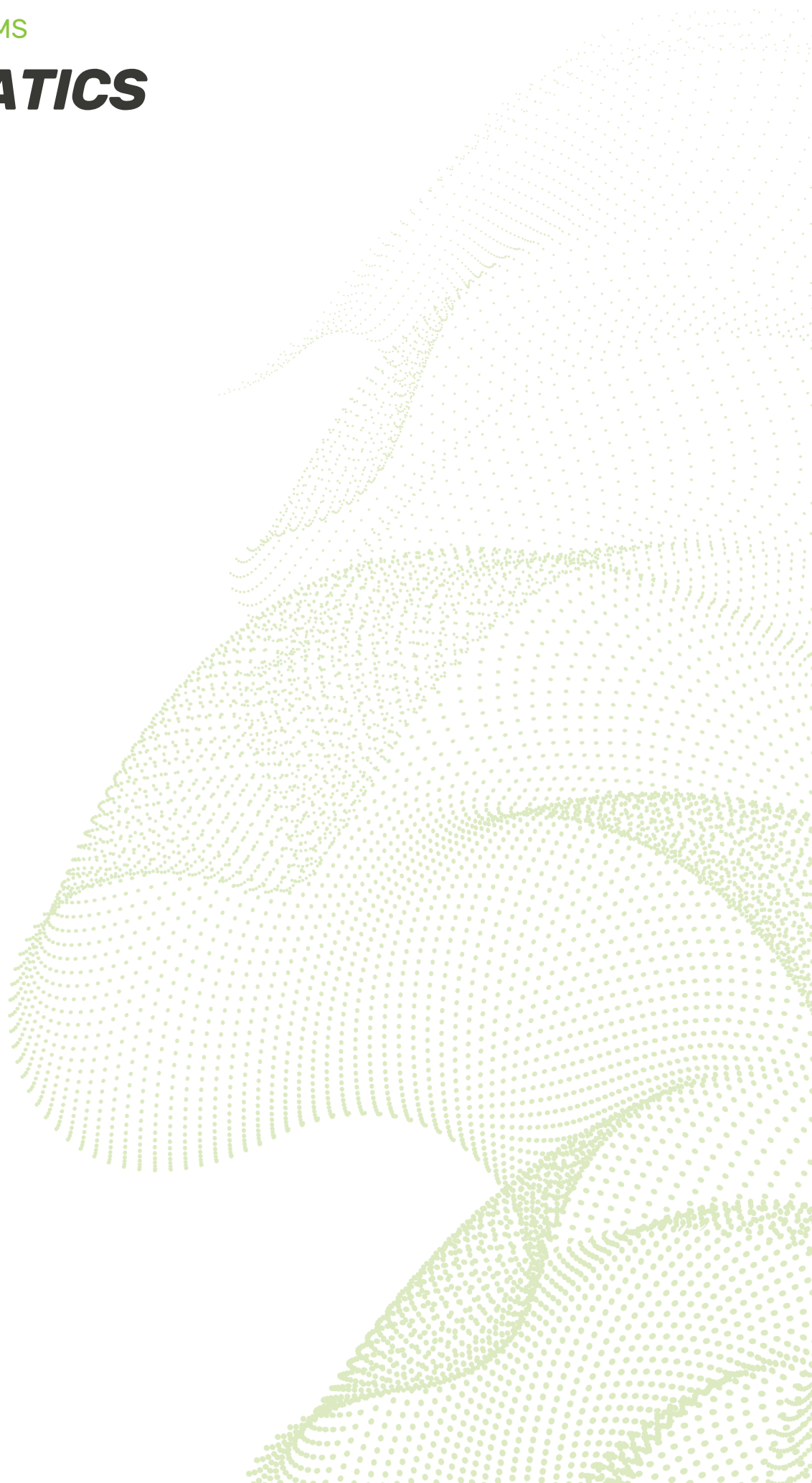


TRAINING SYSTEMS

# ***PNEUMATICS***

---



**HRE**  
Automation

Taking advantage of its more than 40 years' experience in industrial automation and fluids, HRE Automation creates training equipment and systems, perfectly **adapted to the requirements of the current industrial needs.**

In continuous search of excellence in **training systems**, HRE Automation 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**  
*Automation*

**HRE Automation**

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<http://www.hre.es>



## **PNEUMATICS TRAINING SYSTEMS**

Pneumatic training trolleys - PLA70 .....	1
Working panels - single/double.....	2
Silent compressor.....	2
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Electro-pneumatics complementary elements.....	21
Proportional-pneumatic position control .....	25
Proportional-pneumatic pressure control .....	27

**Pneumatic training trolleys - PLA70**

**PLA70-1 / PLA70-2**

- Dimensions: 1100 mm x 800 x 1960 mm (high).
- Metal structure painted in dark grey color, RAL 7005, to guarantee a long useful life in perfect condition.
- Metal working panel of 950x1050 mm. With Ø5mm bushes every 50mm (horizontally and vertically) for clamping components without using any additional tool. Metal panel with Epoxi plastic paint covering, RAL 7035, to guarantee a long useful life in perfect condition.
- Upper frame of 300x1050mm. for mounting electrical elements and other elements, included in the panel in a vertical position  
**(Available with one panel PLA70-1 or with two panels PLA70-2).**
- Big fixed metal tray under the panels with 4 wheels, 2 of them are lockable.
- Paper holder for drawings at each working side.
- **Drawers' cabinet (optional).** Cabinet with three drawers for storing components, central locking with key and safety protection (a single drawer can be opened at the same time). Each drawer has a metal tray to fix the elements.
- Room for **silent compressor (optional, for pneumatic applications)**, 3 holes for support of the compressor feet. (optionally: possibility of locating a second drawers' cabinet in that place)



**Single trolley PLA70-1**

Fixed mobile structure with one working panel and one paper holder.

**Ref. 53952007**

**Double trolley PLA70-2**

Fixed mobile structure with two working panels and two paper holders.

**Ref. 53952008**

**Drawers' cabinet for trolleys PLA70**

3 drawers with fixing trays and safety protection with central locking.

