EDGE-U-CATION®

Changing the Position of Your Pocket Clip

Many Spyderco knives have adjustable clips that allow you to configure them for different carry positions. Some are adjustable for left or right-side tip-up carry, while others offer the flexibility of four-position carry: tip-up or tip-down on the left and right sides.

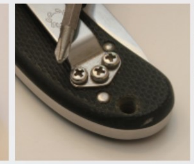
Although we do apply thread-locking compound (i.e. "Loc-Tite®") to our clip screws at the factory, if you choose to reconfigure your clip, we strongly recommend that you apply fresh thread-locker to all your clip screws when you install it. This will help prevent the screws from loosening over time. Thread-locking compound is available at most hardware, auto supply, and home improvement stores.

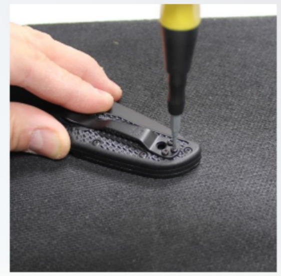
Get the Proper Tools Before You Begin

Proper tools are critical to good folder maintenance. Before you attempt to change the position of your knife's clip, invest in the correct size of micro screwdrivers, Torx® drivers, and/or hex wrenches for your knife. The exact tools you will need depend upon your specific model of knife and, in some cases, when it was made. As part of Spyderco's commitment to Constant Quality Improvement (C.Q.I.), the clip style and screw types used on some knives have evolved over time. It is therefore impossible for us to provide a comprehensive list of which knives require which clip screw tools. However, generally speaking, a good Spyderco tool kit should include T-6 and T-8 Torx ("star-shaped") drivers, a small Phillips screwdriver (#1 Phillips), a 1.5mm metric hex-head (aka "Allen") wrench, and a small coin like a U.S. penny or nickel. With these tools, you should be able to adjust just about any Spyderco clip.

Before you attempt to remove any Spyderco clip screw, check to ensure that you have the proper tool for the job. A magnifying glass or loupe will help you examine the screw head closely and choose the correct tool for the job. Also, check the tip of the tool to ensure that it is not worn. Using worn or incorrect tools can easily strip screw heads.

Changing Clips Attached with Screws

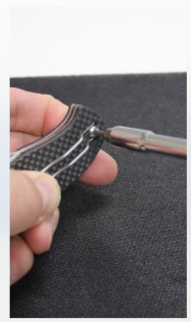



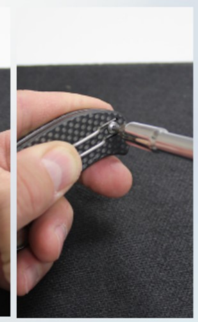



Place a folded towel or computer mouse pad on a firm, flat surface. This will protect your knife and keep it from rotating as you work. Place your closed knife on the pad (never work on a knife with an open blade), insert the tip of the tool into the screw head and apply firm downward pressure as you turn counterclockwise to loosen the screw. Make sure that you maintain downward pressure to avoid stripping the screw head. Repeat this process with the other screws until they are all loose, but leave them in the clip holes.

Lift the clip and the screws together and hold the screws in place with your fingertip to avoid dropping them. Apply a small drop of temporary thread-locking compound to the threads of each screw and then align the clip and screws with the handle holes for your preferred mounting position. With the knife again supported by the towel or mouse pad, turn the middle screw until it engages. This will align the clip and make the other screws easier to install. Turn all screws down until snug. Finish tightening them while applying firm downward pressure on the tool to avoid stripping the screw heads.

Changing Wire Clips

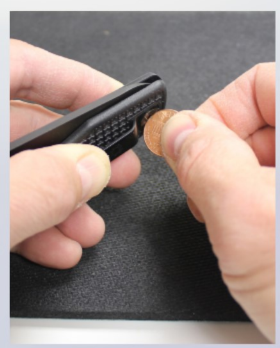




Follow the same procedures as described above to loosen the single Torx screw that retains the wire clip. If necessary, apply pressure with your fingertip to the head of the Torx screw on the back side of the knife to prevent it from turning. You may also use a second Torx driver to prevent that screw from turning.

