



MULTISURFER™

MILLING PRODUCTS

Tip Style Series:

T-Slot: 18T, 19T, 19R, 3EJ6A

Facing: 18F, 19F, 1EJ7A

Thread: 18Y, 19Y

Dovetail: 19V

Diameter (Connection Code):

0.87"-1.0" / 25mm (LP)

1.25" / 32mm (LQ)

1.50"-1.56" / 40mm (LR)

Shank Adaptions:

Cylindrical, Solid ER

Materials:

Cast Iron, Steel, Stainless Steel,
High-Temp Alloys & Titanium



Quick-Change Interchangeable Heads for Slotting, Facing & Threading

Multi-Surfer is a replaceable head system for larger diameter slotting, facing and single point threading. It bridges a diameter gap between Ingersoll's popular Chip-Surfer and Indexable Slotters. To oppose the cutting forces that accompany larger diameters, Multi-Surfer is equipped with a unique and simple design that allows for precise and rigid mounting.

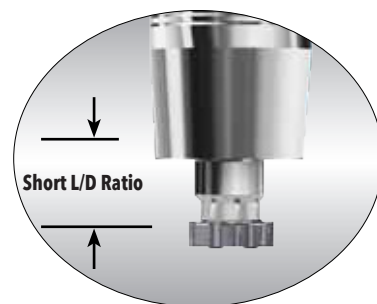
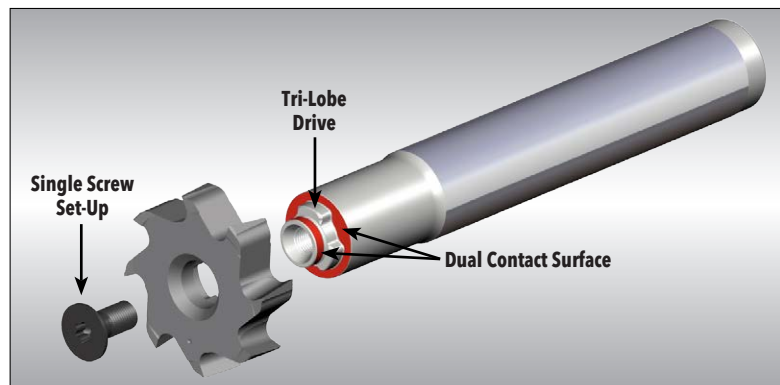
Features & Benefits:

- .875-1.560 T-Slot heads with .125-.375 width range and 4-10 flutes
- 1.560 Full radius T-Slot heads with .062-.312 width range and 10 flutes
- 24-39mm & 1.00-1.50" Facing heads with 6-10 flutes; Ideal for stubby applications
- 60° Partial Profile Thread heads with 6-10 flutes
- 15°, 30° and 45° Dovetail heads with 10 flutes
- Cylindrical shanks with strong Bore, Screw & Tri-Lobe-Drive connection
- Steel shanks with various configurations and coolant options



FEATURES

Stable, Secure Drive Adaption



More Cutting Edges Maximize Productivity

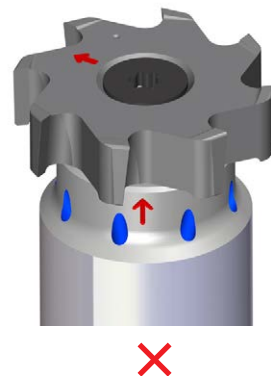
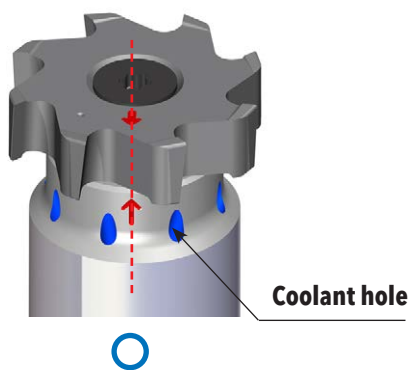
Indexable
Low Density



MULTISURFER
High Density



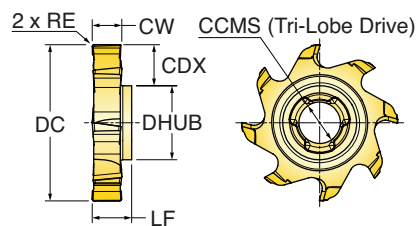
Coolant Alignment



When internal coolant is applied by combining the 18F/19F head with the S-L-SA holder, the arrows shown on the head and holder must be positioned opposite to each other (as shown below) in order to ensure a smooth coolant flow to the cutting edge.

