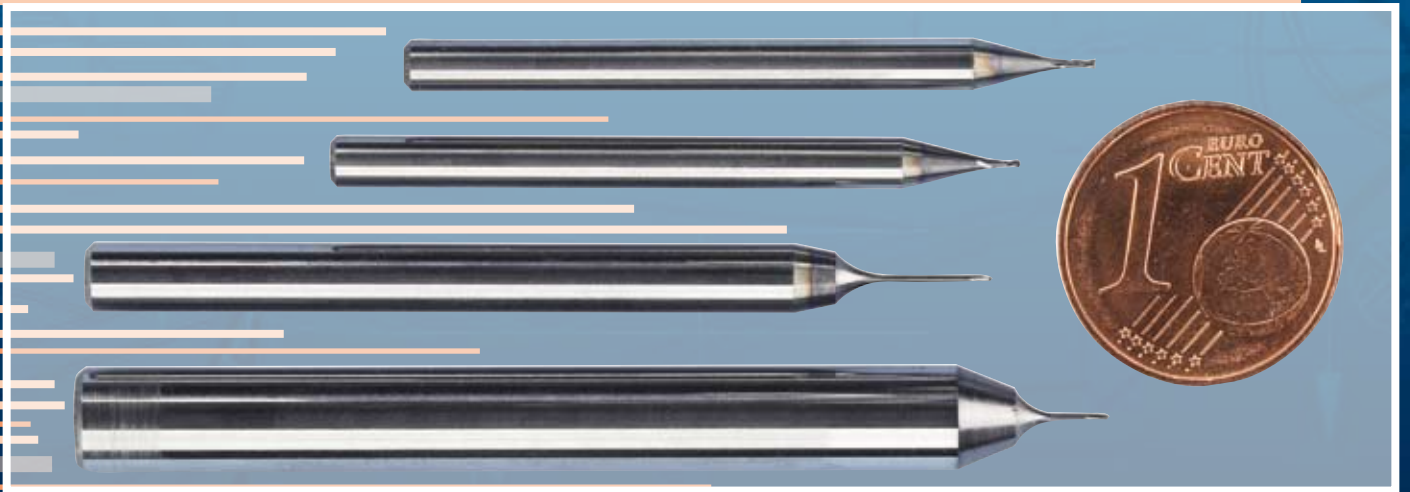




**Jongen Werkzeugtechnik
GmbH & CO. KG**

MICRO END MILLS



The Tool:

The new Jongen UNI-MILL micro end mills are suitable for nearly every type of machining like rib milling, slot milling, pre-finishing and finishing. Moreover, these tools are applicable to copper and to steel up to tempered steel that provides high flexibility.

Due to their multifunctional geometry a peak capacity is achievable by processing of almost every material type.

Cutting Material "MX70":

This new cutting material type has been specifically designed for micro cutting tools and consists of ultra finest-grain carbide with TiAlN-coating supplementary attuned to micro solid carbide cutters.

The optimal combination of hard metal and coating affords high cutting parameters as well as a long tool life.



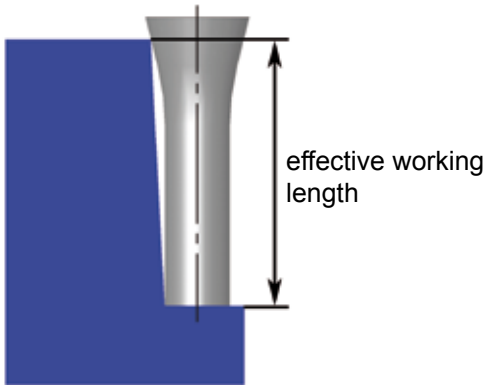
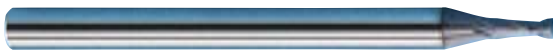
Geometry:

Thanks to the increasing neck length and the interference angle an increase of the working length can be provided.

The Types:

Type MNF

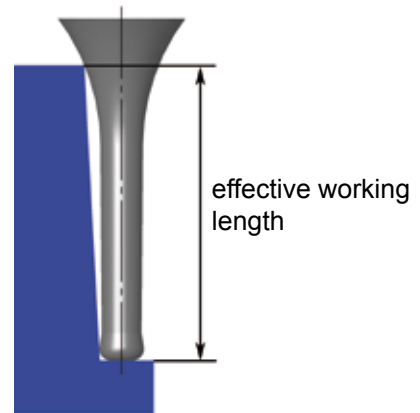
Flat-shaped shank type milling cutter



See p. 4-5 for details

Type MKT

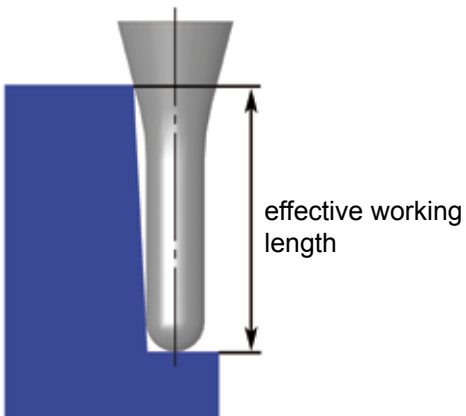
Torus-shaped shank type milling cutter with conical increasing neck length



