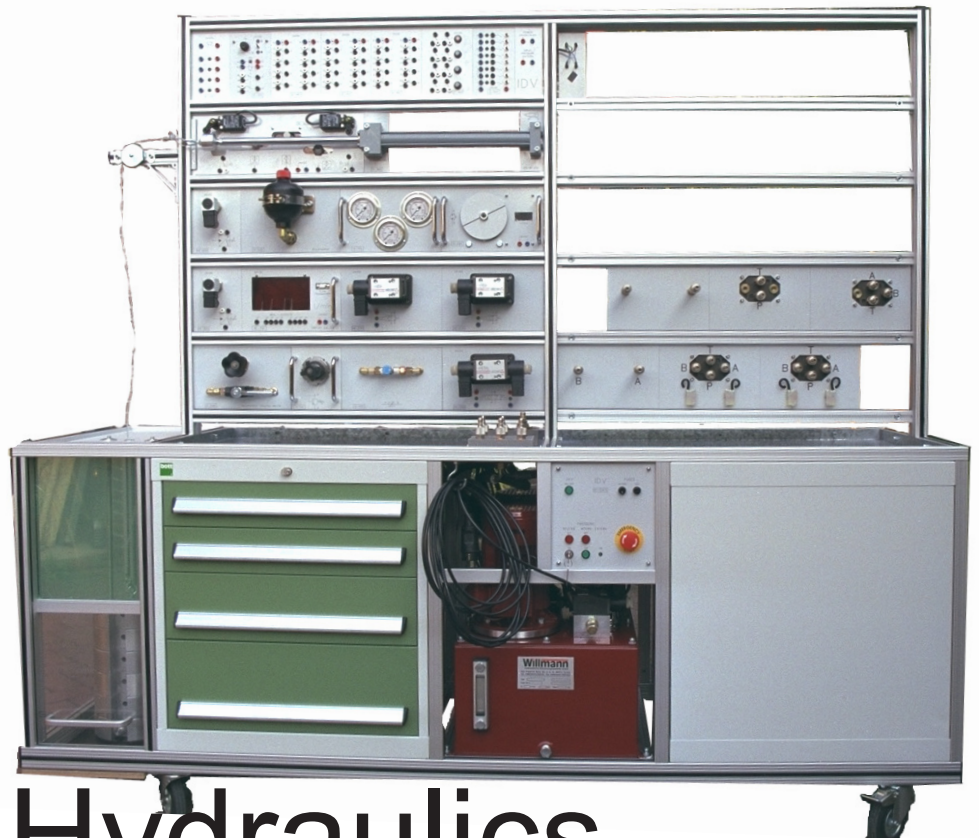
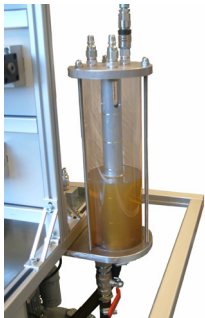


# Trainings- system



# Hydraulics

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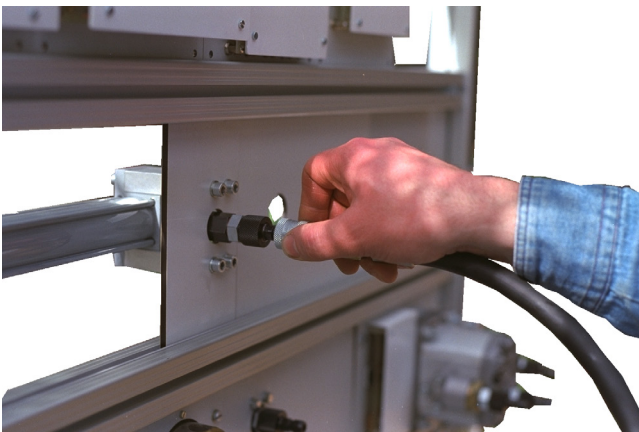
# The regular education-system

The trainingssystem for hydraulics offers possibilities to train the specific properties of hydraulics systems with the help of fundamental exercises and furthergoing influence by the study ranges Hydraulics and Electrohydraulics, which are made in accordance with the BIBB - concept.

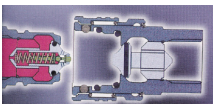
Above all the trainingssystem meets the goals and requirements of the studyranges for a didactic introduction to regulation (closed-loop)- and control (open loop) technology.

The **IDV** - trainingssystem is build to meet the didactic requirements because:

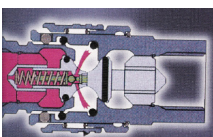
- the essential fundaments of hydraulics can be acquire,
- control of equipment which is already available is possible without causing difficulties,
- consequences of changing control parameters are visible and can be classify from the students,
- the system is extendable, for example with a view to flutter- and speed regulation and further specific investigation systems (Digital technology)
- the system meets the requirements of skilled education for industrial mechanics as well as electrisians etc.,
- all hydraulic, electrohydraulic and proportional hydraulic components are ready to install,
- only industrial components are used,
- all components are fitted with quick-connect - **safety connections** -!!



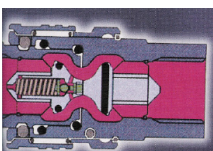
- to realize the connecting of the tube's becomes always **behind**, the reason for highest **safety**!
- All connectors are closed and **100% leakage free** and are integrated with a **pressure eliminator**!



The pressure eliminator is a miniature valve with patent. It is built in the body of the coupling.

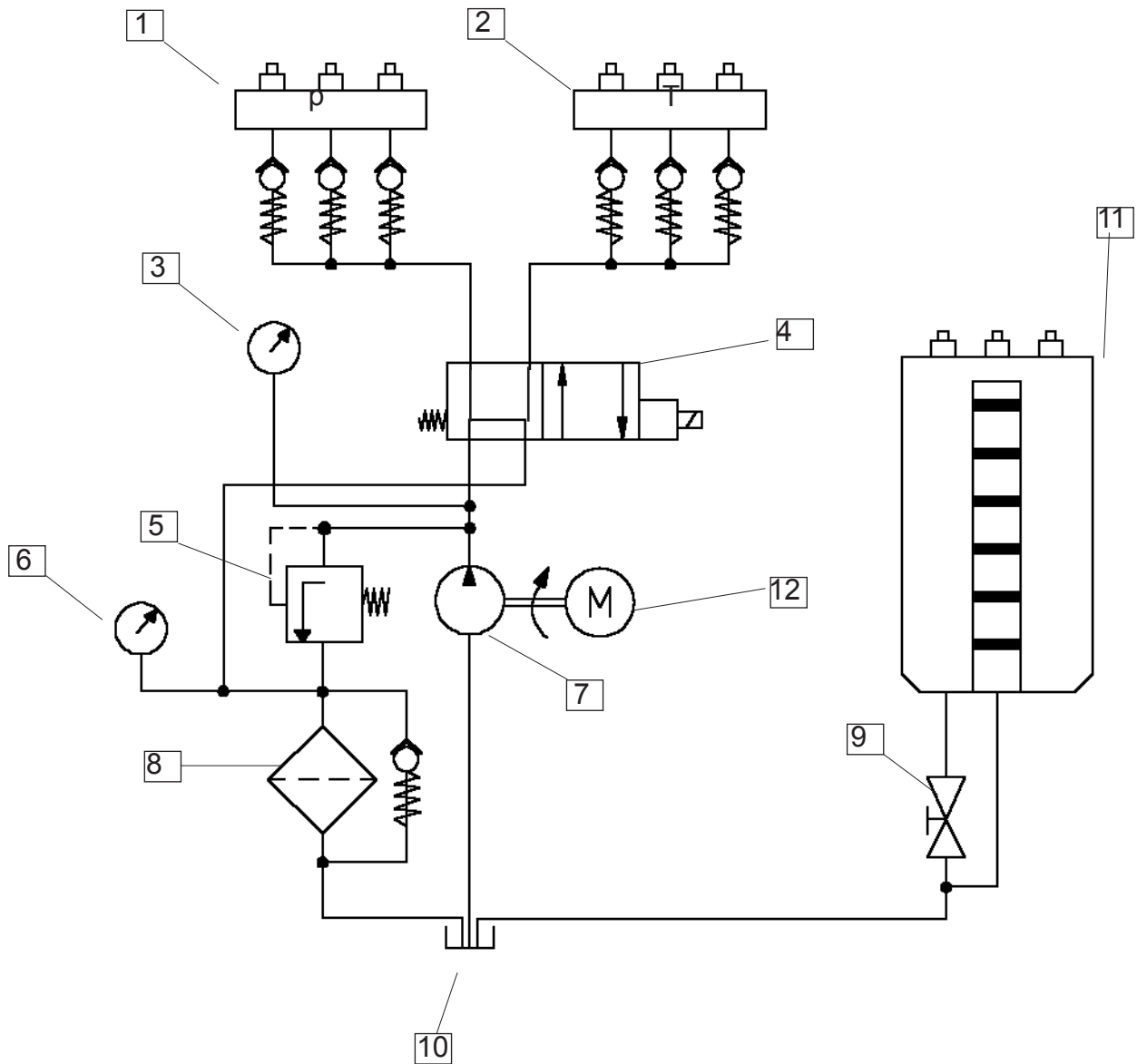


When connected, the high pressure will eliminated automatically.



