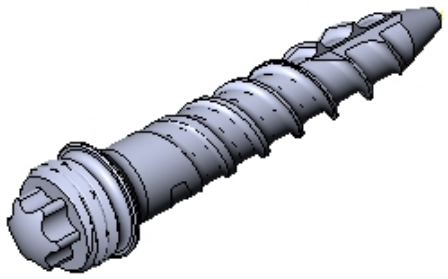
MACHINING REPORT

Turning report generated by surfsup on 1/18/2010 10:13 AM.

Part Name:	**ECAS 12-20 Bone Screw**		
ESPRIT File Path:	C:\VYTAS\ESPRIT\DemoGallery\Turning_Production\StarCNC\ECAS 12-20 Bone Screw.esp		
NC Program Number: Name: Unit:	1234.0000 BONE_SCREW Inch	**Stock** Type: Diameter: Length (Part/Total):	0 0.3750 1.1773/12.0000
Overall Cycle Time:	00:00:41	**Machine Name:**	Star ECAS 12-20
Material Class: Condition:			
Comment:			

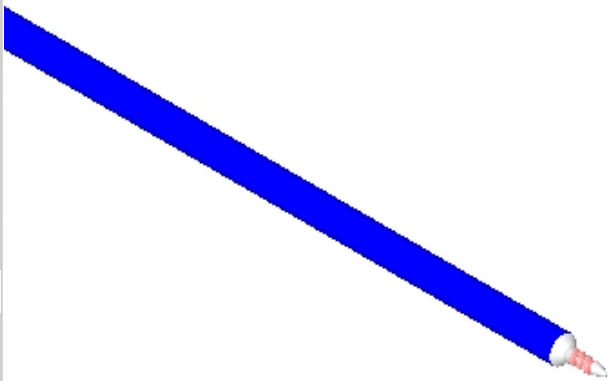


OP #	OPERATION	SPINDLE# TURRET# HEAD#	STATION# TOOL# ORIENT.	TOOL	SPEED RPM/SPM	FEED UNIT PM/PR (XY/Z)	NC COMP	CYCLE TIME	COMMENT
2	THREAD	1.0000 - 1.0000	S 3.0000 T 3.0000 2V	THREAD	750.0000 74.0000	75.0000 0.1000	-	00:00:00	-
3	MILL FLUTE	1.0000 - 1.0000	S 5.0000 T 5.0000 X -	3/8 END MILL	4000.0000 393.0000	20.0000 50.0000	Left 0.0000	00:00:01	-
5	DEBURR THREAD	1.0000 - 1.0000	S 3.0000 T 3.0000 2V	THREAD	750.0000 74.0000	75.0000 0.1000	-	00:00:00	-
7	THREAD	1.0000 - 1.0000	S 3.0000 T 3.0000 2V	THREAD	750.0000 74.0000	75.0000 0.1000	-	00:00:01	-
9	DEBURR THREAD	1.0000 - 1.0000	S 3.0000 T 3.0000 2V	THREAD	750.0000 74.0000	75.0000 0.1000	-	00:00:00	-
23	CUTOFF	1.0000 - 1.0000	S 1.0000 T 1.0000 2V	.088 CUTOFF	3000.0000 393.0000	3.0000 0.0010	-	00:00:05	-
26	ROUGH SUB OD	2.0000 - 2.0000	S 1.0000 T 21.0000 1H	BORING BAR SUB	3820.0000 250.0000	7.6400 0.0020	No	00:00:14	-
28	THREAD RELIEF	2.0000 - 2.0000	S 2.0000 T 22.0000 1H	.04 FULL RADIUS GROOVE	1910.0000 250.0000	5.7300 0.0030	No	00:00:01	-
29	THREAD SUB	2.0000 - 2.0000	S 3.0000 T 23.0000 1H	THREAD SUB	750.0000 74.0000	24.0000 0.0320	-	00:00:00	-
30	MILL HEXALOBE	2.0000 - 2.0000	S 4.0000 T 24.0000 Z -	1/16 END MILL	4000.0000 65.0000	20.0000 50.0000	Left 0.0000	00:00:03	-

