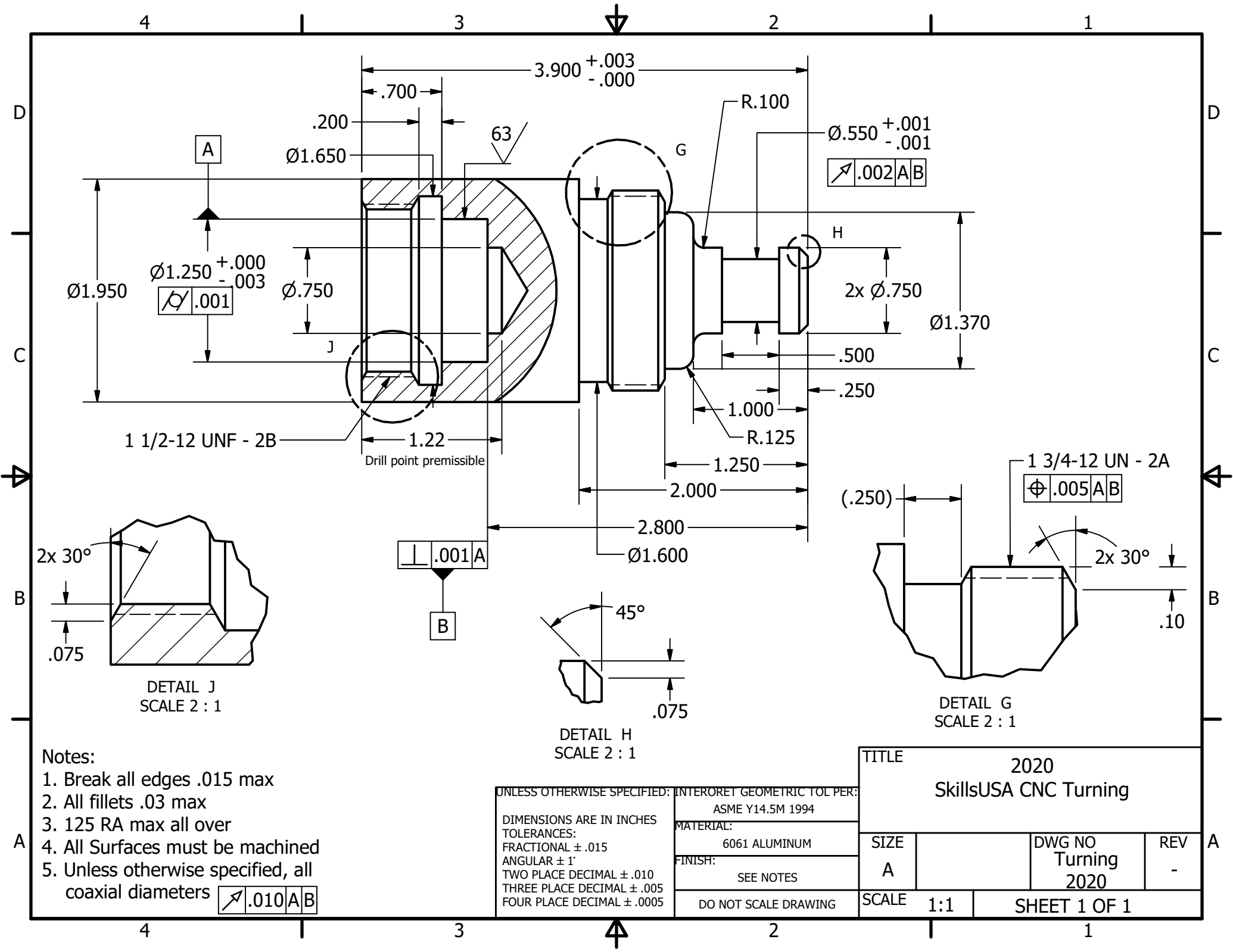


2020 LATHE TEST





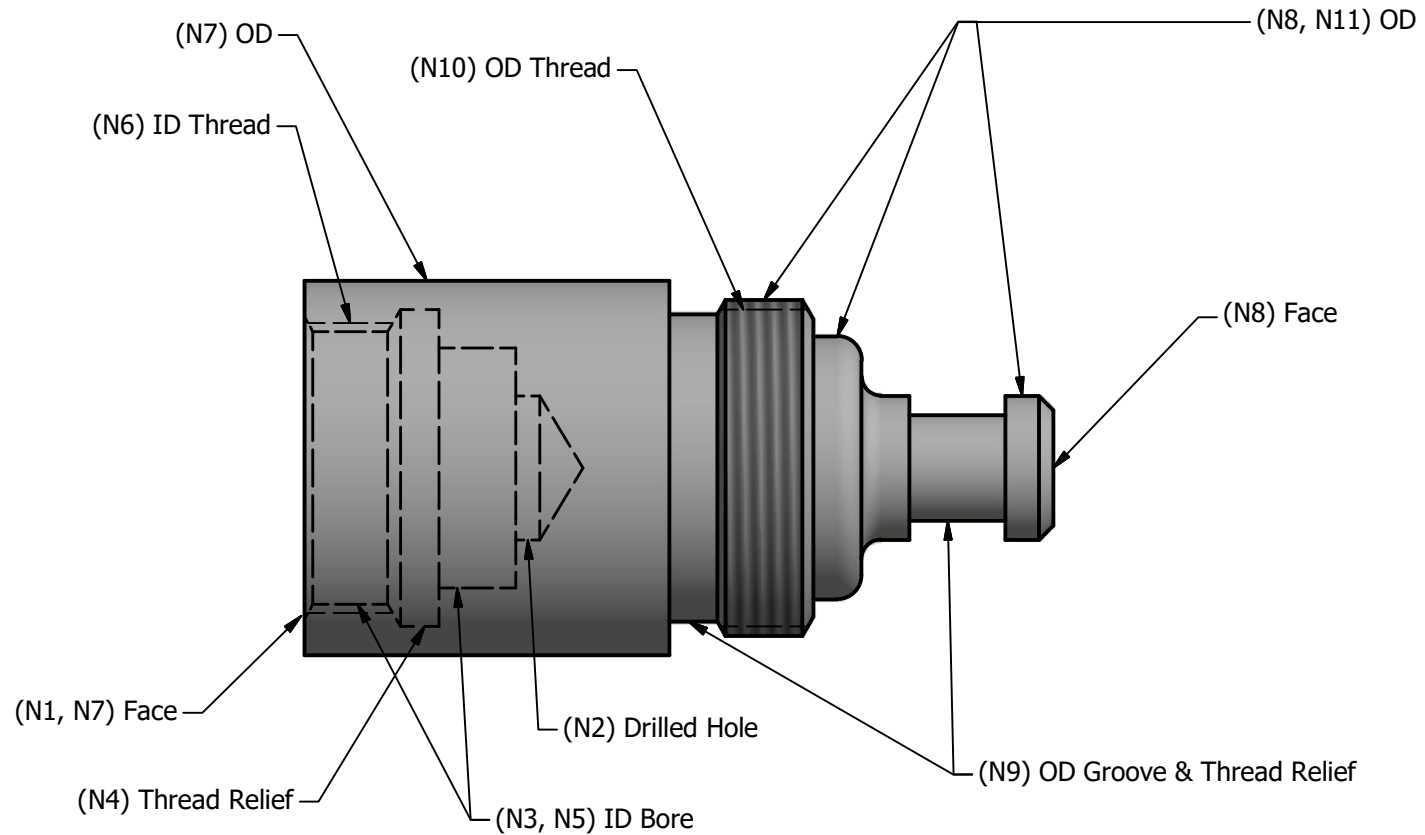
Notes:

1. Break all edges .015 max
2. All fillets .03 max
3. 125 RA max all over
4. All Surfaces must be machined
5. Unless otherwise specified, all coaxial diameters $\varnothing .010 AB$

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm .015$ ANGULAR $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .010$ THREE PLACE DECIMAL $\pm .005$ FOUR PLACE DECIMAL $\pm .0005$	INTERPRET GEOMETRIC TOL PER: ASME Y14.5M 1994
	MATERIAL: 6061 ALUMINUM
