MILLSTAR.

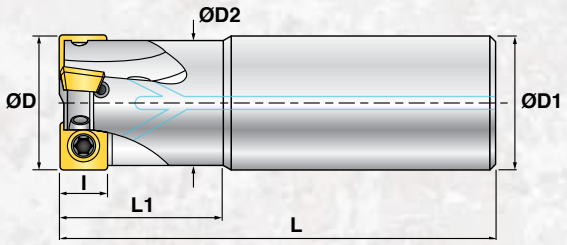
Square Shoulder Milling Cutters Program

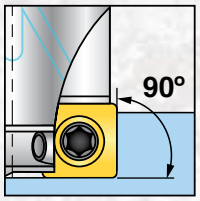
Millstar's latest development in square shoulder milling brings you a new generation of cost-efficient tools with unique capabilities. Our innovative geometry maintains a constant rake angle on all edges to ensure a smooth cut that requires less cutting force. The precise 90° angle of our cutters combines with a wiper effect to produce an unprecedented surface quality. Millstar's square shoulder cutters also feature a high-strength body to withstand extreme temperatures, and an improved corrosion-resistant surface for longer tool life.

Square Shoulder Milling Cutters Program Contents - Inch Section

Milling Cutters Identification System

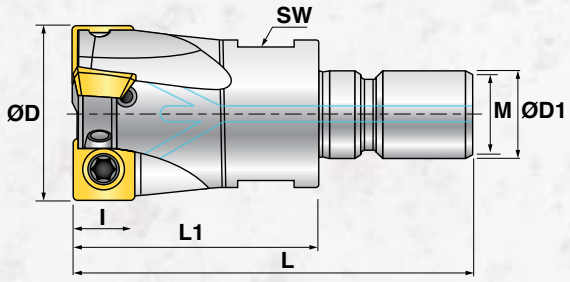
Measure-ment System	Denotes Square Shoulder Milling Cutters	S = Single line of inserts M= Multi-lines of Inserts	S= Straight Shank A= Arbor Cutter H= Screw on Head	Denotes insert Style	Denotes Insert Size	Denotes Cutting Diameter Size	Denotes Overall Cutter Length	Denotes Shank Diameter Size	Denotes Number of Flutes
Imperial	S	S	S	S	09	1000	-	1000	3
Imperial	S	S	H	S	09	1000	-	-	3

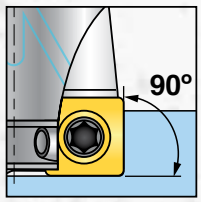




Square Shoulder Straight Shank for SOKT 09T3 Insert

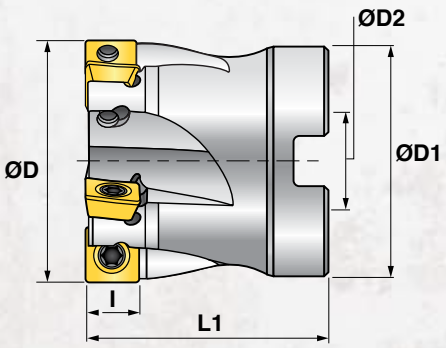
Millstar Part Number	ØD	ØD1	L	L1	N° Flutes	l	Insert size	Screw	N max	Torx	ØD2
SSS-S09-1000-4.0-1000-3	1.0	1.0	4.0	1.550	3	.315	9mm	MSSS-1	3.20	T08	.66
SSS-S09-1250-4375-1250-4	1.250	1.250	4.375	2.10	4	.315	9mm	MSSS-1	3.20	T08	.94

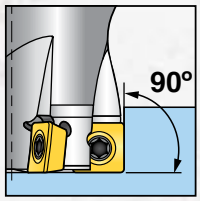




Square Shoulder Screw On Heads for SOKT 09 Insert

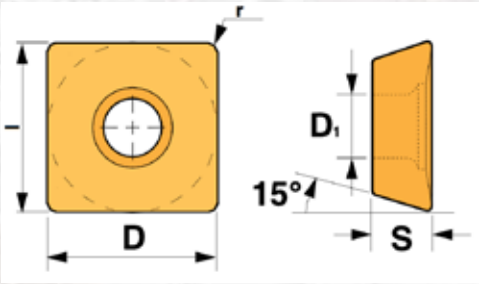
Millstar Part Number	ØD	ØD1	L	L1	Thread M	N° Flutes	l	Insert size	Screw	N max	Torx	SW
SSH-S09-1000-3	1.0	12.5mm	2.250	1.380	M12	3	.315	9mm	MSSS-1	3.20	T08	.67
SSH-S09-1250-4	1.250	17mm	2.480	1.570	M16	4	.315	9mm	MSSS-1	3.20	T08	.95