31	FINISH OD	2.0000 - 2.0000	S 1.0000 T 21.0000 1H	BORING BAR SUB	1910.0000 250.0000	5.7300 0.0030	No	00:00:04	-
32	DEBURR THREAD SUB	2.0000 - 2.0000	S 3.0000 T 23.0000 1H	THREAD SUB	750.0000 74.0000	24.0000 0.0320	-	00:00:00	-
27	EJECT	2.0000 - 2.0000	S - T - -	-	0.0000 -	0.0000 -	-	00:00:01	-
24	PICKUP	2.0000 - 2.0000	S - T - -	-	300.0000 -	50.0000 -	-	00:00:02	-
1	FACE AND TURN PAST FLUTE	1.0000 - 3.0000	S 2.0000 T 12.0000 3V	35DEG .008RAD	1910.0000 250.0000	5.7300 0.0030	No	00:00:10	-
4	DEBURR TURN	1.0000 - 3.0000	S 2.0000 T 12.0000 3V	35DEG .008RAD	1910.0000 250.0000	5.7300 0.0030	No	00:00:08	-
6	TURN	1.0000 - 3.0000	S 2.0000 T 12.0000 3V	35DEG .008RAD	1910.0000 250.0000	5.7300 0.0030	No	00:00:06	-
8	DEBURR TURN	1.0000 - 3.0000	S 2.0000 T 12.0000 3V	35DEG .008RAD	1910.0000 250.0000	5.7300 0.0030	No	00:00:06	-

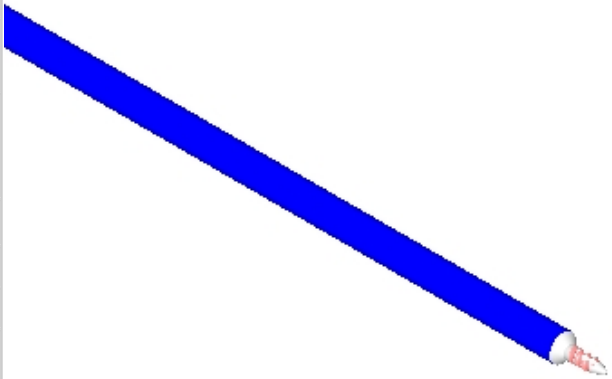
OPERATION DETAILS

OP 2 : THREAD	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:00 4.0684 3.2392
T 3.0000 : THREAD	
Tool Style	
Orientation	2V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	3.0000



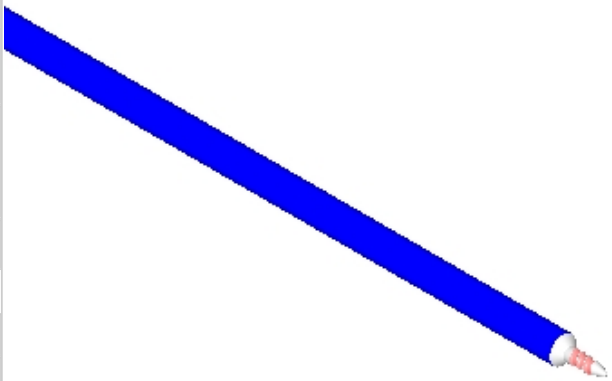
OPERATION DETAILS

OP 3 : MILL FLUTE	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	90.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:01 0.5000 0.3089
T 5.0000 : 3/8 END MILL	
Tool Style	End Mill
Orientation	X -
Tool Material	High Speed Steel, Solid, Uncoated
Spindle Direction	CW
Coolant	On
Length Comp Register	5.0000



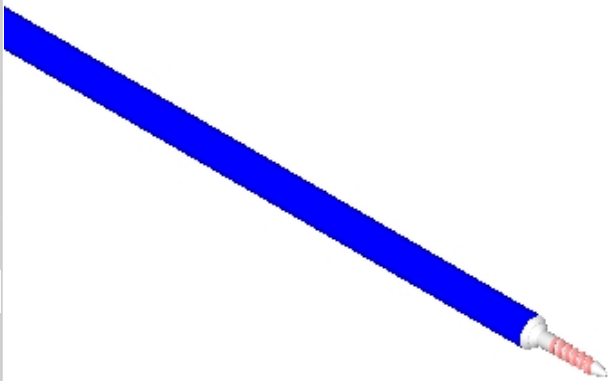
OPERATION DETAILS

OP 5 : DEBURR THREAD	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:00 0.1875 0.4055
T 3.0000 : THREAD	
Tool Style	
Orientation	2V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	3.0000



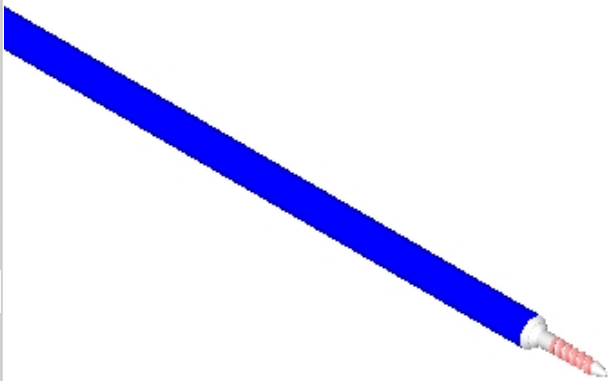
OPERATION DETAILS

OP 7 : THREAD	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:01 4.1071 5.3594
T 3.0000 : THREAD	
Tool Style	
Orientation	2V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	3.0000