	FINISH: SEE NOTES
	DO NOT SCALE DRAWING

TITLE 2020 SkillsUSA CNC Turning			
SIZE A		DWG NO Turning 2020	REV -
SCALE 1:1	SHEET 1 OF 1		

Features that must be programmed



4

3

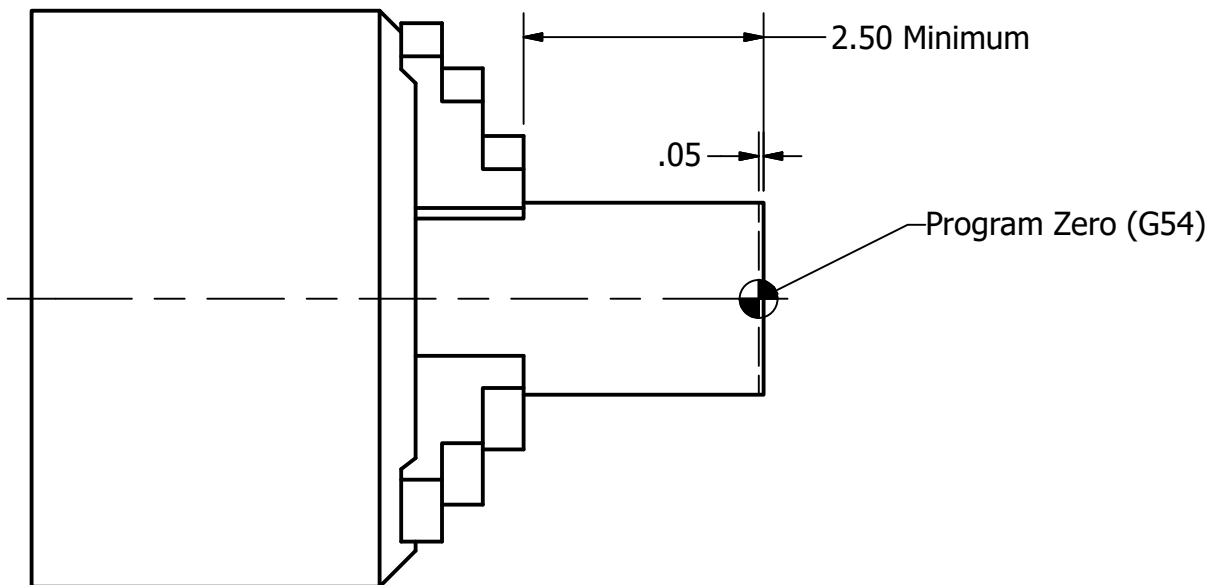
2

1

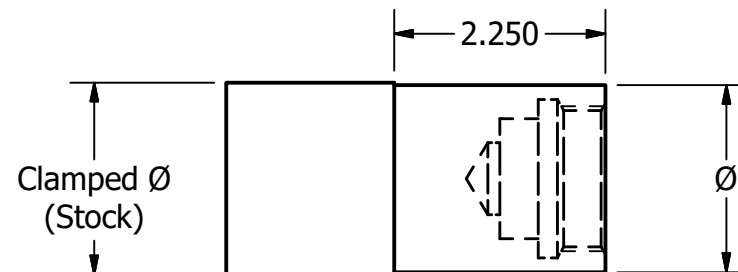
SkillsUSA 2020: Setup Sheet

Operation 1

Part Number	T2020
Operation	1 of 2
Machine	Haas ST-10
Material	6061 Aluminum
Stock Size	Op1
Workholding	6" Chuck
Fixture	Hard Jaws



This operation finishes all internal diameters and turns outside diameter 2.250 back (see diagram).



