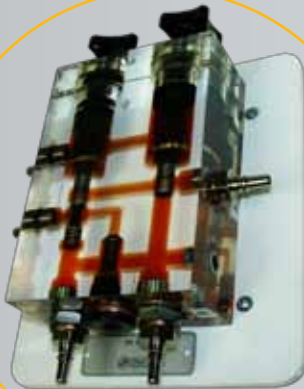




# HYDROMODEL-200

Transparent Hydraulics - Electro-hydraulics

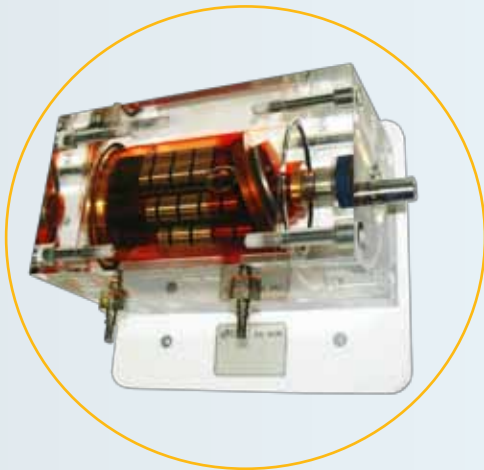
Hydraulic and electro-hydraulic technology at a glance



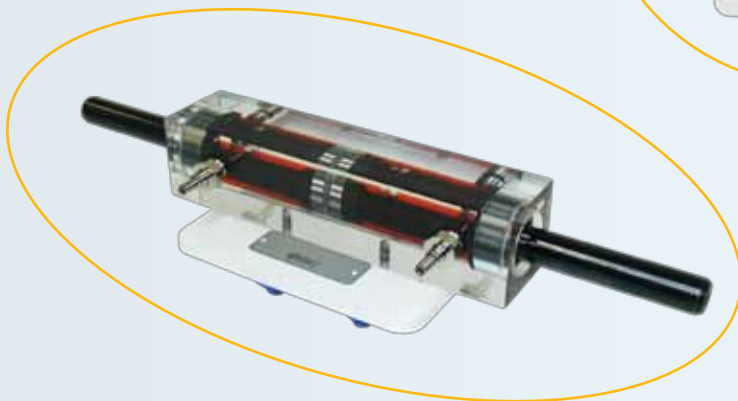
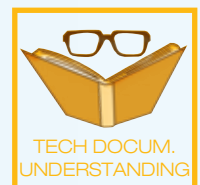
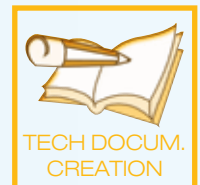
Implements and controls hydraulic  
and electro-hydraulic circuits



Develop the SKILLS...



Transparent methacrylate body with  
internal industrial metal parts



In the following TECHNOLOGIES...





### ■ HYDROMODEL-200 - Transparent Hydraulics - Electro-hydraulics

HYDROMODEL-200 meets training needs for technology related to hydraulic components in a very visual way.

The parts are made up of a transparent methacrylate body with internal industrial metal parts. Using this system, it is possible to see inside the components as they operate, becoming familiar with them and understanding how they work.



### Hermetic connections



The hoses, as well as the different devices, are connected to each other with a system of quick-fit self-sealing connectors NW4 1/8".

This system guarantees a maximum level of fluid integrity with ZERO LEAKAGE even during connection/disconnection operations.

### Fixing to the panel

Each component includes a fixing system to aid quick and simple preparation of practical exercises.