The oil flow's leakage free to the pressure less tube. The reason is a easy way to coupling a tube to a valve ect.

# Hydraulics circuit for the aggregate



Working without pressure only



# Function of the different elements

- 1 **Three connections p** (pressure) with shut-off quick-connects
- 2 **Three connections T** (Tank) also with shut-off quick-connects
- 3 **Pressure indication** (max. pump pressure), alternative: digital pressure indication
- 4 **4/2-directional control valve - floating neutral position** electrical actuated. The control valve is used for a pressureless working (even when the electromotor is switched on). When the key-switch is used (indication by control lamp) and the pushbutton "pressure" is activated, an electrical self-latching is switched on. As a result of this the 4/2 directional control valve is switched on and the pumpflow will be lead through the three p-connections.  
Also its possible to control the above function with an electrical signal (bushes are on the control board) from your own circuit.



- 5 **Pressure relief valve** is build as a safety valve in the system. Any pressure is adjustable by knob.
- 6 **Oilfilter conditation indication:**
  - Green - Filter OK
  - Red - Filter has to be changed
- 7 **Hydropump:** Gear wheel pump with transporting volume of 7.5 cm<sup>3</sup>/rotation (standard)
- 8 **Oilfilter:** Build in the return line with check valve.
- 9 **Shut-off valve:**

Closed	:	for measuring the oilvolume
Opened	:	return to tank
- 10 **Tank with level and temperatur indication**

Top black marking :	Maximum
Lower red marking :	Minimum

**Option:** electrical level indicator
- 11 **Measureing glass**, 2.5 l in a scale of 0.5 l

# Description



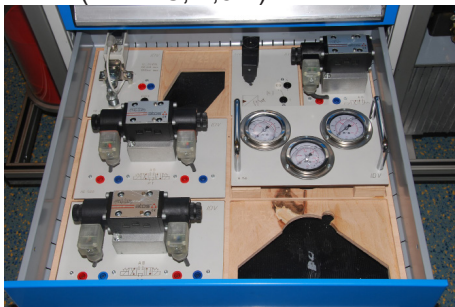
11

## Measuring glass with overflow:

- o Volume = 2,5l, scale divided in 0,5l
- o The measuring glass has three connections with shut-off quick-connects
- o The overflow has a direct connection with the tank
- o The measuring glass is connected with the tank by an shut-off valve
- o Possibility to connect a digital Q (HE-700)

## Electromotor:

- o Switched on the electromotor is only possible if the FI-protection and the motor protection switches are activated. Note the rotary direction (Marker on the motor). The motor protection is automatically.
- o Rotation of the Motor is 900 rpm
- o If activating the Emergency Off pushbutton the control current and the E-motor are switched off
- o Fuses (24 VDC)
- o Integrated power supply on the upper rail (24 VDC; 4,5 A)



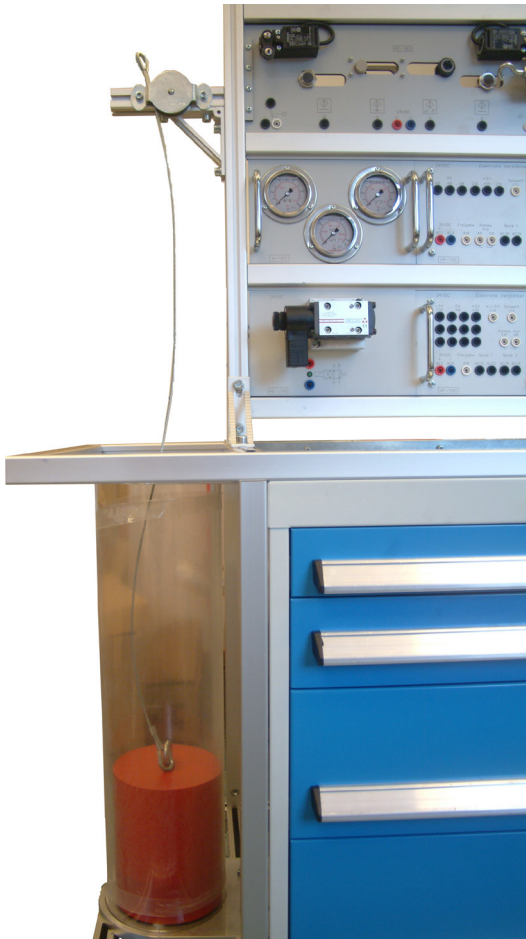
## Trolley:

- o Mounted on wheels
- o For storing hydraulic components
- o Three rows with four components a row
- o Cupboard with four drawer for storing hydraulic components



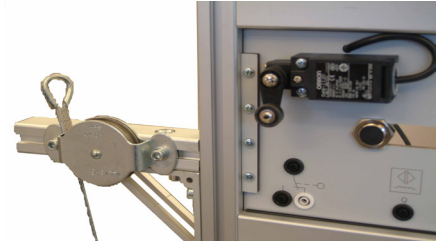
## Drawer-Overview:

- o two drawer to storage the components
- o for every valve is a separtly space created with valve number
- o Therefor, the teacher can see with one view if some valve are missing.



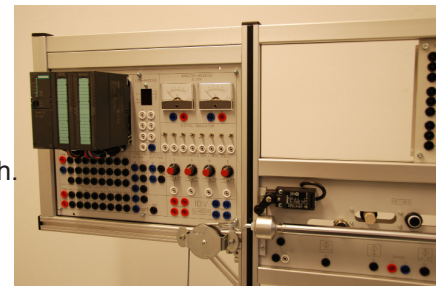
### Pulling weight (Basic-Version) H-050 :

- o Two parts (20 + 10 kg)
- o mounted in Alu-construction
- o Protected against touching (Plexiglass)
- o The weights are adjustable with an inside hexagon-key (included), removable from the bottom side
- o max. pressure from the weight: 17 bar



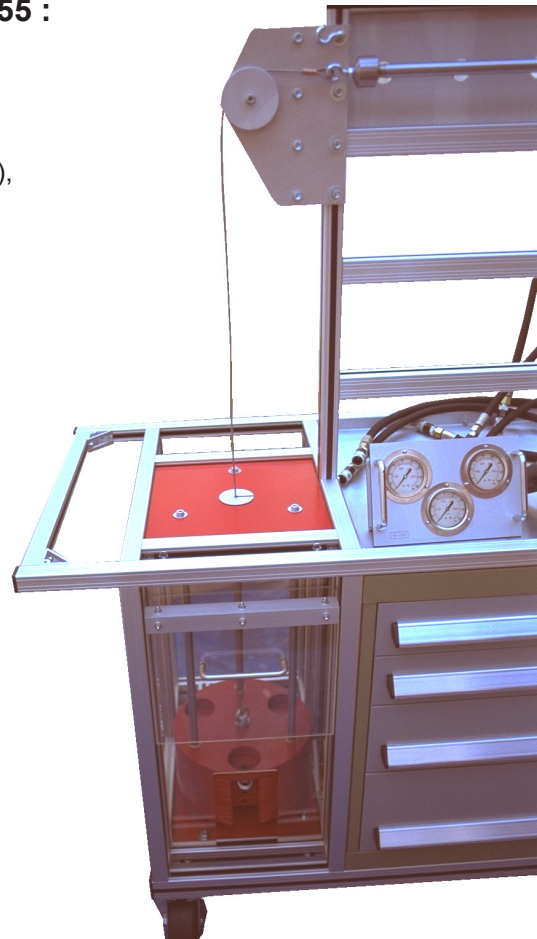
### PLC-Integration

- o our universal system allow also the PLC-Integration in the bench.