MULTISURFER™ SERIES 18T, 19T

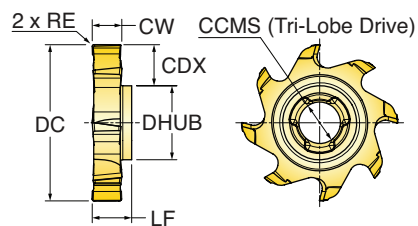
T-SLOT TIP



Part Number	DC Cutting Diameter	RE Corner Radius	CW Cutting Width	CDX Cutting Depth Max.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Diameter	Grade
									IN2005
18T-9712LPRN01	0.970	0.015 R	0.125	0.210	0.315	6	Multi-Surfer LP	0.510	•
18T-9715LPRN01	0.970	0.015 R	0.156	0.210	0.315	6	Multi-Surfer LP	0.510	•
18T-9718LPRN01	0.970	0.015 R	0.187	0.210	0.315	6	Multi-Surfer LP	0.510	•
18T-9721LPRN01	0.970	0.015 R	0.218	0.210	0.315	6	Multi-Surfer LP	0.510	•
18T-9725LPRN01	0.970	0.015 R	0.250	0.210	0.315	6	Multi-Surfer LP	0.510	•
18T-9728LPRN01	0.970	0.015 R	0.281	0.210	0.315	6	Multi-Surfer LP	0.510	•
18T-9731LPRN01	0.970	0.015 R	0.312	0.210	0.315	6	Multi-Surfer LP	0.510	•
19T-1212LQRN01	1.250	0.015 R	0.125	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1215LQRN01	1.250	0.015 R	0.156	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1218LQRN01	1.250	0.015 R	0.187	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1221LQRN01	1.250	0.015 R	0.218	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1225LQRN01	1.250	0.015 R	0.250	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1228LQRN01	1.250	0.015 R	0.281	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1231LQRN01	1.250	0.015 R	0.312	0.310	0.315	8	Multi-Surfer LQ	0.590	•
19T-1515LRRN01	1.562	0.015 R	0.156	0.430	0.394	10	Multi-Surfer LR	0.670	•
19T-1518LRRN01	1.562	0.015 R	0.187	0.430	0.394	10	Multi-Surfer LR	0.670	•
19T-1521LRRN01	1.562	0.015 R	0.218	0.430	0.394	10	Multi-Surfer LR	0.670	•
19T-1525LRRN01	1.562	0.015 R	0.250	0.430	0.394	10	Multi-Surfer LR	0.670	•
19T-1528LRRN01	1.562	0.015 R	0.281	0.430	0.394	10	Multi-Surfer LR	0.670	•
19T-1531LRRN01	1.562	0.015 R	0.312	0.430	0.394	10	Multi-Surfer LR	0.670	•
19T-1537LRRN01	1.562	0.015 R	0.375	0.430	0.394	10	Multi-Surfer LR	0.670	•

MULTISURFER™ SERIES 18T, 19T (METRIC)

