Fluidea

...we know how!

STRAIGHT HANDLES IC1 & IC2

20.03





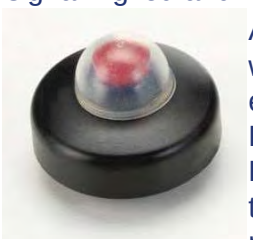
Index:

IC1 & IC2: generality

Straight handles with multifunctional option series IC can be supplied as spare or mounted on our electrical or hydraulic joysticks, and also on control levers of our main valves. It's a good alternative to the multifunctional ergonomic handles where an application needs a smaller dimension or a lower cost, without compromising versatility and reliability.

IC handles are available in 2 basic configurations:

- **Single switch IC1**, with momentary on-off function or with 3 momentary position rocker switch and normally open circuit (N.O.) or with a rocker diverter with 3 momentary positions "mom-off-mom" with normally open circuit (N.O). Both functions have a heavy duty microswitch rated 16 A at 250 VAC. Push button and rocker are on the top side of the handle and are protected with an oil proof rubber cap.
- **Multi function pushbutton IC2,** with momentary or latched pushbuttons or 2 and 3 position rocker switches, rated 5 A at 28 VDC and IP64 protection degree or IP68 on request. All pushbuttons have a plastic cap actuator available with a 9 range colours. Optional silicon protecting caps are available and can be used to cover actuator caps when used in very dusty environments. Other options as pushbuttons with signalling led and 4 way pushbuttons.



Also rotary potentiometers are available with PWM regulator and proportional electro-hydraulic blocks on request from FLUIDEA product range.
Handle body is made with oil-proof black thermoplastic material, UV and scraping resistant and can be used in a wide range of ambient temperatures.

Use of high quality electrical components, in compliance with European directive 2002/95/CE, ensures the maximum reliability and long life also for the heaviest working conditions.

A wide range of additional options, including mounting levers and fittings, rubber boots, customized wirings, can cover the most demanding applications of different sectors as industrial automation, electrical, hydraulic and pneumatics tools, building tools, earth moving machines, gardening machines, traffic signal and many others.

The data and the technical features in this catalogue are not binding. The manufacturer reserves the right to carry out modifications, by its unquestionable judgement and without prior notice, in order to improve its products. The manufacturer is not responsible for damage to people or properties caused by an improper use of the product.

IC1 & IC2: Applications

The multifunctional straight handles series IC can be used on hydraulic joysticks, main valves and various applications: industrial automation for the control of electric, pneumatic and hydraulic tools, hydraulic presses, die cutters, tapping machines, punching machines, riveters, construction industry machines, earth moving machines, wood manufacturing machines, gardening machines, traffic light installations, material lifting and moving machines.

Handle IC2 with rocker and 2 pushbuttons on a hydraulic joystick

Handle IC2 with 2 pushbuttons on a rotary bracket of a tapping machine

Handle IC2 with 2 pushbuttons on a riveter clamp

Handle IC1 with 1 pushbutton on control device of a traffic light

IC1 & IC2: Technical features:

Handle:

- Shell material	Techno-polymer PA6+30%FV
- UV resistance	Good
- Mineral oil resistance	Good
- Protection degree	IP54
- Ambient temperature range	from -20° to + 60°C
- Adapter material	Zinc plated steel or brass

Micro-switches for handle series IC1:

- Maximum current	10 A inductive, 16 A resistive
- Maximum input voltage	250 VAC
- Electrical life	100.000 cycles at maximum load
- Mechanical life	1.000.000 cycles
- Protection degree	IP54
- Ambient temperature range	da - 55° a + 85°C
- Total operating stroke	2,4 mm max.
- Operating force	3,00 N max.
- Release forc :	0,75 N min.
- Terminal materials	Cadmium silver alloy
- Cadmium silver alloy	Thermoplastic polymer
- Approvals:	CE, CSA, UL,VDE

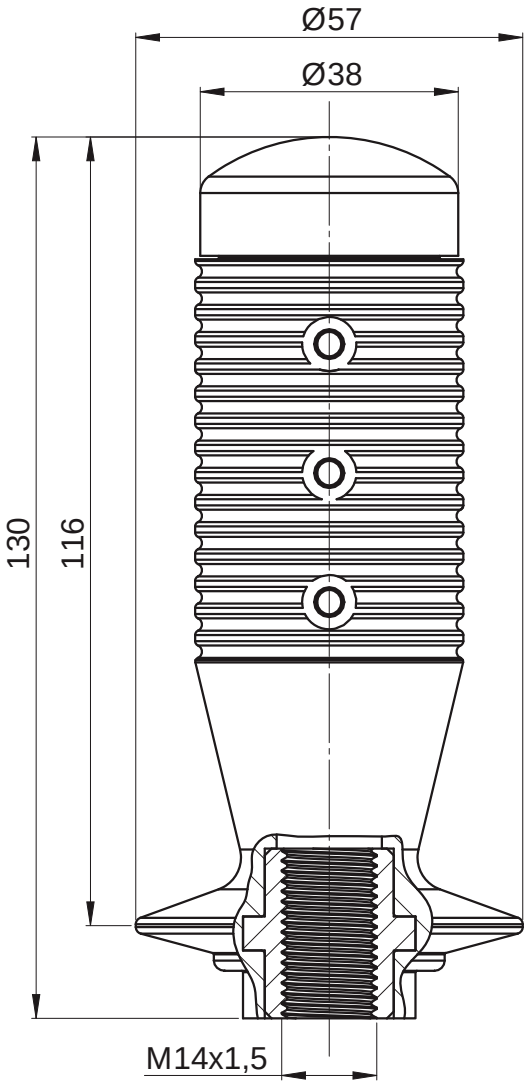
Micro-switches for handle series IC2:

- Maximum current	5 A resistive, 3 A induttive
- Input voltage range	from 5 to 28 VDC
- Electrical life	from 25.000 cycles at max. current to 1.000.000 cycles at 1A resistive
- Mechanical life	1.000.000 cycles
- Protection degree	IP64 standard (IP68 on request)
- Ambient temperature range	from - 55° to + 85°C
- Total operating stroke	2 mm max.
- Operating force	7,5 ±0,2N
- Terminal materials	Gold plated silver alloy

Terminals:

- Terminal material	Tinned copper strands
- Tinned copper strands	Silicon or PVC
- Wire sleeve material	Black polyester fibre
- Wire section	0,50 mm^2
- Rope making wires	Class 6 VDE 0295
- Approvals:	UL - CSA - HAR
- Standard length	500 mm (other length on request)

