

# FieldQ™ Pneumatic actuators and controls

Fully integrated proven hardware and design



# FieldQ™: The Fully Integrated Solution

*“With FieldQ, Emerson is your single source for a fully integrated actuator and accessories”*

*“Direct mounting enables 15% savings in labor, materials and time”*

*“20% reduction in installation and commissioning time”*

*“Small footprint allows flexibility for retrofit into existing pipe runs”*

FieldQ provides a new way of looking at valve automation. It combines a field-proven rack and pinion pneumatic actuator with the necessary controls in an integrated modular package. Gone are the non-integrated accessories from multiple vendors, mounting brackets, cumbersome external cabling and tubing. Instead, the FieldQ solution offers true ‘plug and play’ capability from the industry’s most recognized single source – Emerson Process Management.

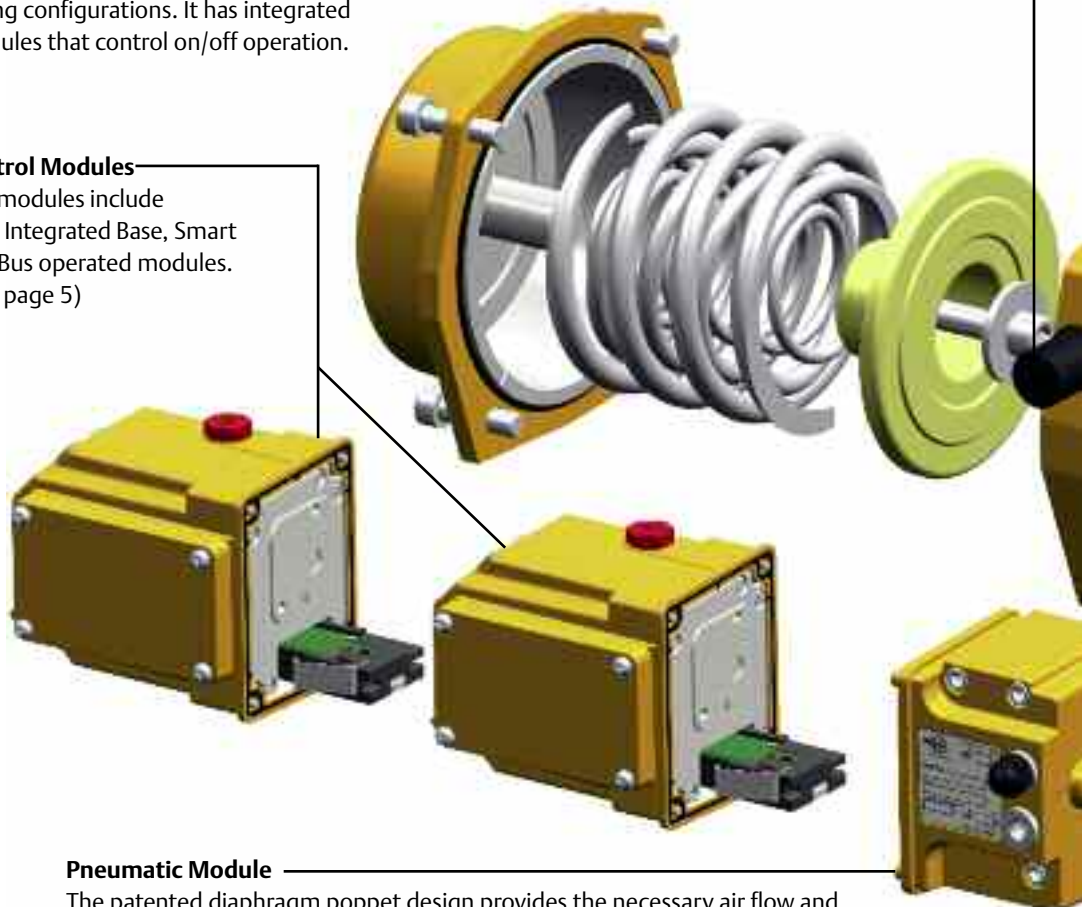
FieldQ is available in torque outputs ranging from 354 in-lbs to 14,160 in-lbs (40Nm to 1600 Nm) and in spring-return or double-acting configurations. It has integrated modules that control on/off operation.

