

Equipment set TP 250 – Advanced level

Safety in pneumatic systems



Risk reduction!

Just like good functionality and economic efficiency, safety is essential to the success of any product. What is more, new directives and laws require intelligent solutions and raise the level of professional skills required. As a result, there is a wide range of different products, information, and qualifications for safety engineering. However, most of these focus on the control level, meaning that safety usually only goes as far as the output of a fail-safe PLC, for example. However, risks can also arise outside of the power section, so it is important that systems include risk reduction measures to cope with such problems.

But what does the “pneumatics specialist” entrusted with the commissioning, troubleshooting, set-up, maintenance, and simple optimization of a system need to know? And how can this knowledge be conveyed in a clear manner, with easy-to-follow steps?

TP 250!

TP 250 builds on the training content of TP 101 and TP 201, focusing on the systematic optimization of safety in pneumatic systems. The aim of the training package is to detect risks in pneumatic processes, to assess the risks for a simple “machine”, and to learn what measures can be used to reduce risks and how to implement them properly.

Training content

- Reducing pressure and force according to the tasks
- Reducing the speed and acceleration while observing the cycle time and flow control for the specific loading conditions
- Emergency stop and release: suitable measures for stopping and properly recommissioning a pneumatic drive
- Suitable measures in case of compressed air failure and return, as well as instructions on how to store and use auxiliary energy
- Suitable measures in case of power failure and return
- Getting to know the operating modes and signals for operating statuses
- Using sensors to detect malfunctions
- Increasing the performance level using a dual-channel emergency stop system
- Selecting and using suitable protective measures

Components from equipment sets TP 101 and TP 201 are required to carry out the projects.

Mounting the pneumatic system, consisting of cylinders, weight, and cover, is done on the profile column of a Learntop workstation. If there is no profile column available, the mounting kit for Learntop S (order no. 526847) or the mounting kit for vertical slotted profile plates (order no. 533528) can be used. Two of each of these are needed.

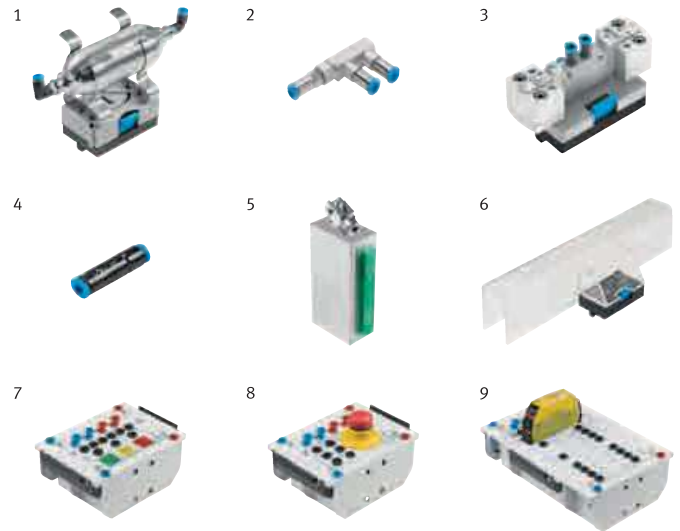
Complete equipment set TP 250 in equipment tray	567264
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The most important components at a glance :

1	1x Air pressure reservoir, 0.1 l	573281
2	2x Non-return valve, delockable	540715
3	1x 5/3-way double solenoid valve, mid position closed	567201
4	1x Non-return valve	153462
5	1x Weight, 2 kg for cylinder	572778
6	1x Cover for cylinder	572777
7	1x Operational status display	567263
8	1x Mushroom-head safety switch	567261
9	1x Safety relay for emergency stop and safety door	567262

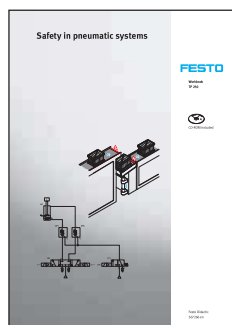
Necessary accessories, also order:

Aluminum profile plate → Page 39
Compressor → Page 136
Tabletop power supply unit → www.festo-didactic.com
Power supply unit for mounting frame → Page 159
4 mm Safety laboratory cables → Page 159



Also order:

Workbook



The workbook contains progressively complex project tasks, together with the solutions for each exercise sheet. In these exercises, students reduce the potential risk level of a pneumatic system step-by-step. The basic level contains the following topics: overview of relevant standards, laws, and regulations; overview and detailed description of operating modes; overview and detailed description of ten relevant safety functions; possible technical solutions for each safety function;

extensive illustrations and cross-sections to explain the design principles.

The workbook contains:

- Sample solutions
- Training notes
- Multimedia CD ROM with graphics and photos of industrial applications, safety guidelines, safety poster
- Worksheets for students

Campus license (→ Page 19):

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fr	567268

Supplementary media

- WBT Safety engineering
- WBT Pneumatics
- WBT Electropneumatics
- Designing and simulating with FluidSIM®
- Measuring and controlling with FluidLab®
- Textbook: Pneumatics/ electropneumatics
- Set of posters on pneumatics