See p. 6-7 for details

Type MNK

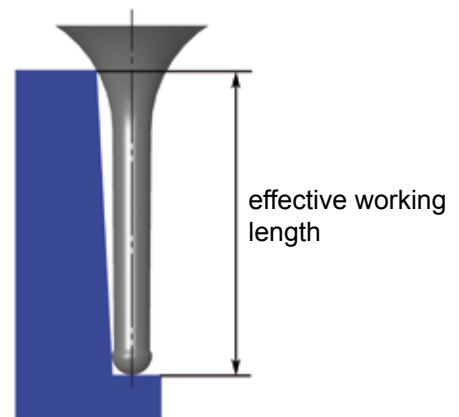
Spherical shank type milling cutter



See p. 8-9 for details

Type MKK

Spherical shank type milling cutter with conical increasing neck length



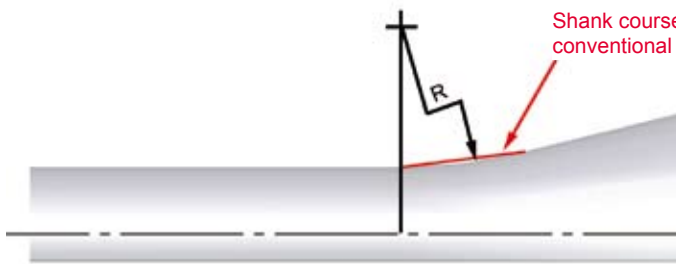
See p. 10-11 for details

Type MNF

MNF: Flat-shaped shank type milling cutter

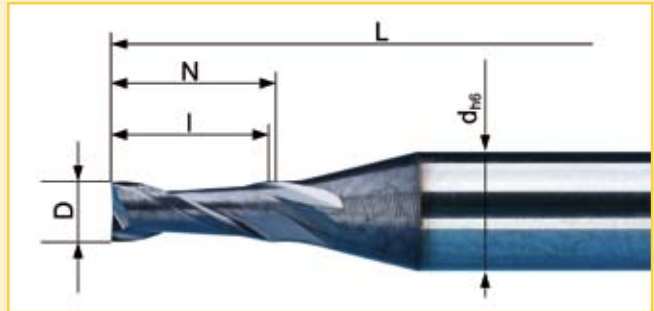
This milling tool has been exclusively developed for machining of deep ribs and slot milling as well as for processing deep contours in precision parts.

This end mill performs a longer tool life and higher parameters due to its improved length-diameter proportions, thus it complies with the highest technical demand, currently available on the market.



The new geometry providing an increasing neck length with smooth radius transitions essentially prevents tool breakage.

Technical Data



Tolerance: $D \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} -0,002 \\ -0,012 \end{matrix}$

Order-No.	Jongen-Code	D	I	N	d _{h6}	L	Z	0°	0,5°	1°	1,5°	2°	3°
MNF-0500-FG-MX70	MNF-2-050-120-012-3-MX70	0,5	1,2	1,2	3	39	2	1,20	1,36	1,51	1,64	1,75	1,93
MNF-0600-FG-MX70	MNF-2-060-150-015-3-MX70	0,6	1,5	1,5	3	39	2	1,50	1,67	1,87	2,00	2,12	2,32
MNF-0700-FG-MX70	MNF-2-070-180-018-3-MX70	0,7	1,8	1,8	3	39	2	1,80	2,01	2,21	2,35	2,47	2,69
MNF-0800-FG-MX70	MNF-2-080-180-018-3-MX70	0,8	1,8	1,8	3	39	2	1,80	2,01	2,21	2,35	2,47	2,69
MNF-1000-FG-MX70	MNF-2-100-200-020-3-MX70	1,0	2,0	2,0	3	39	2	2,00	2,20	2,40	2,56	2,68	2,92
MNF-1200-FG-MX70	MNF-2-120-250-025-4-MX70	1,2	2,5	2,5	4	51	2	2,50	2,73	2,97	3,13	3,27	3,56
MNF-1400-FG-MX70	MNF-2-140-300-030-4-MX70	1,4	3,0	3,0	4	51	2	3,00	3,29	3,53	3,70	3,85	4,19
MNF-1500-FG-MX70	MNF-2-150-400-040-4-MX70	1,5	4,0	4,0	4	51	2	4,00	4,37	4,63	4,81	5,01	5,46
MNF-1800-FG-MX70	MNF-2-180-450-045-4-MX70	1,8	4,5	4,5	4	51	2	4,50	4,91	5,17	5,37	5,59	6,09
MNF-2000-FG-MX70	MNF-2-200-500-050-4-MX70	2,0	5,0	5,0	4	51	2	5,00	5,44	5,71	5,93	6,17	6,72

Cutting Data

		alloyed and unalloyed steel (150-250 HB) for copper (Cu): $n + f_z + 20\%$				tool steel (25-35 HRC)				tool steel (35-45 HRC)			
D	N	a_p	n	f_z	V_f	a_p	n	f_z	V_f	a_p	n	f_z	V_f
(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(min-1)	(mm)	(mm/min)
0,5	1,2	0,050	32.000	0,021	1344	0,045	28.800	0,021	1210	0,035	27.200	0,016	870
0,6	1,5	0,042	32.000	0,026	1664	0,038	28.800	0,026	1498	0,029	27.200	0,020	1088
0,7	1,8	0,049	28.800	0,024	1382	0,044	25.920	0,024	1244	0,034	24.480	0,020	979
0,8	1,8	0,056	32.000	0,026	1664	0,050	28.800	0,026	1498	0,039	27.200	0,020	1088
1,0	2,0	0,100	28.800	0,032	1843	0,090	25.920	0,032	1659	0,070	24.480	0,023	1126
1,2	2,5	0,084	25.600	0,032	1638	0,076	23.040	0,032	1475	0,059	21.760	0,023	1001
1,4	3,0	0,100	22.400	0,032	1434	0,090	20.160	0,032	1290	0,070	19.040	0,023	876
1,5	4,0	0,110	22.400	0,032	1434	0,099	20.160	0,032	1290	0,077	19.040	0,023	876
1,8	4,5	0,130	20.800	0,035	1456	0,117	18.720	0,035	1310	0,091	17.680	0,026	919
2,0	5,0	0,200	16.800	0,042	1411	0,180	15.120	0,042	1270	0,140	14.280	0,031	885