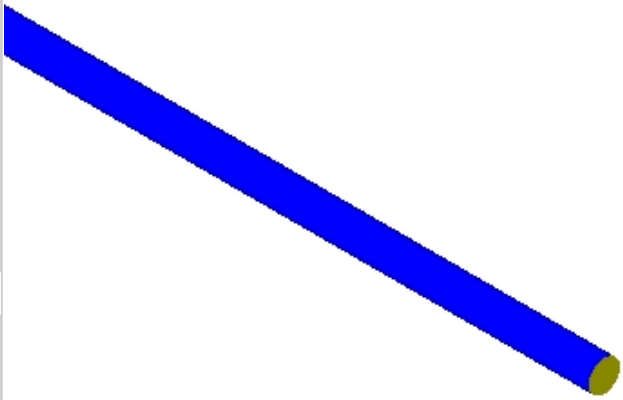
OPERATION DETAILS

OP 9 : DEBURR THREAD	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:00 0.3873 0.6818
T 3.0000 : THREAD	
Tool Style	
Orientation	2V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	3.0000



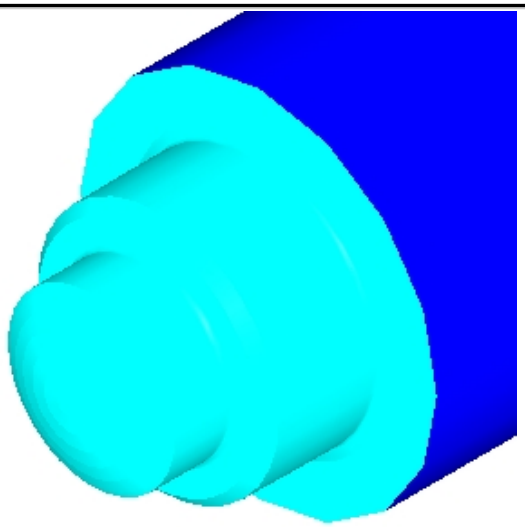
OPERATION DETAILS

OP 23 : CUTOFF	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:05 0.0000 0.2325
T 1.0000 : .088 CUTOFF	
Tool Style	
Orientation	2V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	1.0000



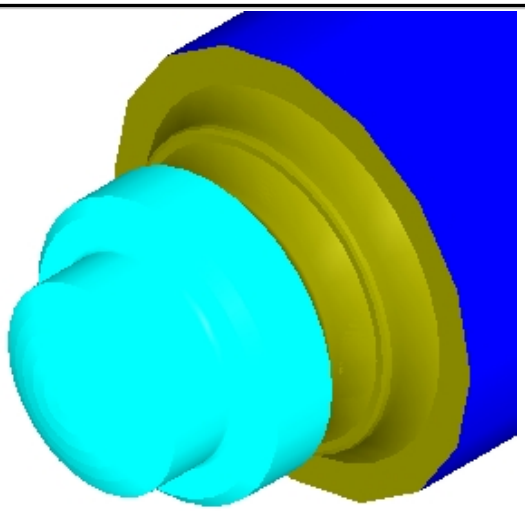
OPERATION DETAILS

OP 26 : ROUGH SUB OD	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:14 2.0244 1.7058
T 21.0000 : BORING BAR SUB	
Tool Style	
Orientation	1H
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	21.0000



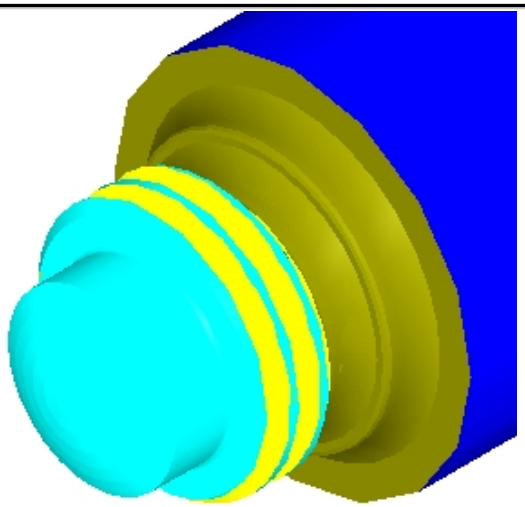
OPERATION DETAILS

OP 28 : THREAD RELIEF	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:01 0.5092 0.1089
T 22.0000 : .04 FULL RADIUS GROOVE	
Tool Style	
Orientation	1H
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	22.0000