Once the screws have been loosened a few turns (they don't have to be removed completely), lift the wire clip up and remove it from the milled grooves in the handle. Push the screw head on that side of the handle down and turn the knife over. Insert the ends of the wire clip under the screw head on the other side and tighten the screw to hold the clip in place. If desired, you may remove the screw completely and apply Loc-Tite to the threads before completing the installation.

Changing Barrel Bolt Clips




Hold the closed knife over a towel or pad on a table and place your index finger over the head of the barrel bolt. Insert a coin into the slot on the other side of the barrel bolt and, while maintaining firm pressure, turn counterclockwise to loosen it. Remove the bolt assembly completely to move the clip to the opposite side. Place the clip into the recess in the handle and insert the body of the barrel bolt (the larger piece with the internal threads) through the clip hole into the handle. Apply a drop of Loc-Tite or similar product to the threads of the screw and screw it into the barrel bolt body. Using the method described above, tighten the barrel nut with the coin.

With the proper tools and knowledge, you can easily configure the carry of your Spyderco knife to best meet your needs, preferences, and tactics.

Steel Terms

Alloy
A material that is dissolved in another metal in a solid solution; a material that results when two or more elements combine in a solid solution.

Critical Temperature
The temperature at which steel changes its structure to austenite in preparation for hardening.

Corrosion Resistance
The ability of a material to resist deterioration as a result of a reaction to its environment. Provided by the elements Chromium (Cr), Copper (Cu), Molybdenum (Mo), and Nitrogen (N).

Ductility
The ability of a material to be stretched or drawn, or plastically deform appreciably before fracturing. Provided by the element Manganese (Mn).

Edge Retention
The ability of a material to resist abrasion and wear. Provided by the elements Carbon (C), Chromium (Cr), Manganese (Mn), Nitrogen (N), and Vanadium (V).

Grit
The physical size of the austenite grains during austenizing. The actual size can vary due to thermal, time, and forging considerations.

Hardness
The resistance of a steel to deformation or penetration analogous to strength. Provided by the elements Carbon (C), Chromium (Cr), Cobalt (Co), Molybdenum (Mo), Nitrogen (N), and Phosphorus (P).

Hardenability
The ability of a steel to be hardened by a heat treating process. Provided by the elements Manganese (Mn), Molybdenum (Mo), and Tungsten (W).

Heat Treating
A controlled heating and cooling process to prescribed temperatures and limits for the purpose of changing the physical properties and behavior of the metal.

Impact Strength
The ability of a material to resist cracking due to a sudden force.

Laminated Steel
A steel consisting of two or three layers of different types of steel forge welded together. In knife blades, this typically consists of a high-performance central core flanked by more ductile outer layers.

Martensite
A supersaturated solid solution of carbon in BCC Iron. A crystalline structure formed when steel is cooled rapidly. Responsible for the hardness of quenched steel.

Precipitation
The separation of a substance that was previously dissolved in another substance.

Quenching
Soaking of steel that has reached a high temperature (above the decrystallization phase) in a medium of air, liquid, oil, or water to rapidly cool it. Quenching steel creates martensite.

Rockwell Test
A measurement of steel hardness based on the depth of penetration of a small diamond cone pressed into the steel under a constant load.

Tempering
Slow, steady heating of martensite steel to just below recrystallization temperature followed by a controlled consistent cooling phase for the purpose of slightly softening the steel, precipitating carbides, and stress relieving.

Tensile Strength
Indicated by the force at which a material breaks due to stretching. Provided by the elements Chromium (Cr) and Manganese (Mn).

Toughness
The ability of a material to resist shock or impact. Provided by the elements Chromium (Cr) and Aluminum (Al).

Yield Strength
The point at which steel becomes permanently deformed; the point at which the linear relationship of stress to strain changes on a stress/strain curve.

Steels are classified accordingly with the elements used in production. These classifications are, Carbon Steels, Alloy Steels, High-Strength Low-Alloy Steels, Stainless Steels, Tool Steels, and Exotic Steels (non steel).

