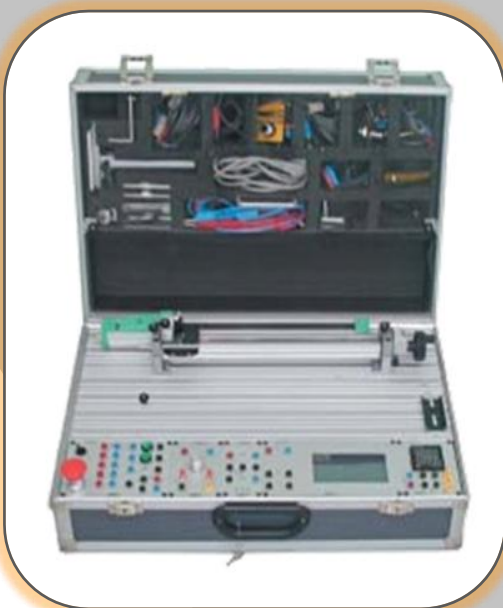





edutechnic

an **HRE HIDRAULIC** trade mark

edu cation in automation **technics**





Taking advantage of its more than 25 years' experience in industrial automation and fluids, HRE Hidraulic S.L. creates training equipment and systems, perfectly **adapted to the requirements of the current industrial needs.**

In continuous search of excellence in **training systems**, HRE Hidraulic is a specialized supplier of technical equipment in the **industrial automation field.**

It offers:

- Practical equipment
- Pedagogical support (teachware)
- Personal attention

Teachers will easily achieve a high quality theoretical and a real base practical education; since the used equipment is technically the same students will handle at the working environment.

HRE Hidraulic S.L.

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<http://www.hre.es>

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Electrically powered hydraulic unit, consisting of:
6 liters transparent tank
0.12 Kw single-phase motor (optionally thriphasic)
Extra-silent gear pump, Q= 0.5 l/min
Pressure relief valve. P max: 10 bar
Pressure gauge: 0-16 bar Stop-Start switch
Quick fit couplings (1P – 2T) Power cable with plug
Tap for inserting bubbles into circulating oil circuit

Oil can with special red coloring



1

Mini-Fluid working panels

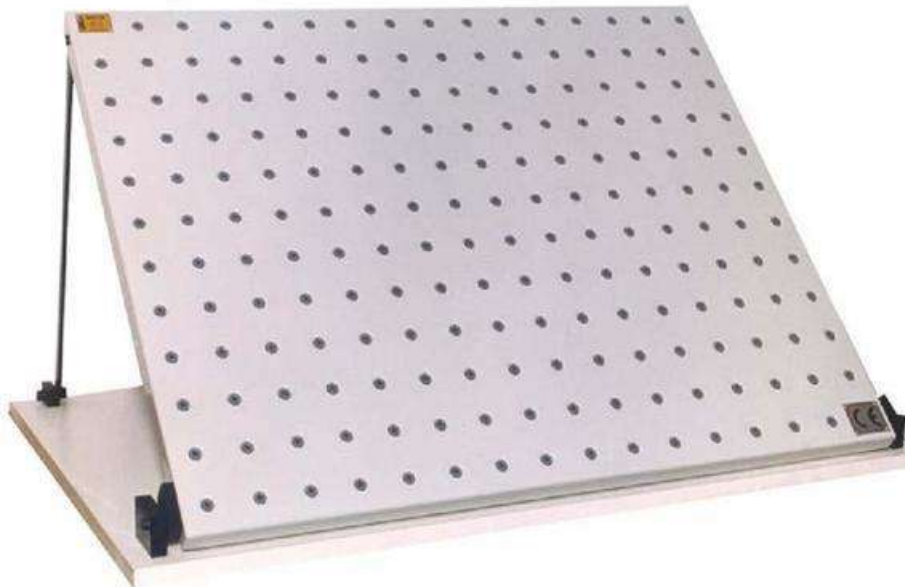


Table top reclining panel 800 x 600

Metal panel, fully plastic coated, dimensions: 800 x 600 mm. With Ø5 mm bushes every 50mm (horizontally and vertically) for quick clamping of hydraulic components without any additional tool.

Screwed to a wooden base covered with beige formica. Size of base: 900 x 600 mm



Table top reclining panel 950 x 1050

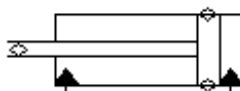
Metal panel, fully plastic coated, panel dimensions: 950 x 1050 mm. With Ø5 mm bushes every 50mm (horizontally and vertically) for quick clamping of hydraulic components without any additional tool.

Screwed to a wooden base covered with beige formica.

Two options:

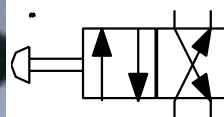
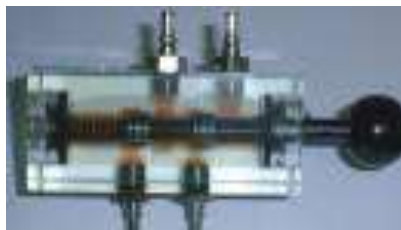
- a) with one working panel
- b) with two working panels

Set of components MINIFLUID level 1



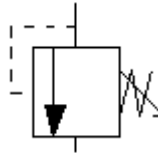
Double effect cylinder

d/e cylinder $\varnothing 20 \times \varnothing 10 \times 58\text{mm}$



Manually actuated 4/2 distributor

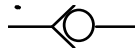
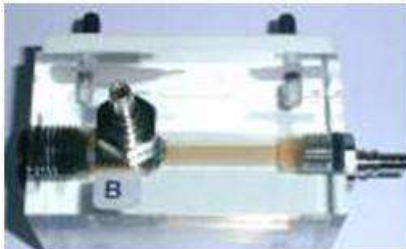
Manually actuated, spring return



Pressure relief valve
Ball valve. Direct control



3 connection divider with pressure gauge
0-10 bar pressure gauge
One female + two male's quick fit connectors



Check valve
Seat check valve



Flow restrictor
Needle flow restrictor,
manual regulation



6 connection divider
6 male quick-fit self-sealing
connectors, size NW4



Set of hoses
6 NW4 x 520 mm length
4 NW4 x 350 mm length
With quick-fit self-sealing female
connectors



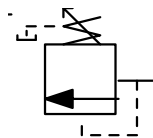
**Oleo-Hydraulics Mini Fluid
handbook**
Theoretic and practice
handbook

** External body made of perspex. Inside components proceeding from real industrial components.*

** No leakage self-sealing quick-fit couplings are used on every component.*

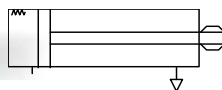
** Every component will be suitable for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically)*

Set of components MINIFLUID level 2



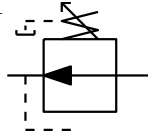
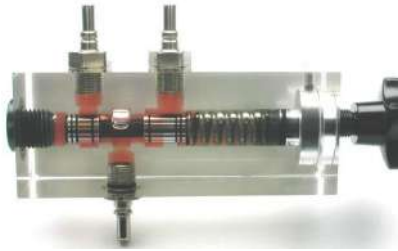
Pressure relief valve with damping

Spool valve with damping
3 way valve. Manual regulation



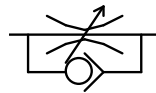
Single effect cylinder

Ø20x Ø10x40 mm
Spring return



Pressure reducing valve

3 way pressure reducing valve. Direct control
Manual regulation



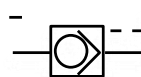
One way flow restrictor

Needle valve with by-pass check valve



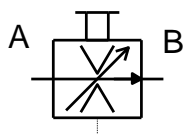
Shut off valve

2/2 valve. Manually actuated



Piloted one way restrictor

Hydraulically actuated check valve



Flow control valve with pressure compensation

Hydrostatic valve incorporated. Manual regulation



4 connection divider

3 male + 1 female quick-fit self-sealing connectors, size NW4



Set of hoses

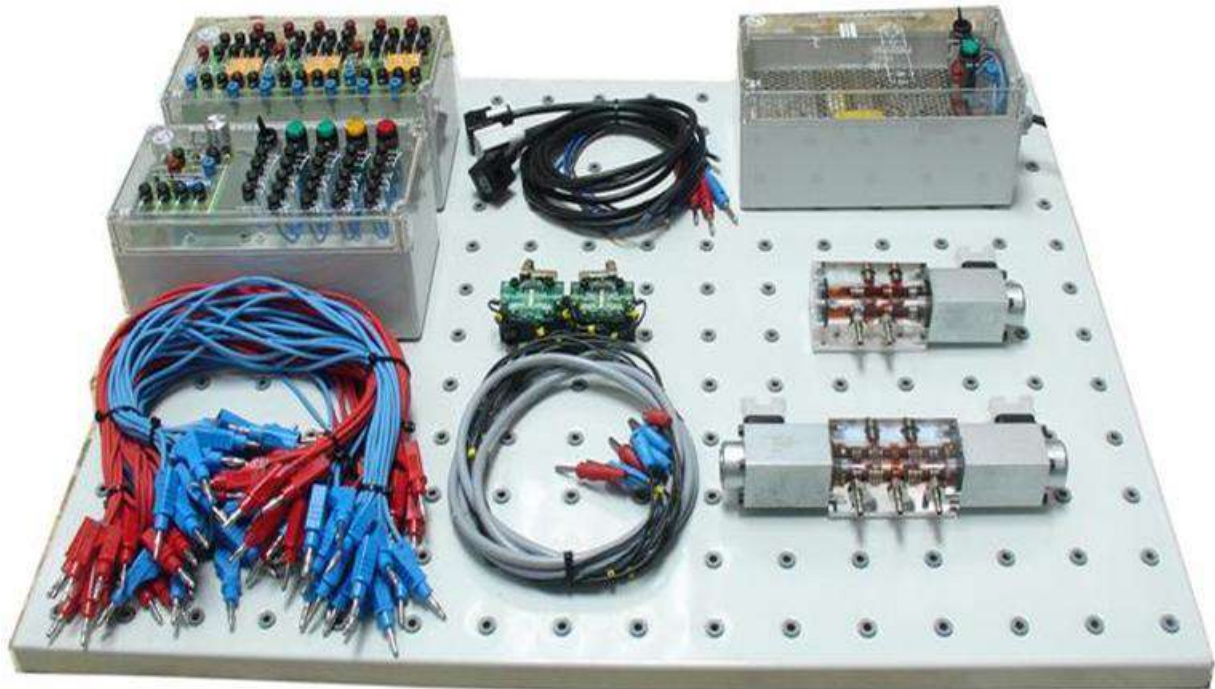
5 NW4 x 520 mm length
With quick-fit self-sealing female connectors

* External body made of perspex. Inside components proceeding from real industrial components.