### Kits









HYDROMODEL-200 has 3 standard kits defined to cover training demands at different educational levels. Users can configure personalised sets to meet their own requirements or add to previously purchased equipment.

| STANDARD KITS |   |
|---------------|---|
| SAI9500       | MOD-201: Transparent hydraulic level I kit  |
| SAI9501       | MOD-202: Transparent hydraulic level II kit |
| SAI9502       | MOD-203: Transparent electro-hydraulic kit  |



## ■ HYDROMODEL-200 - With this system you could...

HYDROMODEL-200 comes up with different practical activities targeting skills in the technologies featuring in the table (below).

| TECHNOLOGIES |  |
|--------------|--|
|              | <br>HYDRAULICS                  |
| SKILLS       | <br>ANALYSIS                    |
|              | <br>TROUBLESHOOTING             |
|              | <br>DESIGNING                 |
|              | <br>TECH DOCUM. CREATION      |
|              | <br>INSTALLATION AND ASSEMBLY |
|              | <br>TECH DOCUM. UNDERSTANDING |
|              | <br>OPERATION                 |



## eLEARNING-200

Find out more about the theory behind the technologies developed in HYDROMODEL-200 with our eLEARNING-200 courses.

### RELATED eLEARNING-200 COURSES

Introduction to electricity (SMC-102)

DC electricity (SMC-103)

AC electricity (SMC-104)

Solid state (SMC-105)

Sensors technology (SMC-108)

Hydraulics / electrohydraulics (SMC-111)

*\*See eLEARNING-200 chapter for more information.*



- This shows how the HYDROMODEL-200 is suitable to develop skills in the specific technology.
- This shows that HYDROMODEL-200 can help develop skills in the specific technology even though there are other more appropriate products in the range.



### ■ HYDROMODEL-200 - Extra equipment

There are other products in the range to complement HYDROMODEL-200.

#### • autoSIM-200



autoSIM-200 is software that can design and simulate pneumatic, electro-pneumatic, hydraulic circuits, etc. It is also used for programming them plus monitoring and control of pre-defined 2D and 3D models.

*\*See autoSIM-200 chapter for more information.*

### ■ HYDROMODEL-200 - Configuration

Getting the right HYDROMODEL-200 configuration is as easy as:

#### • Steps to follow

- 1.- Select the panel and the necessary extras.
- 2.- Select the chosen standard kits or a personalised configuration.
- 3.- In the event of preferring a personalised configuration, select the references chosen for the composition.



## ■ HYDROMODEL-200 - Standard kits

| HYDROMODEL-200 - Standard kits                      |  | KITS |     |     |
|---|--|------|-----|-----|
| Ref.  | Description  | 201  | 202 | 203 |
| Actuators   |  |      |     |     |
| SAI9412   | Double acting cylinder                             | 1    |     |     |
| SAI9419   | Single acting cylinder                             |      | 1   |     |
| Distribution valves                                 |  |      |     |     |
| SAI9413   | 4/2 directional control valve. Manually operated   | 1    |     |     |
| SAI9431   | 4/2 solenoid valve, spring return                  |      |     | 1   |
| SAI9440   | 4/3 solenoid valve with closed mid-position        |      |     | 1   |
| Pressure control valves                             |  |      |     |     |
| SAI9414   | Pressure relief valve (ball valve), direct control | 1    |     |     |
| SAI9418   | 3 way pressure relief valve, with damping          |      | 1   |     |
| SAI9420   | Pressure reducing valve, 3 way. Direct control     |      | 1   |     |
| Flow valves   |  |      |     |     |
| SAI9422   | Manual shut-off valve, 2 way                       |      | 1   |     |
| SAI9423   | Piloted check valve                                |      | 1   |     |
| SAI9415   | One way restrictor                                 | 1    |     |     |
| SAI9416   | Two way flow control valve                         | 1    |     |     |
| SAI9421   | One way flow control valve                         |      | 1   |     |
| SAI9424   | Flow control valve with pressure compensation      |      | 1   |     |
| Connection parts and accessories                    |  |      |     |     |
| SAI9425   | Set of 5 hoses                                     |      | 1   |     |
| SAI9408   | Set of 10 hoses                                    | 1    |     |     |
| SAI9405   | 6 connection distributor on manifold               | 1    |     |     |
| SAI9407   | 4 connection divider                               |      | 1   |     |
| SAI9406   | Cross distributor with pressure gauge              | 1    |     |     |
| Control modules, sensors and electrical accessories |  |      |     |     |
| SAI9040   | Power supply                                       |      |     | 1   |
| SAI9042   | Set of pushbuttons                                 |      |     | 1   |
| SAI9041   | Set of 3 relays                                    |      |     | 1   |
| SAI9231-R   | Electric end of stroke (right)                     |      |     | 1   |
| SAI9231-L   | Electric end of stroke (left)                      |      |     | 1   |
| SAI9272   | Set of connectors + cable for solenoids            |      |     | 1   |
| SAI9046   | Set of cables with electric connector 4 mm         |      |     | 1   |
| Didactic support                                    |  |      |     |     |
| SAI9496   | User's and practical manual                        | 1    | 1   | 1   |

