

Ball-Wedge Bonder G5 62000

F & K DELVOTEC – The Ball-Wedge Bonder specialist – delivers the perfect solution for any bonding challenge in the automotive, opto-electronics, sensors and HF/RF technology.

The unique rotary bond head offers the possibility always to bond in the direction of the transducer oscillation, greatly improving the quality of the second bond. In addition, collisions with components within the bonding envelope can easily be avoided, facilitating automation especially for difficult packaging types, e. g. in sensor production and automotive electronics.



Advantages

- Excellent bond quality even on problematic substrates such as thick film ceramics thanks to patented wire tear function
- All specialty modes such as Stitch-on-Ball, Security-Ball-on-Stitch, Ball-on-Stitch-on-Ball with recentering as well as Tailless Bumping and Ball Stacking
- Many different capillary lengths permit trouble-free bonding even of difficult premolded packages
- Superior automation options, e. g. for heating plastic molded packages for bonding with gold wire

NOT JUST MACHINES.
BUT BONDING SOLUTIONS.

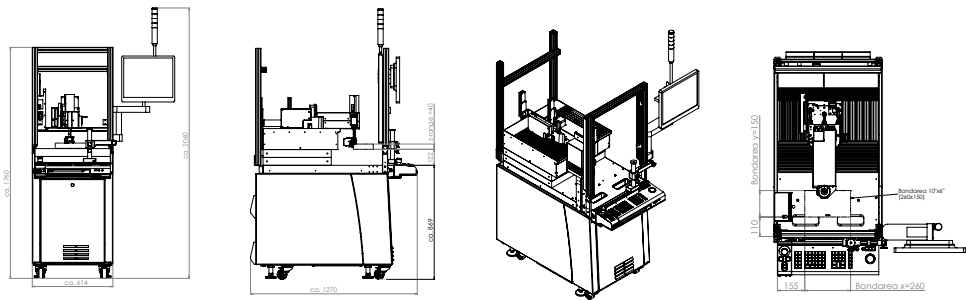
F  **K**
DELVOTEC

MADE FOR YOU - YOUR ADVANTAGES AT A GLANCE

BALL-WEDGE WIREBONDER G5 62000

- Proven mechanical system and software
- Optimal scalability of your investment
- Perfected bond head exchange system for technological wide range
- Compact F & K work holder and cost-efficient handling system
- Manual or automatic operation
- Up to 25 % better pull values thanks to rotating ball-wedge bond head
- Ideal for RF/HF packages
- Suitable for bonding in cavities

BALL-WEDGE MACHINE MODEL



Ball-Wedge Wirebonder G5 62000

WORK AREA

X-Axis	254 mm (10")
Y-Axis	152.4 mm (6")
Z-Axis	40 mm (1.57"), optional 60 mm (2.36")
Width	620 mm
Height with/without signal lamp	2,249 / 1,723 mm
Depth	1,125 mm
Weight	620 kg

SUPPLY

Working height	SMEMA compliant 850-1,050 mm
Power supply	110 V +/- 10 %, 230 V +/- 10 %, single phase, 50-60 Hz
Power	3.2 kVA including heater
Compressed air	4-8 bar
Vacuum connection	< -0.8 bar

BALL-WEDGE BOND HEAD

- **Wire feed angle**
90°
- **Wire diameter**
Standard 17-50 µm (0.7-2 mil)
- **Wire materials**
Au, Cu, (Pd, Fe doped Au wire)
- **Wire spool**
 - 2" diameter
 - Wire end detection using CCD sensor
- **Features**
 - Stitch-on-Ball
 - Ball-on-Stitch
 - Ball-on-Stitch-on-Ball
 - Ball stacking
 - Tailless Bumping
- **Capillary types**
 - 11, 16, 19 mm (0.44", 0.64", 0.76") length
 - All current tool manufacturers
- **Touchdown sensor**
 - Inductive sensor with linear working range
 - Anti-crash hardware sensor
- **Transducer frequencies**
 - 60 to 142 kHz
 - Largest range of transducer frequencies in the market
 - In-house F & K transducer manufacture for 25 years
- **Ultrasonic generator**
 - F & K, digital 30-250 kHz
 - Resolution < 1 Hz
 - Power max. 100 W, programmable
- **Bond force**
 - 10 to 250 cN, programmable for each bond
 - Exact control of the bond force to 1 cN
- **Bond head fast-change system**
Proven, fast-change system with intelligent bond head recognition, enables exchange of bond heads in less than 15 minutes
- **Speed**
Speed up to 2.5 wires/sec (application dependent)

BALL-WEDGE MACHINE MODEL

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MACHINE SPECIFICATION

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X-Y-axes	Linear encoder resolution better than 0.1 µm
P-axis	+/- 200° AC servomotor with absolute encoder, resolution 0.0035°
Z-axis	Optionally 60 mm (2.36"), AC servomotor with absolute encoder, resolution 0.5 µm
Positional accuracy	< +/- 5 µm @ 3 sigma, incl. PRU/Wire/Tool/Application
Repeatability on product	< +/- 3 µm @ 3 sigma, incl. PRU/Wire/Tool/Application
Monitor	19" flat screen
Microscope	Stereo zoom microscope, adjustable lighting
Control	EKF Dual Core CPU
Connections	SMEMA, USB, RJ 45, Digital I/O
Operating system	Real-time, Unix®-based multi-tasking OS
Certification	CE

