WATER AND WASTEWATER TREATMENT PLANTS
Beck actuators are durable and dependable
- Over 75 years of proven performance
- No burn-out motor
- Unlimited modulation
- No torque switches
- No thermal overloads
- No worm gears
- No lithium batteries for electronics
- Positioning steps as small as 0.10 degrees
- No recommended periodic maintenance

Beck Model 11-200/300 installed on a rotating scum pipe

Beck Model 11-200/300 installed on a MagnaDrive Vertical ASD

Plant-wide solution for modulating and open/close applications
Beck actuator applications in water and wastewater treatment plants include:
- Filter flow control valves (effluent)
- Filter backwash valves
- Wash water return valves
- Aeration blower inlet vanes
- Air distribution header valves
- Return activated sludge valves (RAS)
- Waste activated sludge valves (WAS)
- Incinerator natural gas valves
- Incinerator Venturi scrubber valves/dampers
- Incinerator combustion air dampers
- Incinerator exhaust gas dampers
- Incinerator fan dampers
- Fluid and magnetic pump and fan adjustable speed couplings
- Variable pump control on MagnaDrive installations
- Ozone control valves (ozone destruct, oxygen control, ozone generator cooling water, etc.)
- Rotating scum pipes
- Reverse osmosis and membrane valves
- Interconnect valves & Well Station valves
The Beck motor

No Burnout, Continuous Duty

The unique motor is one of the features that sets Beck actuators apart from other typical electric actuators. Beck’s no burnout motor ensures that the actuator is available 100% of the time. There are no duty cycle limitations typical of most electric actuators, so the Beck actuator tracks the control signal perfectly, greatly simplifying loop tuning.

The Beck motor:

• Never overheats or burns-out—even under demanding modulating control or stalled conditions. Thermal overloads and torque switches are not required in Beck actuators.
• Reaches full speed and torque in milliseconds and stops in milliseconds, eliminating dead time.
• Provides extremely accurate and repeatable positioning for modulating applications.
• Does not coast or overshoot the desired position.
• Draws low current (0.16 A to 3.0 A).
• Uses double-lipped, grease-sealed bearings for maintenance-free operation and meets IP68 (submerged in 3 meters of water for 48 hours).

Tested in an active modulating loop, conventional motors rose rapidly in temperature, tripping thermal overload devices and becoming unavailable for extended time intervals. Only the Beck motor remained stable for continuous operation.

Motor Temperature Rise
Active Control Loop

Beck Model 11-160s mounted on sludge valve extension bonnets

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Trip</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional Motor - Abrupt Loss of Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beck Motor - Continuous Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Digital Electronics

High Efficiency Spur Gear Train
Permanently Lubricated, Heat Treated
Alloy Steels and Ductile Iron

Digital Control Module (DCM)

Contactless Position Feedback
With Over-travel Limit and Auxiliary
Switches

DCM Equipped with Feedback Display

Electric Handswitch
Local Operation, Auxiliary Handswitch Contact

Contactless Position Sensor (CPS)

Manual Handwheel
Without Declutch
BEFORE & AFTER PHOTOS OF A BECK 11-469 REPLACING AN UNRELIABLE ELECTRIC ACTUATOR ON A RETURN ACTIVATED SLUDGE VALVE

BEFORE REPLACEMENT

AFTER REPLACEMENT

BEFORE & AFTER TREND DATA OF A BECK ACTUATOR REPLACING AN UNRELIABLE ELECTRIC ACTUATOR ON A FILTER EFFLUENT VALVE
(City of East Moline Water Treatment Plant, IL)

BECK 11-300 actuator mounted on a filter effluent valve.

FILTER PERFORMANCE BEFORE

FILTER PERFORMANCE AFTER

Beck 11-300 actuator linkage-mounted on a 24” butterfly valve.
Beck actuator installed on a digester valve in a hazardous-rated application.

Beck actuators with characterized linkages connected to butterfly valves to provide a torque multiplier at the valve seat.

Separate Compartments
Type 4X Housings for Major Components, IP68 (3 meters / 48 hours)

Digital Control Module (DCM)
Gear Train and Motor Housing
Contactless Position Sensing Device (CPS)
Wiring Terminal Board

Beck actuator direct-mounted on a 3” butterfly valve.

Beck 31-M50 actuator direct-mounted on a 3” butterfly valve.

Beck actuators with characterized linkages connected to butterfly valves to provide a torque multiplier at the valve seat.
Services

- Product demonstrations
- Site surveys
- Application reviews
- Specification writing
- Customer support (24/7)
- Repair service
- Field service
- Stocked spare parts

and ...

- All Beck actuators include a 3 year limited warranty.

Beck actuator equipped with Remote Indication
### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Drive Power</th>
<th>Model 11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120 V ac, single-phase, 60 Hz (50 Hz Optional)</td>
</tr>
<tr>
<td></td>
<td>(208, 240, 380, 415, 480 &amp; 575 V ac, 60 or 50 Hz Optional)</td>
</tr>
<tr>
<td></td>
<td>Model 14 &amp; 29</td>
</tr>
<tr>
<td></td>
<td>120 V ac, single-phase, 60 Hz (50 Hz Optional)</td>
</tr>
<tr>
<td></td>
<td>(240 V ac, single-phase, 60 or 50 Hz Optional)</td>
</tr>
<tr>
<td>Output Torque/Thrust</td>
<td>Model 11</td>
</tr>
<tr>
<td></td>
<td>Up to 1,800 lb-ft (2,440 N•m)</td>
</tr>
<tr>
<td></td>
<td>Model 14</td>
</tr>
<tr>
<td></td>
<td>Up to 4,000 lbs of thrust (17,800 N)</td>
</tr>
<tr>
<td></td>
<td>Model 29</td>
</tr>
<tr>
<td></td>
<td>Up to 6,100 lbs of thrust (27,134 N)</td>
</tr>
<tr>
<td>Operating Conditions</td>
<td>–40° to 185° F (–40° to 85° C)</td>
</tr>
<tr>
<td></td>
<td>0 to 100% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Input Signal Options</td>
<td>4–20 mA or 1–5 V dc for digital control</td>
</tr>
<tr>
<td>Communication Interface Options</td>
<td>HART, Foundation Fieldbus, Profield PA, Modbus RTU, Modbus TCP (Ethernet), local pushbutton/LEDs and DB9 Serial Commands</td>
</tr>
<tr>
<td>Position Feedback Signal</td>
<td>4–20 mA</td>
</tr>
<tr>
<td>Action on Loss of Input Signal</td>
<td>Stays in place (all models) or moves to a preset position (configurable with some models)</td>
</tr>
<tr>
<td>Action on Loss of Power</td>
<td>Stays in place, manual Handwheel operation</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Type 4 or 4X (depending on specific model). Models approved for use in Hazardous classified locations are also available—contact a Beck Sales or Application Engineer for details.</td>
</tr>
</tbody>
</table>

### DIRECT-COUPLED

![Direct-Coupled Image]

### J-BRACKET

![J-Bracket Image]

### REVERSE LINKAGE

![Reverse Linkage Image]

### L-BRACKET

![L-Bracket Image]