* No leakage self-sealing quick-fit couplings are used on every component.

*Every component will be suitable for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically)

Set of components MINIFLUID Electro-hydraulics



Electrical power supply unit

220 VAC/24 VDC, I=5 A

Over load and short circuit protection

On/Off switch

On/Off indication lamp

Electronically stabilized

Ø=4 mm quick connectors

Plastic box with printed transparent cover



Control unit

4 push buttons, 2 green, 1 red, 1 yellow, with 1 normally open + 1 normally closed contacts each.
1 switch with 1 normally open + 1 normally closed contacts.

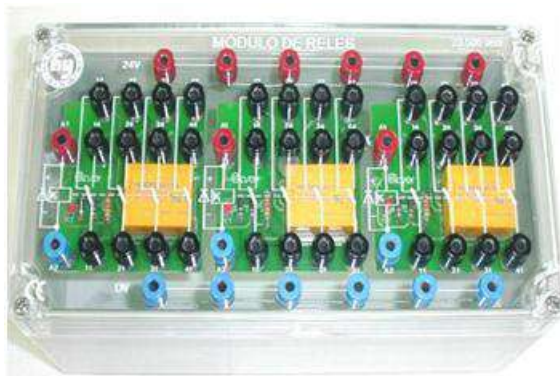
1 connection / disconnection electronic timer, 0 to 6 seconds regulation.

4 spark suppressing diodes.

4 indicator lights, 2 green, 1 red and 1 yellow.

Ø=4 mm quick connectors.

Plastic box with printed transparent cover



Relay unit

3 relay unit with 4 exchanged (switched) contacts each.

On/Off light indicator on every relay solenoid

Spark surprising diode on every solenoid

6 connection divider for positive voltage

6 connection divider for negative voltage de

Ø=4 mm quick connectors

Plastic box with printed transparent cover



Set of connection cables

14 blue cables, 50 mm length with $\varnothing 4$ mm male connectors

14 red cables, 50 mm length with $\varnothing 4$ mm male connectors

8 blue cables, 150 mm length with $\varnothing 4$ mm male connectors

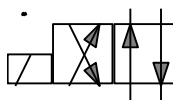
8 red cables, 150 mm length with $\varnothing 4$ mm male connectors



Set of 3 connectors for solenoids

2 grey + 1 black

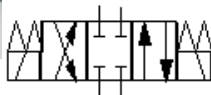
Including solenoid 2P+G connector, on/off indicator lamp, cable and male $\varnothing 4$ mm quick connectors



4/2 solenoid valve

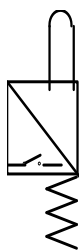
Spring return

24VDC solenoid 2P+G



4/3 solenoid valve

4/3 valve, spring centered.
A, B, P y T closed in central
position. 24 VDC solenoids



Set of two roller limit switches

1 normally closed + 1 normally
opened contacts
Transparent body
Ø=4 mm female connectors

** External body made of perspex. Inside components proceeding from real industrial components.*

** No leakage self-sealing quick-fit couplings are used on every component.*

** Every component will be suitable for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically)*

Some other MINIFLUID components

Among many others the following components are available.

Ask for any other of your interest if not included in this catalogue



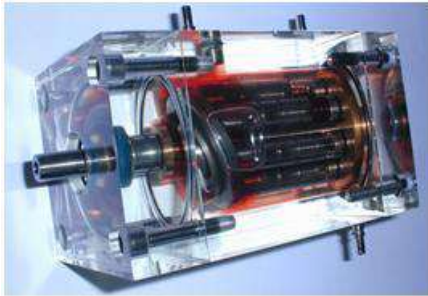
External gear motor



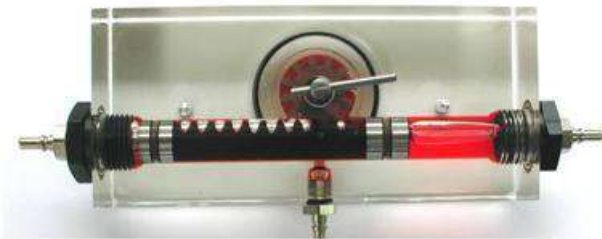
Internal gear motor



Vane motor



Axial piston motor with
reclined plate



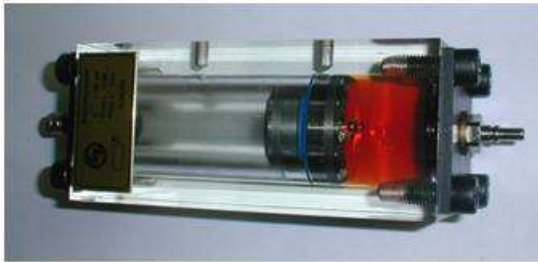
Rack-pinion rotary actuator



Vane rotary actuator



Diaphragm accumulator



Piston accumulator



Bladder accumulator



Double rod cylinder



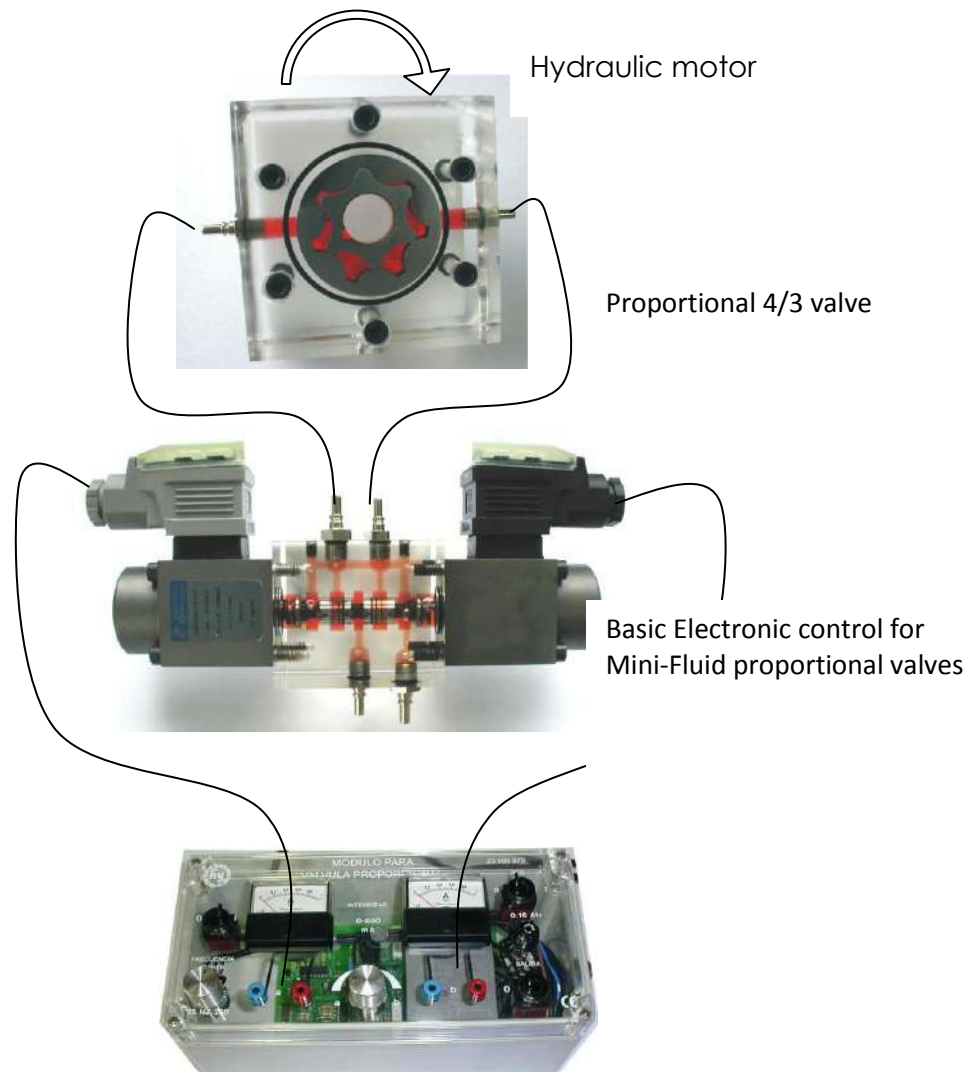
Double effect cylinder with
adjustable end stroke
damping

* External body made of perspex. Inside components proceeding from real industrial components.

* No leakage self-sealing quick-fit couplings are used on every component.

