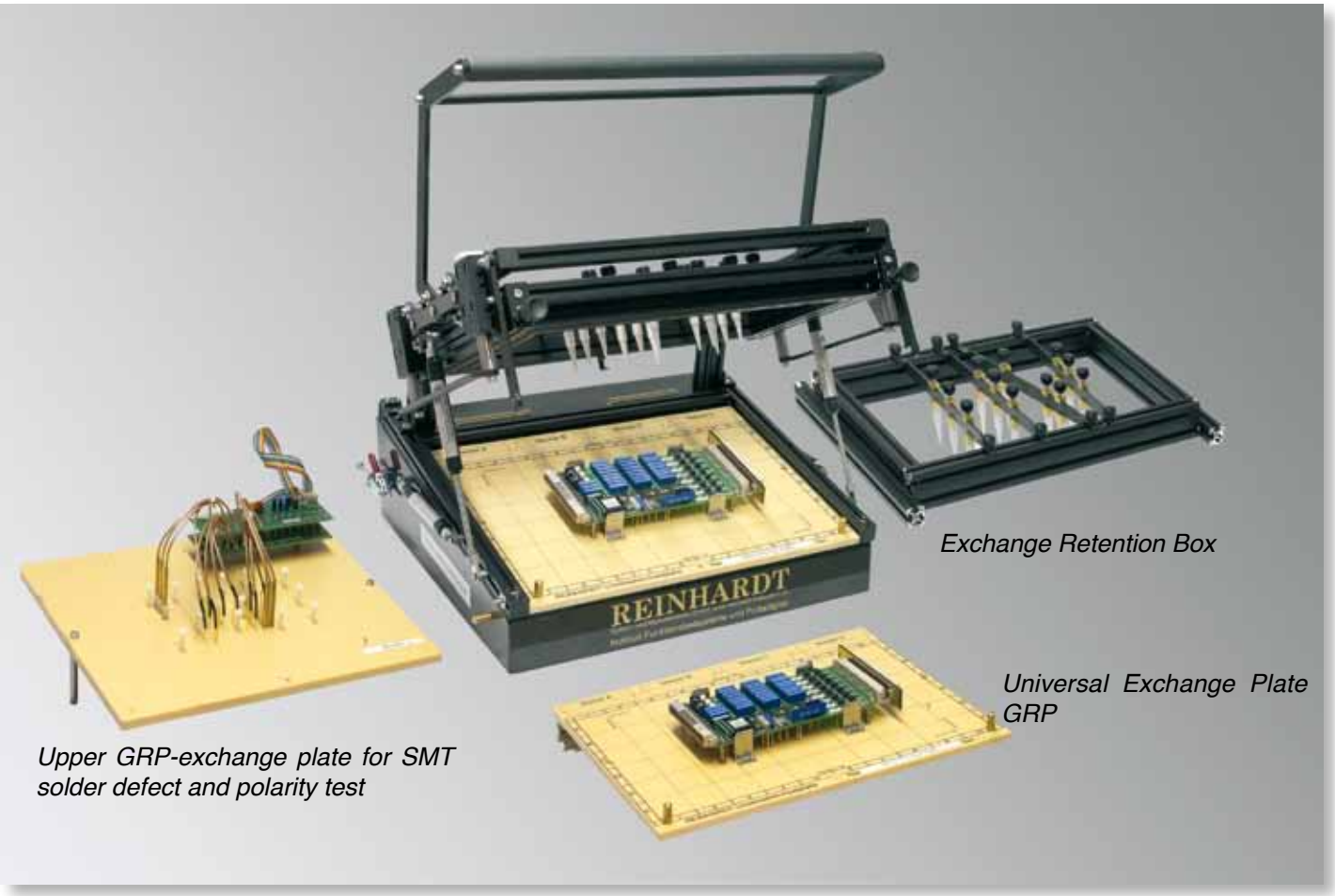
REINHARDT-Test Fixtures

for Contacting Electronic PCBs in In-circuit and Function Test



We are the leading German manufacturer of In-circuit and Function test systems. We started developing and producing test fixtures for testing electronic PCBs, modules and hybrids in 1990. As we have kept close contact with our customers and have exchanged views since 1976, we know the problems of fixturing in In-circuit and Function test. Our practical experience becomes part of our fixture products so that our fixtures are constantly adapted to changing needs, but we always create them practice-oriented, cost-effective and easy-to-use. Up to date, more than 80,000 fixturings have been created with our fixtures which shows the reliability of our fixtures.