⚠ DON'T FORGET TO ADD AN ASSEMBLY PANEL, HYDRAULIC UNIT AND EXTRAS

|         |   |
|---------|---|
| SAI2064 | Vertical mounting panel for 2 work posts          |
| SAI2065 | Rolling table with twin-post                      |
| SAI9410 | Portable hydraulic pump for transparent hydraulic |
| SAI2074 | Storage drawer blocks for rolling table with lock |





### ■ HYDROMODEL-200 - Customized kits

The available hydraulic and electro-hydraulic components are listed below, by category.

#### Assembly panel, hydraulic unit and extras



##### SAI2064 - Vertical mounting panel for 2 work posts

- External dimensions: 1150x760x410mm\*. Allows work to be carried out on both sides, optimizing investment and space.

*\*Other dimensions available on request.*

##### SAI2065 - Rolling table with twin-post

- The entire rolling frame system may be disassembled for transportation.
- The vertical panel means you can work on both sides.
- Panel dimensions: 1150x760x25mm.
- It has a work-top for horizontal work, 1200x800mm.
- The lower section features a 1200x600mm metal shelf containing the component storage drawers block, the portable hydraulic pump, etc.
- 4 wheel support, 2 of them with brake and 2 without brake, and high loading output.
- Total dimensions: 1200x800x1700mm.



##### SAI9410 - Portable hydraulic pump for transparent hydraulic

- Transparent tank holding 6 litres.
  - Gear pump. Q= 1 l/min.
  - Pressure relief valve, Pmax: 10 bar.
  - 3 quick connector couplings (P + 2T).
  - Single-phase motor. Start - stop switch. Filter cap and filter.
  - Air bubble insertion system in the circulation oil.
- \* Does not include oil drum. SAI9411 necessary.*

##### SAI2074 - Storage drawer blocks for rolling table with lock

- Compact 4-drawer block with slide guides to house the components.
- External dimensions: 500x725x650mm.
- With security lock.



##### SAI9411 - Oil with special red colouring

- Specially coloured oil for using with transparent elements.
- Quantity required for portable hydraulic pump.

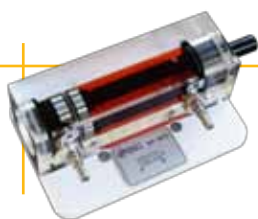
#### Didactic support

SAI9496- User's and practical manual

SAI9553 - Theoretical concepts manual

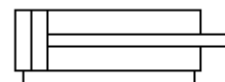


## Actuators

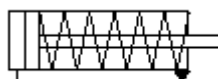


**SAI9412 - Double acting cylinder**

- $\varnothing 20/\varnothing 10 \times 58\text{mm}$  of stroke.
- Max. Pressure: 10bar.



**SAI9419 - Single acting cylinder**



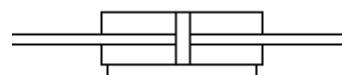
- $\varnothing 20/\varnothing 10 \times 40\text{mm}$  of stroke. Spring return.
- Max. Pressure: 10bar.



