

MS DRILL SERIES

DRILLS FOR UNIVERSAL MACHINING



DIA  **EDGE**

MMC Hartmetall GmbH
A Sales Company of  **MITSUBISHI MATERIALS**

MS DRILL

SOLID CARBIDE DRILL SERIES



A choice of quality tooling for a superior cost performance ratio. A versatile combination of reliable carbide and coating technology for the needs of the modern metal cutting world.

Solutions to cutting problems built over decades of production knowledge enables us to provide a comprehensive and more cost effective range of tools.



Our dedication to quality and reliability is continued with this range of MS drills that are manufactured to the exacting standards of DIN 6537.

FEATURES

SOLID CARBIDE DRILL SERIES

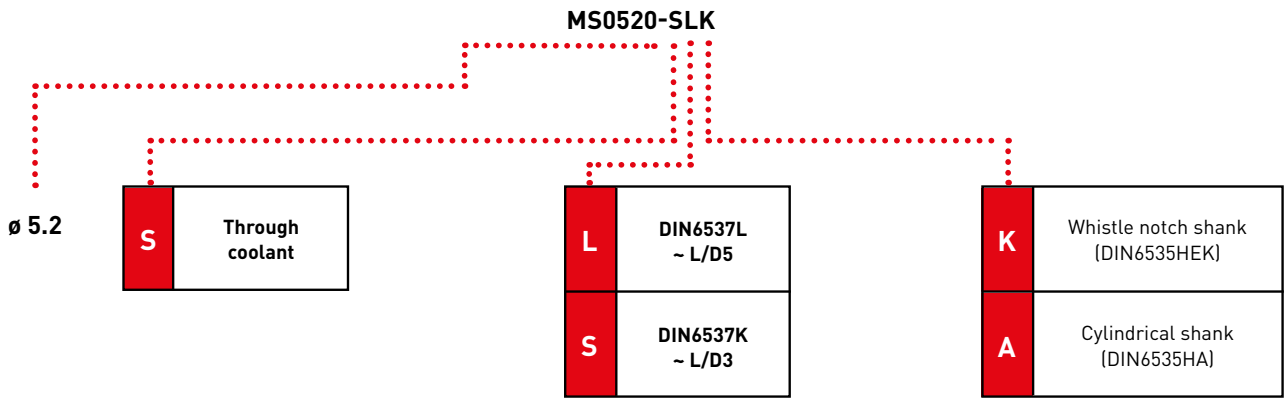


- Through coolant type
- 3 x D and 5 x D drilling length
- Strong cutting edge geometry
- For a wide range of materials
- Whistle notch / cylindrical shank types
- Super micro grain cemented carbide
- PVD coating for long tool life



ORDER CODE DESCRIPTION

MS○○○○○-S○○ (Internal coolant)

