

Technology

Anti-Vibration Blades for Grooving

Brought To You by Iscar | Jun 25, 2018

Throughout the world, on a daily basis, machine tool operators must contend with unwelcome vibrations when metal cutting. Vibrations may occur due to issues related to the machine tool itself, problems due to a tool's length and/or its clamping method, the programming of a controller, or a combination of any of these factors.

The unremitting development of advanced cutting tools and the introduction of innovative methodologies to overcome metal cutting vibrations continue to be a major objective for ISCAR. Over several years, the company's prolific R&D department has created a wide range of effective anti-vibration tools that allow users to achieve high metal removal rates and to increase their efficiencies and profitability. ISCAR continues to be a leading innovator in the field of anti-vibration tools.

ISCAR's Whisper Line tools, designed for turning and grooving applications are referred to as tuned or damped tools which provide effective solutions for the elimination of vibrations. The popular Whisper Line provides a series of key benefits for increasing productivity and for achieving substantial cost savings when grooving and turning. These are common applications where long tool overhangs are required, specifically in grooving blades. When using ISCAR's Whisper Line tools, grooving and turning applications become quieter in difficult to access component areas. Tools with long overhangs are now becoming increasingly popular in these problematic machining zones, specifically in heavy duty and aerospace applications.

Whisper Line tools provide the user with, not only improved surface finish characteristics, but also considerably increased tool life. Whisper Line tools boost production to new levels while providing a quiet operation and cost-efficiency.

Due to the ever increasing complexity of parts, over the last few years ISCAR has launched many deep grooving / parting solutions, mainly for the heavy duty and aerospace industries. Some of these industries' applications require tools with very long overhangs when compared to the width and height of the blade. Such tools in a conventional design format tend to cause vibrations, which result in unbearable levels of noise, poor surface quality and shorter insert tool life. While many anti-vibration tools exist in the market for internal machining applications, ISCAR is the only company that offers anti-vibration blades for external applications. The company's vast experience and unmatched designing skills have enabled ISCAR to produce an ingenious damping mechanism that is small enough to be assembled onto blades, and created the optimal blade for a large range of overhangs. This unique ISCAR damping mechanism consists of two plates connected by a screw and fixed to the blade by an O-ring. Each blade is pre-calibrated by ISCAR for optimal performance at an overhang of 100 mm. Even though this groundbreaking new arrangement is suitable for a wide range of overhangs, if needed, the end-user can easily adjust and fine tune the calibration of the tool for optimal results. Even when employed in shallow grooving applications, where standard conventional tools can be used, the new anti-vibration blades provide a wide range of benefits in terms of surface quality and inset tool life.

An example of the benefits gained through the use of the new damping mechanism blades is a deep grooving application where a long tool overhang of 70 mm was applied to a 200 mm workpiece. Outstanding results were achieved. The insert's tool life performance was 4 times greater when mounted on an ISCAR anti-vibration blade for a 20mm grooving application. The machined component's surface finish proved to be excellent and overall productivity was dramatically increased.

In addition to offering the company's standard blades, ISCAR also specializes in special tailor made tools available in many shapes that feature an effective anti-vibration mechanism for all types of groove-turn applications.

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