Applications:

Contacting via spring contact pins for In-circuit test, function test and repairs, wiring test, for programming e. g. EEPROMs and Flash RAMs and final system test.

- **Fixtures for In-circuit-, Function test and repair for more than 1,000 contact pins**
- **Contacting from below and above**
- **also for PCBs which are double-sided loaded**
- **Guiding absolutely in parallel**
- **Various types with working areas from 95 x 95 mm, 92 x 180 mm, 360 x 230 mm to 670 x 462 mm**
- **Easy handling of the PCB**
- **Closed manually with little effort**
- **Cost-effective exchange plates**
- **Use of probes for SMT solder defect test and polarity test of capacitors from top and bottom**
- **Lower side of the fixture is accessible for preparatory measuring tasks**
- **The housing offers a lot of free space for special installations**
- **Preparations for a new task in typically 1 minute**
- **Ergonomic for right- as well as lefthanders**
- **Durable by robust construction**
- **Little signs of wear, low follow-up cost**
- **Fixtures are supported by our test fixture production system; fixtures are built in 3 to 5 hours**

REINHARDT System- und Messelectronic GmbH

Bergstr. 33 D-86911 Diessen-Obermühlhausen Tel. 08196/934100 + 7001, Fax 08196/7005 + 1414

E-Mail: info@reinhardt-testsystem.de http://www.reinhardt-testsystem.de

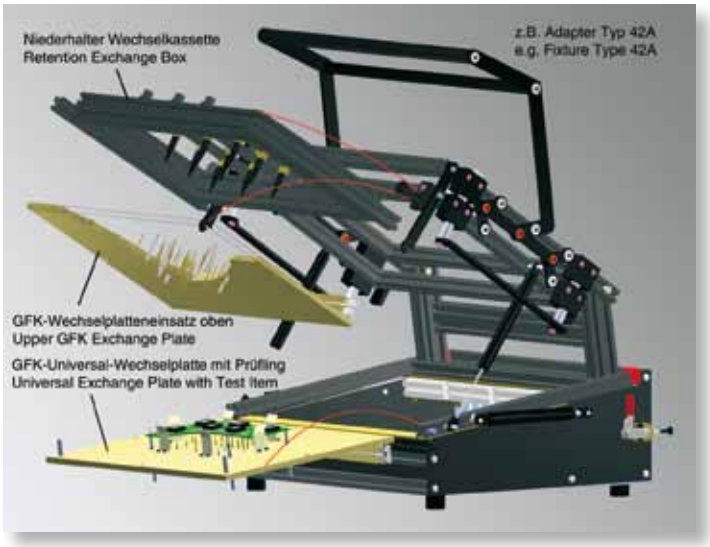
What all our fixtures have in common

Exchange Plate:

Our exchange plates (bed of nails) are drawers. The basic fixture is connected to the exchange plate by plugging a number of 64/96way multi-way connectors once. This is why the times for changing component types are very short (typically 1 minute). Please see the last page of this brochure for technical details.

Working method of Fixture Type 42A and Type 62/AC

The lower exchange plate (bed of nails) is fixed with our fixtures. After the upper part with the retention box is turned down, the retention box clicks into place and is then lowered from above – absolutely in parallel with a few hundredth millimeters accuracy at each of the four sides and without any



tilting (There are four linear guidings with sliding bearings which do not require maintenance). With its retention pins, the retention box or the upper exchange plate holds down the test item and presses it to the lower exchange plate (bed of nails) with the spring contact pins. As the front lever is wide and ergonomic, both left-handers and right-handers can use the fixture without problems. Operation forces have been distributed so that over 90 % of the operational distance, you only apply less than 1 kg force. Only for a peak of a few percent of the total operational distance, the force rises to 6 kg with a number of 800 pins.

Retention Box:

The basic version of a fixture comes with an exchangeable box with retention pins that can be adjusted as necessary. With knurled head screws, both the retention pins and the receiver rails of the retention box can be adjusted as required by the resp. item to be tested. You therefore only buy the box once – this reduces your testing cost.

For SMT-solder defect or polarity test you can change the box for an optional upper GFK exchange plate with a maximum 2 rows of connectors (max. 8 connectors with a total of 512 pins).

Interface to the Test System:

On the rear of the fixture housing, there is the SR18VG REINHARDT-interface with up to 18 multi-way connectors or SR8VG with 8 multi-way connectors (not Type 105A-2 and Type 125H). These 64/96way interchange connectors are mounted floatingly. They can be contacted very comfortably by REINHARDT-test systems via 2 tightening levers.

