

# GROUP 57



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## **AC/DC powered quarter-turn valve actuators**

*Ideally suited for remote applications where AC line power is not available and/or fail-to-safe position response is required.*

The Group 57 actuator has features designed to meet the requirements found in many remote and hazardous locations—such as wellhead and pipeline valves in the oil and gas industry.



Features and advantages specific to the Group 57 include:

- **The ability to run on 12–48 Vdc power**, making the Group 57 ideal for use with solar panel operation.
- **Class I, Division 1, Groups B, C & D hazardous location ratings**.
- **Built-in electric fail-safe capability** with optional, internal ultra-capacitor backup power.
- **Fast stroking speeds (9 seconds for 90°)** for applications with fast open or close requirements (adjustable).
- **Simple and flexible valve mounting options** including compliance with the ISO 5211 Part-turn Actuator Mounting Standard or custom hardware to fit virtually any valve.
- **Space efficient packaging** making it easier to fit on valves in any orientation.

# FEATURES

## Beck Motor

### *Compact, Reliable Control & Uniquely Fast*

The compact Beck motor provides powerful, reliable performance.

- **Never overheats or burns out**, even under demanding modulating control or stalled conditions.
- Starts and stops instantaneously—eliminating deadtime.
- Travels 90 degrees in 9 seconds.
- Provides extremely accurate positioning in modulating applications.
- **Will not coast or overshoot** the desired position.
- Low power draw eliminates the need for relays. Very efficient when used with the optional, internal backup power supply.
- Maintenance-free with double-lipped, grease-sealed bearings.

## Lockable, Electric Handswitch

### *Time-Saving Local Operation*

Valves may be operated at their individual locations with the built-in, lockable, electric Handswitch. This saves time during installation and troubleshooting, allowing online adjustments to be made quickly and easily by bypassing the electronics in the actuator and control system.

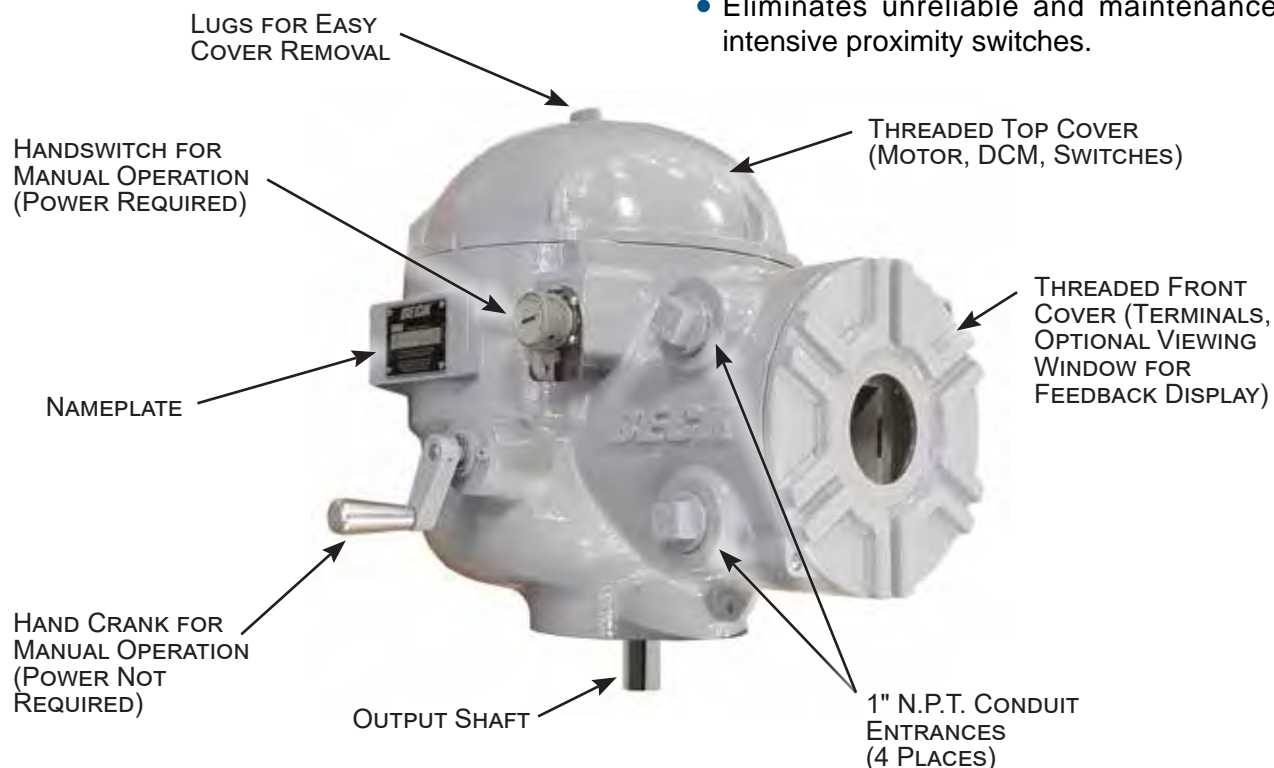
The Handswitch also serves as an electrical backup in the event of control system failure.