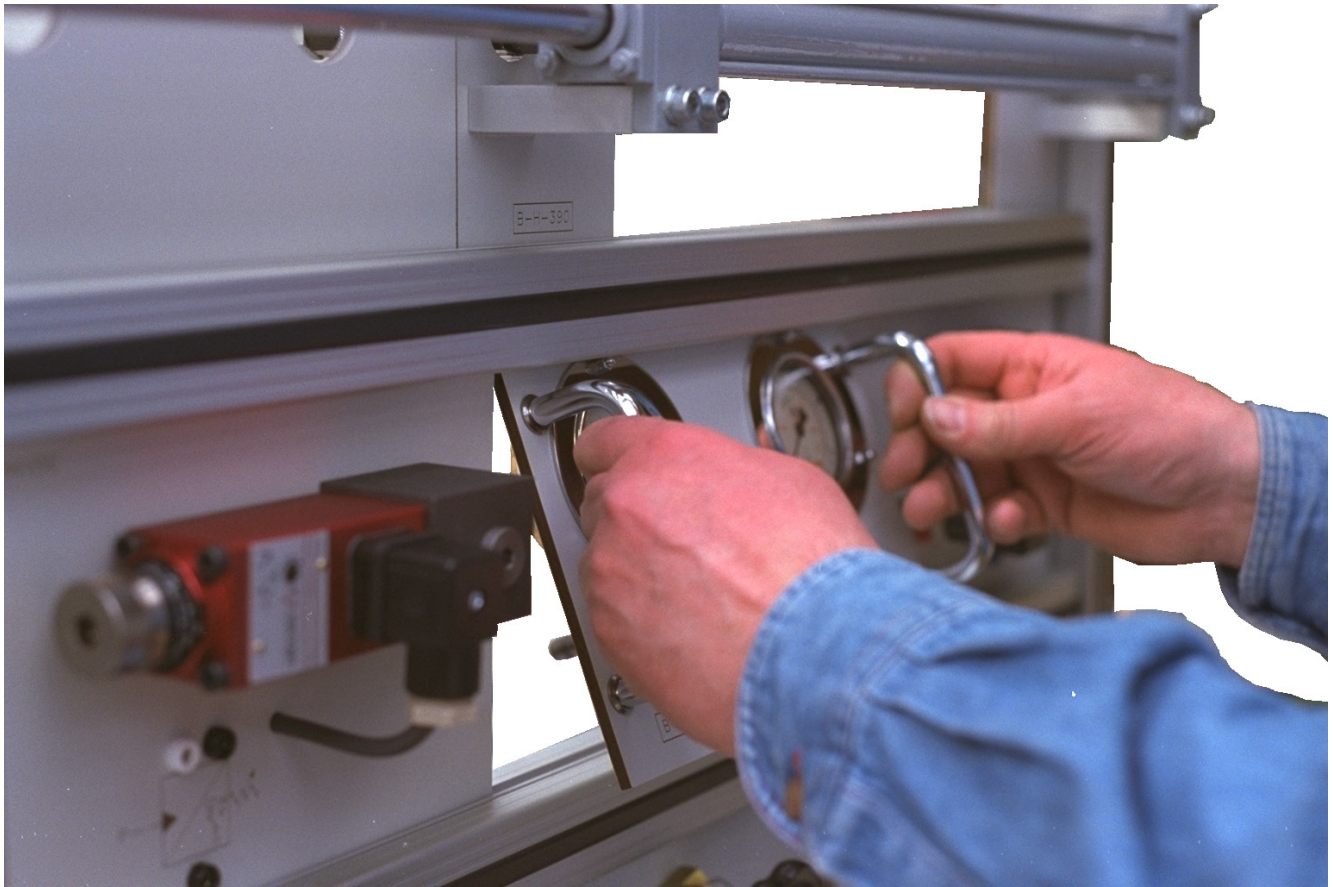
### Pulling weight (Teacher-Version) H-055 :

- o Six parts (up to 60 kg)
- o mounted in Alu-construction
- o Protected against touching (Plexiglass)
- o The weights are adjustable with a pin (included), every 10 kg
- o max. pressure from the weight: 35 bar





- Hydraulic components are mounted on panels in order to place them in the therefore made three rows in the trolley. The panels are provided with symbols (when available) according to DIN ISO 1219. Also on the backside.



- Hose connections are in principal **mounted on the backside** of the trainingssystem. Control, adjustments and wiring on the **frontside**.
- **exceptional low-noise** pressure unit:
  - $Q = 6,25 \text{ l/min.}$  (on request other volumes are also available)
  - $p_{\text{max}} = 70 \text{ bar}$ , adjustments with a knob from the pressure relief valve, indication on manometer
  - $U = 230 \text{ VAC (380 V) / 50 Hz}$  with switch to change the rotary direction
  - Oil level- and filter indication
  - Max. contents: 30 l. (**environment friendly with Rapsoil is possible**)
  - All three pressure- and tank connections are integrated in the trolley, all connections with Walther safety nipples resp.- couplings (minimal oil lost by pumping).
  - Electro solenoid for pressure less flowing, switchable with a keyswitch (teacher key!!).
  - Motor protection switch.



- o **Integrated 24 VDC Power supply with display for rotation of the Hydro-Motor and with volume flow measurement device!**

**All included, not extra cost's!!**

## Pneumatics - Integration:

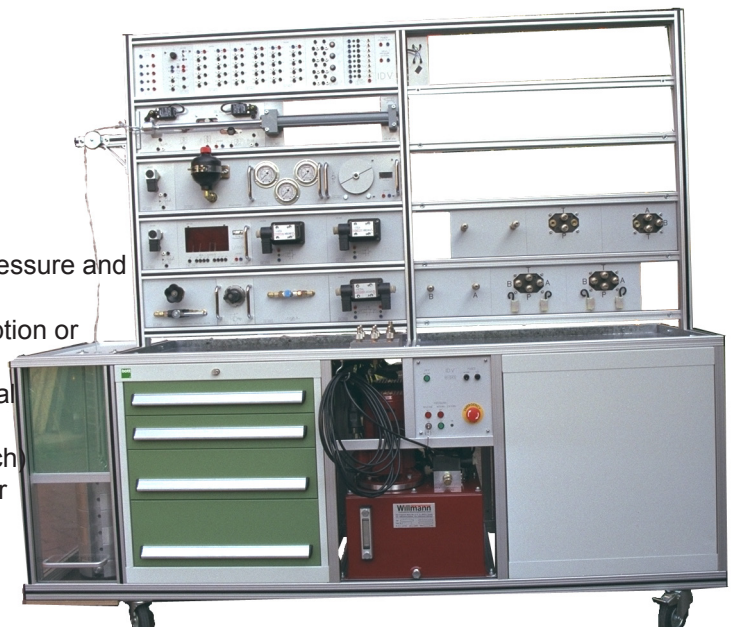
- o Pneumatics / Electropneumatics - trainingssystem can be integrated
- o 1050 x 750 mm mounting panel
- o Quick-install system with two screws
- o ALU - Frame
- o The upper electro-rail of the hydraulics system are usable for pneumatics, also the 24 VDC supply



## Trainingssystem (Double)

H-045

- o 44l Tank,
- o  $2 \times P = 0,75 \text{ KW}$
- o  $Q = 2 \times 6,25 \text{ l / min.}$
- o Pressure range up to approx. 65 bar
- o 3 T- und 3 p-connections every side
- o Oil collect device
- o digital measuring integration possible (Pressure and Volume flow)
- o 2 x load for the cylinder each 15 Kg as option or H-055
- o Pressureless flowing manually or electrical actuated separate for both sides
- o 2 x integrated 24 VDC - supply (4.5 A each)
- o Keyswitch (Teacherswitch) for each motor
- o Control, adjustment and electric on the front side,
- o tubing on the back side (high safety),
- o each time shifting working
- o 4 Installation rows for each 3.5 parts per side
- o 2 drawer systems with each 4 drawer, choosing in different color Standard is green(100 Kg/each)
- o Pneumatics / Electropneumatics - trainingssystem can be integrated
- o Dimensions: app. 1800, 600, 2000 mm (W,D,H)
- o Weight app. 400 kg (with 2 x BIBB-Set)

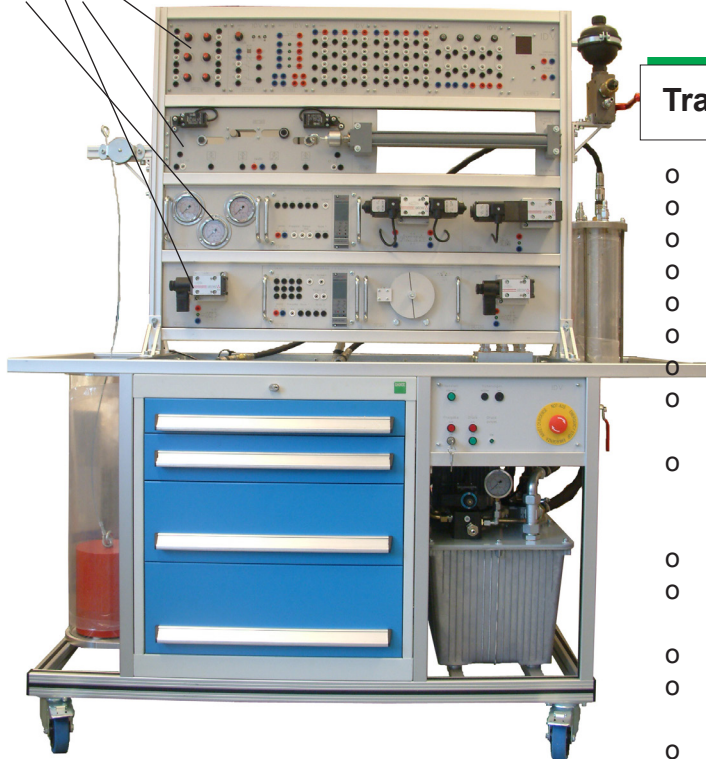




Delivering without components:

Description

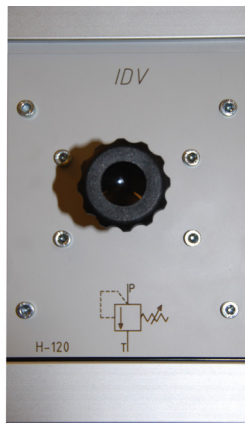
Order - No.