Square Shoulder Arbor Style Milling Holder for SOKT 09 Insert

Millstar Part Number	ØD	ØD1	L1	ØD2 (H6)	Key Width	N° Flutes	l	Insert size	Screw	N max	Torx
SSA-S09-2000-6	2.0	1.770	1.570	.750	.312	6	.315	9mm	MSSS-1	3.20	T08
SSA-S09-3000-9	3.0	2.360	1.960	1.0	.375	9	.315	9mm	MSSS-1	3.20	T08
SSA-S09-4000-9	4.0	3.750	1.960	1.50	.625	9	.315	9mm	MSSS-1	3.20	T08



Insert Data

Insert Code	Dimensions (mm)					Grades			
	D	I	S	r	D1	MPP30H	MCP3005	MPP3505	MCK1505
SOKT 09T308-S	.375	.375	.156	.031	.173	●	●	●	
SOKT 09T308-E	.375	.375	.156	.031	.173	●			
SOKT 09T308-C	.375	.375	.156	.031	.173				●

● denotes available item

Insert Geometry

Code		Description
S		The S geometry was designed for milling high alloyed steels. It provides a strong edge for best results even in hard machining applications.
C		With its very strong cutting edge, C geometry is the first choice for machining cast iron.
E	*Coming Soon*	The E geometry is the best choice for machining stainless steels. It has a sharp edge which is also well-suited to steel finishing applications.

Grades Description

Code		Description
MPP30H		This is a special, improved, multi-layer PVD coating, approaching the hardness of CBN on a tough substrate. This extremely wear-resistant coated grade is recommended for very hard metal milling applications. Because it can withstand high cutting temperatures, it is also appropriate for high speed milling under dry conditions and for higher alloy steels with hardness over 40HRC. Other recommended applications include machining of stainless steels, PH, nickel and chrome based alloys, nodular and grey cast iron.
MCP3005		With a tough substrate and a new CVD coating, this grade is extremely wear-resistant when machining alloyed steels and cast iron. It is also suitable for high-speed milling of alloyed steels under 40HRC, and for interrupted cutting applications.
MPP3005		This grade features special, improved Al TiN approaching the hardness of CBN on a very tough substrate. It is recommended for hard metal machining applications, especially for roughing operations. MPP3005 also allows high-speed and dry milling on tool, die and higher alloy steels with hardness over 40HRC. It is suitable for machining stainless steels, nickel and chrome based alloys, nodular and grey cast iron.
MCK1550		This grade was specially developed for cast iron milling applications. It has a high hardness substrate and an improved Aluminum Oxide CVD coating which allows usage either with or without coolant.

Machining Application Data - Grades Application

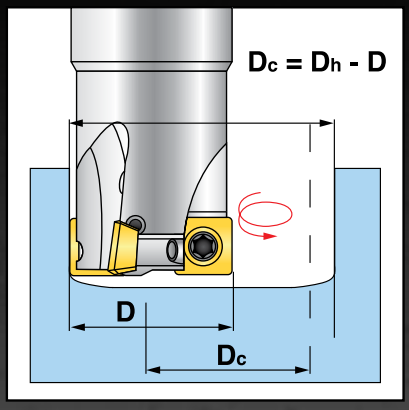
ISO	Work Material		MPP30H		MCP3005		MPP3005		MCK1505	
	Type	Properties	Vc	fz	Vc	fz	Vc	fz	Vc	fz
			SFM	inch	SFM	inch	SFM	inch	SFM	inch
P	Carbon Steel	<24 N/inch	800-1200	.003-.016	800-1200	.003-.016	800-1200	.003-.016		
		<37 N/inch	600-1000	.003-.012	600-1000	.003-.012	600-1000	.003-.012		
	Tool & Die Steel	28-37 N/inch	600-900	.003-.010	600-900	.003-.010	600-900	.003-.010		
		35-47 N/inch	500-700	.003-.008	500-700	.003-.008	500-750	.003-.008		
		47-55 N/inch	325-500	.003-.008	250-450	.003-.008	250-450	.003-.008		
M	Stainless Steel	Austenitic & Feritic	600-1000	.003-.016			600-800	.003-.016		
		Martensitic	325-500	.003-.010			250-450	.003-.010		
K	Cast Iron	GG-Ft							800-1200	.003-.008
		GGG-FGS							600-900	.003-.006
		GTS-MN/MP							500-800	.003-.006