		tempered steel (45-55 HRC)				tempered steel (55-70 HRC)			
D	N	a_p	n	f_z	V_f	a_p	n	f_z	V_f
(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(min-1)	(mm)	(mm/min)
0,5	1,2	0,025	24.000	0,013	624	0,020	22.400	0,011	493
0,6	1,5	0,021	24.000	0,017	816	0,017	22.400	0,014	627
0,7	1,8	0,025	21.600	0,017	734	0,020	20.160	0,014	564
0,8	1,8	0,028	24.000	0,017	816	0,022	22.400	0,014	627
1,0	2,0	0,050	21.600	0,020	864	0,040	20.160	0,017	685
1,2	2,5	0,042	19.200	0,020	768	0,034	17.920	0,017	609
1,4	3,0	0,050	16.800	0,020	672	0,040	15.680	0,017	533
1,5	4,0	0,055	16.800	0,020	672	0,044	15.680	0,017	533
1,8	4,5	0,065	15.600	0,022	686	0,052	14.560	0,019	553
2,0	5,0	0,100	12.600	0,026	655	0,080	11.760	0,023	541

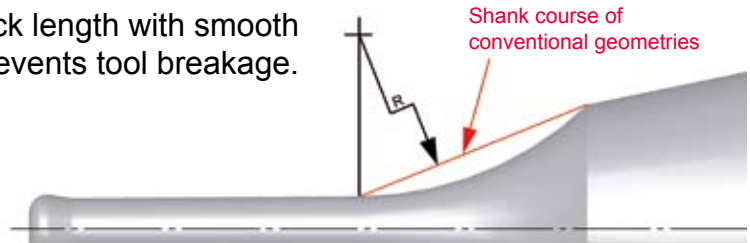
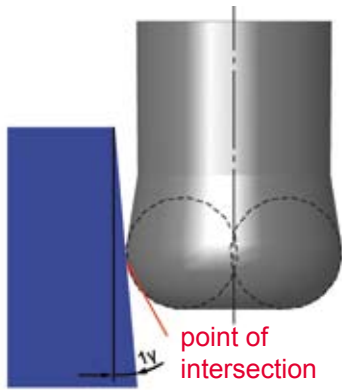
The above-mentioned data are standard values that may vary depending on processing, type of machine and material grade. For processing use a machine with the highest preciseness and rigidity. Should the available rotation number be lower of that given in the table, reduce feed rate proportionally.

MKT: Torus-shaped shank type milling cutter with conical increasing neck length

This milling tool has been specifically designed for machining deep ribs and slot milling as well as for processing deep contours in precision parts.

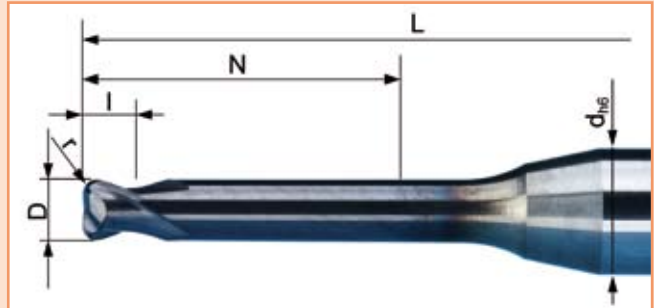
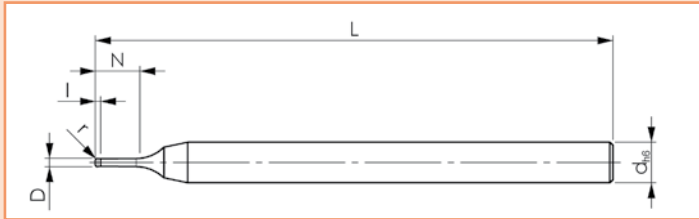
This end mill performs a longer tool life and higher parameters due to its improved length-diameter proportions, thus it complies with the highest technical demand, currently available on the market.

The new geometry providing an increasing neck length with smooth radius transitions essentially prevents tool breakage.



Due to the continuously conical running flute behind the radius, optimal cutting characteristics can be achieved even under drifting or wearing conditions.

