

PILOT Range

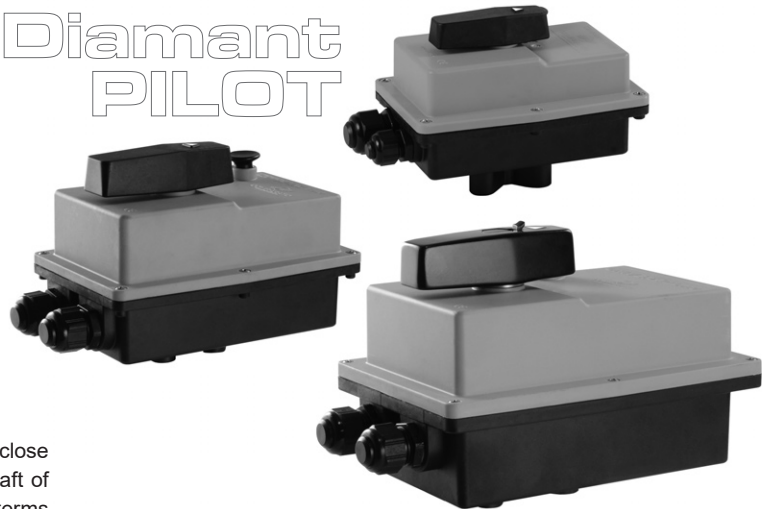
ROTARY ACTUATORS • PROPORTIONAL AND ON/OFF

USE

- industrial plants with hot and cold fluids
- winery
- automation systems
- Building Management Systems (BMS)
- hydraulic plants
- HVAC plants
- compressed air plants

Diamant
PILOT

Compact
PILOT



Universal PILOT

FUNCTIONING

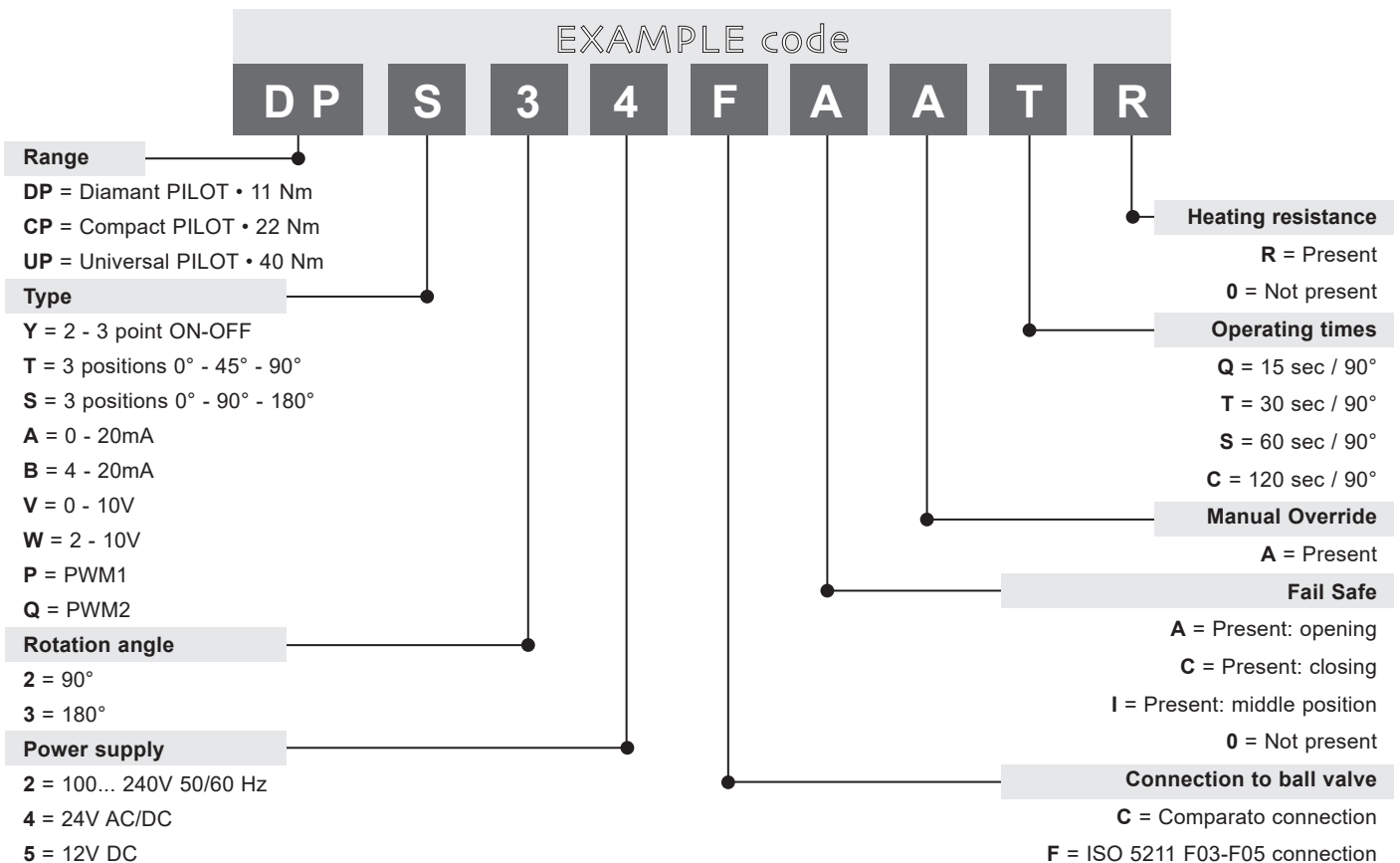
PILOT actuators use last generation stepper motors with a close control loop: a potentiometer detects the position of the output shaft of the gear unit, granting high standards of precision and reliability in terms of positioning. There are two different control types (on/off or proportional) and several operating times.

