

Machining

## ISCAR's New Line of Tools Simplifies Broaching Applications

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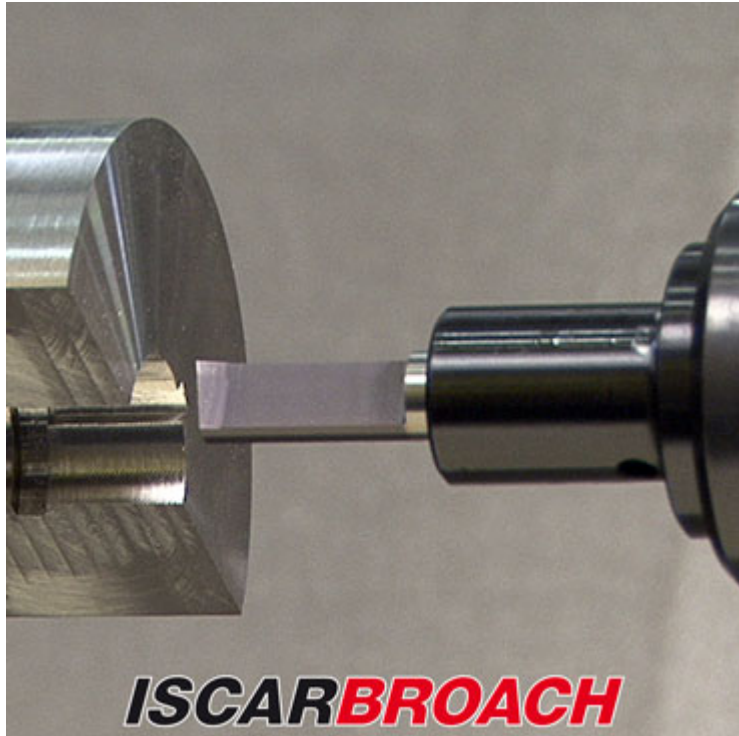
Broaching is an application used for precision machining of many industrial part types. The most common applications of broaching are keyways and splines. ISCAR engineers have developed a range of unique high precision tools for broaching applications of workpieces in small batches.

### Keyway grooves

Machining keyway grooves is becoming more prevalent in general engineering and applications associated with industries such as automotive, heavy duty, gear, weapon and more. Keyway tool designs, when used with dedicated broaching machines, are designed for long production runs. The ISCARBROACH tools enable finishing a complete part which improves machining cycles and provides high quality solutions for small batches of parts.

ISCAR's broaching tools can broach blind or through holes applications. The traditional production of blind keyholes involves expensive die sink (EDM) operations. With relief grooves or cross holes, blind keyways can be broached on a CNC machining center with ISCAR's broaching tools.

Beside solutions for machining the standard material groups, ISCAR's broaching tool designs provide high accuracy and repeatability characteristics and allow keyway applications on difficult to machine materials such as titanium, Inconel and stainless steel.



### Lathe/milling solutions

The growing demand for an appropriate solution to keyway grooves using a lathe/milling machine, has led ISCAR's prolific R&D engineers to develop a line of products for highly accurate broaching applications. ISCAR's broaching line offers many advantages compared to the typical dedicated broaching machines:

- Full machining process in a single clamping – ISCAR's broaching line enables the machining of a complete part in a single clamping process, saving precious lead time
- High accuracy – Use of a CNC lathe provides much higher accuracy compared to the typical dedicated broaching machine
- Better surface finish – The CNC machine's high stability results in better part surface finish
- Machining small batches – The ability to use a lathe eliminates any dependency on having to subcontract a project, which represents a significant advantage for small batch parts production
- Cost savings – While the traditional production of keyway grooves involve expensive EDM / wire cutting operations, ISCAR's broaching line offers a cheaper and faster solution for machining such grooves



**ISCARBROACH**

#### **Broaching product lines**

ISCAR has developed two standard product lines for broaching. Each product line includes inserts and their appropriate holders:

#### **ISCAR XNUWB Line**

The XNUWB standard product line provides an indexable solution for parts with hole diameters starting from Ø22 mm and a width range of 5-12mm.

#### **ISCAR SCB Line**

The SCB standard line is a solid carbide solution suitable for smaller parts with hole diameters starting from Ø10 mm and a width range of 5-12mm.

Standard inserts are available in IC908 PVD coated grade, suitable for a wide range of materials and machining conditions.

#### **Precision broaching**

ISCAR recommends the following machining tips for precision broaching operations:

- Make a relief groove at the end of the cut
- For better chip evacuation, set the tool in the 12 o'clock position

- Always retract without touching the material
- Using coolant is highly recommended
- Avoid interrupted cuts

Typical cutting conditions recommended for broaching

Typical conditions:  $V_c = 4000 - 8000 \text{ mm/min}$ ,  $A_p = 0.02\text{-}0.08 \text{ mm}$



**Special solutions** In addition to its standard line, ISCAR is also engaged in developing targeted solutions for different broaching applications, such as tooth broaching, square broaching, hexagon broaching and other geometric shapes.

Many types of industries use broaching to produce high precision components. Typical broaching application parts include gears, transmission shafts, compressor vane slots, pump rotors & bodies, rattle barrels, lock cylinders and many more. No matter which type of industry, ISCAR's experts can guide a full engineering broaching process to assure maximum productivity on the shop floor.

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