- For Slant Milling or Helical Interpolation decrease the recomended feed by 30%
- In case of Helical Interpolation do not exceed the max Ap/revolution
- For Plunging use 50% of recommended feed only

Machining Application Data

Helical Interpolation

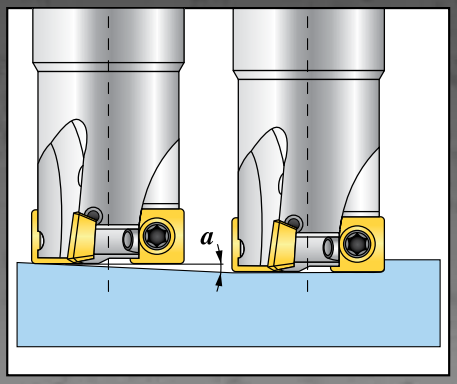
Tool Code	Tool ØD	ØDh(min)	ØDh(max)	a°
SSS-S09-1000-4.0-1000-3	1.0	1.457	1.890	4°
SSS-S09-1250-4375-1250-4	1.250	1.850	2.441	2°
SSA-S09-2000-6	2.0	2.480	3.071	0.75°
SSA-S09-3000-9	3.0	3.268	3.858	0.5°
SSA-S09-4000-9	4.0	4.291	4.882	0.4°
SSH-S09-1000-3	1.0	1.457	1.890	4°
SSH-S09-1250-4	1.250	1.850	2.441	2°



• Dc is calculated value for rotation

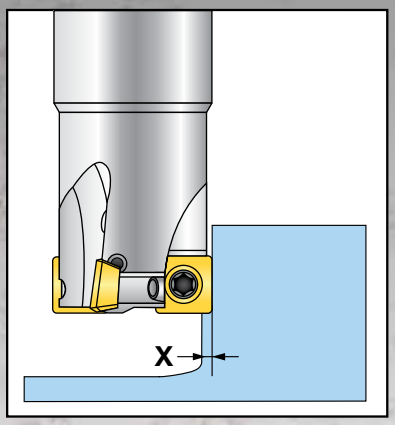
Slant Milling

Tool Code	Tool ØD	a°
SSS-S09-1000-4.0-1000-3	1.0	4°
SSS-S09-1250-4375-1250-4	1.250	2°
SSA-S09-2000-6	2.0	0.75°
SSA-S09-3000-9	3.0	0.5°
SSA-S09-4000-9	4.0	0.4°
SSH-S09-1000-3	1.0	4°
SSH-S09-1250-4	1.250	2°



Axial Plunging

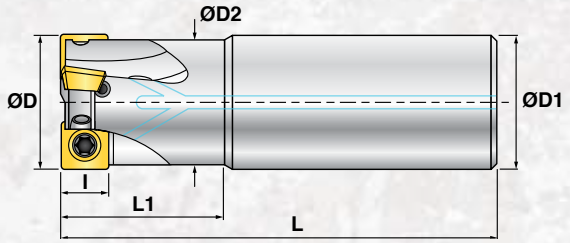
Tool Code	Tool ØD	X(max)
SSS-S09-1000-4.0-1000-3	1.0	.020
SSS-S09-1250-4375-1250-4	1.250	.020
SSA-S09-2000-6	2.0	.012
SSA-S09-3000-9	3.0	.012
SSA-S09-4000-9	4.0	.012
SSH-S09-1000-3	1.0	.020
SSH-S09-1250-4	1.250	.020

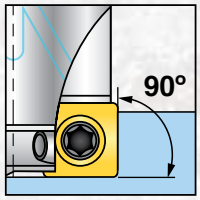


Square Shoulder Milling Cutters Program Contents - Metric Section

Milling Cutters Identification System

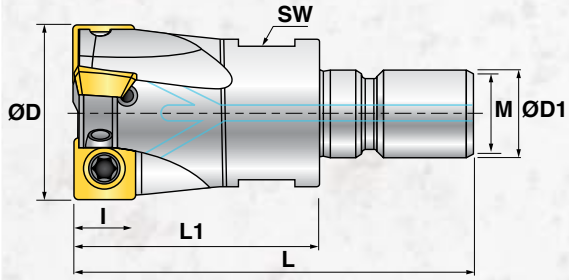
Measure-ment System	Denotes Square Shoulder Milling Cutters	S = Single line of inserts M= Multi-lines of Inserts	S= Straight Shank A= Arbor Cutter H= Screw on Head	Denotes insert Style	Denotes Insert Size	Denotes Cutting Diameter Size	Denotes Overall Cutter Length	Denotes Shank Diameter Size	Denotes Number of Flutes
Metric	S	S	S	S	09	25	-	25	3
Metric	S	S	H	S	09	25	-	-	3

