

Automatic Selective Soldering Systems



EBSO Headquarter in Germany

Over 30 years
experience in electronics

EBSO

solutions for good connections

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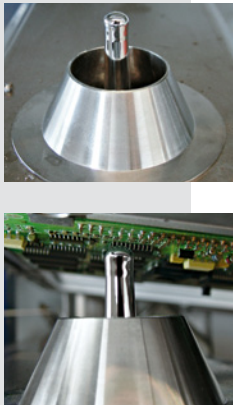


EBSO
solutions for good connections

Selective Soldering

with the EBSO SPA Line

Miniwave with overflow wetable solder nozzle



Many components can due to theire thermal sensitivity not be soldered with a tra-
ditional wave solder process (LCD displays). Other PCB's are due to SMD com-
ponent layout issues also can't be soldered successfully using the traditional wave
solder process.

Further more often the very costly custom made solder masks to cover the SMD
components are difficult to make and not justifiable so customers finish up hand
soldering parts. To automate this process the answer is selective soldering.

EBSO already had machines like SPA 300-F and 400-F developed in the year 1999,
this machine concept also allows small to medium companies with smaller budgets
and production lots to enter this attractive new technology. The SPA Line starts
from manual machines all the way up to fully automatic solder centres.

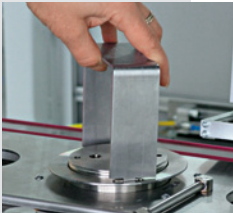
With this particular product line up EBSO has become the world market leader.
Product specific solder nozzles and masks round off the enormous know-how
EBSO has in this new emerging soldering technology.

Selective soldering makes your THT solder process more efficient and safer due to
exact control of flux quantity, preheat and solder temperature. With over 30 well
trained distributors world wide, EBSO can provide best service in pre- and after-
sales.

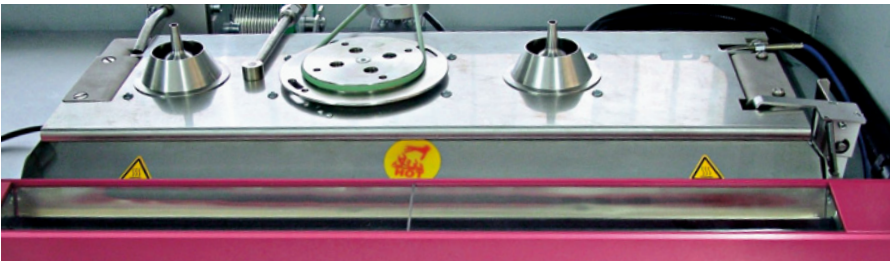
All SPA machines are built with the same solder pot technology made of fully titani-
um which is best for lead free solder alloys.

The patented unique "QUICK RELEASE" solder pump is a revolution in terms of
maintenance time. This system allows full access to the solder pot within seconds,
hence it increases your production efficiency.

„QUICK RELEASE”
solder pump



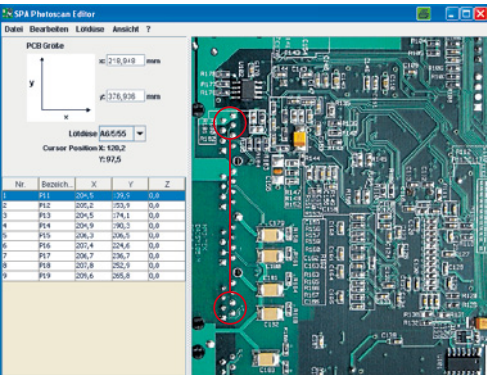
Simply turn pump 45°
and the pump is ready
to remove



Solder pot with dual nozzle technology and IR-preheat

The EBSO Offline programming
software together with the inte-
grated Photo-Editor allows fastest
programming times.

Photo-Editor makes programming easy
and comfortable



SPA-R

Rework and Manual Soldering

The bench top machine SPA-R is a manual solder station to rework leaded compo-
nents such as connectors etc.

Due to RoHS conform electronics the lead free solder temperature raised which
made the rework of THT components with a solder iron even more difficult then
it was before.

The solution is the SPA-R which makes this process less painless. Furthermore, for
manual soldering of small and medium batches the SPA-R can be used as well.