* Every component will be suitable for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically)

PROPORTIONAL HYDRAULICS

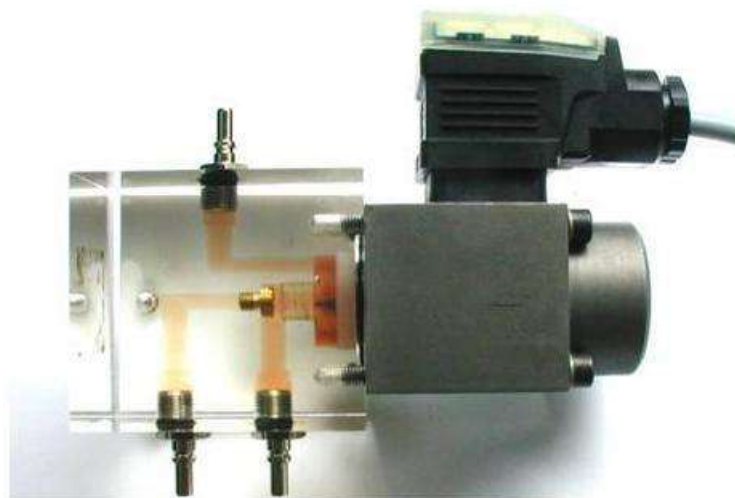
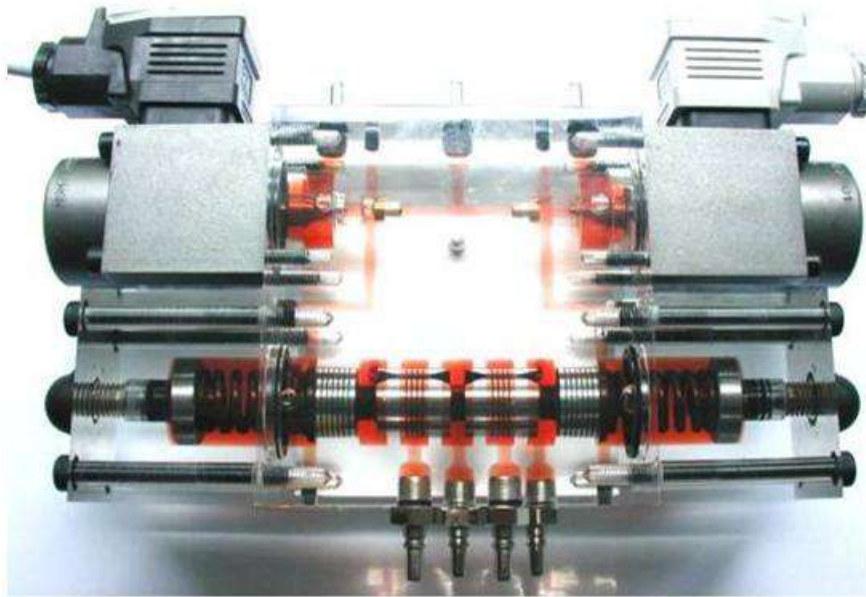


Other available proportional valves:

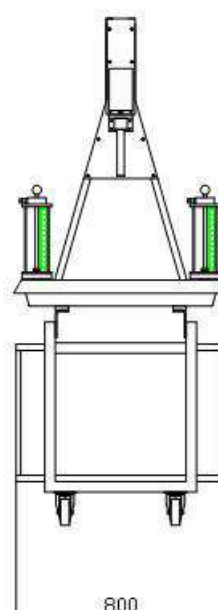
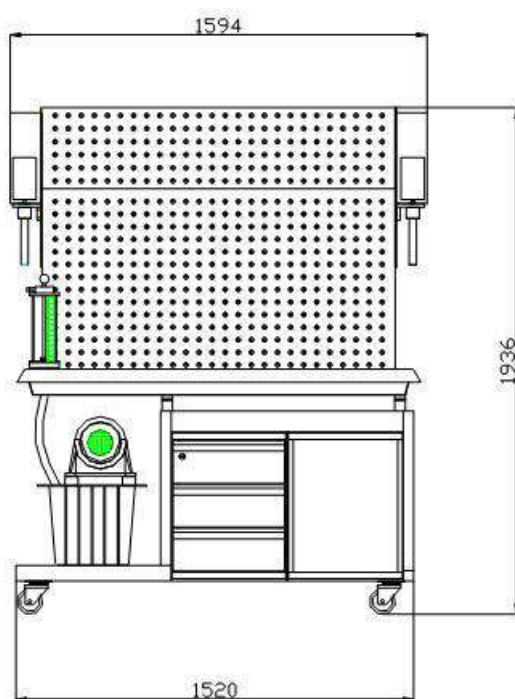
Proportional relief valve

Proportional 4/3 valve. –hydraulically Piloted

Proportional pressure compensated flow regulator



Hydraulic Training Trolley HLA80-2



- 2 Working posts
- Dimensions: 1594 x 850, 1936 mm (high).
- Metal structure with plastic paint covering
- 2 metal working panels of 1350x1050 mm each. With Ø17 mm holes for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically) for clamping hydraulic components without using any additional tool.
- 4 wheels, 2 of them are lockable.
- 3 drawers for each working position, for storing components.
- 2 Pressure connections and 4 return connections at each working side
- 2 paper holders for drawings.
- 2 Emergency buttons to cut down electrical and hydraulic power supply.
- 3 sockets 220 Vac (or 110 Vac) at each side. 2P+T , 16 Amp.
- Just one single-phase plug for the hydraulic power unit and the six electrical sockets.
- 30 litres oil, HLP 46
- Big fixed metal tray with plate grid under the panels to collect any eventual leak of oil. Directly connected to the oil deposit of the hydraulic power unit.

HYDRAULIC POWER UNIT:

- Assembled onto the metal structure, under the panels, incorporate shock absorbers to avoid noise.
- 2 internal gear pumps. 4.5 liters /min each pump.
- Noise level 60 db - 1 meter
- 2 pressure relief valves, oil level viewfinder, air inlet filter, oil return filter, 2 pressure gauges,
- Oil reservoir 30 liters
- Single –phase electric motor 220 V 50Hz (optionally 110 Vca 50 – 60 Hz or triphasic), 1.2 Kw
- On-Off control box with two push buttons and motor overload protection.

Every valve size will be NW6 – Cetop 3.

Hydraulic Training Trolley HLA80-1

Similar to the HLA80-2 but with just one working post.



- 1 Working post
- Dimensions: 1594 x 850, 1936 mm (high).
- Metal structure with plastic paint covering
- 1 metal working panels of 1350x1050 mm. With Ø17 mm holes for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically) for clamping hydraulic components without using any additional tool.
- 4 wheels, 2 of them are lockable.
- 3 drawers and 1 pyramidal plate for storing components
- 2 Pressure connections and 4 return connections

- Paper holders for drawings.
- Emergency buttons to cut down electrical and hydraulic power supply.
- 3 sockets 220 Vac (or 110 Vac). 2P+T , 16 Amp.
- Just one single-phase plug for the hydraulic power unit and the three electrical sockets.
- 30 litres oil, HLP 46
- Big fixed metal tray with plate grid under the panels to collect any eventual leak of oil. Directly connected to the oil deposit of the hydraulic power unit.

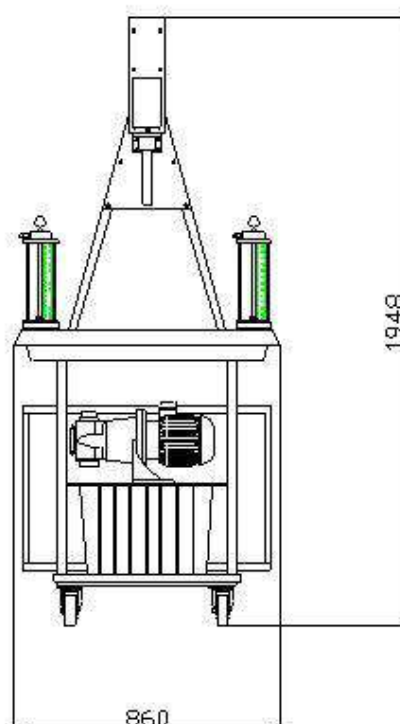
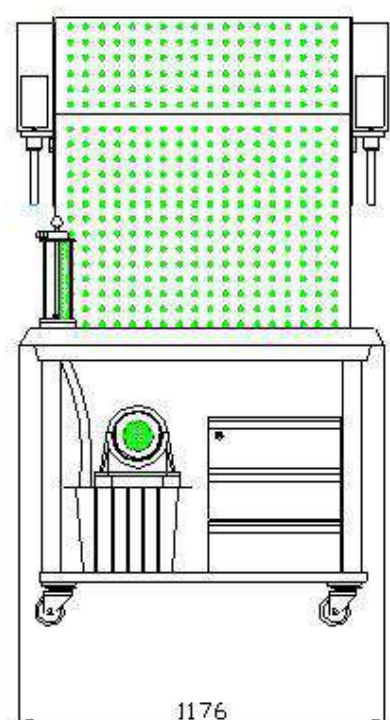
HYDRAULIC POWER UNIT:

- Assembled onto the metal structure, under the panels, shake absorbers to avoid noise.
- Internal gear pumps. 4.5 liters /min.
- Noise level 60 db - 1 meter
- Pressure relief valve, oil level viewfinder, air inlet filter, oil return filter, pressure gauge,
- Oil reservoir 30 liters
- Single –phase electric motor 220 V 50Hz (optionally 110 Vca 50 – 60 Hz or triphasic), 1.2 Kw
- On-Off control box with two push buttons and motor thermal protection.