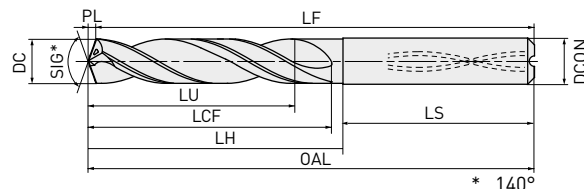


MS-DRILL



CYLINDRICAL SHANK

P M K



DC≤3	3<DC≤6	6<DC≤10	10<DC≤14
0.016	0.016	0.021	0.025
+0.004	+0.004	+0.006	+0.007

Order number	Stock	DC	L/D	LU	LCF	LH	OAL	LF	PL	LS	DCON
MS0300-SSA	●	3.0	3	15	20	25	62	61	0.5	36	6
MS0300-SLA	●		5	23	28	29	66	65	0.5	36	6
MS0310-SSA	●	3.1	3	14.9	20	25	62	61	0.6	36	6
MS0310-SLA	●		5	22.9	28	29	66	65	0.6	36	6
MS0330-SSA	●	3.3	3	14.7	20	25	62	61	0.6	36	6
MS0330-SLA	●		5	22.7	28	29	66	65	0.6	36	6
MS0340-SSA	●	3.4	3	14.5	20	25	62	61	0.6	36	6
MS0340-SLA	●		5	22.5	28	29	66	65	0.6	36	6
MS0350-SSA	●	3.5	3	14.4	20	25	62	61	0.6	36	6
MS0350-SLA	●		5	22.4	28	29	66	65	0.6	36	6
MS0370-SSA	●	3.7	3	14.1	20	25	62	61	0.7	36	6
MS0370-SLA	●		5	22.1	28	29	66	65	0.7	36	6
MS0380-SSA	●	3.8	3	18	24	29	66	65	0.7	36	6
MS0380-SLA	●		5	30	36	37	74	73	0.7	36	6
MS0390-SSA	●	3.9	3	17.9	24	29	66	65	0.7	36	6
MS0390-SLA	●		5	29.9	36	37	74	73	0.7	36	6
MS0400-SSA	●	4.0	3	17.7	24	29	66	65	0.7	36	6
MS0400-SLA	●		5	29.7	36	37	74	73	0.7	36	6
MS0410-SSA	●	4.1	3	17.6	24	29	66	65	0.7	36	6
MS0410-SLA	●		5	29.6	36	37	74	73	0.7	36	6
MS0420-SSA	●	4.2	3	17.5	24	29	66	65	0.8	36	6
MS0420-SLA	●		5	29.5	36	37	74	73	0.8	36	6
MS0430-SSA	●	4.3	3	17.3	24	29	66	65	0.8	36	6
MS0430-SLA	●		5	29.3	36	37	74	73	0.8	36	6
MS0450-SSA	●	4.5	3	17.1	24	29	66	65	0.8	36	6
MS0450-SLA	●		5	29.1	36	37	74	73	0.8	36	6
MS0460-SSA	●	4.6	3	16.9	24	29	66	65	0.8	36	6
MS0460-SLA	●		5	28.9	36	37	74	73	0.8	36	6
MS0480-SSA	●	4.8	3	20.7	28	29	66	65	0.9	36	6
MS0480-SLA	●		5	36.7	44	45	74	81	0.9	36	6
MS0500-SSA	●	5.0	3	20.4	30	29	66	65	0.9	36	6
MS0500-SLA	●		5	36.4	46	45	82	81	0.9	36	6

MS-DRILL - CYLINDRICAL SHANK

Order number	Stock	DC	L/D	LU	LCF	LH	OAL	LF	PL	LS	DCON
MS0510-SSA	●	5.1	3	20.3	30	29	66	65	0.9	36	6
MS0510-SLA	●		5	36.3	46	45	82	81	0.9	36	6
MS0520-SSA	●	5.2	3	20.1	30	29	66	65	0.9	36	6
MS0520-SLA	●		5	36.1	46	45	82	81	0.9	36	6
MS0550-SSA	●	5.5	3	19.8	30	29	66	65	1	36	6
MS0550-SLA	●		5	35.8	46	45	82	81	1	36	6