They are provided with a positioning feedback 2-10V and two microswitches.

All **PILOT** actuators can be provided with a heating resistance, manual override with release button and Fail Safe system: in case of power failure, the actuator automatically reaches the set safety position by using the energy stored in the integrated supercapacitors.

VERSIONI E CODE BUILDER

In order to get the code, replace the letters and digits according to the desired characteristics.



Example: **Diamant PILOT** range, three positions 0°-90°-180°, power supply 24V AC/DC, ISO 5211 connection, Fail Safe in opening, with emergency manual override, operating times 30 sec / 90°, with heating resistance.



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PILOT Range

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TECHNICAL FEATURES

PILOT



	Diamant PILOT		Compact PILOT	Universal PILOT
ELECTRICAL DATA	Power supply			
	12Vdc • 24Vdc • 24V 50/60 Hz • 100...240V 50/60 Hz ± 10%			
	Max power consumption during operations	10W	25W	25W
	Standby power consumption	2W	3W	3W
	Heating resistance power	3W	5W	5W
WORKING DATA	Power supply cable			
	4 x 0,5 mm ² (AWG 20) - Length 1m			
	Signal cable			
	12 x 0,2 mm ² (AWG 24) - Length 1m			
	Micro switches features			
	max 30Vdc - 0,1 A			
	Nominal torque	11Nm	22Nm	40Nm
	Type of control			
	2 points • 3 points • 3 positions			
	Proportional control			
FAIL SAFE	0-10V • 2-10V • 0-20 mA • 4-20 mA • PWM1 • PWM2			
	Dead band positioning signal			
	1%			
	Impedance of the proportional signal			
	100kΩ (0-10V / 2-10V) • 500Ω (0-20 mA / 4-20 mA) • 133kΩ (PWM)			
	Positioning feedback			
	2-10Vdc			
	Feedback max current			
	40 mA			
	Positioning precision			
SAFETY	± 5%			
	Motor's rotation direction			
	Invertible			
	Manual override			
	Handle and release button			
	Rotation angle			
	90° • 180°			
	Operating times (90°)	15s * • 30s • 60s • 120s	15s * • 30s • 60s • 120s	30s • 60s • 120s
	Max noise level	45 dB (A)	60 dB (A)	65 dB (A)
	Class protection			
	IP67			
	Connection to the ball valve			
	Comparato • ISO 5211 F03/F05			
	ISO 5211 F03/F05			
	ISO 5211 F05/F07			
	Accumulators			
	Supercapacitors			
	Emergency position			
	Opening / closing / middle			
	Fail Safe operating times (90°)	20s	26s	30s **
	Minimum charging time			
	2 min (90°) • 6 min (180°)			
	15 min (90°) • 30 min (180°)			
	50 min (90°)			
	Max power consumption	5 W	3 W	3 W
	Working room temperature			
	-10°C... + 50°C			
	Storing and transport conditions			
	- 40°C ÷ +80°C, RH max 95% - no condensation			
	Maintenance			
	None			
	Certification			
	CE			