**Ref. 13028045**

*The trolley's reference does not include the drawers and the compressor*

**Working panels**

**Single /Double**

Metal working panel, fully plastic coated, with Ø5mm bushes every 50mm (horizontally and vertically) for clamping components without using any additional tool. Metal panel with Epoxi plastic paint covering, RAL 7035, to guarantee a long useful life in perfect condition. Single or double panels, reclining or supported, on a wooden base covered with formica. Dimensions 900x1050 mm

**Reclined panel with upper frame in vertical position**



**Single panel, 900x1050**  
One reclining panel.  
**Ref. 53952856**

**Double panel, 900x1050**  
Two panels supported.  
**Ref. 53952855**

**Silent compressor**

**Ref. 01521831**

Our training equipment can be equipped with the silent compressor (optional). PLA70 training trolleys has a specific location for the compressor, under the tray / next to the cabinet, fixed to the structure of the working bench.



**Features:**

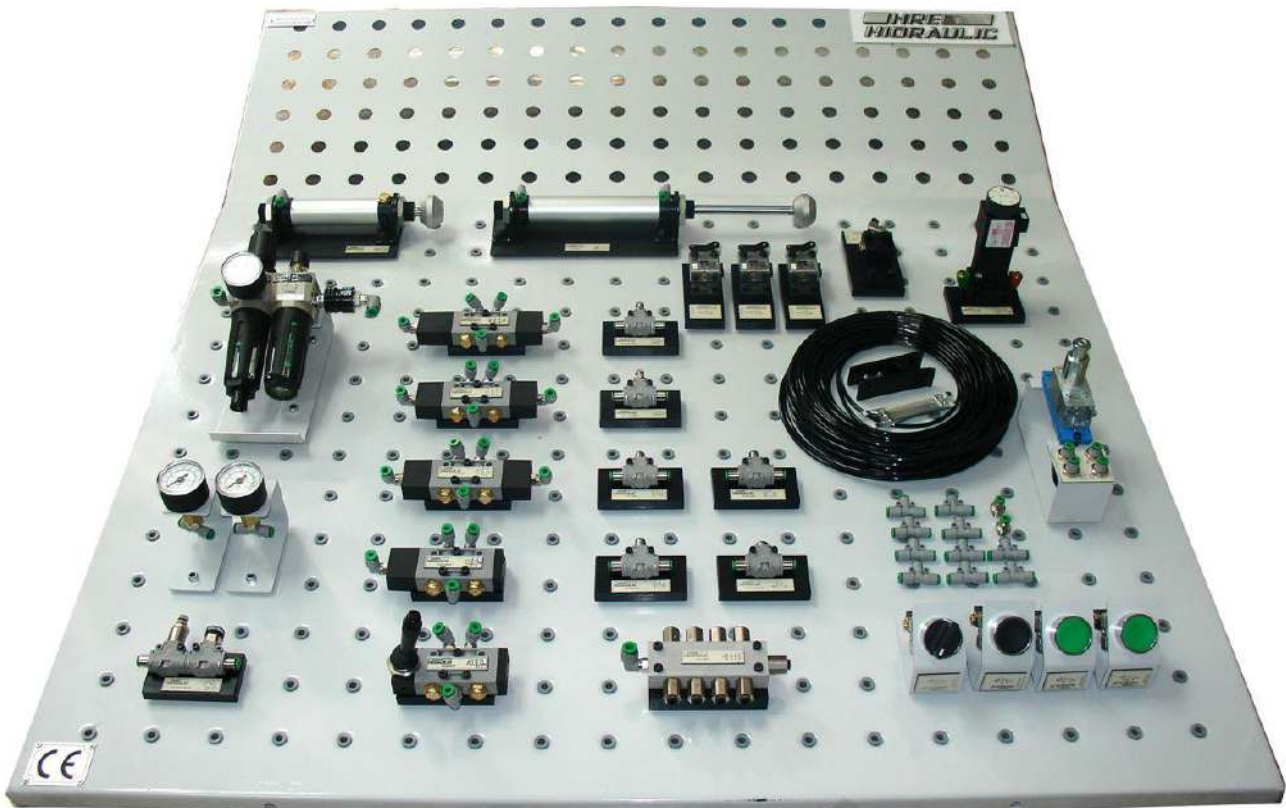
- Designed to work in classrooms
- Sound level 45 dB at 1 meter
- Flow: 50 litres/min
- Pmax: 8bar
- Tank 15 litres
- Power 0,5 HP
- Automatic stop and start pressure switch
- Air intake filter
- Visual indicator of lubrication oil

**Silent compressor**  
Specially for working with one/two training panel  
**Ref. 01521831**



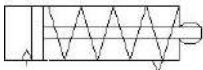
**Pneumatics level 1**

Ref. 53950430



3

1



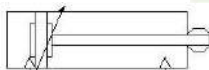
**Single acting cylinder**

Ø25 x 50 mm stroke, spring return with silencer

Ref. 13024850

Units.1

2



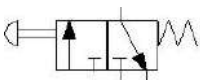
**Double acting cylinder**

Ø25 x 100 mm stroke, adjustable cushioning

Ref. 13024851

Units.1

3



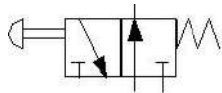
**3/2 way valve, NC**

3/2 way valve, normally closed, manually operated by push button, spring return

Ref. 13024852

Units.2

**4**



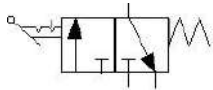
**3/2 way valve, NO**

3/2 way valve, normally open, manually operated by push button, spring return

**Ref. 13024912**

**Units.1**

**5**



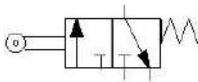
**3/2 way valve with selector**

3/2 manual valve, operated by selector

**Ref. 13024854**

**Units.1**

**6**



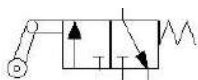
**3/2 limit switch, NC**

3/2 way roller lever valve, normally closed, spring return

**Ref. 13024855**

**Units.3**

**7**



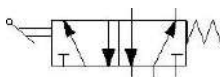
**3/2 retractable limit switch, NC**

3/2 way retractable roller lever valve, nc, spring return

**Ref. 13024856**

**Units.1**

**8**



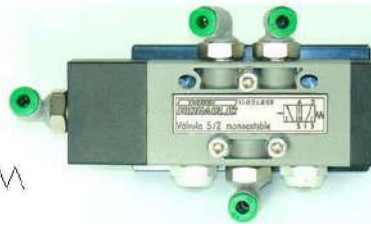
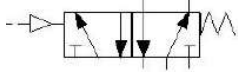
**5/2 way lever valve**