Technical Data



Tolerance: $D \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} -0,002 \\ -0,012 \end{matrix}$
 $r \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} +0,01 \\ 0,00 \end{matrix}$

Order-No.	Jongen-Code	D	r	l	N	d _{h6}	L	Z	0°	0,5°	1°	1,5°	2°	3°
MKT-0500-HK-MX70	MKT-2-050-035-030-4-R10-MX70	0,5	0,1	0,35	3	4	51	2	3,19	3,51	3,72	3,89	4,04	4,31
MKT-0501-LM-MX70	MKT-2-050-035-045-4-R10-MX70	0,5	0,1	0,35	4,5	4	51	2	4,69	5,11	5,37	5,57	5,75	6,05
MKT-0502-NO-MX70	MKT-2-050-035-060-4-R10-MX70	0,5	0,1	0,35	6	4	51	2	6,19	6,70	6,99	7,22	7,41	7,75
MKT-0600-HK-MX70	MKT-2-060-040-040-4-R10-MX70	0,6	0,1	0,40	4	4	51	2	4,19	4,58	4,82	5,02	5,18	5,48
MKT-0601-LM-MX70	MKT-2-060-040-060-4-R10-MX70	0,6	0,1	0,40	6	4	51	2	6,19	6,70	6,99	7,22	7,41	7,75
MKT-0800-HK-MX70	MKT-2-080-050-040-4-R20-MX70	0,8	0,2	0,50	4	4	51	2	4,17	4,56	4,79	4,99	5,15	5,44
MKT-0801-LM-MX70	MKT-2-080-050-060-4-R20-MX70	0,8	0,2	0,50	6	4	51	2	6,18	6,68	6,97	7,20	7,39	7,73
MKT-1000-HK-MX70	MKT-2-100-080-040-4-R20-MX70	1,0	0,2	0,80	4	4	51	2	4,17	4,56	4,79	4,98	5,15	5,44
MKT-1001-LM-MX70	MKT-2-100-080-080-4-R20-MX70	1,0	0,2	0,80	8	4	51	2	8,19	8,78	9,11	9,37	9,58	9,95
MKT-1002-NO-MX70	MKT-2-100-080-120-4-R20-MX70	1,0	0,2	0,80	12	4	51	2	12,19	12,95	13,34	13,64	13,90	14,32
MKT-1500-HK-MX70	MKT-2-150-135-080-4-R20-MX70	1,5	0,2	1,35	8	4	51	2	8,18	8,77	9,10	9,36	9,58	9,94
MKT-1501-LM-MX70	MKT-2-150-135-120-4-R20-MX70	1,5	0,2	1,35	12	4	51	2	12,19	12,94	13,34	13,64	13,89	14,31
MKT-1502-NO-MX70	MKT-2-150-135-160-4-R20-MX70	1,5	0,2	1,35	16	4	51	2	16,19	17,08	17,53	17,87	18,15	19,58
MKT-2000-HK-MX70	MKT-2-200-170-080-4-R20-MX70	2,0	0,2	1,70	8	4	51	2	8,18	8,77	9,10	9,36	9,58	9,99
MKT-2001-LM-MX70	MKT-2-200-170-120-4-R20-MX70	2,0	0,2	1,70	12	4	51	2	12,19	12,94	13,34	13,64	13,89	15,31
MKT-2002-NO-MX70	MKT-2-200-170-160-4-R20-MX70	2,0	0,2	1,70	16	4	51	2	16,19	17,08	17,53	17,87	18,61	X
MKT-2003-PR-MX70	MKT-2-200-170-080-4-R50-MX70	2,0	0,5	1,70	8	4	51	2	8,18	8,76	9,08	9,33	9,55	9,91
MKT-2004-ST-MX70	MKT-2-200-170-120-4-R50-MX70	2,0	0,5	1,70	12	4	51	2	12,19	12,93	13,32	13,62	13,87	15,21
MKT-2005-VW-MX70	MKT-2-200-170-160-4-R50-MX70	2,0	0,5	1,70	16	4	51	2	16,19	17,07	17,52	17,85	18,55	X

Cutting Data

			alloyed and unalloyed steel (150-250 HB) for copper (Cu): n + f _z +20%				tool steel (25-35 HRC)				tool steel (35-45 HRC)			
D	r	N	a _p	n	f _z	V _f	a _p	n	f _z	V _f	a _p	n	f _z	V _f
(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/ min)	(mm)	(min-1)	(mm)	(mm/ min)	(mm)	(min-1)	(mm)	(mm/ min)
0,5	0,1	3	0,013	38.000	0,025	1900	0,012	34.200	0,025	1710	0,010	32.300	0,020	1292
0,5	0,1	4,5	0,001	30.400	0,019	1155	0,007	27.400	0,019	1041	0,006	25.850	0,016	827
0,5	0,1	6	0,007	22.810	0,019	867	0,006	20.520	0,019	780	0,006	19.400	0,016	621
0,6	0,1	4	0,010	25.470	0,027	1375	0,009	22.900	0,027	1237	0,008	21.650	0,022	953
0,6	0,1	6	0,008	20.970	0,027	1132	0,007	18.800	0,027	1015	0,007	17.770	0,022	782
0,8	0,2	4	0,045	39.600	0,024	1901	0,041	35.640	0,024	1711	0,036	33.660	0,024	1616
0,8	0,2	6	0,020	35.200	0,023	1619	0,018	31.680	0,023	1457	0,016	29.920	0,020	1197
1,0	0,2	4	0,045	35.460	0,039	2766	0,040	32.076	0,039	2502	0,035	30.290	0,039	2363
1,0	0,2	8	0,040	35.640	0,039	2780	0,036	32.076	0,039	2502	0,032	30.290	0,039	2363
1,0	0,2	12	0,035	35.640	0,039	2780	0,032	32.076	0,039	2502	0,028	30.290	0,039	2363
1,5	0,2	8	0,050	24.640	0,035	1725	0,045	22.200	0,035	1554	0,041	21.000	0,030	1260
1,5	0,2	12	0,050	24.640	0,035	1725	0,043	22.200	0,035	1554	0,039	21.000	0,030	1260
1,5	0,2	16	0,045	24.640	0,035	1725	0,041	22.200	0,035	1554	0,036	21.000	0,030	1260
2,0	0,2	8	0,049	16.800	0,065	2184	0,045	15.120	0,065	1966	0,040	14.280	0,057	1628
2,0	0,2	12	0,047	16.800	0,065	2184	0,043	15.120	0,065	1966	0,038	14.280	0,057	1628
2,0	0,2	16	0,045	16.800	0,065	2184	0,041	15.120	0,065	1966	0,036	14.280	0,057	1628
2,0	0,5	8	0,050	16.800	0,072	2419	0,047	15.120	0,072	2177	0,040	14.280	0,063	1799
2,0	0,5	12	0,048	16.800	0,072	2419	0,043	15.120	0,072	2177	0,038	14.280	0,063	1799
2,0	0,5	16	0,045	16.800	0,072	2419	0,041	15.120	0,072	2177	0,036	14.280	0,063	1799