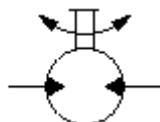
**SAI9457 - Double rod cylinder**



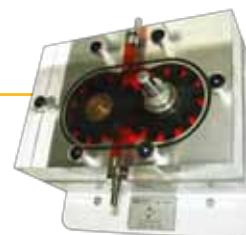
- $\varnothing 14/\varnothing 20/\varnothing 14 \times 100\text{mm}$  of stroke.
- Max. Pressure: 10bar.



**SAI9401 - External gear motor**



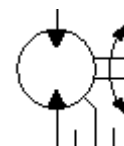
- Two-way hydraulic motor, with external gears.
- With two gears with 12 teeth and one shaft.



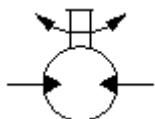
**SAI9436 - Axial piston motor**



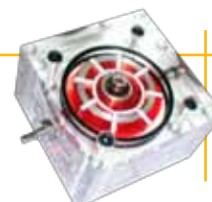
- Two-way hydraulic motor with axial pistons.
- 7 metal pistons  $\varnothing 12$  over inclined plane.
- Connections A, B and L drainage.



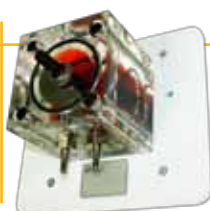
**SAI9435 - Vane motor**



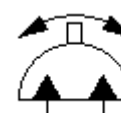
- Two-way vane hydraulic motor with one shaft. 8 vanes acting on eccentric rotor.



**SAI9438 - 180° rotary actuator**



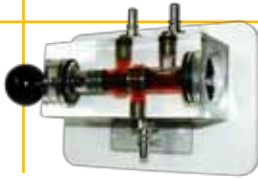
- Oscillating two-way hydraulic motor.
- Angle of rotation: 180°. One shaft.



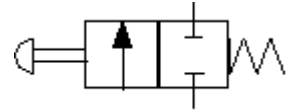


## Distribution valves

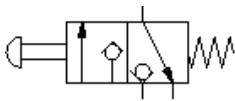
### SAI9442 - 2/2 directional control valve. Manually operated.



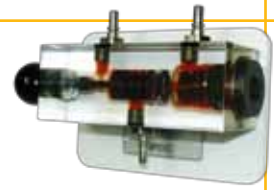
- Manually-operated and spring return.
- With drainage.



### SAI9445 - 3/2 directional control valve. Manually operated. Seat type.



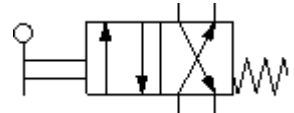
- Manually-operated and spring return.
- Max. Pressure: 10bar.



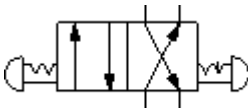
### SAI9413 - 4/2 directional control valve. Manually operated.



- Manually-operated and spring return.
- Max. Pressure: 10bar.



### SAI9446 - 4/2 directional control valve. Mechanical interlocking.



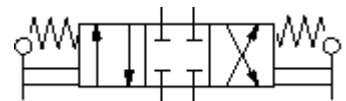
- Manual operation on both sides.
- Max. Pressure: 10bar.



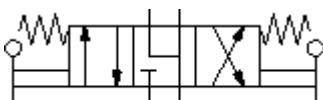
### SAI9447 - 4/3 directional control valve. Closed mid-position.



- Manual operation on both sides and spring centered.
- Max. Pressure: 10bar.



### SAI9449 - 4/3 directional control valve. Relieving mid-position.



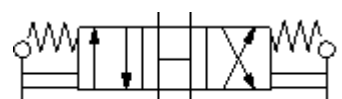
- Manual operation on both sides and spring centered.
- Max. Pressure: 10bar.



### SAI9450 - 4/3 directional control valve. P-A-B-T linked in mid-position.



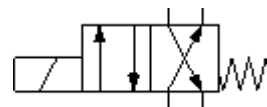
- Manual operation on both sides and spring centered.