IC1 & IC2: Overall dimensions



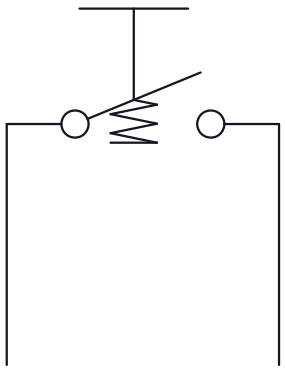
IC1 handle series without adapter and pushbutton

IC1 : Pushbutton and wiring configuration

Handle without switch	**A**

With one N.O. switch	**B**

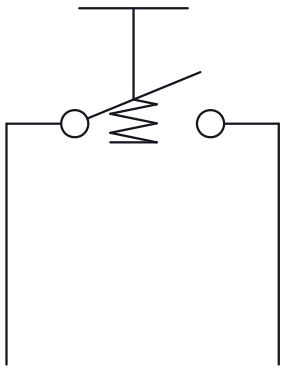
Electric diagram **B**



IC1 : Pushbutton and wiring configuration

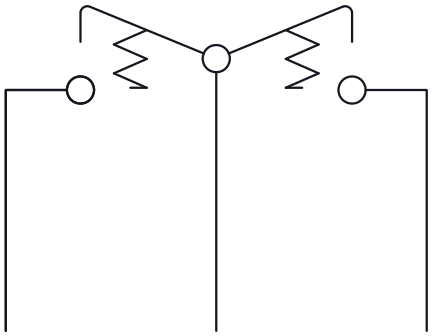
With one N.O. switch and safety device	C

Electric diagram **C**



With 3 position rocker “mom-off-mom”	D

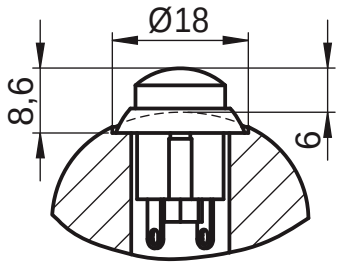
Electric diagram **D**



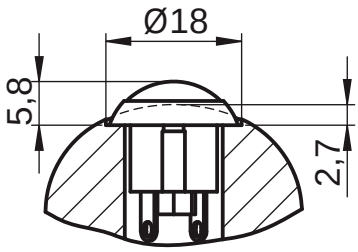
C configuration has a safety device to prevent the accidental operation of the pushbutton

IC2: cap and colour configuration fo the standard pushbuttons

The standard push buttons are momentary “off-mom” with N.O circuit and 2 terminal pins. They are available with rigid caps of two different heights **A** (raised) and **B** (flush). The dimensions are shown below and the caps are easily repleaceble by size and colour.



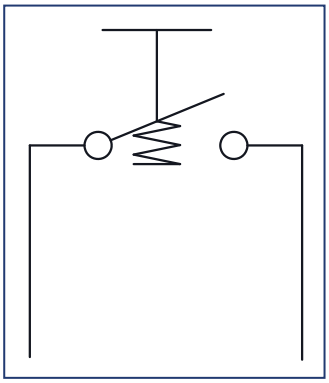
Raised cap **A**



Flush cap **B**

Options with doble circuit and 4 terminals N.O./N.C. are available on request.

See page 5 for specifical technical data



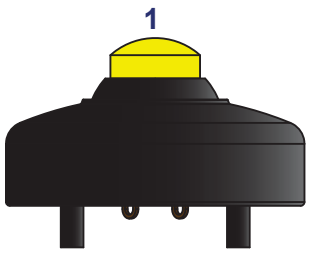
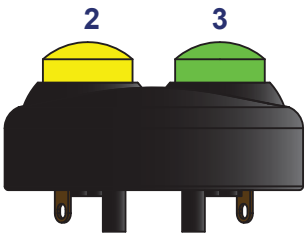
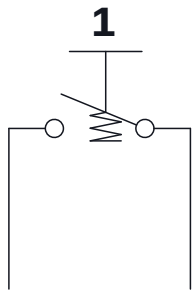
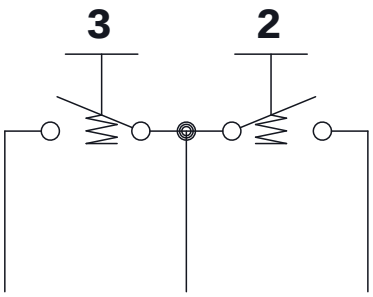
Electric diagram of the pushbuttons “off-mom” standard with 2 terminal pins

IC2: colour selection of standard pushbuttons:

Orange	**O**		Yellow	**Y**		Red	**R**	
White	**W**		Grey	**H**		Green	**G**	
Blue	**B**		Black	**N**		Violet	**V**	

Colours are valid for standard pushbuttons “off-mom” with normally open circuit with raised or flush cap without led.

IC2: Pushbuttons and wiring configuration for IC2; cap options

		
With one pushbutton in position 1 **A**	With two pushbuttons in positions 2 & 3 **B**	Without pushbuttons **Z**
Electric diagram **A** 	Electric diagram **B** 	

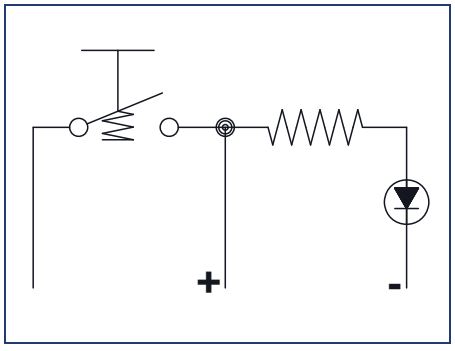
IC2: Optional silicon caps for harsh environments

Add the code after the pushbutton code	**S**

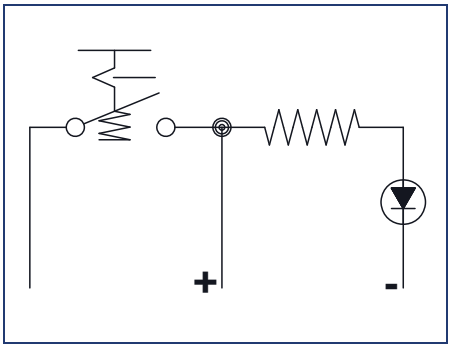
They are transparent silicon caps of high resistance to the abrasion and waterproof. Available in raised or flush option size according to the selected standard pushbutton caps, they aim to improve protection in the most severe enviromental conditions.

