

Trainingsystem Aluminium design



Pneumatics /
Electropneumatics /
Proportionalpneumatics

The IDV education philosophy:

- Only industrial components from different producer are used in our system
- Every valve and cylinder has the **best connectors** in metal body. That means: If you wish to **varies** some exercises, every connector can be changed. It is not fixed in the valve.
Because, is the connector fixed in the valve and your students disturb a connector, you must replace than the complete valve.
- By IDV-System, you must replace only the connector. This is the practise in industry

Tubing:

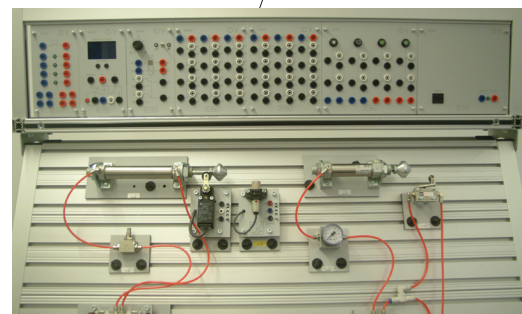
a very big ring for connecting / disconnecting
that means: easy handling for a long time
only metal connectors



Push down the ring, you can disconnect the tube.

For tubing: Only push the tube in the connector:

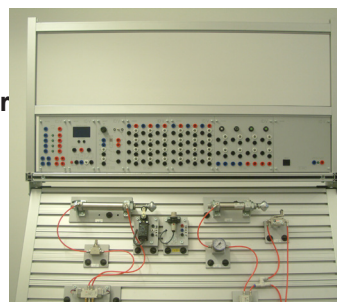
Space for Elec-
tro components
(Relays ect.)



Different standard benches:

- small single bench
- small double bench
- big single bench
- big double bench
- all benches are lockable
- labels for the drawers
- different colours available by the big benches
- Load carrying capacity up to 100 Kg per drawer
- Trainingsboards for a standard table

Space for a PLC,
Simulators



Specially solutions,
for example with
space for a PC also
possible.
We can design your
own ideas for the
bench

Test us!!



Education - System

Pneumatics / Electropneumatics / Proportionalpneumatics

General information:



The Electro-and Electropneumatic components are with two installation ways:

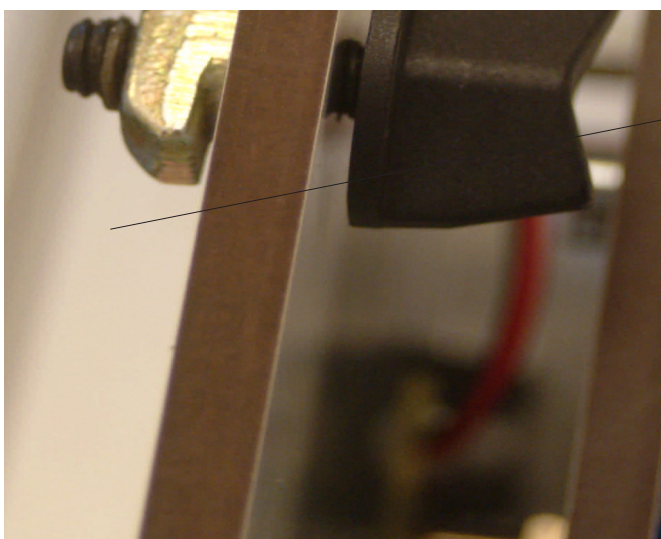
1. With 4 mm safety lab cables (standard in schools)
2. With a extra cable (parallel) to connect like in industry (Only by IDV)



Mounting on the Aluminium subplate:

every components (valve,cylinders, switches, sensors) are mounted with 2 big **wing screws**

On the backside are a metal connector passed for the slide in the Aluminium system



A fixing ring safe the connector. That means: It is not possible to loose this connector (**only by IDV**)

Working places for Pneumatics / E-Pneumatics

LW-007-V (Vertical version)



Description

Ordering - No.

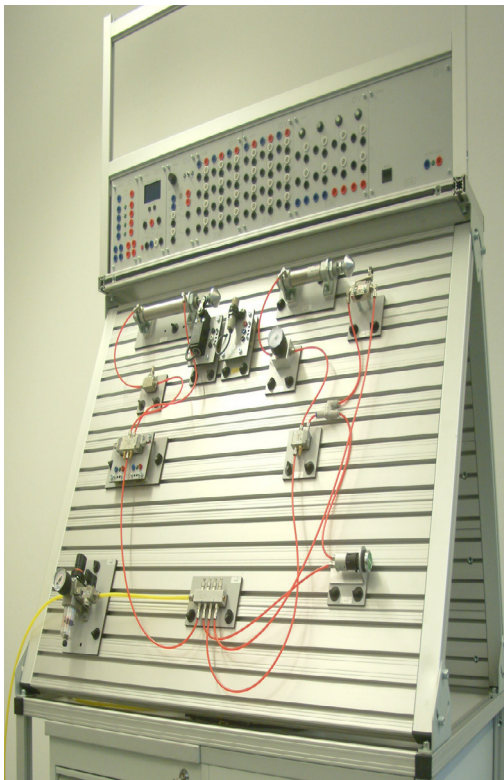
Working place, double, single LW-007/008

- o possible to roll, 4 wheels steerable, 2 with a brake
- o work display 1050 x 750 mm, both sides
- o ALU frame
- o Grid 25 / 25 mm
- o 2 Cupboards with five drawers each, lockable, max. load: 100 Kg per drawer, different colours possible
- o Filing in the middle and on top
- o Dimensions: 1.260 x 800 x 1540 mm (L x D x H)
- o Weight: 147 kg
- o **Roof or Vertical version**

also possible with only **one work display** and one cupboard (**LW-008**)

- o Dimensions then 1075 x 800 x 1540 mm (L x D x H)
- o Weight: 83 kg

LW-009 (Roof version)



Working place, double, single LW-009/010

- o possible to roll, 4 wheels steerable, 2 with a brake
- o work display 1050 x 750 mm, both sides
- o ALU frame
- o Grid 25 / 25 mm
- o 2 Cupboards with five drawers each, lockable, max. load: 20 Kg per drawer, colour light-grey
- o Filing in the middle and on top
- o Dimensions: 1.075 x 800 x 1440 mm (L x D x H)
- o Weight: 95 kg
- o **Roof or Vertical version**

also possible with only **one work display** and one cupboard (**LW-010**)

- o Dimensions then 1075 x 800 x 1440 mm (L x D x H)
- o Weight: 57 kg

PLC-Frame

- o PLC-Top-Frame for PLC (all Type's) and Function-Simulator's
- o to integrated in all our Benches (LW-007 ... LW-010)
- o as extended version for the E-frame
- o or complet for both (E-components, 200 mm height and for PLC, DIN A4 height)



Working places for Pneumatics / E-Pneumatics

Trainingsboard

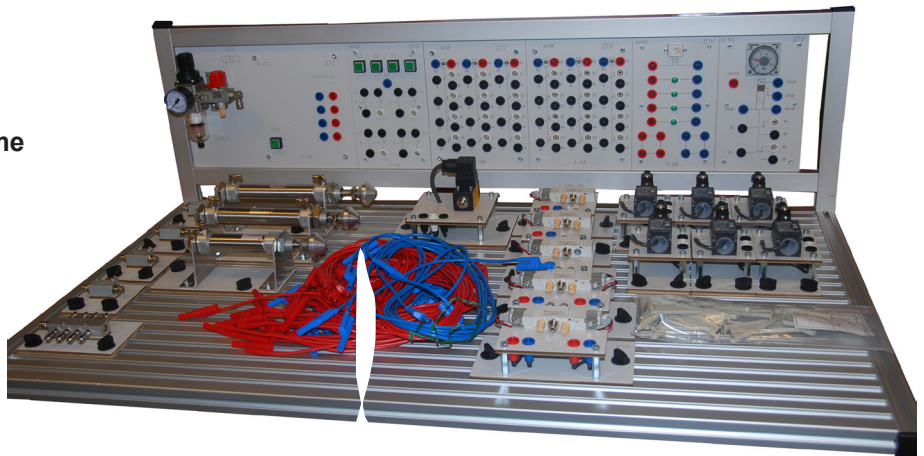
DI-003AP*

- o 1060 x 600 mm
- o with Alu-frame
- o Grid 25 mm
- o For installation on the bench or a table
- o also for installation on hydraulics- trainingssystem (H-045 / H-050)
- o Weight: 8 kg
- o Order-No. APH is to integrate in the Hydrailic-Workbenches (H-045 / H-050)



Trainingsboard with Electro frame

(E-030)



Trainingsboard with Electro frame

(E-030)

and Roof device (LW-020)

to put it on a workbench etc.
with or without Power supply



Working places for Pneumatics/- E-Pneumatics- PLC and Mechatronic's



Working place, Double, Single LW-039

- o possible to roll, 4 wheels steerable, 2 with a brake
- o in ALU-Frame design
- o Pneumatic board 1, vertical 700 x 700 mm,
- o Pneumatic board 2, horizontal 700 x 600 mm, with 2 possibilities for use:
 1. one working area: 600 x 700, or
 2. two working area's each: 1000 x 700
- o Alu-Nut-system in a grid of 25 mm
- o Prepared to install the pulling load (P-117)
- o Space for a PC or Notebook
- o Expandable with E-030 for the E-Components
- o Two additional rows for PLC and Function simulators
- o Container to roll under the working area (option)
- o Dimensions: 1600 x 670 x 1550 mm (L x D x H)
- o Weight: ca. 60 kg