Note:

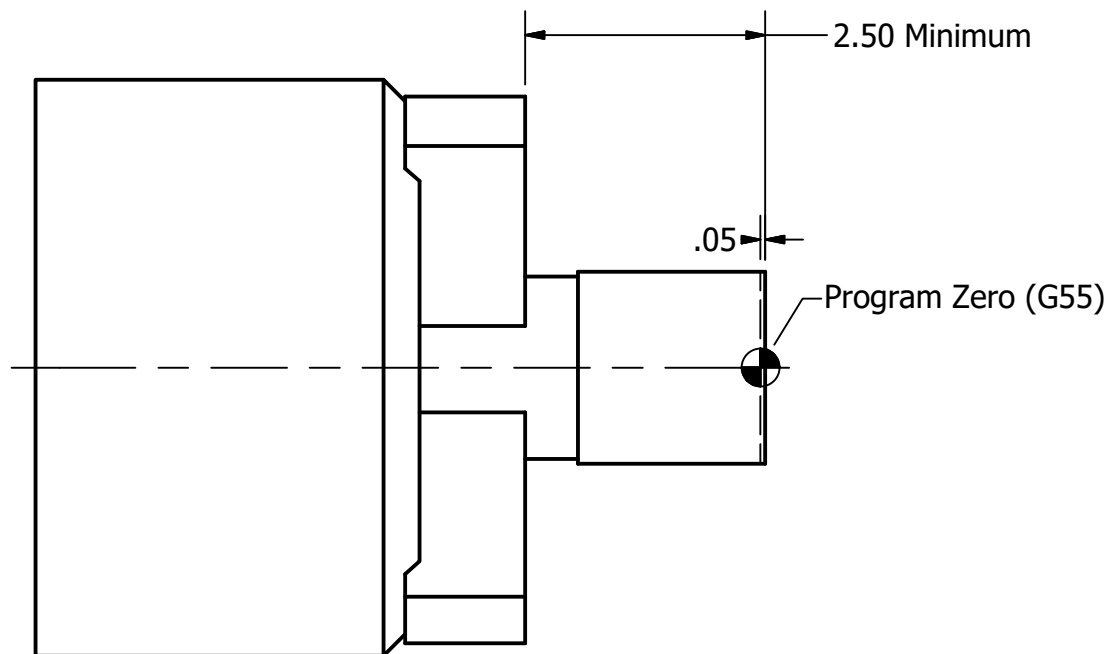
- * 6 inch chuck
- * Hard jaws are permissible

Sequence numbers N1 - N7

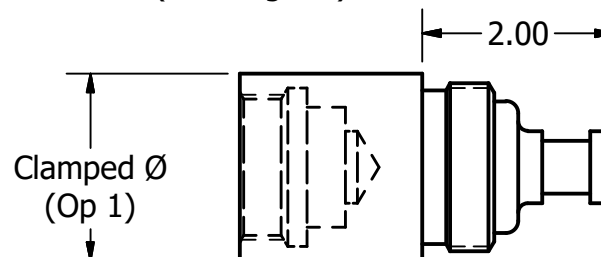
SkillsUSA 2020: CNC Setup Sheet

Operation 2

Part Number	T2020
Operation	2 of 2
Machine	Haas ST-10
Material	6061 Aluminum
Stock	Op 1
Work Holding	6" Chuck
Fixture	Bored Jaws



This operation finishes all external feature except finished diameter clamped in bored jaws. (see diagram).



Notes:

- * 6 inch chuck
- * Soft jaws required

Sequence numbers N8 - N11

Contestant#: _____

Turning Sequence & Score Card

Contest Name: _____

Sequence:	N1	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0101	Tip #3: .031R Speed: 1200 SFPM Feed: .006 IPR		15			
Tool Description:	OD Turn						
Coding Instructions:	Face part and leave .010" for finish						
				Followed Instructions?	5	☐	☐

Sequence:	N2	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T1010	Speed: 2500 RPM Feed: .005 IPR		15			
Tool Description:	.750 Dia. Drill						
Coding Instructions:	Drill hole						
			Followed Instructions?	5	☐		☐

Sequence:	N3	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0202	Tip #2: .015R Speed: 1200 SFPM Feed: .006 Depth of Cut: .05 X Stock to Leave: .020" Z Stock to Leave: .002"		20			
Tool Description:	ID Bore						
Coding Instructions:	Rough turn all IDs; thread minor diameter 1.410 (min), 1.428 (max)						
				Followed Instructions?	5	☐	☐

Sequence:	N4	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0404	Speed: 2000 RPM Feed: .006 IPR		35			
Tool Description:	ID Groove						
Coding Instructions:	Turn thread relief (ID Groove)						
Note: include chamfer				Followed Instructions?	5	☐	☐

Contestant #: _____

Turning Sequence & Score Card

Contest Name: _____

Sequence:	N5	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0202	Tip #2: .015R Speed: 1200 SFPM Feed: .006		15			
Tool Description:	ID Bore						
Coding Instructions:	Finish turn all IDs; thread minor diameter 1.410 (min), 1.428 (max)						
			Followed Instructions?	5	☐		☐

