

PROFILES OF SUCCESS

Affordable, Application-specific Solenoid Solutions

Our creative engineering process is Electroswitch's unique ability to work one on one with customers to develop the industry's only truly affordable application-specific solenoid assembly. To illustrate this process, we've featured several case studies describing the challenges and innovative solutions we have achieved for four very different types of solenoids.

In each case study, starting with a standard solenoid, we designed a solution integrating the customer's solenoid requirements into an application-specific assembly. Then - and this is the remarkable part - we provided the entire assembled package for less than the combined cost of the ready-made parts.

Yes, Custom for Less than Off-The-Shelf

How do we do it? Electroswitch has fifty years of solenoid engineering expertise, and a tradition of focusing that expertise on each individual customer's solenoid problem. With our advanced engineering software capabilities and long-term experience in developing application-specific solenoid assemblies, we already have the immediate expertise to meet your design needs.

Let Us Achieve Success for Your Company

For each of the companies featured in these case studies, our "perfect fit" assembly increased performance efficiency, decreased the number of components and reduced the manufacturing costs. Let us design a solution for you. Call us for a free no obligation consultation.

SOLENOID ASSEMBLIES

HOUSING STYLES



BALL RACE ROTARY

Uses angled ball traces to convert a linear force into a rotary force. High starting torque, high speed and long life.



BRUSHLESS ROTARY

Converts a linear force directly into a rotary force without any contacting parts. Medium starting torque, high speed, and long life.



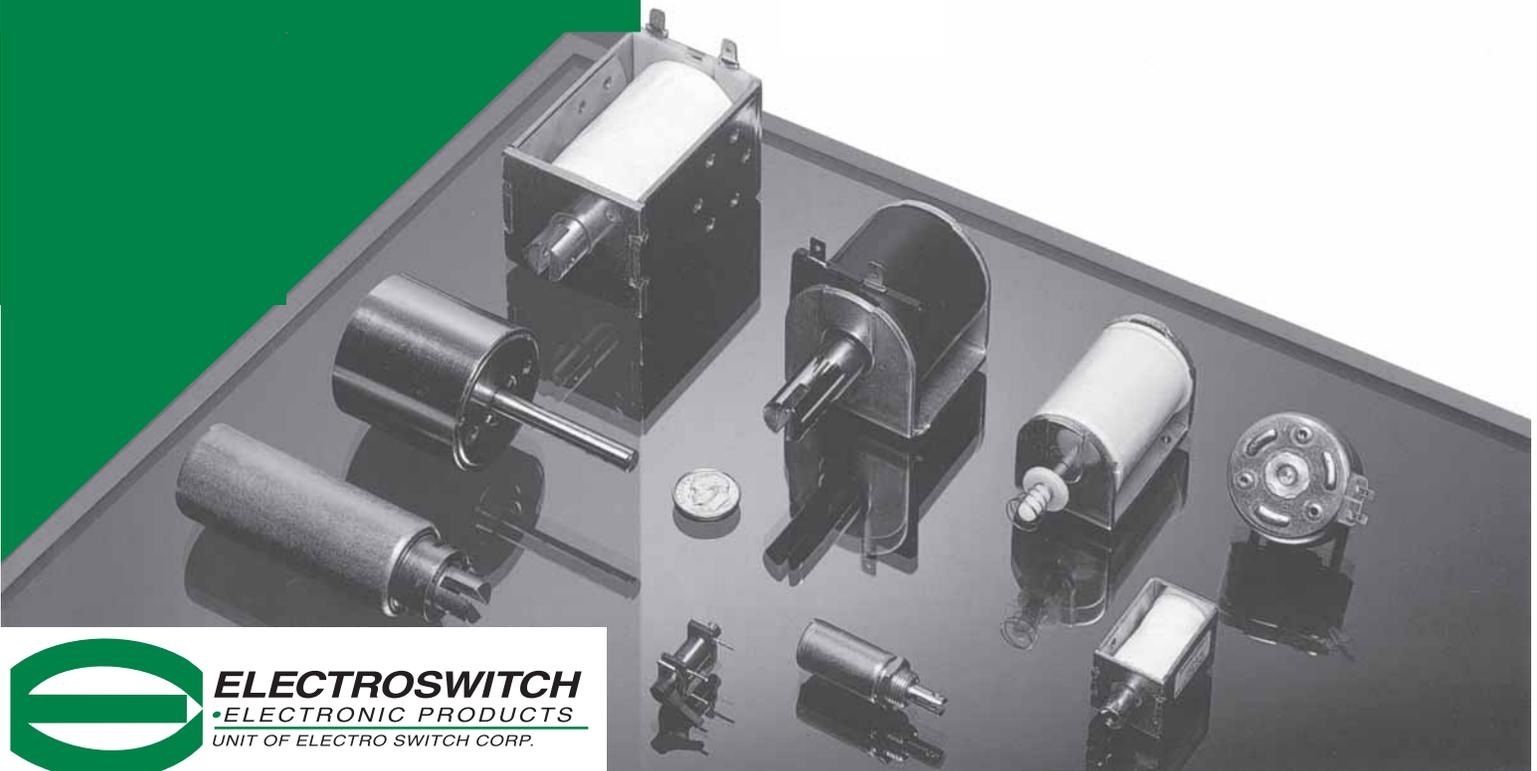
C & D BOX FRAME

Low-cost linear solenoid can be customized to specific applications. Multiple sizes, DC or AC, with terminals or lead wires.