+ **Carbon Steels** contain varying amounts of Carbon and not more than 1.65% of Manganese and .60% of Copper. There are three types of Carbon Steels, Low (.3% or less), Medium (.4-.7%), and High (.8% and up). High Carbon is commonly used for knives.
+ **Alloy Steels** have a specified composition, containing certain percentages of Vanadium, Molybdenum, or other elements, as well as larger amounts of Manganese, Silicon, and Copper than do regular Carbon Steels.
+ **High-Strength Low-Alloy Steels** known as HSLA steels. They cost less than do regular Alloy Steels because they contain only small amounts of the expensive alloying elements. They have been specially processed, however, to have much more strength than Carbon Steels of the same weight.
+ **Stainless Steels** contain a minimum of 13% Chromium. The Chromium provides a much higher degree of rust resistance than Carbon Steels. Various sources site differing minimum amounts of Chromium required to deem a steel as stainless (10-13%). It is important to note, that the amount of Chromium needed can be dependant upon the other elements used in the steel.
+ **Tool Steels** contain Tungsten, Molybdenum and other alloying elements that give them extra strength, hardness, and resistance to wear.
+ **Exotic Steels** are generally accepted as steel, but by definition are not steel. Examples of Exotic Steels include H1, ZDP-189, Talonite, and Titanium.

Steel Elements

The world of steel is fluid and ever-evolving. Steel is very subjective as it relates to knives and knife knuts. There is no clear cut answer as to which is the best steel. We all have different requirements and preferences. All steels are primarily mixtures, or more properly, alloys of iron and carbon.

At Spyderco, we gravitate towards superior products and are committed to using the best materials available at the time. As steel evolves, so do our products. There are over 3,000 different types of steel, each having its own positive and negative attributes. In order to determine your own preferences, it is best to understand the history of steel and how it is made.

Although an exact date of discovery is not known, man has been forging steel for as long as he's been working iron. Ironworkers learned to make steel by heating wrought iron and charcoal (a source of carbon) in clay boxes for a period of several days. By this process, the iron absorbed enough carbon to become true steel.

Iron by itself is a relatively soft metal; it does not hold a good edge. However, if you add carbon, it hardens the iron, making steel. Steel is ideal for making edged tools.

In a very simplified explanation, making steel is like baking a cake. You follow a recipe to achieve the type of cake (steel) that you desire. You begin with flour (iron) and from there you add various ingredients (elements). These added ingredients will determine what type of cake (steel) you end up with. Once you have added all of the additional ingredients (elements), you are left with a batter that is ready to bake (heat treat). Baking (heat treating) is just as much a part of the "recipe" as the ingredients (elements). If not done properly, several properties can suffer. Once baked, you have a new, completely different, finished product. Your cake will forever be a cake; it can never go back to being batter. Of course steel can be re-melted to a molten state, but that simply is the beginning of becoming a new type of steel all over again.

Steel is an alloy made of iron and carbon. Historically, steels have been prepared by mixing the molten materials. Alloying elements are melted and dissolved into molten iron to make a steel. The molten steel is cast into an ingot, which is rolled out (while still hot) and shaped into a sheet. As the steel begins to slowly cool below the critical temperature, things start happening inside the steel. At these elevated temperatures, alloying elements are able to move around in the steel, or diffuse. Different elements diffuse at different rates (the larger the atom, the slower it diffuses). If the alloying contents are too high for some elements to assimilate with, the excess will separate or segregate out of the steel and form inclusions or possibly combine with another element to form large undesirable carbides. These diffusional processes are also controlled by the austenite grain size of the steel – grains are little packets of specifically oriented crystals. Grain boundaries act as barriers to diffusion, the smaller the grains, the more boundaries, and the slower the steel. This limits the performance capabilities of the steel both in corrosion resistance and in wear resistant carbide formation.