Sequence:	N6	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0606	Speed: 1800 RPM Feed: .08333 IPR Thread Height: .0451 Depth of 1st Pass: .015 Major Dia: 1.500		45			
Tool Description:	ID Thread						
Coding Instructions:	Thread ID						
				Followed Instructions?	5	☐	☐

Sequence:	N7	Cutting Parameters	Features		Y	Results	N
Tool Number:	T0101	Tip #3: .031R Speed: 1200 SFPM Feed: .008 IPR		15			☐
Tool Description:	OD Turn						
Coding Instructions:	Finish Face and OD						
			Followed Instructions?	5	☐		☐

Sequence:	N8	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0101	Tip #3: .031R Speed: 1200 SFPM Feed: .004 IPR		20			
Tool Description:	OD Turn						
Coding Instructions:	Part is flipped! Face part to length; rough and finish all ODs; thread major diameter = 1.7482 (max) 1.7368 (min) Note: Part length will have a minimum of .050" excess material; Finish turn O.D thread dia length to 1.99 to prep for OD groove						
			Followed Instructions?	5	☐		☐

Contestant #: _____

Turning Sequence & Score Card

Contest Name: _____

Sequence:	N9	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0808	Speed: 6000 RPM Feed: .004 IPR		30			
Tool Description:	OD Groove						
Coding Instructions:	Thread OD groove and thread relief. Note: include chamfer for threads.						
		Followed Instructions?		5	☐		☐

Sequence:	N10	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T1212	Speed: 1800 RPM Feed: .08333 IPR Thread Height: .0544 Depth of 1st Pass: .015 Minor Dia: 1.649		25			
Tool Description:	OD Thread						
Coding Instructions:	Thread OD						
		Followed Instructions?		5	☐		☐

Sequence:	N11	Cutting Parameters	Features	Points	Y	Results	N
Tool Number:	T0101	Tip #3: .031R Speed: 1200 SFPM Feed: .006 IPR		10			
Tool Description:	OD Turn						
Coding Instructions:	Clean up ODs and deburr threads after threading						
		Followed Instructions?		5	☐		☐

CNC Competition Tool Tip Information

Mill Project

- T4 .205 drill tip angle 140 degrees
- T5 tap has 3 tapered threads or .150 tapered length
- T6 .265 drill tip angle 140 degrees
- T7 reamer tip .041 tip length
- T8 sharp point, no flat
- T10 3/8" ball nose end mill is programmed from center of the ball tip

Lathe Project

- T1010 carbide inserted drill 4 degree included angle
- All lathe tools program from the leading edge

T0101 Insert

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

CCGX 09 T3 08-AL H10

CCGX 3(2.5)2-AL H10

5723245

10545010

Product Description

CoroTurn® 107 insert for turning

chip breaker manufacturer's designationCBMD

operation typeCTPT

insert size and shapeCUTINT_SIZESHAPE

inscribed circle diameterIC

insert shape codeSC

cutting edge effective lengthLE

Corner radiusRE

wiper edge propertyWEP

tool style codeTSYC

handHAND

gradeGRADE

SubstrateSUBSTRATE

AL

Medium ISO:

CC09T3 0.375

inch C

0.349291 inch

0.03126 inch

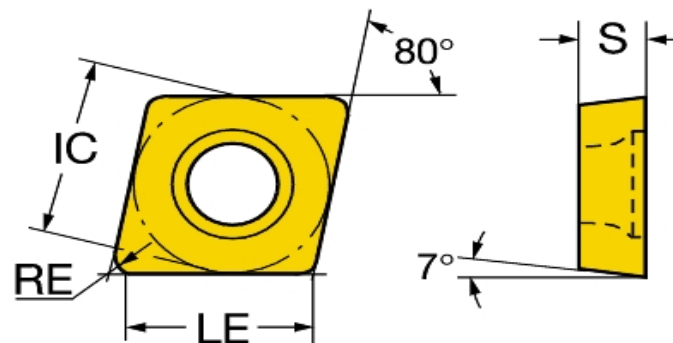
FALSE CCGX-

AL

N

H10

HM



T0101 Holder

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

QS-SCLCR 12

3C QS-SCLCR

61885923C

26188592

Product Description

CoroTurn® 107 shank tool for turning

tool cutting edge angleKAPR

tool lead anglePSIR

part 2 of cutting item interface identifiersCUTINT_MASTER

adaptive interface machine directionADINTMS maximum

ramping angleRMPX

workpiece side body angleBAWS

machine side body angleBAMS

maximum overhangOHX

tool style codeTSYC

handHAND

damping propertyDPC

coolant entry style codeCNSC

95 deg

-5 deg

ISO: CCMT 09T308

Rectangular shank -inch: 3/4 x 3/4

0 deg

0 deg

0 deg

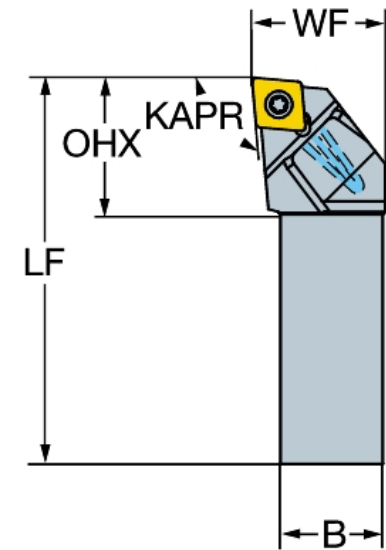
1.04331 inch

SCLCR/L..HP (INCH)