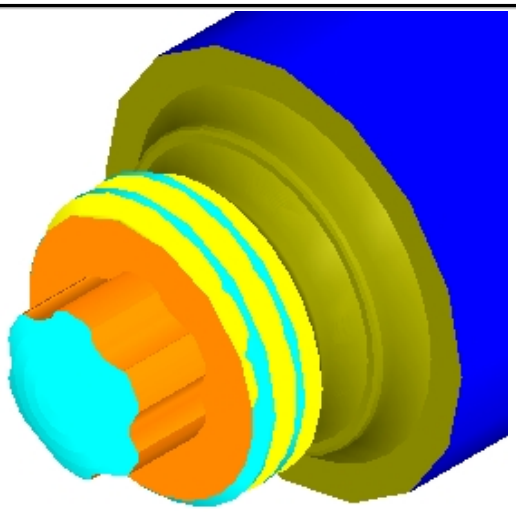
OPERATION DETAILS

OP 29 : THREAD SUB	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:00 1.2936 0.7267
T 23.0000 : THREAD SUB	
Tool Style	
Orientation	1H
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CCW
Coolant	On
Length Comp Register	23.0000



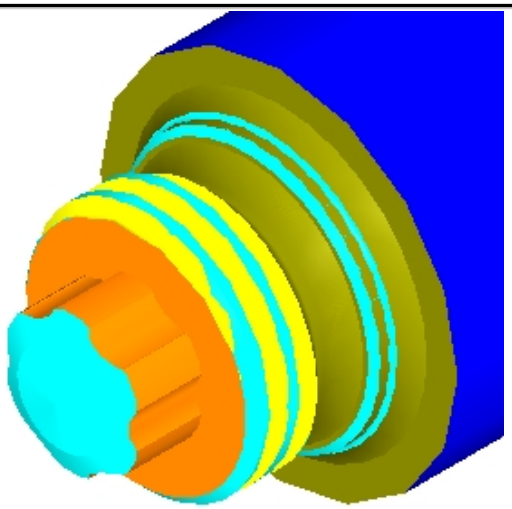
OPERATION DETAILS

OP 30 : MILL HEXALOBE	
Op Type	**-**
Work Coordinate	**XYZ**
Primary Angle Secondary Angle	**(90.0000)** **0.0000**
Cycle Time Rapid length Feed Length	**00:00:03** **0.0600** **1.0988**
T 24.0000 : 1/16 END MILL	
Tool Style	**End Mill**
Orientation	**Z -**
Tool Material	**High Speed Steel, Solid, Uncoated**
Spindle Direction	**CW**
Coolant	**On**
Length Comp Register	**24.0000**



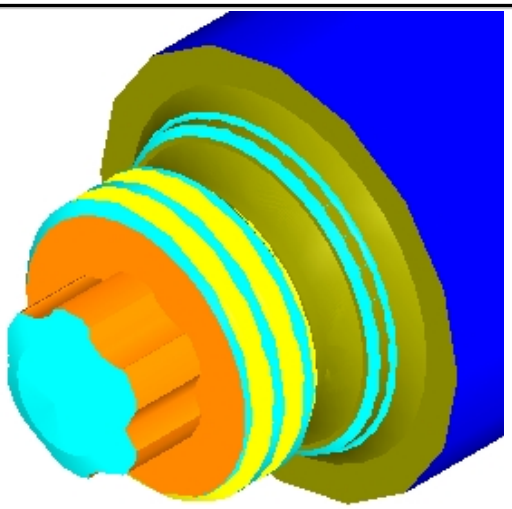
OPERATION DETAILS

OP 31 : FINISH OD	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:04 0.3096 0.3455
T 21.0000 : BORING BAR SUB	
Tool Style	
Orientation	1H
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	21.0000



