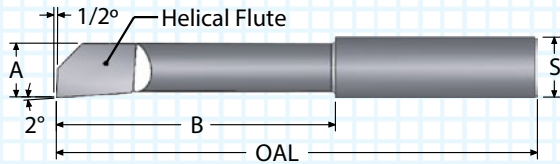
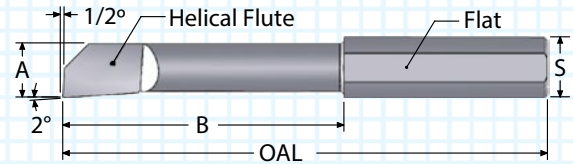


BORING BARS - HELICAL - SOLID CARBIDE

- Positive high shear tool design reduces cutting force
- ALTiN+ coating helps extend tool life
- Stocked in both uncoated and ALTiN+ coating
- Made with premium submicron grade carbide



**HELICAL BACK RAKE
WITHOUT FLAT**

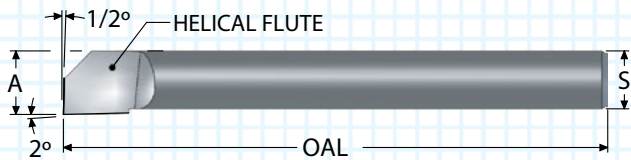


**HELICAL BACK RAKE
WITH FLAT**

"A" MIN BORE	"B" MAX DEPTH	"S" SHANK DIA.	OAL	ORDER #	
				UNCOATED	ALTiN+
0.025	0.093	0.125	1.50	HB25	HB25A
0.027	0.125	0.125	1.50	HB27	HB27A
0.031	0.156	0.125	1.50	HB31	HB31A
0.031	0.187	0.125	1.50	HB31L	HB31LA
0.036	0.156	0.125	1.50	HB36	HB36A
0.036	0.250	0.125	1.50	HB36L	HB36LA
0.042	0.250	0.125	1.50	HB42	HB42A
0.042	0.312	0.125	1.50	HB42L	HB42LA
0.052	0.312	0.125	1.50	HB52	HB52A
0.057	0.312	0.125	1.50	HB57	HB57A
0.060	0.375	0.125	1.50	HB60	HB60A
0.060	0.500	0.125	1.50	HB60L	HB60LA
0.070	0.437	0.125	1.50	HB70	HB70A
0.080	0.500	0.125	1.50	HB80	HB80A
0.085	0.500	0.125	1.50	HB85	HB85A
0.090	0.500	0.125	1.50	HB90	HB90A
0.090	0.625	0.125	1.50	HB90L	HB90LA
0.100	0.562	0.125	1.50	HB100	HB100A
0.100	0.625	0.125	2.00	HB100L	HB100LA
0.110	0.562	0.125	1.50	HB110	HB110A
0.110	0.625	0.125	2.00	HB110L	HB110LA
0.115	0.625	0.125	1.50	HB120	HB120A
0.115	0.625	0.125	2.00	HB120L	HB120LA

"A" MIN BORE	"B" MAX DEPTH	"S" SHANK DIA.	OAL	ORDER #	
				UNCOATED	ALTiN+
0.025	0.093	0.125	1.50	HB25F	HB25FA
0.027	0.125	0.125	1.50	HB27F	HB27FA
0.031	0.156	0.125	1.50	HB31F	HB31FA
0.031	0.187	0.125	1.50	HB31LF	HB31LFA
0.036	0.156	0.125	1.50	HB36F	HB36FA
0.036	0.250	0.125	1.50	HB36LF	HB36LFA
0.042	0.250	0.125	1.50	HB42F	HB42FA
0.042	0.312	0.125	1.50	HB42LF	HB42LFA
0.052	0.312	0.125	1.50	HB52F	HB52FA
0.057	0.312	0.125	1.50	HB57F	HB57FA
0.060	0.375	0.125	1.50	HB60F	HB60FA
0.060	0.500	0.125	1.50	HB60LF	HB60LFA
0.070	0.437	0.125	1.50	HB70F	HB70FA
0.080	0.500	0.125	1.50	HB80F	HB80FA
0.085	0.500	0.125	1.50	HB85F	HB85FA
0.090	0.500	0.125	1.50	HB90F	HB90FA
0.090	0.625	0.125	1.50	HB90LF	HB90LFA
0.100	0.562	0.125	1.50	HB100F	HB100FA
0.100	0.625	0.125	2.00	HB100LF	HB100LFA
0.110	0.562	0.125	1.50	HB110F	HB110FA
0.110	0.625	0.125	2.00	HB110LF	HB110LFA
0.120	0.625	0.125	1.50	HB120F	HB120FA
0.120	0.625	0.125	2.00	HB120LF	HB120LFA

BORING BARS - HELICAL - SOLID CARBIDE

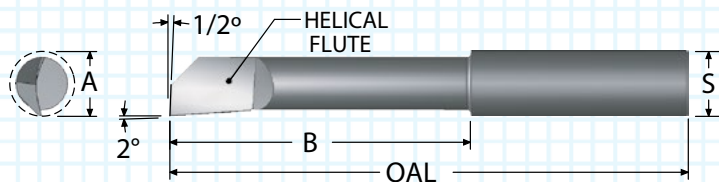


- Bar features an adjustable max bore depth
- ALTiN+ coating provides better surface finish
- Positive high shear tool design reduces cutting force
- Made with premium submicron grade carbide