NETWORK CONNECTIVITY

TCP/IP/FTP data exchange
SMEMA for in-line connections to other machines
SEMI communication standard SECS/GEM

PATTERN RECOGNITION

Pattern recognition unit	Cognex® 8000 Pat Max® System
Recognition time	2 ms per pattern recognition
Alignment correction	NEW Flexsearch, single point recognition incl. phase angle, two point recognition, phase angle correction +/- 5 %
Precision	Sub-pixel resolution down to 0.1 pixel
Camera	Moving CCD-camera, 640 x 480 pixel
Resolution	2-30 µm per pixel, adjustable using different optics
Image size	Standard 1.2 mm x 1 mm bis 20 mm x 18 mm

MANUAL WORKSTATIONS

Standard size for PCB 4" x 4", 6" x 6", 8" x 6", 10" x 6"
Vacuum and / or mechanical clamping
Height-adjustable table optional
Heated or unheated

ILLUMINATION

Optimal illumination with a combination of light sources
Coaxial and indirect light
180° red; mountable left or right
Spot LED, white, red, blue
Universal LED, white, red, blue, green
24 V LED, light tile

AUTOMATIC PARTS HANDLING

Belt indexer
Flat substrates, e. g. ceramic substrates, PCB or workpiece carriers
Length up to 350 mm
Width up to 150 mm
Can be combined with heated bond-off station 2" x 2", and with 2 pre-heat stations

MAGAZINE LIFT SYSTEM

F & K leadframe lifts, dual axes	Magazine width 24-115 mm	Height 94-200 mm	Length 154-244 mm, optionally 234-324 mm
F & K Substrate / boat lifts, single axis	Magazine width max. 240 mm	Height max. 300 mm	Length max. 240 mm
	Substrate width max. 160 mm	Substrate length < 150 mm or > 300 mm, Substrate widths > 160 mm are treated individually as special requirements	

NOT JUST MACHINES. BUT BONDING SOLUTIONS.

QUALITY TOOLS

BOND PROCESS CONTROL (BPC): What exactly are the advantages of the new BPC?

- Closed-loop-system for continuous monitoring and real-time control of the bonding parameters time, ultrasonic power and bond force
- Adjustment of the ultrasonic power to surface variations in the current process



LEVEL
03

Guarantee Quality by Process Perfection

A sensor tracks the wire deformation continuously and the ultrasonic energy applied is controlled in real time according to previously defined reference values.

LEVEL
02

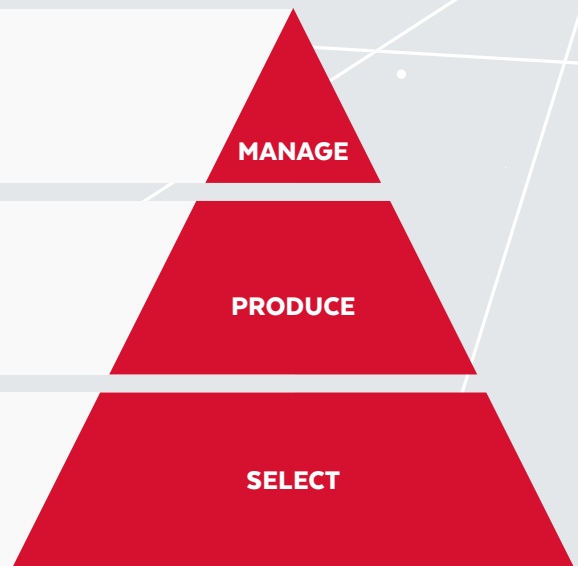
Produce Quality by Process Monitoring

The process runs reliably within defined tolerances. By means of a data base statistical evaluations from the analysis of up to 636 process parameters per wire can be made. Cpk values are determined continuously.

LEVEL
01

Select Quality by Defect Detection

The basic principle of bond process control: faulty components will be identified and can be rejected. .



Tool inspection

- Graphical display of the expected positioning of the capillary by pattern recognition unit
- Minimum set-up time with maximum traceability when changing capillary
- Simple check of ball centering
- Free-air-ball measurement possible

Load cell

- Load cell and housing for fully automatic calibration of the bond weight

Traceability

- Link up to standard F & K or customer specific MES
- Link to an existing host
- For manual and automatic parts handling

Barcode & DMC-Reader

- Fully automatic part recognition, recipe and process data assignment
- Available as flexible hand-held DMC-reader or fixed-position integrated unit

Transducer

- Optimised, tuned system comprising transducer and ultrasonic generator
- Continuous in-house development for 25 years ensures constant and outstanding quality
- Measurement of every transducer using extensive test procedures properly documented by the transducer laboratory

BOND ACADEMY: your advantages?

