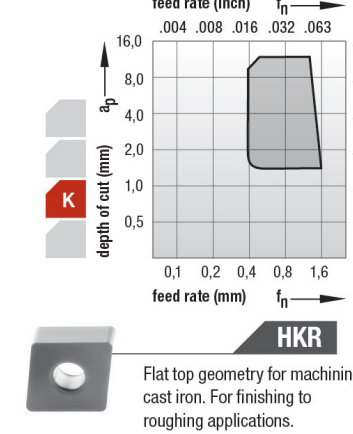
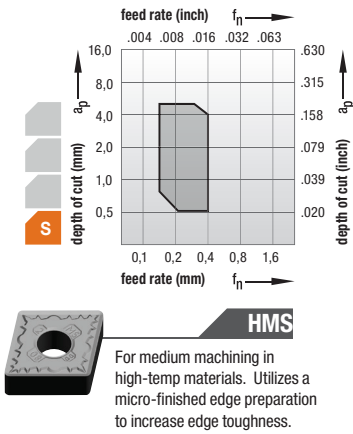
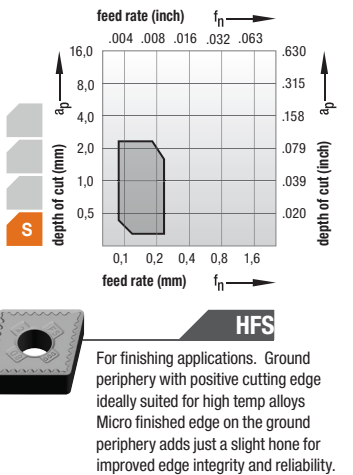
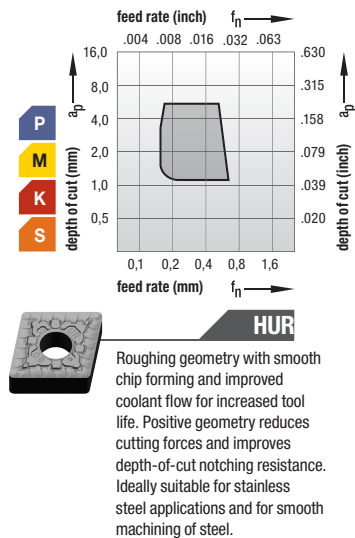
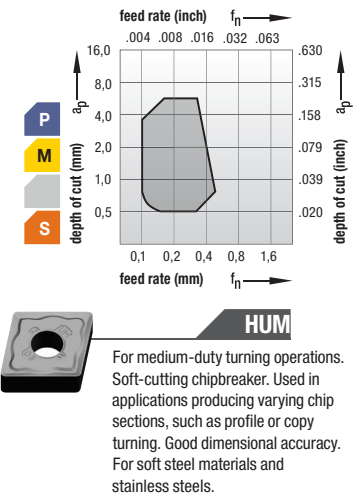
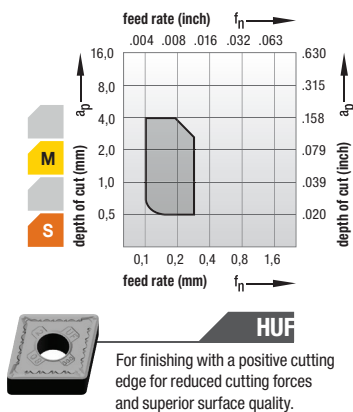
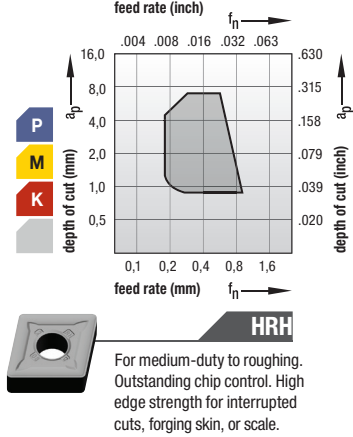
