



Rodney Hunt

A ZURN Company

SCUBA™

Actuators

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SCUBA



SCUBA.™ In the Rodney Hunt Tradition of Quality and Reliability



Submersible SCUBA unit, designed for hazardous duty in a combined sewer regulation chamber.



Rugged, practically maintenance-free, the SCUBA unit is a linear actuator designed for heavy-duty applications where dependable long-term service is required. The SCUBA unit is part of a long line of quality products from Rodney Hunt, a leader in the design and manufacture of gates, valves, and actuation equipment for liquid control applications around the world.

SCUBA units are compact, self-contained electrohydraulic actuators that were designed for gate and valve actuation, but can be easily used with almost any device requiring linear actuation. A simple mechanical connection to the device, and a straightforward electrical connection to the control panel, makes the field installation of SCUBA quick and easy.

SCUBA is ideal for a wide variety of applications where accessibility may be difficult, where modulating service is required, or anywhere a low maintenance linear actuator is desired. With many standard options, an economical SCUBA unit can be configured for long, dependable service in hazardous, submersible, and corrosive environments. Our engineers can add special features to satisfy the most demanding applications.

Rodney Hunt's SCUBA unit is available with a weather-tight cover for outdoor installations.



SCUBA.™ Provides Self-Contained, Low-Maintenance Actuation.



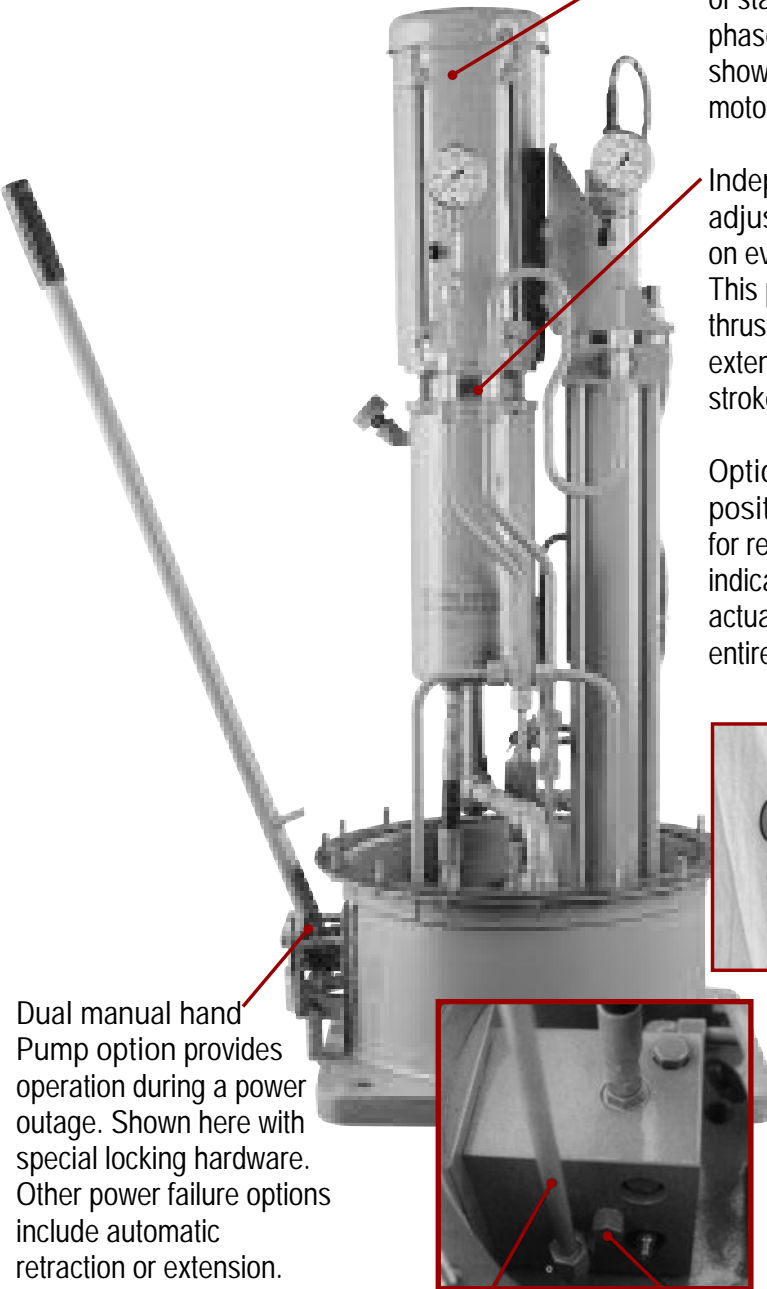
The SCUBA actuator differs from traditional manual and electric Actuators. SCUBA units are designed to be completely self-contained, and appropriate for a wide range of applications.