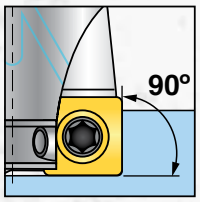




Square Shoulder Straight Shank for SOKT 09T3 Insert

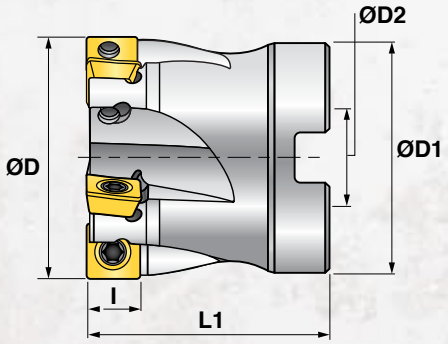
Millstar Part Number	ØD	ØD1	L	L1	N° Flutes	l	Insert size	Screw	N max	Torx	ØD2
SSS-S09-25-88-25-3	25	25	88	25	3	8	9	MSSS-1	3,20	T08	17
SSS-S09-32-96-25-4	32	32	96	39	4	8	9	MSSS-1	3,20	T08	24

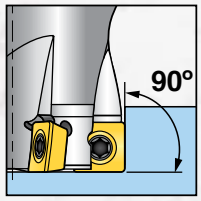




Square Shoulder Screw On Heads for SOKT 09 Insert

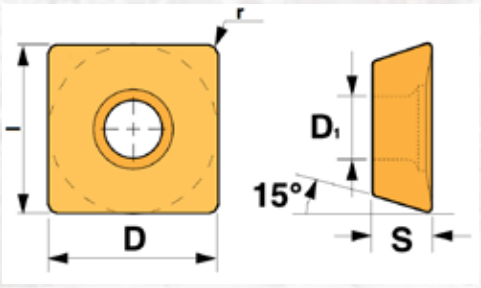
Millstar Part Number	ØD	ØD1	L	L1	Thread M	N° Flutes	l	Insert size	Screw	N max	Torx	SW
SSH-S09-25-3	25	12,50	57	35	M12	3	8	9	MSSS-1	3,20	T08	17
SSH-S09-32-4	32	17,00	63	40	M16	4	8	9	MSSS-1	3,20	T08	24





Square Shoulder Arbor Style Milling Holder for SOKT 09 Insert

Millstar Part Number	ØD	ØD1	L1	ØD2 (H6)	Key Width	Clamping screws for milling adapters (metric)	N° Flutes	l	Insert size	Screw	N max	Torx
SSA-S09-40-5	40	38	40	16	8.4	M12x30	5	8	9	MSSS-1	3,20	T08
SSA-S09-50-6	50	43	40	22	10.4	M16x30	6	8	9	MSSS-1	3,20	T08
SSA-S09-63-7	63	48	40	22	10.4	M16x30	7	8	9	MSSS-1	3,20	T08
SSA-S09-80-9	80	58	50	27	12.4	M20x30	9	8	9	MSSS-1	3,20	T08



Insert Data

Insert Code	Dimensions (mm)					Grades			
	D	I	S	r	D1	MPP30H	MCP3005	MPP3505	MCK1505
SOKT 09T308-S	9,52	9,52	3,97	0,8	4,4	●	●	●	
SOKT 09T308-E	9,52	9,52	3,97	0,8	4,4	●			
SOKT 09T308-C	9,52	9,52	3,97	0,8	4,4				●

● denotes available item

Insert Geometry

Code		Description
S		The S geometry was designed for milling high alloyed steels. It provides a strong edge for best results even in hard machining applications.
C		With its very strong cutting edge, C geometry is the first choice for machining cast iron.
E	*Coming Soon*	The E geometry is the best choice for machining stainless steels. It has a sharp edge which is also well-suited to steel finishing applications.

Grades Description

Code		Description
MPP30H		This is a special, improved, multi-layer PVD coating, approaching the hardness of CBN on a tough substrate. This extremely wear-resistant coated grade is recommended for very hard metal milling applications. Because it can withstand high cutting temperatures, it is also appropriate for high speed milling under dry conditions and for higher alloy steels with hardness over 40HRC. Other recommended applications include machining of stainless steels, PH, nickel and chrome based alloys, nodular and grey cast iron.
MCP3005		With a tough substrate and a new CVD coating, this grade is extremely wear-resistant when machining alloyed steels and cast iron. It is also suitable for high-speed milling of alloyed steels under 40HRC, and for interrupted cutting applications.
MPP3005		This grade features special, improved Al TiN approaching the hardness of CBN on a very tough substrate. It is recommended for hard metal machining applications, especially for roughing operations. MPP3005 also allows high-speed and dry milling on tool, die and higher alloy steels with hardness over 40HRC. It is suitable for machining stainless steels, nickel and chrome based alloys, nodular and grey cast iron.
MCK1550		This grade was specially developed for cast iron milling applications. It has a high hardness substrate and an improved Aluminum Oxide CVD coating which allows usage either with or without coolant.