IC2: Configuration of latched pushbuttons with led and electric diagrams

			
“off-on” green latched without led **IBG**	“off-on” yellow latched without led **IBY**	“off-on” red latched without led **IBR**	“off-on” blue latched without led **IBB**
			
“off-mom” green momentary with led **GL**	“off-mom” yellow momentary with led **YL**	“off-mom” red momentary with led **RL**	“off-mom” blue momentary with led **BL**
			
“off-mom” green latched with led **IBGL**	“off-mom” yellow latched with led **IBYL**	“off-mom” red latched with led **IBRL**	“off-mom” blue latched with led **IBBL**



Electric diagram momentary pushbutton



Electric diagram latched pushbutton

On-off pushbuttons with signalling led, available latching or momentary can be mounted on the upper cap; for led version specify the input voltage 12 or 24 VDC

IC2: 4-way mini-joystick MJ4

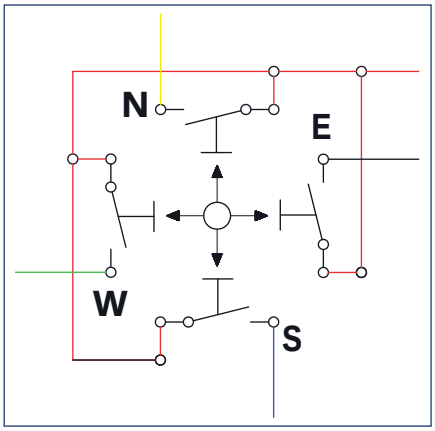
MJ4 is a mini-joystick “off-mom” with 4 terminals pins, N.O. circuit, spring return to neutral, cross movements North-South-East-West and can be fitted only on the IC2 handle top cap only.

4-way Mini-joystick “off-mom”	**MJ4**

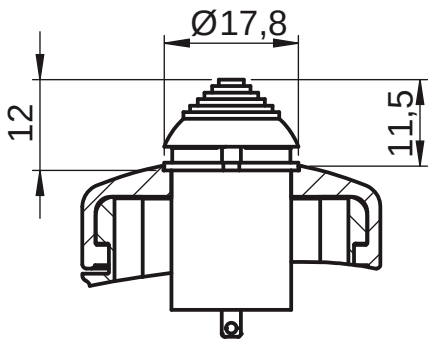
Technical features:

- Maximum current:	1 A resistive, 2 A inductive
- Minimum current:	10 µA @ 30 mV
- Maximum input voltage:	28 VDC
- Electrical life:	100.000 cycles
- Mechanical life:	500.000 cycles
- Protection degree:	IP68
- Ambient temperature:	from - 55° to + 85°C
- Operating angle:	10° +/- 0,5
- Operating force:	330 N +/- 10

Electric diagram MJ4



Overall dimensions MJ4



IC2: rotary potentiometer PRV

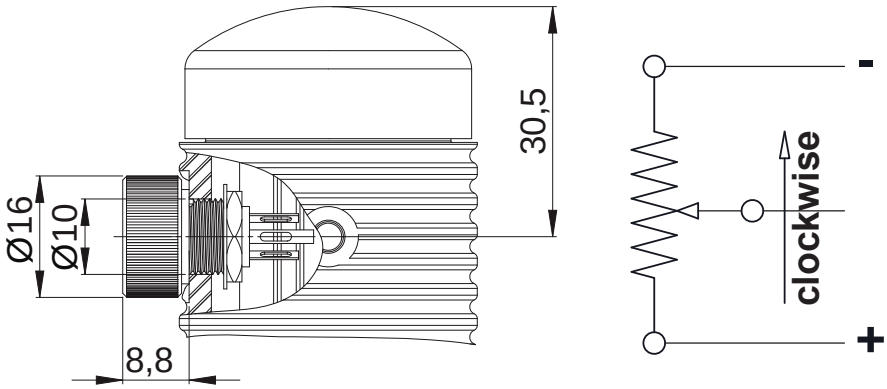
It is a hand operated rotary potentiometer and can be allocated only in position 6 of the IC2 handle body. It is used for proportional remote controls of hydraulic variable displacement pumps and motors and any other user regulated via electro -hydraulic pressure reducing valves. It can be supplied in combination with our **ELR** electronic controllers and **ERP** electro-hydraulic manifold blocks.

Thumbwheel rotary potentiometer	**PRV6**

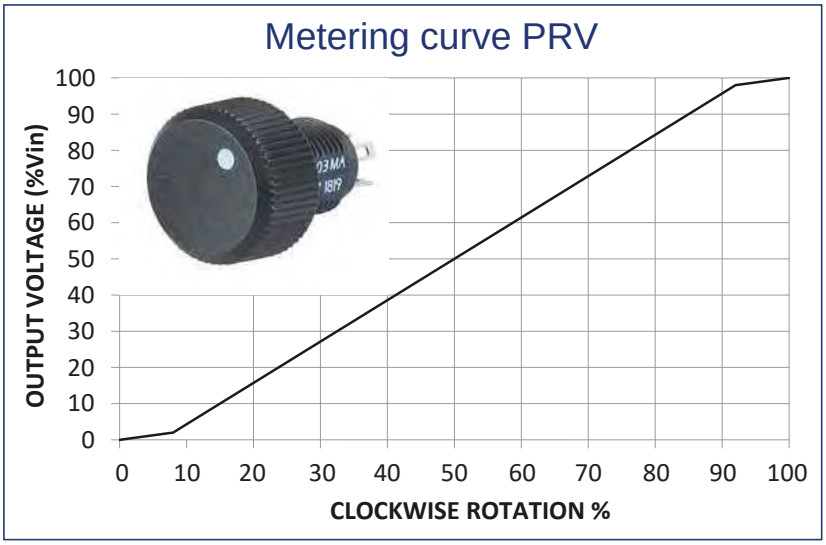
Technical data:

- Potentiometer resistance:	0,1÷10 kΩ +/- 20%
- Terminal resistance:	1 Ω typical
- Power:	1 W at +40 °C
- Max supply voltage:	77 VDC
- Max current:	7 mA
- Operating temperature:	-40° ÷ +85 °C
- Temperature coefficient:	+/- 150 ppm/°C
- Electrical rotation angle:	270° +/- 5°
- Mecanical rotation angle:	300° +/- 5°
- Operating torque:	2 Ncm
- Protection degree:	IP67

Overall dimension and electric diagram

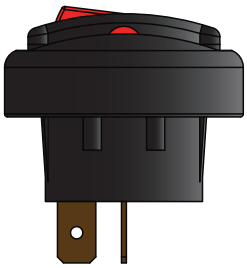


Metering curve PRV

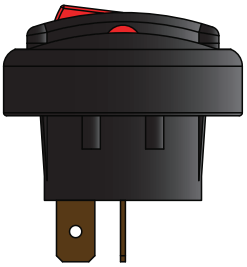


IC2: rocker switches

The rocker switches are available with 2 and 3 terminals pins, in N.O. circuit, spring return (**MOM**) or latching (**ON**) and can be fitted only on the upper cup of the handle.