Powder Metallurgy has in the past few years become the chosen method of preparation. The difference in the processing of a powdered metal allows for steel chemistries not possible with traditional steelmaking practices. The process starts out the same as wrought steels – alloying elements are added and dissolved into molten iron. Then comes the large difference, the molten steel is atomized (misted into microscopic droplets) into liquid nitrogen where the steel is instantly frozen, leaving no time for diffusional processes. The chemistry of the resulting powder is identical to that in the molten vat. Additionally, there are no inclusions or large carbides that form. The austenite grain size is the size of the powder at the very largest, which is small. The powder is then cleaned and sorted by size and then the remaining ideal powder is sintered in a hot isostatic press to solidify the steel. Sintering is heating the steel to a temperature just below its melting point and then pressing it together at high pressure to solidify or remove the voids between powder spheres. This allows for drastic changes in the steel chemistry namely in Carbon and Vanadium. A larger volume of the highly wear resistant Vanadium carbides form upon heat-treating. Since Vanadium has a greater propensity to interact with Carbon and form carbides than it does with Chromium, most of the excess Carbon is utilized in the formation of Vanadium carbides. These leave the Chromium free to keep the steel corrosion resistant. The result is a premium steel product with properties of exceptional wear-resistance and good corrosion-resistance.

Heat treating the steel to its critical temperature allows the Carbon atoms to enter into the crystalline molecules of the iron which have expanded due to the heating. Quenching the steel at this point causes the molecules to contract, trapping the Carbon atoms inside. More specifically, the process of hardening steel by heat treatment consists of heating steel to a temperature at which austenite is formed. Austenite has the property of dissolving all the free Carbon present in the steel. Quenching is then used to "freeze" the austenite, changing it to martensite. These treatments set up large internal strains in the steel; these are relieved by tempering (further heating the steel at lower temperatures). Tempering the steel decreases the hardness, strength, and brittleness. It, however, increases the ductility and toughness.

Blade Grinds

Centerline Grind

A blade grind resembling that of a double-edged knife in which the top and bottom bevels meet in the center of the blade's width. Only the bottom edge is sharpened and the spine of the knife is left unsharpened to create a swedge.

False Edge

A sharpened secondary edge on the spine of a blade near the point. If unsharpened, it is called a swedge.

Flat-Saber Grind

A blade ground with flat bevels that extend from the centerline of the blade to the cutting edge. This grind maintains full thickness through a larger portion of the blade for increased strength.

Full-Flat Grind

A blade ground with flat bevels that extend from the spine all the way to the cutting edge. This grind reduces drag during cutting and decreases overall weight.

Hamaguri (Appleseed)

Japanese for "clam" or "clamshell," it describes a blade ground with convex radiused bevels. Also called an Appleseed or Moran grind, it is often produced by grinding on a slack grinding belt.

Hollow Grind

A blade with bevels that are ground with a concave radius. The bevels may extend the full width of the blade (full hollow grind) or only a portion of its width.

Single-Bevel Grind

Also called a chisel grind, this describes a blade that is beveled on only one side. It may be flat or hollow ground.

Swedge

An unsharpened bevel on the spine of a blade near the point. If it were sharpened, it would be considered a false edge. A swedge reduces blade weight, enhances balance, and improves penetration.

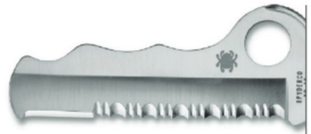
Zero Grind

A grind similar to a full-flat grind but without the secondary bevel at the cutting edge. The plane of the bevel continues to create the cutting edge.

Zero-Ground Saber

(Scandinavian or "scandi" grind) similar to a flat-ground saber, but without a secondary bevel at the cutting edge. The plane of the bevel continues to create the cutting edge.

Blade Shapes



Assist

A hollow-ground blade with a blunt tip designed to prevent accidental punctures. Designed for cutting webbing, rope, seatbelts, or clothing.

Bowie-Shaped

Named after the legendary Colonel James Bowie, this term has come to describe any number of variations of a blade with a primary cutting edge with a curved "belly" and a clipped point. The clip may be sharpened or unsharpened or may be straight or concave.

Double-Edged

A blade with sharpened edges on both the primary edge and the spine or a symmetrical blade with two sharpened edges, like a dagger.