XY-Table with position
fixing



Different solder nozzle
sizes and customized
nozzles



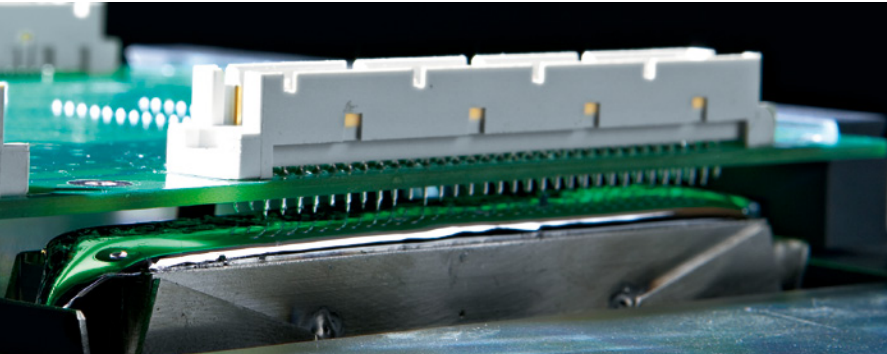
SPA-R insight
straightforward
engineering



SPA-R with laserpointer to ease
component centering over nozzle

Product Highlights:

- Easy to operate
- Timer-function
- Solder pump and solder bath made of fully titanium for lead free solder alloys equipped with the "QUICK RELEASE" pump technology
- On the fly wave hight regulation
- Wave standby-function to reduce tack time
- Save of 5 programs
- Easy solder nozzle interchange
- No limits in board size
- Optional N2-supply
- Optional laserpointer to ease component centering over nozzle
- XY-table



Soldering of a connector

SPA 300/400 NC Platform

Established worldwide

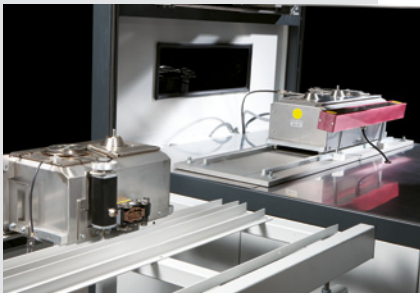
Since we introduced the SPA 300-F / SPA 400-F to the market in 2003 more then 450 machines has been installed so far.

The concept of the machine allows many options for the requirements of the customers demand. Solder pot as well as solder pump are flood with protective gas. The SPA 300/400 NC platform is designed für the automotive soldering of connector strips, relais, transformers and other conventional assemblies. Especially für applications which aren't qualified for the wave solder process, SPA is ideally applicable to automate the manual soldering process.

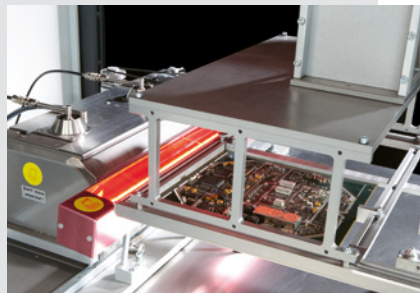
The design of the system offers a variety of options and custom specific equipments which could be retrofitted anytime.



Soldering system with charging station



Comfortable and fast change via charging station



Processing room of the soldering system

Your advantages:

Integrated, intuitively user interface

EBSO offline editor is a Windows based software to create a solder program for each individual solder joint. It isn't needed any know-how in programming. Additionally, every solder joint can be programmed via an intuitively "point & click"-program. So you'll receive your individual, reproducible soldering program in very short time. Read more about on page 7.

EBSO FAST REMOVE

With the unique EBSO FAST REMOVE pump in the solder pot, you reduce your maintenance time and receive more operational availability.



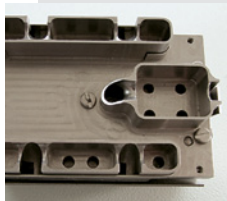
Soldering process with the wettable nozzle