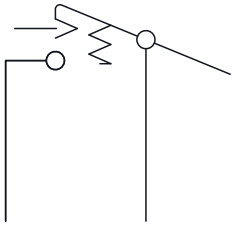


Two position latching rocker switch **D1**

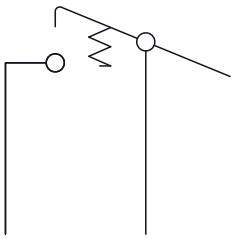


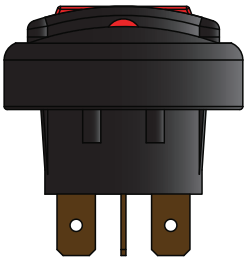
Two position momentary rocker switch **E1**

Electric diagram **D1**

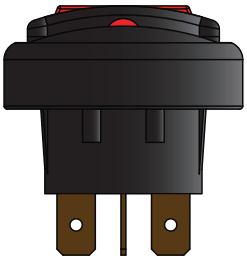


Electric diagram **E1**



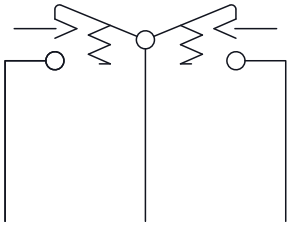


Three position latching rocker switch **D2**

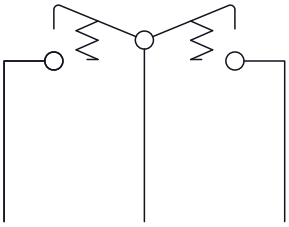


Three position momentary rocker switch **E2**

Electric diagram **D2**

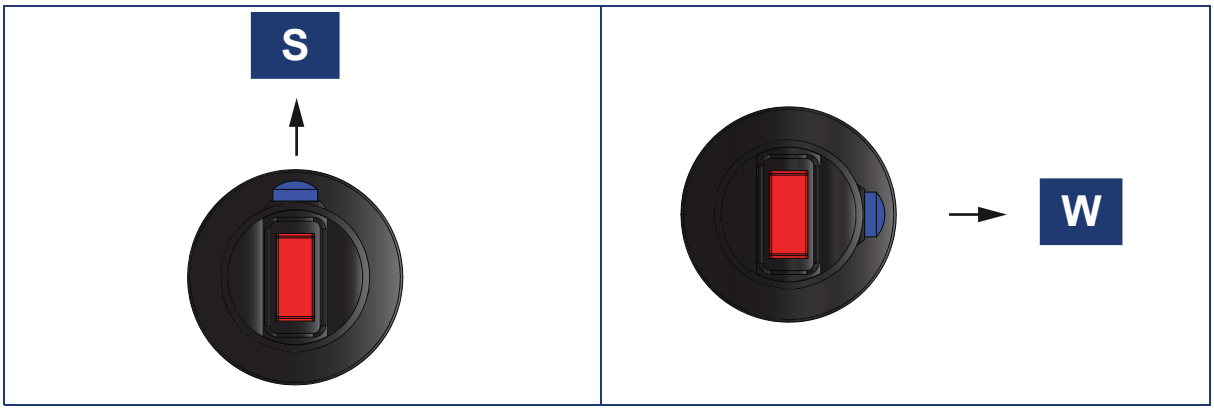


Electric diagram **E2**



IC2: Rocker switch orientation

Handle view from the top
(omit the code if the rocker has standard orientation = S)



Aligned with pushbuttons
on the handle body

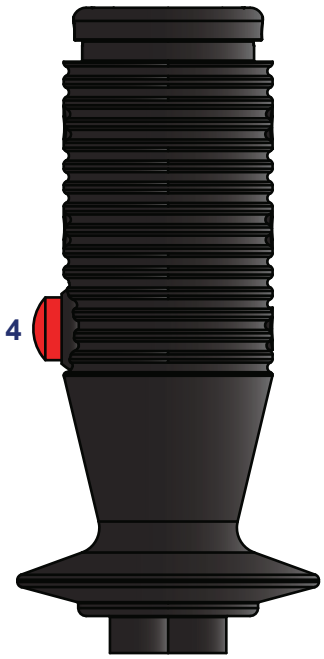
Orthogonal to pushbuttons
on the handle body

Handle IC2 with two latching position rocker switch on the cap and 2 momentary pushbuttons with raise cap on the handle body in position G4 and R5 (rocker switch orientation type S)

IC2: Pushbutton configuration and electric diagram on the handle body

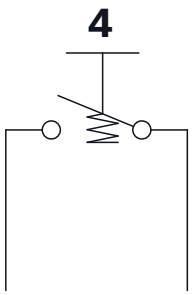
Standard momentary “off-mom” N.O. pushbuttons

IC2 body without pushbuttons	0



IC2 body with one pushbutton in pos.4	1

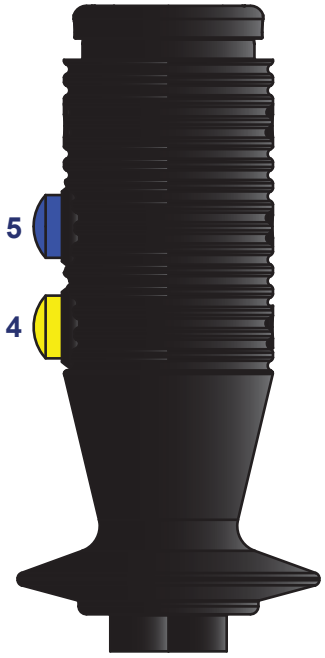
Electric diagram **1**



Straight handle without pushbuttons, with collar, adapter and rubber boot Q

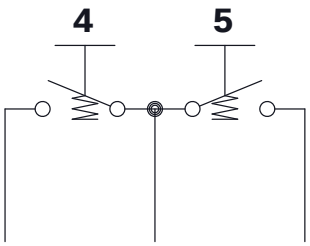
IC2: Pushbutton configuration and electric diagram on the handle body