5/2 manual valve, operated by lever / spring return

**Ref. 13024858**

**Units.1**

**9**



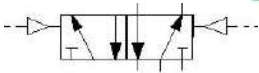
**5/2 way single pilot valve**

5/2 valve, pneumatically operated / spring return

**Ref. 13024859**

**Units.1**

**10**



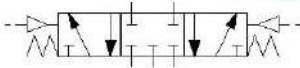
**5/2 way double pilot valve**

5/2 valve, pneumatically operated by both sides

**Ref. 13024860**

**Units.2**

**11**



**5/3 way double pilot valve, CC**

5/3 valve, pneumatically operated by both sides, closed centers

**Ref. 13024861**

**Units.1**

**12**



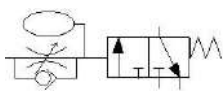
**Pressure sequence valve**

Setting of pressure manual by rotary knob, flow rate adjustable by throttling

**Ref. 13024862**

**Units.1**

**13**



**Pneumatic timer, NC**

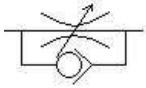
Pneumatic timer valve to the connection, 3/2 NC. Regulation from 0-30 seg.

**Ref. 13024863**

**Units.1**



**14**



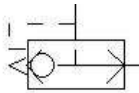
**One way flow restrictor**

One way flow control valve with check valve, manual adjustment

**Ref. 13024864**

**Units.2**

**15**



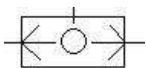
**Quick-exhaust valve**

Quick - exhaust valve with silencer

**Ref. 13024865**

**Units.1**

**16**



**Shuttle valve (OR)**

Pneumatic OR logic function

**Ref. 13024866**

**Units.2**

**17**



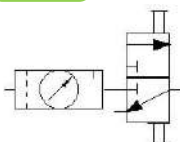
**Dual pressure valve (AND)**

Pneumatic AND logic function

**Ref. 13024867**

**Units.1**

**18**



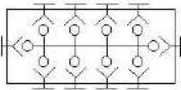
**Start up valve: FRL unit**

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

**Ref. 13024868**

**Units.1**

19



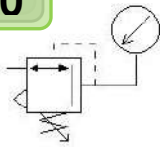
**Manifold, 10 way**

Distributor block: 1 inlet and 9 outlets with check valves

**Ref. 13024869**

**Units.1**

20



**Pressure regulator + gauge**

Pressure reducing valve with gauge from 0 to 8 bar

**Ref. 13024870**

**Units.1**

21



**Pressure gauge**

0...12 bar, with two Ø4mm. quick fit connections

**Ref. 13024871**

**Units.2**

22



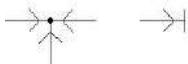
**Flexible black pipe, cutter and extractor**

25 m. of black pipe, Ø4 mm., + pipe cutter + extractor tool

**Ref. 13024913**

**Units.1**

23



**T connections and fittings**

10 "T" connections and 2 straight fittings, Ø4 mm.

