

## 4 NEW TYPES OF VQ END MILLS

VQ, the top of the range series of carbide end mills from Mitsubishi Materials has recently been expanded to include 4 new innovative types. These latest additions have been specifically designed for specialised applications in difficult-to-cut and stainless steel materials.

### Coating and ZERO- $\mu$ Surface

A lot of the reliability and high performance of all the VQ series can be attributed to the [Al, Cr]N group based coating which delivers substantially improved wear resistance. The extreme heat and oxidation resistance and lower coefficient of friction of the new coating means this next generation of end mills can maximise performance and help prevent tool wear even under the harshest of cutting conditions. Additionally the surface of the coating has been given a smoothing treatment resulting in better machined surfaces, reduced cutting resistance and an increased chip discharge capacity. With conventional coatings the sharpness of the cutting edge can be affected, but with the unique ZERO- $\mu$  Surface, the cutting edge retains its sharpness whilst still remaining protective during harsh cutting conditions.

### VQHVRB

Vibration control corner radius end mills are ideal for increased feed rates and larger depths of cut are achievable, resulting in highly efficient machining. The special gashed land enables good chip disposal for both increased feed rates and larger depths of cut. Whilst a variable helix in the flute geometry provides vibration control for smooth, stable cutting.

### VQFDRB

Duplex radius end mills provide exceptionally long tool life when machining cobalt chrome alloy. The distinctive geometry provides stable machining with a low radial cutting force and also provides improved notch wear due to the reduced side contact.

**True round ball cutting edge over the full 280° allows stable, accurate machining even during undercut operations.**



### VQ2XLB

This new long neck ball nose type displays a new cutting edge with a unique, strong S-shaped geometry provides improved resistance to chipping that is normally caused during deep milling applications. High accuracy of the ball nose also ensures precise and reliable machining and consistent workpiece dimensions at all times.

### VQ4WB

A multi-functional lollipop end mill with a true 280° extended cutting zone and special geometry of the cutting edge & rake face realises multi-functional machining over a wide range of applications. This makes it the optimal choice for machining undercut and complex shapes when using a 5-axis machine. Furthermore, a cleverly designed constant edge and rake geometry reduces chattering and helps prevent burrs.

### Availability

VQHVRB –  $\varnothing$ 1 with corner R0.1,  $\varnothing$ 2 with corner R0.2  
 $\varnothing$ 3 with corner R0.5 and  $\varnothing$ 4 with corner R1.0

VQFDRB –  $\varnothing$ 3,  $\varnothing$ 4 and  $\varnothing$ 6 with duplex radius end mills

VQ2XLB –  $\varnothing$ 1,  $\varnothing$ 1.5,  $\varnothing$ 2 and  $\varnothing$ 3 with different neck length

VQ4WB – from  $\varnothing$ 1.0 ~  $\varnothing$ 6.0

### SHARPNESS ON THE EDGE

**Sharp cutting edges and protection against wear.  
 The ideal combination for difficult-to-cut materials.**