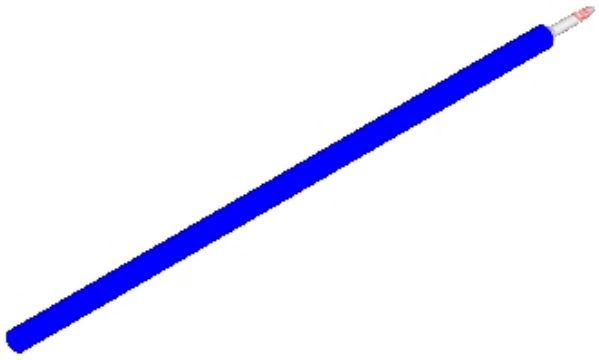
OPERATION DETAILS

OP 32 : DEBURR THREAD SUB	
Op Type	**-**
Work Coordinate	**XYZ**
Primary Angle Secondary Angle	**0.0000** **0.0000**
Cycle Time Rapid length Feed Length	**00:00:00** **0.4429** **0.1453**
T 23.0000 : THREAD SUB	
Tool Style	
Orientation	**1H**
Tool Material	**Carbide, Indexable, Coated**
Spindle Direction	**CCW**
Coolant	**On**
Length Comp Register	**23.0000**



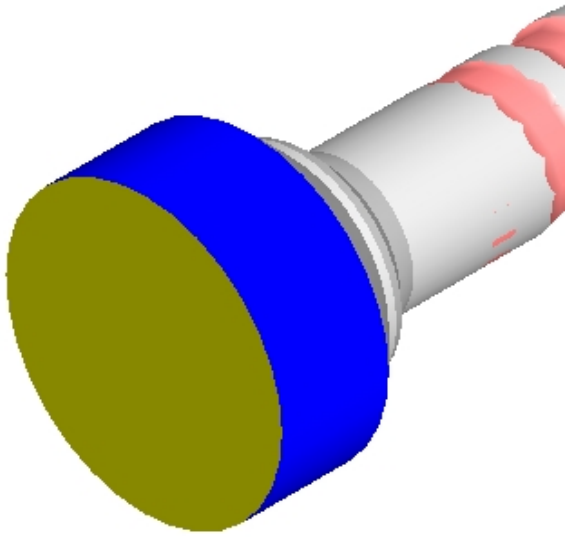
OPERATION DETAILS

OP 27 : EJECT	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:01 11.1532 0.0000
T CLT1101V : CL498V	
Tool Style	CLT1110V
Orientation	CLT1402V
Tool Material	CLT1420V
Spindle Direction	CLT1195V
Coolant	CLT1214V
Length Comp Register	CLT1121V



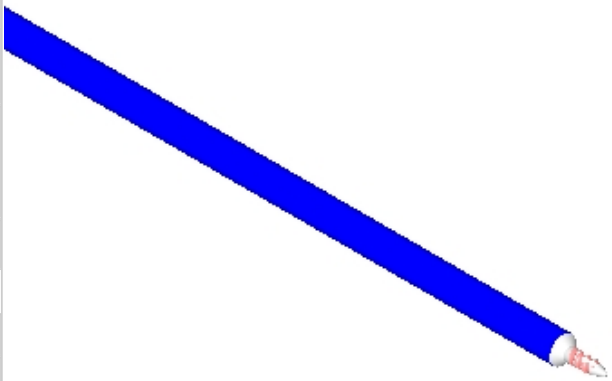
OPERATION DETAILS

OP 24 : PICKUP	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:02 9.7425 1.0000
T CLT1101V : CL498V	
Tool Style	CLT1110V
Orientation	CLT1402V
Tool Material	CLT1420V
Spindle Direction	CLT1195V
Coolant	CLT1214V
Length Comp Register	CLT1121V



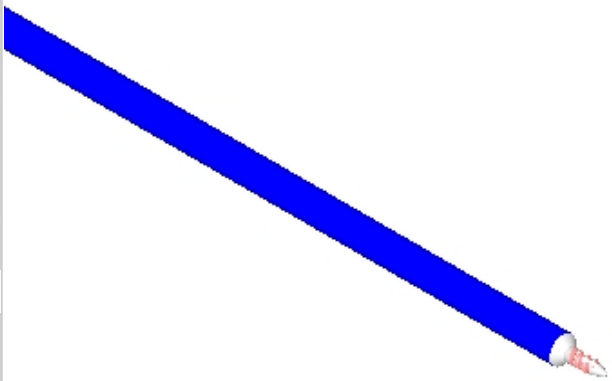
OPERATION DETAILS

OP 1 : FACE AND TURN PAST FLUTE	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:10 0.7005 0.9345
T 12.0000 : 35DEG .008RAD	
Tool Style	
Orientation	3V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	12.0000