**Ref. 13024914**

**Units.10+2**

24

**Pneumatic theory book: Modern Pneumatics**

**Ref. 01509006**

**Units.1**

**Workbook: Pneumatics Levels 1 & 2 (vol1)**

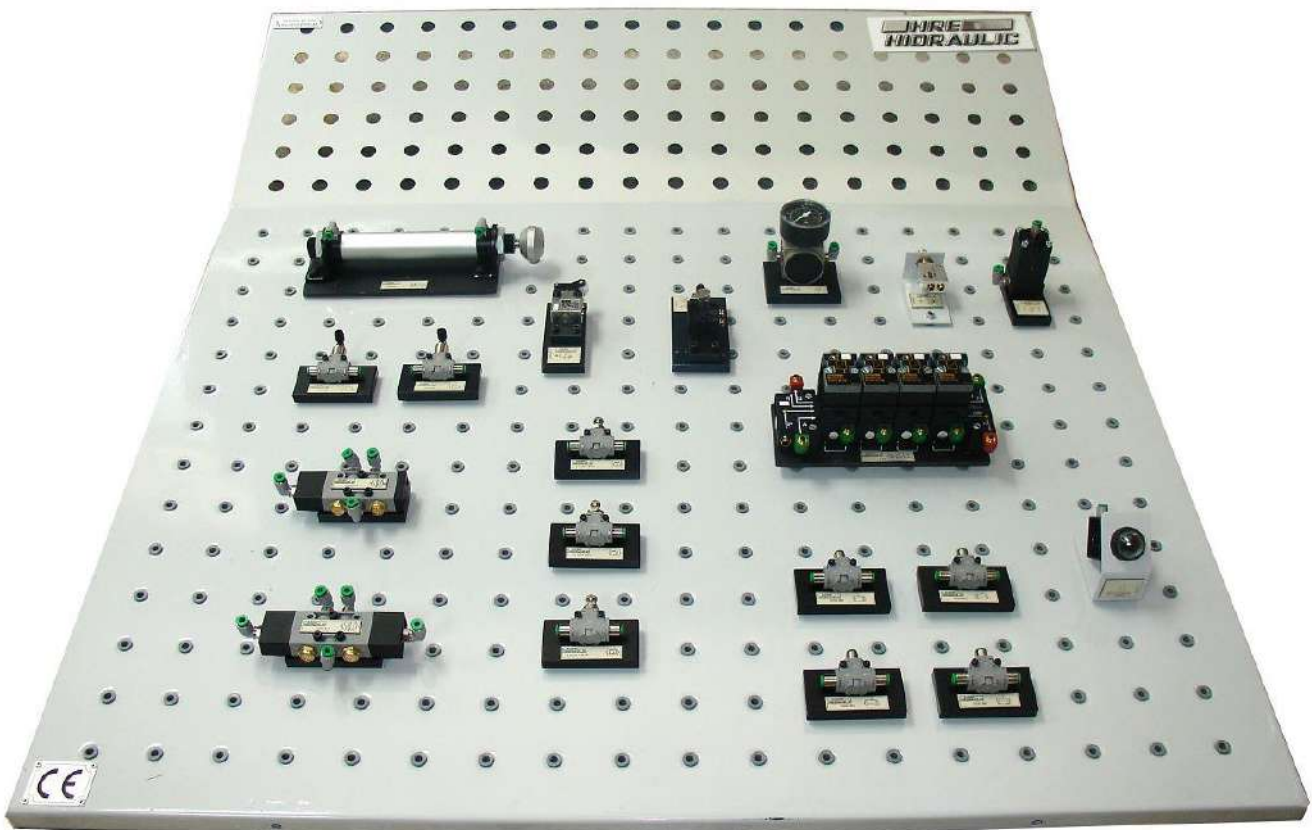
**Ref. 01509008**

**Units.1**

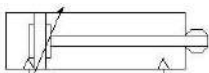
All elements mounted on a base plate with standardized symbols, with Ø4mm fittings and exhaust silencers if necessary.

**Pneumatics level 2**

Ref. 53950431



**1**



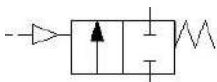
**Double acting cylinder**

Ø25 x 100 mm stroke,  
adjustable cushioning

Ref. 13024851

Units.1

**2**



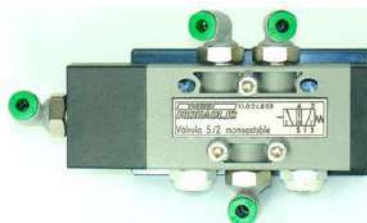
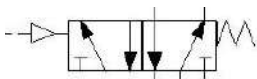
**Piloted one way restrictor**

2/2 valve, pneumatically  
operated / spring return

Ref. 13024878

Units.2

**3**



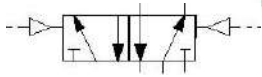
**5/2 way single pilot valve**

5/2 valve, pneumatically  
operated / spring return

Ref. 13024859

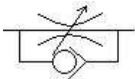
Units.1

**4**



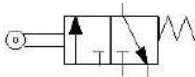
**5/2 way double pilot valve**  
5/2 valve, pneumatically operated by both sides  
**Ref. 13024860**      **Units.1**

**5**



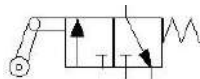
**One way flow restrictor**  
One way flow control valve with check valve, manual adjustment  
**Ref. 13024864**      **Units.3**

**6**



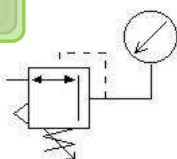
**3/2 limit switch, NC**  
3/2 way roller lever valve, normally closed, spring return  
**Ref. 13024855**      **Units.1**

**7**



**3/2 retractable limit switch, NC**  
3/2 way retractable roller lever valve, nc, spring return  
**Ref. 13024856**      **Units.1**

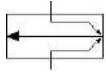
**8**



**Low pressure regulator**  
With pressure gauge from 0 to 4 bar  
**Ref. 13024872**      **Units.1**



**9**

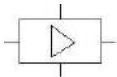


**Pneumatic low pressure detector**

Low pressure air blow detector

**Ref. 13024873                      Units.1**

**10**



**Pneumatic amplifier**

Amplifier for pneumatic low pressure detector

**Ref. 13024874                      Units.1**

**11**

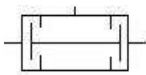


**4 step logic sequencer**

With auxiliary push button for activate each step. Possibility of serial connection with additional sequencers

**Ref. 13024875                      Units.1**

**12**



**Dual pressure valve (AND)**

Pneumatic AND logic function

**Ref. 13024867                      Units.4**

**13**



**Pressure indicator**

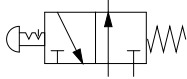
Green color, optical indicator. With Ø4mm. quick fit connection

**Ref. 13024890                      Units.1**

**Pneumatics complementary elements**

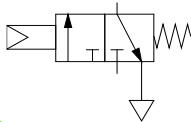
Single ref.

**1**



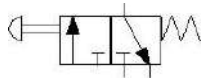
**Pneumatic emergency**  
3/2 way valve, normally open, manually operated by emergency button  
**Ref. 7438**

**2**



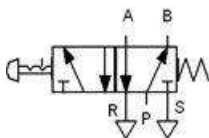
**3/2 way single pilot valve, NC**  
3/2 valve, normally closed, pneumatically operated / spring return  
**Ref. 7440**

**3**



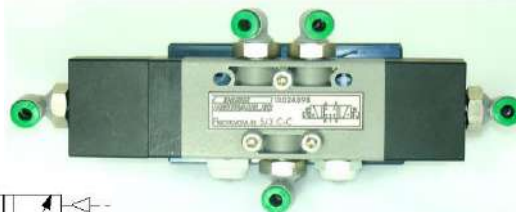
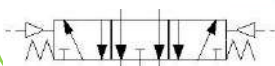
**3/2 way manual valve, NC**  
3/2 manual valve, normally closed, operated by push button / spring return  
**Ref. 12273**

**4**



**5/2 way valve with selector**  
5/2 manual valve, operated by selector  
**Ref. 032774**

**5**



**5/3 way double pilot valve, OC**  
5/3 valve, pneumatically operated by both sides, open centers  
**Ref. 13024916**

6

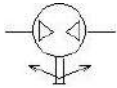


**Rotary actuator**

30° -180° adjustable angle,  
with two proximity detectors  
and Ø=4mm male plugs

**Ref. 13024917**

7



**Pneumatic motor**

Bi-directional air motor,  
auxiliary valve actuated

**Ref. 13024929**

8

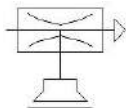


**Rodless cylinder**

Double acting rodless  
cylinder, Ø25 x 300mm stroke,  
adjustable cushioning

**Ref. 13024889**

9

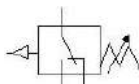


**Suction cup with venturi valve**

Vacuum generator by venturi  
effect with Ø32 mm suction  
cup, silencer and Ø4mm. quick  
fit connection

**Ref. 13028033**

10

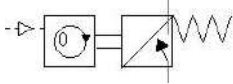


**Vacuum switch**

Vacuum switch from -0.3 to  
- 1bar. Voltage free switched  
output

**Ref. 13024901**

**11**

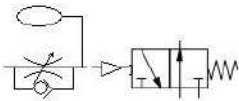


**Pneumatic counter**

5-digit pneumatic counter with preset. Manual or pneumatic reset

**Ref. 13024908**

**12**

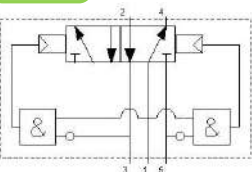


**Pneumatic timer, NO**

Pneumatic timer valve to the connection, 3/2 NO. Regulation from 0-30 seg.