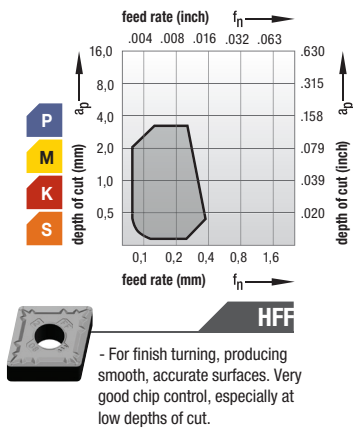
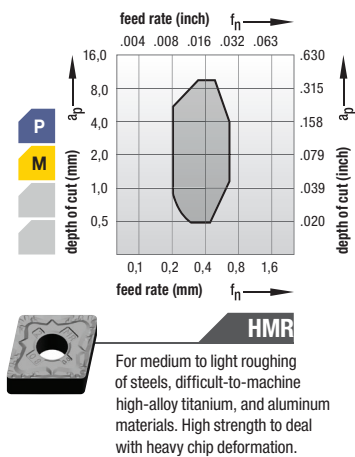
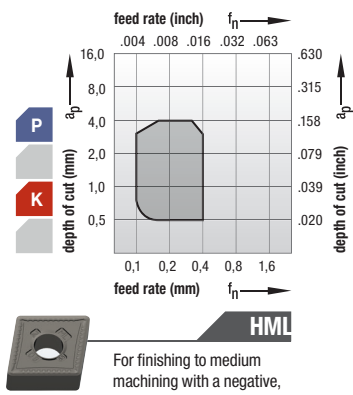
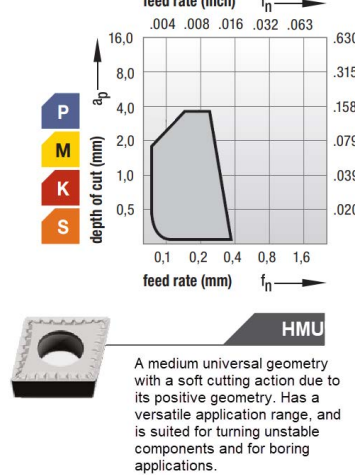
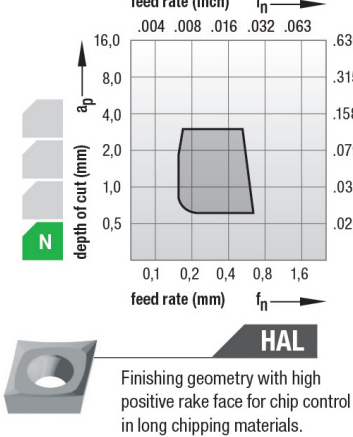
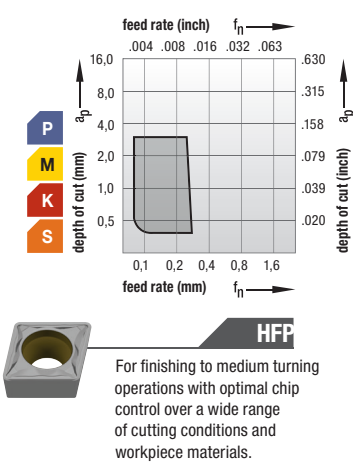
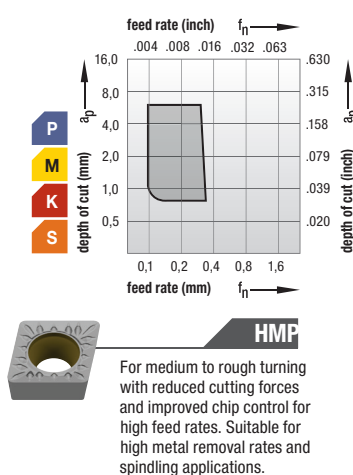