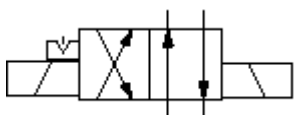
### SAI9431 - 4/2 solenoid valve, spring return



- Coil-operated and spring return.
- Max. Pressure: 10bar. Low consumption coil (12w).
- \*Connector for SAI9272 coil required.*



### SAI9482 - 4/2 solenoid valve with mechanical interlocking



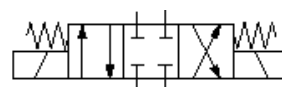
- Bistable. Coil-operated on both sides.
- Max. Pressure: 10bar. Low consumption coil (12w).
- \*Connector for SAI9272 coil required.*



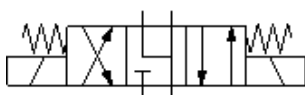
### SAI9440 - 4/3 solenoid valve with closed mid-position



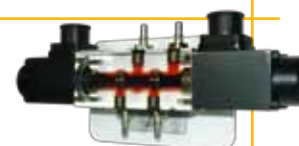
- Coil-operated on both sides and spring centered.
- Max. Pressure: 10bar. Low consumption coil (12w).
- \*Connector for SAI9272 coil required.*



### SAI9483 - 4/3 solenoid valve. A-B-T linked in mid-position



- Bistable. Coil-operated on both sides.
- Max. Pressure: 10bar. Low consumption coil (12w).
- \*Connector for SAI9272 coil required.*



### SAI9484 - 4/3 solenoid valve. A-B-P linked in mid-position



- Bistable. Coil-operated on both sides.
- Max. Pressure: 10bar. Low consumption coil (12w).
- \*Connector for SAI9272 coil required.*



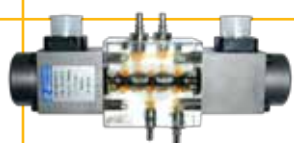
### SAI9485 - 4/3 solenoid valve. A-B-P-T linked in mid-position



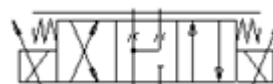
- Bistable. Coil-operated on both sides.
- Max. Pressure: 10bar. Low consumption coil (12w).
- \*Connector for SAI9272 coil required.*



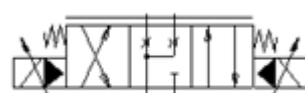
### SAI9403 - 4/3 proportional directional control valve, direct control.



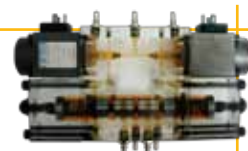
- A, B and P connected in mid-position. T closed.
- Coil-operated on both sides. Spring centered.
- Max. Pressure: 10bar. 24Vcc / I nominal: 0.8A coils.
- \*Connector for SAI9303 coil required.*



### SAI9404 - 4/3 proportional directional control valve.

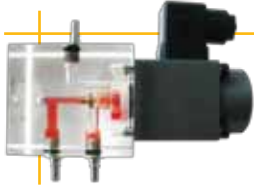


- Pilot-operated. External pilots X and Y. Spring centered. A, B and P connected in mid-position. T closed.
- Coil-operated on both sides.
- Max. Pressure: 10bar. 24Vcc / I nominal: 0.8A coils.
- \*Connector for SAI9303 coil required*



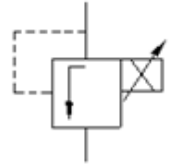


## Pressure control valves

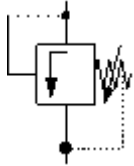


**SAI9402 - Proportional pressure relief valve, direct control.**

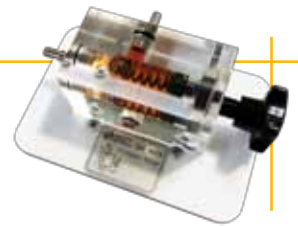
- Coil-operated 24Vcc / I nominal: 0.8A.
- Max. Pressure: 10bar.
- \*Connector for SAI9303 coil required.*