**Ref. 13027957**

**13**

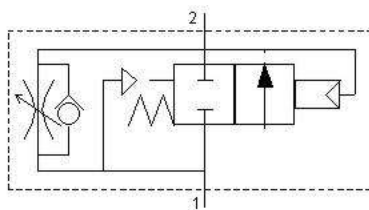


**Oscillating valve**

Oscillating valve with logic NOT cells incorporated. Pmax = 8bar

**Ref. 13028041**

**14**

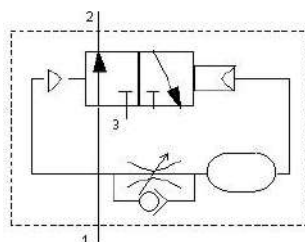


**Soft start valve**

Flow from 1 to 2: 760l/min and from 2 to 1: 900l/min

**Ref. 13027996**

**15**



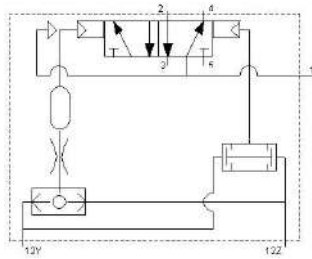
**Adjustable pulse transmitter valve**

Shorts permanent input signal into a regulated output pulse

**Ref. 13024915**

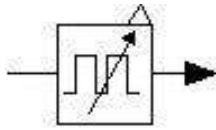


**11**



**Two-hand safety module**  
Two-hand control to work in combination with push button valves  
**Ref. 130249887**

**12**

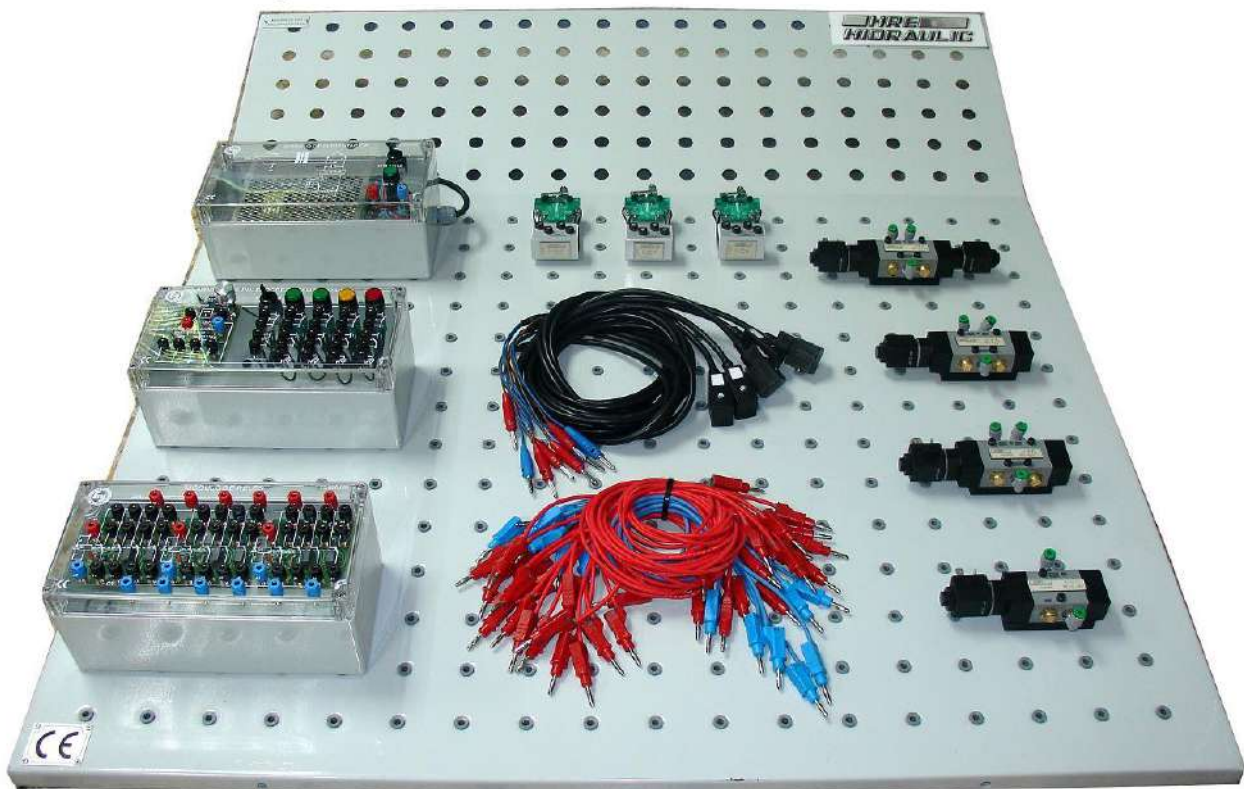


**Pulse generator**  
Pneumatic pulse generator.  
Timing from 0.02 to 8 sec. adjustable  
**Ref. 13028040**

Do not hesitate to ask us for any other element or additional valve, more complementary elements are available with configurations/controls different from those shown in this catalog

**Electro-pneumatics level 1**

Ref. 53950434



**1**



**Power supply unit.**

**110-220 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

**Ref. 23500965**

**Units.1**

**2**



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

Transparent body

Ø=4 mm female connectors

**Ref. 13024919**

**Units.3**

**3**



**Control panel with timer**

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 s regulation

4 spark suppressing diodes

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

∅=4 mm quick connectors

**Ref. 23500966**

**Units.1**

**4**



**Relays module**

3 relay unit with 4 switched contacts each

On/Off light indicator on every relay solenoid

Spark suppressing diode on every solenoid

6 connection divider for + voltage

6 connection divider for - voltage

∅=4 mm quick connectors

Plastic box printed transparent cover

**Ref. 23500968**

**Units.1**

**5**



**Set of connection cables**

4 blue cables, 250 mm length

4 red cables, 250 mm length

8 blue cables, 500 mm length,

8 red cables, 500 mm length.