R

FALSE

1: axial concentric entry



T0202 Insert

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

CCGX 06 02 04-AL H10

CCGX 2(1.5)1-AL H10

5723233

10109385

Product Description

CoroTurn® 107 insert for turning

chip breaker manufacturer's designationCBMD

operation typeCTPT

insert size and shapeCUTINT_SIZESHAPE

inscribed circle diameterIC

insert shape codeSC

cutting edge effective lengthLE

Corner radiusRE

wiper edge propertyWEP

tool style codeTSYC

handHAND

gradeGRADE

SubstrateSUBSTRATE

AL

Medium

ISO: CC0602

0.25 inch

C

0.23811 inch

0.01563 inch

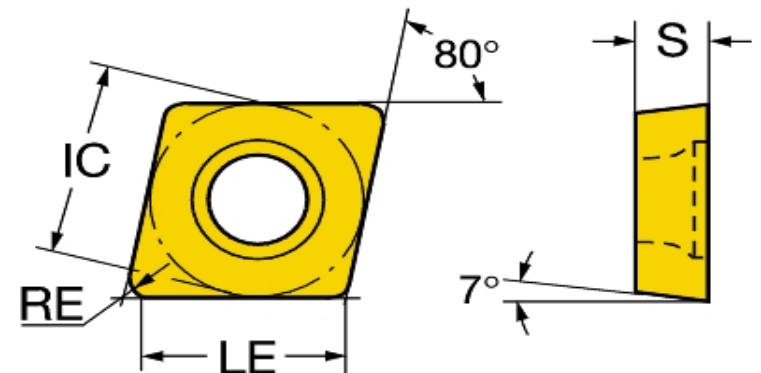
FALSE

CCGX-AL

N

H10

HM



T0202 Holder

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

A08M-SCLCR 2-R

A08M-SCLCR 2-R

5721313

12162986

Product Description

CoroTurn® 107 boring bar for turning

tool cutting edge angleKAPR

tool lead anglePSIR

part 2 of cutting item interface identifiersCUTINT_MASTER

adaptive interface machine directionADINTMS maximum

ramping angleRMPX

minimum bore diameterDMIN1

workpiece side body angleBAWS

machine side body angleBAMS

minimum overhangOHN

maximum overhangOHX

tool style codeTSYC

handHAND

95 deg

-5 deg

ISO: CCMT 060204

Cylindrical shank without clamping features -inch: 1/2

0 deg

0.598425 inch

0 deg

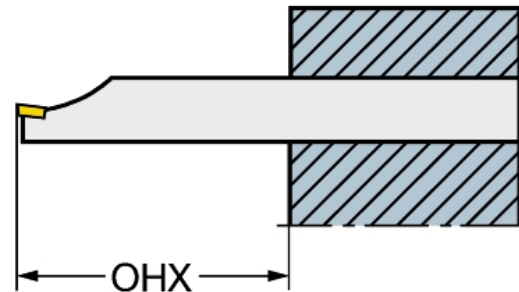
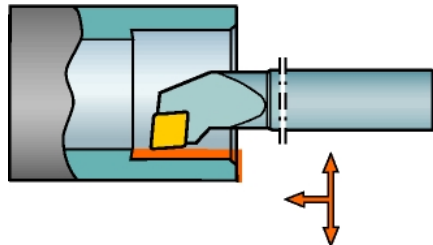
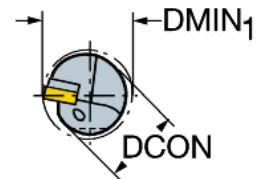
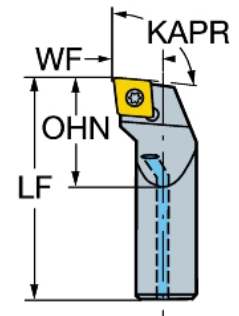
0 deg

0.75 inch

2 inch

A..SCLCR/L -R (INCH)