Key Benefits:

- Self-Contained: All actuator components installed on a common base.
- Cost Effective: Reduced installation, maintenance and operating costs.
- Easy Installation: one mechanical connection. No field piping. Straightforward wiring.
- Rugged Design: 1 1/4" base plate. Stainless steel cover available.
- High Efficiency: Negligible mechanical losses. No screw stem friction or wear.
- Low Maintenance: No routine maintenance required .

Standard and Custom Options

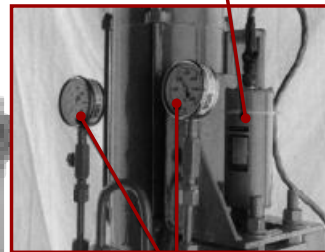
- Optional Covers: Covers available to meet most applications (such as weather-tight and submersible).
- Hazardous Environments Explosion-proof and intrinsically safe components permit installation in hazardous environments.
- Power Failure Operation: Able to fully retract or extend upon loss of electrical power.
- Position Feedback: End of travel and continuous position feedback is available.



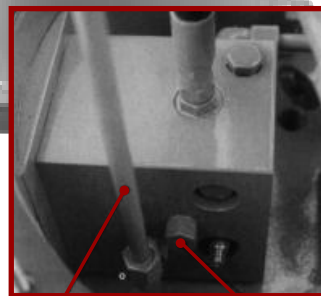
Electric motors are available in a wide variety of standard voltages, phases, and ratings. Photo shows an explosion-proof motor.

Independent, dual thrust adjustments are standard on every SCUBA actuator. This permits separate thrust limitation for the extension and retraction stroke of the actuator.

Optional continuous position feedback allows for remote position indication and control of the actuator throughout its entire stroke.



Stainless steel case, grade A pressure gauges provide indication for initial adjustments and monitoring of system's operating characteristics.



Manifold cartridge valving eliminates the need for line mounted valves. Optional hand pump manifold illustrated.

Stainless steel tubing with silver brazed, O-ring face seal fittings provide a leak-free system.

Dual manual hand Pump option provides operation during a power outage. Shown here with special locking hardware. Other power failure options include automatic retraction or extension.

A variety of covers are available for every application.

Where are SCUBA.™ Units Used?



Combined Sewer Overflow Regulation

SCUBA's self-contained and rugged construction makes it ideally suited for the wet, corrosive and hazardous environment of combined sewer overflow regulator chambers.

Modulating Service

Reduced mechanical wear and maintenance costs make a SCUBA unit the logical choice for modulating service.

Corrosive Installations

SCUBA units are supplied with Rodney Hunt's standard epoxy paint system which protects the unit in most corrosive applications. For extremely corrosive environments, SCUBA units can be supplied with stainless steel covers.

Submersible Locations

A submersible SCUBA unit can be specified for operation in an underwater location.

Hazardous Environments

SCUBA units can be supplied for installation in Class I, Division 1 hazardous locations by utilizing explosion-proof and intrinsically safe components.