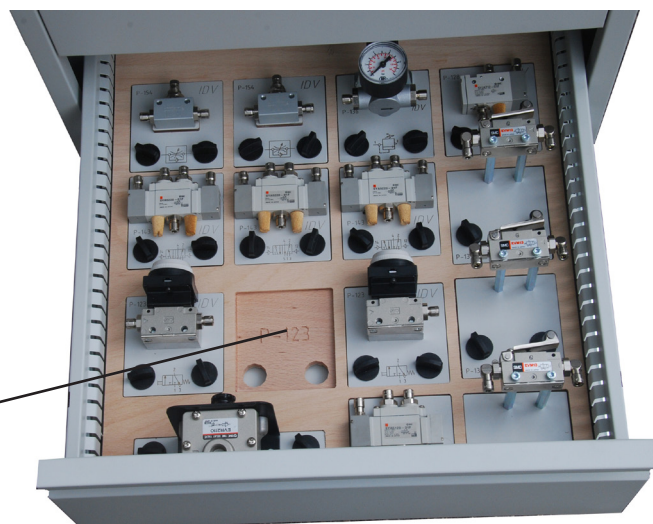


Roll-container

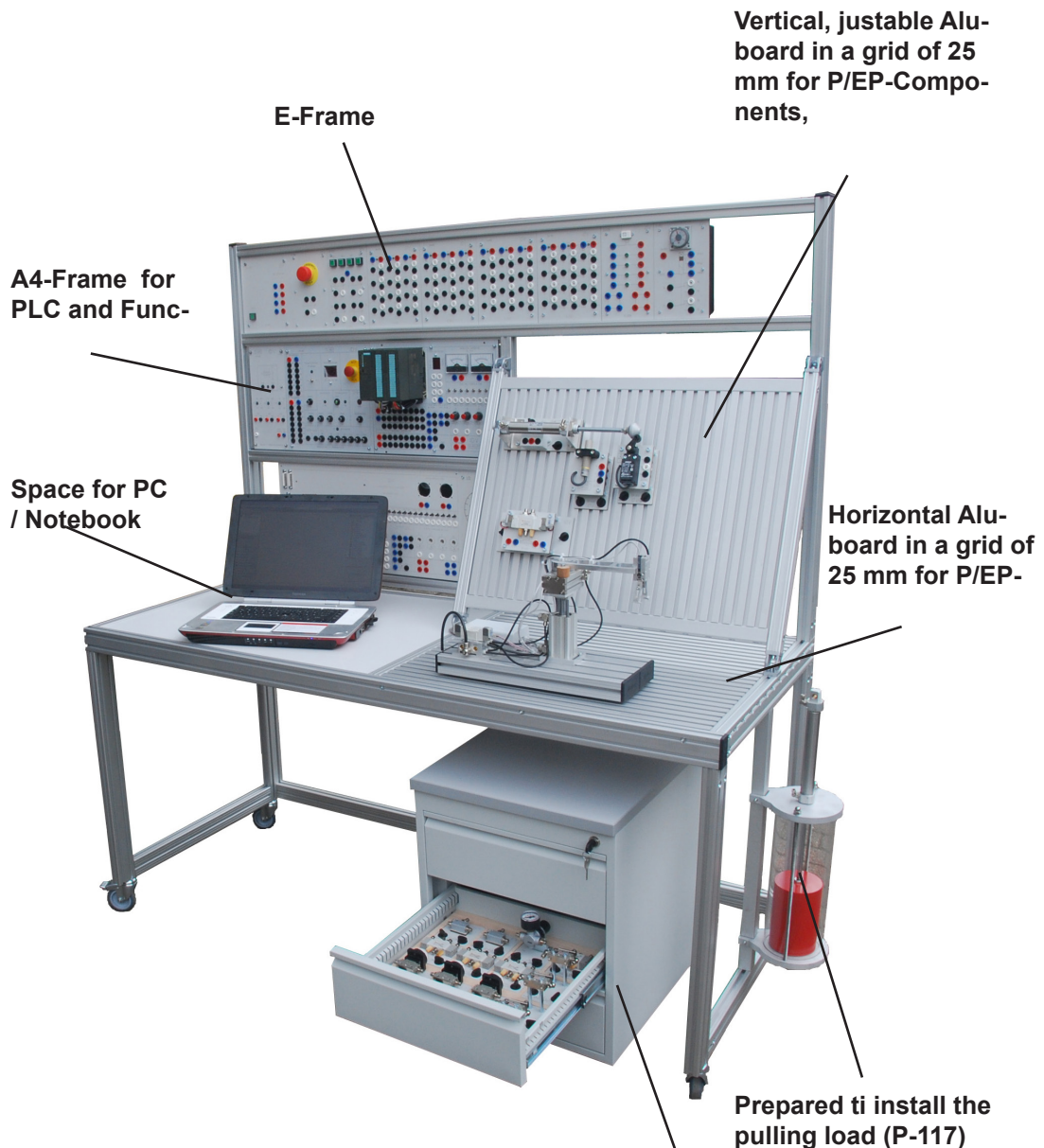
- o to roll, 4 wheels, 2 with a brake
- o 3 drawers, lockable
- o Top wooden plate 25 mm
- o To roll under the working area of LW-035
- o incl. Sorting system with description of each component, so you can direct see, if any part are missing
- o Enough space for one P-Set or EP-Set
- o Dimensions: 460 x 600 x 620 mm (L x T x H)
- o Also possible to deliver in a depth of 800 mm
- o Weight: ca. 27 kg (ohne Komponenten)



Sorting system for each drawer,
on each free place is a piece
number graved



LW-035



Working place, Double, Single LW-035

- o possible to roll, 4 wheels steerable, 2 with a brake
- o in ALU-Frame design
- o Pneumatic board 1, horizontal 700 x 600 mm
- o Pneumatic board 2, vertical 550 x 600 mm, justable in the angle (useable for Examination)
- o Alu-Nut-system in a grid of 25 mm
- o Prepared to install the pulling load (P-117)
- o Space for a PC or Notebook
- o Top row for E-Components
- o Two additional rows for PLC and Function simulators
- o Container to roll under the working area (option)
- o Dimensions: 1600 x 690 x 1800 mm (L x T x H)
- o Weight: ca. 80 kg

Material sets according to BIBB-2010

Complete equipment set

P-003

- o With 50 m PE-tube 4/2
- o Two Quick Push in Connectors 1/8"
- o Two T - connectors
- o Two cross - connectors
- o Tube-cutter

- o for exercises 1 - 11 in Pneumatics

Extra equipment set

P-004

- o for extra exercises in Pneumatics
(Bigger sequence control circuits,
Cascade circuits with up to 4 Cylinders)

Other Equipment Set's

Basic education

TP-101

- o Basic step's in Pneumatic's

Advanced education

TP-102

- o Advanced step's in Pneumatic's

Equipment-set's

Equipment			P-003	P-004	TP-101	TP-102	
01	Filter control valve	P-100/2	1	0	1	0	
02	Distributor	P-104	1	0	1	0	
03	Single acting cylinder	P-112	1	0	1	0	
04	Load device, 9 Kg	P-117	1	0	0	0	
05	Double acting cylinder	EP-300	1	2	0	2	
06	Double acting cylinder	EP-300-EL	1	0	1	0	
07	Pressure gauge	P-118	1	0	2	0	
08	3/2-way valve, press button	P-123	3	0	2	3	
09	3/2-way valve, with detent	P-125	0	0	1	0	
10	3/2-way valve, press button, NO	P-127	1	0	1	0	
11	3/2-way valve, pressure actuated	P-128	1	0	1	4	
12	3/2-way valve with roller	P-131	3	2	2	0	
13	3/2-way valve, magnetic actuated	P-133	2	0	2	0	
14	3/2-way valve, with one way roller	P-134	0	0	0	1	
15	3/2-way pressure sequencer valve	P-136	1	0	1	0	
16	5/2-way valve with turn switch and detent	P-139	0	0	1	0	
17	5/2-way valve both side's pressure act.	P-143	3	2	3	2	
18	5/2-way valve one side pressure act.	P-148	1	0	1	0	
19	3/2-Wege-time delay	P-151	1	0	1	1	
20	Check choke valve	P-154	2	4	2	2	
21	check valve, pilot operated	P-156	2	0	0	2	
22	Quick exhaust valve	P-157	1	1	1	0	
23	Shuttle valve (Logic OR)	P-159	1	1	1	4	
24	Double pressure valve (Logic AND)	P-161	3	2	2	3	
25	Pressure control valve	P-163	0	0	1	0	
26	5/3-way valve	P-168/1	1	0	0	0	
27	Suction cup	P-170	1	0	0	0	
28	Vacuum generator, Ejector	P-171	1	0	0	0	
29	Modular sequencer for 4 step's	P-200	0	2	0	1	
30	Pneumatical counter	P-616	0	0	0	1	
31	Tube 4/2, 50m	B-1030	0	0	1	1	

Material sets according to BIBB-2010

- o for the exercises 1 - 15 (incl. the exercise with "Emergency-Off" and final working exercise) in Electropneumatics

Complete equipment set

EP-003

- o Comprised in accordance with actual equipment list

- o for the exercises: Positioning and Sensors, digital pressure monitoring

Extra equipment set

EP-004

- o Comprised in accordance with actual equipment list with extra informations

Other Equipment Set's

Basic education

TP-201

- o Basic step's in Electro-Pneumatic's

Advanced education

TP-202

- o Advanced step's in Electro-Pneumatic's

Equipment sets

Equipment			EP-003	EP-004	TP-201	TP-202
01	Relays, 3-fold	E-140	2	1	2	2
02	Emergency-OFF switch	E-160	1	0	0	1
03	Time relay module, 8 function's	E-155	1	0	0	1
04	Signal Output device	E-250	1	0	0	0
05	Electric signals input	E-260	1	0	1	1
06	Electrical counter, Up and down	E-270	0	0	0	1
07	Sensor, inductive	EP-350	1	0	0	1
08	Sensor, magnetic	EP-400	1	0	2	0
09	Sensor, capacitive	EP-450	0	1	0	1
10	Sensor, optical	EP-500	0	1	1	0
11	Limit switch	EP-550	6	0	2	0
12	5/2-way valve, bistabile	EP-600	3	1	2	0
13	Valve block, 2x 5/2- bi- and mono-stable	EP-625	0	0	0	1
14	5/2-way valve, unistabile	EP-650	3	0	1	0
15	3/2-way valve (NC)	EP-700	1	0	2	0
16	5/3-way valve, closed in midposition	EP-800/1	0	1	0	0
17	p-E-Converter	EP-850	1	0	0	0
18	p-E-converter, electronical	EP-860	0	1	1	0

For the complete work with this set's, you need also the basic pneumatic-devices from the Pneumatic-set's (P-XXX), Power supply, Aluminium workplace, cable's!

