

Model TR-7-1000 / TR-7-3000-QC Pneumatic Fixture



Model TR-7-1000 Ready to Test



Model TR-7-3000-QC Lid Open to Install UUT

Product Features

- Pneumatic Power
- 1000 and 3000 Test Point Versions
- Support Dual-Sided Probing
- Fast/Safe Loading and Unloading
- Easy, Low-Cost Customizing

Applications

- **Most Common Circuit Assemblies**
- **Through-hole and SMT Devices**
- **Hard-to-Gasket Assemblies**
- **Individual or Panelized PCBs**

The CheckSum Model TR-7 Pneumatic Bed-of-Nails Fixture System is designed for test fixturing of circuit boards up to 13.2" x 16". The Model TR-7 can be used for most general-purpose fixturing applications, and can also be used when the unit-under-test (UUT) is difficult to gasket and seal on vacuum fixture systems. Pneumatic fixturing provides several advantages over vacuum fixturing:

1. There is no gasketing to degrade, which makes the fixture last longer.
2. Since there is no air-flow past the UUT, there is less static build-up in the fixture, probes last longer, and the test system is quieter.

3. Fixturing costs are lower, since initial fixture kit costs are lower and customization costs are lower.
4. Difficult-to-vacuum-seal UUTs (such as those with internal routing, open vias, or dense concentrations of probes) can be easily accommodated.
5. Since a low-power compressed air supply is used, it is not necessary to purchase and maintain a vacuum pump.
6. Since a top mechanism is already in place, it is less expensive to adapt to top-probing applications such as with TestJet Technology.

The Model TR-7 is available in two styles to meet different testing needs:

- The TR-7-1000 can accept assemblies up to 1000-test points and has a ribbon-cable interface to the tester. The TR-7-1000 is ideal for low-to-mid point-count testing, when fixtures are not changed frequently, or when minimizing initial cost is important.

FIXTURE
SYSTEMS

Model TR-7-1000 / TR-7-3000-QC Pneumatic Fixture

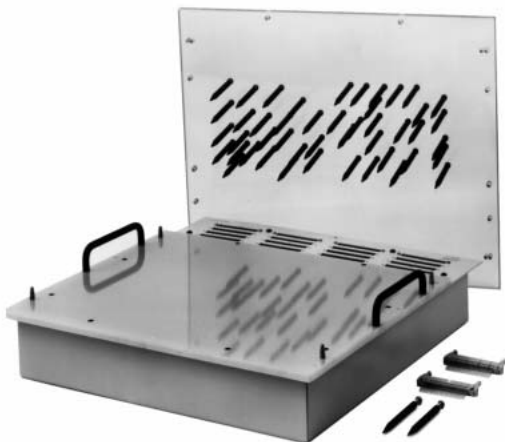
- The TR-7-3000-QC can accept assemblies up to 3000-test points and has a spring-probe interface to the test system. The TR-7-3000-QC is well suited for mid-to-high point-count testing, and to minimize time spent when fixtures are frequently changed.

With a vertical travel of only 0.50", either Model TR-7 provides safe, fast operation, but is adequate for compressing probes on both sides of the UUT. Since lid closure occurs before pressure is applied, complicated safety interlocks and mechanisms are not necessary. The TR-7-1000 can also be specified (at no extra cost) with 0.25" travel for dual-level fixturing with a combination of short and long-travel spring probes. In the first level (obtained by closing the top lid), only the longer probes make contact. In the second level (obtained by actuation of the pneumatic mechanism), all of the probes make contact. The first level is used to minimize circuit loading for functional testing and the second for MDA in-circuit testing.

Customizing the Fixture

The Model TR-7 Fixture Press is used in conjunction with low-cost fixture kits that are customized for each UUT. CheckSum can customize the fixture for your UUT or it can be done by a local fixture contractor or in-house if the necessary drilling and wiring equipment is available.

Fixture Kit customization involves drilling, installation of spring probes & receptacles, installation of guide pins, wire-wrapping the probe receptacles to the interface connectors, and installation of pressure rods into the top plate. For top-access to the UUT, the top plate can be drilled or milled to allow use of screwdrivers or adjustment tools.



Model TR-7-KIT1000 (with added pressure rods)

To change the type of assembly being tested on the TR-7-1000, the ribbon cables from the test system are removed, then the probe and top plates are removed. Typical time to change fixture kits is under five minutes. No test system ribbon cables need to be moved to change the type of assembly being tested on the TR-7-3000-QC. The fixture's transfer blocks automatically route the signals to the fixture kit via spring probes.