MS0560-SSA	●	5.6	3	19.6	30	29	66	65	1	36	6
MS0560-SLA	●		5	35.6	46	45	82	81	1	36	6
MS0570-SSA	●	5.7	3	19.5	30	29	66	65	1	36	6
MS0570-SLA	●		5	35.5	46	45	82	81	1	36	6
MS0580-SSA	●	5.8	3	19.4	30	29	66	65	1.1	36	6
MS0580-SLA	●		5	35.4	46	45	82	81	1.1	36	6
MS0600-SSA	●	6.0	3	19.1	30	29	66	65	1.1	36	6
MS0600-SLA	●		5	35.1	46	45	82	81	1.1	36	6
MS0610-SSA	●	6.1	3	25	34	42	79	78	1.1	36	8
MS0610-SLA	●		5	44	53	54	91	90	1.1	36	8
MS0620-SSA	●	6.2	3	24.8	34	42	79	78	1.1	36	8
MS0620-SLA	●		5	43.8	53	54	91	90	1.1	36	8
MS0650-SSA	●	6.5	3	24.4	34	42	79	78	1.2	36	8
MS0650-SLA	●		5	43.4	53	54	91	90	1.2	36	8
MS0660-SSA	●	6.6	3	24.3	34	42	79	78	1.2	36	8
MS0660-SLA	●		5	43.3	53	54	91	90	1.2	36	8
MS0680-SSA	●	6.8	3	24	34	42	79	78	1.2	36	8
MS0680-SLA	●		5	43	53	54	91	90	1.2	36	8
MS0690-SSA	●	6.9	3	23.9	34	42	79	78	1.3	36	8
MS0690-SLA	●		5	42.9	53	54	91	90	1.3	36	8
MS0700-SSA	●	7.0	3	23.8	34	42	79	78	1.3	36	8
MS0700-SLA	●		5	42.8	53	54	91	90	1.3	36	8
MS0730-SSA	●	7.3	3	30.4	34	42	79	78	1.3	36	8
MS0730-SLA	●		5	42.4	53	54	91	90	1.3	36	8
MS0740-SSA	●	7.4	3	30.2	41	42	79	78	1.3	36	8
MS0740-SLA	●		5	42.2	53	54	91	90	1.3	36	8
MS0750-SSA	●	7.5	3	30.1	41	42	79	78	1.4	36	8
MS0750-SLA	●		5	42.1	53	54	91	90	1.4	36	8
MS0780-SSA	●	7.8	3	29.7	41	42	79	78	1.4	36	8
MS0780-SLA	●		5	41.7	53	54	91	90	1.4	36	8
MS0800-SSA	●	8.0	3	29.5	41	42	79	78	1.5	36	10
MS0800-SLA	●		5	41.5	53	54	91	90	1.5	36	10
MS0830-SSA	●	8.3	3	34.1	47	48	89	87	1.5	40	10
MS0830-SLA	●		5	48.1	61	62	103	101	1.5	40	10
MS0850-SSA	●	8.5	3	33.8	47	48	89	87	1.5	40	10
MS0850-SLA	●		5	47.8	61	62	103	101	1.5	40	10
MS0860-SSA	●	8.6	3	33.7	47	48	89	87	1.6	40	10
MS0860-SLA	●		5	47.7	61	62	103	101	1.6	40	10
MS0870-SSA	●	8.7	3	33.5	47	48	89	87	1.6	40	10
MS0870-SLA	●		5	47.5	61	62	103	101	1.6	40	10
MS0880-SSA	●	8.8	3	33.4	47	48	89	87	1.6	40	10
MS0880-SLA	●		5	47.4	61	62	103	101	1.6	40	10
MS0900-SSA	●	9.0	3	33.3	47	48	89	87	1.6	40	10
MS0900-SLA	●		5	47.3	61	62	103	101	1.6	40	10