Specially material set's

Measureing in Pneumatic's

TP210

Measureing in Pneumatic's

No.	Description	Order-No.	Quantity
1	Universal connector unit with Data cable with Signal changer, digital	MCS-569	1
2	Signal changer, analogue with USB	EP-864	1
3	Pressure sensor, electronic	EP-860	2
4	Volume flow sensor, electronic	EP-870	1
5	Proportional-Pressure regulating valve	PP-200	1
6	Pressure regulating valve	P-163	1
7	Throttle check valve	P-154	1
8	PCLab-Software, Single licence	EP-864	1
9	Check valve, pilot operated, incl. Throttle check valve	P-156	2



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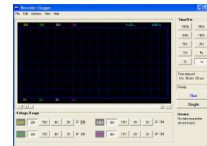
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With this material set you expand the Basic education set's (P-003, TP-101, EP-003, TP-201) with components around the Complex "Measureing" in the Pneumatic's.

Digital and analogues signals comes from the sensor's via USB to a Computer. With the Software (PCLab) you can measuring the different pressures and volume flow's with up to 4 channels synchronous at the same time. This signals comes in a graph form or with a digital measurement device. Also the graphs are possible to save and print.

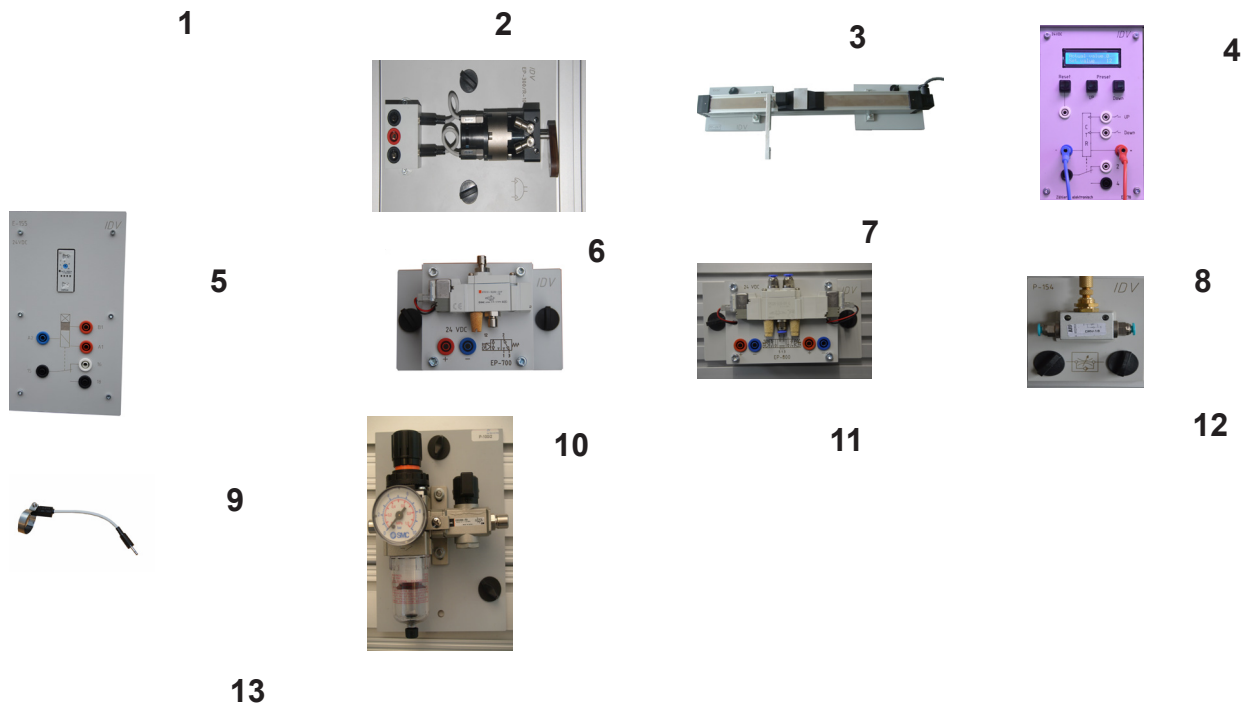
Some exercises comes with the manual like: Comparison between Input chocking and Output chocking.

For the complete work with this set's, you need also the basic pneumatic-devices from the Pneumatic-set's (P-XXX), Power supply, Aluminium workplace, cable's!

Specially material set's

Actuator's in Pneumatic's

TP220 Actuator's in Pneumatic's			
No.	Description	Order-No.	Quantity
1	Pneumatical tandem Actuator, Size 10	EP-301	1
2	Pneumatical Rotary actuator	EP-300-R-10	1
3	Linear unit (Piston rodless cylinder), 16-300	PP-090	1
4	Counter, electronically	E-270	1
5	Time relay, 8 Functions	E-155	1
6	3/2-way-solenoid valve, uni stable	EP-700	1
7	5/3-way-solenoid valve, NC	EP-800	1
8	Throttle check valve	P-154	4
9	Sensor, magnetically (REED-Contact), 2-wire	EP-400	1
10	Preparation unit	P-100/2	1
11	Load device, 175g	548581	2
12	Load device, 2Kg	548582	1
13	Pressure air accumulator	152912	1



With this material set you expand the Basic education set's (P-003, TP-101, EP-003, TP-201) with components around the Complex "Actuators" in Pneumatic's.

There are described the advantages and disadvantages of specially actuators in Pneumatic's. The set comes with a manual and many exercises from practical applications.

For the complete work with this set's, you need also the basic pneumatic-devices from the Pneumatic-set's (P-XXX), Power supply, Aluminium workplace, cable's!

Specially material set's

Vacuum Technics

TP-230

TP230

Vacuum technic's

No.	Description	Order-No.	Quantity
1	Air accumulator, 1l, up to 10 bar	P-106	1
2	Vacuum switch, electrical, 0 to -1bar	EP-861	1
3	Vacuum gauge, 0 to -1bar	P-118-V	1
4	Throttle check valve	P-154	1
5	Vacuum Generator, Ejector	P-171	1
6	Vacuum Generator, Ejector, double power	P-172	1
7	Check valve	P-155	1
8	Check valve, delockable	P-156	1
9	Suction cup, 20 mm, NBR	P-170	1
10	Suction cup, 32 mm, NBR	P-170-32-NBR	1
11	Suction cup, 20 mm, VMQ	P-170-20-VMQ	1
12	Suction cup, 32 mm, VMQ	P-170-32-VMQ	1
13	Bellows suction cup, 20 mm	P-170-B	1
14	Suction cup, oval	P-170-oval	1

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With this material set you expand the Basic education set's (P-003, TP-101, EP-003, TP-201) with components around the Complex "Vacuum technology" in the Pneumatic's/ Electropneumatic's.

For the complete work with this set's, you need also the basic pneumatic-devices from the Pneumatic-set's (P-XXX), Power supply, Aluminium workplace, cable's!

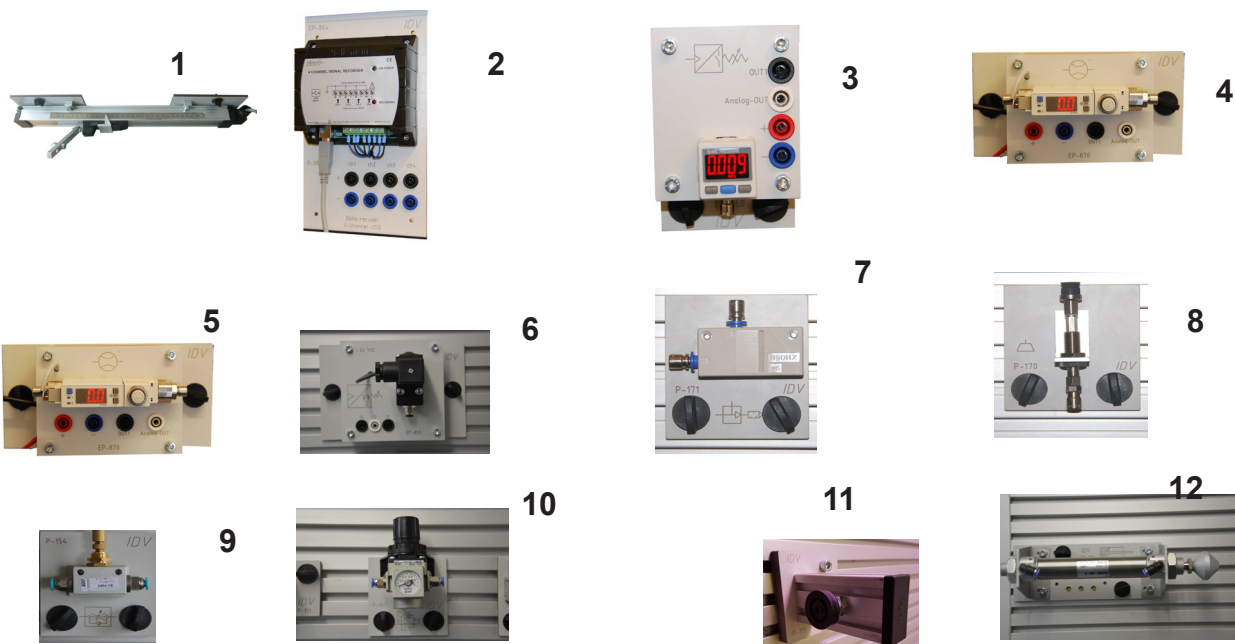
Specially material set's

Sensor's in Pneumatic's

TP240

Sensor's in Pneumatic's

No.	Description	Order-No.	Quantity
1	Positioning transmitter, 100mm	PP-097-100	1
2	Signal changer	EP-864	1
3	Pressure sensor, electronic	EP-860	1
4	Volume flow sensor, electronic	EP-870	1
5	Volume flow sensor, electronic	EP-872	1
6	Pressure switch	EP-850	1
7	Vacuum generator, Ejector	P-171	1
8	Suction cup, 10 mm	P-170	1
9	Throttle check valve	P-154	1
10	Pressure regulating valve	P-163	1
11	Mechanical limit device, 35 mm way, adjustable	P-111	1
12	Double acting Profile cylinder	EP-300	1



With this material set you expand the Basic education set's (P-003, TP-101, EP-003, TP-201) with components around the Complex "Sensors" in the Pneumatic's/ Electropneumatic's.