T-SLOT TIP



Part Number	DC Cutting Diameter	RE Corner Radius	CW Cutting Width	CDX Cutting Depth Max.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Diameter	Grade
									IN2005
18T24730LPRN04	24.70 mm	0.400 R	3.00 mm	5.50 mm	8.00 mm	6	Multi-Surfer LP	13.00 mm	•
18T24740LPRN04	24.70 mm	0.400 R	4.00 mm	5.50 mm	8.00 mm	6	Multi-Surfer LP	13.00 mm	•
18T24750LPRN04	24.70 mm	0.400 R	5.00 mm	5.50 mm	8.00 mm	6	Multi-Surfer LP	13.00 mm	•
18T24760LPRN04	24.70 mm	0.400 R	6.00 mm	5.50 mm	8.00 mm	6	Multi-Surfer LP	13.00 mm	•
18T24770LPRN04	24.70 mm	0.400 R	7.00 mm	5.50 mm	8.00 mm	6	Multi-Surfer LP	13.00 mm	•
18T24780LPRN04	24.70 mm	0.400 R	8.00 mm	5.50 mm	8.00 mm	6	Multi-Surfer LP	13.00 mm	•
19T31730LQRN04	31.70 mm	0.400 R	3.00 mm	8.00 mm	8.00 mm	8	Multi-Surfer LQ	15.00 mm	•
19T31740LQRN04	31.70 mm	0.400 R	4.00 mm	8.00 mm	8.00 mm	8	Multi-Surfer LQ	15.00 mm	•
19T31750LQRN04	31.70 mm	0.400 R	5.00 mm	8.00 mm	8.00 mm	8	Multi-Surfer LQ	15.00 mm	•
19T31760LQRN04	31.70 mm	0.400 R	6.00 mm	8.00 mm	8.00 mm	8	Multi-Surfer LQ	15.00 mm	•
19T31770LQRN04	31.70 mm	0.400 R	7.00 mm	8.00 mm	8.00 mm	8	Multi-Surfer LQ	15.00 mm	•
19T31780LQRN04	31.70 mm	0.400 R	8.00 mm	8.00 mm	8.00 mm	8	Multi-Surfer LQ	15.00 mm	•
19T39740LRRN04	39.70 mm	0.400 R	4.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•
19T39750LRRN04	39.70 mm	0.400 R	5.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•
19T39760LRRN04	39.70 mm	0.400 R	6.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•
19T39770LRRN04	39.70 mm	0.400 R	7.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•
19T39780LRRN04	39.70 mm	0.400 R	8.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•
19T39790LRRN04	39.70 mm	0.400 R	9.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•
19T39799LRRN04	39.70 mm	0.400 R	10.00 mm	11.00 mm	10.00 mm	10	Multi-Surfer LR	17.00 mm	•

MULTISURFER™ SERIES 19R **NEW**

FULL RADIUS ALL-EFFECTIVE T-SLIT TIP



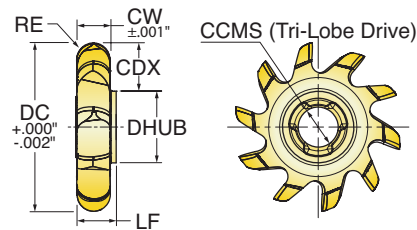
Contour



Slotting



T-Slotting



Part Number	DC Cutting Diameter	RE/CHW Corner Radius/ Chamfer Width	CW Cutting Width	CDX Cutting Depth Max.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Diameter	Grade
									IN2505
19RE1506LRRN03	1.562	0.031 R	0.062	0.430	0.390	10	Multi-Surfer LR	0.670	•
19RE1509LRRN04	1.562	0.047 R	0.094	0.430	0.390	10	Multi-Surfer LR	0.670	•
19RE1512LRRN06	1.562	0.062 R	0.125	0.430	0.390	10	Multi-Surfer LR	0.670	•
19RE1515LRRN07	1.562	0.078 R	0.156	0.430	0.393	10	Multi-Surfer LR	0.670	•
19RE1518LRRN09	1.562	0.094 R	0.187	0.430	0.389	10	Multi-Surfer LR	0.670	•

MULTISURFER™ SERIES 19R **NEW**

FULL RADIUS STAGGER TOOTH T-SLOT TIP



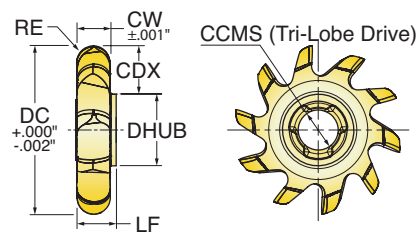
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Slotting



T-Slotting



Part Number	DC Cutting Diameter	RE/CHW Corner Radius/ Chamfer Width	CW Cutting Width	CDX Cutting Depth Max.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Diameter	Grade
									IN2505
19RE1525LRRN12	1.562	0.125 R	0.250	0.430	0.382	10	Multi-Surfer LR	0.670	•
19RE1531LRRN15	1.562	0.156 R	0.312	0.430	0.366	10	Multi-Surfer LR	0.670	•

MULTISURFER™ SERIES 19V **NEW**

DOVETAIL TIP



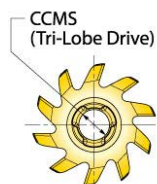
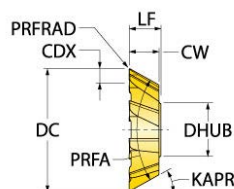
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Slotting