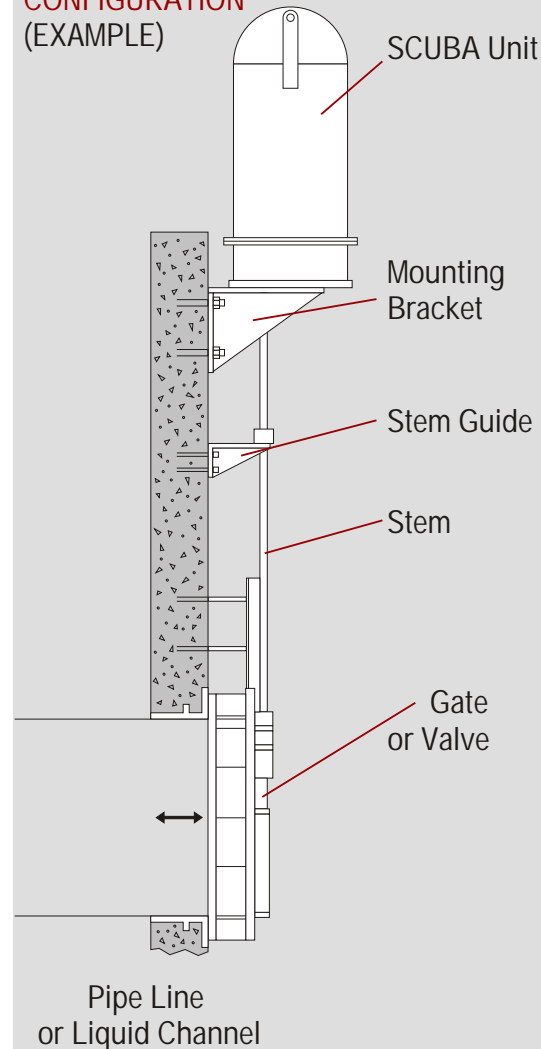
Emergency Power Failure Operation

Unlike electric actuators, SCUBA units can be supplied to automatically extend or retract upon a loss of electrical power. Emergency operation is often critical for influent chambers or pump stations.

Remote Installations

For very remote sites, SCUBA units can be supplied with manual pumps or 12 VDC motors for operation with a vehicle's battery system.

CONFIGURATION
(EXAMPLE)



A SCUBA unit can be used to operate large water and wastewater control valves like this 36" Rotovalve, destined for service in a municipal sewage treatment facility.

Specifications



The following is a sample specification for Rodney Hunt Company's SCUBA series of linear actuators. The sample specification is divided into distinct sections, each dealing with a particular aspect or feature of the SCUBA unit. The specifier is encouraged to read each section carefully and choose the appropriate subsection that best meets the application.

Although a SCUBA unit can be specified and designed for almost any type of application and configuration, only the standard features have been included here. If an application requires a special design consideration, application assistance is available from Rodney Hunt Company.

General: A complete electrohydraulic actuator system shall be furnished to operate the equipment specified. The design shall be directed, reviewed and approved by a Professional Engineer registered in the state of manufacture of the actuator system. It shall be equivalent in design and workmanship to the SCUBA unit, as manufactured by Rodney Hunt Company of Orange, Massachusetts.

It is the intent of this specification to encourage the use of the latest technological advances both in component selection and in system design concepts.

Actuator Construction: Each actuator shall be designed to be a single self-contained unit, requiring only electrical connections. The actuator shall be completely factory wired, assembled and tested.

The operating rod and any required operating stem shall be sized to safely withstand 1.25 times the actuator output at maximum system pressure and shall be sized so that L/r is less than 200; where "L" is the unsupported length and "r" is the radius of gyration. The operating rod shall be hard chrome plated. Any additional stem required shall be stainless steel.

All hydraulic tubing shall be 300 series stainless steel with O-ring face seal, sil-brazed fittings meeting the requirements of SAE J1453.

All electrical connections shall be made within conduit enclosures or junction boxes and be properly labeled. No live connections shall be exposed when the unit cover is removed. If analog signal wiring is required, it should be shielded and separated from the control and power wiring.