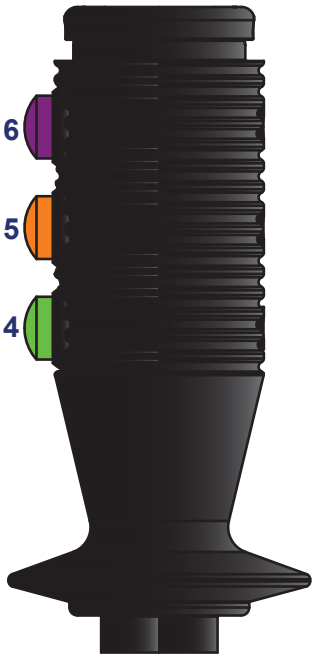
Standard momentary “off-mom” N.O. pushbuttons



IC2 body with two pushbuttons in pos.4 and 5 — **2**

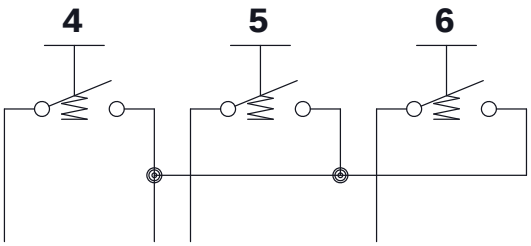
Electric diagram **2**



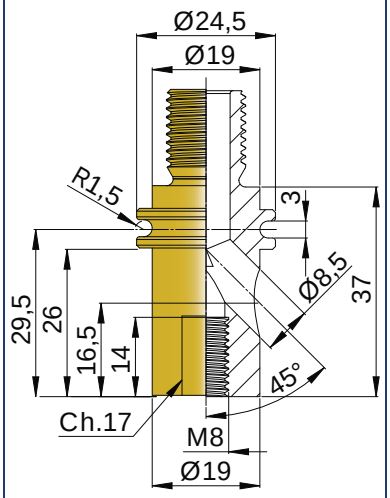


IC2 body with three pushbuttons in pos.4, 5 and 6 — **3**

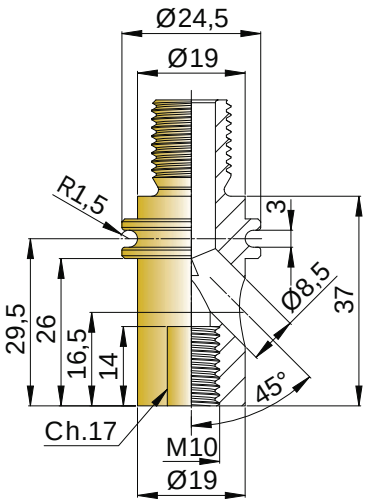
Electric diagram **3**



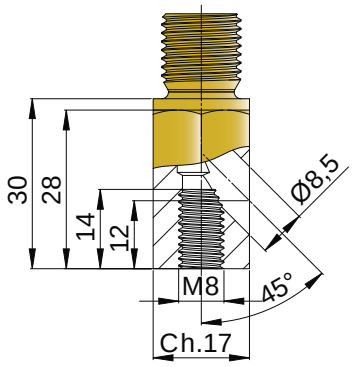
IC1 & IC2: mounting adapters



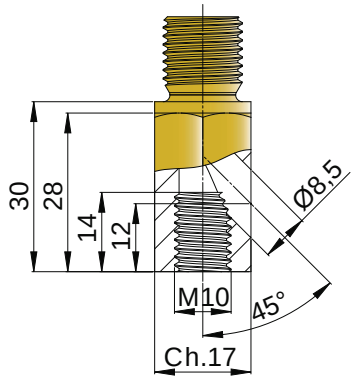
M8-F with collar and radial wire exit **C1**



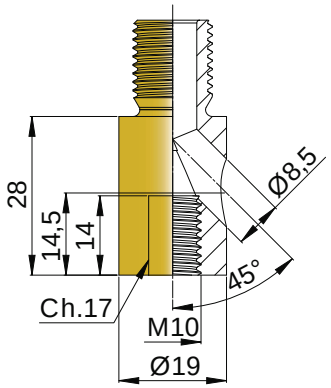
M10-F with collar and radial wire exit **C2**



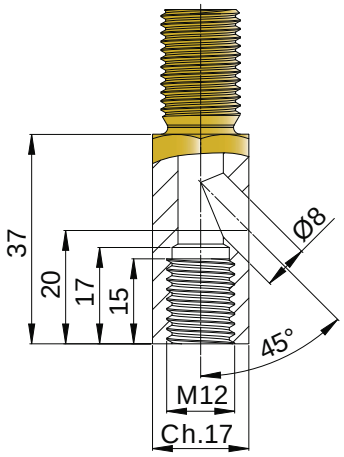
M8-F without collar and radial wire exit **C3**



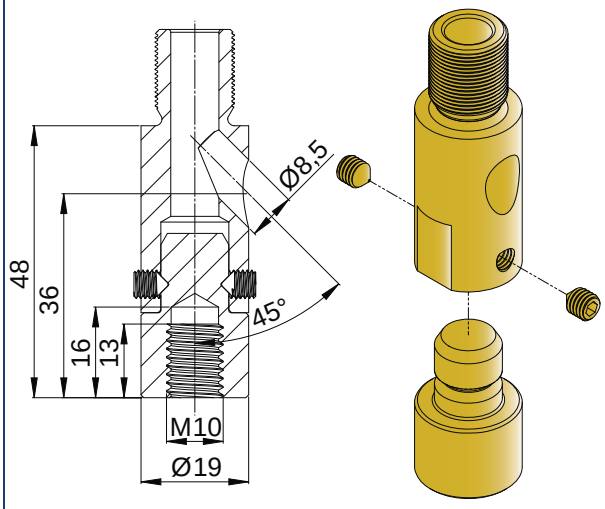
M10-F without collar and radial wire exit **C4**