## Trainingssystem (single)

H-050

- o 30l Tank,
- o  $P = 1.1 \text{ KW}$
- o  $Q = 6.9 \text{ l / min.}$  ( $V = 7.5 \text{ cm}^3/\text{rev}$ ;  $n = 915 \text{ rev/min.}$ )
- o Pressure range up to 65 bar (or more)
- o 3 T- und 3 p-connections
- o Oil collect device
- o measuring glass 2,5l (Skale in 0,5l)
- o Pressureless flowing manually or electrical actuated
- o integrated 24 VDC - supply and digital scale for measurement rotation of the hydraulic motor and for volume flow measurements
- o Keyswitch (Teacherswitch)
- o Control, adjustment and electric on the front side, tubing on the back side (high safety)
- o 3 Installation rows for each 4 parts per side
- o Drawersystem with 4 drawer, choosing in different color (6 colours), 100 Kg/each drawer
- o Pneumatics / Electropneumatics - trainingssystem can be integrated
- o Dimensions: app. 1400, 600, 2000 mm (W,D,H)
- o Weight app. 250 kg (with BIBB-Set)



## Pressure relief valve

H-120

- o Mounted on panel
- o Connections with safety connectors on the backside
- o Adjustment range 10 - 75 bar with knob
- o  $Q_{\text{max.}} 45 \text{ l/min.}$



## Pressure gauge

H-150

- o 3 Manometer Mounted on panel
- o Connections with safety connectors on the backside
- o Indication range 0 - 100 bar (other ranges available on request)



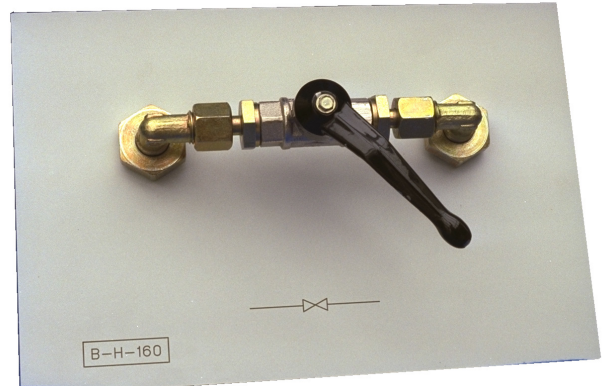
Description

Order - No.

## Shut-off valve

H-160

- o Mounted on panel
- o Connections with safety connectors on the backside
- o swivelling, 90 degrees variably
- o Pressure up to 100 bar
- o  $Q_{max.} = 50 \text{ l / min}$



## Check valve

H-300

- o Connections with safety connectors for tube
- o Openings pressure = 0,5 bar
- o  $p_{max.} = 1 - 400 \text{ bar}$
- o  $Q_{max.} = 25 \text{ l / min.}$



## Check valve

H-320

- o Pilot operated
- o Connections with safety connectors for tube
- o Openings pressure = 5 bar
- o  $p_{max.} = 2.8 - 400 \text{ bar}$
- o  $Q_{max.} = 30 \text{ l / min.}$



## Check valve

H-340

- o Connections with safety connectors for tube
- o Openings pressure = 4 bar
- o  $p_{max.} = 4 - 400 \text{ bar}$
- o  $Q_{max.} = 25 \text{ l / min.}$



Description

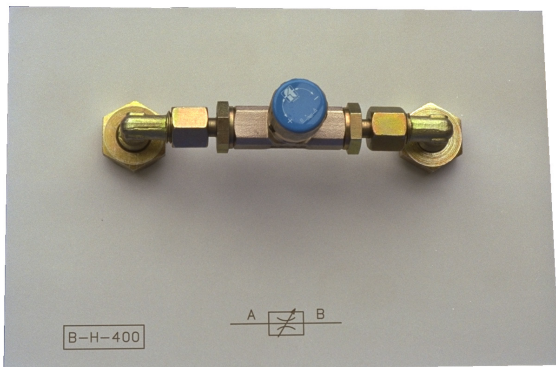
Order - No.



## Differential cylinder

**H-390**

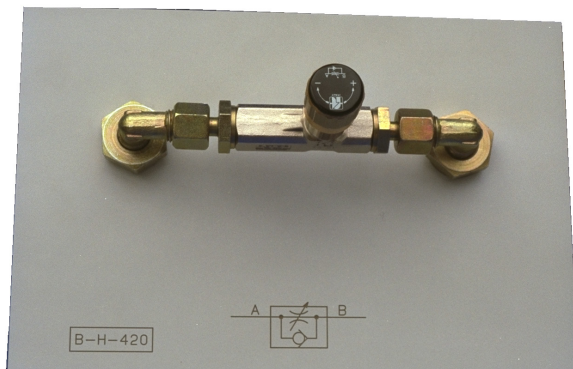
- o Mounted on panel
- o Connections with safety connectors on the backside
- o piston diameter = 25 mm
- o piston rod diameter = 18 mm
- o  $i = 2.04$
- o very good **load and indication**
- o Stroke = 400 mm
- o Nominal pressure = 160 bar
- o max. operating pressure = 250 bar
- o also with 200mm stroke and 12 mm rod ratio = 1:1.7



## Throttle valve

**H-400**

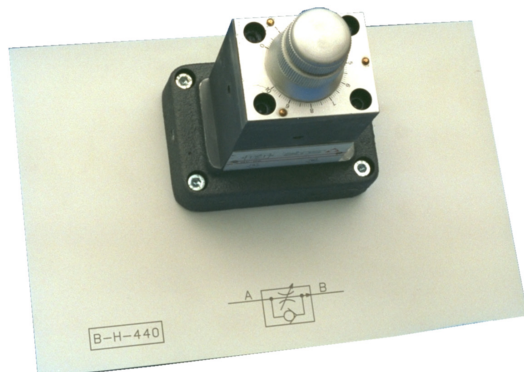
- o Mounted on panel
- o Connections with safety connectors on the backside
- o variably adjustable
- o Pressure range up to 0 - 250 bar
- o  $Q_{max.} = 10 \text{ l / min.}$



## Throttle check valve

**H-420**

- o Mounted on panel
- o Connections with safety connectors on the backside
- o variably adjustable
- o Pressure range up to 0 - 250 bar
- o  $Q_{max.} = 10 \text{ l / min.}$



## 2-Way flow control valve

**H-440**

- o Mounted on panel
- o Connections with safety connectors on the backside
- o variably adjustable: 0 to 6 l/min.
- o Pressure range up to 250 bar
- o Minimal pressure difference = 8 bar

## Description

## Order - No.

### Pressure reducing valve

**H-460**

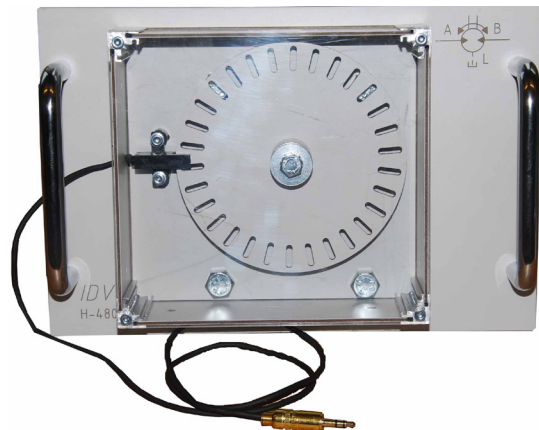
- o Mounted on panel
- o Connections with safety connectors on the backside
- o 3-Way model
- o Pressure range 7 to 100 bar
- o  $Q_{max.} = 45 \text{ l / min.}$
- o Operating pressure till 350 bar



