Troubleshooting is the key skill all technicians must have today. The 950-PT1 Pneumatic Troubleshooting System teaches pneumatic troubleshooting like no other product in the market today. A hands-on learning station models a real world electro-pneumatic machine with 30 faults that can be inserted into the system. Amatrol’s FaultPro allows you to insert faults at will, trouble free.

The 950-PT1 is the first product to offer a realistic troubleshooting experience for students because the faults are inserted throughout the system, including both the pneumatic, mechanical and electrical components. The system is set up like a real machine with realistic loads, pressures, and heavy-duty pneumatic components, just like students will see in the workplace! The features also make the 950-PT1 an excellent system for teaching advanced pneumatics, system tuning, installation, and maintenance.

Learning Topics:
- Troubleshooting
- Startup/Shutdown
- Installation
- Maintenance
- Lockout / Tagout
- System Tuning
- Air-over-oil Systems
- Pilot-Operated DCVs
- Rodless Cylinders
- Subplate-Mounted Valves
- Sandwich Valves
- JIC Tie-Rod Cylinders
- Shock Absorbers
**Real World Conditions** - The 950-PT1 teaches troubleshooting effectively because the pneumatic system operates under actual load conditions. Each application exposes students to a different type of load including inertial, friction, compression, and static loads. The 950-PT1 gives students experiences they normally could get only on the job. Each of the major circuit panels replicates a common application. The PLC control offers a variety of thumbwheel-selectable programs to change sequences, presenting students with different troubleshooting scenarios.

**Computer-Based Fault Insertion** - The 950-PT1 System includes Amatrol’s unique FaultPro computerized troubleshooting system, which automatically inserts faults and tracks student troubleshooting efforts. This system enables students to learn troubleshooting in a self-directed environment, allowing teachers to support more students. FaultPro features on-line student control of the troubleshooting activity through menu-driven screens, making it easy for students to set up and perform their own troubleshooting exercises for both practice and testing sessions. Students get immediate feedback about their responses so they know if they are learning and they receive a record of their skill achievement. An on-line help screen provides step-by-step instructions during the troubleshooting process.

The computerized fault insertion system avoids damage to the equipment that is normally associated with manual fault insertion because it inserts faults electronically. This makes the training equipment last longer while being safer for the student and the teacher.

The 30 faults that make up the fault insertion system present students with realistic troubleshooting experiences. Faults can be inserted into the electrical system, loads, and pneumatic system. Test points and measurement instruments are included so students can troubleshoot in a realistic manner.

**Student Troubleshooting Report**

**Troubleshooting Test-Points**

**Technical Data**

**Mobile Workstation**
- Welded steel construction, 1.5 in. (3.81 cm) square tube, swivel casters
- 72 in. (183 cm) L x 72 in. (183 cm) H x 28 in. (71 cm) W
- Pre-mounted components, industrial fittings, standard connections
- Component test stations (35 total)
- Pressure gauges, 0-160 psig, 2.5 in., with quick connect fittings (3)

**System Header**
- Quick connect header, 20 mm pneumatic rated PVC pipe
- Branch line drop leg - 0.375 in. steel tubing, steel compression fittings
- Filter/regulator/gauge with manual drain, automatic drain trap
- Regulator with gauge; collection reservoir
- Pneumatic lookouthag-out with vent
- Electrical pressure switch

**Overrunning Load Circuit**
- Directional control valve, 5-way, 3-position, blocked center, internally pilot-operated, double solenoid, sub-plate mounted
- Air-over-oil tanks (2)
- Hydraulic flow control valves (2)
- Hydraulic cylinder, JIC type, 12 in. stroke, 1.5 in. bore, adjustable cylinder cushions
- Electrical limit switches, DPDT, metal enclosure type, roller arm type (2)
- 75-lb weight, attached to the cylinder rod

**Compression Load Circuit**
- Directional control valve, 5-way, 3-position, blocked center, internally pilot-operated, double solenoid, sub-plate mounted
- Cylinder, JIC type, 6 in stroke, 1.5 in. bore, double acting
- Inductive limit switches (2)
- Heavy duty compression bad spring
- Regulator, relieving type with integrated bypass check valve and pressure gauge

**Running Load Circuit**
- Directional control valve, 5-way, 3-position, solenoid-controlled
- Lubricator
- Flow control valves, independently mounted (2)
- Pneumatic gear motor; caliper brake with independent DCV
- Precision braking regulator with gauge
- Flywheel-4 lb inertial load, flywheel guard

**Radial Load Circuit**
- Directional control valve, 5-way, 2-position; detented, pilot-operated, solenoid-controlled
- Flow control valves, exhaust restrictor type (2)
- Limit switches, compact, roller arm type (2)
- Rotary actuator, vane type, double acting, 180 degree rotation minimum
- Hydraulic shock absorbers (2), adjustable deceleration

**Vacuum Load Pneumatic Circuit Panel**
- Directional control valve, 5-way, 2-position, solenoid-controlled (4)
- Directional control valve manifold, 4-station
- Flow control valves (5)
- Pressure regulator with gauge, non-relieving
- Vacuum generator; vacuum cup
- Quick exhaust
- Rodless cylinder, 0.5 in. bore, 12-in. stroke
- Cylinder 4 in stroke, 0.5 in bore, double acting
- Gravity feed part system
- Vacuum generator, 0.5 in. bore x 1.0 in. stroke, single acting (2)
- Limit switches, compact, roller arm type
- Proximity switches, SPDT with metal enclosure, magnetic type, mounted to cylinder (4)

**Control Center**
- Programmable controller, 32 inputs and 24 outputs
- Electrical lockout/tagout; circuit breaker switch
- Indicator lights (4)
- Thumbwheel switch selects (8), auto (8), manual programs (2)
- Cycle start pushbutton; cycle stop pushbutton
- Actuator jog selector switch, forward/reverse
- Idle / manual / auto selector switch
- Brake control pushbutton
- Emergency stop pushbutton, hard-wired

**Fault Insertion Controller**
- PC digital I/O fault control card, PCI slot
- Fault insertion relay circuit board, 24 electrical faults, 23 pneumatic faults, 11 adjustment faults, 10 A @ 115VAC
- 4 foot ribbon cables (2)

**Fault Insertion Software**
- PC-Based Windows 98 or higher
- On-line student troubleshooting
- Database student response tracking
- Custom template design capability
- Class administration capability
- Student results reporting

**BS46 Student Learning Activity Packet**
**BS56 Teacher’s Assessment / Portfolio Guide**

**Additional Requirements**
- Compressed air, clean, dry, 100 psig, 5 scfm, Amatrol model 90-926 or equal
- Electrical power, 110 VAC / 60 Hz / 1 PH or 4 Amps 230 VAC / 50 Hz / 1 PH

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