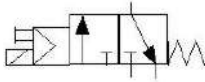
6 red cables, 1500 mm length.

With ∅4 mm male quick connectors

**Ref. 23500974**

**Units.1**

**6**



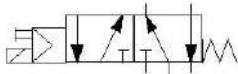
**3/2 solenoid valve, 24Vdc solenoid and spring return**

3/2 valve, normally closed (NC) with auxiliary manual button

**Ref. 13024895**

**Units.1**

**7**



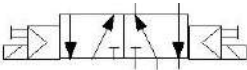
**5/2 solenoid valve, 24Vdc solenoid and spring return**

5/2 valve, with auxiliary manual button

**Ref. 13024896**

**Units.2**

**8**



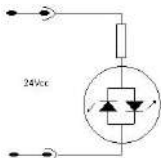
**5/2 solenoid valve, 24Vdc solenoids**

5/2 valve, bistate, with auxiliary manual buttons

**Ref. 13024897**

**Units.1**

**9**



**Connector for solenoid.**

Including 2P+G connector, led indicator, cable and male Ø=4 mm quick connectors

**Ref.13024899**

**Units.5**

**10**

**Electro pneumatics workbook: Levels 1 & 2 (vol2)**

**Ref. 01509007**

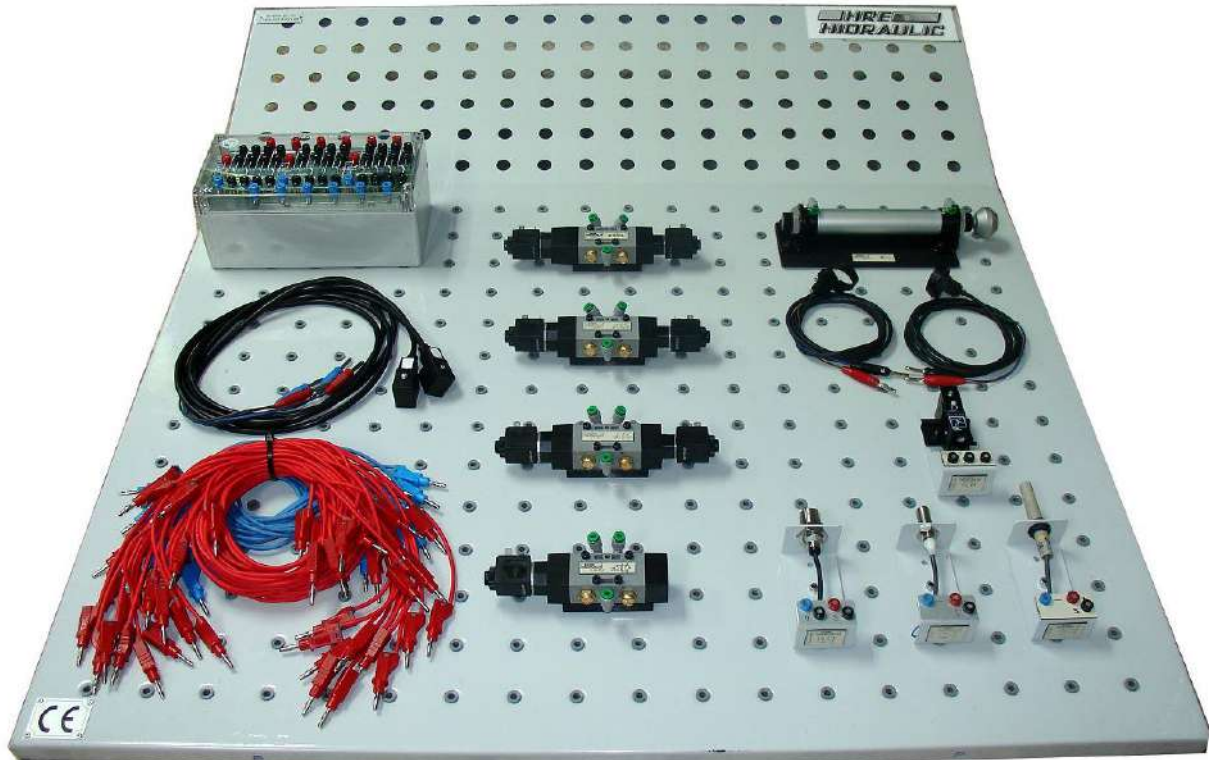
**Units.1**

All elements mounted on a base plate with standardized symbols, with Ø4mm fittings and exhaust silencers if necessary.



**Electro-pneumatics level 2**

Ref. 53950435



**1**



**Relays module**

3 relay unit with 4 switched contacts each

On/Off light indicator on every relay solenoid

Spark suppressing diode on every solenoid

6 connection divider for + voltage

6 connection divider for - voltage

Ø=4 mm quick connectors

Plastic box printed transparent cover

**Ref. 23500968**

**Units.1**

**2**



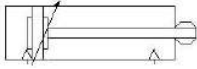
**Magnetic "reed" sensor**

Magnetic not contact cylinder position detector, clamping flange to cylinder Ø25mm and male Ø=4mm quick connectors

**Ref. 13024907**

**Units.2**

3



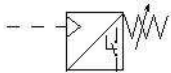
**D. effect magnetic cylinder**

Ø25 x 100 mm stroke,  
adjustable cushioning and  
magnetic piston

**Ref. 13024911**

**Units.1**

4



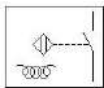
**Adjustable pressure switch**

Output signal by exchanged  
(switched) contact

**Ref. 13024900**

**Units.1**

5



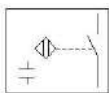
**Inductive sensor**

Non-contact proximity sensor  
M12, nominal sensing 2 mm.

**Ref. 13024903**

**Units.1**

6



**Capacitive sensor**

Non-contact proximity sensor  
M12, nominal sensing 4 mm.