Turning Geometries

Negative Inserts



Positive Inserts



HAAS Turning Grades • SPEED CHART

Low-Carbon (<0.3% C) and Free-Machining Steel											Starting Conditions	
material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P0/P1	HTP15										395	1320
	HTP25										275	925
	HTS35										210	700
	HTS10										280	925

Medium- and High-Carbon Steels (>0.3% C)											Starting Conditions	
material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P2	HTP15										265	880
	HTP25										195	650
	HTS35										150	500
	HTS10										200	650

Alloy Steels and Tool Steels (≤330 HB) (≤35 HRC)											Starting Conditions	
material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P3	HTP15										190	630
	HTP25										155	510
	HTS35										120	400
	HTS10										155	510

Alloy Steels and Tool Steels (340–450 HB) (36–48 HRC)											Starting Conditions	
material group	grade	60 (200)	90 (300)	120 (400)	150 (500)	180 (600)	210 (700)	240 (800)	270 (900)	300 (1000)	m/min	SFM
P4	HTP15										145	480
	HTP25										105	360
	HTS35										95	325
	HTS10										110	360

Ferritic, Martensitic, and PH Stainless Steels (≤330 HB) (≤35 HRC)											Starting Conditions	
material group	grade	120 (400)	150 (500)	180 (600)	210 (700)	240 (800)	270 (900)	300 (1000)	330 (1100)	360 (1200)	m/min	SFM
P5	HTP15										215	720
	HTP25										195	650
	HTS35										135	450
	HTS10										200	660

Ferritic, Martensitic, and PH Stainless Steels (340–450 HB) (36–48 HRC)											Starting Conditions	
material group	grade	105 (350)	135 (450)	165 (550)	195 (650)	225 (750)	255 (850)	285 (950)	315 (1050)	345 (1150)	m/min	SFM
P6	HTP15										180	600
	HTP25										150	500
	HTS35										105	350
	HTS10										150	500

Grey Cast Iron							speed – m/min (SFM)					Starting Conditions		◇
material group	grade	60 (200)	180 (600)	305 (1000)	430 (1400)	550 (1800)	675 (2200)	800 (2600)	920 (3000)	1040 (3400)	1160 (3800)	m/min	SFM	
K1	HTK10											450	1500	
	HTK20	◇										300	1000	

Ductile, Compacted Graphite, and Malleable Cast Irons (<600 MPa tensile strength)											speed – m/min (SFM)		Starting Conditions		
material group	grade	90 (300)	135 (450)	180 (600)	225 (750)	275 (900)	320 (1050)	360 (1200)	410 (1350)	460 (1500)	500 (1650)	m/min	SFM		
K2	HTS10											200	650		
	HTK10											360	1200		
	HTK20											240	800		

Ductile, Malleable, and Austempered Cast Irons (>600 MPa tensile strength)											speed — m/min (SFM)		Starting Conditions		
material group	grade	90 (300)	135 (450)	180 (600)	225 (750)	275 (900)	320 (1050)	360 (1200)	410 (1350)	460 (1500)	500 (1650)	m/min	SFM		
K3	HTS10											150	500		
	HTK10											240	800		
	HTK20											210	700		

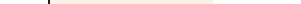
Austenitic Stainless Steel (180 HB)											Starting Conditions	
material group	grade	90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)	m/min	SFM
M1	HTM15										180	600
	HTM25										150	500
	HTS35										120	400
	HTS10										215	700
	HTS25										180	550

Ferritic/Martensitic Stainless Steel Mixture (Duplex) (200 HB)											Starting Conditions	
material group	grade	90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)	m/min	SFM
M2	HTM15										165	550
	HTM25										140	450
	HTS35										105	350
	HTS10										200	650
	HTS25										165	500

Martensitic Stainless Steel (240 HB)											Starting Conditions	
material group	grade	90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)	m/min	SFM
M3	HTM15										150	500
	HTM25										120	400
	HTS35										90	300
	HTS10										185	600
	HTS25										150	450

Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤34 HRC)							speed – m/min (SFM)					Starting Conditions		◇
material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM	
S1	HTSU10											30	100	
	HTS10											55	180	
	HTS25											40	125	
	HTM15											55	180	
	HTM25											40	125	

Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤45 HRC)											speed – m/min (SFM)		Starting Conditions		
material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM		
S2	HTSU10											35	110		
	HTS10											60	195		
	HTS25											30	100		
	HTM15											60	195		
	HTM25											30	100		

Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC)							speed – m/min (SFM)					Starting Conditions		◇
material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM	
S3	HTSU10											40	125	
	HTS10											70	225	
	HTS25											40	125	
	HTM15											70	225	
	HTM25											40	125	