## Dual Travel Stops

FieldQ provides dual travel stops as standard. The travel stops can be adjusted in the open and/or closed position. (see page 4)

## Control Modules

The modules include Fully Integrated Base, Smart and Bus operated modules. (See page 5)



## Pneumatic Module

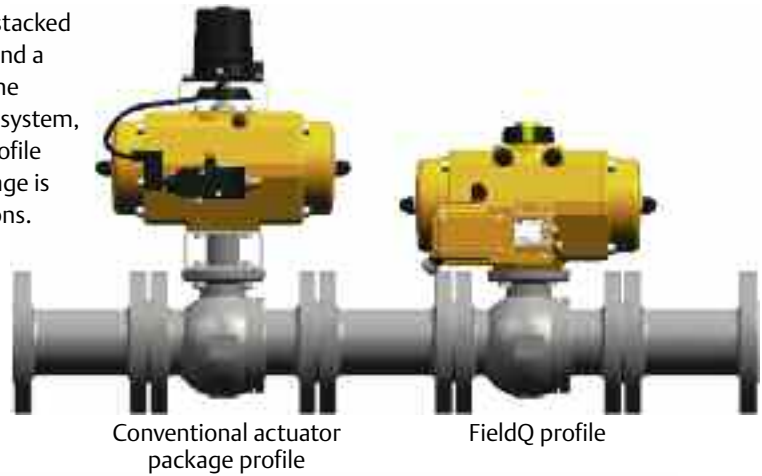
The patented diaphragm poppet design provides the necessary air flow and volume to open and close the actuator quickly. A breather function protects the spring chamber by moving the exhausted supply air out of the central air chamber to the spring chambers. This protects the actuator internal components especially in corrosive or harsh environments. The pneumatic module can be equipped with optional speed controls and/or exhaust silencers. (see page 4).

## Intelligent Position Tracking

The IPT technology™ allows the integration of controls and feedback into a single product. (See page 4)

# Adding value to valve automation

Conventional actuator and control packages create a stacked profile, normally with a monitor or positioner on top and a mounting bracket below the actuator, coupling it to the valve. With the FieldQ's integrated controls and insert system, overall height is minimized and replaced with a low profile modular design. The compactness of the FieldQ package is highly conducive to retrofit and tight piping applications.



## Pinion

Hard anodized, heavy duty aluminum alloy balanced pinion has three-part design, reducing pressure forces and maintenance, even in high cycle applications.

## Limit Stop Cam

The large diameter, high tensile steel cam ensures accurate, lasting stroke adjustment.

## Body

The hard anodized actuator body, along with the control modules, are protected from corrosive environments with a protective finish that has passed a 1,000 hour salt spray test per ASTM B117.

## Spring Package

The encapsulated package, with corrosion-protected springs, can be easily-disassembled with a standard Allen wrench for conversion of double-acting to spring-return configuration on sizes 40 through 350. (See page 4)

## Piston

The precision-machined rack is chromazitized for optimal performance. It has a three point guiding system and O-rings for air-tight sealing.

## Housing Guide Band

Nylatron® guide band provides wear protection between housing and piston for extended service life.

## Centering Plate

Provided in accordance with DIN3337 with a variety of inserts available. Provides a low cost and versatile direct mounting to your valve.

## End Cap

Flat design on double-acting models reduces overall length, and a visible indication of double acting versus spring return.

