

Square D® Safety Switches

Industry-Leading Performance and Reliability



Square D® Safety Switches

Setting the standard for performance, quality and reliability in today's commercial and industrial applications



First introduced in 1907, Square D safety switches have a long history of leadership in safety and performance. Since then, we have pioneered many innovations to help maximize the lifetime value of our safety switches.

Safety switches play a crucial role in today's commercial and industrial settings. They function by isolating power in daily activities and providing an effective way to interrupt power in an emergency. Two primary applications for safety switches include as a lockout on sight disconnect and as a circuit isolation device.

Square D safety switches are designed to outperform all other switches in a wide range of demanding applications.

Key Customer Applications

| | Sight Disconnects for Motors (OSHA Compliance) | Service Entrance | Branch Circuit Protection |
|---------------------------------|--|------------------|---------------------------|
| Industrial Facilities | X | | X |
| Retail Construction | X | X | X |
| Water/Waste Water | X | X | X |
| Data Centers | X | | X |
| Automotive | X | | X |
| Packaging | X | | X |
| Pharmaceutical, Food & Beverage | X | | X |
| Commercial OEM | X | | X |

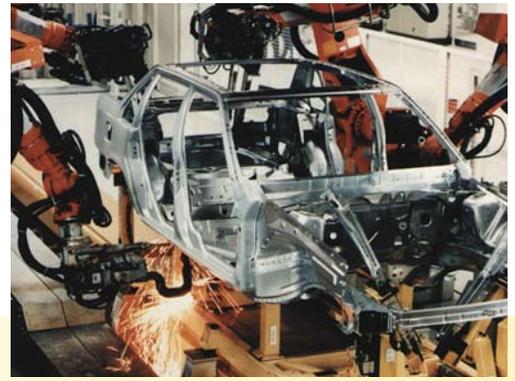
Performance

Three Times the Life – Three Times the Value

The performance of safety switches is important to the safe and profitable operation of many industrial settings. In addition, requirements from organizations such as the Occupational Safety and Health Administration (OSHA) have increased the use of safety switches in many commercial and industrial facilities.

Based on NEMA KS-1 life test requirements, in lock out/tag out applications where a switch is operated just once per hour, 24 hours a day, seven days a week, the useful life of the switch is exceeded in less than two years. For switches in these high-use applications, durability is key.

Square D safety switches provide significantly higher levels of mechanical endurance, than NEMA KS-1 requires. This translates to improved reliability in a production environment. In fact, the standard for the design life of Square D F Series safety switches is a minimum of three times the NEMA requirement. No competitor comes close to the performance offered by Square D safety switches.



Potential Cost Avoidance Due to Square D Switch Life

| Operations of switch/ 8-hour shift | Ops/yr. in 24/7 environment | Life of Square D switch in years | Life of Competitive switch in years* | Cost avoidance by using Square D* |
|------------------------------------|-----------------------------|----------------------------------|--------------------------------------|-----------------------------------|
| 1 | 1095 | 45.7 | 13.7 | \$ 165.00 |
| 2 | 2190 | 22.8 | 6.8 | \$ 330.00 |
| 3 | 3285 | 15.2 | 4.6 | \$ 495.00 |
| 4 | 4380 | 11.4 | 3.4 | \$ 660.00 |
| 5 | 5475 | 9.1 | 2.7 | \$ 825.00 |

**Does not include cost of lost productivity. Switch cost replacement; labor = 2 hr. @ \$35/hr., cost of switch @ \$95. Maximum useable life of switch assumed to be 20 years. Life determination based on 50,000 operations for Square D F Series 30A and NEMA for competition*

Designed for the Best Performance in the Industry

A key performance benefit of the Square D safety switch is its ability to break load. A locked motor can draw six to eight times motor full-load current. In an emergency situation, it's important to have a switch with enhanced load break capability.

It all starts with blade and jaw switch construction — a design element unique to Square D brand products. Blade and jaw switches are ideally suited for the management of heavy motor loads and arc interruption.