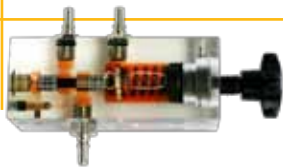
**SAI9414 - Pressure relief valve (ball valve), direct control.**



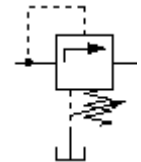
- Manual adjustment using the twist handle.
- Max. Pressure: 10bar.



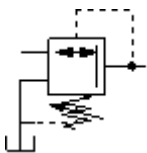
**SAI9418 - 3 way pressure relief valve, with damping.**



- Direct control. Manual adjustment by rotary knob.
- Max. Pressure: 10bar.



**SAI9420 - Pressure reducing valve, 3 way. Direct control.**



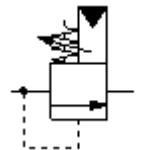
- Manual adjustment by rotary knob.
- Max. Pressure: 10bar.



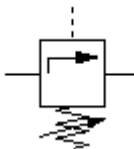
**SAI9459 - Pressure relief valve. Pilot operated.**



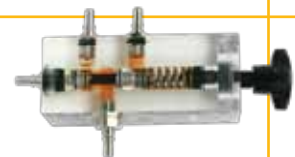
- Manual regulation by rotary knob.
- Max. Pressure: 10bar.



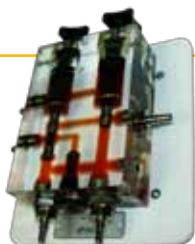
**SAI9460 - Discharge valve**



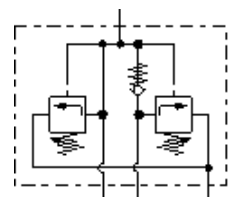
- Discharge valve by external pilot.
- Manual regulation by rotary knob.
- Max. Pressure: 10bar.



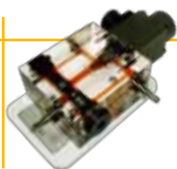
**SAI9463 - High - Low pressure circuit**



- Manual adjustment by two rotary knobs.
- Max. Pressure: 10bar.
- Comprised of a circuit of two adjustable limit valves and a non-return valve.
- All in the same body.



## Flow valves

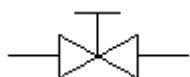


### SAI9439 - Proportional flow control valve with pressure compensation

- Coil-operated 24Vcc / I nominal: 0.8A
- Max. Pressure: 10bar.
- \*Connector for SAI9303 coil required*



### SAI9422 - Manual shut-off valve, 2 way

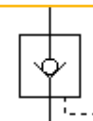


- Manual rotary actuation.
- Max. Pressure: 10bar.



### SAI9423 - Piloted check valve

- Max. Pressure: 10bar.



### SAI9415 - One way restrictor



- Max. Pressure: 10bar.



### SAI9416 - Two way flow control valve

- Two-way flow control valve, with two ports, needle. Manual adjustment by rotary knob.
- Max. Pressure: 10bar.



### SAI9421 - One way flow control valve

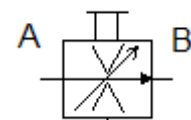


- One-way. Manual adjustment by rotary knob.
- Max. Pressure: 10bar.

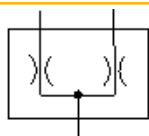


### SAI9424 - Flow control valve with pressure compensation

- Manual regulation by rotary knob.
- Max. Pressure: 10bar.



### SAI9468 - Flow divider

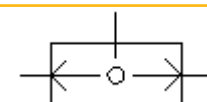


- Flow divider valve: it divides the inlet flow into two equal parts.
- Max. Pressure: 10bar.



### SAI9469 - Circuit selector with logic function "OR"

- Max. Pressure: 10bar.