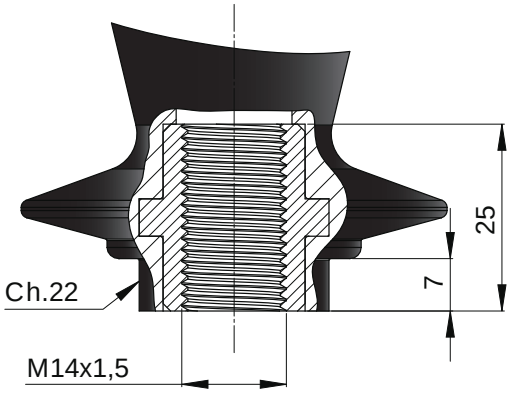
M10-F without collar and radial wire exit **C7**



M12-F without collar and radial wire exit **C8**



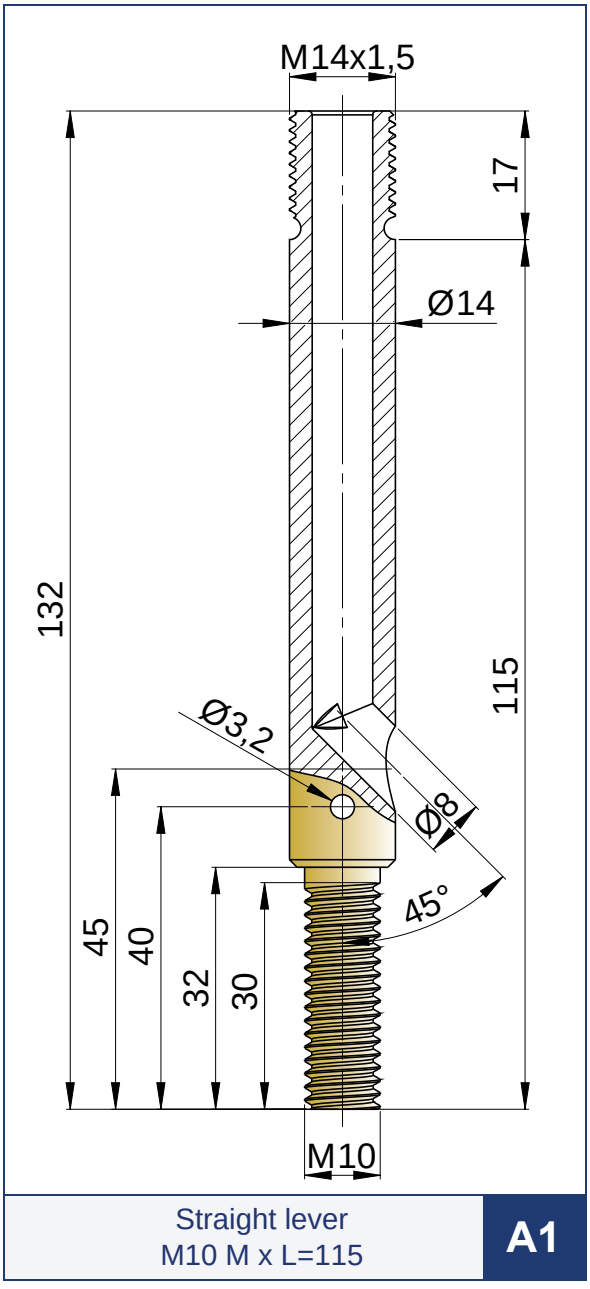
M10-F without collar swivelling radial wire exit **C9**