### Hydromotor

**H-480**

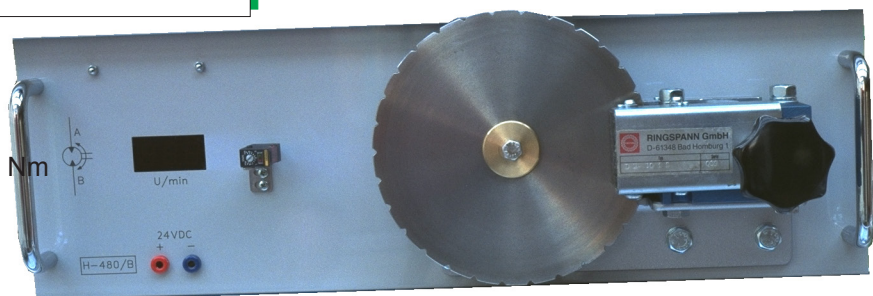
- o Mounted on panel
- o Connections with safety connectors on the backside
- o with connection for oil leak
- o with extra digital tachometer (3-digits)
- o Volume =  $8 \text{ cm}^3 / \text{U}$
- o Operating pressure till 230 bar



### Hydromotor

**H-480/B**

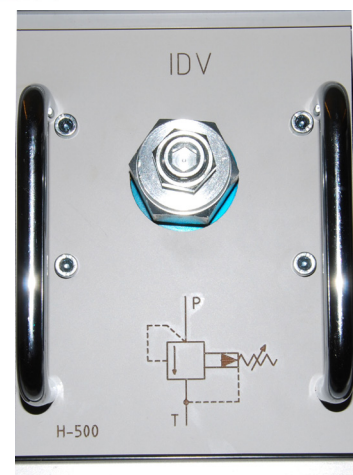
- o same as H-480
- o however with disk brake
- o manually adjustable till 20 Nm
- o Steeldisk
- o max. torque: 10 Nm

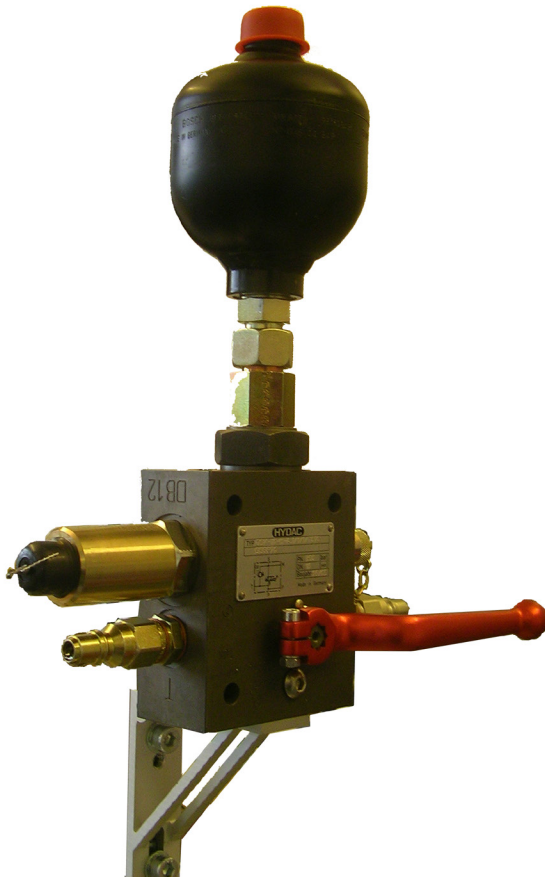


### Pressure relief valve, pilot

**H-500**

- o pilot operated
- o Mounted on panel
- o Connections with safety connectors on the backside
- o variably adjustable pressure = 7 - 105 bar
- o  $Q_{max.} = 230 \text{ l / min.}$





Description

Order - No.

## Hydror accumulator

**H-540**

- o For mounting on a bench (H-045, H-050)
- o Connections with safety connectors
- o Mini-measuring connector for gauge
- o max. operating pressure = 70 bar
- o  $V = 320 \text{ cm}^3$
- o  $N_2$ -Fill pressure = 20 bar
- o Safety device with seal pressure relief valve (70 bar) and 3/2-way valve for emergency OFF and energy ON

## Accumulator filling device

**H-560**

- o in transport case
- o with connections for Hydroreservoir and nitrogen bottle
- o max. operating pressure = 210 bar
- o Controlmanometer till 250 bar
- o Exhaust valve



## Nitrogen bottle

**H-570**

- o Filling with 1000 l Nitrogen (standard pressure)
- o 5 l with filling pressure 200 bar
- o Control pressure 300 bar



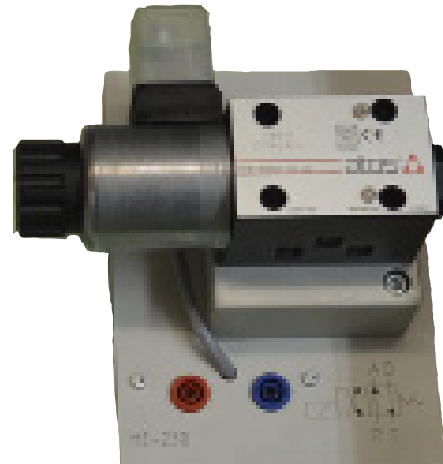
Description

Order - No.

## 4/2 - Way solenoid valve

HE-230

- o Mounted on panel
- o Connections with safety connectors on the backside
- o direct operated
- o single pilot valve
- o Coil 24 VDC / 1.4 A
- o max. allowed pressure on connections P-A-B: 320 bar
- o max. allowed pressure on connection T: 100 bar
- o  $Q_{max.} = 50 \text{ l / min. (P to A, P to B)}$
- o  $Q_{max.} = 75 \text{ l / min. (A to T, B to T)}$



## 4/3 - Way solenoid valve

HE-5X0

- o different functions available (see list below)
- o Mounted on panel
- o Connections with safety connectors on the backside
- o direct operated
- o double pilot valve, center position with spring
- o Coil 24 VDC / 1.4 A
- o max. allowed pressure on connections P-A-B: 320 bar
- o max. allowed pressure on connection T: 100 bar
- o  $Q_{max.} = 50 \text{ l / min. (P to A, P to B)}$
- o  $Q_{max.} = 75 \text{ l / min. (A to T, B to T)}$



HE - 500	in center position all connections closed
HE - 510	Floating neutral position (Tandem)
HE - 520	in center position A, B and T connected
HE - 530	Differential - function
HE - 540	Open center

All this described function's are also possible with Hand (Manual) Actuation.

Order No.: HH-230 has the Same function As HE-230, .....

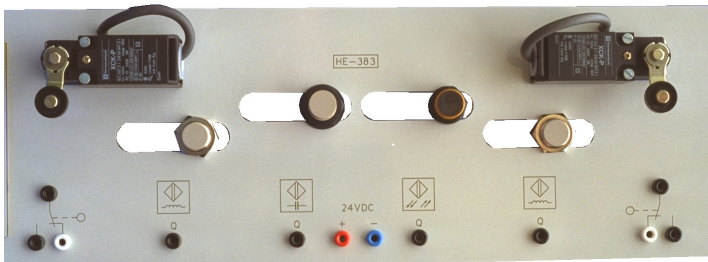


It's also possible to deliver this way-valve's with manually operated (**Hand lever**) with the same functions. For example:  
HH-510 is Manually operated valve with neutral mid position!

Description

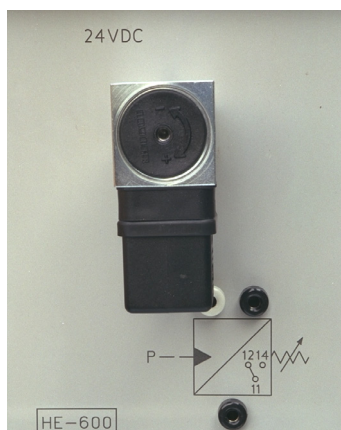
Order - No.

## Sensor / Limit switch - Modul HE-383



- o 2 limit switches / each 1 changeover
- o each 1 Sensor: capacitive, inductive and optical
- o to put behind the rod from the cylinder over the totality stroke
- o 24 VDC
- o Current: Limit switch: 3 A
- o Sensor, capacitive: 200 mA
- o Sensor, inductive: 100 mA
- o Sensor, optical: 100 mA

single sensors also available!



## Pressure switch

HE-600

- o Mounted on panel
- o Connections with safety connectors on the backside
- o 1 changeover / max. contact current till 3 A
- o Pressure adjustment range 8 till 160 bar (adjustable with knob, lockable)
- o Hysteresis 6 till 11 bar
- o Electrical lifetime 1.000.000 operations
- o Mechanical lifetime 10.000.000 operations



## Pressure switch with digital display

HE-620

- o Mounted on panel
- o Measuring connector on the backside
- o 1 outputs (pnp), programmable as NC or NO - contact with 2 functions (Hysteresis, Window)
- o max. contact current till 80 mA (12 ... 24 VDC)
- o Pressure adjustment range 1 till 100 bar (programmable setting mode, lockable)
- o Hysteresis adjustable for both output's seperatly from 0% till 97%
- o Electrical lifetime 100.000.000 operations



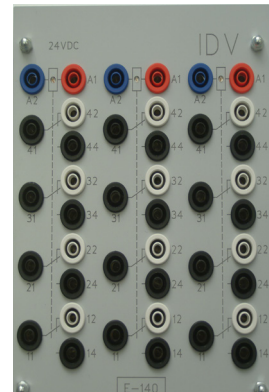
Description

Order - No.