			tempered steel (45-55 HRC)				tempered steel (55-70 HRC)			
D	r	N	a _p	n	f _z	V _f	a _p	n	f _z	V _f
(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/ min)	(mm)	(min- 1)	(mm)	(mm/ min)
0,5	0,1	3	0,008	28.500	0,017	969	0,008	26.600	0,015	798
0,5	0,1	4,5	0,005	22.800	0,013	593	0,005	21.290	0,011	468
0,5	0,1	6	0,005	17.100	0,013	445	0,004	15.970	0,011	351
0,6	0,1	4	0,007	19.100	0,019	726	0,006	17.830	0,016	571
0,6	0,1	6	0,004	15.680	0,019	596	0,004	14.630	0,016	468
0,8	0,2	4	0,029	29.700	0,021	1247	0,027	27.720	0,018	998
0,8	0,2	6	0,029	29.700	0,021	1247	0,027	27.720	0,018	998
1,0	0,2	4	0,030	26.730	0,035	1871	0,029	24.950	0,030	1497
1,0	0,2	8	0,026	26.730	0,032	1711	0,024	24.950	0,028	1397
1,0	0,2	12	0,018	23.760	0,030	1426	0,017	22.170	0,026	1153
1,5	0,2	8	0,033	18.480	0,035	1294	0,032	17.250	0,030	1035
1,5	0,2	12	0,031	18.480	0,032	1183	0,030	17.250	0,028	966
1,5	0,2	16	0,029	18.480	0,030	1109	0,027	17.250	0,026	897
2,0	0,2	8	0,033	12.600	0,063	1588	0,031	11.760	0,054	1270
2,0	0,2	12	0,031	12.600	0,063	1588	0,029	11.760	0,054	1270
2,0	0,2	16	0,029	12.600	0,063	1588	0,027	11.760	0,054	1270
2,0	0,5	8	0,033	12.600	0,063	1588	0,031	11.760	0,054	1270
2,0	0,5	12	0,031	12.600	0,063	1588	0,029	11.760	0,054	1270
2,0	0,5	16	0,029	12.600	0,063	1588	0,027	11.760	0,054	1270

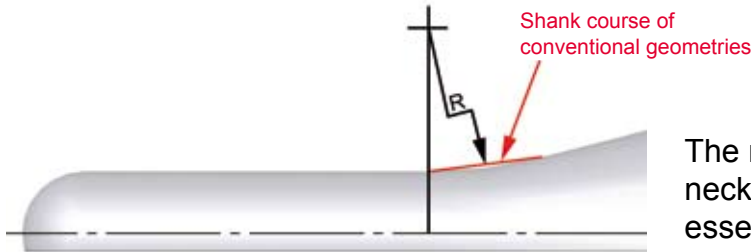
The above-mentioned data are standard values that may vary depending on processing, type of machine and material grade. For processing use a machine with the highest preciseness and rigidity. Should the available rotation number be lower of that given in the table, reduce feed rate proportionally.

Type MNK

MNK: Spherical shank type milling cutter

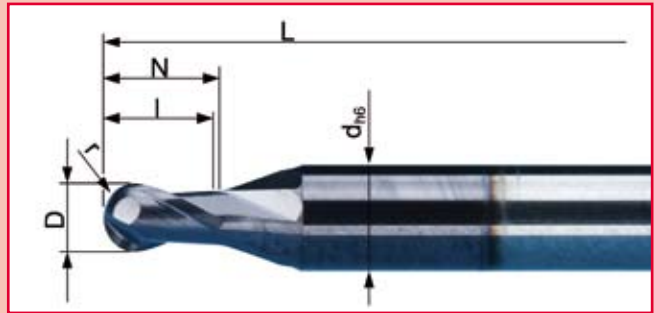
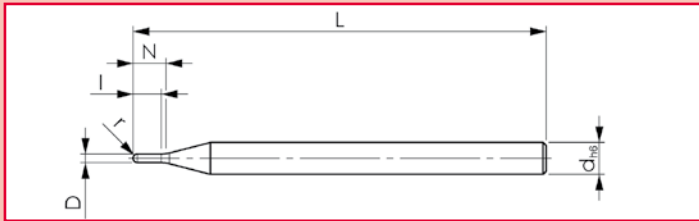
This milling tool has been exclusively developed for machining of precision parts and profile milling by short cantilever lengths.

Because of its solid design a longer tool life and higher parameters can be obtained, following the highest technical requirements currently possible on the market.



The new geometry providing an increasing neck length with smooth radius transitions essentially prevents tool breakage.