Every valve size will be NW6 – Cetop 3.

Every hydraulic connection will use anti-leakage quick self-sealing ecologic connectors

Hydraulic Training Trolley HLA70-2



- 2 Working posts
- Dimensions: 1176 x 860, 1948 mm (high).
- Metal structure with plastic paint covering
- 2 metal working panels of 950x1050 mm each. With Ø17 mm holes for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically) for clamping hydraulic components without using any additional tool.
- 4 wheels, 2 of them are lockable.
- 3 drawers, for storing components.
- 1 Pressure connections and 2 return connections at each working side
- 2 paper holders for drawings.
- 2 Emergency buttons to cut down hydraulic power supply.
- 30 liters oil, HLP 46
- Big fixed metal tray with plate grid under the panels to collect any eventual leak of oil. Directly connected to the oil deposit of the hydraulic power unit.

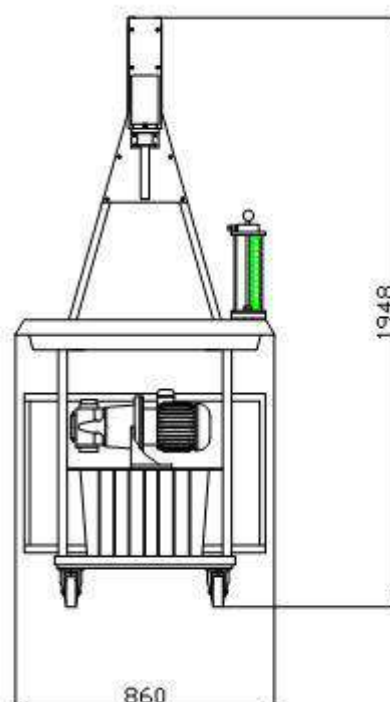
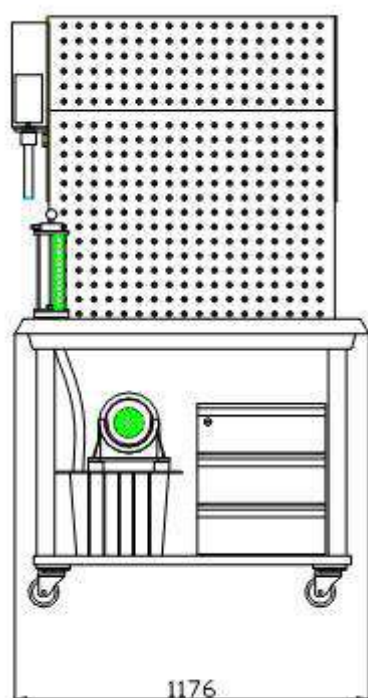
HYDRAULIC POWER UNIT:

- Assembled onto the metal structure, under the pannels, shake absorbers to avoid noise.
- 2 internal gear pumps. 4.5 liters /min each pump.
- Noise level 60 db - 1 meter
- 2 pressure relief valves, oil level viewfinder, air inlet filter, oil return filter, 2 pressure gauges,
- Oil reservoir 30 liters
- Single –phase electric motor 220 V 50Hz (optionally 110 Vca 50 – 60 Hz or triphasic), 1.2 Kw
- On-Off control box with two push buttons and motor thermal protection.

Every valve size will be NW6 – Cetop 3.

Every hydraulic connection will use anti-leakage quick self-sealing and ecologic connectors.

Hydraulic Training Trolley HLA70-1



- 1 Working posts
- Dimensions: 1176 x 860, 1948 mm (high).
- Metal structure with plastic paint covering
- 1 metal working panels of 950x1050 mm. With Ø17 mm holes for working on panels with Ø5 mm bushes every 50mm (horizontally and vertically) for clamping hydraulic components without using any additional tool.
- 4 wheels, 2 of them are lockable.
- 3 drawers, for storing components.
- 1 Pressure connections and 2 return connections
- paper holders for drawings.
- Emergency buttons to cut down hydraulic power supply.
- 30 liters oil, HLP 46
- Big fixed metal tray with plate grid under the panels to collect any eventual leak of oil. Directly connected to the oil deposit of the hydraulic power unit.

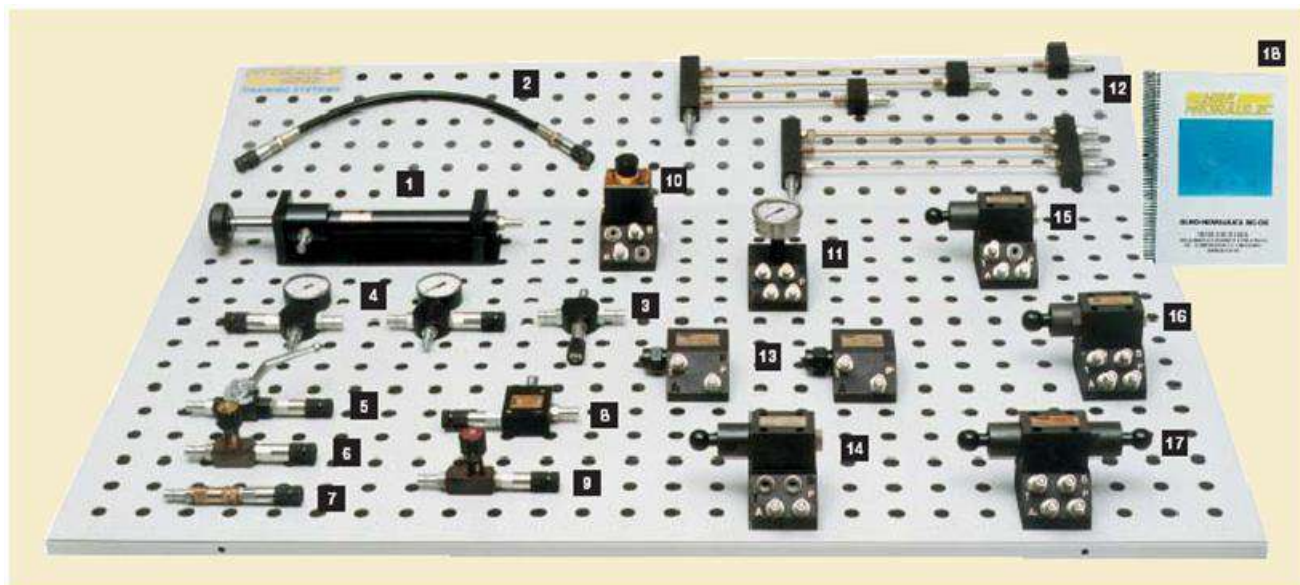
HYDRAULIC POWER UNIT:

- Assembled onto the metal structure, under the pannels, shake absorbers to avoid noise.
- Internal gear pumps. 4.5 liters /min.
- Noise level 60 db - 1 meter
- Pressure relief valve, oil level viewfinder, air inlet filter, oil return filter, pressure gauge,
- Oil reservoir 30 liters
- Single –phase electric motor 220 V 50Hz (optionally 110 Vac 50 – 60 Hz), 1.2 Kw
- On-Off control box with two push buttons and motor thermal protection.

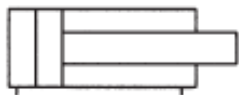
Every valve size will be NW6 – Cetop 3.

Every hydraulic connection will use anti-leakage quick ecologic connectors

Hydraulics level 1



1



Double acting differential cylinder

Ø32 / Ø22, 200 mm

2



Set of 12 hoses with quick female connectors

8 hoses NW6 x 500 mm length

4 hoses NW6 x 1000 mm length

3



Cross distributor

4 connections

4



2 "T" distributor with pressure
gauge 0...60 bar
Glycerin damped

5



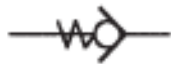
Shut off ball valve

6



Two way flow restrictor

7



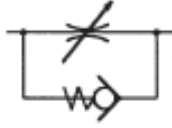
One way restrictor
Non-return valve

8



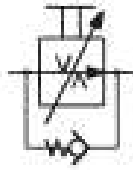
Piloted one way restrictor

9



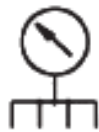
One way flow restrictor

10



Pressure compensated one way flow regulator
On base plate

11



4 connections distributor on manifold with pressure gauge 0...60 bar
Glycerin damped

12

Set of tubes for testing pressure drops

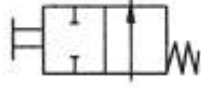
One item with three different diameters and the same length, another item with three different lengths and the same diameter

