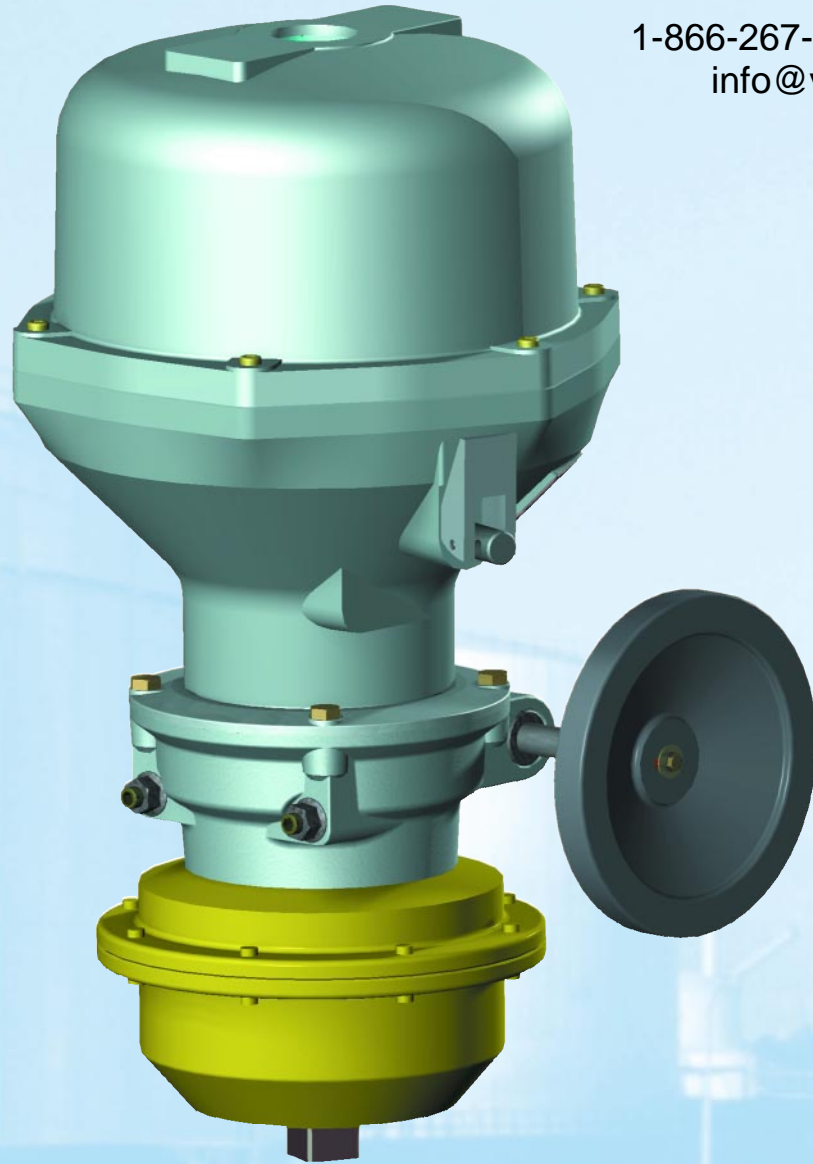


VL MOTION SYSTEMS INC.

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Electric Actuators

**FQ
RANGE**

B BERNARD

A105/02

"THE" fail safe electric actuator

For all quarter turn applications, Spring Return **FQ** range Actuators ensure automatic opening or closing even without any power supply.

■ APPLICATION FIELDS

They include :

- All those where the loss of power supply necessitates automatically to put the driven device in a safety position.
- All those where the risks are such, that driving the device to its safety position must be possible at any time even in the absence of power supply.

For example : Storage and distribution of gas and dangerous fluids, fire protection systems, chemical installation safety, climate control and ventilation of hazardous areas (protection of the environment).

■ IMPORTANT FUNCTIONS

When energized (after electrical wiring) the actuator operates the valve normally and at the same time compresses the spring which is held in the loaded position by the solenoid brake. In case of power failure to the solenoid, the spring will drive the actuator and valve to the safety position either open or closed. The associated dashpot speed controls the spring action and permits a safe and shock-free operation of the valve. When the power supply is restored (no resetting of the spring is required), the actuator is immediately available for normal operation.