M14x1,5 F without adapter **Z1**

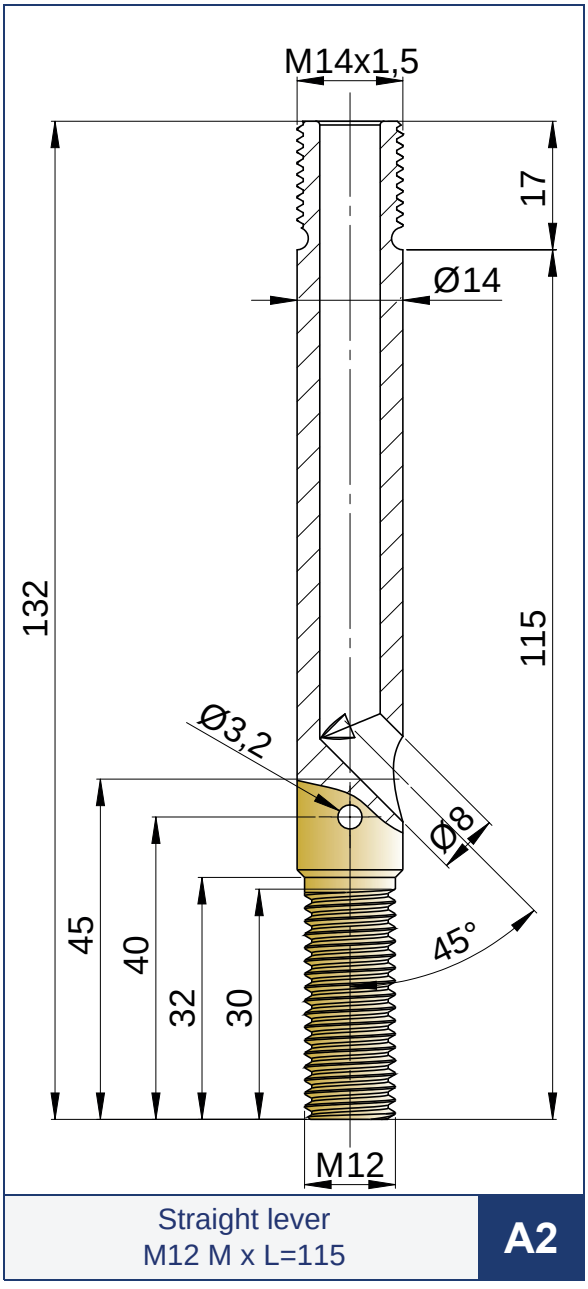
IC1 & IC2: mounting levers

Mounting adapters and levers are made in brass or zinc plated steel



Straight lever
M10 M x L=115

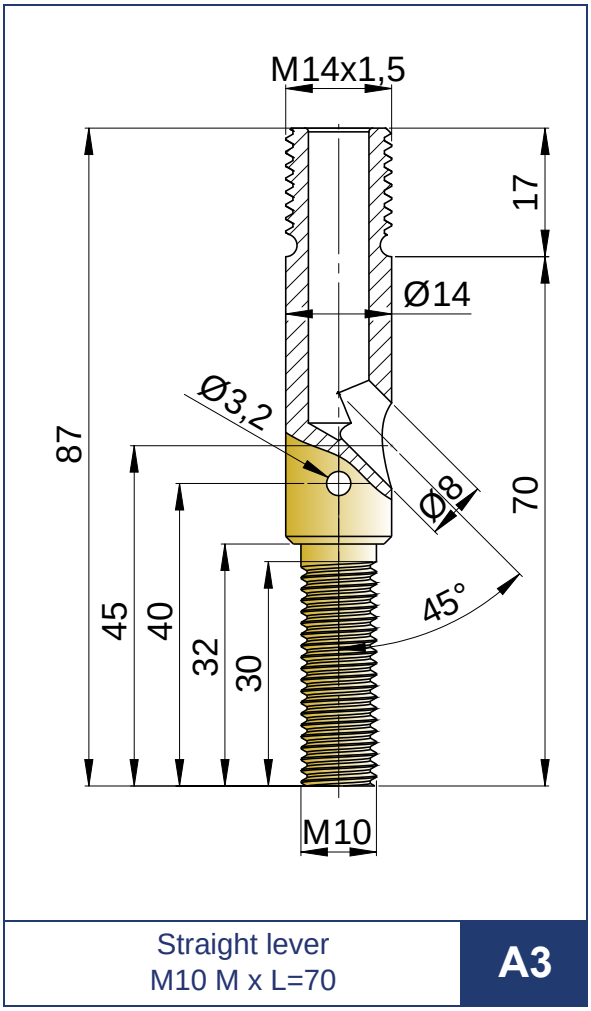
A1



Straight lever
M12 M x L=115

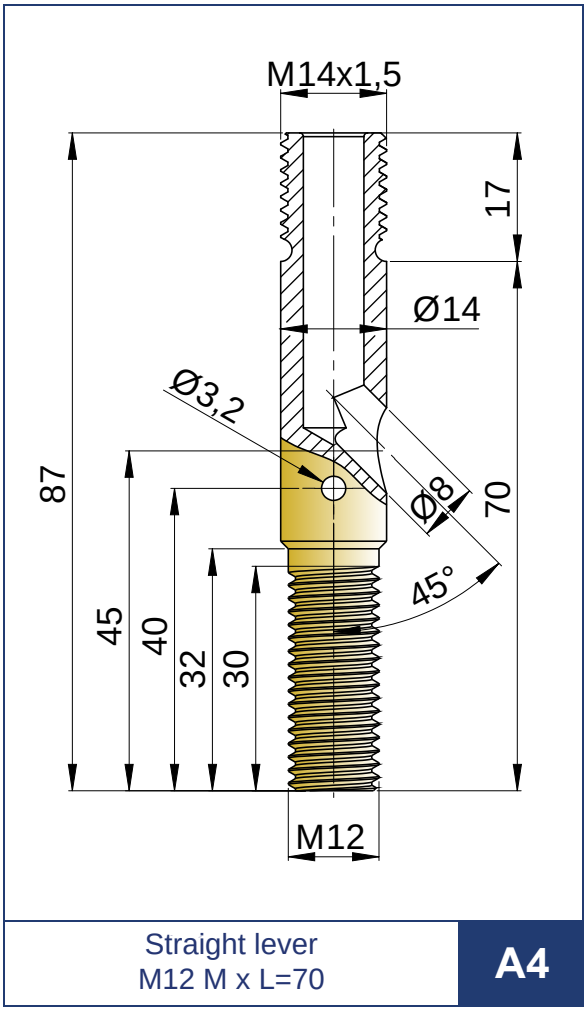
A2

IC1 & IC2: mounting levers



Straight lever
M10 M x L=70

A3



Straight lever
M12 M x L=70

A4

IC1 & IC2: Wire configuration

Without wires	Z
Single high flexibility, section 0,50 mm^2	G
Multicore cable section 0,50 mm^2	S
Special wire on request (specify features)	SP

IC1 & IC2: Wire length

Without wires	00
Standard length, from handle bottom (cm)	50
Length on request, from handle bottom (cm)	300

IC1 & IC2: wire terminals

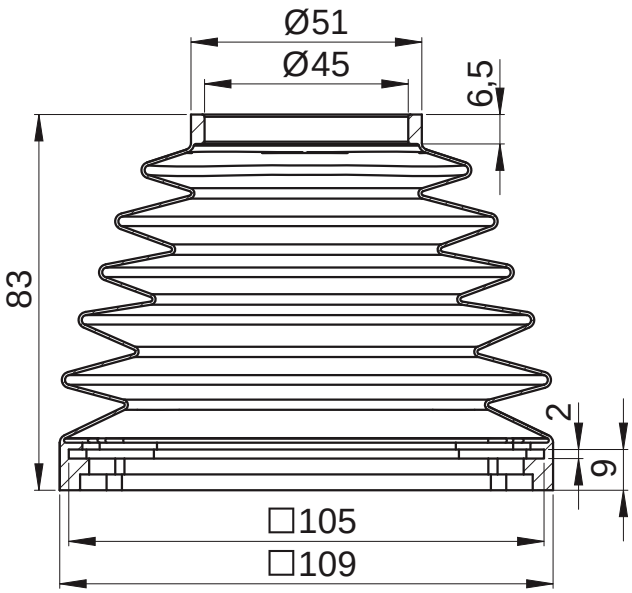
Without wires	Z
Wire terminal with 5 mm strip, without tinplate	N
With faston (specify brand and type)	S
Connector (specify brand and type) with wired terminals	C

IC2 handle fitted with 3 pushbuttons, customized mounting adptor & wiring with miniatiurized connector

IC1 & IC2: Protection boots

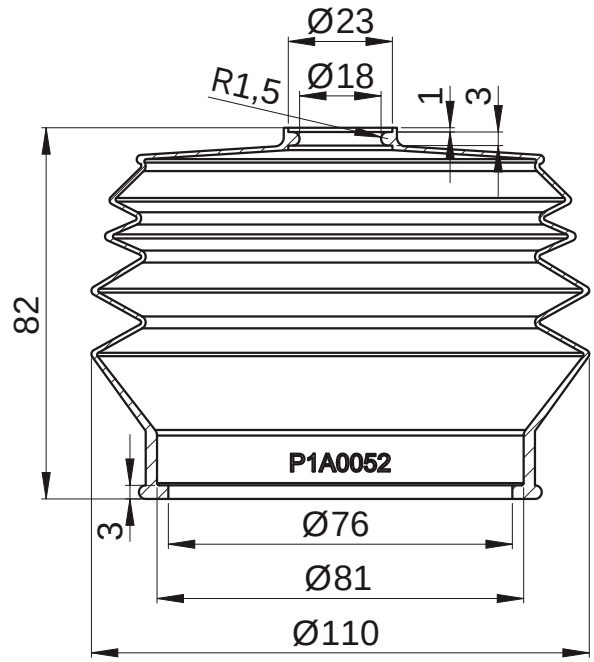
Without rubber boot	Z

Suitable for adapters C8 and C9 (page 18)



