BROACH TERMINOLOGY

Back-off Angle — Relief angle back of the cutting edge of a broach tooth.

Back-of-tooth Radius — The radius on the back of the tooth in the chip space.

Broach — A metalcutting tool of bar or slab shape, equipped with a series of cutting teeth.

Burnishing Button — Broach tooth without a cutting edge. A series of buttons is sometimes placed after the cutting teeth of a broach, to produce a smooth surface by material compression.

Chipbreaker — Notches in the teeth of broaches which divide the width of chips, facilitating their removal. On round broaches they prevent the formation of a solid ring in the chip gullet.

Chip per Tooth — The depth of cut which determines chip thickness.

Chip Space — Space between broach teeth which accommodates chips during cut. Sometimes called the “chip gullet,” it includes the face angle, face angle radius, and back-of-tooth radius.

Cut per Tooth — Progressive increase in tooth height from tooth-to-tooth of a broach. Usually greater in roughing teeth than in semifinishing teeth. Action of step height produces the equivalent of feed in other types of machining. Twice the chip per tooth for round broaches.

External Broach — A broach which cuts on the external surface of the workpiece.

Face Angle — Angle of the cutting edge of a broach tooth. Sometimes called the “hook” angle.

Face Angle Radius — The radius just below the cutting edge that blends into the back of the tooth radius.

Finishing Teeth — Teeth at the end of broach arranged at a constant size for finishing the surface.

Follower Diameter — That part of the broach which rests in the follower support bushing, and which may be used as a retriever on the return stroke.

Front Pilot — The guiding portion of a broach (usually internal) which serves as a safety check to prevent overloading of the first roughing tooth.

Gullet — Name sometimes applied to “chip space.”

Hook Angle — Name sometimes applied to “face angle” of tooth.

Internal Broach — Broach which is pulled or pushed through a hole in the workpiece to bring the hole to desired size and shape.

Land — Thickness of the top of the broach tooth.

Land, Straight — A land having no back-off angle, and used for finishing teeth to retain broach size after a series of sharpenings.

Length to First Tooth — The sum of pilot and pull shank length.

Overall Length — Total length of a broach.

Pitch — Measurement from the cutting edge of one tooth to the corresponding point on the next tooth.
Pull Broach — Broach that is pulled through or over the face of the workpiece.

Pull End — That end of the broach at which it is coupled to the puller of the broaching machine.

Push Broach — A broach that is pushed through or over the surface of the workpiece.

Roughing Teeth — The teeth which take the first cuts in any broaching operation. Generally they take heavier cuts than the semifinishing teeth.

Round Broach — Broach of circular section.

Semifinishing Teeth — Broach teeth, just ahead of the finishing teeth, which take the semifinishing cut.

Shank Length — Portion of broach in front of teeth which is the pull end.

Shear Angle — The angle between the cutting edge of a shear tooth and a line perpendicular to the broach axis or line of travel on surface broaches.

Shear Cutting Tooth — Tooth positioned so it does not make a right angle with the direction of broach motion. Used on surface or external broaches, and cuts with a shear action, with maximum tooth overlap.

Surface Broach — An external broach which cuts a flat or contoured surface.

Tooth Depth — Height of tooth or broach gullet from root to cutting edge.