In standard, the spring operates clockwise when viewed from the top. The electric part is equipped with an asynchrone triphase motor of squirrel cage type. Other versions are possible in single phase and direct current supply.

What is FAIL SAFE ?

In addition to their normal function of on-off or modulating actuators, **FQ** operators are designed in order to immediately close or open the driven device, thanks to the action of an integrated spring, and without any external power source, whenever they detect an emergency such as :

- A loss of signal,
- An abnormal temperature,
- Or the loss of power itself.

■ STANDARD DESIGN

- **Mechanical position indicator**
- **Travel limit switch setting is easy, with a simple screw driver**
- **Adjustable mechanical stops for quarter turn**
- **Electrical connection to a terminal strip.**

■ ENCLOSURES

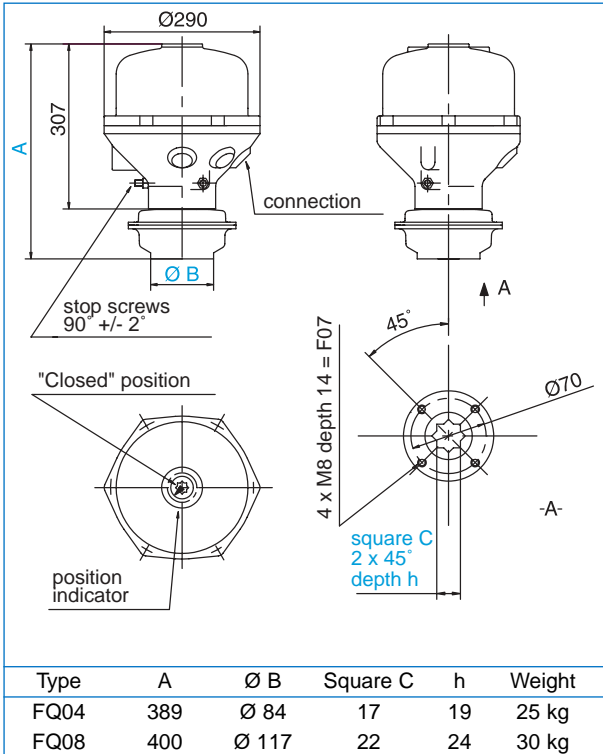
Bernard actuators are weather-proof to IP67 and are also available explosion-proof according to European Standards EN 50014 - EN 50018, class EEx dIIC T4, T5, T6, approval N° INERIS 93C5017.

● Catalogue options :

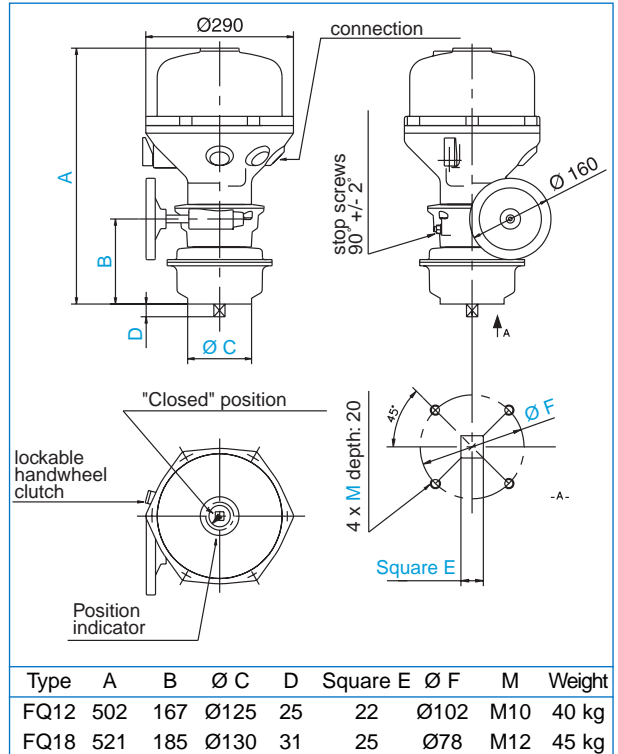
- MOTOR :
 - 3PH 50 or 60 HZ
 - 1PH 50 or 60 HZ
 - DC - versions
- ON-OFF or Modulating duty
- Extra limit switches
- Anticondensation heater resistance
- Position transmitters 4-20mA or Potentiometer

