HARVI II TE

SOLID END MILLS

5-Flute End Mills with Extreme Application Range Achieve Ultimate Productivity and Tool Life

With the powerful combination of an extremely broad application range and ultimate productivity and tool life, HARVI II TE can make your general engineering, aerospace and defense and medical projects a cut above the rest. You can count on maximum machining flexibility across materials and efficiency in traditional and dynamic milling applications.

Applications

PRIMARY

- Side Milling/ Shoulder Milling
- Slotting Up to 1.5 – 2xD
- Helical Interpolation
- Ramping Up to 45 Degrees
- Trochoidal Milling

SECONDARY

- Plunging

Materials

PRIMARY

- P Steels
- S High-Temp Alloys
- M Stainless Steels
- K Cast Iron

SECONDARY

- H Hardened Materials

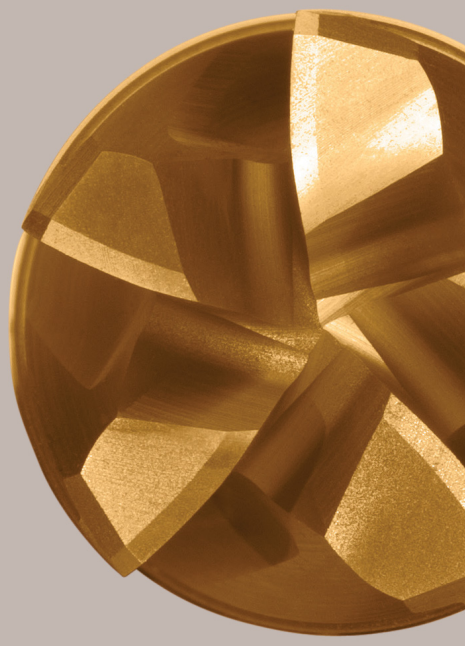
A Revolutionary 5-Flute End Mill Design for Ultimate Performance

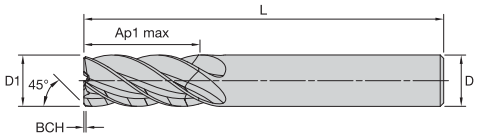
HARVI II TE solid end mills are the latest addition to Kennametal's HARVI family of high-performance versatile end mills and the only centerless 5-flute tool available for aggressive cutting parameters like ramping, plunging and deep slotting.

- Open 5-flute design combined with a stronger core for increased MRR, tool life and chip evacuation capabilities
- Novel centerless end face designed for aggressive ramping, plunging and deep slotting
- Chip gashes for better chip evacuation and improved tool cooling with increased coolant flow from the flute to cutting zone
- Proprietary W-flute shape for better chip evacuation and stronger core
- Eccentric relief increases the edge strength for longer tool life and wide material application range

Industries

- General Engineering
- Aerospace
- Medical
- Oil & Gas
- Wind & Solar
- Automotive





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● Primary
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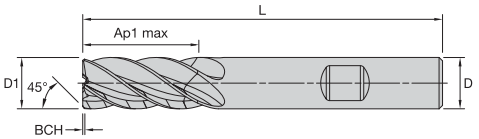
HARVI II TE

Chamfered • 5 Flutes • Plain Shank

KCPM15A

Order Number	Catalog Number	D1	D	AP1 Max	L	BCH	
7156120	H2TE5CH0400R011HAM	4.00	6.00	11.00	57.00	0.20	•
7156121	H2TE5CH0500R013HAM	5.00	6.00	13.00	57.00	0.20	•
7156122	H2TE5CH0600R016HAM	6.00	6.00	16.00	57.00	0.20	•
7157115	H2TE5CH0700R016HAM	7.00	8.00	16.00	63.00	0.20	•
7156125	H2TE5CH0800R019HAM	8.00	8.00	19.00	63.00	0.30	•
7157117	H2TE5CH0900R019HAM	9.00	10.00	19.00	72.00	0.30	•
7157118	H2TE5CH1000R022HAM	10.00	10.00	22.00	72.00	0.30	•
7156127	H2TE5CH1200R026HAM	12.00	12.00	26.00	83.00	0.40	•
7157120	H2TE5CH1600R032HAM	16.00	16.00	32.00	92.00	0.50	•
7157141	H2TE5CH1600L060HAM	16.00	16.00	60.00	125.00	0.50	•
7157142	H2TE5CH1800R032HAM	18.00	18.00	32.00	92.00	0.50	•
7157143	H2TE5CH2000R038HAM	20.00	20.00	38.00	104.00	0.50	•
7157144	H2TE5CH2000L060HAM	20.00	20.00	60.00	125.00	0.50	•
7157145	H2TE5CH2500R045HAM	25.00	25.00	45.00	121.00	0.50	•
7157146	H2TE5CH2500R075HAM	25.00	25.00	75.00	150.00	0.50	•



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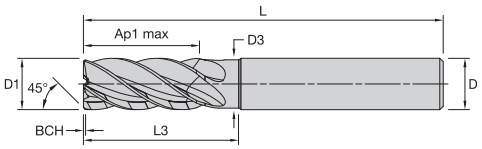
HARVI II TE