* operating time not available with a 12Vdc power supply

** for the activation of Fail Safe with a 180° rotation please contact our technical department



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PILOT Range

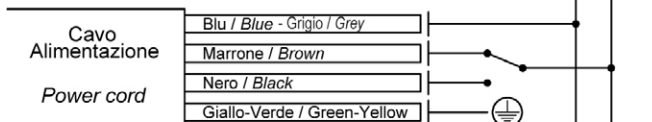
ROTARY ACTUATORS • PROPORTIONAL AND ON/OFF

ELECTRICAL CONNECTIONS

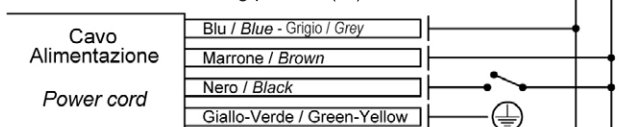
ON/OFF CONTROL

POWER CORD and CONTROL

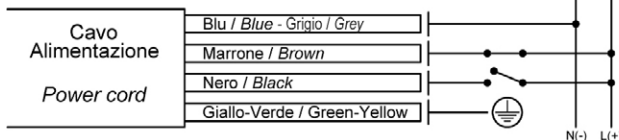
3 POINTS control • closing position (0°)



2 POINTS control • closing position (0°)

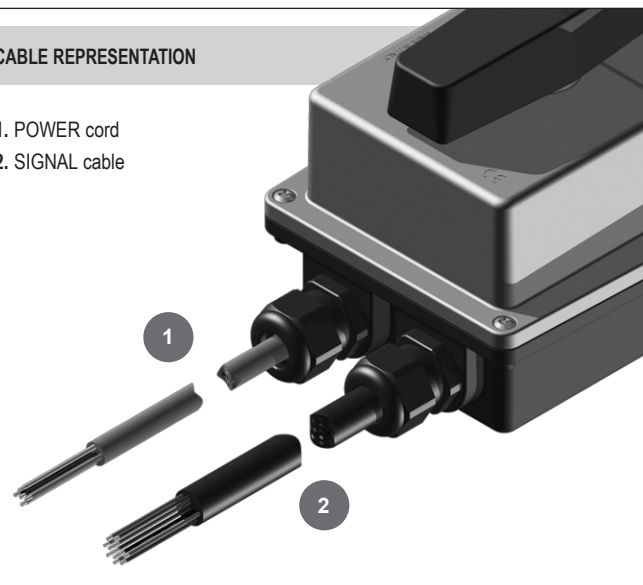


3 POSITION (0°-45°-90° and 0°-90°-180°) closing position (0°)

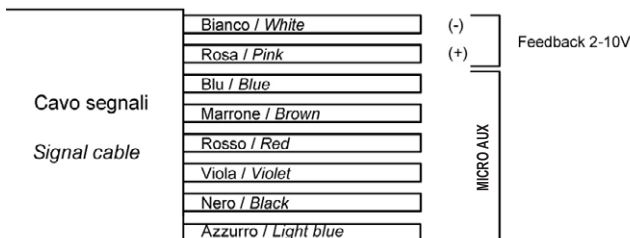


CABLE REPRESENTATION

1. POWER cord
2. SIGNAL cable



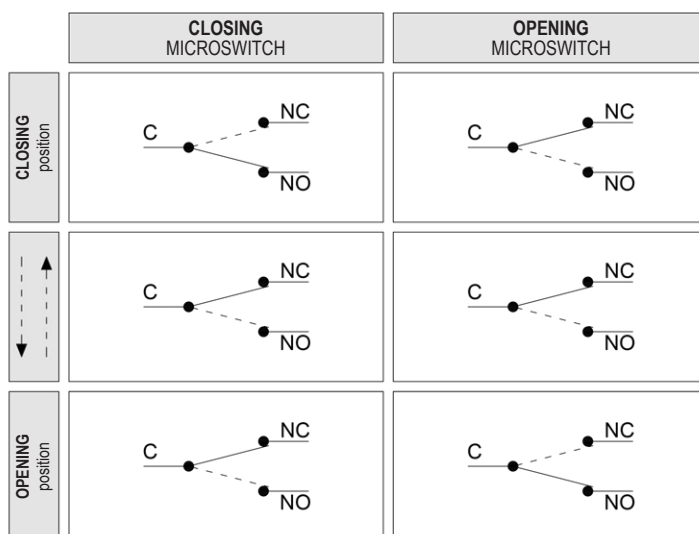
SIGNAL CABLE



MICRO AUSILIARI / AUXILIARIES

DIAMANT PILOT		
APERTURA OPENING	C	MARRONE / BROWN
	NC	BLU / BLUE
	NO	ROSSO / RED
CHIUSURA CLOSING	C	NERO / BLACK
	NC	VIOLA / VIOLET
	NO	AZZURRO / LIGHT BLUE