**Ref. 13024904**

**Units.1**

7



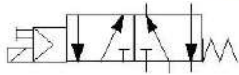
**Photoelectric sensor**

Non-contact reflex sensor  
M18, nominal sensing 100mm.  
Output PNP/NPN

**Ref. 13024905**

**Units.1**

**8**



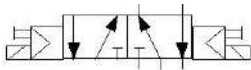
**5/2 solenoid valve, 24Vdc solenoid and spring return**

5/2 valve, with auxiliary manual button

**Ref. 13024896**

**Units.1**

**9**



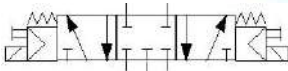
**5/2 solenoid valve, 24Vdc solenoids**

5/2 valve, bistate, with auxiliary manual buttons

**Ref. 13024897**

**Units.2**

**10**



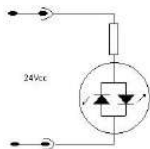
**4/3 solenoid valve, 24Vdc solenoids and spring centered**

5/3 valve, closed centers, with auxiliary manual buttons

**Ref. 13024898**

**Units.1**

**11**



**Connector for solenoid.**

Including 2P+G connector, led indicator, cable and male  $\varnothing=4$  mm quick connectors.

**Ref.13024899**

**Units.2**

**12**



**Set of connection cables**

6 red cables, 250mm length

10 red cables, 500mm length

8 red cables, 1500mm length

5 blue cables, 500mm length

4 blue cables, 1500mm length

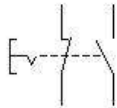
**Ref. 23500975**

**Units.1**

**Electro-pneumatics complementary elements**

**Single ref.**

**1**

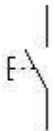


**Emergency push button**

Push button with interlocking, with 1NO contact and 1 NC contact. Ø4mm sockets

**Ref. 23500952**

**2**

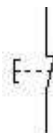


**Electric push button NO**

Push button green color (start), with 1NO contact. Ø4mm sockets

**Ref. 23500953**

**3**



**Electric push button NC**

Push button black color (stop), with 1NC contact. Ø4mm sockets

**Ref. 23500954**

**4**

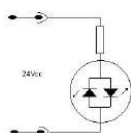


**Electric switch**

Electric switch, rotary actuation, black color (auto). Ø4mm sockets

**Ref. 23500923**

**5**



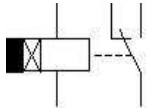
**1 Connector for solenoid.**

Including 2P+G connector, led indicator, cable and male Ø=4 mm quick connectors

**Ref. 13024899**



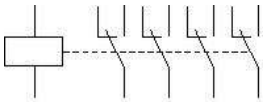
**6**



**Electronic timer**

Selectable connection / disconnection time. Setting by potentiometer. Ø4mm sockets  
**Ref. 23500957**

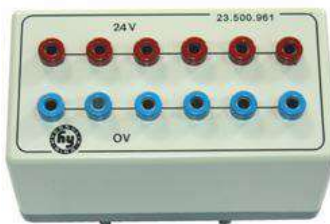
**7**



**Relay module**

24Vdc relay, with 4 switched contacts. Ø4mm sockets  
**Ref. 23500955**

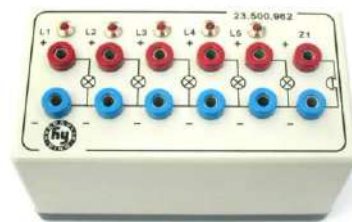
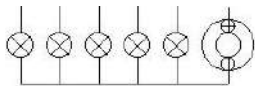
**8**



**Electrical distributor module**

6 red connection Ø4mm sockets (24V) and 6 blue connection Ø4mm sockets(0V)  
**Ref. 23500961**

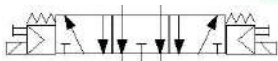
**9**



**Indicator module**

With 5 LED lights and 1 buzzer, Ø4mm sockets activations at 24Vdc  
**Ref. 23500962**

**10**



**4/3 solenoid valve, 24Vdc solenoids and spring centered**

5/3 valve, open centers with P closed, with auxiliary manual buttons  
**Ref. 13024920**

11



**Control unit and relay**

3 push buttons, 1 green, 1 red, 1 yellow, with 1 normally open + 1 normally closed contacts each  
 1 relay, with 4 switched contacts.  
 1 electrical distributor: 5 red (24V) and 5 blue(0V) connection sockets  
 2 spark suppressing diodes  
 3 indicator lights, 1 green, 1 red and 1 yellow  
 Ø=4 mm quick connectors  
**Ref. 23500969**

12



**PLC´s on rack**

Programmable logic controllers from the main manufacturers on the market. Different models and I/O configurations of Siemens, Omron...  
 Ask for the requirements  
**Ref. PLC´s on rack**

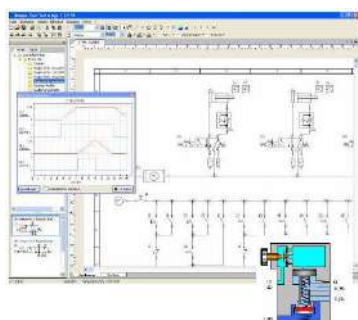
13



**Up/Down counter**

Electronic settings, two channels: A and B. Preselection value and reset can be manual or electric. Output:1 switched contact, Ø4mm sockets  
**Ref. 23500956**

14



**HRE OFT software**

Friendly software for the desing and simulation of electro- hydraulics, and electro pneumatics circuits. Available packages: Pneumatics, Hydraulics and Fluid Power (Pneumatics and hydraulics).  
 Ask for the licenses **Ref. HRE OFT**

15



**Automation Studio design and simulation software** Powerful software for the design and simulation of circuits with different automation technologies. Different packages: Pneumatics, Hydraulics, Fluid Power, Electrotechnics, Automation, Premium  
Ask for the licenses **Ref. AStudio**

Do not hesitate to ask us for any other element or additional valve, more complementary elements are available with configurations/controls different from those shown in this catalog

**Proportional pneumatics position control**

Ref. 23505021



1



**Proportional controller, adjustable gain**

Pneumatic servo valve controller, settings by 5 potentiometers

Ref. 20035

Units.1

2



**Double acting cylinder with linear position transducer**

Cylinder  $\varnothing 25 \times 200$  mm stroke, adjustable cushioning and transducer