Technical Data



Tolerance: $D \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} -0,002 \\ -0,012 \end{matrix}$

$r \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} +0,005 \\ -0,005 \end{matrix}$

Order-No.	Jongen-Code	D	r	I	N	d _{h6}	L	Z	0°	0,5°	1°	1,5°	2°	3°
MNK-0500-CD-MX70	MNK-2-050-100-010-3-MX70	0,5	0,25	1,0	1,0	3	39	2	1,00	1,00	1,20	1,33	1,43	1,60
MNK-0600-CD-MX70	MNK-2-060-150-015-3-MX70	0,6	0,30	1,5	1,5	3	39	2	1,50	1,59	1,81	1,95	2,05	2,24
MNK-0800-CD-MX70	MNK-2-080-200-020-3-MX70	0,8	0,40	2,0	2,0	3	39	2	2,00	2,19	2,38	2,52	2,64	2,84
MNK-1000-CD-MX70	MNK-2-100-220-022-3-MX70	1,0	0,50	2,2	2,2	3	39	2	2,20	2,20	2,55	2,71	2,83	3,05
MNK-1200-CD-MX70	MNK-2-120-220-022-3-MX70	1,2	0,60	2,2	2,2	3	39	2	2,20	2,20	2,54	2,69	2,81	3,02
MNK-1500-CD-MX70	MNK-2-150-250-025-3-MX70	1,5	0,75	2,5	2,5	3	39	2	2,50	2,58	2,86	3,02	3,14	3,36
MNK-2000-CD-MX70	MNK-2-200-300-030-3-MX70	2,0	1,00	3,0	3,0	3	39	2	3,00	3,15	3,40	3,56	3,69	3,93

Cutting Data

alloyed and unalloyed steel
(150-250 HB)
for copper (Cu): $n + f_z + 20\%$

D	r	N	a _p	a _e	n	f _z	V _f
(mm)	(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)
0,5	0,25	1,0	0,045	0,135	40.000	0,03	2400
0,6	0,30	1,5	0,042	0,126	40.000	0,038	3040
0,8	0,40	2,0	0,080	0,240	40.000	0,038	3040
1,0	0,50	2,2	0,100	0,300	36.000	0,045	3240
1,2	0,60	2,2	0,040	0,120	28.800	0,041	2362
1,5	0,75	2,5	0,100	0,300	28.000	0,045	2520
2,0	1,00	3,0	0,200	0,600	21.000	0,075	3150

			tool steel (25-35 HRC)					tool steel (35-45 HRC)				
D	r	N	a _p	a _e	n	f _z	V _f	a _p	a _e	n	f _z	V _f
(mm)	(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(mm)	(min-1)	(mm)	(mm/min)
0,5	0,25	1,0	0,041	0,122	36.000	0,03	2160	0,036	0,108	34.000	0,027	1836
0,6	0,30	1,5	0,038	0,113	36.000	0,038	2736	0,034	0,101	34.000	0,034	2312
0,8	0,40	2,0	0,072	0,216	36.000	0,038	2736	0,064	0,192	34.000	0,034	2312
1,0	0,50	2,2	0,090	0,270	32.400	0,045	2916	0,080	0,240	30.600	0,041	2509
1,2	0,60	2,2	0,036	0,108	25.920	0,041	2125	0,032	0,096	24.480	0,041	2007
1,5	0,75	2,5	0,090	0,270	25.200	0,045	2268	0,080	0,240	23.800	0,041	1952
2,0	1,00	3,0	0,180	0,540	18.900	0,075	2835	0,160	0,480	17.850	0,068	2428

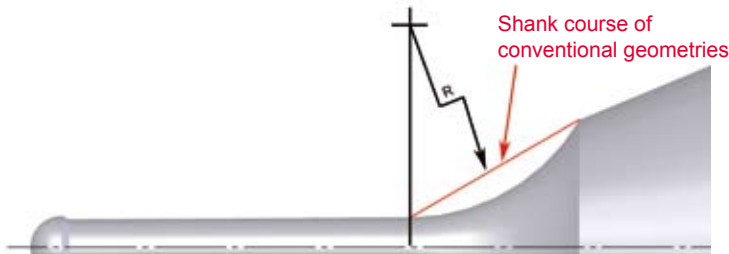
			tempered steel (45-55 HRC)					tempered steel (55-70 HRC)				
D	r	N	a _p	a _e	n	f _z	V _f	a _p	a _e	n	f _z	V _f
(mm)	(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(mm)	(min-1)	(mm)	(mm/min)
0,5	0,25	1,0	0,029	0,088	30.000	0,024	1440	0,027	0,081	28.000	0,021	1176
0,6	0,30	1,5	0,027	0,082	30.000	0,030	1800	0,025	0,076	28.000	0,026	1456
0,8	0,40	2,0	0,052	0,156	30.000	0,030	1800	0,048	0,144	28.000	0,026	1456
1,0	0,50	2,2	0,065	0,195	27.000	0,036	1944	0,060	0,180	25.200	0,032	1613
1,2	0,60	2,2	0,026	0,078	21.600	0,036	1555	0,024	0,072	20.160	0,032	1290
1,5	0,75	2,5	0,065	0,195	21.000	0,036	1512	0,060	0,180	19.600	0,032	1254
2,0	1,00	3,0	0,130	0,390	15.750	0,060	1890	0,120	0,360	14.700	0,053	1558

The above-mentioned data are standard values that may vary depending on processing, type of machine and material grade. For processing use a machine with the highest preciseness and rigidity. Should the available rotation number be lower of that given in the table, reduce feed rate proportionally.