Quality

Blade and Jaw Construction

Compare the features of Square D safety switches with the competition and you'll find there really is no comparison. Visible blades are an important feature and they must be visible in real-world conditions. Our switch blades are easily visible, even in the less than ideal lighting conditions where electrical equipment is often installed.

This provides an added level of performance, allowing users to visually verify that the downstream circuit is de-energized. An optional view window adds another degree of safety through visual verification of switch position without the need to open the door.

In addition, the design of the Square D safety switch includes an oversized arc suppressor, a key feature in the ability of the switch to break the load by effectively attenuating the arc for a clean interruption.

Designed for Long-Term Durability

Rugged construction and corrosion protection provide the industry's longest lasting switches. Galvannealed steel is featured in all single-throw Type 3R and 12 enclosures, offering superior corrosion protection.

One feature that sets Square D F Series safety switches apart are NEMA 4X seam welded enclosures. This design element helps to extend equipment life by providing excellent environmental and corrosion protection without the use of a silicone sealer, which can be incompatible with some manufacturing processes.

Square D safety switches are also built with performance-enhancing components. Square D safety switches feature more copper than other switches available on the market today. This larger amount of copper is one of the reasons Square D safety switches have lower operating temperatures. Managing temperatures inside the switch is essential to providing greater service life.

Heat is not the only factor that impacts switch life. By enclosing the operating mechanism, the design of Square D safety switches reduces the amount of dust and other contaminants that shorten the mechanism's operating life.

Efficient Installation

Our time-saving design features make installation quick and easy. Square D safety switches feature quick-release cover latches, which are easier to operate than screw-fasteners. On NEMA 4X and NEMA 12 switches, this design feature ensures a better gasket seal — a critical feature in adverse operating conditions — than is available with designs that rely on screw-fastened covers.

Another key feature designed to improve ease of installation is tangential knockouts, which allow easier installation of conduit, without the need for costly, time-consuming offsets and bends.

A Full Range of Accessories

Square D safety switches feature a complete offering of accessories, available either factory installed or field installable. Factory-installed options include key interlocks, nameplates, push buttons and optional safety colors. Field-installable accessory options include neutral kit, ground lugs, electrical interlocks, class "R" fuse rejection kits, compression terminals and conduit hubs.



Mechanical Endurance Requirements for UL, NEMA and F Series Switches

| Switch Rating (Amperes) | Number of Operations | | | |
|-------------------------|----------------------|------------------------|----------------------|------------------|
| | UL98 | NEMA KS 1 General Duty | NEMA KS 1 Heavy Duty | F series Reqmts. |
| 30 & 60 | 10,000 | 10,000 | 15,000 | 50,000 |
| 100 | 10,000 | 10,000 | 14,000 | 50,000 |
| 200 | 8,000 | 8,000 | 12,000 | 36,000* |

*Single-throw switches only

Short Circuit Current Ratings

| UL Listed Fuse Class | General Duty RMS Sym Amps | Heavy Duty RMS Sym Amps |
|----------------------|---------------------------|-------------------------|
| Plug | 10,000 | NA |
| H | 10,000 | 10,000 |
| K | 10,000 | 10,000 |
| J | 100,000 | 200,000 |
| R | 100,000 | 200,000 |
| T | 100,000 | 200,000 |
| L | NA | 200,000 |

Reliability

Cost-Saving Maintenance

Advanced maintenance features extend switch life and reduce down time, saving both labor and material costs. After a Square D safety switch has outlasted all the others, the modular design allows the replacement of worn or damaged components. Downtime is kept to a minimum with the design that allows the complete replacement of all interior components.

Field-replaceable components such as interior line bases, load bases and mechanisms are available. In addition, these switches provide replaceable handles and lockplates that can be easily replaced if they are damaged or vandalized.

In addition Square D NEMA 4X and 12 safety switches come standard with fuse pullers, increasing the convenience and safety of maintenance. Fuse pullers are also field installable on certain models.