TUBULAR

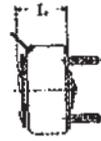
DC solenoid constructed to maximize linear force. Available with bushing mount, good heat dissipation and long life.



ELECTROSWITCH
•ELECTRONIC PRODUCTS
UNIT OF ELECTRO SWITCH CORP.

ROTARY SOLENOIDS

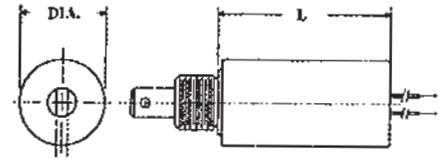
<u>Voltage (DC)</u>	<u>Type</u>	<u>Size (D x L)</u>	<u>Stroke/Motion</u> <u>(Right/Left Hand Strokes)</u>	<u>Starting Torque</u>
6, 12, 24	2NE	1.125" x .716"	25°, 35°, 45°	up to 1.4 lb in
	3NB	1.312" x .718"	25°, 35°, 45°, 67.5°	up to 2.7 lb in
<u>Duty Cycles</u>	5NB	1.875" x 1.265"	25°, 35°, 45°, 67.5°, 95°	up to 8.3 lb in
Int., Cont.				



Note: Standard rotary solenoid uses needle bearing for increased life and performance.

TUBULAR SOLENOIDS - PUSH/PULL TYPE

<u>Voltage (DC)</u>	<u>Type</u>	<u>Size (D x L)</u>	<u>Type</u>	<u>Size (D x L)</u>
6, 12, 18, 24, 48	C7-18	7/16" x 1 1/8"	C12-24	3/4" x 1 1/2"
	C8-14	1/2" x 7/8"	C16-18	1" x 1 1/8"
<u>Duty Cycles</u>	C8-24	1/2" x 1 1/2"	C16-32	1" x 2"
Int., Cont.	C8-32	1/2" x 2"	C24-26	1 1/2" x 1 5/8"
			C24-38	1 1/2" x 2 3/8"

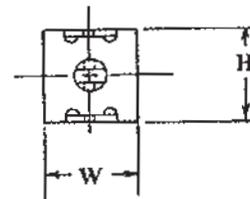
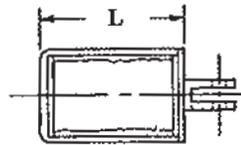


Force Range

up to 7.5 lbs @ 1/4" stroke

D FRAME SOLENOIDS - PULL TYPE

<u>Voltage (DC)</u>	<u>Type</u>	<u>Size (W x H x L)</u>
6, 12, 24, 48	34	.750" x .750" x .765"
	35	.750" x .750" x 1.187"
<u>Duty Cycles</u>	37	.937" x .812" x 1.625"
Int., Cont.	40	1.828" x 1.562" x 2.625"
	42	1.218" x 1" x 2"

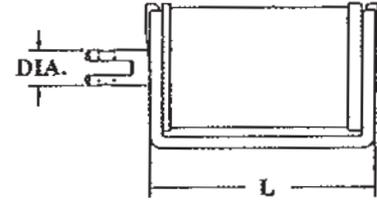
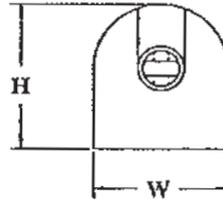


Force Range

up to 10 lbs @ 1/4" stroke

C FRAME SOLENOIDS - PUSH/PULL TYPE

<u>Voltage (DC)</u>	<u>Size (W x H x L)</u>
12, 24, 36	1.13" x 1.28" x 1.84"
	1.56" x 1.70" x 1.70"



Duty Cycles

Int., Cont.

Force Range

up to 6 lbs @ 1/4" stroke

ELECTROMECHANICAL TORQUE ACTUATORS

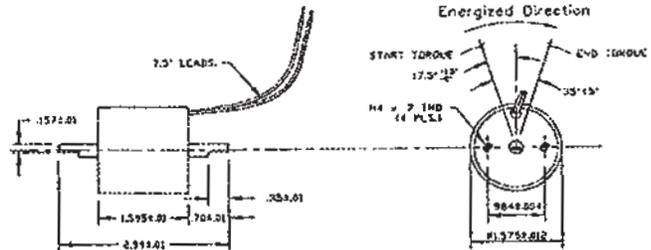
<u>Voltage (DC)</u>	<u>Size (D x L)</u>
6, 12, 24, 48, 120	1.575" x 1.595"

Duty Cycles

Int., Cont.

Starting Torque

up to 5 lb in



Note: Various shaft dimensions available upon request.

APPLICATION-SPECIFIC SOLENOIDS

Electroswitch has the unique ability in developing application-specific solenoid assemblies. With our advanced engineering software capabilities and long-term experience in developing application-specific solenoid assemblies, we already have the immediate expertise to meet your design needs. Electroswitch provides a custom cost-saving solution for your application.