The Handswitch may also be locked in the AUTO position to prevent local operation.

## Over-travel Limit Switches & Auxiliary Switches

Two over-travel protection limit switches are provided and up to four additional auxiliary switches are available as an option. Switch features include:

- Rated for a minimum of 6 A at 120 Vac to ensure long life.
- Field-adjustable to operate at any point in the actuator's travel range.
- May initiate secondary functions or provide remote indication of actuator position.
- Eliminates unreliable and maintenance-intensive proximity switches.



*Group 57 Actuator Component Locations*

## Feedback Display (optional)

### ***Actuator position at a glance***

The feedback display is an illuminated, numerical readout showing the actuator's position as a percentage of full travel. The display is viewed through a tempered glass window in the terminal compartment.

Three LEDs are visible through the window. Two configurable LEDs light at either end of actuator travel—a red LED and a green LED. A yellow LED lights when the actuator is moving toward either end of travel.

## Drive Train

### ***Power and Durability that Maximize Reliability and Minimize Maintenance***

Beck's durable gear train maintains accurate, consistent valve positioning even under the demanding conditions of an active control loop.

- Gear trains are constructed of heat-treated alloy steels and ductile iron.
- Efficient gearing essentially eliminates wear-induced backlash and positioning inaccuracies.
- Durable design provides up to 4 days of protection against intermittent or extended accidental stalls.
- Integral self-locking mechanism ensures that actuators hold a minimum of 200% of rated torque with the motor de-energized.

## Hand crank

### ***Manual Control Without Declutch***

An easy-to-turn Hand crank is incorporated into the Group 57 design to allow manual operation during installation or power outages.

- The hand crank can be used to move valves to any position smoothly and easily under full load conditions.
- Mechanical stops prevent manual overtravel.

## Housing

### ***Superior Protection and Convenient Access to Components***

Beck actuators feature a cast aluminum body with compartments to protect components from moisture and dirt, and allow easy access for installation and calibration.

- Precision-machined aluminum alloy castings with corrosion-resistant poly-urethane paint provide a rugged, dust-tight, weatherproof Type 4X enclosure.
- Specifically designed for use in Hazardous classified locations—Class I, Division 1, Groups B, C & D.
- The top compartment protects the motor, electronics and switches. A separate, sealed compartment protects the terminals and display.
- Gasketed, precision-machined, threaded covers provide extra protection for harsh environments.
- Output and hand crank shafts use double-lip seals to ensure lifelong protection from harsh environments.

## Mounting Versatility

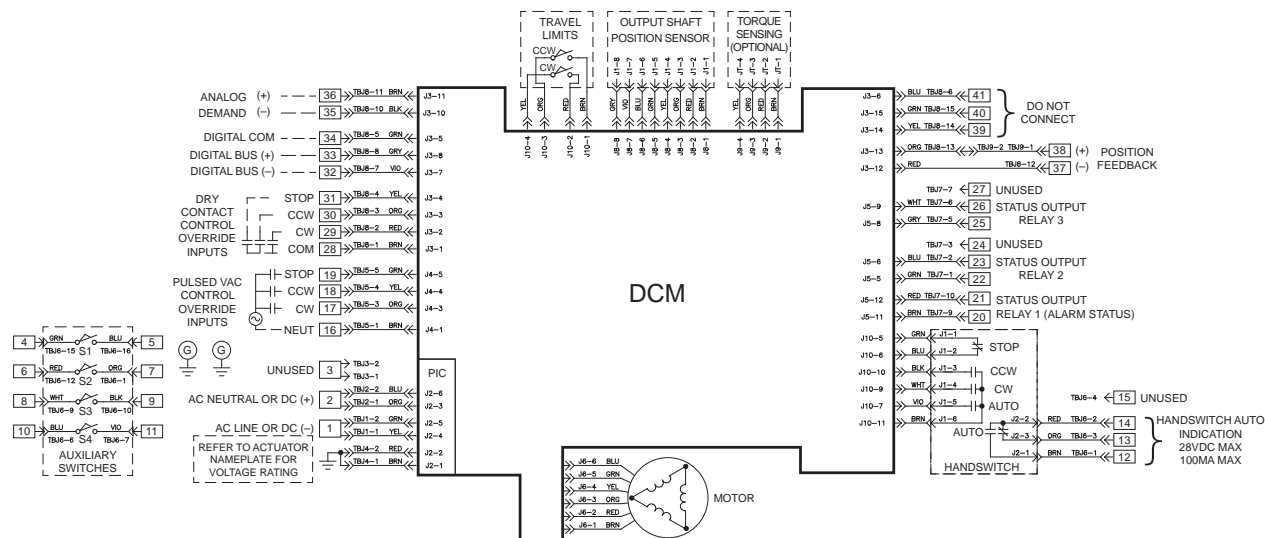
### ***Can be Mounted in any Orientation for Greater Installation Flexibility***

Group 57 actuators are lubricated in such a way that they may be mounted in any convenient position. This flexibility allows actuators to be installed in hard-to-fit locations.