13



2 pressure relief valve 2...64 bar
On base plate

14



**2/2 manual acting valve,
spring return**
Onto base plate

15



**3/2 manual acting valve,
spring return**
Onto base plate

16



**4/2 manual acting valve,
spring return**
Onto base plate

17



**4/3 manual acting valve,
spring centered**
P-T connected at centered
position, onto base plate

18

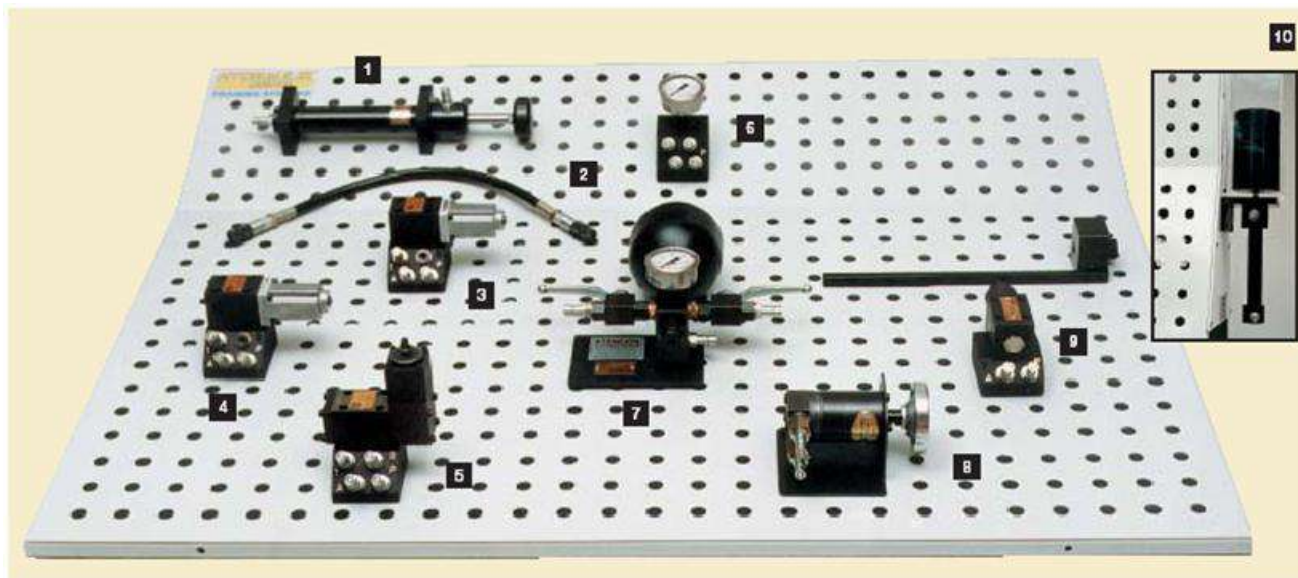
Workbook with theory and practices

Every valve size will be NW6 – Cetop 3.

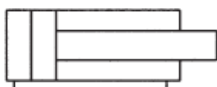
Every hydraulic connection will use anti-leakage quick-fit ecologic connectors

Every component will be suitable for working on panels with Ø17 mm holes every 50mm (horizontally and vertically).

Hydraulics level 2



1



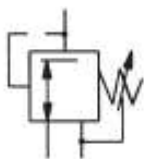
Double action cylinder
Ø32 / Ø16 x 200 mm stroke.

2



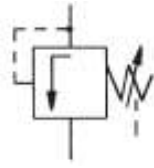
Set of 10 hoses with quick female connectors
8 hoses NW6 x 500 mm length
2 hoses NW6 x 1000 mm length

3



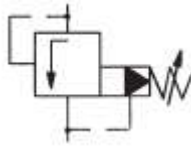
Pressure reducing valve, 3 ways
2...64 bar, onto base plate

4



**Pressure relief valve with
spool and damping**
2...64 bar

5



**Pressure relief valve with
spool, piloted**
2...64 bar

6



**4 connections distributor on
manifold with pressure
gauge 0...60 bar**
Glycerin damped

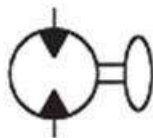
7



**Hydraulic diaphragm
accumulator with T.U.V. safety
certificate**

2 manual valves and a relief
security valve. $V=0,7 \text{ dm}^3$,
Nitrogen pressure 20 bar

8



Hydraulic motor

Gyrator system, with shaft
wheel. $12,5 \text{ cm}^3/\text{rev}$

9



**2/2 valve, ball actuated,
spring return**

With acting cam for Ø32
cylinder rod

10

Counter-weight 30 Kg

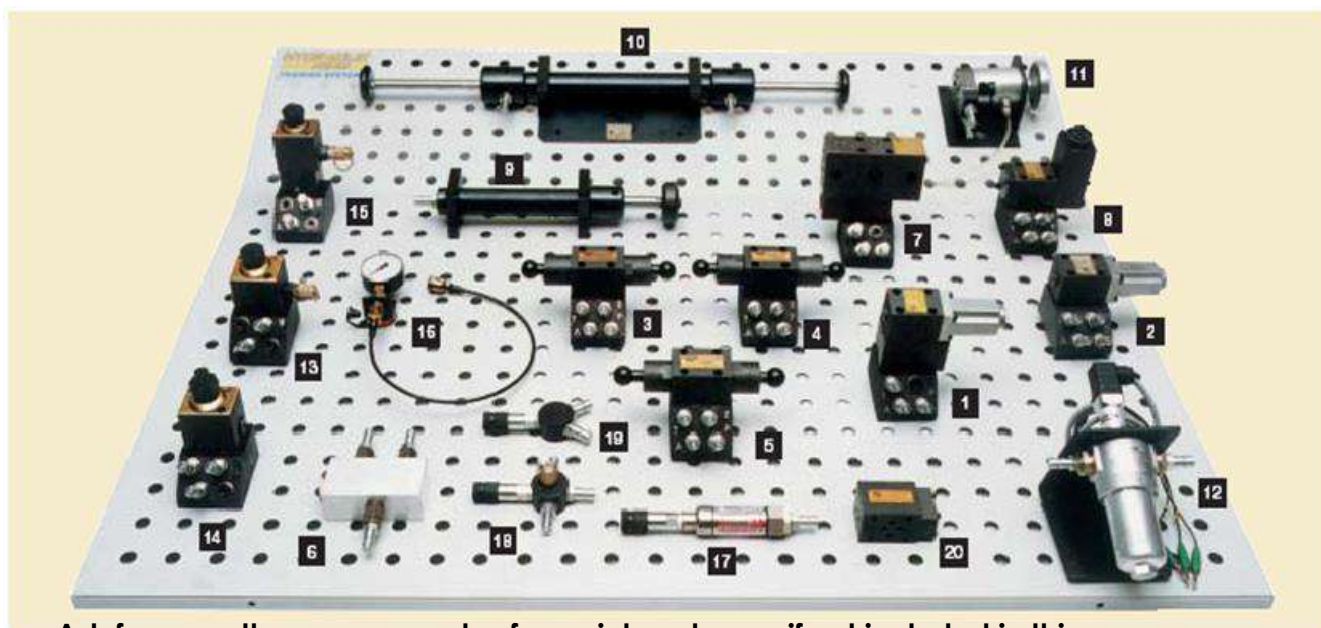
To be fixed on one of the trolley sides. It includes a double effect cylinder Ø20 / Ø12, 150 mm stroke in order to make traction / compression exercises. Transparent protection screen

Every valve size will be NW6 – Cetop 3.

Every hydraulic connection will use anti-leakage quick-fit ecologic connectors

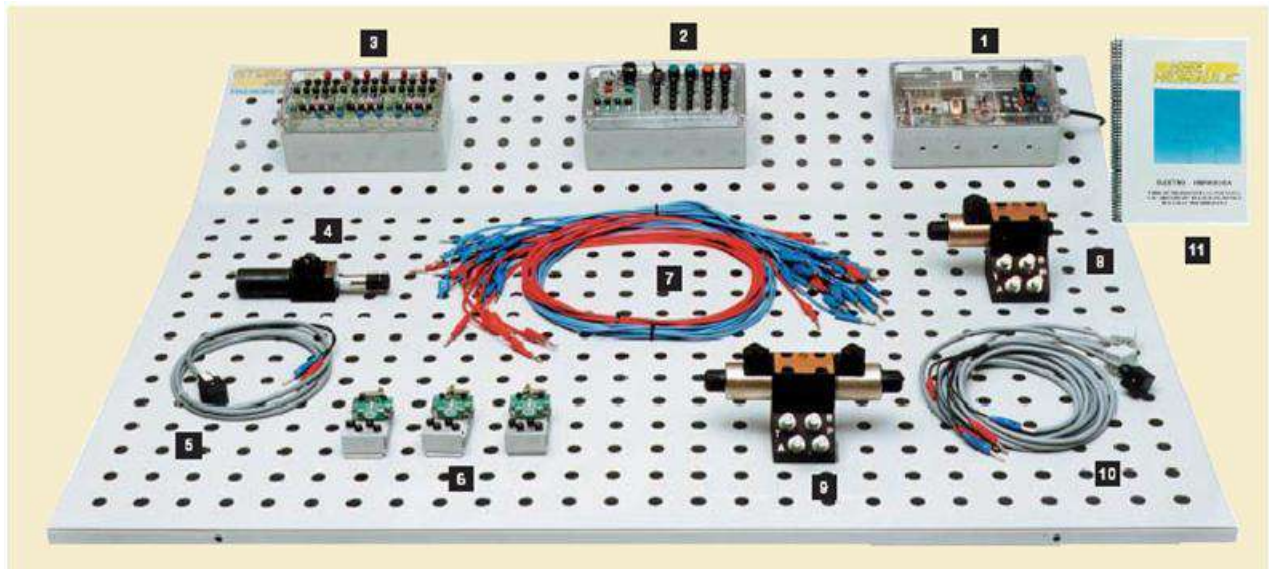
Every component will be suitable for working on panels with Ø17 mm holes every 50mm (horizontally and vertically).