MS-DRILL - CYLINDRICAL SHANK

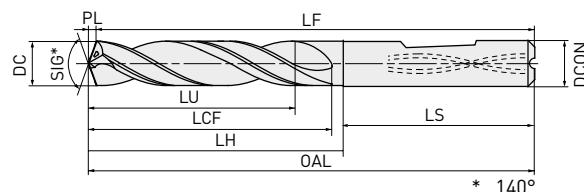
Order number	Stock	DC	L/D	LU	LCF	LH	OAL	LF	PL	LS	DCON
MS0930-SSA	●	9.3	3	33.1	47	48	89	87	1.6	40	10
MS0930-SLA	●		5	47.1	61	62	103	101	1.6	40	10
MS0950-SSA	●	9.5	3	32.5	47	48	89	87	1.7	40	10
MS0950-SLA	●		5	46.5	61	62	103	101	1.7	40	10
MS0980-SSA	●	9.8	3	32.1	47	48	89	87	1.8	40	10
MS0980-SLA	●		5	46.1	61	62	103	101	1.8	40	10
MS1000-SSA	●	10.0	3	31.8	47	48	89	87	1.8	40	10
MS1000-SLA	●		5	45.8	61	62	103	101	1.8	40	10
MS1020-SSA	●	10.2	3	39.6	55	56	102	100	1.9	45	12
MS1020-SLA	●		5	55.6	71	72	118	116	1.9	45	12
MS1030-SSA	●	10.3	3	39.4	55	56	102	100	1.9	45	12
MS1030-SLA	●		5	55.4	71	72	118	116	1.9	45	12
MS1040-SSA	●	10.4	3	39.3	55	56	102	100	1.9	45	12
MS1040-SLA	●		5	55.3	71	72	118	116	1.9	45	12
MS1050-SSA	●	10.5	3	39.2	55	56	102	100	1.9	45	12
MS1050-SLA	●		5	55.2	71	72	118	116	1.9	45	12
MS1070-SSA	●	10.7	3	38.9	55	56	102	100	1.9	45	12
MS1070-SLA	●		5	54.9	71	72	118	116	1.9	45	12
MS1080-SSA	●	10.8	3	38.8	55	56	102	100	2	45	12
MS1080-SLA	●		5	54.8	71	72	118	116	2	45	12
MS1100-SSA	●	11.0	3	38.5	55	56	102	100	2	45	12
MS1100-SLA	●		5	54.5	71	72	118	116	2	45	12
MS1120-SSA	●	11.2	3	38.2	55	56	102	100	2	45	12
MS1120-SLA	●		5	54.2	71	72	118	116	2	45	12
MS1140-SSA	●	11.4	3	38	55	56	102	100	2.1	45	12
MS1140-SLA	●		5	54	71	72	118	116	2.1	45	12
MS1150-SSA	●	11.5	3	37.8	55	56	102	100	2.1	45	12
MS1150-SLA	●		5	53.8	71	72	118	116	2.1	45	12
MS1170-SSA	●	11.7	3	37.6	55	56	102	100	2.1	45	12
MS1170-SLA	●		5	53.6	71	72	118	116	2.1	45	12
MS1180-SSA	●	11.8	3	37.4	55	56	102	100	2.1	45	12
MS1180-SLA	●		5	53.4	71	72	118	116	2.1	45	12
MS1200-SSA	●	12.0	3	37.2	55	56	102	100	2.2	45	12
MS1200-SLA	●		5	53.2	71	72	118	116	2.2	45	12
MS1250-SSA	●	12.5	3	41.5	60	61	107	105	2.3	45	14
MS1250-SLA	●		5	58.5	77	78	124	122	2.3	45	14
MS1260-SSA	●	12.6	3	41.4	60	61	107	105	2.3	45	14
MS1260-SLA	●		5	58.4	77	78	124	122	2.3	45	14
MS1270-SSA	●	12.7	3	41.3	60	61	107	105	2.3	45	14
MS1270-SLA	●		5	58.3	77	78	124	122	2.3	45	14
MS1300-SSA	●	13.0	3	40.9	60	61	107	105	2.4	45	14
MS1300-SLA	●		5	57.9	77	78	124	122	2.4	45	14
MS1350-SSA	●	13.5	3	40.2	60	61	107	105	2.5	45	14
MS1350-SLA	●		5	57.2	77	78	124	122	2.5	45	14
MS1370-SSA	●	13.7	3	39.9	60	61	107	105	2.5	45	14
MS1370-SLA	●		5	56.9	77	78	124	122	2.5	45	14
MS1400-SSA	●	14.0	3	39.5	60	62	107	105	2.5	45	14
MS1400-SLA	●		5	56.5	77	79	124	122	2.5	45	14

MS-DRILL



WHISTLE NOTCH SHANK

P M K



DC≤3	3<DC≤6	6<DC≤10	10<DC≤14
0.016	0.016	0.021	0.025
+0.004	+0.004	+0.006	+0.007

Order number	Stock	DC	L/D	LU	LCF	LH	OAL	LF	PL	LS	DCON
MS0300-SSK	●	3.0	3	15	20	25	62	61	0.5	36	6
MS0300-SLK	●		5	23	28	29	66	65	0.5	36	6
MS0310-SSK	●	3.1	3	14.9	20	25	62	61	0.6	36	6
MS0310-SLK	●		5	22.9	28	29	66	65	0.6	36	6
MS0330-SSK	●	3.3	3	14.7	20	25	62	61	0.6	36	6
MS0330-SLK	●		5	22.7	28	29	66	65	0.6	36	6
MS0340-SSK	●	3.4	3	14.5	20	25	62	61	0.6	36	6
MS0340-SLK	●		5	22.5	28	29	66	65	0.6	36	6
MS0350-SSK	●	3.5	3	14.4	20	25	62	61	0.6	36	6
MS0350-SLK	●		5	22.4	28	29	66	65	0.6	36	6
MS0370-SSK	●	3.7	3	14.1	20	25	62	61	0.7	36	6
MS0370-SLK	●		5	22.1	28	29	66	65	0.7	36	6
MS0380-SSK	●	3.8	3	18	24	29	66	65	0.7	36	6
MS0380-SLK	●		5	30	36	37	74	73	0.7	36	6
MS0390-SSK	●	3.9	3	17.9	24	29	66	65	0.7	36	6
MS0390-SLK	●		5	29.9	36	37	74	73	0.7	36	6
MS0400-SSK	●	4.0	3	17.7	24	29	66	65	0.7	36	6
MS0400-SLK	●		5	29.7	36	37	74	73	0.7	36	6
MS0410-SSK	●	4.1	3	17.6	24	29	66	65	0.7	36	6
MS0410-SLK	●		5	29.6	36	37	74	73	0.7	36	6
MS0420-SSK	●	4.2	3	17.5	24	29	66	65	0.8	36	6
MS0420-SLK	●		5	29.5	36	37	74	73	0.8	36	6
MS0430-SSK	●	4.3	3	17.3	24	29	66	65	0.8	36	6
MS0430-SLK	●		5	29.3	36	37	74	73	0.8	36	6
MS0450-SSK	●	4.5	3	17.1	24	29	66	65	0.8	36	6
MS0450-SLK	●		5	29.1	36	37	74	73	0.8	36	6
MS0460-SSK	●	4.6	3	16.9	24	29	66	65	0.8	36	6
MS0460-SLK	●		5	28.9	36	37	74	73	0.8	36	6
MS0480-SSK	●	4.8	3	20.7	28	29	66	65	0.9	36	6
MS0480-SLK	●		5	36.7	44	45	74	81	0.9	36	6
MS0500-SSK	●	5.0	3	20.4	30	29	66	65	0.9	36	6
MS0500-SLK	●		5	36.4	46	45	82	81	0.9	36	6

