Slovak Republic, Slovenia, Spain, South Africa, South Korea, Sweden, Switzerland, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, USA, Vietnam