# Reliable, Predictable and Maintainable

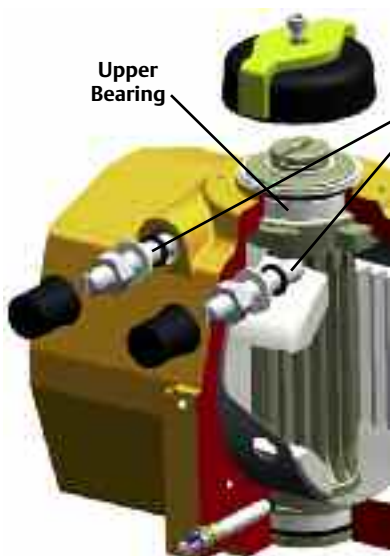
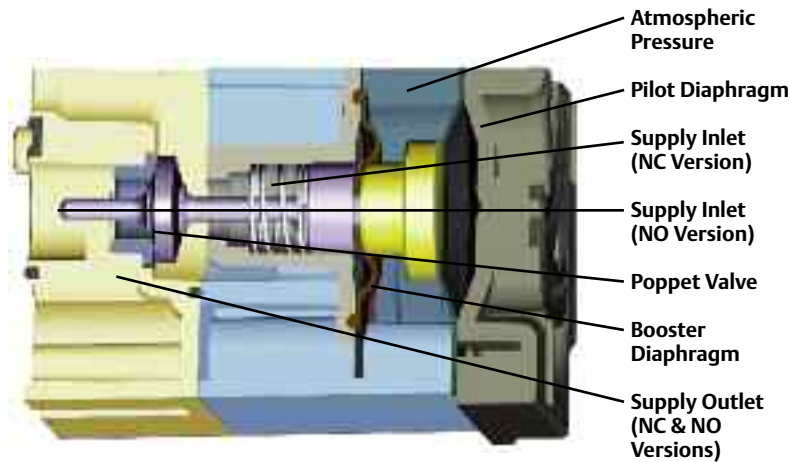
## Multiple Spring Design

The FieldQ encapsulated spring design provides superior field safety. When removed, the springs remain as part of the assembly. Conversion from double-acting to spring-return configurations is both simple and safe.

FieldQ utilizes three embedded springs, an inner, middle and outer spring allowing for six different spring torques. The design also allows equal force to each piston, extending service life.

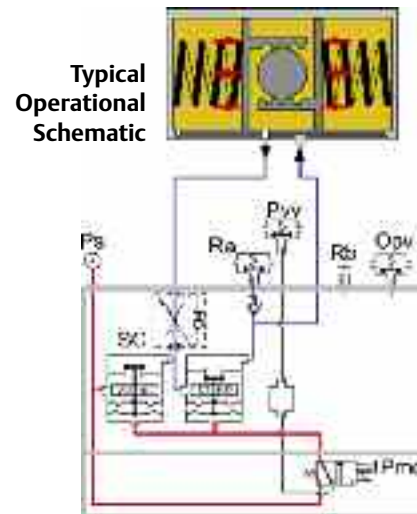
## Poppet Valve and Closed Loop Breather

The FieldQ pneumatic module has a poppet valve instead of the traditional spool valve. The benefits include self cleaning seals. Minimal seal wear requires less power to activate than a conventional solenoid and allows the use of a unique closed loop exhaust that provides superior corrosion protection on the closing stroke of spring-return designs.



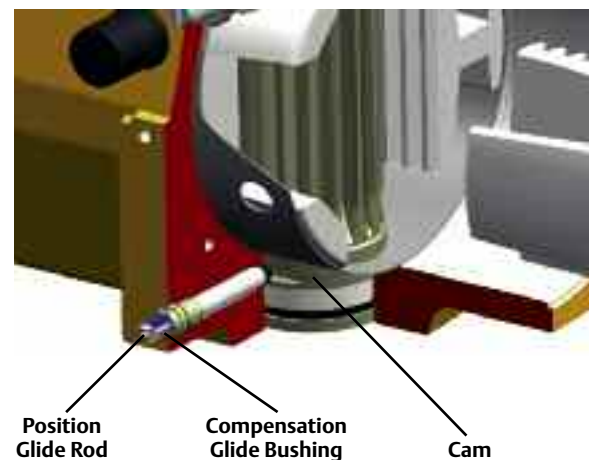
## Dual Travel Stops

FieldQ offers dual travel stops for open and close. Mounted on the top of the actuator housing, the travel stops make adjustments easy and accurate. The internal steel limit cam reduces wear on the travel stops and itself helping to ensure the accuracy of the stops. Spring-return units can be field modified from fail close to fail open simply by removing the stops, rotating the pistons 180° and reinstalling the stops.