MS-DRILL - WHISTLE NOTCH SHANK

Order number	Stock	DC	L/D	LU	LCF	LH	OAL	LF	PL	LS	DCON
MS0510-SSK	●	5.1	3	20.3	30	29	66	65	0.9	36	6
MS0510-SLK	●		5	36.3	46	45	82	81	0.9	36	6
MS0520-SSK	●	5.2	3	20.1	30	29	66	65	0.9	36	6
MS0520-SLK	●		5	36.1	46	45	82	81	0.9	36	6
MS0550-SSK	●	5.5	3	19.8	30	29	66	65	1	36	6
MS0550-SLK	●		5	35.8	46	45	82	81	1	36	6
MS0560-SSK	●	5.6	3	19.6	30	29	66	65	1	36	6
MS0560-SLK	●		5	35.6	46	45	82	81	1	36	6
MS0570-SSK	●	5.7	3	19.5	30	29	66	65	1	36	6
MS0570-SLK	●		5	35.5	46	45	82	81	1	36	6
MS0580-SSK	●	5.8	3	19.4	30	29	66	65	1.1	36	6
MS0580-SLK	●		5	35.4	46	45	82	81	1.1	36	6
MS0600-SSK	●	6.0	3	19.1	30	29	66	65	1.1	36	6
MS0600-SLK	●		5	35.1	46	45	82	81	1.1	36	6
MS0610-SSK	●	6.1	3	25	34	42	79	78	1.1	36	8
MS0610-SLK	●		5	44	53	54	91	90	1.1	36	8
MS0620-SSK	●	6.2	3	24.8	34	42	79	78	1.1	36	8
MS0620-SLK	●		5	43.8	53	54	91	90	1.1	36	8
MS0650-SSK	●	6.5	3	24.4	34	42	79	78	1.2	36	8
MS0650-SLK	●		5	43.4	53	54	91	90	1.2	36	8
MS0660-SSK	●	6.6	3	24.3	34	42	79	78	1.2	36	8
MS0660-SLK	●		5	43.3	53	54	91	90	1.2	36	8
MS0680-SSK	●	6.8	3	24	34	42	79	78	1.2	36	8
MS0680-SLK	●		5	43	53	54	91	90	1.2	36	8
MS0690-SSK	●	6.9	3	23.9	34	42	79	78	1.3	36	8
MS0690-SLK	●		5	42.9	53	54	91	90	1.3	36	8
MS0700-SSK	●	7.0	3	23.8	34	42	79	78	1.3	36	8
MS0700-SLK	●		5	42.8	53	54	91	90	1.3	36	8
MS0730-SSK	●	7.3	3	30.4	34	42	79	78	1.3	36	8
MS0730-SLK	●		5	42.4	53	54	91	90	1.3	36	8
MS0740-SSK	●	7.4	3	30.2	41	42	79	78	1.3	36	8
MS0740-SLK	●		5	42.2	53	54	91	90	1.3	36	8
MS0750-SSK	●	7.5	3	30.1	41	42	79	78	1.4	36	8
MS0750-SLK	●		5	42.1	53	54	91	90	1.4	36	8
MS0780-SSK	●	7.8	3	29.7	41	42	79	78	1.4	36	8
MS0780-SLK	●		5	41.7	53	54	91	90	1.4	36	8
MS0800-SSK	●	8.0	3	29.5	41	42	79	78	1.5	36	10
MS0800-SLK	●		5	41.5	53	54	91	90	1.5	36	10
MS0830-SSK	●	8.3	3	34.1	47	48	89	87	1.5	40	10
MS0830-SLK	●		5	48.1	61	62	103	101	1.5	40	10
MS0850-SSK	●	8.5	3	33.8	47	48	89	87	1.5	40	10
MS0850-SLK	●		5	47.8	61	62	103	101	1.5	40	10
MS0860-SSK	●	8.6	3	33.7	47	48	89	87	1.6	40	10
MS0860-SLK	●		5	47.7	61	62	103	101	1.6	40	10
MS0870-SSK	●	8.7	3	33.5	47	48	89	87	1.6	40	10
MS0870-SLK	●		5	47.5	61	62	103	101	1.6	40	10
MS0880-SSK	●	8.8	3	33.4	47	48	89	87	1.6	40	10
MS0880-SLK	●		5	47.4	61	62	103	101	1.6	40	10
MS0900-SSK	●	9.0	3	33.3	47	48	89	87	1.6	40	10
MS0900-SLK	●		5	47.3	61	62	103	101	1.6	40	10