Chamfered • 5 Flutes • Weldon Shank

KCPM15A

Order Number	Catalog Number	D1	D	AP1 Max	L	BCH	
7156123	H2TE5CH0500R013HBM	5.00	6.00	13.00	57.00	0.20	•
7156124	H2TE5CH0600R016HBM	6.00	6.00	16.00	57.00	0.20	•
7157116	H2TE5CH0700R016HBM	7.00	8.00	16.00	63.00	0.20	•
7156126	H2TE5CH0800R019HBM	8.00	8.00	19.00	63.00	0.30	•
7157119	H2TE5CH1000R022HBM	10.00	10.00	22.00	72.00	0.30	•
7156128	H2TE5CH1200R026HBM	12.00	12.00	26.00	83.00	0.40	•
7157148	H2TE5CH1600R032HBM	16.00	16.00	32.00	92.00	0.50	•
7157149	H2TE5CH1600L060HBM	16.00	16.00	60.00	125.00	0.50	•
7157150	H2TE5CH1800R032HBM	18.00	18.00	32.00	92.00	0.50	•
7157151	H2TE5CH2000R038HBM	20.00	20.00	38.00	104.00	0.50	•
7157152	H2TE5CH2000L060HBM	20.00	20.00	60.00	125.00	0.50	•



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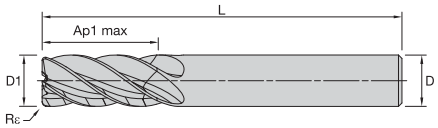
HARVI II TE

Chamfered • 5 Flutes • Necked • Plain Shank

KCPM15A

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	BCH	
7157191	H2TE5CH1000N022HAM	10.0	10.0	9.40	22.0	30.0	72.0	0.30	•
7156181	H2TE5CH1200N026HAM	12.0	12.0	11.28	26.0	36.0	83.0	0.40	•
7157192	H2TE5CH1600N032HAM	16.0	16.0	15.04	32.0	42.0	92.0	0.50	•
7157193	H2TE5CH2000N038HAM	20.0	20.0	18.80	38.0	52.0	104.0	0.50	•



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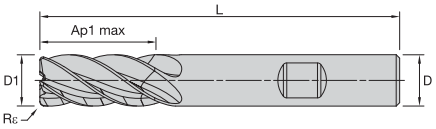
HARVI II TE

Radiused • 5 Flutes • Plain Shank

KCSM15A

Order Number	Catalog Number	D1	D	AP1 Max	L	Rε	
7156129	H2TE5RA0400R011HAR025M	4.00	6.00	11.00	57.00	0.25	•
7156130	H2TE5RA0500R013HAR025M	5.00	6.00	13.00	57.00	0.25	•
7156142	H2TE5RA0600R016HAR050M	6.00	6.00	16.00	57.00	0.50	•
7156168	H2TE5RA0600R016HAR100M	6.00	6.00	16.00	57.00	1.00	•
7156143	H2TE5RA0700R016HAR050M	7.00	8.00	16.00	63.00	0.50	•
7156144	H2TE5RA0800R019HAR050M	8.00	8.00	19.00	63.00	0.50	•
7157159	H2TE5RA0800R019HAR100M	8.00	8.00	19.00	63.00	1.00	•
7157154	H2TE5RA0900R019HAR050M	9.00	10.00	19.00	72.00	0.50	•
7156145	H2TE5RA1000R022HAR050M	10.00	10.00	22.00	72.00	0.50	•
7157160	H2TE5RA1000R022HAR100M	10.00	10.00	22.00	72.00	1.00	•
7156146	H2TE5RA1200R026HAR050M	12.00	12.00	26.00	83.00	0.50	•
7156169	H2TE5RA1200R026HAR100M	12.00	12.00	26.00	83.00	1.00	•
7157165	H2TE5RA1200R026HAR250M	12.00	12.00	26.00	83.00	2.50	•
7156147	H2TE5RA1600R032HAR050M	16.00	16.00	32.00	92.00	0.50	•
7156170	H2TE5RA1600R032HAR100M	16.00	16.00	32.00	92.00	1.00	•
7157166	H2TE5RA1600R032HAR250M	16.00	16.00	32.00	92.00	2.50	•
7156148	H2TE5RA1600L060HAR050M	16.00	16.00	60.00	125.00	0.50	•
7156171	H2TE5RA1600L060HAR100M	16.00	16.00	60.00	125.00	1.00	•
7157167	H2TE5RA1600L060HAR250M	16.00	16.00	60.00	125.00	2.50	•
7157161	H2TE5RA1800R032HAR100M	18.00	18.00	32.00	92.00	1.00	•
7156149	H2TE5RA2000R038HAR050M	20.00	20.00	38.00	104.00	0.50	•
7156172	H2TE5RA2000R038HAR100M	20.00	20.00	38.00	104.00	1.00	•
7157168	H2TE5RA2000R038HAR250M	20.00	20.00	38.00	104.00	2.50	•
7156173	H2TE5RA2000L060HAR100M	20.00	20.00	60.00	125.00	1.00	•
7156150	H2TE5RA2500R045HAR050M	25.00	25.00	45.00	121.00	0.50	•
7157172	H2TE5RA2500R075HAR400M	25.00	25.00	75.00	150.00	4.00	•