Ref. 14609

Units.1

3



**5/3 servo valve, closed centers**

Proportional control, M5 connector with cable and male  $\varnothing=4$  mm quick connectors

Ref. 20034

Units.1



4



**Dual power supply**

Input 240 VAC  
Dual output: +/- 12 Vdc  
In plastic box with Ø=4mm plugs

**Ref. 26283**

**Units.1**

5



**External set-point value generator**

Power 12Vdc,  
Output 0 +10Vdc by rotating joystick  
In plastic box with Ø=4mm plugs

**Ref.15413**

**Units.1**

6



**Dual display**

Visualization of the set point and the feedback. Input from 0 a 10V dc by 4 digits displays

**Ref.2309**

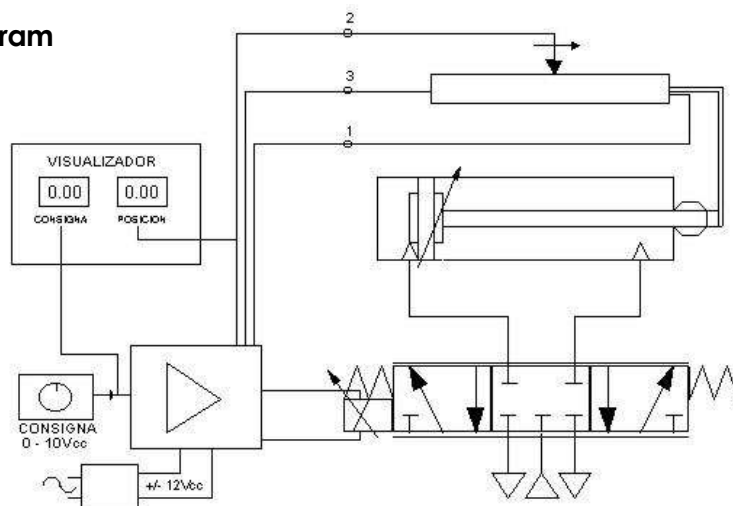
**Units.1**

7

**Proportional pneumatics workbook: Position control**

**Ref. 034650**

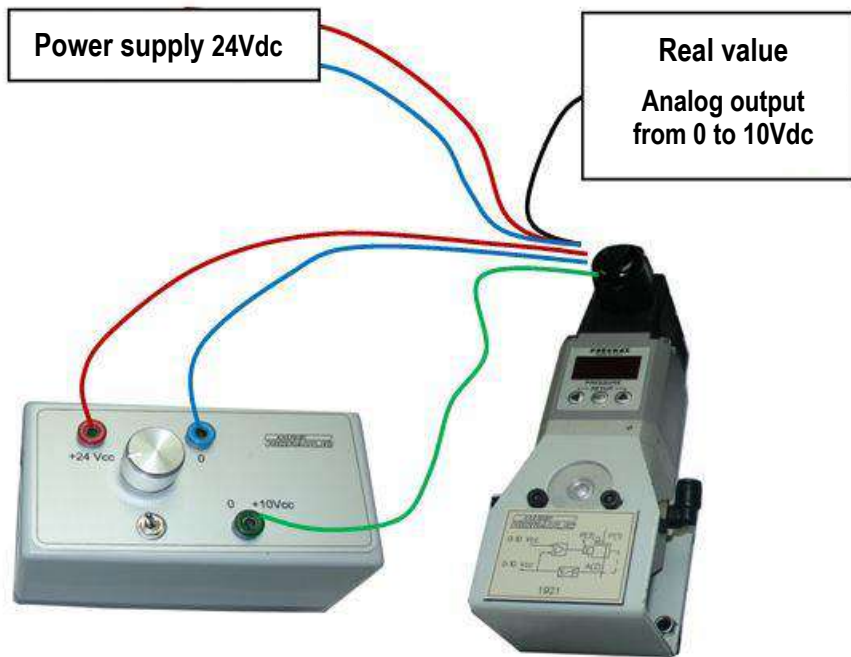
**Control diagram**



**Position control in closed loop**

**Proporcional pneumatics – pressure control**

**Ref. 23505022**



**1**



**Proportional reducer valve, pressure range from 0 to 9 bar, with display**

Built-in pressure transducer for self-regulation of pressure in internal closed loop. Over plate with Ø=4mm plugs

**Ref. 38381**

**Units.1**

**2**



**External set-point value generator**

Power 24Vdc,

Output 0 +10Vdc by rotating joystick

In plastic box with Ø=4mm plugs

**Ref.14593**

**Units.1**

**3**

**Proportional pneumatics workbook: Pressure control**

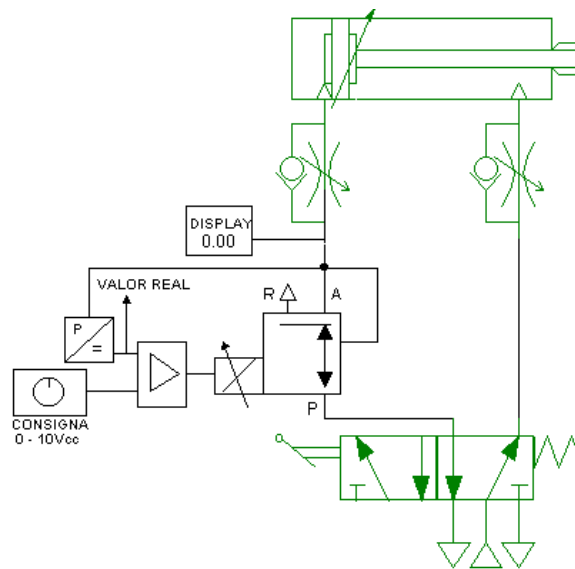
**Ref. 034651**

**Proportional pressure control in closed loop from 0 to 9 bar** by a proportional reducing valve with built-in pressure transducer for self-regulation of pressure in internal closed loop.

Self-regulation of pressure by 16-bit microprocessor with 12-bit analog converter and analog pressure transducer, with closed-loop control of outlet pressure with reference pressure

Reference signal by rotary potentiometer of 0...10 Vdc, pressure ratio / set point of 1 bar / volt

**Control diagram**



**Pressure control in closed loop**

Elements in green not included in the **Ref. 23505022**



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