COMPACT/UNIVERSAL PILOT		
APERTURA OPENING	C	NERO / BLACK
	NC	AZZURRO / LIGHT BLUE
	NO	VIOLA / VIOLET
CHIUSURA CLOSING	C	MARRONE / BROWN
	NC	ROSSO / RED
	NO	BLU / BLUE



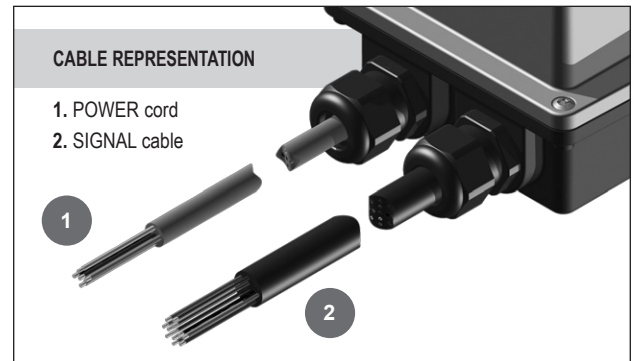
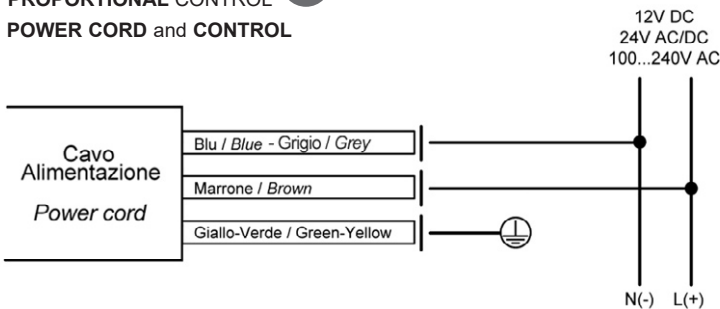
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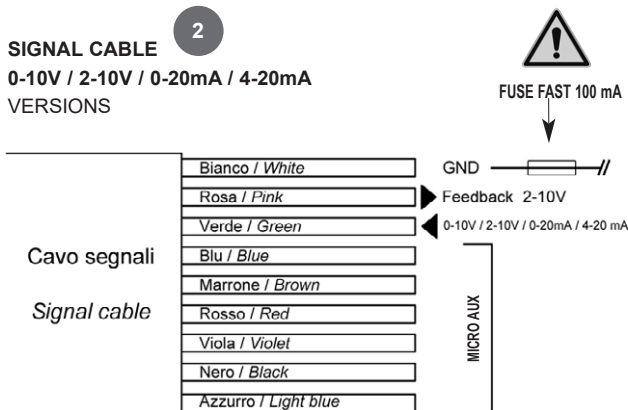
PILOT Range

ROTARY ACTUATORS • PROPORTIONAL AND ON/OFF

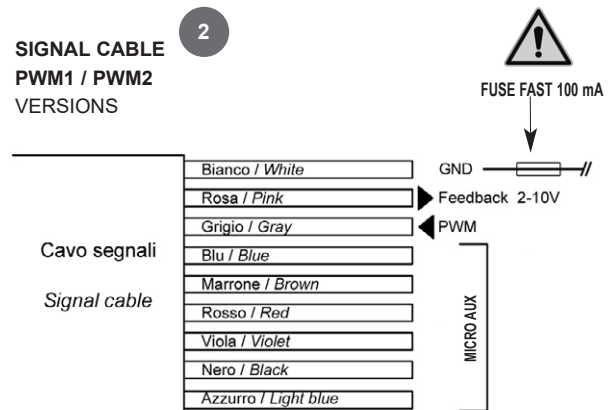
PROPORTIONAL CONTROL POWER CORD and CONTROL