Housing:

The housing of the 40- and 60-series are closed metal housings with REINHARDT-SR18VG-interfaces on the rear. Different multi-way connectors can be plugged into this interface, i. e. you can use high-voltage connectors or connectors with high-current contacts of HF-contacts. Fixture Type 145A-3 has got a SR18VG-interface as have the fixtures of the 40- and 60-series. At the rear of the smaller fixture types 105A-2 and 125H two 64/96way connectors operate as interface to the test or programming unit.

REINHARDT-fixtures offer another big advantage for preparatory measurements for new test programs: Since again and again you have to measure signals at the single pins, the fixture, be it pneumatic or manual, can be opened although the upper part is closed for contacting the test item, so that you can reach the pin connection for measurement tasks (not Type 100B, 105A-2, 125H, 145A-3 or Type 242):

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Type 40B

Type 40A Pneumatic Fixture

Type 40 is closed manually, but a pneumatic cylinder supports the operator. Pressure force is 2,000 N. There are two levels for a combined in-circuit- and function test. For access from below, the complete retention device can be opened.
Security switch by two-handed operation
Shift: In-circuit test: 20 mm, function test 13 mm
Compressed air, 6 bar, 5 micron
Maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket

Type 41

Type 41

Type 41 has got an interface (single-plug) with 18 connectors which connects it to the test system. The connectors to the test item are on the front of this fixture. The unit can be turned so that measurements can be made on the conductor side of the PCB. The ranging block for the respective type of test item is for ranging the connections of sources, generators, stimulus and measuring matrix boards etc. This ranging block is made up of 8 multi-way connectors and is plugged onto the upper side of type 41. Wiring is by wire-wrap.

Type 42A

Type 42A Manual Retention Fixture

Manual fixture Type 42A comes as a desk fixture with sloping working area. This fixture can be used for 2,000 N. The retention box or upper exchange plate is lowered absolutely in parallel with a few hundredth millimeters accuracy at each of the four sides and without any tilting (There are four linear guidings with plastic sliding bearings which do not require maintenance). With its retention pins, the retention box or upper exchange plate holds down the test item and presses it to the lower exchange plate (bed of nails) with the spring contact pins. The complete retention unit can be opened so that there is optimum access to the exchange box from below.
Maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket
Shift: 26 mm
For further technical data, please see the last page of this brochure.

Type 42APneu

Type 42AP Pneumatic Retention Fixture

Type 42 AP with two-hand operation (4 keys – security) comes with a sloping working area. It can be used for max. 2,000 N. The retention box or upper exchange plate is lowered absolutely in parallel with a few hundredth millimeters accuracy at each of the four sides and without any tilting. With its retention pins, the retention box or upper exchange plate holds down the test item and presses it to the lower exchange plate (bed of nails) with the spring contact pins. The complete retention unit can be opened so that there is optimum access to the exchange box from below.
Maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket
Compressed air, 6 bar, 5 micron
Shift: 26 mm

Type 52L – large

Type 52L Manual Fixture

Fixture Type 52L was designed for a basic system with expansion rack and max. 2,000 N. Because of its working area 670 x 462 mm so that it can be used for very large PCBs such as e. g. backplanes. The exchange plate is contacted in up to 3 rows of 7 connectors each so that up to 1,344 connections to the basic fixture are possible by one plug-in procedure. On the rear, there is the SR18VG REINHARDT-interface for up to 2 x 18 VG-multi-way connectors (64way).
Overall dimensions housing: about 800 mm wide, about 790 mm deep, about 310 mm high

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Type 62C

Type 62C Manual Desk Fixture

This manual desk fixture with sloping working area and 4 linear guidings is used for max. 2,000 N. The upper part can be opened. The exchange retention box comes with 15 retention pins 10 x 45 mm which are mounted to 5 receiver profiles. Working area of the exchange plate is 360 x 230 mm. A second interface can be mounted as an option.
maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket

Shift: 26 mm

Type 62L

Type 62L Manual Desk Fixture

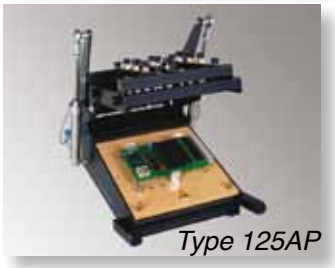
Fixture Type 62L has a horizontal working area and was developed for a basic test system with expansion rack. The fixture with 4 linear guidings is used for max. 2,000 N. Two REINHARDT-interfaces SR18VG for up to 2 x 18 multi-way connectors (64way) are on the rear. The exchange retention box comes with 15 retention pins 10 x 45 mm which are mounted to 5 receiver profiles. Working area of the exchange plate is 360 x 230 mm.
maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket