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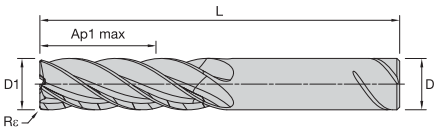
HARVI II TE

Radiused • 5 Flutes • Weldon Shank

KCSM15A

Order Number	Catalog Number	D1	D	AP1 Max	L	Rε	
7156141	H2TE5RA0500R013HBR025M	5.00	6.00	13.00	57.00	0.25	•
7156161	H2TE5RA0600R016HBR050M	6.00	6.00	16.00	57.00	0.50	•
7156162	H2TE5RA0800R019HBR050M	8.00	8.00	19.00	63.00	0.50	•
7156163	H2TE5RA1000R022HBR050M	10.00	10.00	22.00	72.00	0.50	•
7156164	H2TE5RA1200R026HBR050M	12.00	12.00	26.00	83.00	0.50	•
7157162	H2TE5RA1200R026HBR100M	12.00	12.00	26.00	83.00	1.00	•
7157169	H2TE5RA1200R026HBR250M	12.00	12.00	26.00	83.00	2.50	•
7156165	H2TE5RA1600R032HBR050M	16.00	16.00	32.00	92.00	0.50	•
7156174	H2TE5RA1600R032HBR100M	16.00	16.00	32.00	92.00	1.00	•
7157170	H2TE5RA1600R032HBR250M	16.00	16.00	32.00	92.00	2.50	•
7156166	H2TE5RA1600L060HBR050M	16.00	16.00	60.00	125.00	0.50	•
7156175	H2TE5RA1600L060HBR100M	16.00	16.00	60.00	125.00	1.00	•
7157155	H2TE5RA1800R032HBR050M	18.00	18.00	32.00	92.00	0.50	•
7156167	H2TE5RA2000R038HBR050M	20.00	20.00	38.00	104.00	0.50	•
7156176	H2TE5RA2000R038HBR100M	20.00	20.00	38.00	104.00	1.00	•
7157171	H2TE5RA2000R038HBR250M	20.00	20.00	38.00	104.00	2.50	•
7156177	H2TE5RA2000L060HBR100M	20.00	20.00	60.00	125.00	1.00	•
7157156	H2TE5RA2500R045HBR050M	25.00	25.00	45.00	121.00	0.50	•
7157173	H2TE5RA2500R075HBR400M	25.00	25.00	75.00	150.00	4.00	•



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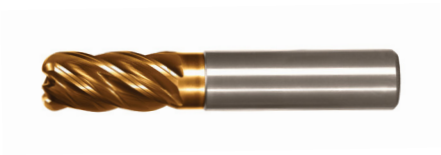
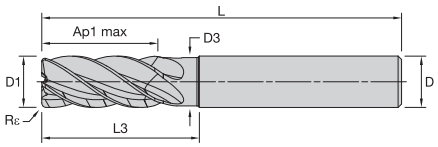
HARVI II TE

Radiused • 5 Flutes • SAFE-λOCK Shank™

KCSM15A

Order Number	Catalog Number	D1	D	AP1 Max	L	Rε	
7157163	H2TE5RA1600R032SLR100M	16.00	16.00	32.00	92.00	1.00	•
7157157	H2TE5RA2000R038SLR050M	20.00	20.00	38.00	104.00	0.50	•
7157164	H2TE5RA2000R038SLR100M	20.00	20.00	38.00	104.00	1.00	•
7157158	H2TE5RA2500R045SLR050M	25.00	25.00	45.00	121.00	0.50	•





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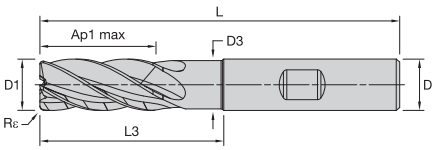
HARVI II TE