Die Technologie

- 3 axis CNC positioning system with Servo drives
- FTP interface to Network
- Digital Closed Loop control for N2 flow incl. Standby function to reduce Cost of Ownership
- Wave Height control
- Autom. Solder wire Feeder and solder level sensor
- Flux Tank and flux Level monitoring
- Control of all Processparameters
 - including monitoring functions
 - including maintenance and error messages
 - including password protection
- Exhaust function monitor
- Control lamp freely configurable
- Operating state and Maintenance indicator (optional with wireless Network to PC)
- Windows CE colour Display
- Internal Data management for program storing
- Timerfunction
- Gashood and Storing compartments
- Softwareupdates via USB or CF card
- ESD-Paint RAL 7035 (light gray) and RAL 7016 (anthracite)
- Standard Solder Area Options: 300 x 300 and 400 x 400 mm (15"x15")
- All Solderpots made of Titanium
- Reliability at highest operational availability due to quick release solder pump
- Easy Change Pot system for lead and lead free production
- Single solder pot with just 20 kg Solder capacity
- Soldering over 2 Solder pots
- Dual Solder nozzle for simultaneous soldering
- Max. clearance at solder side 40 mm
- Wetable Nozzles 3 – 12 mm Inner Diameter
- Jet Nozzles 5 – 60 mm
- Wave Nozzle 300 mm
- Special nozzles for Dipping process
- Max. 4 Fluxers in any combination
- Single Spray / Single Microdrop
- Dual Spray / Dual Microdrop
- Combination of Single or Dual Spray and Microdrop
- Convection line Preheater
- IR Line or Area Preheater
- Top Side IR Preheater
- Fluxer Spray test function
- Witness colour Camera including TFT Monitor)
- AOI for solder control
- Barcode or DatamatrixCode with BDA (Traceability)
 - Solder Frame identification over RFID-Chip
 - including soldering protocol
 - including process data recorder
- Programming via Offline Editor
 - including Photo Editing
 - or Import Functions



Selective soldering application with 45 mm interfering edge



Custom made multi dip nozzle



Production at Werma Signal Lights in Germany: 3 SPA machines, inbetween operator working place insures highest flexibiliy and throughput - always 3 different (or same) products are in production at the same time

SPA 500 Modular

Indivudal Solutions for High-end Selective Soldering

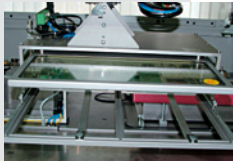


The new modular platfform can be equipped for the individual product requirement in high-end / high-volume selective soldering process.

Unique Technology Advantages:

- Closed loop XYZ-portalsystem with servo-drives
- Solder angle under 0° and 7° free to program
- Max. PCB size 510 x 510 mm
- Max. solder mask size 550 x 550 mm
- Precise-spray and/or microdrop fluxer for point and line fluxing incl. 2 l flux pot and flux level monitoring
- Titanium solder pot and solder pump - best for lead free
- Pump unit equipped with unique „QUICK RELEASE“-design
- Solder frame reckognition with integrated collision avoidance
- Dual nozzle for simultaneous soldering to double throughput
- Possibility of 4 fluxers (i.e.: 2 drop, 2 spray oder 4 spray fluxer)
- 2 Flux pots to run 2 differnet fluxers (i.e.: VOC and VOC-free)
- Top Site Preheat
- Optional Inline
- 2 solder pots in machine with max. solder area of 510 x 510 mm on both solder pots i.e.: 1 solder pot dipping process 2nd solder pot selective miniwave wave
- Wide range of solder nozzles and customized such as dipping nozzles
- Wetable and jet wave nozzles
- N2 inert
- Easy change pot option
- Saves up to 40 solder programs
- Travel speed up to 20 m/min
- Process monitoring of
 - Flux level
 - Air and N2 supply
 - Solder level and automatic solder wire feeder
 - Wave height
- Easy „point and click“ programming with the smart Offline- and Photo-Editor software