R



T0404 Insert

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

N151.3-400-30-7G 1125

N151.3-400-30-7G 1125

5736984

10925655

Product Description

T-Max® Q-Cut insert for grooving

insert seat size codeSSCM

30

insert seat size codeSSCN

30

cutting widthCW

0.15748 inch

handHAND

N

operation typeCTPT

Medium

clearance angle majorAN

11 deg

Corner radius leftREL

0.015748 inch 0.015748

Corner radius rightRER

inch N151.3-7G 0.20815

tool style codeTSYC insert

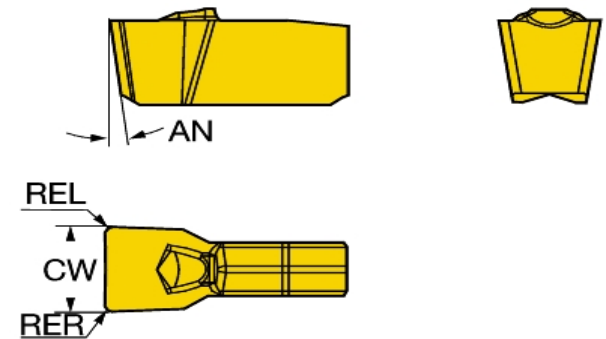
inch

thicknessS gradeGRADE

235

weight of itemWT

0.0374 lbs



T0404 Holder

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

RAG151.32-D12Q71-40

RAG151.32-D12Q71-40

5739264

80005269

Product Description

T-Max® Q-Cut boring bar for grooving

cutting depth maximumCDX

part 2 of cutting item interface identifiersCUTINT_MASTER

adaptive interface machine directionADINTMS minimum

bore diameterDMIN1

workpiece side body angleBAWS

minimum overhangOHN

maximum overhangOHX

handHAND

coolant entry style codeCNSC

coolant exit style codeCXSC

tool style codeTSYC

coolant pressureCP

0.235984 inch

COR: Q-Cut -size 30

(N151.3-300-30-4G) Cylindrical shank

w/ 3 flats -inch: 1 1.25984 inch

90 deg

1.27 inch

4 inch

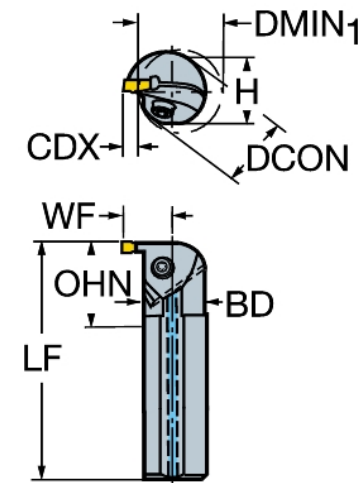
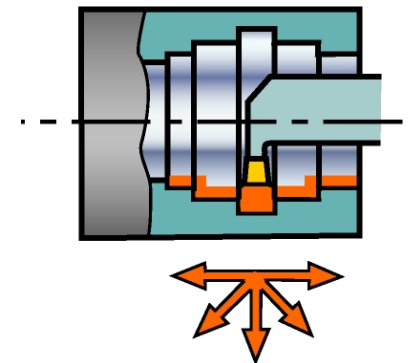
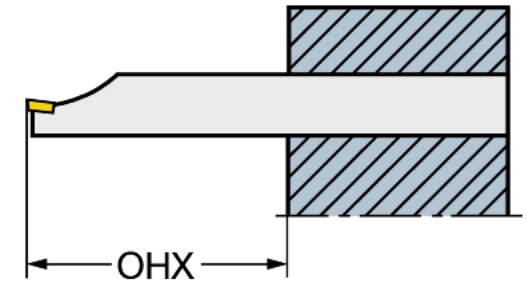
R

1axial concentric entry

3: axial inclined exit R/

LAG151.32 (3-INCH)

145.038 lbf/in2



T0606 Insert

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

266RL-16UN01A120M 1125

266RL-16UN01A120M 1125

5757954

12375252

Product Description

CoroThread® 266 insert for thread turning

insert seat size codeSSCM

insert seat size codeSSCN

thread form typeTHFT

Thread standard referenceTHFTSR1

threads per inchTPI

tooth countNT

theoretical thread heightHA thread

height differenceHB profile distance

exPDX

thread tolerance classTCTR thread

typeTTP

handHAND

3/8

3/8

UN60

ISO 5864-1978

12

1

0.052362 inch

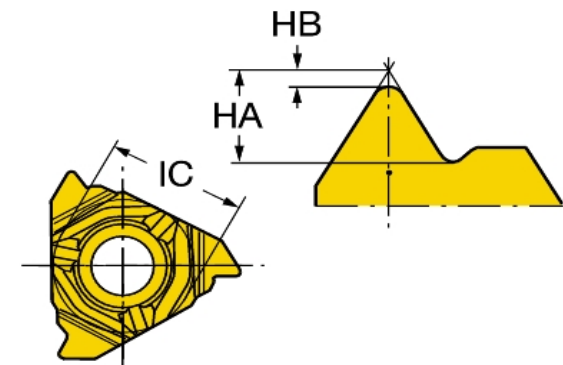
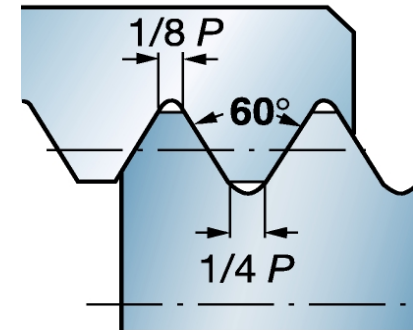
0.005118 inch

0.055118 inch

2B

INT

R



T0606 Holder

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

Product Description

CoroThread® 266 boring bar for thread turning

insert seat size codeSSCM

insert seat size codeSSCN

adaptive interface machine directionADINTMS

connection size codeCZC

minimum bore diameterDMIN1

shank heightH

functional widthWF

functional lengthLF

usable lengthLU

minimum overhangOHN

axial clearance angleALP

master insert identificationMIIDM

266RKF-D16-3

266RKF-D16-3

5758091

12387675

3/8

3/8

Cylindrical shank w/ 3 flats -inch: 1

1

1.26 inch

0.905984 inch

0.669016 inch

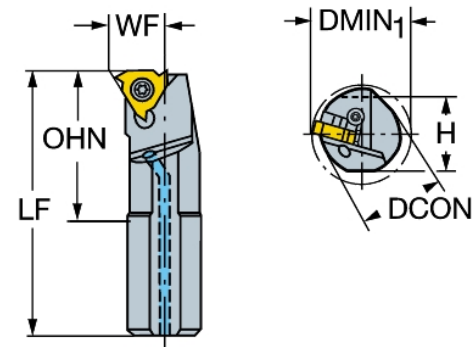
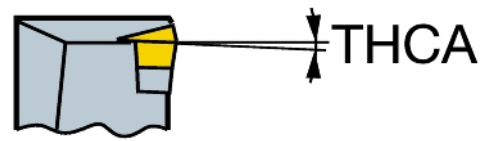
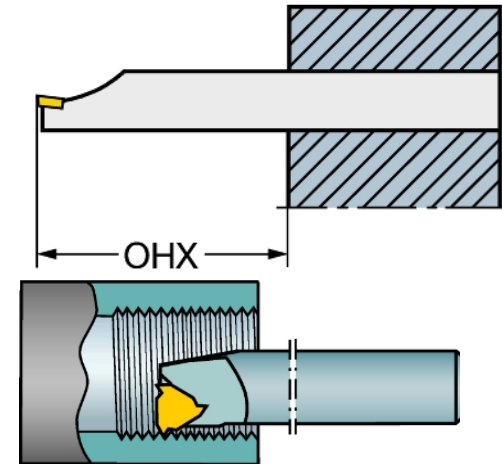
12 inch

3 inch

1.14 inch

-15 deg

266.RL-16..