Digital and analogues signals comes from the sensor's via USB to a Computer. With the Software (PLLab) you can measuring the different pressures and volume flow's with up to 4 channels synchronous at the same time. This signals comes in a graph form or with a digital measurement device. Also the graphs are possible to save and print.

Some exercises comes with the manual (10 exercises) like: Comparison between Input chocking and Output chocking.

For the complete work with this set's, you need also the basic pneumatic-devices from the Pneumatic-set's (P-XXX), Power supply, Aluminium workplace, cable's!

Specially material set's

Close loop in Pneumatic's

TP111 No.	Close loop in Pneumatic's Description	Order-No.	Quantity
1	Signal Input device	E-260	1
2	3/2-Way valve, push button	P-123	2
3	3/2-Way solenoid valve, uni stable	EP-700	2
4	Pressure gauge	P-118	1
5	Throttle check valve	P-154	2
6	Preparation unit	P-100/2	1
7	Distributor	P-104	1
8	PE-Tube, 4/2	B-1030	10
9	Regulating software for S7-300-PLC	SP-150	1
10	Potentiometer module	PP-180	1
11	Pressure sensor, electronic	EP-860	1
12	5/3-Way solenoid valve, NC	EP-800	1
13	Proportional valve, Puls-width-Modulated	PP-.150	1
14	Pressure air accumulator	152912	2
15	Linear unit (Piston rodless cylinder), 16-300	PP-090	1
16	Linear unit (Piston rodless cylinder), 32-300	PP-095	1
17	Linearpotentiometer, incl. connecting device für both Linear units and cable, incl. Lineal	PP-097	1
18	Load, 1 Kg	34065	1
19	Shock adsorber		2



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With this material set you expand the Basic education set's (P-003, TP-101, EP-003, TP-201) with components around the Complex "Sensors" in the Pneumatic's/ Electropneumatic's.

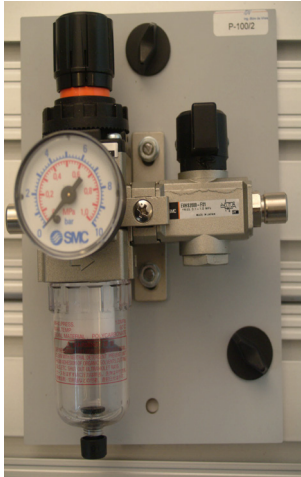
In the exercises are described the problems for positioning with different valve solutions and with different actuator's and it's technical differentiation.

Learning contests: Close-and open loop control, Repeatability, High speed problems.

The set comes with a manual with some practical background and many circuit's.

For the complete work with this set's, you need also the basic pneumatic-devices from the Pneumatic-set's (P-XXX), Power supply, Aluminium workplace, cable's!

Trainingequipment Pneumatics

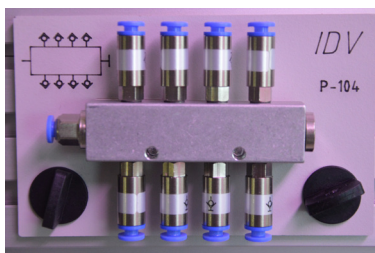


Description

Ordering - No.

Filter control valve

- o Water separator, filter, pressure regulator, pressure indication
- o Control range 0 - 12 bar
- o Connection for tube 6/4
- o 3/2-way start-up valve
- o quick connection with 2 screw connectors



Distributor

P-104

- o 8 quick push-pull connectors for tube 4/2 with close connectors
- o 1 input port for tube 6/4
- o quick connection with 2 screw connectors



Mechanical Limit device

P-111

- o to Limit the stroke of a cylinder
- o Range up to 35 mm
- o with Hand screw
- o quick connection with 2 screw connectors



Single-acting cylinder

P-112

- o Piston diameter 25 mm
- o Stroke 50 mm
- o Pressure range 1 - 10 bar
- o Connection 90°, turnable, for tube 4/2
- o quick connection with 2 screw connectors
- o with fixed End cushioning



Double acting cylinder

EP-300

- o Piston diameter 25 mm
- o Stroke 100 mm
- o Operation pressure 1 -10 bar
- o Adjustable cushioning
- o Magnetic pistons
- o Connection 90°, turnable, for tube 4/2
- o quick connection with 2 screw connectors

- Also deliverable (integrated in the Set P-001, ect):

- without cushioning, without magnetic piston:
- without cushioning, with magnetic piston:

P-115
EP-290

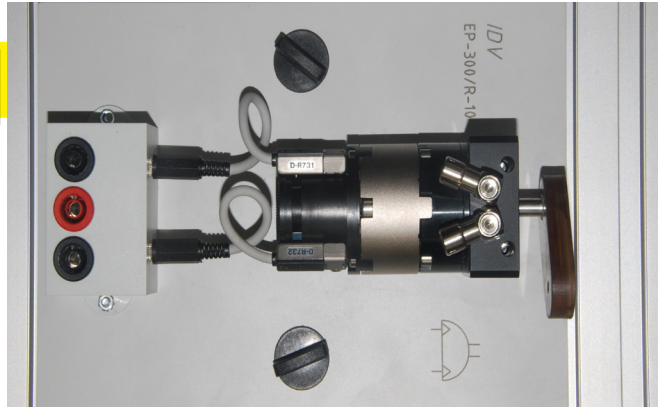
Trainingsequipment Pneumatics

Description

Ordering - No.

Double acting rotating cylinder EP-300-R

- o Piston diameter 10 mm
- o rotating angle till 270°, adjustable
- o Operation pressure 1 -10 bar
- o Magnetic pistons
- o Connection 90°, turnable, for tube 4/2
- o quick connection with 2 screw connectors
- o incl. two magnetic sensors



Pressure gauges

P-118(V)

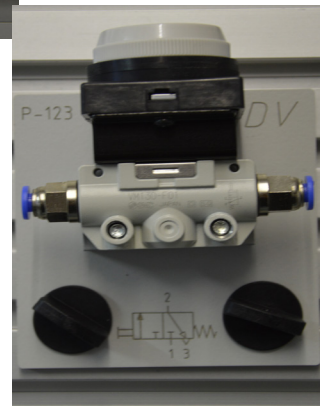
- o Indication range 0 - 10 bar
- o **P-118-V**: indication Range 0 - -1 bar (Vacuum)
- o Double connection for hose 4/2
- o quick connection with 2 screw connectors



3/2-Way valve (NC)

P-123

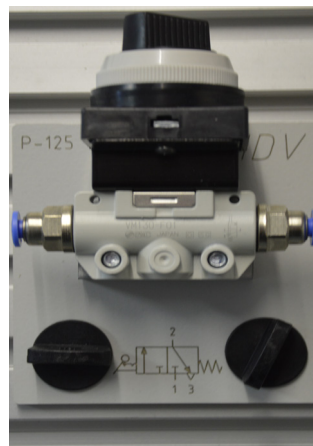
- o 3/2-way valve with pushbutton
- o direct working
- o unthreaded exhaust
- o Pressure range 0 - 12 bar
- o Connection for tube 4/2
- o Actuating force 16 N
- o quick connection with 2 screw connectors



3/2-Way valve

P-125

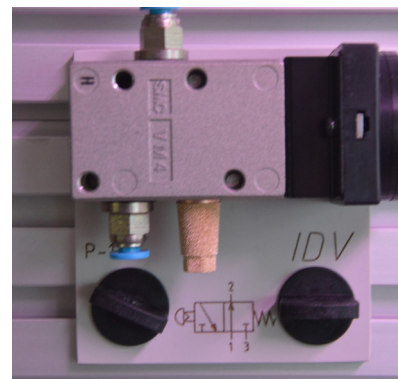
- o 3/2-way valve with turn switch
- o direct working
- o unthreaded exhaust
- o Pressure range 0 - 12 bar
- o Connection for tube 4/2
- o Actuating force 22 N
- o quick connection with 2 screw connectors



3/2-Way valve (NO)

P-127

- o 3/2-way valve with switchbutton
- o pilot operated
- o threaded exhaust
- o Pressure range 3 - 10 bar
- o Connection for tube 4/2
- o Actuating force 12 N
- o also possible as NC-Valve: P-129
- o quick connection with 2 screw connectors



Trainingsequipment Pneumatics

Description

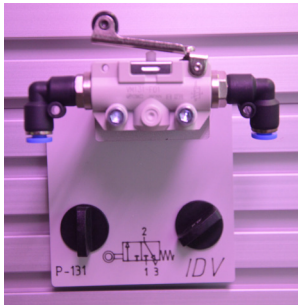
Ordering - No.



3/2-Way valve (NC / NO)

P-128

- o 3/2-way valve pneumatically actuated, with spring return (NC/NO)
- o direct operated
- o threaded exhaust
- o Connection for tube 4/2
- o Operation pressure: -0,95 - 10 bar
- o Control pressure: 3 - 10 bar
- o quick connection with 2 screw connectors



3/2-way valve (NC)

P-131

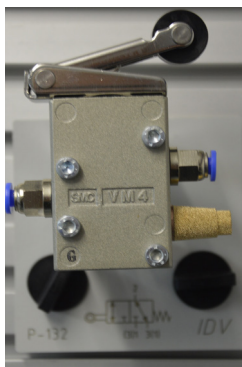
- o 3/2-way-valve roller activated with spring return
- o direct working
- o unthreaded exhaust
- o Connection for tube 4/2
- o Operation pressure 0 - 12 bar
- o Actuating force at 6 bar: 8 N
- o quick connection with 2 screw connectors



3/2-Wegeventil, magnetical

P-133

- o 3/2-Way valve - magnetically actuated with spring return
- o direct operated
- o threaded exhaust
- o Working pressure 0 - 6 bar
- o mounting direct on the profile cylinder (EP-300-



3/2-Way valve (NC / NO)

P-132

- o 3/2-way valve roller activated with spring return
- o direct working
- o threaded exhaust
- o Connection for tube 4/2
- o Working pressure 0 - 12 bar
- o Actuating force at 6 bar: 17 N
- o quick connection with 2 screw connectors



3/2-way valve (NC)

P-134

- o 3/2-way valve, one way trip roller actuated with spring return
- o direct working
- o unthreaded exhaust
- o Connection for tube 4/2
- o Operation pressure 0 - 12 bar
- o Actuating force at 6 bar: 8 N
- o quick connection with 2 screw connectors

Trainingsequipment Pneumatics

Description

Ordering - No.