## Relays module

**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 relay module

**E-155**

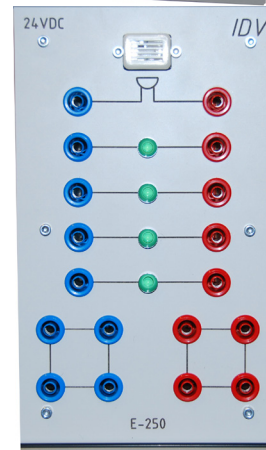
- o Time relay module with 6 functions as followed:  
ON-delay; ON-delay-pulse, Pulse;  
ON/OFF-delay;  
OFF-delay;  
Pulse One cycle
- o 6 time area's from 0.1s to 24 h adjustable
- o 1 changeover, max. contact load: 1 A
- o 24 VDC / 75 mA supply
- o LED - Function indication
- o safety plugs
- o System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



## Electrical indicator output

**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 indicator 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



## Trainingsequipment

## Digital measuring



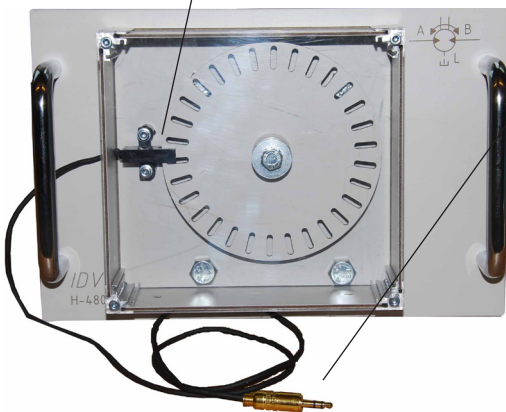
### Description

### Order - No.

- o Integrated 24 VDC Power supply with display for rotation of the Hydro-Motor and with volume flow measurement device including analogues Output signal

All included, not extra cost's!!

only one cable to connect the Hydro-Motor with the display



### Hydromotor with q-Meter

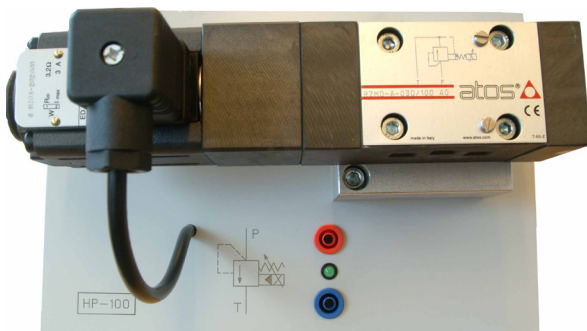
**H-480**

- o Mounted on panel
- o Connections with safety connectors on the backside
- o with connection for oil leak
- o integrated digital tachometer (3-digits)
- o integrated digital Flow-meter
- o Volume = 12 cm<sup>3</sup> / U
- o Operating pressure till 230 bar

for volume flow measurement, you can use the Hydro-Motor!!

## Trainingsequipment

## Proportional Hydraulics



### Pressure relief valve

**HP-100**

- o proportional pressure relief valve
- o Mounted on panel
- o Connections with safety connectors on the backside
- o pilot operated
- o operating pressure 5 till 100 bar
- o max. operating pressure adjustable with knob
- o  $Q_{max} = 12 \text{ l / min.}$
- o Coil 12 VDC / 0,1 till 1,5 A
- o suitable regulator: HP-150

# Trainingsequipment Proportional Hydraulics

## Control amplifier

**HP-150**

- o suitable regulator for HP-100
- o 1-channel
- o Mounted on panel
- o Voltage supply 24 VDC
- o Signal voltage 5 VDC
- o Regulation by command value, its coming from one of the six potentiometer from the command plate (HP-375)
- o Ramp, adjustable till 5 sec. for complete change of scheduled value
- o When delivered adjusted with HP-100



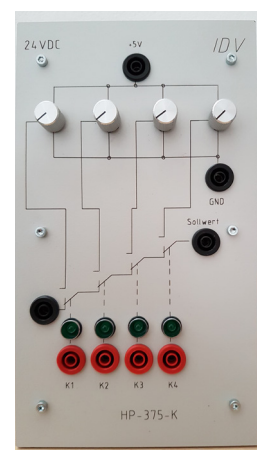
**HP-375**

**HP-375-K**

## Command value plate

**HP-375**

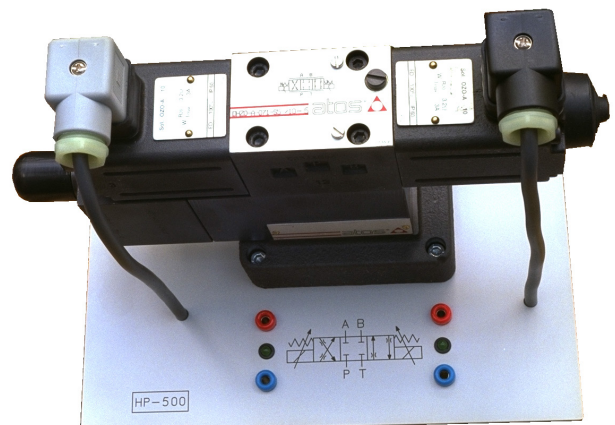
- o suitable command plate for HP-150 and HP-580
- o Mounted on panel
- o Signal voltage comes from the choosed amplifier
- o Six potentiometers on the plate
- Also: -K: with 4 Potentiometer with integrated calling relays HP-375-K



## 4/3-Way valve

**HP-500**

- o proportional 4/3-valve
- o Mounted on panel
- o Connections with safety connectors on the backside
- o Operating pressure till 350 bar
- o  $Q_{max.} = 40 \text{ l / min.}$
- o Coil 12 VDC / 0,1 till 2,2 A
- o suitable regulator: HP-580



## Control amplifier

**HP-580**

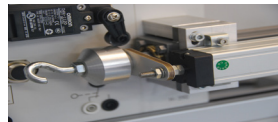
- o suitable regulator for HP-500
- o 2-channel
- o Mounted on panel
- o Voltage supply 24 VDC / 50 Watt
- o Signal voltage 5 VDC, 0 till 2,4 A
- o Regulation by command value, its coming from one of the six potentiometer from the command plate (HP-375)
- o Ramp, adjustable till 5 sec. for complete change of scheduled value
- o When delivered adjusted with HP-500



## Trainingsequipment      Servo Hydraulics

Description

Order - No.



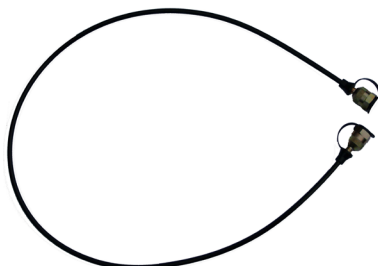
### Way-Measuring for Cylinder      HS-390

- o to connect with H-390
- o Sensor resolution < 0,01 mm
- o lineare accuracy till  $\pm 0,05$  %
- o max. speed of the sensor till 4 m/s
- o Stroke 400 mm
- o incl. mounting device for the Cylinder

### PID-close loop regulator      HS-600

- o for Position controlling of the Hydraulic cylinder
- o 24 VDC
- o Set value-and Actual value on the display
- o Two analogues Inputs for Set-and Actual value
- o One analogues Output 0-5V as Setting signal
- o Two digital Outputs for:  
Actual value to big / to small

## Accessories for Hydraulics / Electrohydraulics



### Hydro tube      H-060 / H-065

- o flexible hydraulic tube
- o A safety coupling on both sides for quick connect
- o integrated pressure eliminator
- o 800 mm long (H-065)
- o 1.100 mm long (H-060)
- o Operating pressure 0 - 400 bar

### Hydro tube      H-062

- o same as H-060
- o with T-distributor for measuring tube

### Mini-measuring-tube      H-067

- o with two screw-connectors
- o integrated check valve's on both sides
- o 1.100 mm long
- o to connect to the gauges and pressure switches
- o Operating pressure: 630 bar



# Accessories for Hydraulics / Electrohydraulics

Description

Order - No.