Dimensional drawings

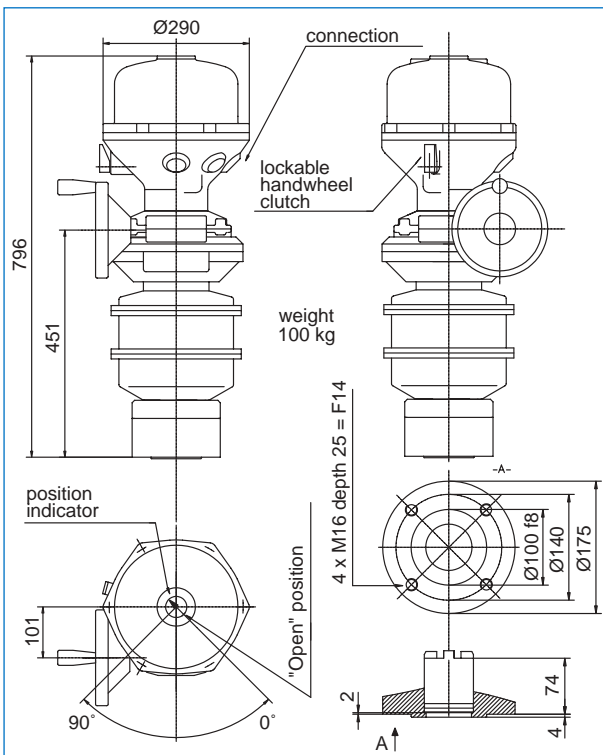
■ FQ04 & FQ08



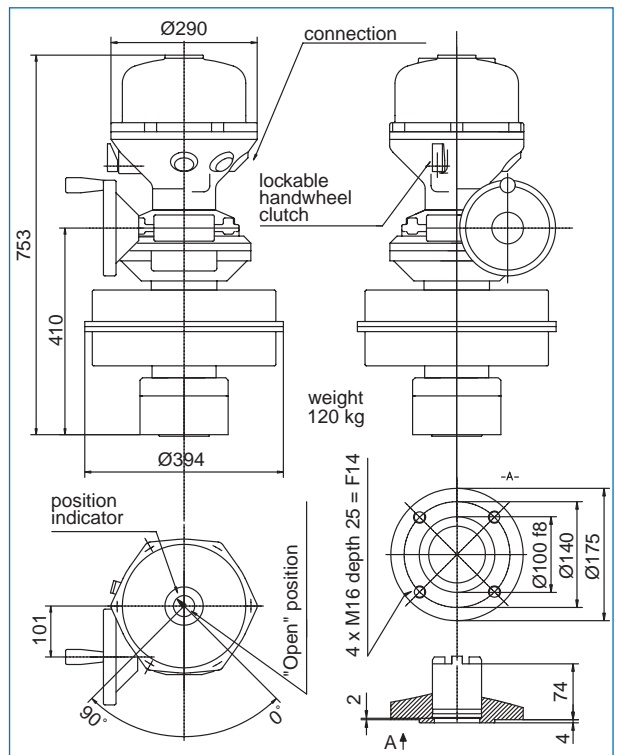
■ FQ12 & FQ18



■ FQ30



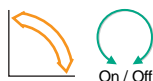
■ FQ50



Standard mounting

| | | Parallel square | Key | Flat |
|------------------------|--|-------------------|-------------------|-------------------|
| FQ04 | | | | |
| | | S | Ød7 | S |
| | | 11 / 14 / 17 | 14 / 18 / 22 / 28 | 11 / 14 / 17 |
| FQ08 | | | | |
| | | S | Ød7 | S |
| | | 11 / 14 / 17 | 14 / 18 / 22 / 28 | 11 / 14 / 17 |
| FQ12 | | | | |
| | | S | Ød7 | S |
| | | 14 / 17 / 19 / 22 | 18 / 22 / 28 / 36 | 14 / 17 / 19 / 22 |
| FQ18 | | | | |
| | | S | Ød7 | S |
| | | 14 / 17 / 19 / 22 | 18 / 22 / 28 / 36 | 14 / 17 / 19 / 22 |
| FQ30 & FQ50 | | | | |
| | | S | Ød7 | S |
| | | 19 / 22 / 36 | 22 / 28 / 30 / 40 | 19 / 22 / 36 |