T-Slotting



Part Number	DC Cutting Diameter	PRFA Profile Angle	KAPR Cutting Edge Angle	PRFRAD Profile Radius	CW Cutting Width	CDX Cutting Depth Max.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Diameter
19V-1539LRRRA45	1.561	90.0	45.0	0.008	0.376	0.370	0.400	10	Multi-Surfer LR	0.670
19V-1539LRRRA60	1.561	60.0	30.0	0.008	0.376	0.210	0.400	10	Multi-Surfer LR	0.670
19V-1539LRRRA75	1.561	30.0	15.0	0.008	0.376	0.100	0.400	10	Multi-Surfer LR	0.670

MULTISURFER™ SERIES 18F, 19F (METRIC)

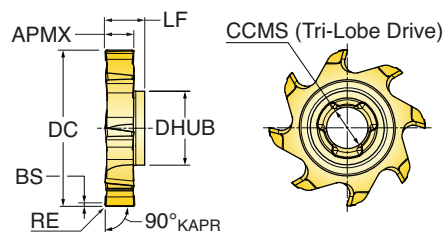
90° FACE MILL TIP



Shoulder



Facing



Part Number	DC Cutting Diameter	RE Corner Radius	BS Wiper Length	APMX Depth of Cut Max.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Diameter	Grade
									IN2005
18F24280LPRA04	24.25 mm	0.400 R	3.60 mm	8.00 mm	8.0 mm	8	Multi-Surfer LP	13.0 mm	•
19F31280LQRA04	31.25 mm	0.400 R	3.60 mm	8.00 mm	8.0 mm	8	Multi-Surfer LQ	15.0 mm	•
19F39210LRR04	39.25 mm	0.400 R	3.60 mm	10.00 mm	10.0 mm	10	Multi-Surfer LR	17.0 mm	•

MULTISURFER™ SERIES 18Y_60, 19Y_60

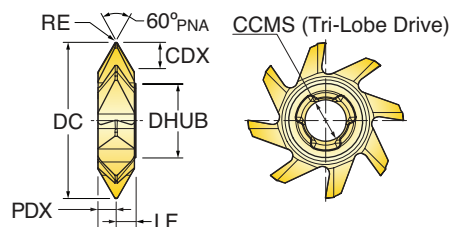
PARTIAL PROFILE THREAD MILL TIP



Internal Thread



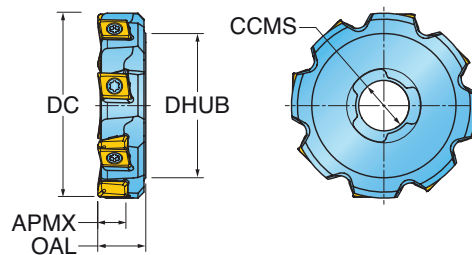
External Thread



Part Number	DC Cutting Dia.	TPN Thread Pitch Min.	TPX Thread Pitch Max.	TPIN Thread Pitch Inch Min.	TPIX Thread Pitch Inch Max.	PNA Profile Included Angle	RE Corner Radius	PDX Profile Distance Ex.	CDX Cutting Depth Max.	LF Functional Length.	DWN Workpiece Dia. Min.	ZEFF Eff. Flutes	CCMS Connection Code	DHUB Hub Diameter	Grade
															IN2005
18Y24730LPRP60	24.70mm	3.0	5.0	8	5	60	0.20mm	2.2mm	3.50mm	5.50mm	36.0mm	6	Multi-Surfer LP	13.0mm	•
19Y31740LQRP60	31.70mm	4.0	6.0	6	4	60	0.30mm	3.7mm	4.70mm	4.00mm	46.0mm	8	Multi-Surfer LQ	15.0mm	•
19Y39760LRRP60	39.70mm	6.0	8.0	4	3	60	0.40mm	4.5mm	6.20mm	5.00mm	57.0mm	10	Multi-Surfer LR	17.0mm	•