## T-Distributor

H-070

- o Two safety connectors
- o One safety coupling
- o integrated pressure eliminator
- o Operating pressure 250 bar
- o Burst pressure 1.400 bar

## Cross-Distributor

H-080

- o Three safety connectors
- o One safety coupling
- o integrated pressure eliminator
- o Operating pressure 250 bar
- o Burst pressure 1.400 bar

## Stopwatch

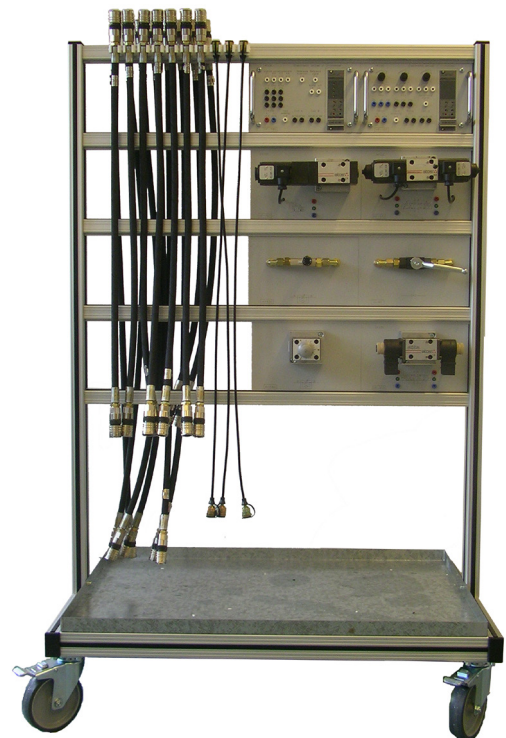
H-095

- o Digital Stopwatch
- o Used together with measuring glass (2,5l) for volume flow measurements

## Equipment-tray

H-040

- o 20 holders for tube's
- o 4 installation rows für each 4 devices
- o Oil collect device
- o 4 steering wheels, 2 with a brake
- o Dimensions: app. 900 x 600 x 1400 mm (L x D x H)
- o Load ca. 30 kg
- o Delivering without components



### Other parts:

We also offer a special valves (for example for differential circuit: 4/3-Way valve, in center position P is connected with A and B) etc.

All offered electric actuated way valves are also available with handle (according to BIBB requirements not needed).

# New Concept BIBB '16

According to the new concept '92 the exercises are summarized in groups. As a result of this it is possible to create lessons and exercises which are important for specific skills.

Undermentioned table shows the subdivision:

<u>Exercise group</u>		<u>Number of exercises</u>
<b>Hydraulics - Introduction</b>		<b>1</b>
<b>Exercise group A</b>	Hydropump; Pressure relief valve Filter; Cylinder	<b>1</b>
<b>Exercise group B</b>	3/2-Way valve; 4/2-Way valve 4/3-Way valve	<b>2</b>
<b>Exercise group C</b>	Check valve; pilot operated check valve	<b>1</b>
<b>Exercise group D</b>	Throttle valve; 2-Way flow control valve Combinations in the circuit; Throttle check valve	<b>3</b>
<b>Exercise group E</b>	pressure relief valve, direct operated; pressure relief valve, pilot operated; Pressure reducing valve; Pressure switch	<b>4</b>
<b>Exercise group F</b>	Hydro-Reservoir; Reservoir-circuits Practical examples	<b>1</b>
<b>Exercise group G</b>	Differential-circuit; Motor-circuit Fast-Slow-Motion-circuits; floating neutral circuits	<b>4</b>
<b>Exercise group H</b>	Commissioning; Inspection; maintenance; Trouble shooting; Overhaul	<b>1</b>
<b>Exercise group Z</b>	Fixing a weight; same slow-motion; neutral floatings; Electrohydraulics	<b>3</b>



## Exercise groups acc. BIBB

The following overall view shows, which utensil a needs in which groups and how much:

\*: The Pressure switches HE - 600 and HE - 620 only one times integrated. You can choose in the exercise group E: HE-600 oder HE-620. Wish you to educate later also in Electrohydraulics, than it is better to choose the modern new pressure switch HE-620. This is also a cheaper solution, because in exercise group Z we need a second pressure switch and this is also included in HE-620.

### Exercise group

Description			A	B	C	D	E	F	G	Z	PROP
01	Trainings-system	H-050/H-045									
02	Hydro-tube, 1.100 mm lenght	H-060		1	2						
03	Hydro-tube, with T-distributor for measuring	H-062	3								
04	Hydro-tube, 800 mm lang	H-065			3		1	1		4	
05	Mini-measuring tube, 1.000 mm lenght	H-067	3								
06	T-Distributor	H-070				1					
07	Cross-Distributor	H-080				1					
08	Stop watch, digital	H-095	1								
09	Pressure relief valve	H-120				1					
10	Manometer, 3 pieces integrated	H-150		1							
11	Shut-off valve	H-160	1								
12	Check valve	H-300				1				2	
13	Check valve, pilot operated	H-320			1						
14	Check valve, opening pressure 4 bar	H-340							1		
15	Differential cylinder	H-390	1								
16	Throttle valve	H-400				1					
17	Throttle check valve	H-420	1								
18	2-Way flow control valve	H-440				1					
19	3-Way pressure reducing valve	H-460					1				
20	Hydromotor with tachometer	H-480							1		
21	pressure relief valve, pilot operated	H-500					1				
22	Hydroreservoir with safety block	H-540						1			
23	Filling device	H-560						1			
24	Nitrogen bottle	H-570						1			
25	4/2-Way solenoid valve	HE-230	1		1						
26	Sensor / Limitswitch modul	HE-383								1	
27	4/3-Way solenoid valve (NC)	HE-500			1						
28	4/3-Way solenoid valve (neutral floating)	HE-510		1							
29	4/3-Way solenoid valve(A,B,T connected)	HE-520								1	
30	Pressure switch *	HE-600					1				
31	Pressure switch, digital *	HE-620								1	
32	Relay modul, 2 Relays each 4 changeover	E-140					1			1	
33	Time-Relay, delay-on, delay-off,	E-155								1	
34	Electrical indicator output incl. distributor	E-250					1				
35	Electrical indicator input, incl. distributor	E-260	1								
36	Universal cabel, 250 mm, red	E-502.R	5							17	
37	Universal cabel, 500 mm, red	E-505.R	4							7	
38	Universal cabel, 250 mm, blue	E-502.B								7	
39	Universal cabel, 500 mm, blue	E-505.B	3								
40	Pressure relief valve, proportional	HP-100									1
41	Amplifier, 1-channel	HP-150									1
42	Command value card	HP-375									1
43	4/3-Way valve, proportional	HP-500									1
44	Amplifier, 2-channel	HP-580									1

# Equipment Sets acc. BIBB mixed (optimized) Hydraulic and Electrohydraulic

- o for exercisegroups A - D in Hydraulics

## Basic equipmentset

**H-001**

- o Comprised in accordance with actual equipment list

- o for exercisegroups E - H in Hydraulics

## Advanced set

**H-002**

- o Comprised in accordance with actual equipment list  
(Pressure switch HE-600)

- o for exercisegroups A - H in Hydraulics

## Complete set A - H

**H-003/\***

- o Comprised in accordance with actual equipment list  
(Without expansion: HE-600 is included  
/D: HE-620 is included)

- o for exercisegroups Z in Hydraulics

## Extension set

**H-004/\***

- o Comprised in accordance with actual equipment list  
(Without expansion: HE-600 is included  
/D: not pressure switch included, because it is included in H-003/D)

- o for exercisegroup Proportional hydraulics

## Proportional equipment set

**H-005**

- o Comprised in accordance with actual equipment list

**The equipment sets are inclusive electro hydraulic way valves. Suitable control equipment such as cables, tubes and T-& cross distributors.**



## Stand alone Sets acc. BIBB Hydraulic

- o this set's are perfect styled for e.c. Basic hydraulics or Basic electrohydraulics. Because the first set's are used at any time the standard devices (e.c. Cylinder and valves's) again.