MS-DRILL - WHISTLE NOTCH SHANK

Order number	Stock	DC	L/D	LU	LCF	LH	OAL	LF	PL	LS	DCON
MS0930-SSK	●	9.3	3	33.1	47	48	89	87	1.6	40	10
MS0930-SLK	●		5	47.1	61	62	103	101	1.6	40	10
MS0950-SSK	●	9.5	3	32.5	47	48	89	87	1.7	40	10
MS0950-SLK	●		5	46.5	61	62	103	101	1.7	40	10
MS0980-SSK	●	9.8	3	32.1	47	48	89	87	1.8	40	10
MS0980-SLK	●		5	46.1	61	62	103	101	1.8	40	10
MS1000-SSK	●	10.0	3	31.8	47	48	89	87	1.8	40	10
MS1000-SLK	●		5	45.8	61	62	103	101	1.8	40	10
MS1020-SSK	●	10.2	3	39.6	55	56	102	100	1.9	45	12
MS1020-SLK	●		5	55.6	71	72	118	116	1.9	45	12
MS1030-SSK	●	10.3	3	39.4	55	56	102	100	1.9	45	12
MS1030-SLK	●		5	55.4	71	72	118	116	1.9	45	12
MS1040-SSK	●	10.4	3	39.3	55	56	102	100	1.9	45	12
MS1040-SLK	●		5	55.3	71	72	118	116	1.9	45	12
MS1050-SSK	●	10.5	3	39.2	55	56	102	100	1.9	45	12
MS1050-SLK	●		5	55.2	71	72	118	116	1.9	45	12
MS1070-SSK	●	10.7	3	38.9	55	56	102	100	1.9	45	12
MS1070-SLK	●		5	54.9	71	72	118	116	1.9	45	12
MS1080-SSK	●	10.8	3	38.8	55	56	102	100	2	45	12
MS1080-SLK	●		5	54.8	71	72	118	116	2	45	12
MS1100-SSK	●	11.0	3	38.5	55	56	102	100	2	45	12
MS1100-SLK	●		5	54.5	71	72	118	116	2	45	12
MS1120-SSK	●	11.2	3	38.2	55	56	102	100	2	45	12
MS1120-SLK	●		5	54.2	71	72	118	116	2	45	12
MS1140-SSK	●	11.4	3	38	55	56	102	100	2.1	45	12
MS1140-SLK	●		5	54	71	72	118	116	2.1	45	12
MS1150-SSK	●	11.5	3	37.8	55	56	102	100	2.1	45	12
MS1150-SLK	●		5	53.8	71	72	118	116	2.1	45	12
MS1170-SSK	●	11.7	3	37.6	55	56	102	100	2.1	45	12
MS1170-SLK	●		5	53.6	71	72	118	116	2.1	45	12
MS1180-SSK	●	11.8	3	37.4	55	56	102	100	2.1	45	12
MS1180-SLK	●		5	53.4	71	72	118	116	2.1	45	12
MS1200-SSK	●	12.0	3	37.2	55	56	102	100	2.2	45	12
MS1200-SLK	●		5	53.2	71	72	118	116	2.2	45	12
MS1250-SSK	●	12.5	3	41.5	60	61	107	105	2.3	45	14
MS1250-SLK	●		5	58.5	77	78	124	122	2.3	45	14
MS1260-SSK	●	12.6	3	41.4	60	61	107	105	2.3	45	14
MS1260-SLK	●		5	58.4	77	78	124	122	2.3	45	14
MS1270-SSK	●	12.7	3	41.3	60	61	107	105	2.3	45	14
MS1270-SLK	●		5	58.3	77	78	124	122	2.3	45	14
MS1300-SSK	●	13.0	3	40.9	60	61	107	105	2.4	45	14
MS1300-SLK	●		5	57.9	77	78	124	122	2.4	45	14
MS1350-SSK	●	13.5	3	40.2	60	61	107	105	2.5	45	14
MS1350-SLK	●		5	57.2	77	78	124	122	2.5	45	14
MS1370-SSK	●	13.7	3	39.9	60	61	107	105	2.5	45	14
MS1370-SLK	●		5	56.9	77	78	124	122	2.5	45	14
MS1400-SSK	●	14.0	3	39.5	60	62	107	105	2.5	45	14
MS1400-SLK	●		5	56.5	77	79	124	122	2.5	45	14