MAXSPEED™ SERIES 1EJ7A **NEW**

90° MODULAR HIGH-DENSITY FACE MILL

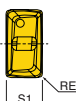


Part Number	DC Cutting Diameter	OAL Overall Length	DHUB Hub Diameter	ZEFF Eff. Teeth	APMX Depth of Cut Max.	CCMS Connection Code Machine Side
1EJ7A-10032LQR01	1.000	0.315	0.748	6	0.185	Multi-Surfer LQ
1EJ7A-12032LQR01	1.250	0.315	0.945	8	0.185	Multi-Surfer LQ
1EJ7A-15040LRR01	1.500	0.394	1.220	10	0.185	Multi-Surfer LR

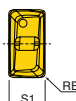
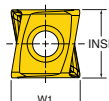
MAXSPEED™ 05 INSERTS



CGM101R001-ML



CGX101R001-M



Part Number	Application	RE Corner Radius	INSL Insert Length	W1 Insert Width	S1 Thickness	Grade	IN2510	IN2505	IN2530
CGM101R001-ML	General Purpose	0.015	0.197	0.197	0.106		•		•
CGX101R001-M	Utility	0.015	0.197	0.197	0.106		•	•	•

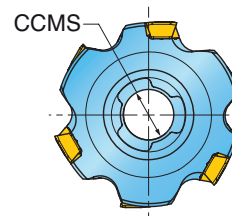
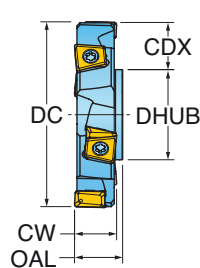
Insert screw tightening torque: 10-14 in*lbs.

MAXSPEED™

SERIES 3EJ6A

NEW

MODULAR SLOTTER



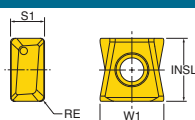
Part Number	DC Cutting Diameter	CW Cutting Width	CDX Cutting Depth Max.	ZEFP Eff. Teeth Periphery	ZNP Peripheral Insert Count	CCMS Connection Code Machine Side	DHUB Hub Diameter
3EJ6A-09027LPR01	0.875	0.276	0.16	2	4	Multi-Surfer LP	0.55
3EJ6A-10027LPR01	1.000	0.276	0.22	2	4	Multi-Surfer LP	0.51
3EJ6A-12027LQR01	1.250	0.276	0.31	3	6	Multi-Surfer LQ	0.59
3EJ6A-15027LRR01	1.500	0.276	0.39	4	8	Multi-Surfer LR	0.67

MAXSPEED™

05 INSERTS



CGM101-001-ML



Part Number	Application	RE Corner Radius	INSL Insert Length	W1 Insert Width	S1 Thickness	NOI Number of Indexes	IH Inset hand	Grade	IN2505	IN2530
CGM101-001-ML	General Purpose	0.015	0.197	0.197	0.106	4	Neutral		•	•

Insert screw tightening torque: 10-14 in*lbs.



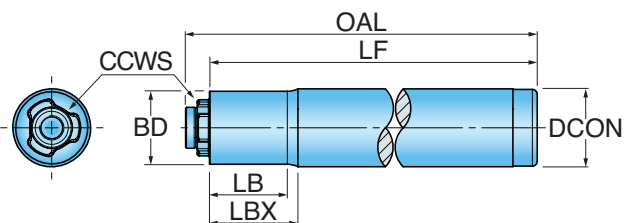
MAXSPEED™ 05 HARDWARE

			 **OPTIONAL**	 **OPTIONAL**	 **OPTIONAL**	
	Insert Screw	Driver Bit	Torque Driver Handle	Preset Torque Bit	Torque Driver Bit	
3EJ6A-09027LPR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	
3EJ6A-10027LPR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	
3EJ6A-12027LQR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	
3EJ6A-15027LRR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	
1EJ7A-10032LQR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	
1EJ7A-12032LQR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	
1EJ7A-15040LRR01	TS18049/HG-P	DS-TP06S	DS-A00-.25-S	DT-11-.25	DS-TP06B	

Insert screw tightening torque: 10-14 in*lbs.