Shift: 26 mm

Type 100B

Type 100B Manual Fixture

With 95 x 95 mm working area and overall dimensions of 230 x 130 x 145 mm, this is our smallest fixture. It is designed for small test items with up to 600 N and comes with 6 bow retention devices. A 64way connector on the rear is used as interface.
maximum component height: with bow retention devices 34 mm without pocket
with upper exchange plate 15 mm without pocket


Type 125AP

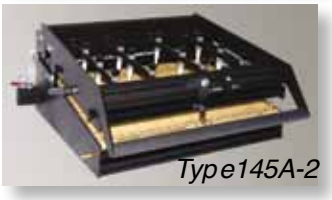
Type 125AP Pneumatic Fixture

Type 125AP with two-hand operation (safety) has a sloping working area and is used for max. 1,000 N. Like Type 105A-2, it comes with a lower exchange plate and with a retention box with 12 retention pins. 2 64way interchange connectors are used as interface.
maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket

Type 125H

Type 125H Manual Fixture

Type 125H has a sloping working area (191.5 x 172 mm) and is used for max.500 contact pins or 1,000 N. It comes with a lower exchange plate and a retention box with 12 retention pins. 2 64way interchange connectors are used as interface.
maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket


Type 145A-2

Type 145A-3 Manual Fixture

This fixture with a sloping working area was designed for max. 1,000 N. Like the fixtures above, it comes with an SR18VG interface on the rear which can hold connectors common in the market. This fixture comes with an upper retention box with 15 retention pins and 4 interchange connectors.
maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket

Type 242

Type 242 Manual Fixture

Fixture Type 242 can be used for more than 2,000 N. Four linear guidings lower the retention box or upper exchange plate absolutely in parallel at each of the four sides without any tilting. With its retention pins, the retention box or upper exchange plate holds down the test item and presses it to the lower exchange plate (bed of nails) with the spring contact pins.
Maximum component height: with retention box 45 mm without pocket
with upper exchange plate 15 mm without pocket

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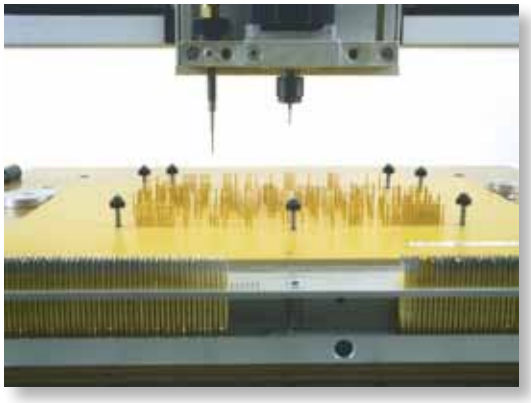
Test Fixture Production System

Since 1991, REINHARDT have been developing and selling a system for building fixtures. This system enables you to build your fixture with bed of nails within a few hours. The software for processing Gerber files helps you calculate all drilling coordinates and graphical fault location data in less than half an hour. Within a few hours, you drill the exchange plates without having to work a lot on a CAD-system. The contact pins are placed automatically so that you must only wire them.

The test fixture production system is built into a cabinet (80 cm high, 80 cm wide and 100 cm deep) and is made up of the drilling machine combined with placing unit, the frame for the standard Reinhardt-fixtures, the magazine for the test contact pins and the complete control unit. Any PC with serial interface (RS232) can be used as control computer (A PC does not come with the unit).
You must supply compressed air, not lubricated, 6 bar pressure at a quantity of 30 l/minute.

Unit for Placing the Contact Pins

Our XYZ Test Fixture Production System not only drills the test fixture with high precision, but it also places the contact pins. Contact pins, either receptacle or probe with receptacle are pressed in with high precision in one process. We are the only supplier of test fixtures who automatically places the probes with an accuracy of 10 μ to 20 μ, repeat accuracy is 10 μ. The same accuracy applies to pressing them in without much buckling them. Two kinds of probes are picked from a bipartite magazine with a total of 630 pieces. They are chosen and pressed in under software control. Our device offers high precision so you do not have to spend hours on straightening the contact probes which is always necessary with other fixtures. Within a very short time, the contact pins are connected to the interface of the exchange plate using the wire-wrap-method. We have found that in typically two to three hours, the fixture is drilled, the contact probes are placed and in another two to three hours, you have wired them. In typically 5 hours, each exchange plate of a test fixture will be finished for your new test.