Operation and Safety

Nothing is as important in the design of a switch as understanding how it will be used. To ensure Square D safety switches continue to meet the needs of commercial and industrial applications, products are engineered with the operational procedures and safe work practices of customers in mind.

Superior Handle Design

The Square D F Series insulated switch handle is an industry exclusive. It is made from a high-strength polymer chosen for weather resistance, durability and impact strength.

The two-color position-indicating handle on heavy duty safety switches enhances operator safety by aiding in visual recognition of switch position from an angle or at a distance. The simple concept of having contrasting colors on the handle enhances the ability of the operator to determine quickly the position of the switch, even in low light conditions. In an emergency it is vital that switch position be accurately recognizable. Plus, an embossed ON/OFF marking is a permanent indication of the switch position and cannot be removed or vandalized.

Tamper-Proof Enclosure

Resolving lock-out issues is a priority with major industrials. Square D F Series safety switches have an extruded lockplate feature that helps prevent tampering with lockout devices. Lockout opening is extruded to reduce the possibility of lockout devices being removed by non-authorized personnel.

With the use of the handle lockplate, the switch can be locked in the OFF position with up to three padlocks to comply with OSHA lockout requirements. The safety switch can also be modified so that the switch can be locked in the ON position, if required by the application.

Heavy-duty dual cover interlocks are key safety features on single throw and double throw heavy duty switches. Designed to prevent opening of the cover when the switch is ON or turning the switch ON when the cover is opened, this feature can be defeated by qualified personnel to allow them to perform any necessary testing.



Catalog Numbering System for Safety Switches

Typical Safety Switch Catalog Number

| | | | | | | | | | | | | | | | | |
|--|--|----------|--|----------|-----------|---|------------------------|--------------------|-------------------|---|-----------------------------------|------------------|--|--|--|---|
| D | 3 | 2 | 1 | N | RB | <p>MISCELLANEOUS</p> <ul style="list-style-type: none"> EI or EI2 = Factory-installed electrical interlock CLR = Class R fuse kits FP = Fuse pullers GL = Ground lugs SLC = Copper lugs LK = Compression lugs SPLO = Lock on VW = Viewing window NP = Phenolic legend plate KI = One key interlock KIKI = Two key interlocks WA = Appleton Powertite® interlocked receptacle WC = Crouse-Hinds ARKTITE® interlocked receptacle WH = HUBBELLOCK® interlocked receptacle | | | | | | | | | | |
| | | | | | | <p>ENCLOSURE</p> <table border="0"> <tr> <td>No Suffix = NEMA Type1</td> <td>CS = Cast aluminum</td> </tr> <tr> <td>A = NEMA Type 12K</td> <td>DX = NEMA Type 4X KRYDON – Crouse-Hinds</td> </tr> <tr> <td>AWK = NEMA Type 12 (without K.O.)</td> <td>R = NEMA Type 3R</td> </tr> <tr> <td>DS = NEMA Types 4, 4X, 5 (304 stainless steel)</td> <td>RB = NEMA Type 3R (Type B hub provision)</td> </tr> <tr> <td>SS = NEMA Types 4, 4X, 5 (316 stainless steel)</td> <td>DF = NEMA Type 4X fiberglass reinforced polyester</td> </tr> </table> | No Suffix = NEMA Type1 | CS = Cast aluminum | A = NEMA Type 12K | DX = NEMA Type 4X KRYDON – Crouse-Hinds | AWK = NEMA Type 12 (without K.O.) | R = NEMA Type 3R | DS = NEMA Types 4, 4X, 5 (304 stainless steel) | RB = NEMA Type 3R (Type B hub provision) | SS = NEMA Types 4, 4X, 5 (316 stainless steel) | DF = NEMA Type 4X fiberglass reinforced polyester |
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| SS = NEMA Types 4, 4X, 5 (316 stainless steel) | DF = NEMA Type 4X fiberglass reinforced polyester | | | | | | | | | | | | | | | |
| | | | | | | <p>NEUTRAL</p> <p>N = Factory-installed neutral (neutrals are field installable on most general duty and heavy duty safety switches)</p> | | | | | | | | | | |
| | | | | | | <p>AMPERE RATING</p> <table border="0"> <tr> <td>1 = 30A</td> <td>3 = 100A</td> <td>5 = 400A</td> <td>7 = 800A</td> </tr> <tr> <td>2 = 60A</td> <td>4 = 200A</td> <td>6 = 600A</td> <td>8 = 1200A</td> </tr> </table> | 1 = 30A | 3 = 100A | 5 = 400A | 7 = 800A | 2 = 60A | 4 = 200A | 6 = 600A | 8 = 1200A | | |
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| 2 = 60A | 4 = 200A | 6 = 600A | 8 = 1200A | | | | | | | | | | | | | |
| | | | | | | <p>VOLTAGE RATING</p> <p>1 = 120 Vac (Plug fuse) 2 = 240 Vac 6 = 600 Vac</p> <p>For DC ratings, see the latest catalog listing.</p> | | | | | | | | | | |
| | | | | | | <p>BLADES SWITCHABLE POLES</p> <p>1 = 1 poles 2 = 2 poles 3 = 3 poles 4 = 4 poles 6 = 6 poles</p> | | | | | | | | | | |
| TYPE OF SWITCH: | FUSIBLE | | NOT FUSIBLE | | | | | | | | | | | | | |
| | <ul style="list-style-type: none"> L = Lite Duty D = General Duty H = Heavy Duty DT = Double Throw | | <ul style="list-style-type: none"> DU = General Duty HU = Heavy Duty DTU = Double Throw | | | | | | | | | | | | | |