T0808 Insert

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

N123H2-0400-0002-CM 1125

N123H2-0400-0002-CM 1125

5735975

12290471

Product Description CoroCut®

1-2 insert for parting

insert seat size codeSSCM

H

insert seat size codeSSCN

H

cutting widthCW handHAND

0.15748 inch

cutting depth maximumCDX

N

operation typeCTPT

0.948819 inch

clearance angle majorAN

Medium

Corner radius leftREL Corner

7 deg

radius rightRER tool style

0.007874 inch

codeTSYC

0.007874 inch

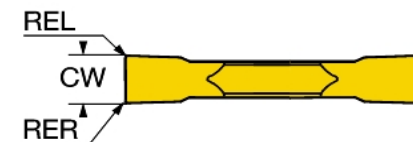
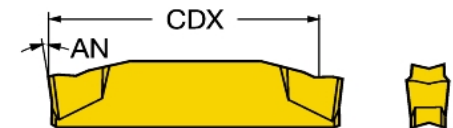
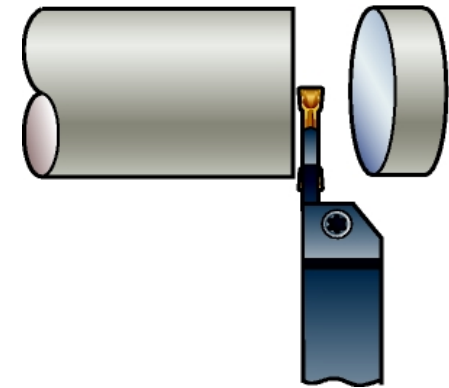
insert thicknessS

N123x2-CM

gradeGRADE

0.17126 inch

1125



T0808 Holder

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

RF123H051-12BM

RF123H051-12BM

5740824

12091354

Product Description

CoroCut® 1-2 shank tool for parting and grooving

cutting depth maximumCDX

part 2 of cutting item interface identifiersCUTINT_MASTER

adaptive interface machine directionADINTMS workpiece

side body angleBAWS

maximum overhangOHX

handHAND

coolant entry style codeCNCS

coolant exit style codeCXSC

tool style codeTSYC

shank widthB

shank heightH

tool cutting edge angleKAPR

0.51 inch

COR: CoroCut 2 -size H (N123H2-TF)

Rectangular shank -inch: 3/4 x 3/4 0

deg

1.33799 inch

R

0: without coolant

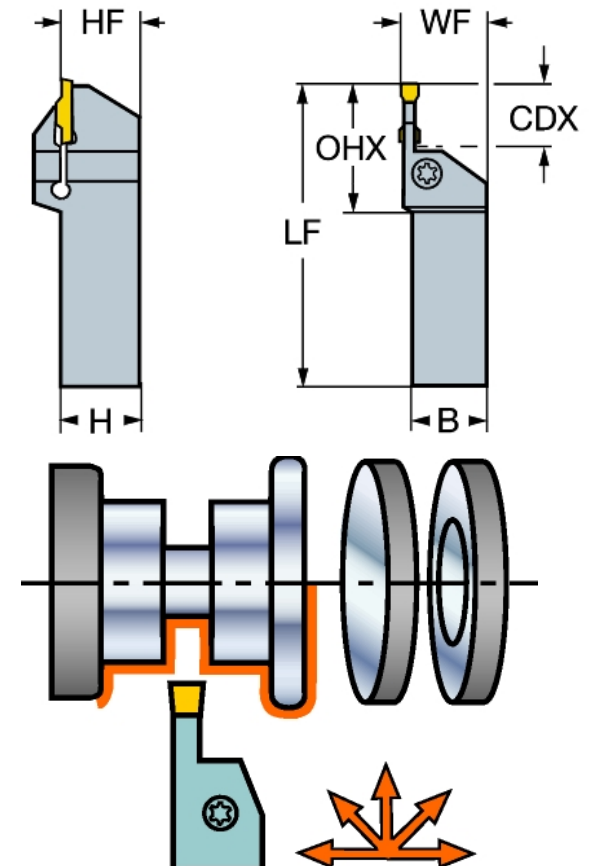
0: no coolant exit

R/LF123..B (INCH)

0.75 inch

0.75 inch

90 deg



CNC Turning Cutters

T1010 Inserts

Product information

Ordering code	
ISO	880-03 03 W06H-P-LM H13A
ANSI	880-03 03 W06H-P-LM H13A
Material ID	5765671
Bar code	12179731

Product Description CoroDrill®

880 insert for drilling

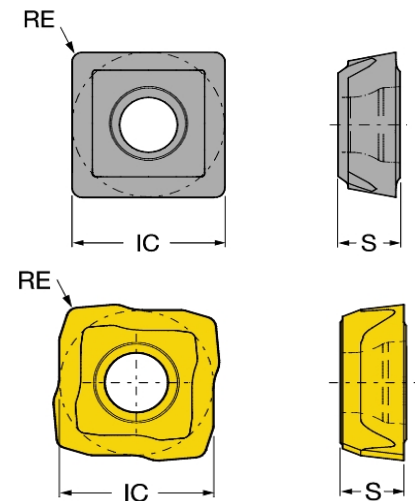
insert usage codeINSUC
chip breaker manufacturer's designationCBMD
operation typeCTPT
insert size and shapeCUTINT_SIZESHAPE
inscribed circle diameterIC
insert shape codeSC
Corner radiusRE
wiper edge propertyWEP
gradeGRADE
SubstrateSUBSTRATE
coatingCOATING
tool style codeTSYC