SIGNAL CABLE 0-10V / 2-10V / 0-20mA / 4-20mA VERSIONS



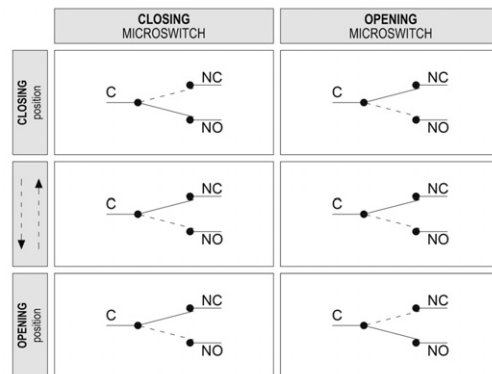
SIGNAL CABLE PWM1 / PWM2 VERSIONS



MICRO AUSILIARI / AUXILIARIES

DIAMANT PILOT		
APERTURA OPENING	C	MARRONE / BROWN
	NC	BLU / BLUE
	NO	ROSSO / RED
CHIUSURA CLOSING	C	NERO / BLACK
	NC	VIOLO / VIOLET
	NO	AZZURRO / LIGHT BLUE

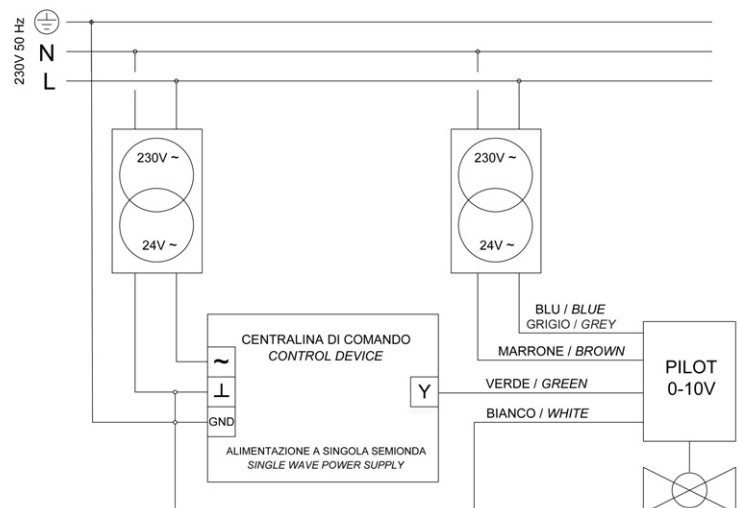
COMPACT/UNIVERSAL PILOT		
APERTURA OPENING	C	NERO / BLACK
	NC	AZZURRO / LIGHT BLUE
	NO	VIOLO / VIOLET
CHIUSURA CLOSING	C	MARRONE / BROWN
	NC	ROSSO / RED
	NO	BLU / BLUE



CAUTION

The actuator has a double wave power supply and therefore it shall not be directly used with other devices with half wave power supply sharing the same power supply and the same control signal: it is necessary to check that the ground/neutral signal of the power supply (POWER SUPPLY - BLUE wire) has not the same electrical potential of GND of the feedback's control signal (SIGNAL CABLE - WHITE wire).

In case an actuator with a 24V AC power supply is coupled with systems/control units with proportional output in tension (0-10V / 2-10V) and half wave power supply 24VAC, it is possible to realise the wiring according to the nearby scheme.



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PILOT Range

ROTARY ACTUATORS • PROPORTIONAL AND ON/OFF

FUNCTIONS

Operating modes

Close-loop positioning control: a potentiometer on the final gear shaft detects the exact position reached by the actuator.

2-POSITION control

ON/OFF 2 or 3 point control

(-) NEUTRAL	(+) PHASE	(+) PHASE	POSITION
I	I	0	Closing
I	0	I	Opening
I	I	I	Opening

3-POSITION control

The actuator can reach the middle position thanks to the ON/OFF control (45° or 90° angle on the basis of the 90° or 180° operating angle)