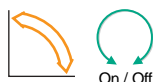
Performances



3 PH 400 V 50 Hz



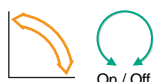
| Max. Torque Nm | Type | Operating time 90°/sec Motor | Spring | | Handwheel | P Kw | Motor S4 -Duty : 30% | | | | |
|-------------------|------|---------------------------------|----------|------|-----------|---------|----------------------|---------|---------|----------|-----------------------|
| | | | Standard | Slow | | | Speed rpm | In A | Id A | Cos φ | E ⁽¹⁾ % |
| 40 | FQ04 | 14 | ± 3 | ± 7 | No | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 40 | FQ04 | 33 | ± 3 | ± 7 | No | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 80 | FQ08 | 33 | ± 2 | ± 6 | No | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 120 | FQ12 | 39 | ± 2 | ± 10 | Yes | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 120 | FQ12 | 93 | ± 2 | ± 10 | Yes | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 180 | FQ18 | 93 | ± 3 | ± 15 | Yes | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 300 | FQ30 | 117 | ± 7 | ± 18 | Yes | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |
| 500 | FQ50 | 117 | ± 9 | ± 27 | Yes | 0,06 | 3000 | 0,3 | 0,9 | 0,8 | 43% |



1 PH 230 V 50 Hz



| Max. Torque Nm | Type | Operating time 90°/sec Motor | Spring | | Handwheel | P Kw | Motor S4 -Duty : 30% | | | | |
|-------------------|------|---------------------------------|----------|------|-----------|---------|----------------------|---------|---------|----------|-----------------------|
| | | | Standard | Slow | | | Speed rpm | In A | Id A | Cos φ | E ⁽¹⁾ % |
| 40 | FQ04 | 33 | ± 3 | ± 7 | No | 0,03 | 3000 | 0,5 | 0,7 | 0,9 | 25% |
| 80 | FQ08 | 33 | ± 2 | ± 6 | No | 0,03 | 3000 | 0,5 | 0,7 | 0,9 | 25% |
| 120 | FQ12 | 93 | ± 2 | ± 10 | Yes | 0,03 | 3000 | 0,5 | 0,7 | 0,9 | 25% |
| 180 | FQ18 | 93 | ± 3 | ± 15 | Yes | 0,03 | 3000 | 0,5 | 0,7 | 0,9 | 25% |
| 300 | FQ30 | 117 | ± 7 | ± 18 | Yes | 0,03 | 3000 | 0,5 | 0,7 | 0,9 | 25% |



1 PH 115 V 60 Hz



| Max. Torque Nm | Type | Operating time 90°/sec Motor | Spring | | Handwheel | P Kw | Motor S4 -Duty : 30% | | | | |
|-------------------|------|---------------------------------|----------|------|-----------|---------|----------------------|---------|---------|----------|-----------------------|
| | | | Standard | Slow | | | Speed rpm | In A | Id A | Cos φ | E ⁽¹⁾ % |
| 40 | FQ04 | 28 | ± 3 | ± 7 | No | 0,03 | 3600 | 1,0 | 1,5 | 0,9 | 30% |
| 80 | FQ08 | 28 | ± 2 | ± 6 | No | 0,03 | 3600 | 1,0 | 1,5 | 0,9 | 30% |
| 120 | FQ12 | 78 | ± 2 | ± 10 | Yes | 0,03 | 3600 | 1,0 | 1,5 | 0,9 | 30% |
| 180 | FQ18 | 78 | ± 3 | ± 15 | Yes | 0,03 | 3600 | 1,0 | 1,5 | 0,9 | 30% |
| 300 | FQ30 | 98 | ± 7 | ± 18 | Yes | 0,03 | 3600 | 1,0 | 1,5 | 0,9 | 30% |

(1) = Efficiency

REMARKS :

- The operating time with the spring can increase according to the load. The mentioned operating times refers to the max output torque.
- The solenoid rated power is 21 W. This solenoid is normally under permanent power supply.

S30000 standard wiring diagram