HELICAL BACK RAKE

"A" MIN BORE	"S" SHANK DIA.	OAL	ORDER #	
			UNCOATED	ALTiN+
0.130	0.1093	1.50	HB135	HB135A
0.145	0.1250	1.50	HB150	HB150A
0.145	0.1250	2.50	HB150L	HB150LA
0.174	0.1562	1.50	HB180	HB180A
0.174	0.1562	2.00	HB180L	HB180LA
0.174	0.1562	3.00	HB180EL	HB180ELA
0.205	0.1875	1.50	HB210	HB210A
0.205	0.1875	3.00	HB210L	HB210LA
0.235	0.2187	1.50	HB240	HB240A
0.235	0.2187	3.00	HB240L	HB240LA
0.284	0.2500	2.50	HB300	HB300A
0.284	0.2500	3.50	HB300L	HB300LA
0.345	0.3125	3.00	HB360	HB360A
0.345	0.3125	5.00	HB360L	HB360LA
0.470	0.4375	3.00	HB480	HB480A
0.470	0.4375	6.00	HB480L	HB480LA

BORING BARS - HELICAL - SOLID CARBIDE



"A" minimum bore diameter refers to the size of the hole that is produced when the tools are rotated on centerline. These tools are designed to be used for both mill and lathe applications.

THREAD MILLS

SINGLE POINT TOOLS
BORING

INDEXABLE TOOLS

PORT - CAVITY

SPECIALTY

"A" MIN BORE	"B" MAX DEPTH	"S" SHANK DIA.	OAL	ORDER #	
				UNCOATED	ALTiN+
0.020	0.062	0.125	1.50	HB020062	HB020062A
0.025	0.062	0.125	1.50	HB025062	HB025062A
0.025	0.125	0.125	1.50	HB025125	HB025125A
0.030	0.125	0.125	1.50	HB030125	HB030125A
0.030	0.187	0.125	1.50	HB030187	HB030187A
0.035	0.125	0.125	1.50	HB035125	HB035125A
0.035	0.187	0.125	1.50	HB035187	HB035187A
0.040	0.187	0.125	1.50	HB040187	HB040187A
0.040	0.250	0.125	1.50	HB040250	HB040250A
0.050	0.312	0.125	1.50	HB050312	HB050312A
0.060	0.375	0.125	1.50	HB060375	HB060375A
0.070	0.437	0.125	1.50	HB070437	HB070437A
0.080	0.500	0.125	1.50	HB080500	HB080500A
0.090	0.500	0.125	1.50	HB090500	HB090500A
0.100	0.562	0.125	1.50	HB100562	HB100562A
0.120	0.625	0.125	1.50	HB120625	HB120625A
0.120	1.000	0.125	2.00	HB1201000	HB1201000A
0.135	0.750	0.1875	2.00	HB135750	HB135750A
0.135	1.000	0.1875	2.00	HB1351000	HB1351000A
0.150	1.000	0.1875	2.00	HB1501000	HB1501000A
0.150	1.250	0.1875	2.00	HB1501250	HB1501250A
0.180	1.000	0.1875	2.00	HB1801000	HB1801000A
0.180	1.250	0.1875	2.50	HB1801250	HB1801250A
0.180	1.500	0.1875	2.50	HB1801500	HB1801500A

"A" MIN BORE	"B" MAX DEPTH	"S" SHANK DIA.	OAL	ORDER #	
				UNCOATED	ALTiN+
0.210	1.000	0.250	2.50	HB2101000	HB2101000A
0.210	1.250	0.250	2.50	HB2101250	HB2101250A
0.210	1.500	0.250	2.50	HB2101500	HB2101500A
0.240	1.000	0.250	2.50	HB2401000	HB2401000A
0.240	1.500	0.250	2.50	HB2401500	HB2401500A
0.240	1.750	0.250	3.00	HB2401750	HB2401750A
0.300	1.000	0.312	2.50	HB3001000	HB3001000A
0.300	1.500	0.312	2.50	HB3001500	HB3001500A
0.300	1.750	0.312	3.00	HB3001750	HB3001750A
0.360	1.000	0.375	2.50	HB3601000	HB3601000A
0.360	1.500	0.375	2.50	HB3601500	HB3601500A
0.360	1.750	0.375	3.00	HB3601750	HB3601750A
0.360	2.000	0.375	4.00	HB3602000	HB3602000A
0.360	2.250	0.375	4.00	HB3602250	HB3602250A
0.360	2.500	0.375	4.00	HB3602500	HB3602500A
0.480	1.500	0.500	3.00	HB4801500	HB4801500A
0.480	2.000	0.500	3.00	HB4802000	HB4802000A
0.480	2.500	0.500	4.00	HB4802500	HB4802500A
0.480	3.000	0.500	4.00	HB4803000	HB4803000A
0.480	3.500	0.500	6.00	HB4803500	HB4803500A
0.480	4.000	0.500	6.00	HB4804000	HB4804000A
0.480	4.500	0.500	6.00	HB4804500	HB4804500A