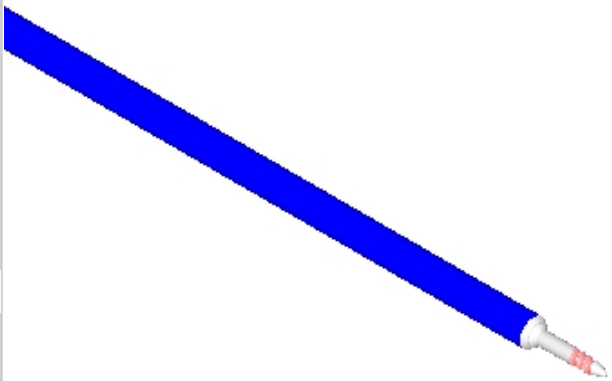
OPERATION DETAILS

OP 4 : DEBURR TURN	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:08 0.7005 0.7545
T 12.0000 : 35DEG .008RAD	
Tool Style	
Orientation	3V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	12.0000



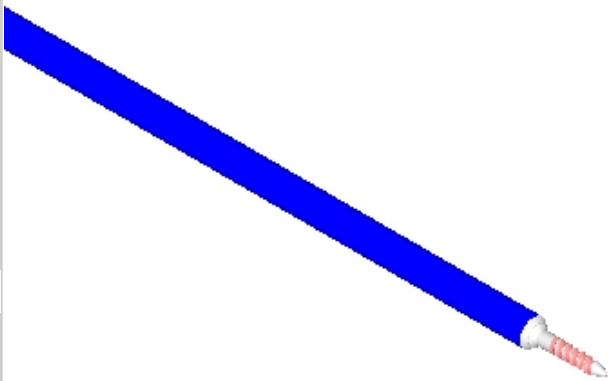
OPERATION DETAILS

OP 6 : TURN	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:06 0.0000 0.6171
T 12.0000 : 35DEG .008RAD	
Tool Style	
Orientation	3V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	12.0000



OPERATION DETAILS

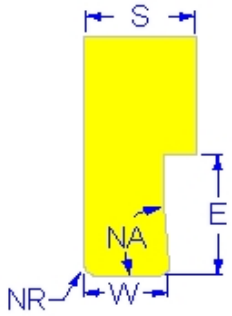
OP 8 : DEBURR TURN	
Op Type	-
Work Coordinate	XYZ
Primary Angle Secondary Angle	0.0000 0.0000
Cycle Time Rapid length Feed Length	00:00:06 0.0000 0.6171
T 12.0000 : 35DEG .008RAD	
Tool Style	
Orientation	3V
Tool Material	Carbide, Indexable, Coated
Spindle Direction	CW
Coolant	On
Length Comp Register	12.0000



TOOL LIST

T 1.0000 : .088 CUTOFF

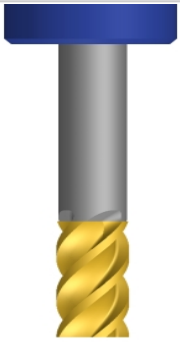
Comment : -



Insert ID	-	Insert Material	**Carbide, Indexable, Coated**
Holder ID	-	Coolant	**On**
Turret Name	**1.0000**	Spindle Direction	**CW**
Station Name	**1.0000**	Length Register	**1.0000**
Compensation	**Edge**	Edge Shift Register	**0.0000**
-	-	Orientation	**2V**
-	-	-	-

T 5.0000 : 3/8 END MILL

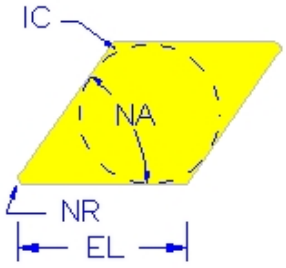
Comment : -



Tool Diameter	**0.3750**	Tool Material	**High Speed Steel, Solid, Uncoated**
Holder Diameter	**1.0000**	Coolant	**On**
Overall Length	**2.0000**	Spindle Direction	**CW**
Tool Length	**1.0000**	Length Comp Register	**5.0000**
Shank Diameter	**0.3750**	Axis Orientation	**X -**
Cutting Length	**0.5000**	-	-
Number of Flutes	**4.0000**	-	-

T 12.0000 : 35DEG .008RAD

Comment : -



Insert ID	-	Insert Material	**Carbide, Indexable, Coated**
Holder ID	-	Coolant	**On**
Turret Name	**2.0000**	Spindle Direction	**CW**
Station Name	**2.0000**	Length Register	**12.0000**
Compensation	**Corner**	-	-
-	-	Orientation	**3V**
-	-	-	-