For NEMA Types 7 & 9 construction, see the latest catalog listing

The Most Complete Line of Switches in the Industry

| | Amp Range | Vac Max | Vdc Max | Fusible | Enclosure Type |
|------------------------------------|-----------|---------|---------|-------------------------|--|
| General Duty | 30–800 | 240 Vac | — | Fusible and Not-Fusible | Type 1, 3R |
| Heavy Duty | 30–1200 | 600 Vac | 600 Vdc | Fusible and Not-Fusible | Type 1, 3R, 4, 4X Stainless Steel, 5, 12 |
| 4 Pole Heavy Duty | 30–600 | 600 Vac | 600 Vdc | Fusible and Not-Fusible | Type 1, 3R, 4X Stainless Steel, 12 |
| 6 Pole Heavy Duty | 30–200 | 600 Vac | — | Fusible and Not-Fusible | Type 1, 3R, 4X Stainless Steel, 12 |
| Double Throw | 30–100A | 600 Vac | 250 Vdc | Fusible and Not-Fusible | Type 1, 3R, 4X Stainless Steel, 12 |
| Double Throw | 200–600 | 600 Vac | 250 Vdc | Not-Fusible | Type 1, 3R, 4X Stainless Steel, 12 |
| Interlock Rec. Switches* | 30–100 | 600 Vac | 250 Vdc | Fusible and Not-Fusible | Type 1, 3R, 4, 4X Stainless Steel, 5, 12 |
| Hazardous Location Switches | 60–225 | 600 Vac | 250 Vdc | Not-Fusible | Type 7 and 9 – Divisions 1 and 2 of the following: Class 1, Groups C and D, Class II Groups E and F; on Class III, Hazardous Locations as defined in NEC Article 500 |

*Appleton POWERITE, Crouse-Hinds ARKTITE and HUBBELLOCK receptacles

Type 1 (indoor), Type 3R (outdoor), Type 4, 4X, 5 (water and dust-tight, corrosion resistant) (cast aluminum, stainless steel, glass polyester or KRYDON), Type 12 (mill and foundry type)

Switches are UL Listed (UL 98 Enclosed Switches) and meet or exceed the NEMA KS1 standard

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