Mounting orientation is limited only by the accessibility of the housing compartments.



# SAMPLE WIRING DIAGRAM & SPECIFICATIONS



## Power

12–30 Vdc (standard). Optional variants: Extended range DC (12–48 Vdc); AC transformers (120, 208, 240, 380, 415, 480, 575 Vac).

## Torque Output

120 lb-ft (162.7 N•m).

## Stroke Timing

9 seconds per 90° (configurable for slower speeds).

## Positioning Resolution (Minimum Step Size)

0.1° typical. Configurable from 0.1° to 2.25°.

## Weight

Approximately 59 lbs. (27 kgs.).

## Certifications

Ordinary & Hazardous Locations available: Class I, Division 1, Groups B, C & D and Class II, Division 1, Groups E, F & G. Enclosure ratings: Type 4X; IP66/IP68 at 3 meters for 48 hours.

## Environmental Temperature Rating

-50°C to 85°C (-58°F to 185°F) (may vary depending on options).

## Control Input

4–20 mA signal or ac/dc pulses.

## Communication Interfaces

HART and Modbus RTU (standard); Modbus TCP (optional)

## Configuration Options

Local pushbuttons, RS-232 Serial PIC command port, Device Description (DD) based HART tools, Modbus.

## Modulation Duty

100% continuous duty with no limitations.

## Mounting Orientations

Actuator may be mounted in any orientation without restrictions.

## Manual Operation

Hand crank (no power required) and Handswitch (power required).

## Switches and Relays

(2) cam-operated over-travel protection switches (standard); up to (4) Form C auxiliary, cam-operated switches (optional); (1) SS alarm; (2) programmable SS SPST relays (standard) or (2) mechanical DPDT relays (optional); status relay (standard).

## Wiring and Termination

Easy access, screw-type terminals accept up to 12 AWG wire.

## Hard Stops

Internal, fixed (standard); external adjustable hard stops (optional).

## Status Indications

Configurable LEDs (red, green and yellow) visible through optional terminal compartment window; digital numeric LED position display available (only if ordered with optional terminal compartment window).

## External Position Feedback Signal

4–20 mA or 1–5 Vdc signal (standard).