With square rubber boot	Q

Suitable for adapters C1 and C2 (page 18)



With round rubber boot	R

Model coding handle IC1

IC1	B	L1	S	50	N	Z

Rubber boot (page 22):
- without rubber boot = **Z**
- with round rubber boot = **R**
- with square rubber boot = **Q**

Wire terminals (page 21):
- without wires = **Z**
- wire terminal with 5 mm strip, without tinplate = **N**
- with faston (specify brand and type) = **S**
- Connector (specify brand and type) with wired terminals = **C**

Cable length (page 21):
- without wires = **00**
- standard length = **50**
- length on request, from handle bottom (cm) = **XX**

Wire configuration (page 21):
- without wire = **Z**
- single high flexibility, section 0,50 mm² with PVC sleeve = **G**
- multicore cable section 0,50 mm² (with silicon protection) = **S**
- special wire on request (specify features) = **SP**

Mounting adapters and levers (pages 18-20):
- without wires, internal thread M14x1,5 = **Z1**
- with straight adapter, internal thread M8 with collar = **C1**
- with straight adapter, internal thread M10 with collar = **C2**
- with straight hexagonal adapter, internal thread M8 without collar = **C3**
- with straight hexagonal adapter, internal thread M10 without collar = **C4**
- with straight adapter, internal thread M10 without collar = **C7**
- with straight adapter, internal thread M10 with and without collar = **C8**
- with straight adapter, internal thread M10 swivelling, without collar = **C9**
- with straight lever, external thread M10, L=115 mm = **A1**
- with straight lever, external thread M12, L=115 mm = **A2**
- with straight lever, external thread M10, L=70 mm = **A3**
- cwith straight lever, external thread M12, L=70 mm = **A4**

Configuration and wire diagram (pages 6 and 8):
- basic handle without pushbutton = **A**
- with one “mom-off” momentary pushbutton N.O. circuit = **B**
- with one “mom-off” momentary pushbutton N.O. circuit + safety device = **C**
- with one “mon-off-mom” momentary rocker switch N.O. circuit = **D**

Model: IC1

Model coding handle IC2

IC2	W	D	1AR4	C1	G	50	N	Z

Rubber boot (page 22):
- without rubber boot = **Z**
- with round rubber boot = **Z**
- with square rubber boot = **Q**

Wire terminals (page 21):
- without wires = **Z**
- wire terminal with 5 mm strip, without tinplate = **N**
- with faston (specify brand and type) = **S**
- Connector (specify brand and type) with wired terminals = **C**

Cable length (page 21):
- without wires = **00**
- standard length = **50**
- length on request, from handle bottom (cm) = **XX**

Wire configuration (page 21):
- without wire = **Z**
- single high flexibility, section 0,50 mm² with PVC sleeve = **G**
- multicore cable section 0,50 m² (with silicon protection) = **S**
- special wire on request (specify features) = **SP**

Mounting adapters and levers (pages 18-20):
- without wires, internal thread M14x1,5 = **Z1**
- with straight adapter, internal thread M8 with collar = **C1**
- with straight adapter, internal thread M10 with collar = **C2**
- with straight hexagonal adapter, internal thread M8 without collar = **C3**
- with straight hexagonal adapter, internal thread M10 without collar = **C4**
- with straight adapter, internal thread M10 without collar = **C7**
- with straight adapter, internal thread M10 with and without collar = **C8**
- with straight adapter, internal thread M10 swivelling, without collar = **C9**
- with straight lever, external thread M10, L=115 mm = **A1**
- with straight lever, external thread M12, L=115 mm = **A2**
- with straight lever, external thread M10, L=70 mm = **A3**
- with straight lever, external thread M12, L=70 mm = **A4**

Handle body configuration (pages 13-16-17):
- without pushbutton = **0**
- with 1 pushbutton “mom-off” N.O. in pos. 4 = **1**
  (followed by cap code, Raised (A)/Flush (B), colour and position ex. 1AR4)
- with 2 pushbuttons “mom-off” N.O. in pos. 4-5 = **2**
  (followed by cap code, Raised (A)/Flush (B), colour and position ex. 2AR4AB5)
- with 3 pushbuttons “mom-off” N.O. in pos. 4-5-6 = **3**
  (followed by cap code, Raised (A)/Flush (B), colour and position ex.3AR4AB5AV6)

Cap configuration (pages 10-11-12-14):
- with 1 pushbutton “mom-off” N.O. in pos. 1 = **A**
  (followed by cap code, Raised (A)/Flush (B), colour and position ex. AAY1)
- with 1 pushbutton “mom-off” N.O. in pos. 2-3 = **B**
  (followed by cap code, Raised (A)/Flush (B), colour and position ex. BAY2AG3)
- with 1 latching rocker switch “on-off” N.O. = **D1**
- with 1 latching rocker switch “on-off-on” N.O. = **D2**
- with 1 spring centered rocker switch “on-off” N.O. = **E1**
- with 1 spring centered rocker switch “on-off-on” N.O. = **E2**
- without pushbutton = **Z**

Pushbutton orientation (pag.15):
- South orientation (standard) = **blank**
- West orientation = **W**

Model: IC2

THE COMPREHENSIVE RANGE OF MANUFACTURED AND MARKETED COMPONENTS INCLUDES:

- Hydraulic gear and axial piston pumps & motors
- Directional control valves & selector valves
- Proportional EH pressure reducing valves & manifold blocks
- Hydraulic, pneumatic and electric on-off & proportional joysticks
- Control electronics
- Radio controls, push buttons stations, dashboards and armrests
- Multifunction ergonomic, cylindrical & palm grips
- Hydraulic filters & contamination control systems
- Heath exchangers and cooling systems
- Fluid monitoring & diagnostic instruments
- Bell housings, driving flanges & elastic couplings

Fluidea

Fluidea S.r.l.
Via Magazzino, 2586 - I-41056 Savignano S/P (MO)
Tel. +39 059 8635156 - Fax: +39 059 8635157
info@fluidea.net - www.fluidea.net