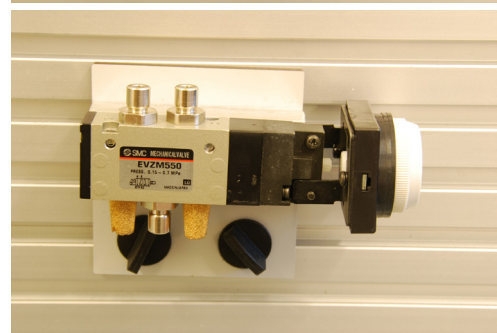
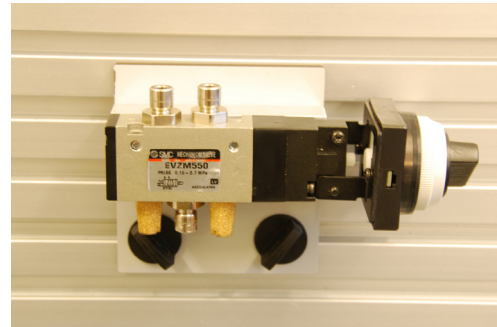
3/2-Way pressure sequency valve P-136

- o 3/2-way valve with pressure related switching, with spring reset
- o unthreaded exhaust
- o Connection for tube 4/2
- o Adjustment range: 0,5 - 5,2 bar
- o Operation pressure till 10 bar
- o quick connection with 2 screw connectors



5/2-Way valve P-139

- o 5/2-way valve with turn switch with detent
- o direct working
- o threaded exhaust
- o Connection for tube 4/2
- o Pressure range 0 - 12 bar
- o Actuating force 38 N
- o quick connection with 2 screw connectors



5/2-Way valve P-140

- o 5/2-way valve with pushbutton
- o direct working
- o threaded exhaust
- o Connection for tube 4/2
- o Pressure range 0 - 12 bar
- o Actuating force 32 N
- o quick connection with 2 screw connectors

5/2-Way valve P-143

- o 5/2-way valve, both sides pneumatically actuated
- o direct working
- o threaded exhaust
- o Connection for tube 4/2
- o Operation pressure: -0,95 - 10 bar
- o Control pressure range : 2 - 10 bar
- o quick connection with 2 screw connectors



5/2-way valve P-148

- o 5/2-way valve, pressure actuated with spring return
- o direct working
- o threaded exhaust
- o Connection for tube 4/2
- o Operation pressure: -0,95 - 10 bar
- o Control pressure range: 3 - 10 bar
- o quick connection with 2 screw connectors



Trainingsequipment Pneumatics

Description

Ordering - No.



3/2-Way time delay valve

P-151

- o 3/2-way turn delay valve, by pressure on Z p switches delayed to A
- o Time range: 0.5 - 10 s
- o unthreaded exhaust
- o Connection for tube 4/2
- o Operation pressure 3 - 10 bar
- o Control pressure range 3 - 10 bar
- o quick connection with 2 screw connectors



One way flow control valve

P-154

- o Check-Choke valve
- o Connecting for tube 4/2
- o Operation pressure 0 - 10 bar
- o quick connection with 2 screw connec-



Check valve

P-155

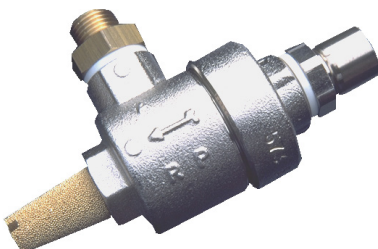
- o check valve in seat principle
- o with direct push/pull Ports for Tube 4/2
- o Working pressure -1 - 10 bar
- o Cracking pressure 5 kPa



Check valve, pilot operated

P-156

- o pilot operated check valve in seat principle
- o to screw direct in the cylinder ports
- o with integrated throttle, adjustable
- o 90° connector, turnable, for Tube 4/2
- o Working pressure 0.5 - 10 bar



Quick-exhaust valve

P-157

- o Quick-exhaust valve as Seat principle
- o directly screwable in cylinder
- o Connecting for tube 4/2
- o Operation pressure 0.3 - 10 bar



Shuttle valve

P-159

- o Shuttle valve, Logic valve "OR"
- o Operation pressure 0.15 - 10 bar
- o for tube 4/2
- o for direct tube connecting

Trainingsequipment Pneumatics

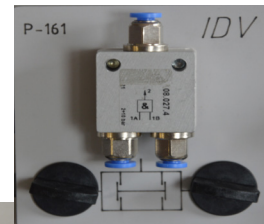
Description

Ordering - No.

AND valve

P-161

- o Double cut-off valve, Logic valve "AND"
- o Operation pressure 0.15 - 10 bar
- o for tube 4/2
- o for direct tube connecting



Pressure control valve

P-163

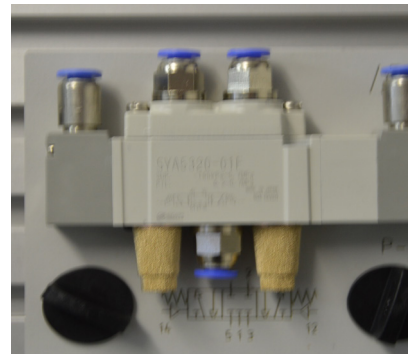
- o Pressure control valve with pressure indication
- o Adjustment range 0.5 - 10 bar
- o Connection for tube 4/2
- o quick connection with 2 screw connectors



5/3-Way valve

P-168/X

- o 5/3-way-valve, both sides pneumatically actuated with spring for center position
- o in center position all connections closed /1
- o direct working
- o threaded exhaust
- o Connection for tube 4/2
- o Operation pressure till 10 bar
- o Control pressure range: 3 - 10 bar
- o quick connection with 2 screw connectors

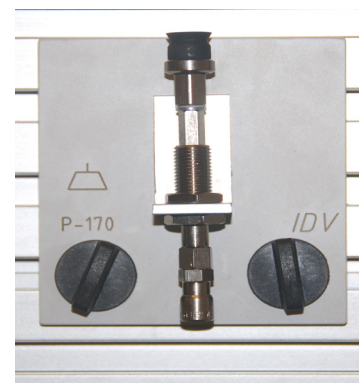


also available: center position pressure on 2 and 4: (P-168/2)
center position 2 and 4 exhaust: (P-168/3)

Suction cup

P-170

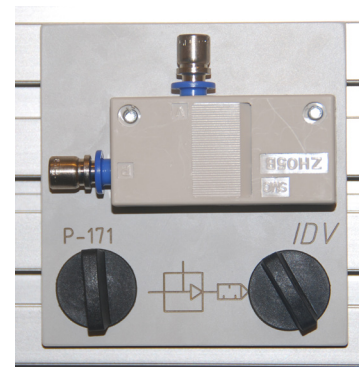
- o Suction cup
- o Suction cup diameter: 10 mm
- o Stroke balancing with Spring element
- o Connector for Tube 4/2
- o quick connection with 2 screw connectors



Vacuum generator, Ejector

P-171/172

- o Ejector to produce a low pressure
- o Minimum supply pressure: 2 bar
- o Produced at 6 bar supply pressure app. 88% Vacuum
- o Connector for Tube 4/2
- o quick connection with 2 screw connectors
- o Suction power: 5 l/min. (P-171); 12 l/min. (P-172)
- o Air consumption: 13 l/min. (P-171); 23 l/min. (P-172)



Trainingsequipment Pneumatics

Description

Ordering - No.



Modular Sequencer

P-200

- o Modular sequencer for 4 steps
- o 3 step modules without manual actuating
- o 1 step module with manual actuating
- o Connection for tube 4/2
- o Head and Tail module
- o Start- and RESET - input
- o Pressure supply p 3 - 8 bar
- o quick connection with 2 screw connectors

Visual display

P-205

- o Visual pressure display
- o By pressure signal a plastic button is displayed orange coloured
- o Connection for tube 4/2
- o Pressure supply p 1 - 8 bar
- o quick connection with 2 screw connectors



Two hand-control block

P-250

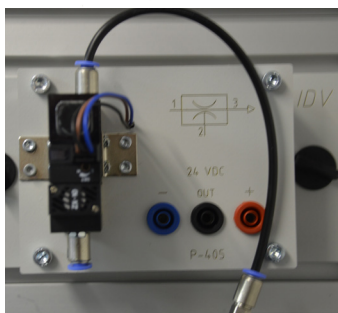
- o 3/2-Way-Two hand-Security valve
- o Valve switched, while two Input signals
- o Z1 and Z2 are activated between 0,5 s
- o Normally closed function
- o Working pressure p: 3 up to 10 bar
- o Volume flow: 280 NI/min.



Ejector with suction-cup

P-405

- o Vacuum generator with suction-cup
- o Pressure point for vacuum is adjustable and controlled whis a change-over
- o With change-over (24 VDC)
- o Pressure supply p 2 - 5 bar



Counter

P-616

- o Pneumatic Preselection counter
- o Counts from 0 - 99999
- o Pneumatic or Manual RESET
- o When the preselection equal the counts, p flows to A
- o Pressure supply p 3 - 6 bar



Trainingsequipment Electropneumatics

Description

Ordering - No.