Drop-Point

A design popularized by the hunting knives of the late Bob Loveless. The spine of the blade follows a subtle convex arc to the point.

Hawkbill

A sharply curved blade sharpened on the concave side. Designed for cutting with a pulling stroke, it is commonly used by commercial fishermen for cutting line, webbing, and netting.

Leaf-Shaped

A blade shape developed and refined by Spyderco. It is similar to a Spearpoint, but not completely symmetrical, and has a more acute point and typically no swedge.

Modified Clip-Point

A blade ground on the spine in an angled or sweeping line downward to meet the point.

Reverse "S"

A blade shape resembling a backwards letter "S" with the tip curving downward and the widest portion of the blade curved in a convex arc.

Sheepfoot

A blade with a blunt rounded tip and a straight cutting edge. The lack of a traditional point reduces the chances of accidental punctures around livestock, inflatable watercraft, and during emergency cutting.

Spearpoint

A symmetrical blade with an equal amount of curve on the spine and the cutting edge. The grind line of the primary bevel and the point both lie on the blade's centerline. Spearpoint blades often feature swedges or false edges on the back of the blade.

Tanto

A traditional Japanese tanto was a short knife with a full guard. In its modern form, pioneered by custom knifemaker Bob Lum, it is a knife blade shape with the angular tip style of a Japanese katana (long sword).

Wharncliffe

A blade shape in which the point of the knife tapers downward from the spine to meet a straight cutting edge at the tip.

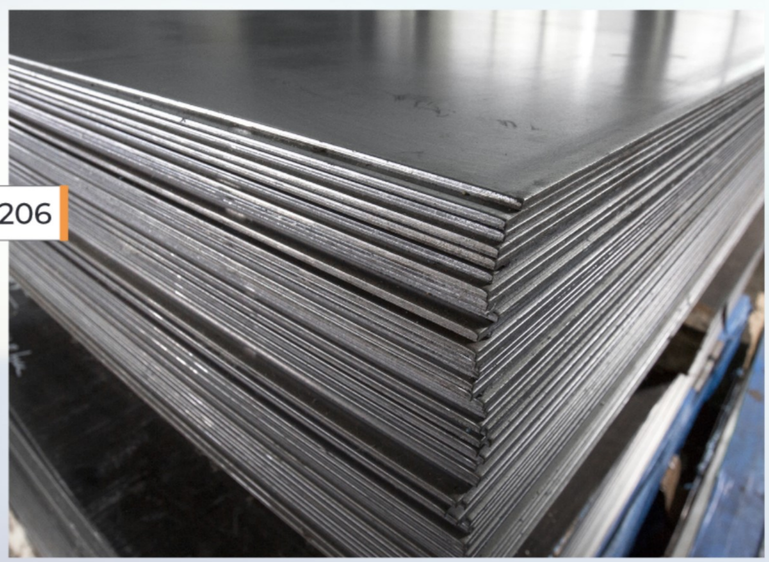
Edge Grinds

PlainEdge™
A sharpened edge with no serrations or teeth, sometimes referred to as a "smooth" edge.

CombinationEdge™
A blade with an edge that is partially PlainEdge and partially SpyderEdge.

SpyderEdge™
An edge featuring Spyderco's two-step serration pattern consisting of one large and two small serrations. This pattern increases the cutting edge's surface area by up to 24%.

Trainer
A purposely blunted blade that is identical in weight and proportion to its live counterpart and used for training and practice purposes.



Clip Styles

Deep-Pocket Clip
A knife clip designed to mount close to the end of the handle so very little of the knife remains exposed when it is clipped in the pocket.

Integral Pocket Clip
A pocket clip molded as an integral part of the handle rather than a separate component attached with screws. This style of clip was used on early Spyderco models.

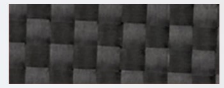
Metal Clip
The most commonly used clip on Spyderco knives, metal clips can be made of stainless steel or titanium. They vary in shape, size, and finish to complement specific knife designs. They may be attached to the handle with screws or barrel bolts and often may be adjusted to provide multiple carry options.

