

Taper Neck Radius HTNRS Taper Slotting

HARDMAX
for high hardness material



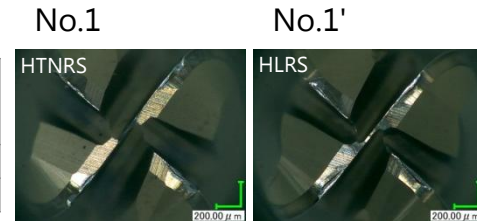
Taper slotting

Work material : Alloy tool steel SKD61 (45HRC)
 Work size : 50x50x60mm
 Gradient angle : 1°
 Length of slot : 27mm (L-shaped slot), 21mm (Straight slot)
 Width of slot : 2.6mm (on bottom part)
 Depth of slot : 20,30,40mm
 Coolant : Water-soluble

x7 times higher efficiency compared to straight type HLRS on 20mm depth slotting

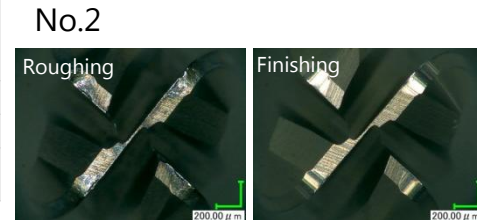
Depth: 20mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0	20	20min18sec
1'	Roughing	4-Flute Long Neck Radius	HLRS φ2xCR0.5	20	7000	800	0.025	0	20	1hr30min9sec



Depth: 30mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0.02	20	22min1sec
2	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	30	9500	2450	0.047	0.02	30	14min31sec
	Finishing				4750	1000	0.0001 (cusp height)	0		1hr47min22sec



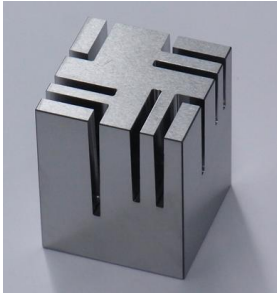
Depth: 40mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0.02	20	27min8sec
2	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	30	9500	2450	0.047	0.02	30	15min32sec
3	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	40	9000	2300	0.02	0.02	40	40min26sec
	Finishing				4500	500	0.0001 (cusp height)	0		4hr28min50sec



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x7 times higher efficiency compared to straight type HLRS on 20mm depth slotting

Depth: 20mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0	20	20min18sec
1'	Roughing	4-Flute Long Neck Radius	HLRS φ2xCR0.5	20	7000	800	0.025	0	20	1hr30min9sec

Depth: 30mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0.02	20	22min1sec
2	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	30	9500	2450	0.047	0	30	14min31sec
	Finishing				4750	1000	0.0001 (cusp height)			1hr47min22sec

Depth: 40mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0.02	20	27min8sec
2	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	30	9500	2450	0.047	0.02	30	15min32sec
3	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	40	9000	2300	0.02	0	40	40min26sec
	Finishing				4500	500	0.0001 (cusp height)			4hr28min50sec

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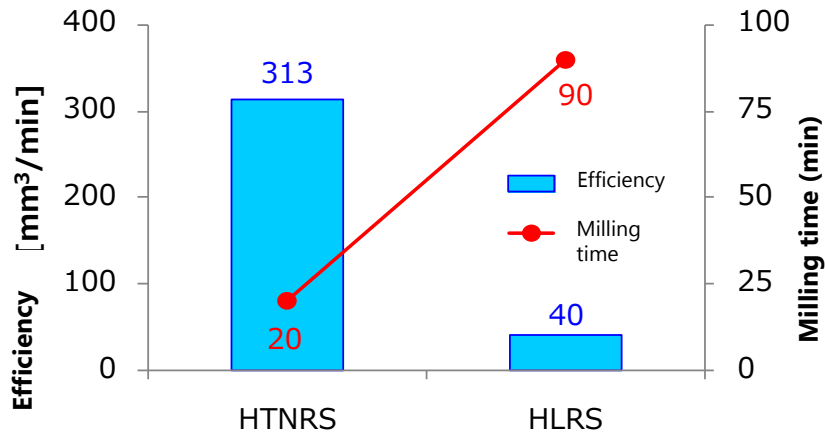
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Depth: 20mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0	20	20min18sec
1'	Roughing	4-Flute Long Neck Radius	HLRS φ2xCR0.5	20	7000	800	0.025	0	20	1hr30min9sec

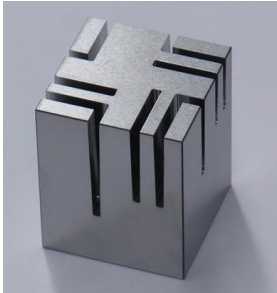
Comparison of HTNRS & HLRS



x7 Efficiency & 1/4 Milling time

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Depth: 40mm L-shaped slot

No.	Process	Tool geometry	Series / Size	Neck length [mm]	Spindle speed [min ⁻¹]	Feed rate [mm/min]	Axial depth a _p [mm]	Finishing stock [mm]	Depth of slot [mm]	Milling time
1	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	20	9500	2450	0.064	0.02	20	27min8sec
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3	Roughing	4-Flute Taper Neck Radius	HTNRS φ2xCR0.5	40	9000	2300	0.02	0.02	40	40min26sec
	Finishing				4500	500	0.0001 (cusp height)	0		4hr28min50sec

Milling image to depth 40mm

Roughing process - 40mm depth completed in 1hr23min!