Radiused • 5 Flutes • Necked • Plain Shank

KCSM15A

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	Rε	
7156182	H2TE5RA0600N013HAR025M	6.00	6.00	5.64	13.00	19.00	57.00	0.25	•
7156186	H2TE5RA0600N013HAR050M	6.00	6.00	5.64	13.00	19.00	57.00	0.50	•
7156199	H2TE5RA0600N013HAR100M	6.00	6.00	5.64	13.00	19.00	57.00	1.00	•
7156183	H2TE5RA0800N019HAR025M	8.00	8.00	7.52	19.00	25.00	63.00	0.25	•
7156187	H2TE5RA0800N019HAR050M	8.00	8.00	7.52	19.00	25.00	63.00	0.50	•
7156200	H2TE5RA0800N019HAR100M	8.00	8.00	7.52	19.00	25.00	63.00	1.00	•
7157194	H2TE5RA1000N022HAR025M	10.00	10.00	9.40	22.00	30.00	72.00	0.25	•
7156188	H2TE5RA1000N022HAR050M	10.00	10.00	9.40	22.00	30.00	72.00	0.50	•
7156201	H2TE5RA1000N022HAR100M	10.00	10.00	9.40	22.00	30.00	72.00	1.00	•
7157209	H2TE5RA1000N022HAR150M	10.00	10.00	9.40	22.00	30.00	72.00	1.50	•
7156211	H2TE5RA1000N022HAR200M	10.00	10.00	9.40	22.00	30.00	72.00	2.00	•
7156216	H2TE5RA1000N022HAR250M	10.00	10.00	9.40	22.00	30.00	72.00	2.50	•
7156189	H2TE5RA1200N026HAR050M	12.00	12.00	11.28	26.00	36.00	83.00	0.50	•
7156202	H2TE5RA1200N026HAR100M	12.00	12.00	11.28	26.00	36.00	83.00	1.00	•
7156212	H2TE5RA1200N026HAR200M	12.00	12.00	11.28	26.00	36.00	83.00	2.00	•
7156217	H2TE5RA1200N026HAR250M	12.00	12.00	11.28	26.00	36.00	83.00	2.50	•
7156218	H2TE5RA1200N026HAR300M	12.00	12.00	11.28	26.00	36.00	83.00	3.00	•
7156190	H2TE5RA1400N026HAR050M	14.00	14.00	13.16	26.00	42.00	83.00	0.50	•
7157210	H2TE5RA1400N026HAR200M	14.00	14.00	13.16	26.00	42.00	83.00	2.00	•
7157219	H2TE5RA1400N026HAR300M	14.00	14.00	13.16	26.00	42.00	83.00	3.00	•
7156191	H2TE5RA1600N032HAR050M	16.00	16.00	15.04	32.00	42.00	92.00	0.50	•
7156203	H2TE5RA1600N032HAR100M	16.00	16.00	15.04	32.00	42.00	92.00	1.00	•
7156213	H2TE5RA1600N032HAR200M	16.00	16.00	15.04	32.00	42.00	92.00	2.00	•
7157214	H2TE5RA1600N032HAR250M	16.00	16.00	15.04	32.00	42.00	92.00	2.50	•
7156219	H2TE5RA1600N032HAR300M	16.00	16.00	15.04	32.00	42.00	92.00	3.00	•
7156192	H2TE5RA1600E032HAR050M	16.00	16.00	15.04	32.00	48.00	100.00	0.50	•
7156204	H2TE5RA1600E032HAR100M	16.00	16.00	15.04	32.00	48.00	100.00	1.00	•
7156214	H2TE5RA1600E032HAR200M	16.00	16.00	15.04	32.00	48.00	100.00	2.00	•
7157215	H2TE5RA1600E032HAR250M	16.00	16.00	15.04	32.00	48.00	100.00	2.50	•
7156220	H2TE5RA1600E032HAR300M	16.00	16.00	15.04	32.00	48.00	100.00	3.00	•
7156234	H2TE5RA1600E032HAR400M	16.00	16.00	15.04	32.00	48.00	100.00	4.00	•
7156237	H2TE5RA1600E032HAR600M	16.00	16.00	15.04	32.00	48.00	100.00	6.00	•
7156193	H2TE5RA2000N038HAR050M	20.00	20.00	18.80	38.00	52.00	104.00	0.50	•
7157201	H2TE5RA2000N038HAR100M	20.00	20.00	18.80	38.00	52.00	104.00	1.00	•
7157211	H2TE5RA2000N038HAR200M	20.00	20.00	18.80	38.00	52.00	104.00	2.00	•
7157220	H2TE5RA2000N038HAR300M	20.00	20.00	18.80	38.00	52.00	104.00	3.00	•
7156235	H2TE5RA2000N038HAR400M	20.00	20.00	18.80	38.00	52.00	104.00	4.00	•
7157195	H2TE5RA2000E038HAR050M	20.00	20.00	18.80	38.00	65.00	115.00	0.50	•
7157202	H2TE5RA2000E038HAR100M	20.00	20.00	18.80	38.00	65.00	115.00	1.00	•
7157212	H2TE5RA2000E038HAR200M	20.00	20.00	18.80	38.00	65.00	115.00	2.00	•
7157216	H2TE5RA2000E038HAR250M	20.00	20.00	18.80	38.00	65.00	115.00	2.50	•
7157221	H2TE5RA2000E038HAR300M	20.00	20.00	18.80	38.00	65.00	115.00	3.00	•
7156236	H2TE5RA2000E038HAR400M	20.00	20.00	18.80	38.00	65.00	115.00	4.00	•
7156205	H2TE5RA2500N045HAR100M	25.00	25.00	23.50	45.00	63.00	121.00	1.00	•
7157222	H2TE5RA2500N045HAR300M	25.00	25.00	23.50	45.00	63.00	121.00	3.00	•
7157227	H2TE5RA2500N045HAR400M	25.00	25.00	23.50	45.00	63.00	121.00	4.00	•
7157203	H2TE5RA2500E045HAR100M	25.00	25.00	23.50	45.00	75.00	135.00	1.00	•
7157224	H2TE5RA2500E045HAR300M	25.00	25.00	23.50	45.00	75.00	135.00	3.00	•