Testing

To operate the fixture, the operator places the UUT onto guide pins in the fixture, then closes the lid. Once the lid is closed, the fixture is actuated by computer control (or manual control) to press the UUT onto the spring probes. A sensor prevents pressure from being applied before the cover is closed. At the end of the test, pressure is removed; the operator opens the lid, and the UUT is removed. Typical combined load/unload time, including application of pressure, is under ten seconds per UUT.

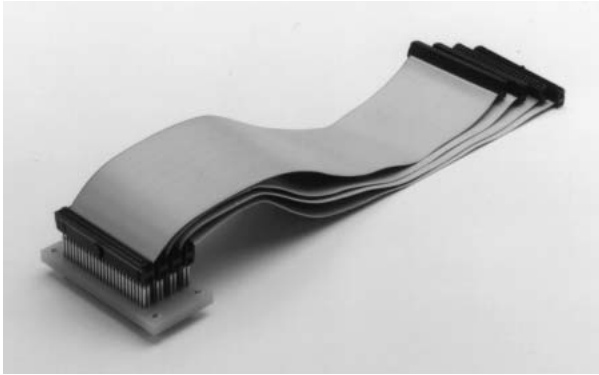
TR-7-1000 Configuration

The Model TR-7-1000 Fixture Press includes the press, power cord, digital control cable, ground wire, and instruction manual.

When building a customized test head, order:

1. A Model TR-7-KIT1000 Fixture Kit which includes a probe plate and pan assembly, interface panel, clear polycarbonate pressure plate, and ten fixed-length pressure rods.
2. For each 50 points wired for the UUT, order one Model FIX-50P-WW 50-pin wire-wrap connector for connection to CheckSum Test System electronics.
3. For each 15-25 probes, order a Model P-ROD pressure rod. Ten are included with each kit to accommodate UUTs of up to about 200 points. If tapered (pointed) pressure rods are necessary, order the P-ROD-T.

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Model FIX-200P-RB Receiver Block/Cable

TR-7-1000-ST Configuration

The TR-7-1000-ST Fixture Press Supports short-travel (.25" travel) applications for single-sided and dual-level probing, but not dual-sided probing.

The configuration is the same as the TR-7-1000, except specify the -ST extension on the Fixture Press, Fixture Kits and Pressure Rod Model Numbers, for example, TR-7-KIT1000-ST.



FIX-200P-WB Fixture Wiring Block

While Fixture Press travel is built into the press, customized fixture kits can be changed from short-travel to long-travel and vice-versa by changing the pressure rod length, and drilling or covering a travel-identification hole in the probe-plate.

TR-7-3000-QC Configuration

The Model TR-7-3000-QC Fixture Press includes the press, power cord, digital control cable, ground wire, and instruction manual:

When initially ordering the Fixture Press, add one FIX-200P-RB Receiver Block/Cable for each 200-points connected to the test system. For example, if you have a 3000-point system, order fifteen FIX-200P-RB Receiver Blocks/Cables with the fixture press. Other blocks may be necessary to support functional test or TestJet Technology configurations.

Contact CheckSum for the recommended configuration if the system has options beyond standard MDA test.



Model TR-7-3000-QC Rear View

**FIXTURE
SYSTEMS**

When building a customized test head, order:

1. A Model KIT3000-QC which includes a probe plate and pan assembly, interface panel, clear polycarbonate pressure plate, and ten fixed-length pressure rods.
2. For each 200-points wired on a particular fixture kit, order one FIX-200P-WB Wiring Block for wiring to UUT spring probes.
3. For each 15-25 probes, order a Model P-ROD pressure rod. Ten are included with each kit to accommodate UUTs of up to about 200 points. If tapered (pointed) pressure rods are necessary, order the P-ROD-T.

Contact the CheckSum fixture group for more information and competitive custom fixturing and test programming quotes.

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Specifications

Fixture Press

Overall Dimensions	24" W x 24" D x 16" H (28" high with the top open)
Air Requirements	50-120 PSI with 40 micron filtering, 80 PSI required with full probe loading
Air Connection	Standard quick-disconnect
Electrical Connections	115/230VAC 50/60Hz for Power, RCA jack for digital control, Banana jack for use with probe and/or operator wrist-strap
Manual Control	Three-position switch for up, down, or remote control
Remote Control	TTL low to engage, TTL high to disen- gage. Internal 10 K Ω pull-up. Can be set to reverse logic.
TR-7-1000 Weight	~110 lbs (~125 lb shipping wt.)
TR-7-3000-QC Weight	~140 lbs (~155 lb shipping wt.)

Fixture Kits

Max. UUT Probe Area	13.2" x 16"
Working Area Above UUT	3.325" normal, 3.575" on -ST (UUT PCB to top cover)
Working Area Below Probe Plate	2.92"
Probe Plate	3/8" G-10 (FR-4) material
Top Cover	1/2" Clear polycarbonate material
Weight	~25 lbs