Top site preheat



Dual nozzle



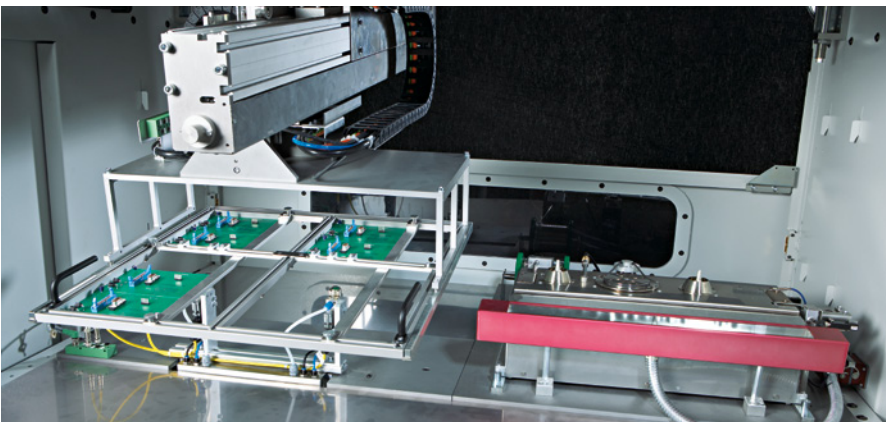
Soldering under 0° or 7°



SPA-500 as inline with gripper unit



Change pot system



The inside view of the SPA 500

Programming

with the EBSO Offline-Editor

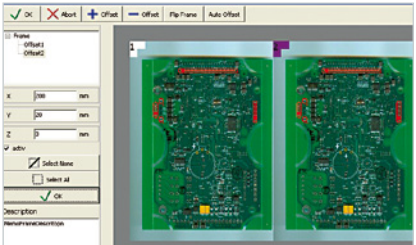
The Ebso offline Editor is a windows based software to create a solder program for each individual solder point. With an easy POINT AND CLICK tool a repeatable solder program is done within minutes

- Offline means no programming on the machine
- Open fine tune parameter settings for each individual solder joint
- Demo mode
- Cykle time calculation
- Compatible to all EBSO solder machines

Import of Gerber datas or CAD datas possible
Use a CAD Image or a scan of the bare PCB board and click on the position you want to solder. Use the default settings and fine tune in necessary.



Use friendly and intuitive software



Automatic multiplying of panelized boards with bad mark function



Parameter for each single solder joint

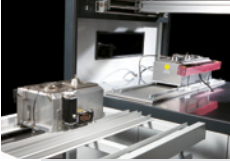
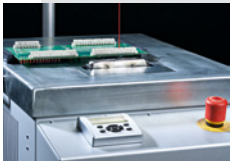
Advantages:

- You can consider neighbour SMD components
- Visual orientation on the board while programming
- Solder joint offsets are easier to control
- Program changes can be done quicker