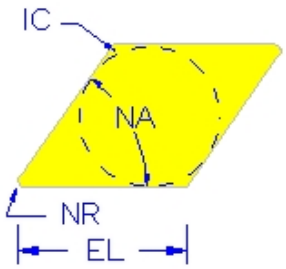
T 3.0000 : THREAD

Comment : -

Insert ID	-	Insert Material	**Carbide, Indexable, Coated**
-	-	Coolant	**On**
Turret Name	**1.0000**	Spindle Direction	**CW**
Station Name	**3.0000**	Length Register	**3.0000**
Compensation	**2.0000**	Edge Shift Register	**0.0000**
-	-	Orientation	**2V**
-	-	-	-

T 21.0000 : BORING BAR SUB

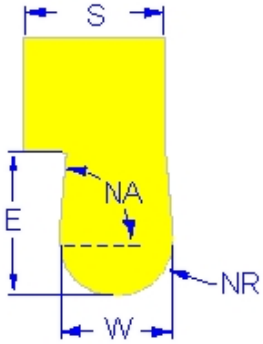
Comment : -



Insert ID	-	Insert Material	**Carbide, Indexable, Coated**
Holder ID	-	Coolant	**On**
Turret Name	**3.0000**	Spindle Direction	**CW**
Station Name	**1.0000**	Length Register	**21.0000**
Compensation	**Corner**	-	-
-	-	Orientation	**1H**
-	-	-	-

T 22.0000 : .04 FULL RADIUS GROOVE

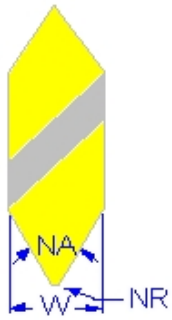
Comment : -



Insert ID	-	Insert Material	**Carbide, Indexable, Coated**
Holder ID	-	Coolant	**On**
Turret Name	**3.0000**	Spindle Direction	**CW**
Station Name	**2.0000**	Length Register	**22.0000**
Compensation	**Edge**	Edge Shift Register	**0.0000**
-	-	Orientation	**1H**
-	-	-	-

T 23.0000 : THREAD SUB

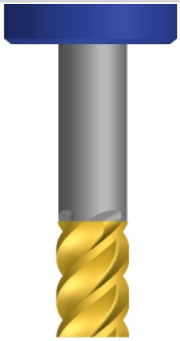
Comment : -



Insert ID	-	Insert Material	**Carbide, Indexable, Coated**
Holder ID	-	Coolant	**On**
Turret Name	**3.0000**	Spindle Direction	**CCW**
Station Name	**3.0000**	Length Register	**23.0000**
Compensation	**Corner**	-	-
-	-	Orientation	**1H**
-	-	-	-

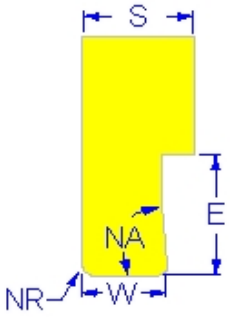
T 24.0000 : 1/16 END MILL

Comment : -

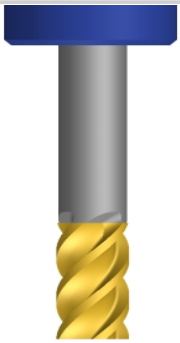


Tool Diameter	**0.0625**	Tool Material	**High Speed Steel, Solid, Uncoated**
Holder Diameter	**0.6250**	Coolant	**On**
Overall Length	**2.5000**	Spindle Direction	**CW**
Tool Length	**1.0000**	Length Comp Register	**24.0000**
Shank Diameter	**0.0625**	Axis Orientation	**Z -**
Cutting Length	**0.5000**	-	-
Number of Flutes	**4.0000**	-	-

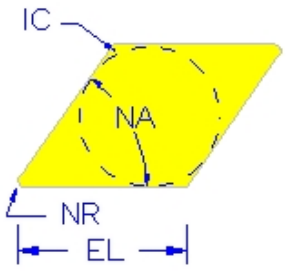
TOOL DETAILS

T 1.0000 : .088 CUTOFF			Comment : **CL7V**	
	Insert ID	**CL811V**	Insert Material	**Carbide, Indexable, Coated**
	Holder ID	**CL820V**	Coolant	**On**
	Turret Name	**1.0000**	Spindle Direction	**CW**
	Station Name	**1.0000**	Length Register	**1.0000**
	Compensation	**Edge**	Edge Shift Register	**0.0000**
	-	**-**	Orientation	**2V**
	-	**-**	CL403C	**CL403V**

TOOL DETAILS

T 5.0000 : 3/8 END MILL			Comment : **CL7V**	
	Tool Diameter	**0.3750**	Tool Material	**High Speed Steel, Solid, Uncoated**
	Holder Diameter	**1.0000**	Coolant	**On**
	Overall Length	**2.0000**	Spindle Direction	**CW**
	Tool Length	**1.0000**	Length Comp Register	**5.0000**
	Shank Diameter	**0.3750**	Axis Orientation	**X -**
	Cutting Length	**0.5000**	-	**-**
	Number of Flutes	**4.0000**	-	**-**