MULTISURFER™ SERIES S*L*SA

STEEL SHANK, NECKED

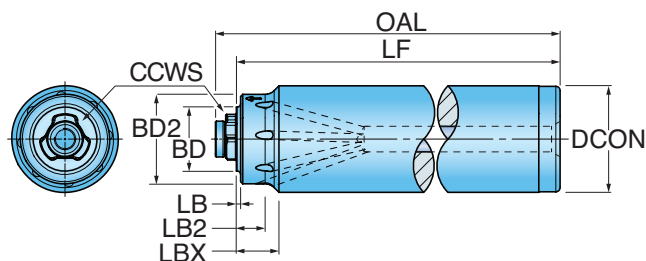


Part Number	CCWS Connection Code	LB Body Length 1	LBX Body Length Max.	LF Functional Length	OAL Overall Length	BD Body Diameter	DCON Shank Diameter	BMC Body Material Code
INCH								
S062LPSA-05	Multi-Surfer LP	0.600"	0.650"	4.000"	4.170"	0.510"	0.625"	Steel
S062LQSA-06	Multi-Surfer LQ	0.700"	0.720"	4.000"	4.190"	0.590"	0.625"	Steel
S062LQSA-07	Multi-Surfer LQ	0.780"	0.800"	5.000"	5.190"	0.590"	0.625"	Steel
S075LRSA-08	Multi-Surfer LR	0.900"	0.940"	5.500"	5.730"	0.670"	0.750"	Steel
METRIC								
S016LPSA-16	Multi-Surfer LP	13.00 mm	16.60 mm	100.00 mm	104.35 mm	13.00 mm	16.00 mm	Steel
S016LQSA-18	Multi-Surfer LQ	16.00 mm	18.20 mm	100.00 mm	104.90 mm	15.00 mm	16.00 mm	Steel
S016LQSA-19	Multi-Surfer LQ	16.00 mm	18.20 mm	130.00 mm	134.90 mm	15.00 mm	16.00 mm	Steel
S020LRSA-23	Multi-Surfer LR	20.20 mm	23.80 mm	140.00 mm	146.00 mm	17.00 mm	20.00 mm	Steel

*Shank modifications can be made by cutting off the back to desired length or turning back the neck for more usable length.

MULTISURFER™ SERIES S*L*SA

STEEL SHANK



Part Number	CCWS Connection Code	LB Body Length 1	LB2 Body Length 2	LBX Body Length Max.	LF Functional Length	OAL Overall Length	BD Body Dia.	BD2 Body Dia. 2	DCON Shank Dia.	CNSC Coolant Entry Style Code	CXSC Coolant Exit Style Code	BMC Body Mat'l Code
INCH												
S075LPSA-03	Multi-Surfer LP	0.030"	0.300"	0.380"	4.250"	4.420"	0.510"	0.625"	0.750"	1	1, 3	Steel
S100LQSA-03	Multi-Surfer LQ	0.030"	0.300"	0.380"	4.250"	4.440"	0.590"	0.812"	1.000"	1	1, 3	Steel
S125LRSA-03	Multi-Surfer LR	0.030"	0.300"	0.380"	5.750"	5.980"	0.670"	1.125"	1.250"	1	1, 3	Steel
METRIC												
S020LPSA-10	Multi-Surfer LP	0.76 mm	7.60 mm	10.00 mm	100.00 mm	104.35 mm	13.00 mm	16.00 mm	20.00 mm	1	1, 3	Steel
S025LQSA-10	Multi-Surfer LQ	0.76 mm	7.60 mm	10.00 mm	100.00 mm	104.90 mm	15.00 mm	21.00 mm	25.00 mm	1	1, 3	Steel
S032LRSA-10	Multi-Surfer LR	0.76 mm	7.60 mm	10.00 mm	140.00 mm	146.00 mm	17.00 mm	28.00 mm	32.00 mm	1	1, 3	Steel

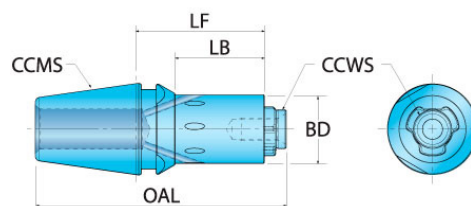
*Shank modifications can be made by cutting off the back to desired length.