Programming can´t be easier

| Technical data | | SPA 500 Modular | SPA 400-NC | SPA 300-NC | SPA R |
|---|--|---|---|--|---------------------------|
| <div>Length</div> <div>Width</div> <div>Height</div> <div>Weight</div> <div>Colour</div> <div>Transportsystem</div> | | 2000 mm | 1600 mm | 1300 mm | 700 mm |
| | | 1950 mm | 1200 mm | 900 mm | 400 mm |
| | | 1350 mm | 1600 mm | 1600 mm | 250 mm |
| | | 500-800 kg | 750 kg | 450 kg | 35kg |
| | | RAL 7035 | RAL 7035 and RAL 7016 | RAL 7035 and RAL 7016 | - |
| | | XYZ axis carrier system | XYZ axis carrier system | XYZ axis carrier system | - |
| <div>Transportangle</div> <div>Max. PCB size</div> <div>Max. frame / fixture size</div> <div>Max. clearance on solder side</div> <div>Max. transportspeed</div> | | 0° or 7° free programmable | 0° or 7° fix | 0° or 7° fix | - |
| | | 510 x 510 mm | 400 x 400 mm | 300 x 300 mm | - |
| | | 550 x 550 mm | 440 x 440 mm | 340 x 340 mm | - |
| | | 30 mm | 40 mm | 40 mm | - |
| | | X axis = 18,5 m/min | X axis = 18 m/min | X axis = 18 m/min | - |
| <div>Position accuracy over fluxer, preheater and solder nozzle</div> <div>Fluxermodule</div> <div>Flux pot</div> <div>Preheater</div> <div>Power</div> <div>Soldermodule</div> <div>Nozzles (refer to data sheet)</div> | | Y axis = 19 m/min | Y axis = 18 m/min | Y axis = 18 m/min | - |
| | | Z axis = 10 m/min | Z axis = 18 m/min | Z axis = 18 m/min | - |
| | | + - 0,1 mm with servo drives | + - 0,1 mm with servo drives | + - 0,1 mm with servo drives | - |
| | | Optional microdrop-fluxer | Optional microdrop-fluxer | Optional microdrop-fluxer | - |
| | | 2 l stainless steel flux pot and fittings incl. flux level monitoring | 2 l stainless steel flux pot and fittings incl. flux level monitoring | 2 l stainless steel flux pot and fittings incl. fux level monitoring | - |
| <div>Smallest nozzle diameter</div> <div>Min. neighbour component clearance</div> <div>Solder capacity</div> <div>Max. temperature</div> <div>Upheat time</div> <div>Solder time</div> <div>Nitrogen technology</div> <div>N2</div> <div>Preasure</div> <div>Consumption</div> <div>N2 type</div> <div>Inline</div> <div>Air</div> <div>Pressure</div> <div>SPS</div> | | IR-emmitters | IR-emmitters | IR-emmitters | - |
| | | Max 7,5 KW | Max 7,5 KW | Max 7,5 KW | - |
| | | Titanium solder bath and pump | Titanium solder bath and pump | Titanium solder bath and pump | - |
| | | Jet wave nozzle | Jet wave nozzle | Jet wave nozzle | - |
| | | Overflow nozzle | Overflow nozzle | Overflow nozzle | - |
| <div>Manual Operation</div> <div>Electrical data</div> <div>Power</div> <div>Power tolerance range</div> <div>Power consumption</div> <div>Fuse rate</div> <div>Exhaust</div> <div>Exhaust power</div> <div>Extension tube</div> <div>Enviroment temperature</div> <div>Permanent sound level</div> <div>Further</div> <div>Welded iron frame</div> | | Special nozzles | Special nozzles | Special nozzles | - |
| | | 2,5 mm on overflow nozzles | 2,5 mm on overflow nozzles | 2,5 mm on overflow nozzles | - |
| | | 4,0 mm on jet wave nozzles | 4,0 mm on jet wave nozzles | 4,0 mm on jet wave nozzles | - |
| | | 1,5-3 mm (depends on nozzle type) | 1,5-3 mm (depends on nozzle type) | 1,5-3 mm (depends on nozzle type) | - |
| | | Approx. 35 kg | Approx. 35 kg | Approx. 35 kg | - |
| | | 400°C | 350°C | 350°C | - |
| | | Approx. 35 minutes | Approx. 30 - 45 min. depends on the soldier bath | Approx. 30 - 45 min. depends on the soldier bath | 350°C |
| | | free programmable | free programmable | free programmable | - |
| | | by user (bottles, tank, generator are suitable) | by user (bottles, tank, generator are suitable) | by user (bottles, tank, generator are suitable) | optional |
| | | 2 bar | 2 bar | 2 bar | 2 bar / 1-3 m³ adjustable |
| | | 1,5-3 m³/h adjustable | 1,5-3 m³/h adjustable | 1,5-3 m³/h adjustable | - |
| | | 2.7 or 99,9 % | from 2.7 or 99,9% | from 2.7 or 99,9% | - |
| | | Standard SMEMA with conveyor and gripper | - | - | - |
| | | 6 bar | - | - | - |
| | | Siemens S7-200 SPS | Schleicher CNC control with Windows CE | Schleicher CNC control with Windows CE | - |
| | | incl. touch-screen panel | colour touch-screen panel | colour touch-screen panel | - |
| | | ■ | ■ | ■ | - |
| | | ■ | ■ | ■ | - |
| | | ■ | ■ | ■ | - |
| | | ■ | ■ | ■ | - |
| | | Wave height, fluxer, preheat, solder temperature | Wave height, fluxer, preheat, solder temperature | Wave height, fluxer, preheat, solder temperature | - |
| | | 3 x 230 / 400 V, N, PE 50 / 60 Hz | 3 x 230 / 400 V, N, PE 50 / 60 Hz | 3 x 230 / 400 V, N, PE 50 / 60 Hz | - |
| | | +6%, -10% | +6%, -10% | +6%, -10% | - |
| | | Max. 15 KW | Max. 7,5 KW - 5 KW depends on configuration | Max. 7,5 KW - 5 KW depends on configuration | - |
| | | Max. 3 x 25 A | Max. 3 x 16 A - 3 x25 A depends on configuration | Max. 3 x 16 A - 3 x25 A depends on configuration | - |
| | | 150 m³/h | 150 m³/h | 150 m³/h | - |
| | | Ø 100 mm | Ø 100 mm | Ø 100 mm | - |
| | | 15-30°C | 15-30°C | 15-30°C | - |
| | | < 50 dB | < 50 dB | < 50 dB | - |
| | | ■ | ■ | ■ | ■ |

Legende: ■ included in standard configuration | - nonexistent



Technical subject to change. We don't take over adhesion for misprint. 10.26.2011