MKK: Spherical shank type milling cutter with conical increasing neck length

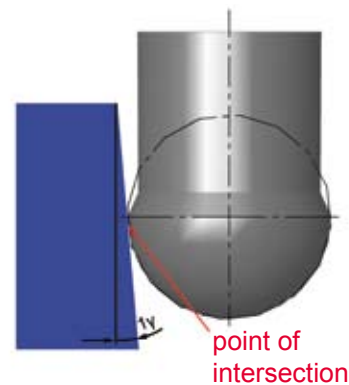
This milling tool has been specifically designed for machining deep ribs and slot milling as well as for processing deep contours in precision parts.

This end mill performs a longer tool life and higher parameters due to its improved length-diameter proportions, thus it complies with the highest technical demand, currently available on the market.

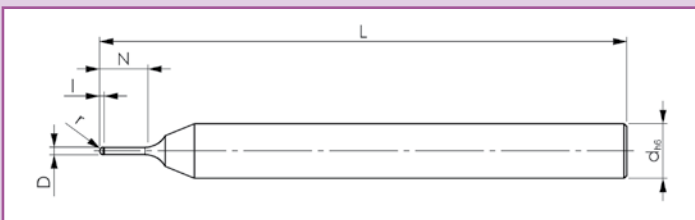


The new geometry providing an increasing neck length with smooth radius transitions essentially prevents tool breakage.

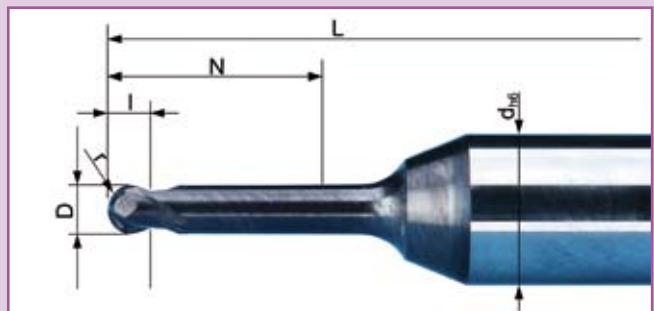
Due to the continuously conical running flute behind the sphere, optimal cutting characteristics can be achieved even under drifting or wearing conditions.



Technical Data



Tolerance: $D \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} -0,002 \\ -0,012 \end{matrix}$
 $r \Rightarrow \varnothing 0,5 - 2,0 = \begin{matrix} +0,005 \\ -0,005 \end{matrix}$



Order-No.	Jongen-Code	D	r	l	N	d _{h6}	L	Z	0°	0,5°	1°	1,5°	2°	3°
MKK-0500-AB-MX70	MKK-2-050-035-030-6	0,5	0,25	0,35	3	6	58	2	3,66	3,95	4,13	4,27	4,40	4,61
MKK-0600-AB-MX70	MKK-2-060-040-040-6	0,6	0,30	0,40	4	6	58	2	4,16	4,46	4,65	4,80	4,93	5,15
MKK-0800-AB-MX70	MKK-2-080-050-050-6	0,8	0,40	0,50	5	6	58	2	5,15	5,49	5,69	5,85	5,99	6,22
MKK-1000-AB-MX70	MKK-2-100-080-060-6	1,0	0,50	0,80	6	6	58	2	6,15	6,52	6,73	6,90	7,04	7,28
MKK-1200-AB-MX70	MKK-2-120-102-080-6	1,2	0,60	1,02	8	6	58	2	8,15	8,59	8,82	9,01	9,16	9,42
MKK-1500-AB-MX70	MKK-2-150-135-080-6	1,5	0,75	1,35	8	6	58	2	8,14	8,56	8,79	8,97	9,12	9,37
MKK-2000-AB-MX70	MKK-2-200-170-100-6	2,0	1,00	1,70	10	6	58	2	10,13	10,58	10,81	10,99	11,14	11,37