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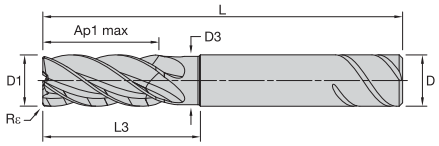
HARVI II TE

Radiused • 5 Flutes • Necked • Weldon Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	Rε	KCSM15A
7156184	H2TE5RA0600N013HBR025M	6.00	6.00	5.64	13.00	19.00	57.00	0.25	•
7156206	H2TE5RA0600N013HBR100M	6.00	6.00	5.64	13.00	19.00	57.00	1.00	•
7156185	H2TE5RA0800N019HBR025M	8.00	8.00	7.52	19.00	25.00	63.00	0.25	•
7156207	H2TE5RA0800N019HBR100M	8.00	8.00	7.52	19.00	25.00	63.00	1.00	•
7157196	H2TE5RA1000N022HBR050M	10.00	10.00	9.40	22.00	30.00	72.00	0.50	•
7157217	H2TE5RA1000N022HBR250M	10.00	10.00	9.40	22.00	30.00	72.00	2.50	•
7156194	H2TE5RA1200N026HBR050M	12.00	12.00	11.28	26.00	36.00	83.00	0.50	•
7156231	H2TE5RA1200N026HBR300M	12.00	12.00	11.28	26.00	36.00	83.00	3.00	•
7156208	H2TE5RA1400N026HBR100M	14.00	14.00	13.16	26.00	42.00	83.00	1.00	•
7156195	H2TE5RA1600N032HBR050M	16.00	16.00	15.04	32.00	42.00	92.00	0.50	•
7156209	H2TE5RA1600N032HBR100M	16.00	16.00	15.04	32.00	42.00	92.00	1.00	•
7156232	H2TE5RA1600N032HBR300M	16.00	16.00	15.04	32.00	42.00	92.00	3.00	•
7156196	H2TE5RA1600E032HBR050M	16.00	16.00	15.04	32.00	48.00	100.00	0.50	•
7156210	H2TE5RA1600E032HBR100M	16.00	16.00	15.04	32.00	48.00	100.00	1.00	•
7156233	H2TE5RA1600E032HBR300M	16.00	16.00	15.04	32.00	48.00	100.00	3.00	•
7156197	H2TE5RA2000N038HBR050M	20.00	20.00	18.80	38.00	52.00	104.00	0.50	•
7156215	H2TE5RA2000N038HBR200M	20.00	20.00	18.80	38.00	52.00	104.00	2.00	•
7157225	H2TE5RA2000N038HBR300M	20.00	20.00	18.80	38.00	52.00	104.00	3.00	•
7156198	H2TE5RA2000E038HBR050M	20.00	20.00	18.80	38.00	65.00	115.00	0.50	•
7157204	H2TE5RA2000E038HBR100M	20.00	20.00	18.80	38.00	65.00	115.00	1.00	•
7157213	H2TE5RA2000E038HBR200M	20.00	20.00	18.80	38.00	65.00	115.00	2.00	•
7157218	H2TE5RA2000E038HBR250M	20.00	20.00	18.80	38.00	65.00	115.00	2.50	•
7157226	H2TE5RA2000E038HBR300M	20.00	20.00	18.80	38.00	65.00	115.00	3.00	•
7157228	H2TE5RA2000E038HBR400M	20.00	20.00	18.80	38.00	65.00	115.00	4.00	•
7157205	H2TE5RA2500N045HBR100M	25.00	25.00	23.50	45.00	63.00	121.00	1.00	•
7157206	H2TE5RA2500E045HBR100M	25.00	25.00	23.50	45.00	75.00	135.00	1.00	•



P	○
M	●
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N	
S	●
H	○

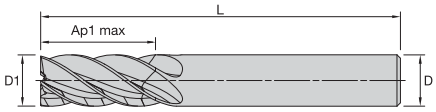
● Primary
○ Secondary

HARVI II TE

Radiused • 5 Flutes • Necked • SAFE-LOCK Shank

KCSM15A

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	Rε	
7157197	H2TE5RA1200N026SLR050M	12.00	12.00	11.28	26.00	36.00	83.00	0.50	•
7157198	H2TE5RA1600N032SLR050M	16.00	16.00	15.04	32.00	42.00	92.00	0.50	•
7157207	H2TE5RA1600E032SLR100M	16.00	16.00	15.04	32.00	48.00	100.00	1.00	•
7157199	H2TE5RA2000N038SLR050M	20.00	20.00	18.80	38.00	52.00	104.00	0.50	•
7157200	H2TE5RA2000E038SLR050M	20.00	20.00	18.80	38.00	65.00	115.00	0.50	•
7157208	H2TE5RA2500N045SLR100M	25.00	25.00	23.50	45.00	63.00	121.00	1.00	•