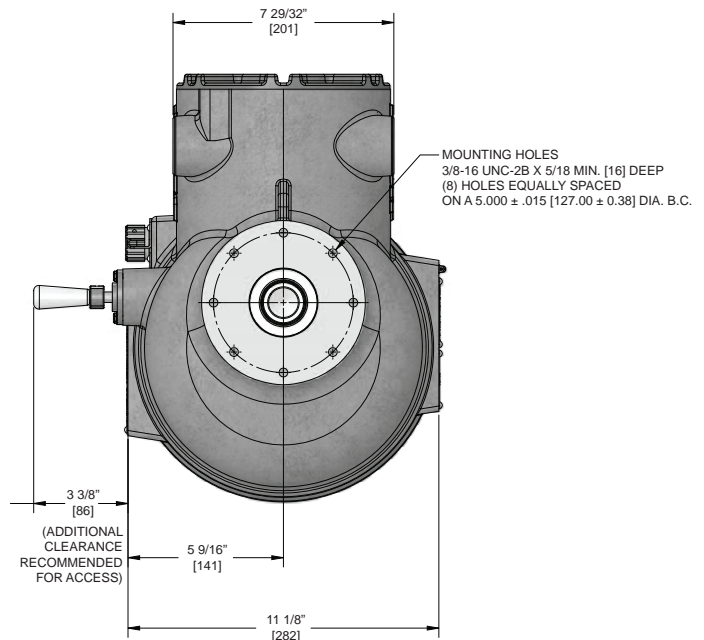
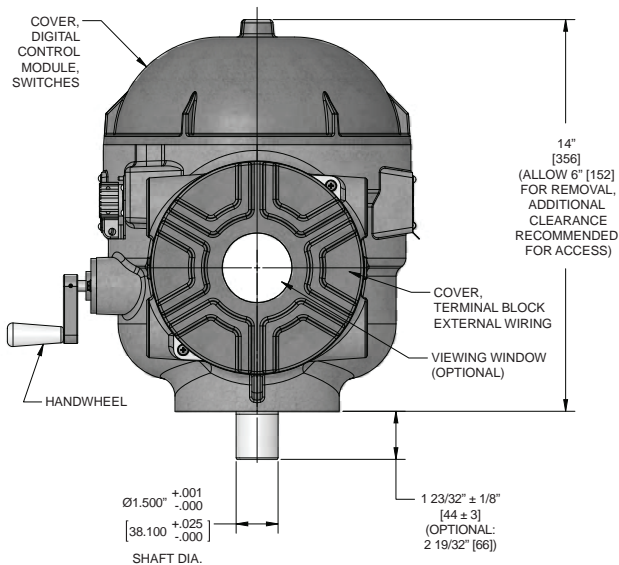
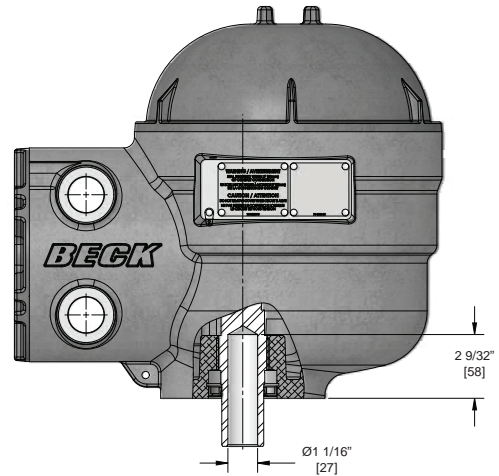
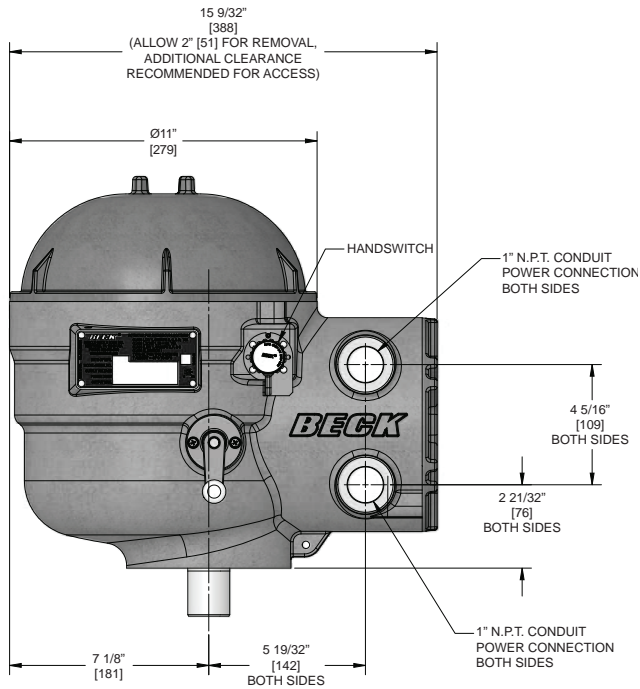
## Backup Power Supply (Optional)

An internal backup supply utilizing ultra-capacitors to provide “go-to-position” response upon power loss; maximum operating temperature limitations apply.

## Valve Mounting Hardware (Optional)

ISO 5211 compatible hardware or custom hardware.

# OUTLINE DIMENSION DRAWINGS



NOTE: Measurements shown in inches and [mm].

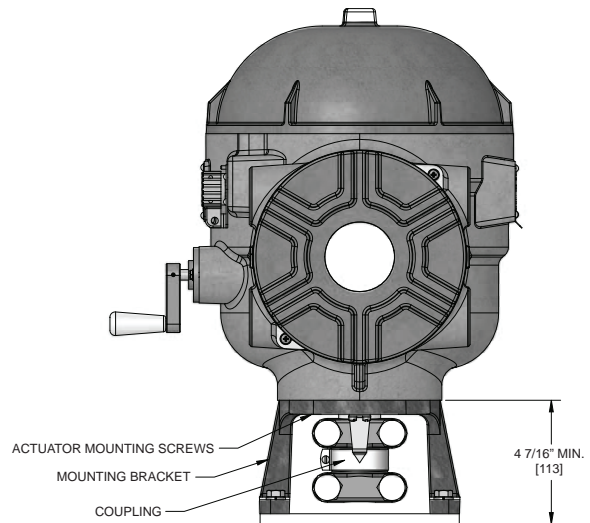
## BECK MODEL 57-109

Approx. Weight	Rated Torque	Max. Overhung Load
59 lbs.	120 lb-ft	750 lbs.
27 kgs.	163 N•m	340 kgs.

## DIRECT MOUNT FASTENER GUIDE

	Size (in.)	Torque* lb-ft [N•m]
Coupling Screws	5/8-18	170 [230]
Actuator Mounting Screws	3/8-16	25 [34]

\*May vary per application.



## VALVE DIRECT MOUNT HARDWARE