In-line-System

The In-line System is for automatically feeding the test system with PCBs. The system makes part of the REINHARDT concept and uses the same exchange plates as Types 40, 42 etc.as needle-beds as well as for the upper plate for the probes. The program can be debugged and calibrated on the manual fixture so that it can then be used on the in-line-system in production. Its core is a pneumatic fixture which is PLC-controlled so that in combination with our test system there is high throughput. The tested PCBs can be fed to further in-line systems.

This is a demo-version. The left and the right are open in the production version.

IE & OE – Specifications subject to change without prior notice! 11/20111

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Fixture-Type	40A	42A	42AP	52L	62C	100B	125H	145A-3	242
for Function Test **for In-circuit Test**	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Contacting from Above and Below	✓	✓	✓	✓	✓	✓	✓	✓	✓
Work. Area in mm Width – Depth	360x230	360x230	360x230	670x462	360x230	95x95	191.5x172	360x230	360x230
Exchange Plates Dimensions in mm	380x297	380x297	380x297	699x529	380x297	104x134	217.6x230	380x297	380x297
Contact Pins Contact Pressure	>1,000 2,000 N	>1,000 2,000 N	>1,000 2,000 N	>1,000 2,000 N	>1,000 2,000 N	300 600 N	500 1,000 N	500 1,000 N	1,000 2,000 N
Operation Force manual Ø in kg	0kg	2.0kg	0kg	2.5kg	2.0kg	1.9kg	1.9kg	1.9kg	2.0kg
Interface Basic Allocation	4x64 total 256	4x64 total 256	4x64 total: 256	4x64 total 256	4x64 total 256	1x64 total: 64	2x64 total 128	4x64 total 256	4x64 total 256
Interface max. Contacts	SR18VG 1152 (1824*)	SR18VG 1152 (1824*)	SR18VG 1152 (1824*)	SR18VG 1152 (1824*)	SR18VG 1152 (1824*)	SR02VG 128 (192*)	SR04VG 256 (384*)	SR18VG 1152 (1824*)	SR18VG 1152 (1824*)
Exchange Plate Interface Basic Allocation	4x64 pcs. total 256	4x64 pcs. total 256	4x64 pcs. total: 256	4x64 pcs. total 256	4x64 pcs. total 256	1x64 pcs. total: 128	2x64 pcs. total 128	4x64 pcs. total 256	4x64 pcs. total 256
Exchange Plate Interface max. Contacts	12x64/96 total 1152	12x64/96 total 1152	12x64/96 total: 1152	14x64/96 total 1344	12x64/96 total 1152	2x64 total: 128	4x64/96 total 384	8x64/96 total 768	12x64/96 total 1152
Opening and Access when Contacted	✓	✓	✓	-	✓	–	–	–	✓
SMT Solder Defect + Polarity Probe	✓/ both sides	✓/ both sides	✓/ both sides	✓/ both sides	✓/ both sides	✓/ both sides	✓/ both sides	✓/ both sides	✓/ both sides
Retention Pins/ Profile Arms	12 pcs. 4 pcs.	12 pcs. 4 pcs.	12 pcs. 4 pcs.	36 pcs. 6 pcs.	12 pcs. 4 pcs.	6 pcs. 2 pcs.	9 pcs. 3 pcs.	12 pcs. 4 pcs.	12 pcs. 4 pcs.
Retention Exchange Box	✓	✓	✓	✓	✓	✓	✓	✓	✓
2Level Fixturing Pneumatic	✓ 6bar	Option manual	– 6 bar	–	Option manual	–	–	–	Option manual
Manual Operation	left/right	left/right	left/right	left/right	left/right	left/right	left/right	left/right	left/right
****Comp. Height cont. one side cont. both sides**	45mm 15mm	45mm 15mm	45mm 15mm	45mm 15mm	45mm 15mm	no pocket 15mm	no pocket 15mm	no pocket 15mm	45mm 15mm
Total Dimensions width, depth, height	50x47.5x46 cm	48x50x28 cm	48x50x28 cm	84x79x45 cm	48x50x38 cm	13x23x 14,5cm	26x34x 32cm	49x50x16.5 cm	48x31x30 cm
Weight ca.	21kg	16kg	19kg	34kg	17kg	1,8kg	8.3kg	13.7kg	16kg

* SR8VG and SR18VG are test system-interfaces for REINHARDT-test systems
* if 96-way connectors are used.

Exchange plate interface

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