P	●
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S	○
H	○

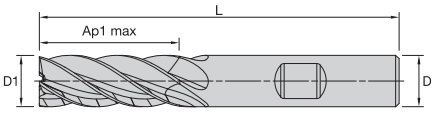
● Primary
○ Secondary

HARVI II TE

Square End • 5 Flutes • Plain Shank

KCPM15A

Order Number	Catalog Number	D1	D	AP1 Max	L	
7156097	H2TE5SE0400R011HAM	4.00	6.00	11.00	57.00	•
7156098	H2TE5SE0500R013HAM	5.00	6.00	13.00	57.00	•
7156099	H2TE5SE0600R016HAM	6.00	6.00	16.00	57.00	•
7156100	H2TE5SE0700R016HAM	7.00	8.00	16.00	63.00	•
7156111	H2TE5SE0800R019HAM	8.00	8.00	19.00	63.00	•
7156930	H2TE5SE0900R019HAM	9.00	10.00	19.00	72.00	•
7156112	H2TE5SE1000R022HAM	10.00	10.00	22.00	72.00	•
7156113	H2TE5SE1200R026HAM	12.00	12.00	26.00	83.00	•
7156114	H2TE5SE1600R032HAM	16.00	16.00	32.00	92.00	•
7156115	H2TE5SE1600L060HAM	16.00	16.00	60.00	125.00	•
7157111	H2TE5SE1800R032HAM	18.00	18.00	32.00	92.00	•
7156117	H2TE5SE2000R038HAM	20.00	20.00	38.00	104.00	•
7156118	H2TE5SE2000L060HAM	20.00	20.00	60.00	125.00	•
7157112	H2TE5SE2500R045HAM	25.00	25.00	45.00	121.00	•



P ●
M ●
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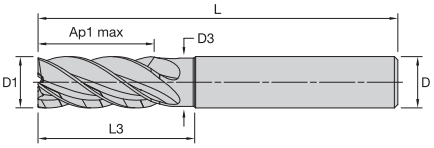
S ○
H ○

● Primary
○ Secondary

HARVI II TE

Square End • 5 Flutes • Weldon Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	KCPM15A
7156119	H2TE5SE1600L060HBM	16.00	16.00	60.00	125.00	•
7157113	H2TE5SE2000R038HBM	20.00	20.00	38.00	104.00	•
7157114	H2TE5SE2000L060HBM	20.00	20.00	60.00	125.00	•



P ●
M ●
K ●
N
S ○
H ○

● Primary
○ Secondary

HARVI II TE

Square End • 5 Flutes • Necked • Plain Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	KCPM15A
7156180	H2TE5SE0600N013HAM	6.00	6.00	5.64	13.00	19.00	57.00	•
7156178	H2TE5SE0800N019HAM	8.00	8.00	7.52	19.00	25.00	63.00	•
7156179	H2TE5SE1000N022HAM	10.00	10.00	9.40	22.00	30.00	72.00	•
7157174	H2TE5SE1200N026HAM	12.00	12.00	11.28	26.00	36.00	83.00	•
7157175	H2TE5SE1400N026HAM	14.00	14.00	13.16	26.00	42.00	83.00	•
7157176	H2TE5SE1600E032HAM	16.00	16.00	15.04	32.00	48.00	100.00	•
7157177	H2TE5SE2000N038HAM	20.00	20.00	18.80	38.00	52.00	104.00	•
7157178	H2TE5SE2000E038HAM	20.00	20.00	18.80	38.00	65.00	115.00	•
7157179	H2TE5SE2500N045HAM	25.00	25.00	23.50	45.00	63.00	121.00	•
7157180	H2TE5SE2500E045HAM	25.00	25.00	23.50	45.00	75.00	135.00	•

HARVI II TE APPLICATION DATA

Material Group		Side Milling		Slotting	KCPM15A - KCSM15A Cutting Speed Vc m/min			Recommended Feed per Tooth (Fz=mm/th) is for Side Milling. For Slotting Reduce Fz by 20% D1 - Diameter											
		Ap	Ae	Ap	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	P0	1.5xD	0.5XD	1.25xD	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P1	1.5xD	0.5XD	1.25xD	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P2	1.5xD	0.5XD	1.25xD	140	190	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P3	1.5xD	0.5XD	1.25xD	120	160	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	P4	1.5xD	0.5XD	1.25xD	90	150	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107
	P5	1.5xD	0.5XD	1.25xD	60	100	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
	P6	1.5xD	0.5XD	1.25xD	50	75	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078
M	M1	1.5xD	0.5XD	1.25xD	90	115	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	M2	1.5xD	0.5XD	1.25xD	60	80	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
	M3	1.5xD	0.5XD	1.0xD	60	70	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078
K	K1	1.5xD	0.5XD	1.0xD	120	150	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	K2	1.5xD	0.5XD	1.0xD	110	140	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	K3	1.5xD	0.5XD	1.0xD	110	130	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
S	S1	1.5xD	0.3XD	0.75xD	50	90	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	S2	1.5xD	0.3XD	0.75xD	25	50	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067
	S3	1.5xD	0.5XD	0.75xD	25	40	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067
	S4	1.5xD	0.5XD	1.25xD	50	60	Fz	0.017	0.023	0.028	0.034	0.040	0.045	0.049	0.057	0.064	0.071	0.076	0.082	0.092
H	H1	1.5xD	0.5XD	1.0xD	80	140	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107
	H2	1.5xD	0.2XD	1.0xD	70	120	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078