Hydraulic complementary



Ask for any other components of your interest even if not included in this catalogue

Electro Hydraulics level 1



1

**Electronic power supply module 220 VAC/24 VDC, I=5 A.
Over load and short circuit protection**

On/Off switch
On/Off indication lamp
Electronically stabilized
Ø=4 mm electronic quick connectors
Plastic box with printed transparent cover

2

Control unit

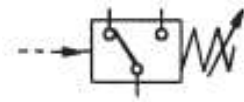
4 push buttons, 2 green, 1 red, 1 yellow, with 1 normally open + 1 normally closed contacts each
1 switch with 1 normally open + 1 normally closed contacts
1 connection / disconnection electronic timer, 0 to 6 second regulation
4 spark suppressing diodes
4 indicator lights, 2 green, 1 red and 1 yellow
Ø=4 mm quick connectors
Plastic box with printed transparent cover

3

Relay module

3 relay unit with 4 exchanged (switched) contacts each
On/Off light indicator on every relay solenoid
Spark suppressing diode on every solenoid
6 connection divider for positive voltage
6 connection divider for negative voltage de
Ø=4 mm quick connectors
Plastic box printed transparent cover

4



Adjustable pressure switch

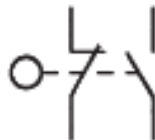
Max. Pressure=40bar
Output signal by exchanged (switched) contact

5

Cable + connector for pressure switch

Male Ø=4 mm quick connector
Cable length = 1,5 m

6



Limit switch, with 1 normally closed contact + 1 normally opened contact

Transparent body
Ø=4 mm female connectors

7

Set of connecting cables, formed by:

14 blue cables, 50 mm length, with $\varnothing 4$ mm male quick connectors
14 red cables, 50 mm length, with $\varnothing 4$ mm male quick connectors
8 blue cables, 150 mm length, with $\varnothing 4$ mm male quick connectors
8 red cables, 150 mm length, with $\varnothing 4$ mm male quick connectors

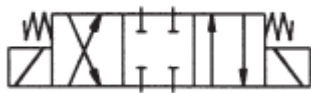
8



4/2 solenoid valve, 24 VDC solenoid and spring return

NW6 size valve, assembled on base plate with quick fit ecologic connectors

9



4/3 solenoid valve, 24VDC solenoids and spring centered

A, B, P and T closed in centered position. NW6 size valve assembled on base plate with quick fit ecologic

10

Set of connectors for solenoids. 2 grey + 1 black

Including solenoid 2P+G connector, on/off indicator lamp, cable and male $\varnothing 4$ mm quick connector

11

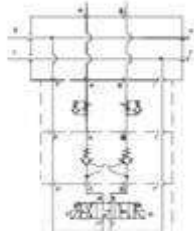
Electro hydraulics workbook with theory and practice

Every valve size will be NW6 – Cetop 3.

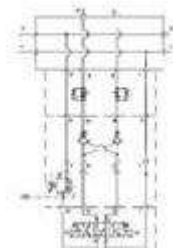
Every hydraulic connection will use anti-leakage quick-fit ecologic connectors

Every component will be suitable for working on panels with Ø17 mm holes every 50mm (horizontally and vertically).

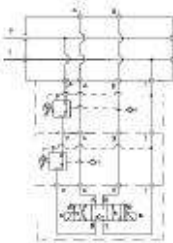
Modular blocks with different functions



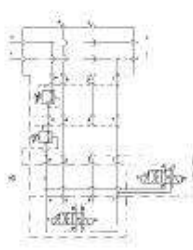
Position & flow control



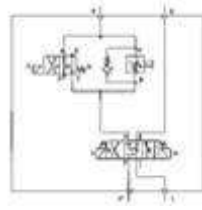
Position, flow & pressure control



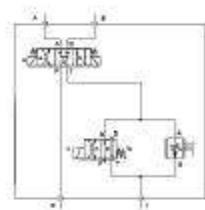
Independent control of pressure at both working directions



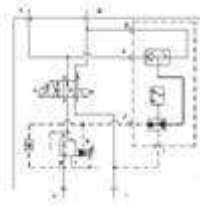
Two independent pressures selection



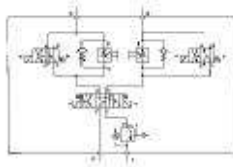
Quick / slow speed change
with secondary regulation



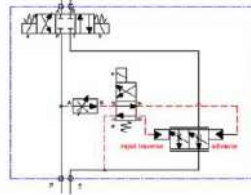
Quick / slow speed change
at both working directions



Pressure regulation with
automatic pressure control
by using self-regulating
pressure switch

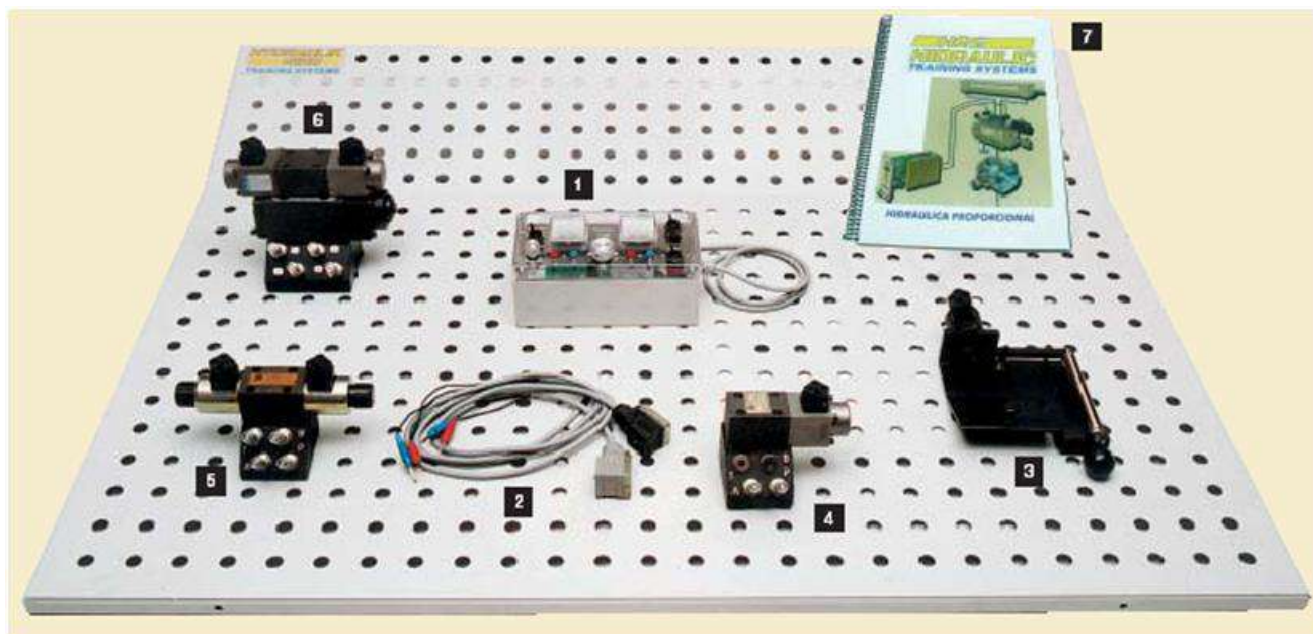


Quick / slow speed change,
independent in both working
directions, with primary
regulation and counter-
pressure



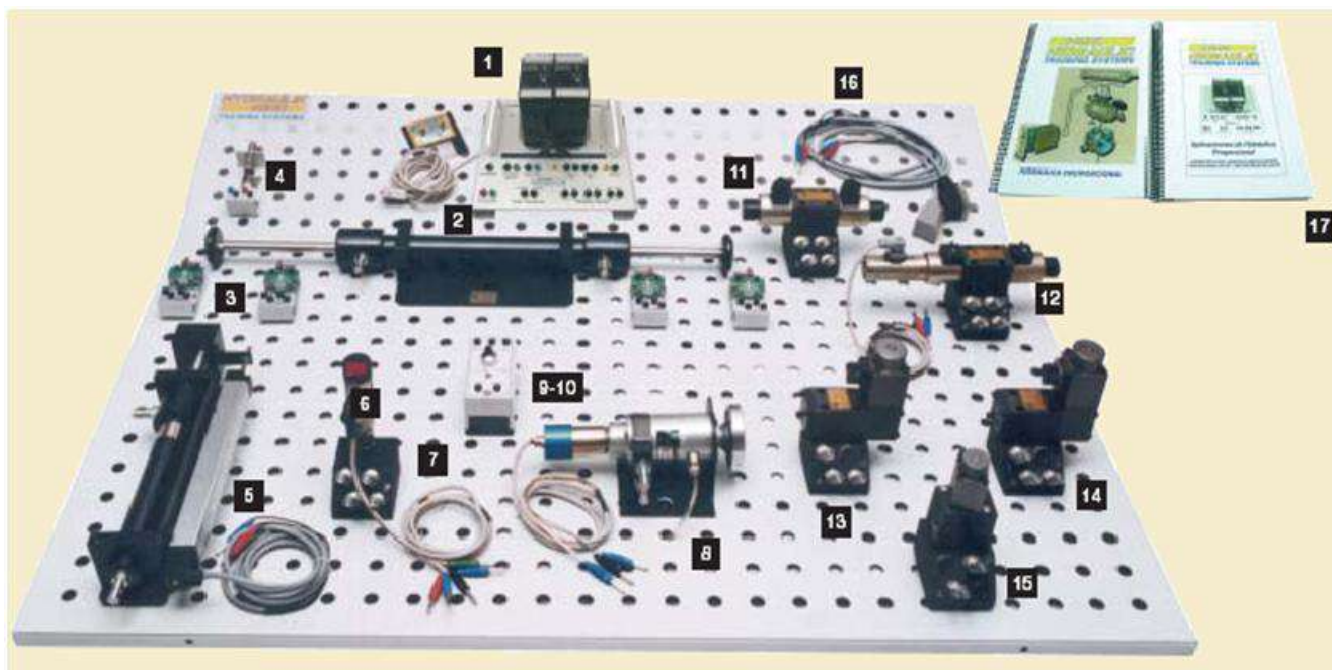
Pre-proportional hydraulics
Quick / slow speed change
control with ramp regulation