Cutting Data

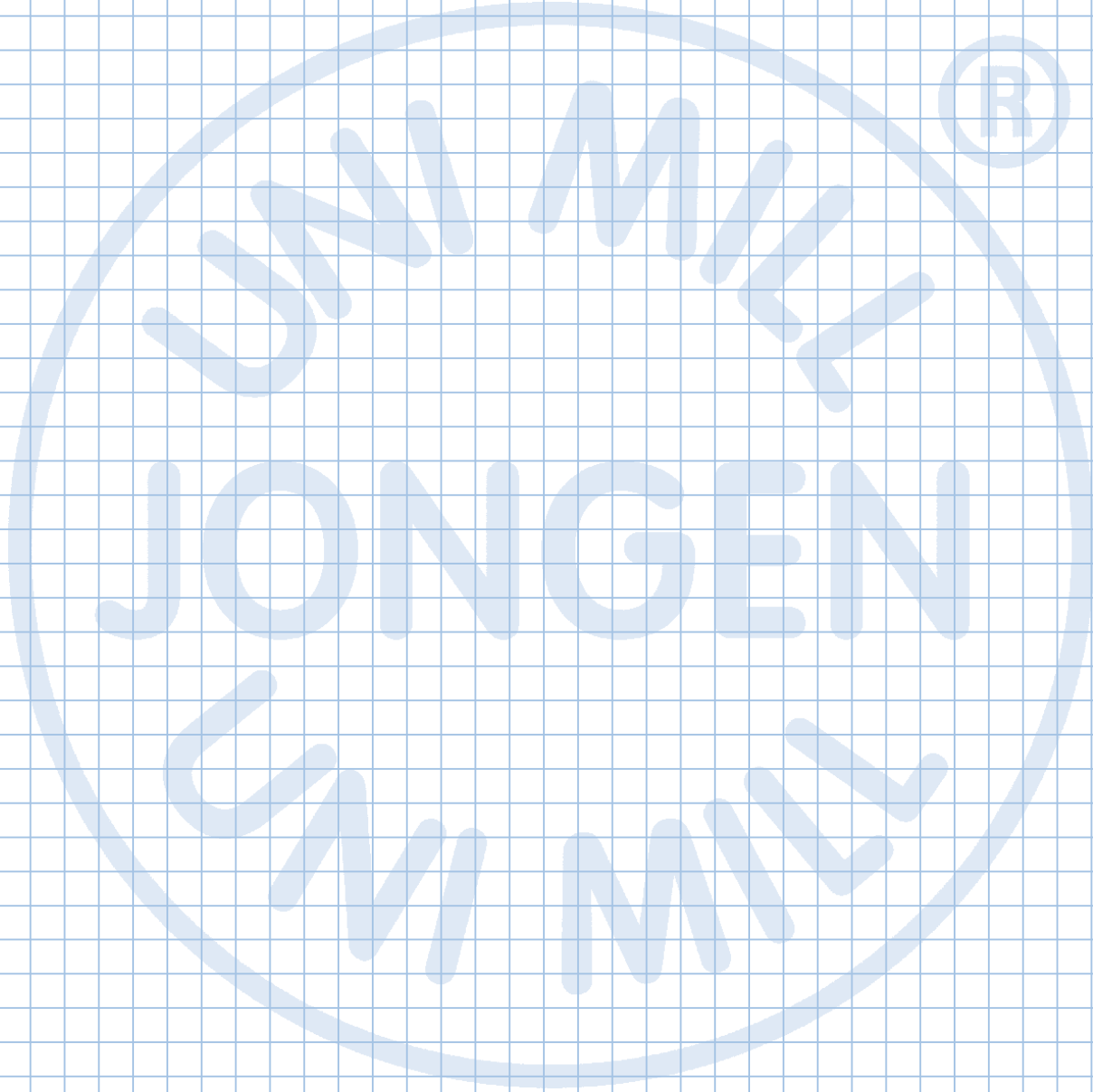
alloyed and unalloyed steel (150-250 HB) for copper (Cu): $n + f_z + 20\%$							
D	r	N	a_p	a_e	n	f_z	V_f
(mm)	(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)
0,5	0,25	3	0,035	0,080	39.600	0,030	2376
0,6	0,30	4	0,035	0,105	39.600	0,030	2376
0,8	0,40	5	0,045	0,135	39.600	0,038	3010
1,0	0,50	6	0,055	0,165	35.640	0,045	3208
1,2	0,60	8	0,055	0,165	35.640	0,045	3208
1,5	0,75	8	0,070	0,210	27.270	0,045	2454
2,0	1,00	10	0,130	0,360	21.800	0,080	3488

tool steel (25-35 HRC)								tool steel (35-45 HRC)				
D	r	N	a_p	a_e	n	f_z	V_f	a_p	a_e	n	f_z	V_f
(mm)	(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(mm)	(min-1)	(mm)	(mm/min)
0,5	0,25	3	0,032	0,080	35.640	0,030	2138	0,028	0,028	33.800	0,030	2028
0,6	0,30	4	0,032	0,095	35.640	0,030	2138	0,028	0,084	33.800	0,030	2028
0,8	0,40	5	0,041	0,122	35.640	0,037	2637	0,036	0,108	33.660	0,037	2491
1,0	0,50	6	0,050	0,149	32.100	0,045	2889	0,044	0,132	30.290	0,045	2726
1,2	0,60	8	0,050	0,149	32.100	0,045	2889	0,044	0,132	30.290	0,045	2726
1,5	0,75	8	0,063	0,189	24.948	0,045	2245	0,056	0,168	23.562	0,045	2121
2,0	1,00	10	0,110	0,340	19.700	0,080	3152	0,090	0,266	18.600	0,074	2753

tempered steel (45-55 HRC)								tempered steel (55-70 HRC)				
D	r	N	a_p	a_e	n	f_z	V_f	a_p	a_e	n	f_z	V_f
(mm)	(mm)	(mm)	(mm)	(mm)	(min-1)	(mm)	(mm/min)	(mm)	(mm)	(min-1)	(mm)	(mm/min)
0,5	0,25	3	0,023	0,068	29.700	0,026	1544	0,021	0,063	27.720	0,023	1275
0,6	0,30	4	0,023	0,068	29.700	0,026	1544	0,021	0,063	27.720	0,023	1275
0,8	0,40	5	0,029	0,088	29.700	0,033	1960	0,027	0,081	27.720	0,029	1608
1,0	0,50	6	0,036	0,107	26.730	0,040	2138	0,033	0,099	24.948	0,035	1746
1,2	0,60	8	0,036	0,107	26.730	0,040	2138	0,033	0,099	24.948	0,035	1746
1,5	0,75	8	0,046	0,137	20.790	0,040	1647	0,042	0,126	19.404	0,035	1358
2,0	1,00	10	0,059	0,176	15.593	0,066	2058	0,054	0,162	14.553	0,058	1688

The above-mentioned data are standard values that may vary depending on processing, type of machine and material grade. For processing use a machine with the highest preciseness and rigidity. Should the available rotation number be lower of that given in the table, reduce feed rate proportionally.

Milling tools ...



... made by JONGEN.



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