MS-DRILL

RECOMMENDED CUTTING CONDITIONS

Material	Properties			Tensile strength	Ø 3.0 – 5.9		Ø 6.0 – 9.9		Ø 10.0 – 14.0	
					Vc	f	Vc	f	Vc	f
P	Un-alloyed sulphur	≤0.25%C	150 HB annealed	<500	100	0.18	110	0.25	130	0.30
	Phosphour steel	≤0.25%C	200 HB annealed	-680	100	0.18	110	0.25	130	0.30
	Carbon steel	≤0.55%C	275 HB tempered	>800	80	0.18	90	0.25	100	0.30
	Tempered steel	≤0.55%C	300 HB annealed	-680	60	0.18	70	0.25	80	0.30
	Die steel / Cast steel		350 HB tempered	>800	50	0.15	60	0.20	70	0.25
	Low alloy steel, Die steel	<200 HB annealed	<680		50	0.18	80	0.25	80	0.30
	Spring steel, Nitrided steel		250 HB tempered	850	60	0.18	70	0.25	80	0.30
	Case hardened steel	>250 HB tempered	>850		60	0.18	70	0.25	80	0.30
	Bearing steel, Cast steel	>300 HB tempered	>1000		50	0.15	60	0.20	70	0.30
	High alloy heat resistant steels	<200 HB annealed	<680		50	0.15	55	0.20	60	0.25
	Valve steel		250 HB tempered	850	45	0.15	50	0.20	55	0.25
	Die steel	>250 HB tempered	>850		50	0.18	55	0.20	60	0.25
	Cast steel	>300 HB tempered	>1000		45	0.15	50	0.20	55	0.25
M	Stainless steel		200 HB ferrit./mart.	680	45	0.15	50	0.20	60	0.25
	Heat resistant steel		250 HB martensitic	850	45	0.15	50	0.20	60	0.25
	Cast steel		230 HB austenitic	-950	45	0.15	50	0.20	60	0.25
K	Laminated graphite	<180 HB ferritic	100 - 400		100	0.20	100	0.25	110	0.30
	Cast iron		220 HB pearlitic	100 - 400	90	0.20	90	0.25	100	0.30
	Spheroidal cast iron	<180 HB ferritic	400 - 800		80	0.20	80	0.25	90	0.30
	Ductile cast iron		250 HB pearlitic	400 - 800	80	0.20	80	0.25	90	0.30
	Tempered and black	<180 HB ferritic	350 - 700		50	0.20	65	0.20	75	0.25
	Cast iron		220 HB pearlitic	350 - 700	50	0.15	60	0.20	70	0.22

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