NOTE:
Those guidelines may require variations to achive optimum results.
Lower value of cuting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cuting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
For smaller taper machining centers, please adjust parameters accordiongly on diameters greater than 12mm.
For tools with reach >4.5xD, reduce fz by 30% and use lowe range of cutting speed as starting condition.
Higher slotting DOC possible with proper pull-out protection, tool holder, machine setup & coolant flow.

HARVI II TE APPLICATION DATA - Adjustment Factor Table

Adjustment Factor Table for Feed and Speed Calculation.

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed Factor	Kv	2.1 - 3.6	1.6 - 3	1.6 - 2.5	1.6	1.4	1.38	1.3	1.2	1.1	1	1
Feed Factor	KFz	3.58	2.56	2.3	1.84	1.67	1.54	1.25	1.09	1.02	1	0.9
phi [°]		16.26	23.07	25.84	32.86	36.87	40.54	53.13	66.42	78.46	90.00	180.00

NOTE:
These calculations are for roughing / semi-finishing cuts when used with the recommeded base fz.
For light finishing cuts requiring improved surface quality it is recommended to reduce the base fz approximately 50% and then apply these factors.
For an Ae/D ratio of 5% or less there is range given for speed factor Kv, which alows the user to either be more conservative at the lower value or more aggressive with the higher value.
This can also be considered based on machinability of the material, from difficukt to free cutting.

To calculate application specific cutting data, please use above Kv coefficient for adaptation of cutting speed and KFz for feed respectively.

Vc new=Vc*Kv
Fz new=Fz*KFz

Calculation Example:

Aplication:	D1=	12.0 mm
	Material Group	P5
	Ae=	20% of D
Cutting data recommendation:	Vc=	80 m/min
	Fz=	0.062 mm/th
Adjustment coefficient:	Kv=	1.30
	KFz=	1.25

Final cutting data recommendation:

Vc new=	80 *	1.30 =	104 m/min
Fz new=	0.062 *	1.25 =	0.0775 mm/th

HARVI II TE APPLICATION DATA

Material Group		Helical Interpolation / Ramping 0° - 15°	KCPM15A - KCSM15A		Min - Max Diameter for Helical Interpolation	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2												
			Cutting Speed Vc			D1 - Diameter												
			m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	10,4-17,1	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5
		Max Depth	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	P0	1,25 x D1	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P1	1,25 x D1	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P2	1,25 x D1	140	190	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P3	1,25 x D1	120	160	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	P4	1,25 x D1	90	150	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107
	P5	1,25 x D1	60	100	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
	P6	1,25 x D1	50	75	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078
M	M1	1,25 x D1	90	115	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	M2	1,25 x D1	60	80	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
	M3	1,0 x D1	60	70	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078
K	K1	1,0 x D1	120	150	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	K2	1,0 x D1	110	140	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	K3	1,0 x D1	110	130	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
S	S1	0,75 x D1	50	90	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	S2	0,75 x D1	25	50	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067
	S3	0,5 x D1	25	40	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067
	S4	1,25 x D1	50	60	Fz	0.017	0.023	0.028	0.034	0.040	0.045	0.049	0.057	0.064	0.071	0.076	0.082	0.092
H	H1	1,0 x D1	80	140	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107
	H2	1,0 x D1	70	120	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078

HARVI II TE APPLICATION DATA

Material Group		Helical Interpolation / Ramping 15° - 30°	KCPM15A - KCSM15A		Min - Max Diameter for Helical Interpolation	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2												
			Cutting Speed Vc			D1 - Diameter												
			m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	10,4-17,1	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5
		Max Depth	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	P0	1,25 x D1	150	200	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P1	1,25 x D1	150	200	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P2	1,25 x D1	140	190	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P3	1,25 x D1	120	160	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	P4	1,25 x D1	90	150	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.045	0.051	0.058	0.063	0.068	0.073	0.080
	P5	1,25 x D1	60	100	Fz	0.016	0.020	0.024	0.029	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	P6	1,25 x D1	50	75	Fz	0.013	0.017	0.020	0.024	0.028	0.031	0.033	0.038	0.043	0.047	0.050	0.053	0.059
K	K1	1,0 x D1	120	150	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	K2	1,0 x D1	110	140	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	K3	1,0 x D1	110	130	Fz	0.016	0.020	0.024	0.029	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
S	S1	0,75 x D1	50	90	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	S2	0,75 x D1	25	50	Fz	0.010	0.013	0.016	0.019	0.022	0.024	0.026	0.031	0.035	0.038	0.042	0.045	0.051
	S3	0,5 x D1	25	40	Fz	0.010	0.013	0.016	0.019	0.022	0.024	0.026	0.031	0.035	0.038	0.042	0.045	0.051
	S4	1,25 x D1	50	60	Fz	0.013	0.017	0.021	0.026	0.030	0.034	0.037	0.043	0.048	0.053	0.057	0.061	0.069
H	H1	1,0 x D1	80	140	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.045	0.051	0.058	0.063	0.068	0.073	0.080
	H2	1,0 x D1	70	120	Fz	0.013	0.017	0.020	0.024	0.028	0.031	0.033	0.038	0.043	0.047	0.050	0.053	0.059