Proportional Hydraulics Level 1



41

Proportional Hydraulics Level 2



17

Pneumatic systems

Two options available:

- PLA70-1: one working panel
- PLA70-2: two working panels



42

Pneumatic training trolley PLA70

Dimensions: 1100 mm x 800 x 1960 mm (high)

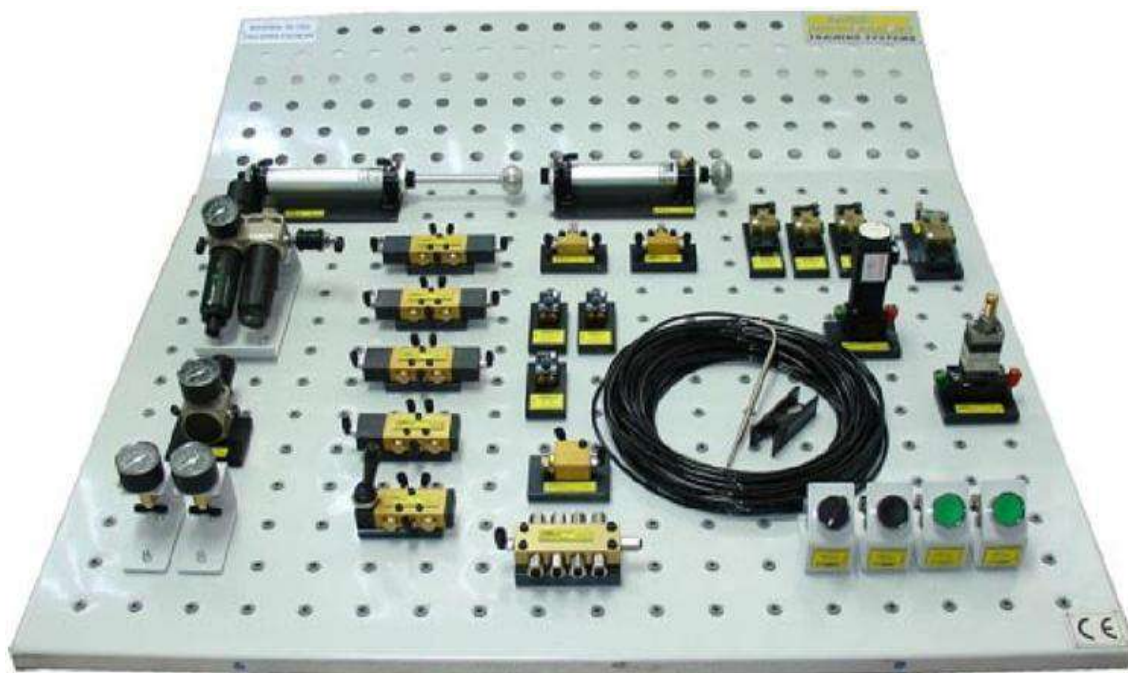
- Metal structure with plastic paint covering
- 2 metal working panels of 950x1.050 mm each
- 4 wheels, 2 of them are lockable.
- 3 drawers for storing components.
- Room for silent compressor (optional)

- 3 drawers for storing components with security system to avoid opening more than one drawer at the same time.
- 4 wheels, 2 of them are lockable.
- Room for silent compressor (optional)

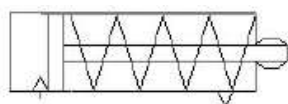
Silent compressor (optional)

- o Specially designed for classrooms
- o 45dB at 1 meter.
- o Flow: 50 liters/min
- o Pmax: 8bar
- o Reservoir volume 15 liters
- o Power 0,5 HP
- o Pressure switch for automatic on/off
- o Inlet air filter
- o Visual indicator of lubricant oil level

Pneumatic set of components - Level I

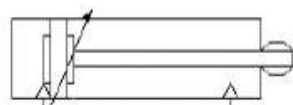


1



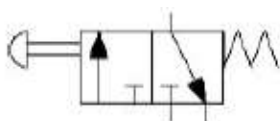
Simple effect cylinder
Ø25 x 50 mm

2



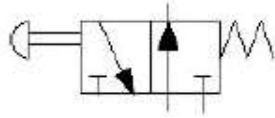
Double effect cylinder
Ø25 x 100 mm

3



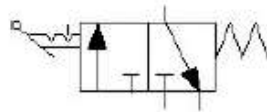
**2 3/2 button actuated
valves, normally closed**
Spring return

4



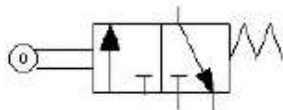
**3/2 button actuated valve,
normally opened**
Spring return

5



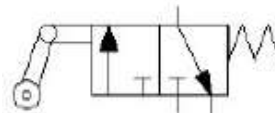
**3/2 valve, actuated by
manual rotary switch**

6



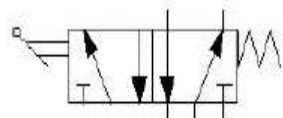
**3 3/2 pneumatic limit
switches**

7



**One way actuated 3/2
pneumatic limit switch**

8



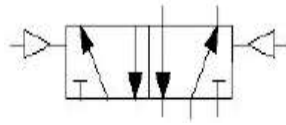
5/2 manual valve
Spring return

9



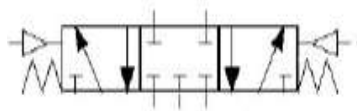
**5/2 valve, pneumatically
operated**
Spring return

10



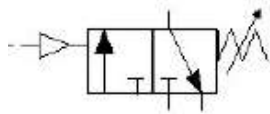
2 5/2 valves, pneumatically operated on both sides

11



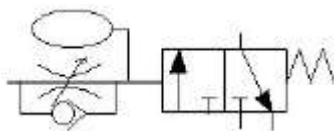
5/3 valve, pneumatically operated
P, A, B, R, S closed at centre position

12



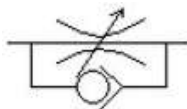
Sequence valve

13



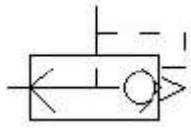
Pneumatic adjustable timer
0-30 sec

14



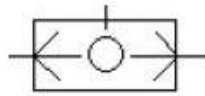
One way flow restrictor

15



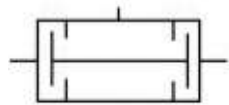
Quick exhaust valve

16



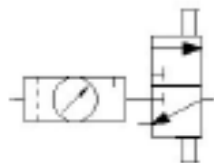
2 circuit selectors
Pneumatic OR logic function

17



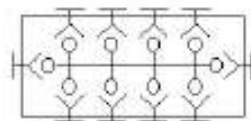
Pneumatic AND logic function

18



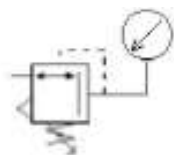
FRL unit
Filter + pressure regulator +
pressure gauge 0...12 bar +
lubricator + 3/2 valve

19



10 connection divider

20



**Pressure regulating valve
with gauge, 0...10 bar**

21



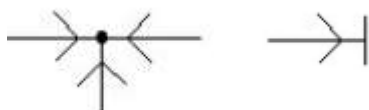
**2 pressure gauges
0...10 bar, with two
connections**

22



**Flexible black hose
25 m, Ø4 mm ext**

23



10 "T" fittings

23

Workbook with theory and practices

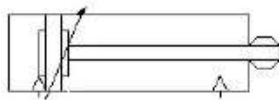
Every component is assembled onto base plates, label with symbol, equipped with hose fittings and escape silencer.

Pneumatic set of components - Level 2



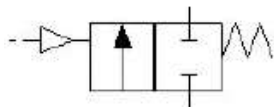
49

1



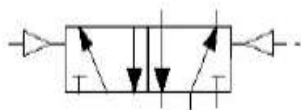
Double effect cylinder
Ø25 x 100 mm with
adjustable pneumatic
damping

2



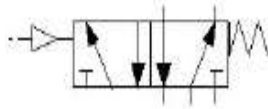
2 2/2 valves
Piloted one way restrictor

3



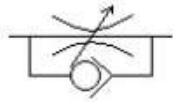
**5/2 valve, pneumatically
operated on both sides**

4



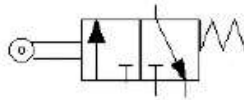
5/2 valve, pneumatically operated
Spring return

5



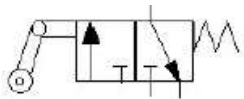
3 one way flow restrictors

6



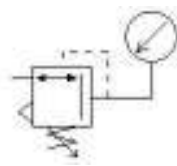
One way actuated 3/2
pneumatic limit switch