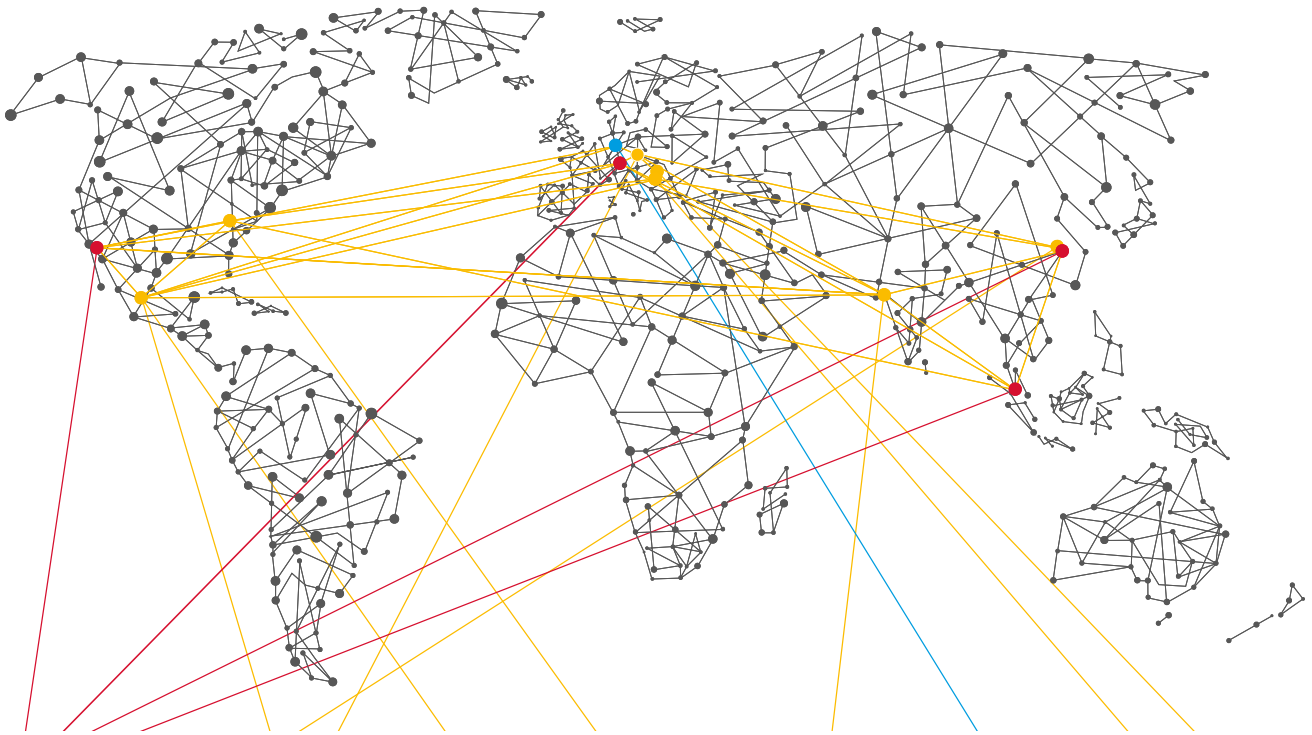
Our support for implementing your requirements and optimising your processes:

- Competent advice
- Determining the correct transducer frequency for the application
- Rapid prototyping
- Validation of product design
- Sample bond tests and pilot series manufacture
- Training your service technicians
- Ramp-up-support



POWERFUL SYNERGIES AS „MEMBER OF STRAMA GROUP“

Together with our parent company, Strama-MPS, we integrate our wirebonders into complete assembly lines with other joining, assembling and testing stations. Our customers profit from the combination of our bonding and automotive expertise, „One-stop-shopping“, and the interface free quality of the complete package.



GERMANY,
Ottobrunn
USA, Foothill Ranch
CHINA, Shanghai
SINGAPORE



GERMANY,
Straubing
CHINA, Taicang
MEXICO, Puebla



MEXICO, Puebla



USA, Greer



INDIA, Nashik



GERMANY,
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CROATIA,
Cerna
BOSNIA, Orašje

F & K DELVOTEC Inc. | Foothill Ranch / USA
Phone +1 949 595 2200 | sales@fkdelvotecusa.com

F & K DELVOTEC Bondtechnik Singapore Pte
Singapore | Phone +65 6779-5055
admin_sales@fnk-delvotec.com.sg

F & K DELVOTEC (SHANGHAI) CO., LTD
Jiading / Shanghai | Phone +86 216952 7807
shanghai_sales@fnk-delvotec.com.sg

F & K DELVOTEC Bondtechnik GmbH
Daimlerstr. 5-7
85521 Ottobrunn / Germany

Phone +49 89 62995 122
Fax +49 89 62995 101

sales@de.fkdelvotec.com
service@de.fkdelvotec.com
www.fkdelvotec.com

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