MULTISURFER™ SERIES ER*L **NEW**

SOLID ER, NECK RELIEF



Coolant



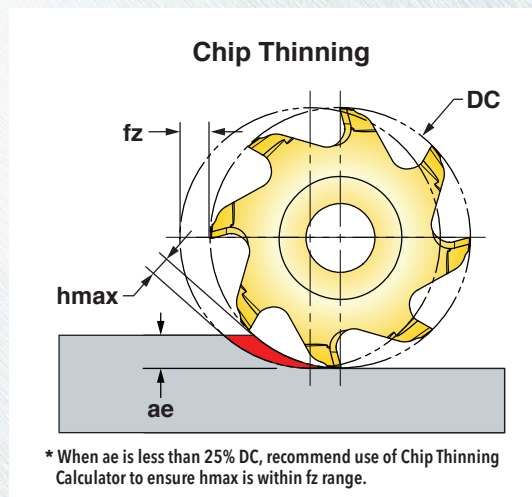
Part Number	CCMS Connection Code Machine Side	CCWS Connection Code Workpiece Side	LB Body Length	LF Functional Length	BD Body Dia.	OAL Overall Length	CNSC Coolant Entry Style Code	CXSC Coolant Exit Style Code
ER20LPSA-20	ER20	Multi-Surfer LP	0.787	1.125	0.512	2.200	1	1,3
ER20LQSA-20	ER20	Multi-Surfer LQ	0.787	1.125	0.590	2.200	1	1,3
ER25LPSA-20	ER25	Multi-Surfer LP	0.787	1.145	0.512	2.300	1	1,3
ER25LQSA-20	ER25	Multi-Surfer LQ	0.787	1.145	0.590	2.319	1	1,3
ER25LRSA-20	ER25	Multi-Surfer LR	0.787	1.145	0.670	2.362	1	1,3
ER32LPSA-20	ER32	Multi-Surfer LP	0.787	1.185	0.512	2.535	1	1,3
ER32LQSA-20	ER32	Multi-Surfer LQ	0.787	1.185	0.590	2.555	1	1,3
ER32LRSA-20	ER32	Multi-Surfer LR	0.787	1.185	0.670	2.598	1	1,3
ER40LRSA-20	ER40	Multi-Surfer LR	0.787	1.268	0.670	2.834	1	1,3

**MULTISURFER™ HARDWARE**

				
	Screw	Driver Handle	Torx Bit	
S062LPSA-05	TS40T098/HG-P	DS-A00T	DS-TP156B	
S062LQSA-06	TS50T110/HG-P	DS-A00T	DS-TP206B	
S062LQSA-07	TS50T110/HG-P	DS-A00T	DS-TP206B	
S075LRSA-08	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	
S016LPSA-16	TS40T098/HG-P	DS-A00T	DS-TP156B	
S016LQSA-18	TS50T110/HG-P	DS-A00T	DS-TP206B	
S016LQSA-19	TS50T110/HG-P	DS-A00T	DS-TP206B	
S020LRSA-23	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	
S075LPSA-03	TS40T098/HG-P	DS-A00T	DS-TP156B	
S100LQSA-03	TS50T110/HG-P	DS-A00T	DS-TP206B	
S125LRSA-03	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	
S020LPSA-10	TS40T098/HG-P	DS-A00T	DS-TP156B	
S025LQSA-10	TS50T110/HG-P	DS-A00T	DS-TP206B	
S032LRSA-10	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	
ER20LPSA-20	TS40T098/HG-P	DS-A00T	DS-TP156B	
ER20LQSA-20	TS50T110/HG-P	DS-A00T	DS-TP206B	
ER25LPSA-20	TS40T098/HG-P	DS-A00T	DS-TP156B	
ER25LQSA-20	TS50T110/HG-P	DS-A00T	DS-TP206B	
ER25LRSA-20	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	
ER32LPSA-20	TS40T098/HG-P	DS-A00T	DS-TP156B	
ER32LQSA-20	TS50T110/HG-P	DS-A00T	DS-TP206B	
ER32LRSA-20	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	
ER40LRSA-20	SRM6X0.5-SP1719-IP25-HG	DS-A00T	DS-TP256B	

MULTISURFER™ OPERATING GUIDELINES

For Series 18T, 19T, 19R, 18F, 19F, 18Y, 19Y, 19V



Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples			
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	450-650	.002-.007	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	450-650		
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	400-600		
M	12 thru 13	Stainless Steel (Fer- ritic & Martensitic)	410, 416, 440	200-450	.002-.005	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4			May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-800	.002-.008	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03			
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-150	.002-.005	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr			