Wire Clip
A clip made from formed heat-treated wire that is attached with a screw or barrel bolt. Some wire clips are designed for deep-pocket carry, while others position the knife higher and closer to the pocket's edge.

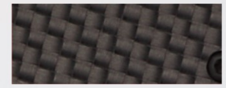
Handle Materials & Terminology

Anodized Aluminum
Subjecting aluminum to electrolytic action to coat it with a protective and decorative film.

Bi-Directional Texturing™
A texture pattern molded into FRN and FRCP handles that consists of opposing graduated steps radiating outward from the center of the handle. It provides a secure, non-slip grip.



Carbon Fiber
Graphite fibers (the size of a human hair) woven together then fused with epoxy resin. A lightweight material with a high level of tensile strength, it has a three-dimensional appearance and is costly to manufacture.

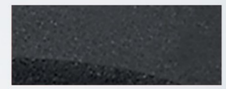


Carbon Fiber/ G-10 Laminate
A durable, aesthetically pleasing material consisting of a surface layer of pure carbon fiber bonded to a base layer of G-10.

FRCP
(Fiberglass reinforced co-polymer) A tough, chemical and heat-resistant material that is extremely lightweight and versatile. An injection-molded co-polyester reinforced with glass fiber, it is unique in that it can be made translucent or transparent and tinted with various colors.

FRN
(Fiberglass Reinforced Nylon) A nylon polymer mixed with glass fiber that can be injection molded. Lightweight and extremely strong, it is used in the manufacture of formed, textured knife handles.

G-10
An epoxy-filled woven glass fiber that is rigid, impervious to temperature changes and chemicals, and can be tinted into different colors. G-10 is an excellent knife handle material.



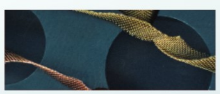
Kraton®
A high-performance elastomer manufactured by Kraton Polymers used as a synthetic replacement for rubber. Kraton provides the flexibility, high traction, and sealing abilities of natural rubber, but with increased resistance to heat, weathering, and chemicals. Kraton is used in the manufacture of knife handles to provide a comfortable, secure grip.

Micarta®
A composite of linen, canvas, or paper that is impregnated with epoxy resin and formed into sheets or blocks. Often used in knife handles, it is lightweight, durable, and visually appealing. It can be polished or bead blasted to produce different appearances and textures.

Natural Materials
Natural materials such as jigged bone, leather, mother of pearl, abalone, stabilized woods, and stone that are suitable for use in making and embellishing handles.

Peel-ply Carbon Fiber
A carbon-fiber-filled epoxy resin laminate that has a textured protective layer bonded to its surface during manufacturing. After the machining of handle scales, the protective layer is removed to reveal a non-slip, high-traction texture.

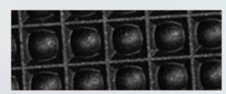
Polypropylene
The world's second-most widely produced synthetic plastic, polypropylene is a thermoplastic polymer used in a wide variety of manufacturing applications. It is extremely rugged and resistant to most chemicals and solvents.



Raffir® Noble
Manufactured in Denmark, Raffir is a strikingly beautiful composite material that encapsulates metal mesh in a durable, translucent resin. Raffir Noble combines a smoke-colored acrylic with a mixture of brass and copper mesh. When machined and polished to create knife scales, it reveals a stunning, semi-transparent, three-dimensional pattern with amazing visual depth and character.

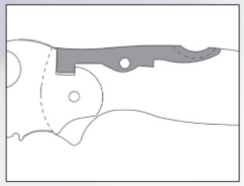
Stainless Steel
Steel containing a minimum of 13% Chromium, making the steel resistant to corrosion. The Chromium oxide (Cr203) in the steel creates a barrier to Oxygen and moisture, thus inhibiting rust formation. Stainless steels are corrosion resistant, but not immune to rust.

Titanium
A non-ferrous metal that is lightweight, highly corrosion resistant, and has a high degree of tensile strength. It is ideally suited to use in the handles, liners and other components of folding knives.