## Connection parts and accessories

### SAI9425 - Set of 5 hoses



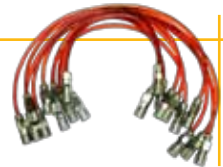
- Set of 5 transparent polyurethane tubes.
- Max. Pressure: 10bar. 520mm length.



### SAI9408 - Set of 10 hoses



- Set of 10 transparent polyurethane tubes.
- Max. Pressure: 10bar. 520mm length: 6 units. 350 mm length: 4 units.



### SAI9405 - 6 connection distributor on manifold



- Max. Pressure: 10bar.



### SAI9407 - 4 connection divider



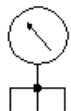
- Max. Pressure: 10bar.
- With three self-sealing plugs and 1 socket.



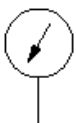
### SAI9406 - Cross distributor with pressure gauge



- Distributor with 3 connections with pressure gauge from 0 to 16 bar.
- With two self-sealing plugs and 1 socket.



### SAI9461 - Pressure gauge without container



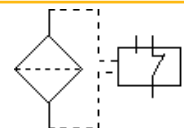
- Without box or scale for viewing the internal mechanism.
- Max. Pressure: 10bar.
- With one self-sealing plug and one socket.



### SAI9462 - Pressure filter with clogging indicator



- Potential-free output by switched contact.
- Max. Pressure: 10bar.



### SAI9464 - Piston accumulator



- Max. Pressure: 10bar.
- Load pressure (nitrogen): 4 bar.



### SAI9466 - Diaphragm accumulator



- Max. Pressure: 10bar.
- Load pressure (nitrogen): 4 bar.



## Control modules, sensors and electrical accessories

### SAI9309 - Power supply module for two proportional coils



- Potentiometer for controlling the output intensity to coils a or b.
- I max. = 0.9 A per coil.
- Overload electronic internal protection.
- Dither frequency on/off switch and Dither frequency value adjustment.
- 2 ammeters for displaying the current via coils a or b.

### SAI9303 - Set of connectors for proportional coils

- Connectors with LED indicators (screen type). Long. 1.5 m.
- It includes 2 units (1 grey connector and 1 black connector).
- Indication on screen of light intensity proportional to the intensity value.



### SAI9040 - Power supply



- Voltage input 110V - 240VAC.
- Output: 24VDC / 5A.
- Short-circuit protection.
- Input switch and LED display.
- Built-in power cable.
- 4 mm terminals for snap connection cables.
- Insulating box with screen printed lid.

### SAI9042 - Set of pushbuttons

- 2 pushbuttons with spring return.
- 2-position selector.
- Electric female connectors 4 mm.
- Insulating box with screen printed lid.

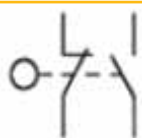


### SAI9041 - Set of 3 relays

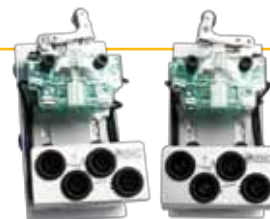


- It includes three relays with coil 24V and 4 switchable contacts.
- LED activated relay display.
- Electric female connectors 4 mm.
- Insulating box with screen printed lid.

### SAI9231-R / SAI9231-L - Electric end of stroke (right / left)



- Retractable roller driven.
- R=right. L=left.
- 1 contact NO. 1 contact NC.
- Transparent body and roller with reversible position.
- Female connectors 4 mm.



### SAI9272 - Set of connectors + cable for solenoids



- Male connectors 4 mm. Cable 1.5 m.
- Ready to connect in solenoid valve coils.
- It includes 3 units (1 black connector and 2 grey connectors).
- LED indicators.

### SAI9046 - Set of cables with electric connector 4 mm

- 5 red cables 1.5 m.
- 10 black cables 0.5 m.
- 5 black cables 1 m.
- 5 blue cables 0.25 m.