Actuator Cover Select one:

Drip-Proof Cover: The actuator cover shall be manufactured so that it protects the actuator from the entrance of rain.

Weather-Tight Cover: The actuator cover shall be manufactured so that it protects the actuator from windblown rain, splashing water, or hose-directed water.

Submersible Cover: The actuator cover shall be manufactured so that it will exclude water in a submerged condition.

Without Cover: The actuator shall be provided without a cover.

Cover Material Select one:

Steel: The actuator cover material shall be steel.

Stainless Steel: The actuator cover material shall be stainless steel.

Nominal Speed Select one:

12"/min.: The actuator shall extend and retract at a nominal speed of 12" per minute.

24"/min.: The actuator shall extend and retract at a nominal speed of 24" per minute.

Power Failure Operation Select one:

Automatic Extension: Upon a loss of electrical power, the actuator shall immediately and automatically fully extend at the normal operating speed.

Automatic Retraction: Upon a loss of electrical power, the actuator shall immediately and automatically fully retract at the normal operating speed.

Manual: Manual operation shall be provided, at a reduced speed, in the event that there is no electrical power available. All manual operation shall be possible without opening the actuator cover. No directional control valves will be allowed.

None Required: No power failure operation is required.

Actuator Environment Select one:

Non-Hazardous: The actuator shall be designed to be installed in a

Nonhazardous environment. All electrical components shall be rated NEMA 12 or better.

Hazardous: The actuator shall be designed to be installed in a Class I, Division 1 hazardous area. All components of the actuator shall be NEMA 7, Class I, Division 1 rated or wired for intrinsic safety.

Electrical Control Enclosure Select one:

NEMA 12: The separate electrical enclosure and all components mounted on its exterior shall be NEMA 12 rated.

NEMA 4X: The separate electrical enclosure shall be corrosion resistant and NEMA 4X rated. All components mounted on the exterior of the enclosure shall be NEMA 4 rated

NEMA 7: The separate electrical enclosure and all components mounted on the exterior shall be NEMA 7 rated and designed for installation in a Class I, Division 1 hazardous environment.

Integral: The electrical enclosure shall be an integral part of the actuator cover. All necessary electrical control components shall be mounted on/in the integral enclosure.

Controls Select all that apply:

Local Extend/Retract: It shall be possible to extend, retract, and position the actuator using manually activated pushbuttons located on the control enclosure. It shall be possible to position the gate at any intermediate position.

Remote Extend/Retract: It shall be possible to position the actuator using two sets of normally open dry contacts provided from devices by others. Motion occurs while these contacts are closed and ceases when they are open.

Modulating: It shall be possible to position the actuator automatically using a single loop controller in order to match a variable 4-20 mA process signal. The controller shall be capable of proportional-integral-derivative (PID) control. The analog process variable signal to be monitored shall be provided from devices furnished by others.

Special Controls: Specify as required.

Position Indication Select one:

End of Travel: End of travel indicating lights, mounted on the control enclosure, shall be provided using proximity switches integrally mounted in the actuator.

Continuous Position Indication: The actuator shall be supplied with a 4-20 mA continuous position transducer. The actuator's position shall be displayed on an LED meter, mounted on the control enclosure.

End of Travel and Continuous Position Indication: The actuator shall be supplied with both a 4-20 mA continuous position transducer and end of travel proximity switches. The control enclosure shall be provided with an LED meter and indicating lights.

None Required: No position indication is required.

Electrical Power: The main electrical power source shall be: (120-1 Φ) (208-1 Φ) (208-3 Φ) (230-1 Φ) (230-3 Φ) (480-3 Φ)

Testing: The actuator shall be thoroughly shop tested to verify that all modes of operation perform as required. Testing shall include verification of motor operating running amps and voltage; actuator operating speed and stroke; and verification of the extension and retraction thrust adjustments.

Painting: The actuator shall be painted with one coat of medium gray high-solids epoxy (5 mils), followed by one coat of medium gray aliphatic polyurethane (2 mils).