3 Flute • HSS Countersink

HSS | 3 | MULTI° | TiN | HRc <52 | P K M S H N

Series: HS3

SIZE	SHK	OAL	TOOL	ANGLE/EDP# 60°	82°	90°	100°	120°
1/4	1/4	2	**HS3-1/4-T**	19600	19601	19602	19603	19604
3/8	1/4	2	**HS3-3/8-T**	19605	19606	19607	19608	19609
1/2	3/8	2	**HS3-1/2-T**	19610	19611	19612	19613	19614
5/8	3/8	2-1/4	**HS3-5/8-T**	19615	19616	19617	19618	19619
3/4	1/2	2-3/4	**HS3-3/4-T**	19620	19621	19622	19623	19624
1	1/2	2-3/4	**HS3-1-T**	19625	19626	19627	19628	19629

- Used for countersinking holes for centers or enlarging existing holes.
- Radial relief on the angle contributes to smooth, chatter-free operation.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS3-1/4-**90T**).

Carbide Drills

SERIES: HDR, IDR, JDR, LDR, HDRNC

MATERIAL	ISO	CARBIDE SFM	HSSCO SFM	FEED RATE PER TOOTH (IPR) 1/16"	1/8"	1/4"	1/2"
Stainless Steels-Soft	M	80-300	20-40	0.0005	0.0005	0.0020	0.0040
Stainless Steels-Hard (PH)	M	40-100	15-25	0.0005	0.0005	0.0010	0.0015
Nickel Base Alloys	S	75-200	15-25	0.0005	0.0006	0.0010	0.0015
Inconel/Monel/Hastelloy	S	75-200	15-25	0.0005	0.0005	0.0010	0.0015
Titanium-Soft	S	80-350	20-25	0.0005	0.0020	0.0040	0.0050
Titanium-Hard	S	40-100	20-25	0.0005	0.0008	0.0020	0.0040
Low Carbon Steels	P	150-300	75-130	0.0005	0.0010	0.0020	0.0040
Die Steels	P	60-130	30-45	0.0005	0.0005	0.0020	0.0040
Hardened Steels > HRc 50	H	25-75	-	0.0005	0.0010	0.0020	0.0030
Cast Iron	K	100-300	60-110	0.0010	0.0020	0.0030	0.0050
Malleable Iron	K	65-200	40-80	0.0010	0.0020	0.0030	0.0050
Aluminium Alloys	N	100-400	150-250	0.0010	0.0020	0.0030	0.0050
Brass & Bronze	N	150-300	100-150	0.0005	0.0010	0.0020	0.0040
Copper	N	150-300	75-150	0.0010	0.0030	0.0050	0.0060
Magnesium	N	300-600	200-350	0.0015	0.0030	0.0050	0.0080
Plastics	N	150-450	70-150	0.0015	0.0030	0.0040	0.0060

Countersinks

MATERIAL	ISO	HSS SFM	COUNTERSINK TYPE M42 8% COBALT WITH TIN SFM	CARBIDE SFM
Stainless Steels - Free Machining	M	30-80	40-100	80-125
Stainless Steels - Others	M	15-50	20-65	50-75
Inconels/Monels	S	30-50	40-65	50-75
Titaniums (6Al4V)	S	50-60	60-75	60-90
Steels Annealed	P	40-50	50-65	50-80
Steels HRc 18-24	P	30-40	40-50	40-60
Steels HRc 25-37	P	25-35	30-45	35-55
Mild Steels	P	70-100	85-125	80-170
Cast Iron	K	75-125	95-150	125-225
Malleable Iron	K	80-90	100-115	90-150
Aluminums Alloys	N	150-250	180-300	300-500
Brass (Bronze)	N	75-125	95-150	150-250
Magnesium	N	125-250	150-300	250-400
Plastics	N	100-250	125-300	250-400

► Multiple flute countersinks are designed for increased feed rates. A controlled feed rate will result in better surface finish.

► All Melin countersinks are manufactured on CNC grinders to ensure consistent and accurate flute spacing. Carbide countersinks should be used in rigid tool holders to maximize tool life.

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

Calculations

End mill speed & feed formulas are the various individual equations that determine the proper overall machining setup or more specifically the speed of the cutting tool and the rate which it is fed into the work piece. Each individual formula is distinct in what it determines but coordinates with the others to ensure successful cutting tool application. You can visit the TECHNICAL section on www.melintool.com for more information.

INCH

RPM = Revolutions Per Minute
3.82 x SFM / Tool Dia

SFM = Surface Foot Per Minute
.262 x RPM x Tool Dia

CPT or IPT = Chip-Load Per Tooth
IPM / RPM / No. Of Flutes

IPM = Inches Per Minute
CPT x RPM x No. Of Flutes

MRRCI = Metal Removal Rate Cubic Inches
IPM x Axial Doc x Radial Woc

IPR = Inches Per Revolution
IPM / RPM

METRIC

RPM = Revolutions Per Minute
1000 x M/MIN / (3.14 x D)

M/MIN = Meters Per Minute
(3.14 x D x RPM) / 1000

Fz OR CPT = Chip-Load Per Tooth
Feedrate (mm) per MIN / (Z x RPM)

VF OR FPM = Feedrate (mm) Per Minute
Feerate (mm) per Tooth x Z x RPM

D = Cutter Dia.
Z= No. Of Teeth.

EQUIVALENTS & CONVERSIONS:

ABBREVIATIONS	
RPM	Revolutions Per Minute
SFM	Surface Feet Per Minute
CPT	Chip Load Per Tooth
IPM	Inches Per Minute
V_f	Millimeters Per Minute
ae	Radial Width of Cut
ap	Axial Depth of Cut
Vc	Surface Meters Per Minute
Fz	Metric Chip Load Per Tooth

N, n or Min^{-1} = RPM
Vc or M/MIN = SFM
Fz or mm/TOOTH = CPT
V_f or mm/MIN = IPM

SFM / 3.281 = M/MIN
M/MIN x 3.281 = SFM
mm/MIN / 25.4 = IPM
mm/TOOTH /25.4 = CPT

IMPERIAL ⟷ METRIC

Inch x 25.4 = Millimeter
Millimeter x .03937 = Inch