Power supply

E-100

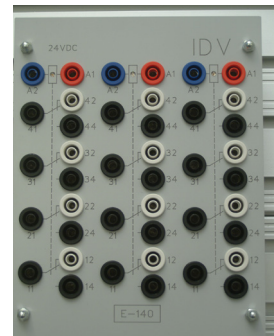
- o 24 VDC / 2.2 A
- o Short circuit proof
- o with protection 2.2 A, integrated
- o 4 mm safety plugs
- o quick connection in ER-frame on the top of the bench
- o with integrated distributor: 4 x +24 VDC; 4 x 0V
- o safety plugs
- o System width 175 mm



Relay (3-fold)

E-140

- o Relay module with 3 Relays
- o 4 changeover each Relay
- o 24 VDC / 80 mA supply
- o max. contact current till 2 A
- o LED - Function indication green
- o safety plugs
- o System width: 150 mm



Time relays module

E-155

- o Time relay module with 6 functions as followed:
ON-delay; ON-delay-pulse, Pulse;
ON/OFF-delay;
OFF-delay;
Pulse One cycle
- o 6 time area's from 0.1s to 24 h adjustable
- o 1 changeover, max. contact load: 16 A
- o 24 VDC / 75 mA supply
- o LED - Function indication
- o safety plugs
- o System width: 125 mm



Emergency-Off-Switch

E-160

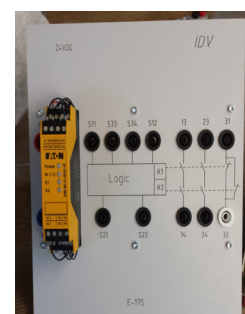
- o with detent
- o 24 VDC
- o 2 contacts (1 NO and 1 NC)
- o safety plugs
- o System width: 125 mm



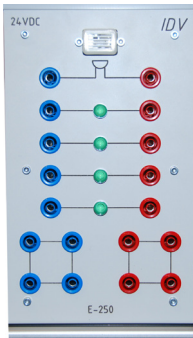
Emergency-Off-Safety Relay

E-175

- o Safety Relay, elektronical, 2-channel
- o 24 VDC, 2 Circuit's
- o Automatical Activating or controlled Activating
- o Safety door circuit
- o 2 pathes
- o 1 control path
- o safety plugs
- o System width: 200 mm



Trainingsequipment Electropneumatics



Description

Ordering - No.

Electrical Indicator

E-250

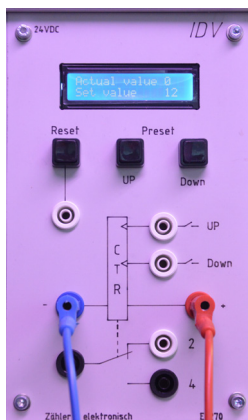
- o Electrical indicator
- o 24 VDC
- o 4 control lamps
- o 1 buzzer
- o with integrated distributor: 4 x +24 VDC;
4 x 0V
- o safety plugs



Electrical signals input

E-260

- o Electrical indicator input
- o 24 VDC, 2 A
- o 3 pushbuttons, each 1 NO and 1 NC-contact
- o 1 pushbutton with detent, 1 NO and 1 NC-contact
- o electrical indication for all switches via LED
- o safety plugs



Counter

E-270

- o Preselection counter, electronic, 4 digit's
- o 24 VDC
- o 30 Hz/ 5 kHz changeable
- o Counts up and down
- o Manual and electrical reset
- o When nominal value = actual value, a relay energized
- o 1 change-over, max. load: 2 A
- o 4 mm safety plugs
- o quick connection in ER-frame on the top of the bench
- o safety plugs
- o System width 100 mm



LOGO!-Smart controller

S-001/L

- o Basic unit with HMI-display
- o 24 VDC
- o 8 Inputs (2 for analogous useable)
- o 4 Outputs (Relay, 10 A)
- o without short circuit proof
- o International protection IP 20
- o alle In-and Outputs with safety plugs and with SUB-D-plug for MCS-Module's
- o quick connection in ER-frame on the top of the bench
- o safety plugs
- o System width 150 mm

Trainingsequipment Electropneumatics

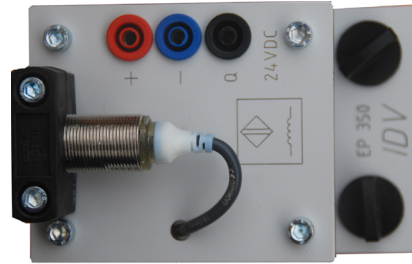
Description

Ordering - No.

Sensor, inductive

EP-350

- o inductive Proximity switch
- o pnp - switched, 1 NO contact
- o Power supply 12 - 24 VDC
- o Contact load up to 100 mA
- o LED - Function display red
- o Switching distance app. 2mm
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



Proximity switch

EP-400

- o Magnetic proximity switch (REED)
- o with fixed trace
- o pnp - switched, 1 NO contact
- o Voltage supply 18 - 30 VDC
- o Contact load up to 500 mA
- o LED - function indication red
- o Cinch-Nipple for easy mounting with EP-400-C



Connecting coupling

EP-400-C

- o for direct screw on the Cylinder (EP-300)
- o Two Cinch couplings
- o Two Sensor Output's on 4mm safety plug's
- o Central Power supply in the middle with 4mm safety plug
- o For up to two Sensor's (EP-400) useable



Sensor, capacitive

EP-450

- o Capacitive Proximity switch
- o pnp - switched, 1 NO contact
- o Power supply 12 - 24 VDC
- o Contact load up to 200 mA
- o LED - Function display red
- o Switching distance ca. 5mm
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



Sensor, optical

EP-500

- o Optical Proximity switch
- o pnp - switched, 1 NO contact
- o Power supply 12 - 24 VDC
- o Contact load up to 100 mA
- o LED - Function display red
- o Switching distance ca. 10 cm
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



Trainingsequipment Electropneumatics

Description

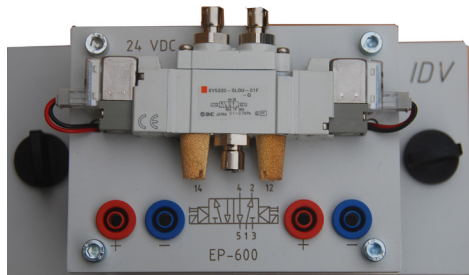
Ordering - No.



Limit switch

EP-550

- o Limit switch with roller
- o 1 change-over
- o Connection load till 2 A
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



5/2-Way valve

EP-600

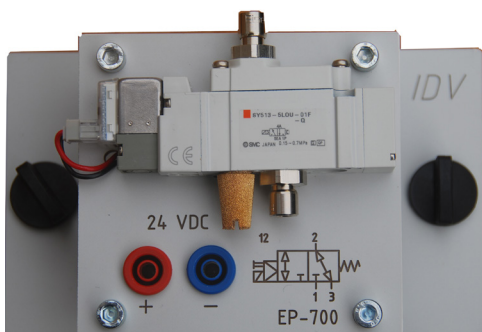
- o 5/2-way valve
- o Both sides electrical actuated (Impulsvalve)
- o pilot operated
- o Operation pressure 2.5 - 10 bar
- o 24 VDC / 0.5 W
- o LED - Function control
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



5/2-Way valve

EP-650

- o 5/2-Way valve
- o One side electrical actuated, with spring return
- o pilot operated
- o Operation pressure 2.5 - 10 bar
- o 24 VDC / 0.5 W
- o LED - Function control
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



3/2-Way solenoid valve

EP-700

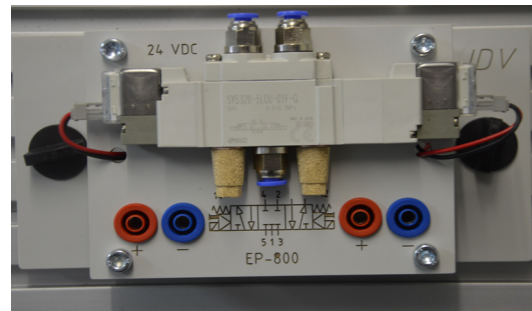
- o 3/2-way solenoid valve, NC
- o One air pilot with spring reset
- o Direct working
- o Operation pressure 2.5 - 10 bar
- o 24 VDC / 1.5 W
- o LED - Function control
- o 4 mm safety plugs
- o quick connection with 2 screw connectors

Trainingsequipment „Measuring with Electropneumatics“

5/3-Way valve

EP-800/X

- o 5/3-way valve
 - o both sides electrical actuated, with spring return
 - o center position all connectors closed /1
 - o pilot operated
 - o Operation pressure 3 - 10 bar
 - o 24 VDC / 2,2 W
 - o LED - Function control
 - o 4 mm safety plugs
 - o quick connection with 2 screw connectors
- also available:** center position pressure on 2 and 4 (EP-800/2)
center position 2 and 4 exhaust (EP-800/3)



p-E - Converter

EP-850

- o Pneumatic-electrical converter
- o spring loaded membrane switch
- o 1 change-over
- o Operation pressure range: 0,25 till 10 bar
- o Hysteresis: 0,5 till 1 bar (related to operation pressure)
- o Contact load till 5 A
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



Pressure sensor with display EP-860

- o Pressure sensor, electronically
- o 2 colour-display, if the output energized, the display changed from red to green colour
- o Output contact load: 24 V, 80 mA
- o Analogue output: 1 - 5 V
- o Supply: 24 VDC
- o Working range: 1 till 10 bar (also for vacuum usings deliverable: **EP-861**: -1 to 0 bar; **EP-862**: -1 to +1 bar)
- o Switching point setting in the menu
- o Hysteresys setting in the menu, different functions programmable as Window- or Hysteresys-mode
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



Volume flow sensor with display EP-870

- o Volume flow sensor, electronically
- o 2 colour-display, if the output energized, the display changed from red to green colour
- o Output contact load: 24 V, 80 mA
- o Analogue output: 1 - 5 V (10 l/min. = 1 V)
- o Supply: 24 VDC
- o Volume flow range: 1 till 50 l/min. (also possible with other range: **EP-872**: 0.2 to 10 l/min.)
- o Switching point setting in the menu
- o Hysteresys setting in the menu, different functions programmable as Window- or Hysteresys-mode
- o 4 mm safety plugs
- o quick connection with 2 screw connectors



Trainingsequipment „Measuring with Electropneumatics“

Description

Ordering - No.