## Intelligent Position Tracking (IPT)

The FieldQ fully enclosed IPT linear feedback system uses a mechanical position glide rod, linked to a contactless Giant Magnetic Resistance (GMR) sensor, providing accurate and repeatable position indication. The feature requires fewer parts, adds greater performance and costs less than conventional designs.



# Reducing life cycle costs

## Types of control modules

FieldQ offers three types of control modules:

1. Fully Integrated Base module for use in conventional wiring applications.
2. Smart on/off control for easy setup and when simple diagnostics are required.
3. Bus on/off control for those applications requiring 2 wire control and feedback and/or advanced diagnostics.

This approach allows FieldQ to address a wide range of control with easy to use plug-n-play modules.



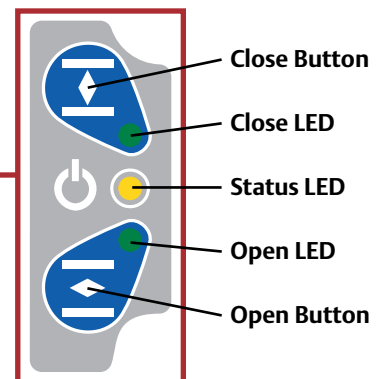
Fully Integrated Base On/Off Control Modules



Bus On/Off Control Modules



Smart On/Off Control Modules



## Diagnostics

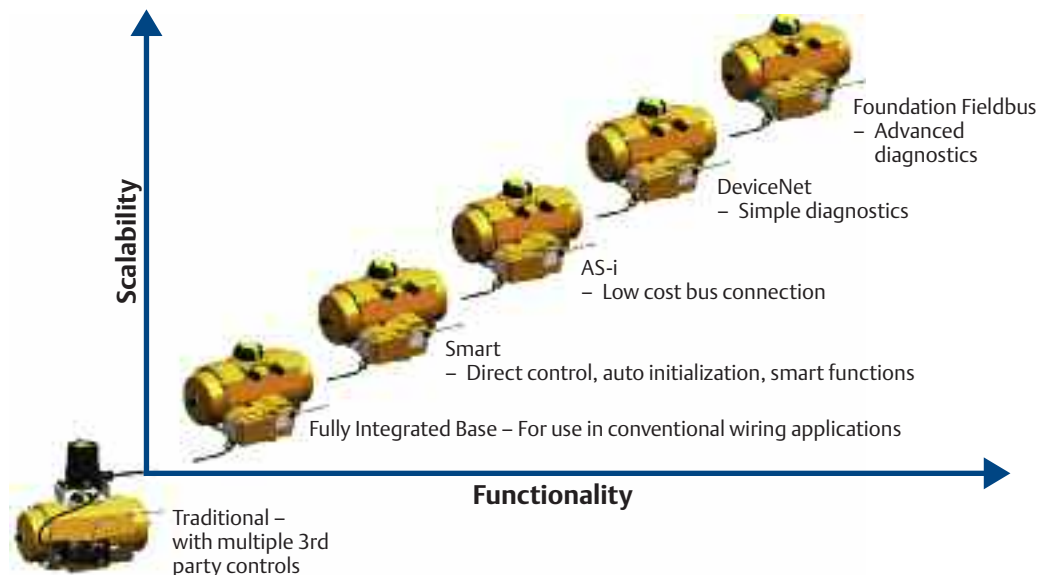
FieldQ is a core component of PlantWeb® digital architecture and is capable of providing a variety of bus protocols, including FOUNDATION Fieldbus™, DeviceNet, and AS-i. FieldQ predictive diagnostics provide accurate and timely information help predict when the final control element and/or its components requires maintenance or even replacement.

### Continuous position tracking in the Foundation Fieldbus module allows measurement of:

- **Travel times**
  - Stuck valve
  - Wear or friction problems
  - Lost air supply
- **Time in position**
  - Indicates need for a valve test
- **Cycle counters**
  - Control module
  - Pneumatic module
  - Actuator
  - Valve
- **Inter-card Communications**
  - Indication of electronics health
  - Checks sensors and ability to communicate

## Auto-Initialization

All Smart and Bus modules are provided with an auto-initialization feature that allows setting of the fully open and fully closed valve positions with the push of a button. This feature also performs some internal diagnostics while initializing the position switches.



