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CII Custom High Performance Solenoids

Product Facts

- Designed and built to customer requirements
- Push, pull or combination motion
- Broad operating temperature range
- Multiple termination and mounting options
- 200°C magnet wire insulation is standard

Description

Custom-designed linear solenoids for demanding applications

Top-end devices are engineered for applications where extreme temperatures and other severe environmental conditions may exist

High altitude, shock, acceleration and vibration reliable

Product Options

Linear motion, tubular solenoid line ranges from models only one-half inch (12.7 mm) in diameter producing only a few ounces (<1N) of force at very short strokes, to three-inch (76.2 mm) diameter models capable of 100 pounds (445 N) force at one-inch (25.4 mm) strokes

Push, pull or combination motion available

Continuous or intermittent duty coils available

AC voltages can be handled through the use of internal rectifiers

Dual coil models with low holding power requirement may be appropriate in power sensitive equipment

Solenoids with plunger seals can be built for harsh environments

Solenoids can be made water-resistant, fuel-resistant and with encapsulated coils (ferrous parts are plated for protection against corrosion)

Leads are provided with TEFLO N and TEFZEL film insulation, but we can use customer-specified MIL-type connectors on the solenoids

Can be provided with flat or conical face depending on stroke

Solenoid plungers can be internally or externally threaded or have clevis attachment

Prototype solenoids can be custom built to a customer’s requirements

Electrical Characteristics

Voltage Rating —
- 6 to 270 VDC
- 28 to 115 VAC (60 or 400 Hz)

Mechanical Characteristics

Ambient Temperature Range —
- -65°C to +125°C

Force — 1 oz. to 100 lbs. push, pull, hold

Rated at 100,000 operations

Built IAW MIL-S-4040 as applicable
Typical Applications

Fin Locking Solenoid
Three of these husky Solenoids are used to lock steering fins in place until the guided weapon is released.

Voltage — 22-28 VDC
Max. Allowable Current — Not specified
Actuating Force — 12 to 15.4 lb. (depends on input V)
Stroke — .095”
Time On — Bomb drop time
Time Off — Continuous
Cycling Rate — Not applicable
Type Operation — Pull
Temperature Range — Ambient -65˚F to +125˚F
Coil Connections — TEFLON Insulated 8” to 8 3/4”
Approximate Dimensions — 2.20” diameter x 2.05” long
Type Mounting — Integral tapped holes
Special Environmental Consideration — Exposure to sand, dust, aircraft oils and fuels, will require an “O” ring seal on plunger.

Primer Firing Solenoid
This extremely powerful Solenoid together with its companion pulse control module is designed to fire a standard Military #41 arsenal primer, as part of an advanced mine detection system.

Voltage — 26 VDC
Max. Allowable Current — 10.4 Amps @ 26 VDC
Actuating Force — 90 oz. force inches (.64 joules)
Stroke — .38”
Time On — W/pulse control module, 25 ms
Time Off — 3 seconds
Cycling Rate — 20 operations/minute
Type Operation — Push
Temperature Range — Ambient -65˚F to +85˚F
Coil Connections — TEFLON Insulated #20 stranded 6’ long
Approximate Dimensions — 3/4” diameter x 3 1/2” long
Type Mounting — Integral 1/2” - 20 threaded base
Special Environmental Consideration — Sand and dust

Aero Medical Valve Solenoid
A scant 3/8” in diameter, this tiny precision Solenoid is capable of 100,000 reliable operations, controlling various airborne gas systems.

Voltage — 28 VDC
Max. Allowable Current — .18 Amps @ 28 VDC
Actuating Force — 190 grams @ .030 Amps
Stroke — .030” minimum
Time On — Continuous duty
Time Off — Not specified
Cycling Rate — Not applicable
Type Operation — Pull
Temperature Range — Ambient -65˚F to +125˚F
Coil Connections — #32 AWG TEFLON insulated, 24” minimum
Approximate Dimensions — 3/8” diameter x 3/4” long
Type Mounting — None
Typical Applications (Continued)

Fuel Valve Solenoid
This is a unique application in which the Solenoid is mounted inside an aircraft fuel tank submerged in JP-8 jet fuel. The coil is potted, completely fuel proof.

Voltage — 115 VAC 400 Hz
Actuating Force — 1 lb. minimum @ 160°F
Stroke — .030"
Time On — Continuous duty rating
Time Off — Not specified
Type Operation — Push
Temperature Range — Ambient -65°F to +160°F
Coil Connections — IAW customer drawing, Teflon Insulated Leads
Approximate Dimensions — Tubular, 3/4" diameter x 3" long
Type Mounting — Flange IAW customer drawing
Special Environmental Consideration — Coil must be air tight, plunger operates while submerged in JP-8 jet fuel

Directional Valve Solenoid
A major valve company selected this rugged type Solenoid to control a directional hydraulic valve in heavy industrial machinery. The valve assembly has a 20 year expected life.

Voltage — 92 VDC
Max. Allowable Current — 7.2 Amps inrush, .06 Amps hold
Actuating Force — 30 lbs. minimum
Holding Force — 40 lbs. minimum
Stroke — .500"
Time On — Continuous duty
Time Off — Not applicable
Cycling Rate — Not applicable
Type Operation — Push and hold
Temperature Range — Ambient -55°F to +85°F
Coil Connections — Teflon insulated #18 AWG, 72" L
Approximate Dimensions — 2 3/16" dia. x 4 3/16"
Type Mounting — Plate
Special Environmental Consideration — Sand, dust, rain

Refueling Release Solenoid
This complex Solenoid with internal current limiting switch is part of an "Air to Air" refueling system.

Voltage — 18 to 30 VDC
Max. Allowable Current — 10 Amps/50 ms - 1 Amp continuous holding
Actuating Force — 20 lbs. min. for .10" of initial stroke
Holding Force — Plunger must hold at bottom
Stroke — .17 to .20"
Time On — Continuous duty
Time Off — Not applicable
Cycling Rate — Not applicable
Type Operation — Pull
Temperature Range — Ambient -65°F to +160°F
Coil Connections — Connector MS 30ZE-10SL-4P per MIL-C-5015
Approximate Dimensions — 2 1/4" dia. x 2 13/16"
Type Mounting — Integral with refueling receptacle
Special Environmental Consideration — High performance aircraft exposure

TEFLON is a trademark of E.I. du Pont de Nemours and Company.
### Application Information Form

**Customer Firm Name:**

**Customer Name:**

**Customer Address:**

**Telephone number:**

**Email address:**

**Voltage:**

**Maximum allowable current:**

**Actuating force:**

**Holding force:**

**Stroke:**

**Duty cycle:**

**Cycle rate:**

**Type of operation:**

**Temperature range if other than -65°C to +125°C:**

**Coil connections:**

**Approximate dimensions:**

**Type of mounting:**

**Applicable Mil-specs:**

**Special environmental considerations (i.e., exposure to salt spray, jet fuel, water, sand and dust):**

**End application of solenoid:**

**Special tests:**

## Application Type:
- [ ] New Design
- [ ] Replacement

**Approximate quantity (annual requirement):**

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**Please return completed form to John Gilbart, Product Manager for custom solenoids.**

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