4-channel-USB-Data recorder EP-864

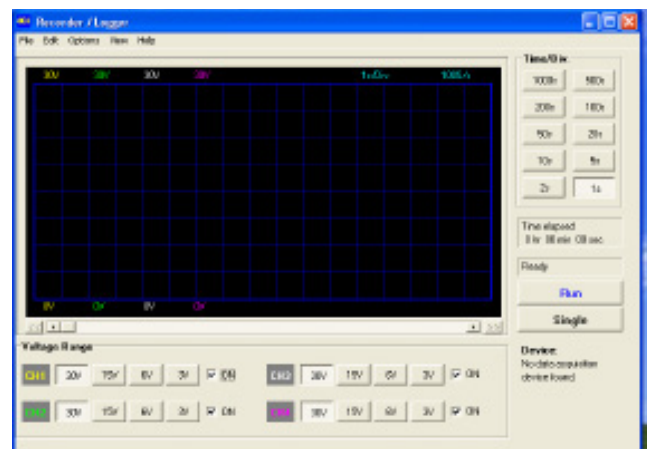
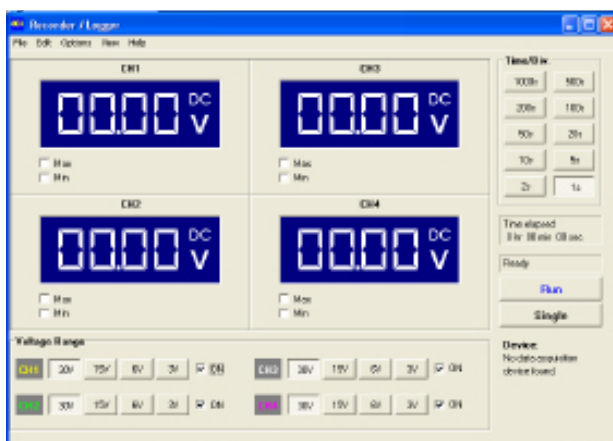
- o Data recorder for Signals from 0 till 30 V
- o 4 channels can simultaneously record the data's and with the incl. software save on the haddisk of your PC
- o For voltages till 30 V
- o Sensibility: 10 mV
- o Power supply comes over the incl. USB cable
- o 4 mm safety plugs
- o direct connectable to EP-860 / 870 or to Hydraulic measuring sensor's

PCLab-Measuring software EP-864-S

- o Data recording software
- o 4 channels can simultaneously record the data's and with the incl. software save on the haddisk of your PC
- o Display as an Oszilloskope
- o or as an Multimeter
- o Min./Max.-recording
- o 4 voltage ranges each channel: 3 / 6 / 15 / 30V
- o System requirements: from WINDOWS 98

Display as an Multimeter

Display as an line



Trainingsequipment Proportionalpneumatics

General description:

The normally movement from the piston or rod is mostly between both fixed points, for example outside and inside of the end from the stroke.

Through switch off the valves (EP-800) just by the motion, than we can stop the piston between the end positions. But in a lot of case, it is not exactly. The reasons for the inaccurate position comes very often from a external force.

With the following equipments (PP-XXX) we can realized a very accurate positioning. Because a double acting cylinder (PP-090 / PP-095) has a sensor for controlled the way. This sensor measured exactly the motion way and transfer the data to a regulator (PP-150). Works than a external force on the rod in one or other direction and will move it in this direction, the regulator controlled every time the right position.

The right position is controlled by a analog voltage signal between 0 to 10 V, realized with a analagous input. When you wish a new position for the cylinder, you have two ways to give the regulator an analog signal: 1. We developed for this problem a potentiometer module (PP-180) and you can switched between 6 different potentiometer or 2. with a PLC with analog output.

Just when the cylinder arrive at the new position, a seperate output acknowledged this. Than can start the next movement f.e. in a sequence control the next step. The regulator shows the acknowledgement with a LED.

Principle we can use every cylinder independant from the stroke or from the diameter. We offer it as standard two different cylinder:

1. A cylinder with diameterer 25 mm and a stroke 100 mm.
2. A cylinder with diameterer 40 mm and a stroke 400 mm.

In the education is the best to teach with both cylinders. The first kind has a bigger proportion from the diameter / stroke. Additionally we have a very slow motion problem whis the cylinder 2. For this problem we have a further output on the regulator to switched a fast motion valve (EP-800) for a fast but rough positioning.

With this system,the principle positioning is possibility on three different ways:

1. With konventionell control by Relays and the Potentiometer module HP-375-K
2. With PLC and digital outputs and Potentiometer module HP-375-K
3. With PLC and analog outputs

The delivery is including with each example documentation!!

Trainingsequipment Proportionalpneumatics

Description

Ordering - No.



Rodless-Cylinder

PP-090 / PP-095

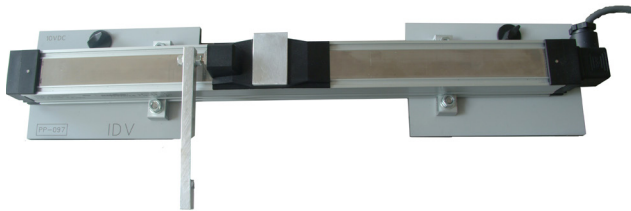
- o with two REED-contact's
- o Protection IP 65

PP-090

- o Piston diameter 16 mm
- o Stroke 300 mm

PP-095

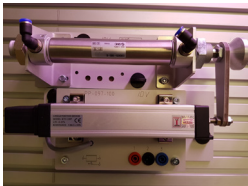
- o Piston diameter 32 mm
- o Stroke 300 mm



Linear way sensor

PP-097

- o to connect with PP-090 and PP-095
- o Sensor resolution < 0,01 mm
- o linear tolerance up to $\pm 0,05$ %
- o max speed with Sensors up to 4 m/s
- o with integrated lineal for way measurement
- o Stroke 300 mm



Linear way sensor

PP-097-100

- o to connect with EP-300
- o Sensor resolution < 0,01 mm
- o linear tolerance up to $\pm 0,05$ %
- o max speed with Sensors up to 4 m/s
- o Stroke 100 mm



Positioning valve unit

PP-100

- o Panel with four 2/2-Way-solenoid valves
- o among ourselves with tubes
- o with quick push in connectors
- o with silencer
- o volume flow: 8 NI/min.
- o 24 VDC



Regulator

PP-150

- o Regulator for the way
- o independant from the stroke
- o two Poti's for the stroke (min.; max.)
- o two Poti's for the accuracy window (one for PP-100 and one for fast motion)
- o Jumper for different switch frequencys
- o Connection for PP-100 and a fast motion valve (reference fast motion valve: EP-800)
- o Plug connection for the sensor

Trainingsequipment Proportionalpneumatics

Description

Ordering - No.

Regulator as Software

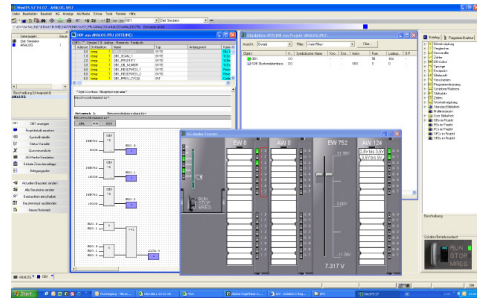
SP-150

- o Regulator for the way
- o independant from the stroke
- o two Poti's for the stroke (min.; max.)
- o two Poti's for the accuracy window (one for PP-100 and one for fast motion)
- o Option for a fast motion valve (reference fast motion valve: EP-800)
- o incl. Documentation

The regulator is a Software solution (PID) for a S7-300-PLC . You need a PLC with four analogues Input's and some digital In/Output's.

Four PLC-Digital Output's are used for a Puls-widht modulation solution for the positioning, two extra Output's are used for the fast motion option.

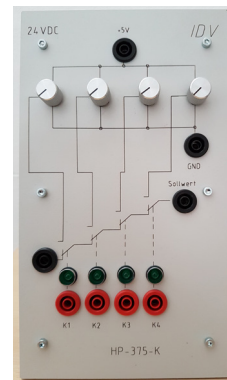
If you buy the hardware products (PP-xxx) we deliver this software for a low price!



Potentiometer module

HP-375-K

- o Changed a Input signal from 24 VDC to 0-10 V DC Output signal
- o four reference value potentiometer with four Calling relay's
- o Relay's with LED control



Pressure control valve

PP-250

- o E-p-changer, proportional solenoid
- o Nominal input: 0 bis 10 VDC, Potentiometer
- o Pressure output: 0,1 up to 6 bar
- o Hysteresis: 0,06 bar
- o Supply: 24 VDC
- o Current consumption: 1,2 A

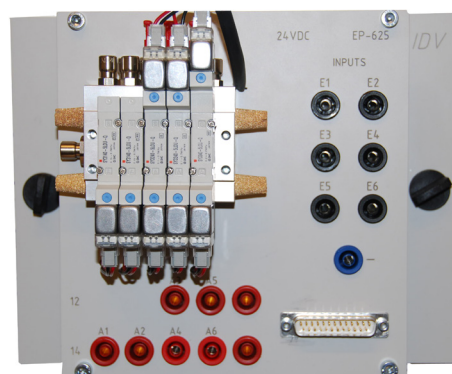
Convert an electrical signal (0 up to 10 VDC,) proportional into pneumatic pressure.

Also possible with current input (0 up to 20 mA; 4 up to 20 mA).