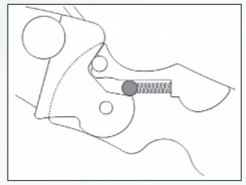


Volcano Grip™
Spyderco's trademarked waffle texture used on several of our FRN handled knife models. It consists of a continuous pattern of small squares with central divots that provide tactile resistance to slipping when gripped in the hand.

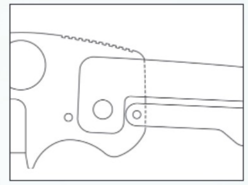
Lock & Joint Mechanisms



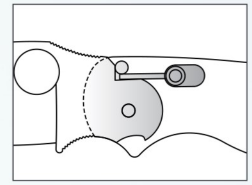
Back Lock
A locking system positioned on the back of the handle that uses a rocker arm that pivots in the center. A lug on one end of the arm engages a notch in the blade's tang to lock the blade open.



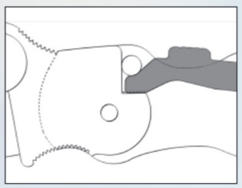
Ball Bearing Lock™
A patented compressive lock that wedges a ball bearing between a fixed anvil and the blade tang. The mechanism also serves as a detent to hold the blade in the closed position.



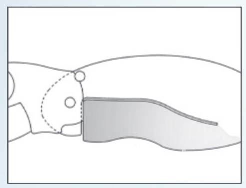
Ball Joint Non-Locking System
Designed by knifemaker Bob Terzuola, this is a slip-joint mechanism that prevents a knife blade from closing through pressure from ball bearings set into spring arms in the handle liners. The Ball Joint also serves as a half-stop for the blade for additional safety.



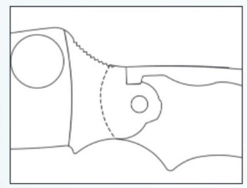
Bolt Action Lock
A locking mechanism designed by Blackie Collins that consists of a spring-loaded bolt that engages on a ramp on the tang of the blade to lock the blade open.



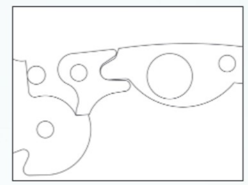
Compression Lock®
A lock mechanism that uses a leaf-like spring from a split liner in the handle to wedge laterally between a ramp on the blade tang and the stop pin (or anvil pin). Developed by Spyderco, it provides extreme lock strength and ease of use.



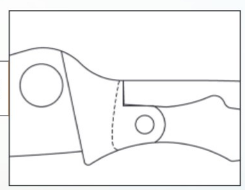
Integral Lock (R.I.L.)
Developed by custom knifemaker Chris Reeve, the Reeve Integral Lock (R.I.L.) is similar to the Walker LinerLock, but uses a lock bar that is integral to one of the handle scales.



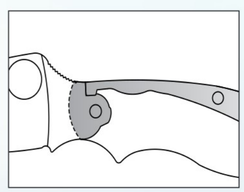
Notch Joint
A non-locking joint in which the blade is held open by spring pressure against a notch in the tang.



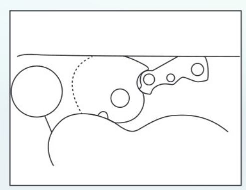
PowerLock™
A locking system positioned on the back of the handle using two interacting rocker arms. One of which engages a notch in the blade's tang to lock the blade open.



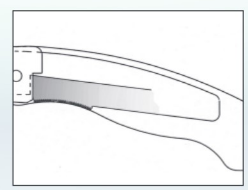
Slip Joint
A non-locking mechanism in which the blade is held open by spring pressure on a flat section on the back of the blade's tang.



SLIPIT™
A Spyderco non-locking folding knife that opens via one-handed operation and features a pocket clip. SLIPIT blades are held open by spring pressure against a notch in the blade's tang.



Stop Lock
A high-strength, extremely user friendly lock mechanism that releases by lifting a spring-loaded toggle on the spine of the handle.



Walker Linerlock
A locking system developed by custom knifemaker Michael Walker that uses a leaf-like spring split from the liner to wedge laterally against a ramped surface on the tang of the blade.