Machining Application Data - Grades Application

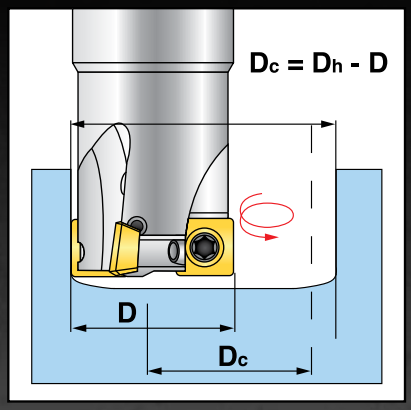
ISO	Work Material		MPP30H		MCP3005		MPP3005		MCK1505	
	Type	Properties	Vc	fz	Vc	fz	Vc	fz	Vc	fz
			m/min	mm	m/min	mm	m/min	mm	m/min	mm
P	Carbon Steel	<600 N/mm	270-360	0,1-0,4	250-340	0,1-0,4	250-350	0,1-0,4		
		<950 N/mm	200-300	0,1-0,3	200-290	0,1-0,3	200-250	0,1-0,3		
	Tool & Die Steel	700-950 N/mm	200-280	0,1-0,25	200-290	0,1-0,25	170-230	0,1-0,25		
		900-1200 N/mm	160-220	0,1-0,2	150-200	0,1-0,2	130-220	0,1-0,2		
		1200-1400 N/mm	100-150	0,1-0,2	80-140	0,1-0,2	80-140	0,1-0,2		
M	Stainless Steel	Austenitic & Feritic	200-280	0,1-0,4			200-260	0,1-0,4		
		Martensitic	100-160	0,1-0,25			80-140	0,1-0,25		
K	Cast Iron	GG-Ft							250-360	0,10-0,20
		GGG-FGS							190-280	0,10-0,15
		GTS-MN/MP							170-250	0,10-0,15

- For Slant Milling or Helical Interpolation decrease the recomended feed by 30%
- In case of Helical Interpolation do not exceed the max Ap/revolution
- For Plunging use 50% of recommended feed only

Machining Application Data

Helical Interpolation

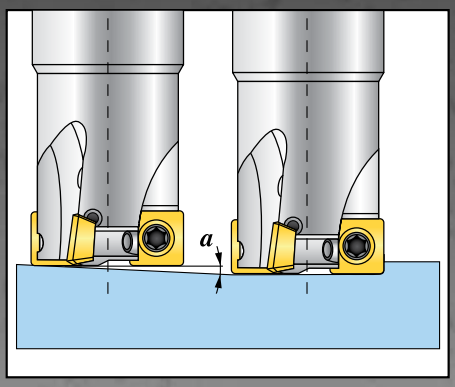
Tool Code	Tool ØD	ØDh(min)	ØDh(max)	a°
SSS-S09-25-88-25-3	25	37	48	4°
SSS-S09-32-96-25-4	32	47	62	2°
SSA-S09-40-5	40	63	78	0,75°
SSA-S09-50-6	50	83	98	0,5°
SSA-S09-63-7	63	109	124	0,4°
SSA-S09-80-9	80	143	158	0,25°
SSA-S09-25-3	25	37	48	4°
SSH-S09-32-4	32	47	62	2°



• Dc is calculated value for rotation

Slant Milling

Tool Code	Tool ØD	a°
SSS-S09-25-88-25-3	25	4°
SSS-S09-32-96-25-4	32	2°
SSA-S09-40-5	40	0,75°
SSA-S09-50-6	50	0,5°
SSA-S09-63-7	63	0,4°
SSA-S09-80-9	80	0,25°
SSA-S09-25-3	25	4°
SSH-S09-32-4	32	2°



Axial Plunging

Tool Code	Tool ØD	X(max)
SSS-S09-25-88-25-3	25	0,5
SSS-S09-32-96-25-4	32	0,5
SSA-S09-40-5	40	0,3
SSA-S09-50-6	50	0,3
SSA-S09-63-7	63	0,3
SSA-S09-80-9	80	0,3
SSA-S09-25-3	25	0,5
SSH-S09-32-4	32	0,5