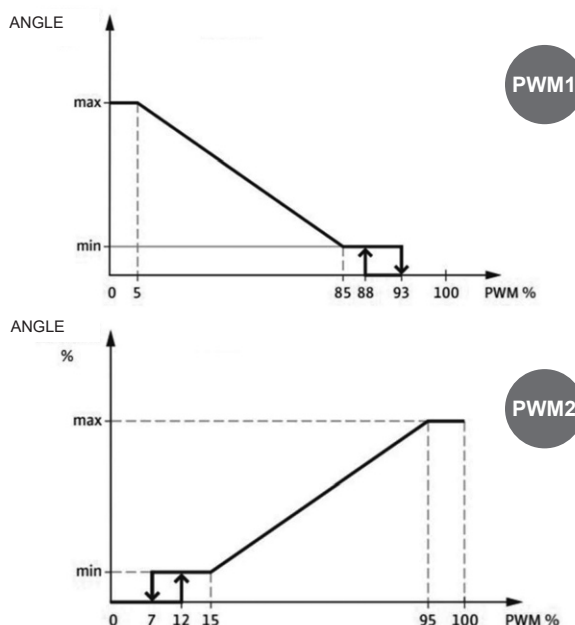
(-) NEUTRAL	(+) PHASE	(+) PHASE	POSITION
I	I	0	Closing
I	0	I	Opening
I	I	I	Middle (45°/90°)

PROPORTIONAL control

Powered-on modulating signal (0-10V / 2-10V) or current (0-20mA / 4-20mA) determining the proportional positioning of the actuator.

PWM control

Modulating signal and pulse width modulation compliant with DIN IEC 60469-1 regulation.



FEEDBACK signal

Proportional signal in 2-10V tension to the angular position achieved by the actuator. 0V= anomalies in the system.

FAIL SAFE

This system collects energy for moving the actuator to the set safety position in case of power failure. The collection of energy is realised by last generation supercapacitors, granting fast charging times and high reliability over time.

It is possible to choose the position of Fail Safe while ordering.



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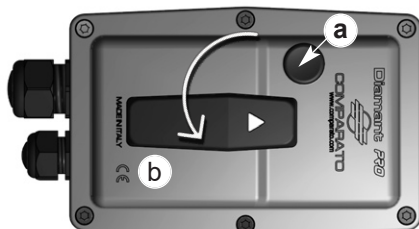
PILOT Range

ROTARY ACTUATORS • PROPORTIONAL AND ON/OFF

MANUAL OPERATION

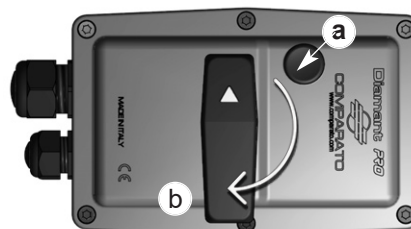
PILOT actuators are provided with a manual override on the top of the cover.

The manual override allows the activation of the valve in case of emergency or power failure.



Actuator in **OPENING** position.

Press the release button (a) and, simultaneously, rotate the lever (b) 90° **COUNTERCLOCKWISE**, in order to move the actuator in the **CLOSING** position.



Actuator in **CLOSING** position.

Press the release button (a) and, simultaneously, rotate the lever (b) 90° **CLOCKWISE**, in order to move the actuator in the **OPENING** position.



Universal PILOT

If you cannot manually operate the ball valve, you can remove the plastic handle by pressing the lever in the direction shown and operate it manually using a size 17mm wrench. Pay attention not to exceed the 40 Nm torque provided by the actuator, in order to avoid the risk of breaks.



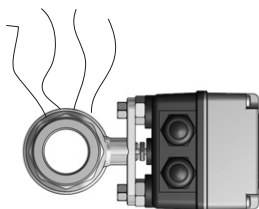
Once the manual opening/closing operation is realised, the actuator stays in its position until the control signal does not change.

INSTALLATION

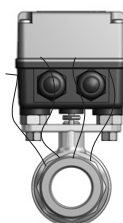
The valve shall not be installed upside down.

When the valve operates with low temperature fluids (possibility of formation of ice on the shaft) or with high temperature (danger of overheating of the actuator), it is advisable to install it as per the pictures below:

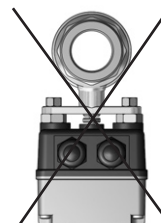
RECOMMENDED POSITION



ALLOWED POSITION



FORBIDDEN POSITION



CAUTION! Do not use high-pressure water directly on the actuator (e.g. a pressure washer)



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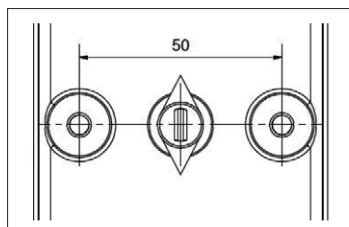
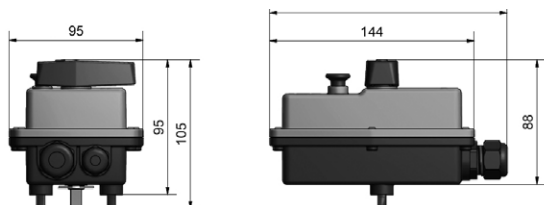
PILOT Range