Product information

Ordering code	
ISO	880-03 03 05H-C-LM H13A
ANSI	880-03 03 05H-C-LM H13A
Material ID	5765612
Bar code	12179720

insert usage codeINSUC C
chip breaker manufacturer's designationCBMD LM
operation typeCTPT Medium feed
insert size and shapeCUTINT_SIZESHAPE COR: CoroDrill 880 -0303-C
inscribed circle diameterIC 0.224409 inch
Corner radiusRE 0.019685 inch
wiper edge propertyWEP FALSE
gradeGRADE H13A
SubstrateSUBSTRATE HM
coatingCOATING Uncoated
tool style codeTSYC 880..C-LM
insert thicknessS 0.102362 inch

P
LM
Medium feed
COR: CoroDrill 880 -0303-P
0.23622 inch
S
0.023622 inch
TRUE
H13A
HM
Uncoated
880..P-LM



T1010 Holder

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

A880-D0750P25-03

A880-D0750P25-03

5723690

12075803

Product Description

CoroDrill® 880 indexable insert drill

cutting diameterDC

0.75 inch

achievable hole tolerance lowerTCHAL

0 inch

achievable hole tolerance upperTCHAU usable

0.009843 inch

lengthLU

2.25 inch

usable length diameter ratioULDR maximum

3

adjustment limitADJLX

0.009843 inch

tool style codeTSYC

A880..Pxx-03

adaptive interface machine directionADINTMS

Cylindrical shank/clamping (US P shank) -inch: 1

coolant entry style codeCNSCO

7: decentral over flange and axial

coolant pressureCP

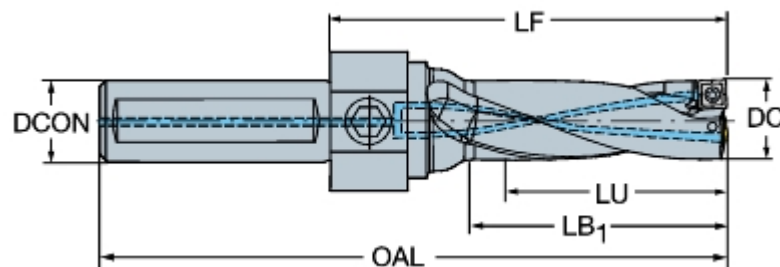
145.038 lbf/in²

connection diameterDCON

1 inch

tool cutting edge angleKAPR

88 deg



T1212 Insert

CNC Turning Cutters

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

266RG-16UN01A120M 1125

266RG-16UN01A120M 1125

5757932

12374946

Product Description

CoroThread® 266 insert for thread turning

insert seat size codeSSCM

insert seat size codeSSCN

thread form typeTHFT

Thread standard referenceTHFTSR1

threads per inchTPI

tooth countNT

theoretical thread heightHA thread

height differenceHB profile distance

exPDX

thread tolerance classTCTR thread

typeTTP

handHAND

3/8

3/8

UN60

ISO 5864-1978

12

1

0.062205 inch

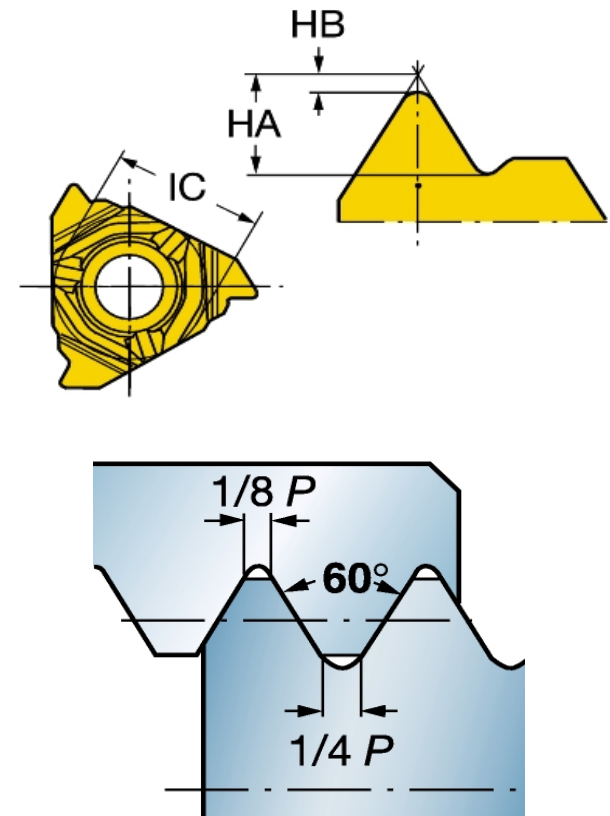
0.011024 inch

0.055118 inch

2A

EXT

R



T1212 Holder

Product information

Ordering code

ISO

ANSI

Material ID

Bar code

Product Description

CoroThread® 266 shank tool for thread turning

insert seat size codeSSCM

insert seat size codeSSCN

adaptive interface machine directionADINTMS

connection size codeCZC

shank widthB

shank heightH

functional widthWF

functional lengthLF

axial clearance angleALP

master insert identificationMIIDM

master insert identificationMIIDN

torqueTQ

CNC Turning Cutters

266RFG-123B

266RFG-123B

5757851

12387546

3/8

3/8

Rectangular shank -inch: 3/4 x 3/4

3/4 x 3/4

0.75 inch

0.75 inch

1 inch

4.5 inch

-10 deg

266.RG-16..

266.RG-16..

2.21269 ft lbs