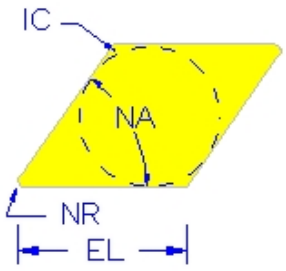
TOOL DETAILS

T 12.0000 : 35DEG .008RAD			Comment : **CL7V**	
	Insert ID	**CL811V**	Insert Material	**Carbide, Indexable, Coated**
	Holder ID	**CL820V**	Coolant	**On**
	Turret Name	**2.0000**	Spindle Direction	**CW**
	Station Name	**2.0000**	Length Register	**12.0000**
	Compensation	**Corner**	CL700C	**CL700V**
	-	**-**	Orientation	**3V**
	-	**-**	CL403C	**CL403V**

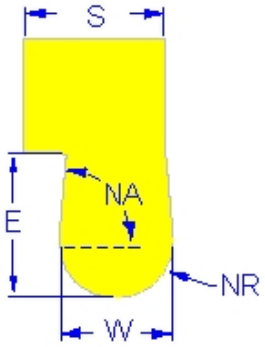
TOOL DETAILS

T 3.0000 : THREAD			Comment : **CL7V**	
	Insert ID	**CL811V**	Insert Material	**Carbide, Indexable, Coated**
	CL820C	**CL820V**	Coolant	**On**
	Turret Name	**1.0000**	Spindle Direction	**CW**
	Station Name	**3.0000**	Length Register	**3.0000**
	Compensation	**2.0000**	Edge Shift Register	**0.0000**
	-	**-**	Orientation	**2V**
	-	**-**	CL403C	**CL403V**

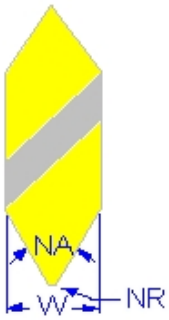
TOOL DETAILS

T 21.0000 : BORING BAR SUB			Comment : **CL7V**	
	Insert ID	**CL811V**	Insert Material	**Carbide, Indexable, Coated**
	Holder ID	**CL820V**	Coolant	**On**
	Turret Name	**3.0000**	Spindle Direction	**CW**
	Station Name	**1.0000**	Length Register	**21.0000**
	Compensation	**Corner**	CL700C	**CL700V**
	-	**-**	Orientation	**1H**
	-	**-**	CL403C	**CL403V**

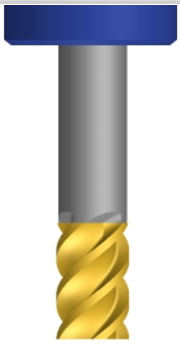
TOOL DETAILS

T 22.0000 : .04 FULL RADIUS GROOVE			Comment : **CL7V**	
	Insert ID	**CL811V**	Insert Material	**Carbide, Indexable, Coated**
	Holder ID	**CL820V**	Coolant	**On**
	Turret Name	**3.0000**	Spindle Direction	**CW**
	Station Name	**2.0000**	Length Register	**22.0000**
	Compensation	**Edge**	Edge Shift Register	**0.0000**
	-	**-**	Orientation	**1H**
	-	**-**	CL403C	**CL403V**

TOOL DETAILS

T 23.0000 : THREAD SUB			Comment : **CL7V**	
	Insert ID	**CL811V**	Insert Material	**Carbide, Indexable, Coated**
	Holder ID	**CL820V**	Coolant	**On**
	Turret Name	**3.0000**	Spindle Direction	**CCW**
	Station Name	**3.0000**	Length Register	**23.0000**
	Compensation	**Corner**	CL700C	**CL700V**
	-	**-**	Orientation	**1H**
	-	**-**	CL403C	**CL403V**

TOOL DETAILS

T 24.0000 : 1/16 END MILL			Comment : **CL7V**	
	Tool Diameter	**0.0625**	Tool Material	**High Speed Steel, Solid, Uncoated**
	Holder Diameter	**0.6250**	Coolant	**On**
	Overall Length	**2.5000**	Spindle Direction	**CW**
	Tool Length	**1.0000**	Length Comp Register	**24.0000**
	Shank Diameter	**0.0625**	Axis Orientation	**Z -**
	Cutting Length	**0.5000**	-	**-**
	Number of Flutes	**4.0000**	-	**-**