ROTARY ACTUATORS • PROPORTIONAL AND ON/OFF

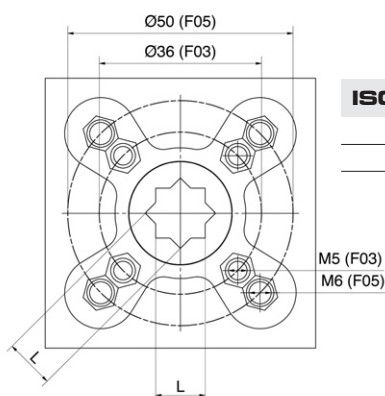
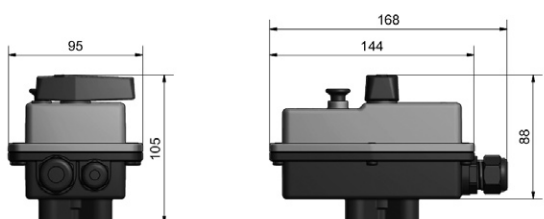
DIMENSIONS AND BALL VALVE CONNECTION

ACTUATORS

Diamant PILOT COMPARATO connection

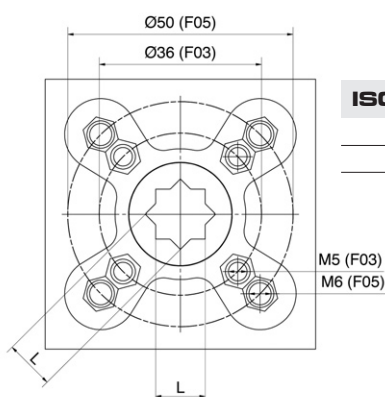
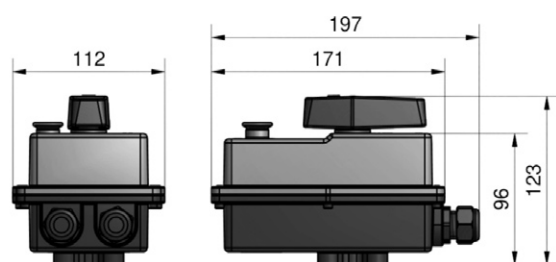


Diamant PILOT ISO 5211 connection



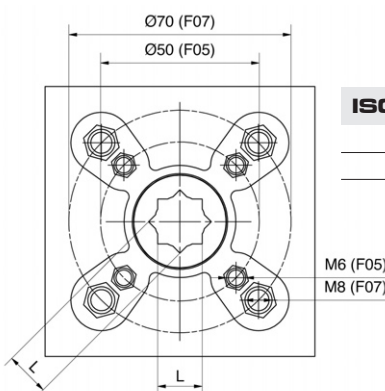
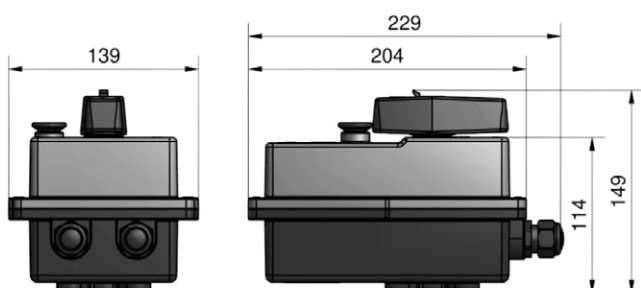
ISO 5211 connection	L
F03	9 mm
F05	11 mm

Compact PILOT



ISO 5211 connection	L
F03	9 mm
F05	11 mm

Universal PILOT



ISO 5211 connection	L
F05	11 mm
F07	14 mm



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EXAMPLE OF SPECIFICATIONS

DIAMANT PILOT ACTUATOR • nominal torque: 11 Nm, proportional control 0-10V, rotation angle: 90°, power supply: 24V AC/DC, connection to ball valve: Comparato connection, emergency manual override, operating times: 30 sec/90°, 2 microswitches, positioning feedback 2-10V, class protection: IP67.

Brand: **COMPARATO**

Code: **DPV24C0AT0**

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