HARVI II TE APPLICATION DATA

Material Group		Helical Interpolation / Ramping 15° - 30°	KCPM15A - KCSM15A		Min - Max Diameter for Helical Interpola-tion	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2												
			Cutting Speed Vc			D1 - Diameter												
			m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	10,4-17,1	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5
		Max Depth	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	P0	1,25 x D1	150	200	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P1	1,25 x D1	150	200	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P2	1,25 x D1	140	190	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P3	1,25 x D1	120	160	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	P4	1,25 x D1	90	150	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.045	0.051	0.058	0.063	0.068	0.073	0.080
	P5	1,25 x D1	60	100	Fz	0.016	0.020	0.024	0.029	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	P6	1,25 x D1	50	75	Fz	0.013	0.017	0.020	0.024	0.028	0.031	0.033	0.038	0.043	0.047	0.050	0.053	0.059
K	K1	1,0 x D1	120	150	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	K2	1,0 x D1	110	140	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	K3	1,0 x D1	110	130	Fz	0.016	0.020	0.024	0.029	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
S	S1	0,75 x D1	50	90	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	S2	0,75 x D1	25	50	Fz	0.010	0.013	0.016	0.019	0.022	0.024	0.026	0.031	0.035	0.038	0.042	0.045	0.051
	S3	0,5 x D1	25	40	Fz	0.010	0.013	0.016	0.019	0.022	0.024	0.026	0.031	0.035	0.038	0.042	0.045	0.051
	S4	1,25 x D1	50	60	Fz	0.013	0.017	0.021	0.026	0.030	0.034	0.037	0.043	0.048	0.053	0.057	0.061	0.069
H	H1	1,0 x D1	80	140	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.045	0.051	0.058	0.063	0.068	0.073	0.080
	H2	1,0 x D1	70	120	Fz	0.013	0.017	0.020	0.024	0.028	0.031	0.033	0.038	0.043	0.047	0.050	0.053	0.059

HARVI II TE APPLICATION DATA

Material Group		Helical Interpolation / Ramping 30° - 45°	KCPM15A - KCSM15A		Min - Max Diameter for Helical Interpola-tion	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2												
			Cutting Speed Vc			D1 - Diameter												
			m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	10,4-17,1	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5
		Max Depth	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	P0	1,25 x D1	150	200	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	P1	1,25 x D1	150	200	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	P2	1,25 x D1	140	190	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	P3	1,25 x D1	120	160	Fz	0.015	0.020	0.024	0.028	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	P4	1,25 x D1	90	150	Fz	0.014	0.018	0.022	0.026	0.030	0.033	0.036	0.041	0.046	0.051	0.055	0.058	0.064
	P5	1,25 x D1	60	100	Fz	0.013	0.016	0.019	0.023	0.026	0.029	0.032	0.037	0.042	0.046	0.050	0.053	0.060
	P6	1,25 x D1	50	75	Fz	0.011	0.013	0.016	0.019	0.022	0.024	0.027	0.031	0.034	0.038	0.040	0.043	0.047
K	K1	1,0 x D1	120	150	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	K2	1,0 x D1	110	140	Fz	0.015	0.020	0.024	0.028	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	K3	1,0 x D1	110	130	Fz	0.013	0.016	0.019	0.023	0.026	0.029	0.032	0.037	0.042	0.046	0.050	0.053	0.060
S	S1	0,75 x D1	50	90	Fz	0.015	0.020	0.024	0.028	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	S2	0,75 x D1	25	50	Fz	0.008	0.011	0.013	0.015	0.017	0.019	0.021	0.025	0.028	0.031	0.033	0.036	0.040
	S3	0,5 x D1	25	40	Fz	0.008	0.011	0.013	0.015	0.017	0.019	0.021	0.025	0.028	0.031	0.033	0.036	0.040
	S4	1,25 x D1	50	60	Fz	0.010	0.014	0.017	0.021	0.024	0.027	0.029	0.034	0.038	0.042	0.046	0.049	0.055
H	H1	1,0 x D1	80	140	Fz	0.014	0.018	0.022	0.026	0.030	0.033	0.036	0.041	0.046	0.051	0.055	0.058	0.064
	H2	1,0 x D1	70	120	Fz	0.011	0.013	0.016	0.019	0.022	0.024	0.027	0.031	0.034	0.038	0.040	0.043	0.047

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