Lead Forming

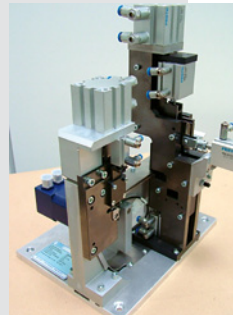
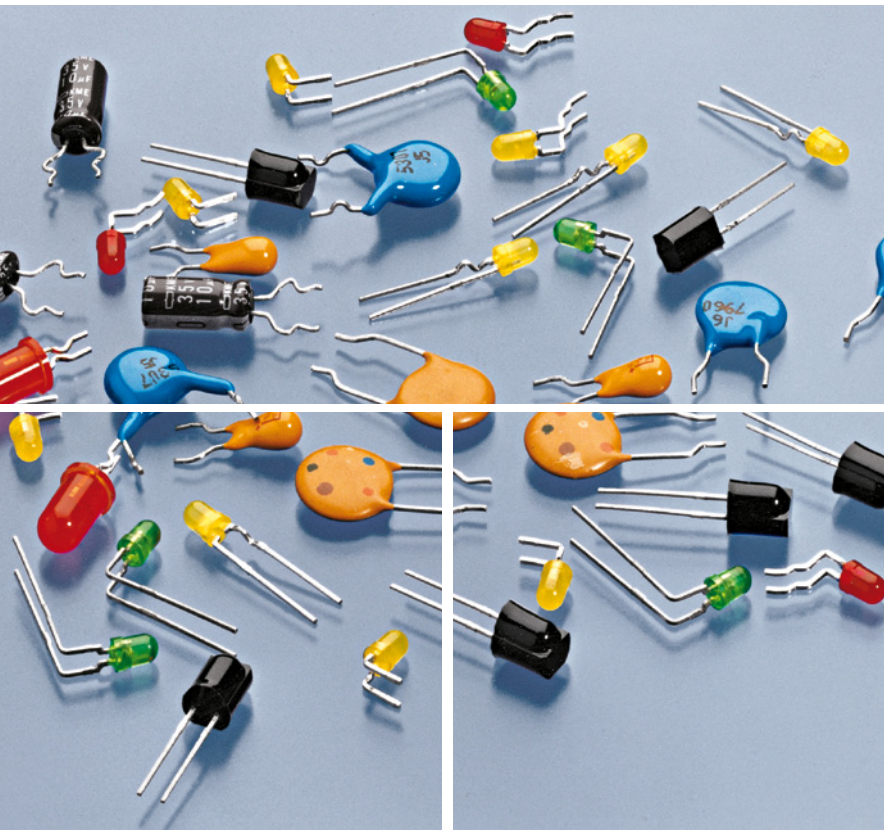
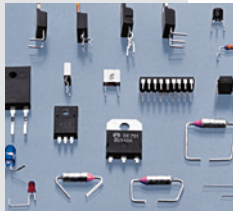


Since more than 30 years the cutting and forming of THT components is the core business of EBSO.

With over 20 standard preforming machines we can provide solutions to any kind of lead forming jobs.

Despite of the SMT technology, THT components are still in use in reasonable quantities in the electronic industry hence makes a big portion of our business.

Visit our website to learn more about EBSO products.



System integration and custom automated systems

Individual customized automation solutions, which often challenging requirements, are part of the engineering services EBSO provides. No matter if it is a complete turnkey solution, special conditioning or a economically and technically implemented system integration. We plan, design, manufacture and assemble customized solutions. Trust in our 30 years experience. Numerous successfully implemented projects in the automotive, consumer, telecommunications, electrical, electronics and ceramic industry speak for themselves.



Process Monitoring

You always have a reliable partner at your side

We assist our customers before, but also during and after the integration of our solutions in their production. Our goal is to install a zero defect process. A claim, which we pursue in the interests of our clients without any compromise.



References

| | | |
|-------------|-------------|------------------|
| • BERU AG | • KUHNKE | • SANMINA SCI |
| • BOSCH | • MARQUARDT | • SIEMENS |
| • FABRINET | • MENTOR | • STIEBEL ELTRON |
| • FESTO | • MIELE | • STILL |
| • GRUNDIG | • MOTOROLA | • VALEO |
| • HONEYWELL | • MSC | • WERMA |
| • HOMAG | • OSRAM | • ZF |
| • KOSTAL | • OTIS | • ZOLLNER |