7



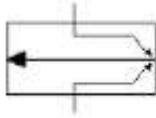
3/2 pneumatic limit switch

8



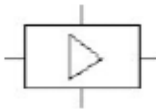
Low pressure regulator

9



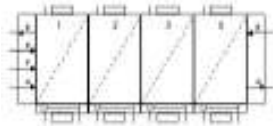
Pneumatic low pressure detector

10



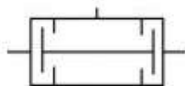
Amplifier for pneumatic detector

11



4 step logic sequencer

12



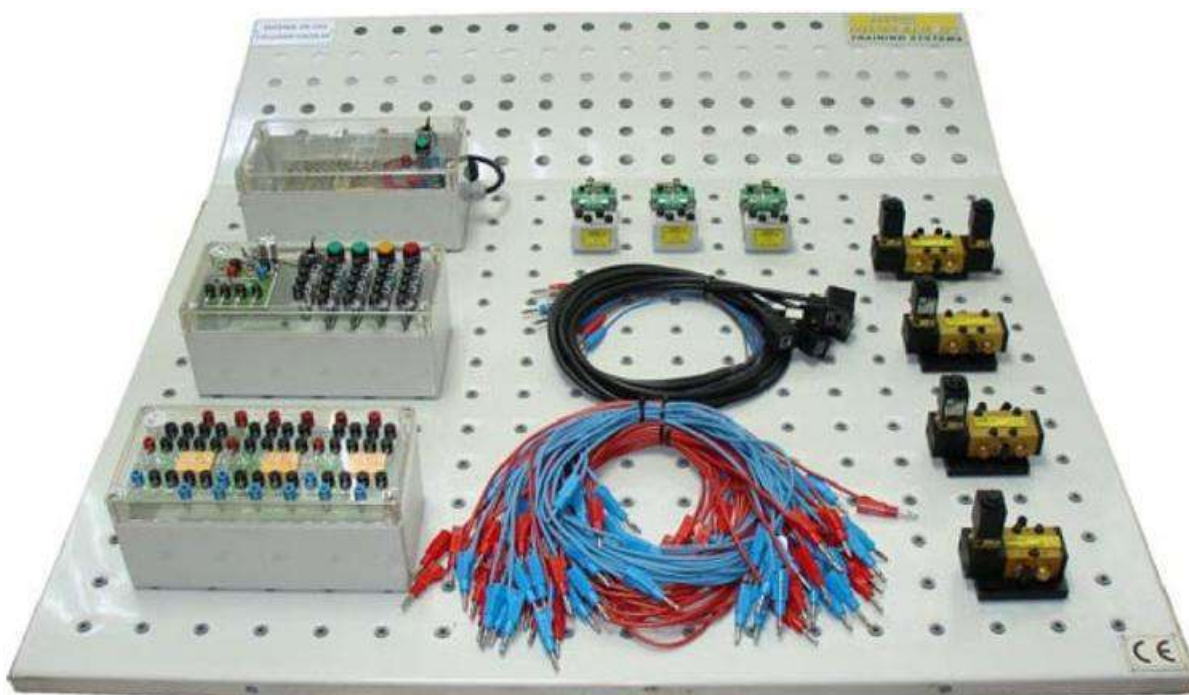
4 pneumatic AND logic functions

13

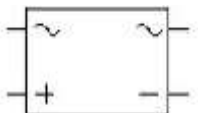


Pressure indicator

Electro pneumatic set of components - Level 1



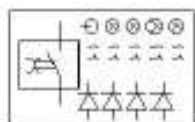
1



Power supply unit

220 VAC/24 VDC, I= 5A,
(optionally 110 Vca/24 Vcc)

2



Control module

4 button switches: 2 green, 1 red, 1 yellow, with 2 open contacts + 2 closed contacts each

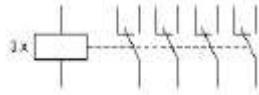
1 switch with 1 open contact + 1 closed contact

1 electronic timer, selectable to connecting / disconnecting function

4 suppressing diodes

4 indicating lamps: 2 green, 1 red, 1 yellow

3



Relay module

3 relays with 4 change-over switches each. Powered coil indicating led

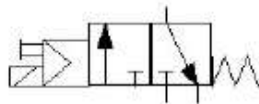
4



3 electric limit switches

With 1 open contact + 1 closed contact

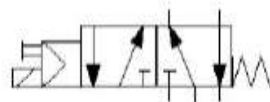
5



3/2 solenoid valve

Spring return, 24 Vcc

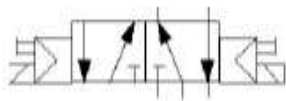
6



2 5/2 solenoid valves

Spring return, 24 Vcc

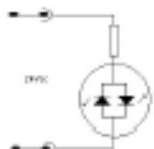
7



5/2 solenoid valve

24 Vcc

8



5 connectors with led and cable for solenoids

9



Set of cables

4 red cables, length: 250 mm
8 red cables, length: 500 mm
6 red cables, length: 1500 mm
6 blue cables, length: 500 mm

10

Workbook with theory and practices

Every component is assembled onto base plates, label with symbol, equipped with hose fittings and escape silencer.

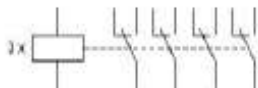
Every electrical connection is made through diameter 4 mm quick connectors (optionally 2mm).

Solenoid valves equipped with auxiliary manual operation.

Electro pneumatic set of components - Level 2



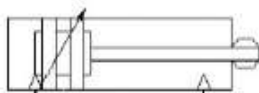
1



Relay module

3 relays with 4 change-over switches each. Powered oil indicating led

2



Double effect cylinder

Magnetic piston, $\varnothing 25 \times 100$ mm.

Pneumatic adjustable dampina at both ends

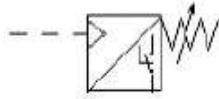
3



2 Magnetic field detectors

"Reed"

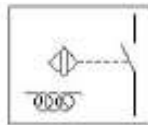
4



Pressure switch

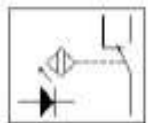
With output by change-over switch

5



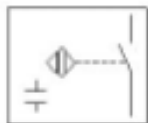
Inductive detector

6



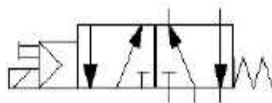
Optic detector

7



Capacitive detector

8



5/2 solenoid valve

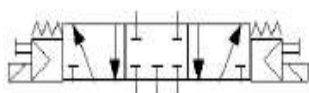
Spring return, 24 Vcc

9



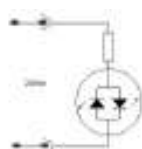
2 5/2 solenoid valve
24 Vcc

10



5/3 solenoid valve
Closed centers, 24 Vcc

11



2 connectors with led and cable for solenoids

12



Set of connecting cables
6 red cables, 250 mm length
10 red cables, 500 mm length
8 red cables, 1500 mm length

Every component is assembled onto base plates, label with symbol, equipped with hose fittings and escape silencer.

Every electrical connection is made through diameter 4 mm quick connectors (optionally 2mm).

Solenoid valves equipped with auxiliary manual operation

Sensorics Level 1

Proximity sensors

Formed by:

- Inductive Sensor M12
- Inductive Sensor M18
- Capacitive Sensor M18
- Optic sensor / object reflection
- Optic Sensor / mirror reflection
- Reflector / Mirror
- Optic fiber sensor
- Optic fiber barreer
- Optic fiber / object reflection
- Magnetic Sensor
- Arbor linear guide, 300mm stroke manual rotating mechanism with position reading
- Set of 12 plates of different materials and features to be detected.
- Set of 6 connecting cables (red and blue)
- Graduated fixtures for fixing detectors and objects to be detected.
- Portable case, 600x400x200, including:
 - Power supply unit 220vac/24vdc/5Amp, Emergency button, 2 indicator lamps and 1 buzzer, +/- distribution female connectors and 1 relay.
 - Grooved aluminum plate for making practices .
 - Shaped foam with transparent cover to contain and keep components.



TACTIL SCREEN

With different functions:

Visualize analog signals (0-10 V , 4-20 mA). To scale and visualize pressure, speed, position, etc)

Intensity and voltage meter

Guide for making practices

Sensorics Level 2

Analog position and speed sensors

- Linear potentiometer (position transducer)
- Assembled on the linear guide (level I)
- Analog ultrasonic sensor
- Foam object for testing
- 24 Vdc motor + reducer + coupling
- Rotating speed sensor
- 2 limit switches
- Linearization module for analog signals
- Motor speed and direction control module
- Portable case with shaped foam for keeping Level II and III components



Every component to be assembled onto level 1 case

Sensorics Level 3

Digital position and speed sensors

- Incremental encoder
- Teeth wheel for pulse counting
- Control module: visualization of position and speed signals + pulse counter + frequency control + different working modes.
- Optional (incremental linear encoder)
- Portable case (the same as level II)

Every component to be assembled onto level 1 case

Sensorics Level 4

Temperature testing and control equipment

- Metal box including PTC heating resistor, cooling fan and J reference thermocouple
- Manual / Automatic modes
- Temperature probe 1 – Thermo resistance RTD PT100 $(-50 \dots 250^{\circ}\text{C})$
- Temperature probe 2 – Thermo couple Type J $(0 \dots 400^{\circ}\text{C})$
- Temperature probe 3 – Thermo resistance PTC $(-20 \dots 80^{\circ}\text{C})$
- Temperature probe 4 – Thermo resistance NTC $(-20 \dots 80^{\circ}\text{C})$
- Signal converter / linearizer for thermo-resistance and thermo-couple. Output 0-10 Vdc . Temperature range selectable by software.
- PID Temperature controller: heat control, heat/cold control, warnings control.
- Sys Config software for PC data capture and temperature control.

It works with an industrial PID controller and needs some adjustments and parameterization. This may be done either manually or through PC by using the software SCADA available in Sysconfig (real time regulation process supervision).



Sensorics Level 5

Pressure and force testing equipment

- Pneumatic cylinder / load cell set. 10 Vdc feeding and 2mv/v output
- Load cell signal adapter. Output 0-10 V.
- Control module: 3/2 normally closed valve, pressure regulator, pressure gauge and 4 way divider block
- Pressure set: Pressure switch normally open / normally closed selectable, analog pressure transducer 4-20 mA 0-10 Kg/cm²
- Vacuum set: ventury vacuum valve, vacuum switch, vacuum gauge and flow regulator.

Every component to be assembled onto level 1 case



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