We begin with a standard solenoid, and design an assembly which will integrate the specific solenoid function. Our "perfect fit" assembly increases performance efficiency, decreases the number of components and reduces manufacturing costs. Let us design a solution for you.



SOLENOID ASSEMBLIES

If you have a solenoid challenge,

Diverter

The Challenge

A manufacturer of automated industrial equipment came to Electroswitch with a new concept for a diverting device. This customer was adamant that the diverter be produced with the performance characteristics defined by their development team. In the past, they experienced frustration with other solenoid suppliers who were only successful in building prototypes. When these prototypes went into volume production, the product consistently failed to meet specifications.

The Solution

Among the several suppliers evaluated, only Electroswitch was able to build to the customer's design specifications, and produce a low cost solenoid at high volume production. Our key to success was incorporating computer aided manufacturing (CAM), which guaranteed the accuracy of precision tolerances within the rotary solenoid.

Electroswitch's long-term commitment to cell manufacturing - including computer aided auditing of production - paid off for everyone. Due to the device's high degree of accuracy required, it was critical that the production process utilize the computer controlled test equipment developed exclusively by Electroswitch engineers. This guaranteed that the product coming off the process would meet the customer's specifications each and every time.

In this application, Electroswitch's special expertise in CAM ensured that the quality went beyond the prototype stage to stay consistent in high volume production.



Locking Mechanism

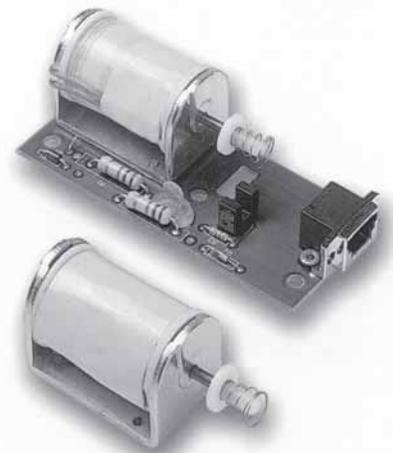
The Challenge

A manufacturer of point-of-service equipment faced several dilemmas in the design of their cash register drawer locking mechanism. Electroswitch was informed that the solenoid needed to be extremely compact due to size constraints in the design. We were also charged with keeping costs low at a medium-volume production level, and we had to overcome the security flaws of the original design which intensified the challenge.

The Solution

In this type of application, when a signal is received by the solenoid, a plunger pushes the lever to unlock and open the drawer. In the previous design, the solenoid's plunger had a fixed linkage to the lever. A physical impact to the outside of the drawer would override the solenoid and push the lever into motion, opening the drawer. Electroswitch addressed this security design flaw by developing a soft linkage, which prevented a physical impact from unexpectedly tripping the lever. This improvement meant that the drawer could only be activated by energizing the solenoid to push the lever, releasing the drawer.

Through creative reengineering, Electroswitch successfully met this customer's unique security, design and budget requirements. Let us do the same for you!



we have a solenoid solution.

Flow Control

The Challenge

A leading manufacturer of medical equipment needed a solenoid to control a valve which in turn controlled two lines. The solution had to be low cost with minimum tooling. The valve manifold system must also withstand very high pressure with little maintenance. Although the valve normally remained open, low power consumption on the solenoid coil was critical to ensure continuous energized operation when the valve was closed. Further, this customer sought a solution that was compatible with their installation process, and had to retrofit existing products in the field.

The Solution

We proposed a very simple approach that eliminated couplings at the manifold, as well as the potential leaks and contamination issues of other designs. This approach made installation as easy as splicing the solenoid's body into a holder, snapping the hose lines into a manifold and plugging in the connector. Because only the manifold required tooling, costs were kept low. We utilized a tubular solenoid for the solenoid valve, which minimized power consumption and maximized valve strength. The power consumption required to hold the valve closed during operation was lowered to eliminate heat rise problems.

By carefully analyzing the problem and providing a simple, low cost solution, Electroswitch gained another satisfied customer.



Pusher

The Challenge

A major manufacturer of automated industrial sorting equipment needed a solenoid to retrofit into their existing equipment. This equipment required life specifications at 10 million cycles, which is ten times the industry standard. The customer was also under a very tight time constraint. Normally, the life cycling of plastics takes months to test at normal operating speeds because of the heat rise within the solenoid coil.

The Solution

To retrofit into the existing equipment and space, Electroswitch's engineers designed a very compact, linear solenoid. By combining multiple stampings into one, we incorporated a C-Frame solenoid onto the main bracket of the assembly without welding or using rivets. This reduced the piece part count and improved both quality and manufacturability.

Electroswitch then experimented with different plastics and metal platings to increase life expectancy. Finally, we developed a low temperature testing method which decreased the overall testing time from months to days to help the customer meet their delivery time frames.

Thanks to flexible, innovative engineering approaches and early quality involvement, Electroswitch economically increased the life of the solenoid, reduced part count and assembly time, improved quality, and delivered the product on time.