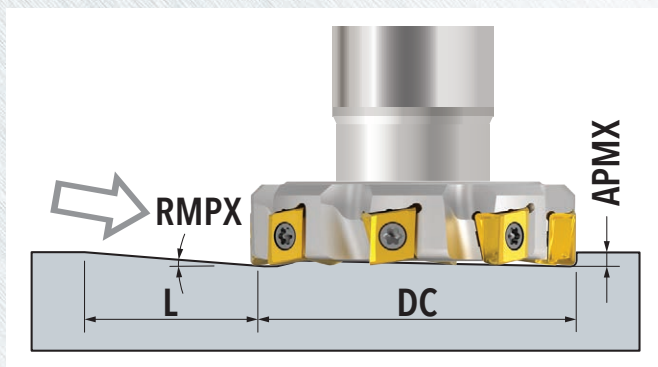
Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.

MAXSPEED™ 05 OPERATING GUIDELINES

ISO	Materials			V _c Cutting Speed SFM	f _z Feed/Tooth (inch)	Harder <-----> Tougher			Coolant	Geometry	
	Mat'l Group #VDI 3323	Type	Examples			IN2510	IN2505	IN2530		M	ML
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-850	.0015-.0030		1	2	NO	2	1
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-500	.0015-.0030		1	2	NO	2	1
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	250-500	.0015-.0030		1	2	NO	1	2
M	12 thru 13	"Stainless Steel (Ferritic & Martensitic)"	410, 416, 440	350-550	.0015-.0030		2	1	YES	2	1
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-500	.0015-.0030		2	1	May not be required at high speeds	2	1
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-700	.0015-.0030	1	2	3	NO	2	1
	17 thru 18	Nodular Cast Iron	60-40-18, 100-70-03	400-650	.0015-.0030	2	1	3	NO	1	2
N	21 thru 30	Aluminum	7075, 6061	1000+	.0015-.0030	1		2			1
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Monel	60-130	.0015-.0030		2	1	YES	2	1
	36 thru 37	Titanium Alloys	6AL-4V, 5Al-5Mo-5V-3Cr	65-150	.0015-.0030		2	1	YES	2	1
H	38 thru 39	Hardened Steel >48	A2, O1, D2	150-400	.0015-.0030		1	2	NO	1	

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.

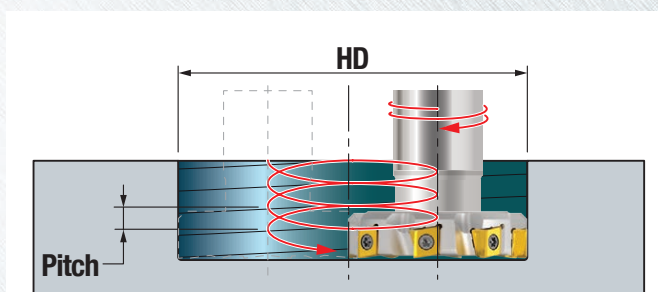
MAXSPEED™ 05 (MULTI-SURFER) STRAIGHT RAMPING



DCX Cutter Diameter	RMPX Ramp Angle Max.	L	APMX Depth of Cut Max.
1.000	0.60	17.30	0.185
1.250	0.40	26.00	0.185
1.500	0.30	34.60	0.185

L in this table is the length the cutter travels to reach the max. depth of cut (.185") while traveling at the max ramp angle listed for the cutter.

MAXSPEED™ 05 (MULTI-SURFER) HELICAL RAMPING



Pitch:

The max. pitch is determined to not exceed the max. depth of cut (APMX) and to not exceed the max. ramp angle (RMPX).

All ramping data is calculated with CGM101R001-ML inserts installed.

DCX Cutter Diameter	HD Min.	HD Max.	HD Max. w/o Cusp	Max Pitch Per Revolution
1.000	1.90	-	0.970	0.0010
-	-	2.00	-	0.0011
1.250	2.40	-	1.470	0.0214
-	-	2.50	-	0.0233
1.500	2.90	-	1.970	0.0196
-	-	3.00	-	0.0210

Example:

1. The min. hole dia. that the 1.000" dia. cutter can interpolate from solid is 1.90" (leaving a raised cusp).
2. The max. hole dia. that the 1.000" dia. cutter can interpolate from solid is 2.00".
3. The max. hole dia. that the 1.000" dia. cutter can interpolate from solid while leaving a flat-bottom is .970" (leaving no raised cusp).