2. Punch Press/Stamping Terms

**Advance** - The amount that a strip or part moves forward in a progressive stamping operation. Also called Jump.

**Blank Die** - A type of cutting tool in which the die matrix is mounted in the lower with a single punch in the upper. Generally, a blank die has no internal features and the part in passed down through the lower die.

**Carrier Strip** - “Sacrificial” stock used in a progressive stamping operation that carries the part from station to station. The carrier is linked to the part and eventually becomes scrap once it is cut-free.

**Compound Die** - A type of cutting tool in which the die matrix is mounted in the upper. A compound die has a lower mounted contour punch and upper mounted perforators and punches for internal features. This is an inverted form of a Blank Die with additional internal holes.

**Die Land** - The amount of “straight” in a die matrix that exists for sharpening before the relief taper begins. Typically this is about 1/8” to 1/4”.

**Die Life** - Die Land expressed as “grind life” or “re-sharpening life”.

**Die** – 1. A matrix within which a punch creates an opening in a part. 2. A block against which work is done.

**Die Penetration** - The amount that a punch penetrates a die during a stamping operation. Typically this is about .050”.

**Die Straight** - See Die Land. Refers to the “Straight” portion of a die profile.

**French Stop** - See Fringe Stop. A misnomer for Fringe Stop.

**Fringe Stop** - In progressive stamping, a stop that is “at the fringes” of the carrier strip. This stop is a fixed point that will stop the forward progress of a strip once the strip has been notched away. The notch length is typically one stock advance. Sometimes called a “French Stop”.

**Heel Block** - A tooling component used for heeling.

**Heel** - A “metal-to-metal” condition between two blocks in a tool used to control or balance imbalanced forces.

**Heel Radius** - A radius provided on a tooling component(s) that prevents two blocks from shearing against each other when they are used to contain forces.

**Heel** - To contain forces via a heel block or similar “metal-to-metal” technique.

**Knock Out Bar** - A press component that straddles the ram in the punch press that is used for “positive knock out”.

**Knock Out** - A tooling component that ejects a part from a matrix (like in a compound die) or a punch (as in a form die)

**Knock Out** - A plate in a tool that that distributes force (typically via pins)

**Plate** - for the purposes of “knock out”.

**Lift** - To lift stock via a lifter.

**Lifter** - A feature in a tool that lifts the stock as it conveys through a progressive die. Often used to lift the past over lover tooling features.

**Matrix** - See Die – strictly speaking a matrix is a tooling component into which a punch is entered to create a part or slug.

**Notch** - A part feature that is cut into a (typically) straight edge.

**Notch** - The process of creating a part feature that is cut into a (typically) straight edge.

**Perf** - Short for perforator.

**Perforator** - A punch that is fitted to a regular shaped body, most likely a round body with a head.

**Pilot** - A feature in a tool that locates a part or strip between operations. Similar to a locator, but used in progressive stamping tools to assure station to station alignment.

**Pilot** - To locate a part or strip in a progressive stamping operation via a pilot.

**Positive Knock Out** - A condition in which a knock out operation is “positive” in that it is mechanically tied into the end of the press stroke and acts via a “top knock out” pin that is integral to the punch press.

**Pressure Pad** - A lower tooling element that pins the part while work is being performed.

**Punch** - 1. Part of a tool that creates an opening. A male feature that creates an opening, usually in conjunction with a female matrix (or die). 2. A block that does the work during a forming operation.
Scrap - The scrap that results from a punching operation in general or consumed during normal setup of the machine.

Semi-Perf - A partially sheared feature that leaves a boss profile (that is the same size as the die). Used commonly for locating parts via a hole & slot - these are usually round features. Also called half-shear.

Shedder - A tool component that sheds a part from a die matrix. Generally a thin plate that sits inside of a die, especially in a Compound Die.

Skim - To cut in a progressively finer fashion, typically using Wire EDM (Electrical Discharge Machining) specifically for the creation of accurate size.

Skyhook - A fixed tooling component that strips a part from a form punch.

Slug - The scrap that results from a punching operation, the “left over” material from a punching operation.

Stop Block - A block that is used for setting the reference height of a tool while in the press so that an accurate part may be obtained. Also called Kiss-Blocks or Set-Blocks. Stop blocks are generally used in balanced sets and are not intended to stop the forward motion of the press ram, but rather act as a reference point for tool setup.

Stripper - A tool component that strips the scrap from a punch. Generally a thin plate that surrounds a punch or set of punches.

Strip - To eject scrap (or a part) from a tooling component, typically a punch.

Wire - Wire EDM (Electrical Discharge Machining): typically used for the creation of punch and die contours.