Valve block (for BIBB-complete) EP-625

- o 2 x EP-600 (5/2-way-double solenoid)
- o 2 x EP-650 (5/2-way-single solenoid)
- o 1 x EP-800 (5/3-way-double solenoid, NC)
- o pilot operated
- o operating pressure 3 - 10 bar
- o Supply: 24 VDC
- o LED - function control
- o Safety plugs
- o SUB-D-plug for our Bus components
- o 6 inputs connected to SUB-D



Accessories for Pneumatics / E-Pneumatics

Ordering-No. Description

B-1030	PE-Tube, 4/2, Colours: natur, blue, red, black, green, yellow
B-1031	PE-Tube, 6/4, Colours: natur, blue, red, black, green, yellow
B-112-0200	Exhaust-throttle with silencer, 1/8"
B-112-0400	Exhaust-throttle with silencer, 1/4"
B-112-5000	Exhaust-throttle with silencer, M5
B-14-49	Plastic-seal, M5
B-15-01	Plastic-seal, G1/8"
B-15-03	Plastic-seal, G 1/4"
B-23-02	Blind screw G1/8"
B-568-0	Silencer, M5
B-568-1	Silencer, G1/8"
B-568-2	Silencer, G1/4"
B-623-0400	Blind connection, 6mm
B-628-0202	Quick Push in Connectors G1/8" for tube 4/2
B-628-0204	Quick Push in Connectors G1/8" for tube 6/4
B-629-5002	Quick Push in Connectors M5 for tube 4/2
B-629-5004	Quick Push in Connectors M5 for tube 6/4
B-634-0202K	Swivel screw connector single, short 1/8" for tube 4/2
B-634-0204K	Swivel screw connector single, short 1/8" for tube 6/4
B-635-5002K	Swivel screw connector single, short M5 for tube 4/2
B-635-5004K	Swivel screw connector single, short M5 for tube 6/4
B-678-0200	T-connection for 3 tubes 4/2
B-678-0400	T-connection for 3 tubes 6/4
B-679-0200	Cross-connection for 4 tubes 4/2
B-679-0400	Cross-connection for 4 tubes 6/4
B-686-0202	Quick Push in 90° Connectors G1/8" for tube 4/2, turnable
B-686-0204	Quick Push in 90° Connectors G1/8" for tube 6/4, turnable
B-687-5002	Quick Push in 90° Connectors M5 for tube 4/2, turnable
B-687-5004	Quick Push in 90° Connectors M5 for tube 6/4, turnable
B-728-0204	Quick Push in Connectors with check valve G1/8" for tube 6/4
B-729-5004	Quick Push in Connectors with check valve M5 for tube 6/4



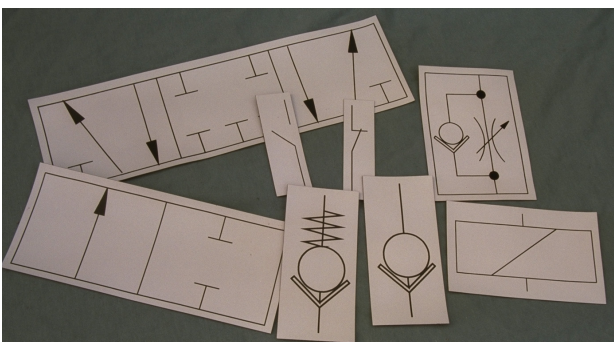
MH-22

Magnetic symbols for Pneumatics / Electropneumatics and Hydraulics / Electrohydraulics in a suitcase

- o 35 different Symbols
- o together 109 pictures

MH-21 Magnetic symbols for Pneumatics / Electropneumatics and Hydraulics / Electrohydraulics

- o 35 different Symbols
- o together 109 pictures



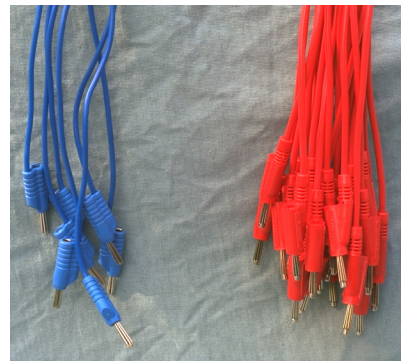
Accessories for Pneumatics / E-Pneumatics

Ordering-No. Description

Z-243.01	Coupling (Quick-system), brass, G1/4" outside
Z-243.216	Plug for Coupling (Quick-system), brass, for tube 6/4
Z-245.32	Coupling (Double), brass, G3/8" outside
Z-245.52	Coupling (Triple), brass, G3/8" outside
Z-060	Tube cutter
Z-061	Replacement knife for tube cutter



E-500.10	Universal cable set for EP-001 with 4mm plug, Red: 5 x 1m, 25 x 0,5m; Blue: 5 x 1m, 10 x 0,5m
E-502.X	Universal cable, 250 - 1000 mm, 4mm plug, additional, Colours: blue , red black



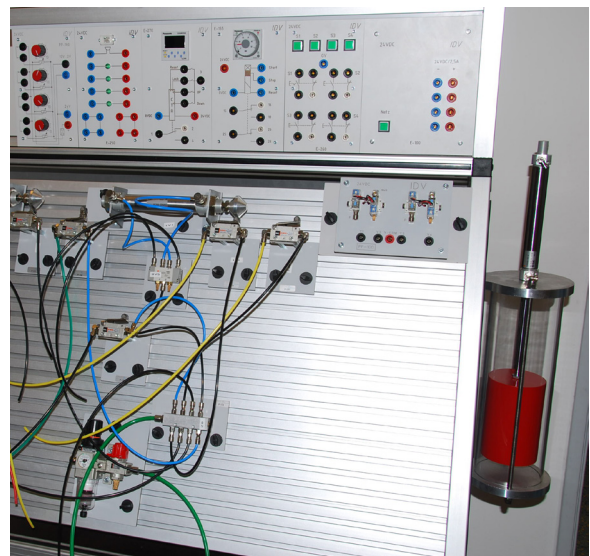
Pulling load, 9 Kg

P-117

Pulling load:

For load exercises, its possible to integrate a pulling load in every IDV-workbench! with integrated double acting cylinder

- o Load: 9 Kg
- o Cyl.-Diameter 25 mm
- o Cyl.-Stroke 150 mm
- o magnetic piston for contactless sensorics
- o with integrated end cushioning adjustable



SIL-AIR 50/24

K-50-24

Voltage:	220-240 V / 50 Hz
El. Power:	340 W
Pneumatic Power:	50 l/min.
Tank size:	15 l (24 l)
Max. operation pressure:	8 bar
Noise level:	40 dB / 1m
Weight:	33 Kg
Dimensions (width, dept, height):	370, 370, 520 mm 420, 420, 640 mm



Literature

Description

Ordering - No.

Pneumatics

Elektropneumatics

Working book for the students acc. BIBB
(Hardcopy and as PDF-file for own printing
incl. some Power point pictures)

AP-001

AEP-001

Working book for the teacher acc. BIBB
(Hardcopy and as PDF-file for own printing
incl. some Power point pictures)

AP-002

AEP-002

Text book acc. Bosch Rexroth

AP-003

AEP-003

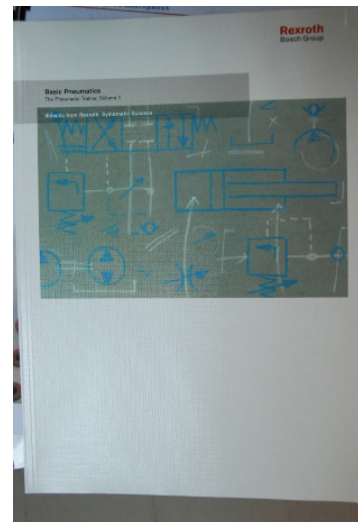
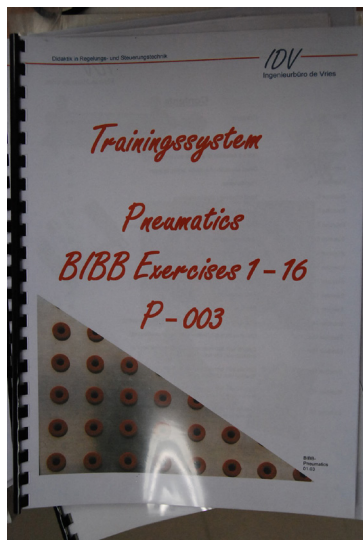
Pneumatics - Working transparencys
(Hardcopy and as PDF-file for own printing)

AP-006

AEP-007

Software for simulation:

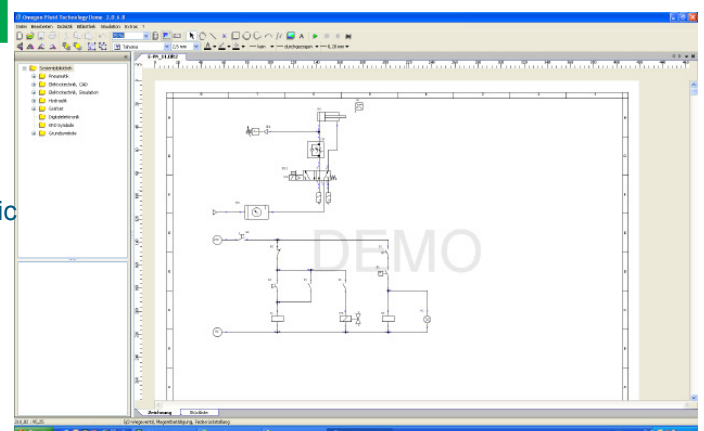
Look for our extra catalogue



Software

Omegon Fluid

- o CD-ROM with Handbook
- o Interactiv circuits with Pneumatic-, Electric- and Logic, Hydraulic, Grafcet, Digitalelectronic
- o User defined elements produceable
- o Wiht Simulation modus you can check the # circuit of correctness and function
- o Single phase- and automatic mode
- o Function diagramm (Way-Time)
- o Window technology
- o Aprooved to DIN ISO 1219
- o I/O-Box to connect our E-Pneumatic/ E-Hydraulic can be deliver (extra order)
- o Single livcence and classroom licences possible



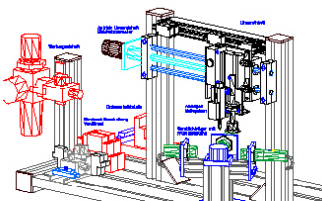
exactly Details look to: <http://www.de.omesim.com>

Other catalogues:



Didaktik in Regelungs- und Steuerungstechnik **IDV**
Ingenieurbüro de Vries

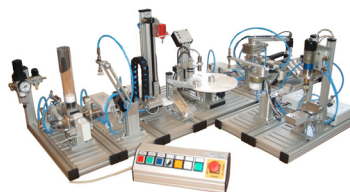
Trainingssystem Mechatronik MCS-800



Flexible Production

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Ingenieurbüro de Vries

Mechatronik- Compact System



MCS

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Seminars Control technology



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