### Basic equipment set Hydraulic H-010

Item	Description	Order-No.	Qty.
01	Hydro-tube, 1.100 mm lang	H-060	3
02	Hydro-tube, 1.100 mm with T-distributor for measuring	H-062	3
03	Hydro-tube, 800 mm lang	H-065	3
04	Mini-measuring tube, 1.000 mm lenght	H-067	3
05	T-Distributor	H-070	1
06	Cross-Distributor	H-080	1
07	Stop watch, digital	H-095	1
08	Pressure relief valve	H-120	1
09	pressure gauge, 3 pieces integrated	H-150	1
10	Shut-off valve	H-160	1
11	Check valve	H-300	1
12	Check valve, pilot operated	H-320	1
13	Differential cylinder	H-390	1
14	Throttle valve	H-400	1
15	Throttle check valve	H-420	1
16	2-Way flow control valve	H-440	1
17	4/2-Way-valve, handle operated	HH-230	2
18	4/3-Way-valve (NC), handle operated	HH-500	1
19	4/3-Way-valve (neutral floating), handle operated	HH-510	1

### Advanced equipment set Hydraulic H-020

Item	Description	Order-No.	Qty.
03	Hydro-tube, 800 mm lang	H-065	2
12	Check valve, opening pressure 4 bar	H-340	1
17	3-Way pressure reducing valve	H-460	1
18	Hydromotor with tachometer	H-480	1
19	pressure relief valve, pilot operated	H-500	1
20	Hydroreservoir with safety block	H-540	1
21	Filling device	H-560	1
22	Nitrogen bottle	H-570	1

## Stand alone Sets acc. BIBB Hydraulic

### Complete equipment set Hydraulic H-030

Item	Description	Order-No.	Qty.
01	Hydro-tube, 1.100 mm lang	H-060	3
02	Hydro-tube, 1.100 mm with T-distributor for measuring	H-062	3
03	Hydro-tube, 800 mm lang	H-065	5
04	Mini-measuring tube, 1.000 mm lenght	H-067	3
05	T-Distributor	H-070	1
06	Cross-Distributor	H-080	1
07	Stop watch, digital	H-095	1
08	Pressure relief valve	H-120	1
09	Manometer, 3 pieces integrated	H-150	1
10	Shut-off valve	H-160	1
11	Check valve	H-300	1
12	Check valve, pilot operated	H-320	1
13	Check valve, opening pressure 4 bar	H-340	1
14	Differential cylinder	H-390	1
15	Throttle valve	H-400	1
16	Throttle check valve	H-420	1
17	2-Way flow control valve	H-440	1
18	3-Way pressure reducing valve	H-460	1
19	Hydromotor with tachometer	H-480	1
20	pressure relief valve, pilot operated	H-500	1
21	Hydroreservoir with safety block	H-540	1
22	Filling device	H-560	1
23	4/2-Way-valve, handle operated	HH-230	2
24	4/3-Way-valve (NC), handle operated	HH-500	1
25	4/3-Way-valve (neutral floating), handle operated	HH-510	1

## Stand alone Sets acc. BIBB Electro - Hydraulic

### Basic equipment set Electro-Hydraulic HE-040

Item	Description	Order-No.	Qty.
01	Hydro-tube, 1.100 mm lang	H-060	3
02	Hydro-tube, 1.100 mm with T-distributor for measuring	H-062	3
03	Hydro-tube, 800 mm lang	H-065	3
04	Mini-measuring tube, 1.000 mm lenght	H-067	3
05	T-Distributor	H-070	1
06	Cross-Distributor	H-080	1
07	Stop watch, digital	H-095	1
08	Pressure relief valve	H-120	1
09	pressure gauge, 3 pieces integrated	H-150	1
10	Shut-off valve	H-160	1
11	Check valve	H-300	1
12	Check valve, pilot operated	H-320	1
13	Differential cylinder	H-380	1
14	Throttle valve	H-400	1
15	Throttle check valve	H-420	1
16	2-Way flow control valve	H-440	1
17	4/2-Way-solenoid valve	HE-230	2
18	4/3-Way-solenoid valve (NC),	HE-500	1
19	4/3-Way-solenoid valve (neutral floating),	HE-510	1
20	Electrical indicator input incl. distributor	E-260	1
21	Universal cabel, 250 mm, red	E-502.R	5
22	Universal cabel, 500 mm, red	E-505.R	4
23	Universal cable, 250 mm, blue	E-502.B	3

### Advanced equipment set Electro-Hydraulic HE-050

Item	Description	Order-No.	Qty.
01	Hydro-tube, 800 mm lang	H-065	4
02	Check valve	H-300	2
03	Sensor / Limitswitch modul	HE-382	1
04	4/3-Way solenoid valve(A,B,T connected)	HE-520	1
05	Hydromotor with tachometer and q-meter	H-480/q	1
06	Hydroreservoir with safety block	H-540	1
07	Filling device	H-560	1
08	Pressure switch	HE-600	1
09	Pressure switch, digital	HE-620	1
10	Relay modul, 2 Relays each 4 changeover	E-140	3
11	Electrical indicator output incl. distributor	E-250	1
12	Time-relay (combination)	E-155	1
13	Counter, electrically	E-270	1
14	Universal cabel, 250 mm, red	E-502.R	17
15	Universal cabel, 500 mm, red	E-505.R	7
16	Universal cabel, 500 mm, blue	E-505.B	3
17	Universal cable, 250 mm, blue	E-502.B	7

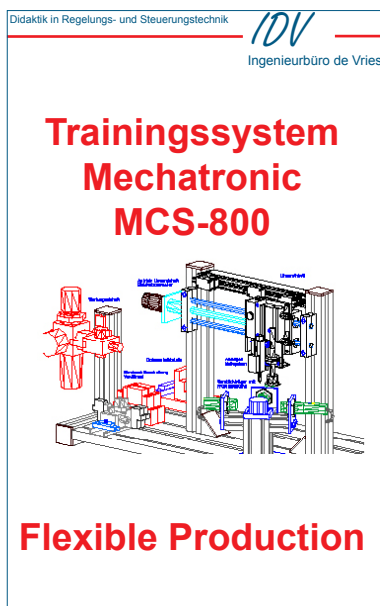
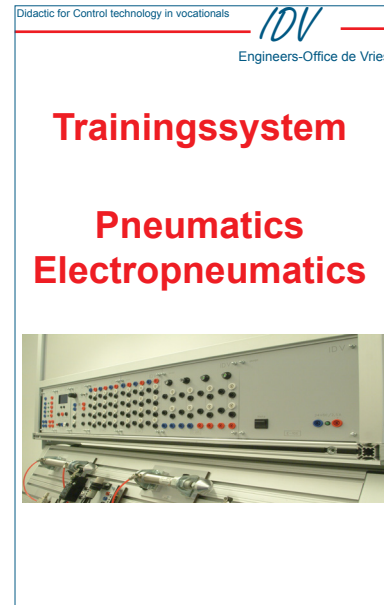
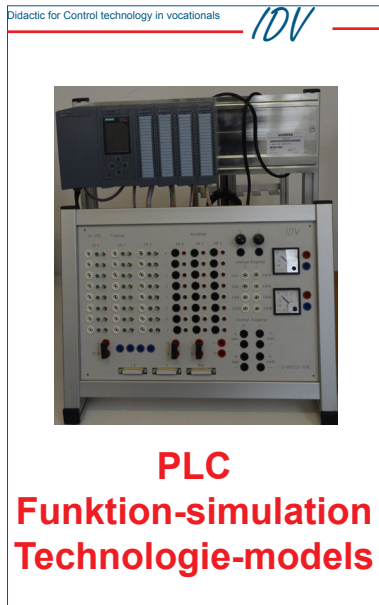


## Stand alone Sets acc. BIBB Electro - Hydraulic

### Complete equipment set Electro-Hydraulic HE-060

Item	Description	Order-No.	Qty.
01	Hydro-tube, 1.100 mm lang	H-060	3
02	Hydro-tube, 1.100 mm with T-distributor for measuring	H-062	3
03	Hydro-tube, 800 mm lang	H-065	4
04	Mini-measuring tube, 1.000 mm lenght	H-067	3
05	T-Distributor	H-070	1
06	Cross-Distributor	H-080	1
07	Stop watch, digital	H-095	1
08	Pressure relief valve	H-120	1
09	pressure gauge, 3 pieces integrated	H-150	1
10	Shut-off valve	H-160	1
11	Check valve	H-300	3
12	Check valve, pilot operated	H-320	1
13	Differential cylinder	H-380	1
14	Throttle valve	H-400	1
15	Throttle check valve	H-420	1
16	2-Way flow control valve	H-440	1
17	Hydromotor with tachometer and q-meter	H-480/q	1
18	Hydroreservoir with safety block	H-540	1
19	Filling device	H-560	1
20	4/2-Way-solenoid valve	HE-230	2
21	4/3-Way-solenoid valve (NC),	HE-500	1
22	4/3-Way-solenoid valve (neutral floating),	HE-510	1
23	4/3-Way solenoid valve(A,B,T connected)	HE-520	1
24	Pressure switch	HE-600	1
25	Pressure switch, digital	HE-620	1
26	Relay modul, 2 Relays each 4 changeover	E-140	3
27	Electrical indicator output incl. distributor	E-250	1
28	Time-relay (combination)	E-155	1
29	Electrical indicator input incl. distributor	E-260	1
30	Counter, electrically	E-270	1
31	Universal cabel, 250 mm, red	E-502.R	22
32	Universal cabel, 500 mm, red	E-505.R	11
33	Universal cable, 250 mm, blue	E-502.B	10
34	Universal cabel, 500 mm, blue	E-505.B	3

## Other catalogues:



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