## Scalability

FieldQ control modules provide a wide range of functions, from simple on-off control to the latest bus control and diagnostics. With the modular plug and play design, you can change control module functionality as requirements dictate while maintaining the same actuator, pneumatic module, wiring, piping and mounting, enforcing the fully integrated concept.

# Applications, Approvals and Electrical Certifications



FieldQ actuators are suitable for use in SIL3 applications where a periodic partial stroke test is performed. Where the testing is not required, FieldQ actuators are suitable in SIL2 applications.

## Approvals – Actuator

- FieldQ carries the CE mark, meaning it is produced under European Directives that include PED, ATEX, Machine, LVD and EMC directives.

## Electrical Certifications – Control Modules

- ATEX
- FM
- CSA
- IEC

**Contact Us: Emerson Process Management, Valve Automation facilities at your nearest location:**

### North & South America

18703 GH Circle  
PO Box 508  
Waller, Texas 77484  
USA  
T +1 281 727 5300  
F +1 281 727 5353

2500 Park Avenue West  
Mansfield, Ohio 44906  
USA  
T +1 419 529 4311  
F +1 419 529 3688

9009 King Palm Drive  
Tampa, Florida 33619  
USA  
T +1 813 630 2255  
F +1 813 630 9449

4112-91A Street  
Edmonton, Alberta T6E5V2  
Canada  
T +1 780 450 3600  
F +1 780 450 1400

Av. Hollingsworth,325  
Iporanga  
Sorocaba, SP 18087-105  
Brazil  
T +55 15 3238 3788  
F +55 15 3228 3300

### Europe

Asveldweg 11  
7556 BT Hengelo(O)  
The Netherlands  
T +31 74 256 1010  
F +31 74 291 0938

Siemensring 112  
D-47877 Willich  
Germany  
T +49 2154 499 660  
F +49 2154 499 6613

25, Rue de Villeneuve  
Silic – BP 40434  
94583 RUNGIS, France  
T +33 1 49 79 73 00  
F +33 1 49 79 73 99

6 Bracken Hill  
South West Industrial Estate  
Peterlee, Co Durham  
SR82LS, United Kingdom  
T +44 191 518 0020  
F +44 191 518 0032

3 Furze Court  
114 Wickham Road  
Fareham, Hampshire  
PO167SH ,United Kingdom  
T +44 132 984 8900  
F +44 132 984 8901

Via Montello, 71/73  
20038 Seregno (Milan)  
Italy  
T +39 (0362) 2285 207  
F +39 (0362) 2436 55

### Middle East & Africa

2 Monteer Road, Isando  
Kempton Park, 1600  
South Africa  
T +27 11 974 3336  
F +27 11 974 7005

PO Box 17033  
Jebel Ali Free Zone  
Dubai,  
United Arab Emirates  
T +971 4 811 8100  
F +971 4 886 5465

### Asia Pacific

9 Gul Road  
#01-02 Singapore 629361  
T +65 6501 4600  
F +65 6268 0028

9/F Gateway Building  
No.10 Ya Bao Road  
Chaoyang District  
Beijing, P.R. China  
T +86 10 5821 1188  
F +86 10 5821 1100

No 15 Xing Wang Road  
Wuqing Development Area  
Tianjin 301700  
P.R. China  
T +86 22 8212 3300  
F +86 22 8212 3308

Lot 13111, Mukim Labu,  
Kawasan Perindustrian Nilai  
71807 Nilai, Negeri Sembilan  
Malaysia  
T +60 6 799 2323  
F +60 6 799 9942

471 Mountain Highway  
Bayswater, Victoria 3153  
Australia  
T +61 3 9721 0200  
F +61 3 9720 0588

301, Solitaire Corporate Park  
151, M.V. Road, Andheri(E)  
Mumbai-400093,  
Maharashtra, India  
T +91 22 6694 2711  
F +91 22 2825 3394

NOF Shinagawa Konan Building  
1-2-5, Higashi-shinagawa  
Shinagawa-Ku, Tokyo  
140-0002 Japan  
T +81 3 5769 6873  
F +81 3 5769 6902

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