10/5 Standard Assembly
Scale 15:1

ZrO₂ — ZrO_2
MgO
Al₂O₃ — Al_2O_3
LaCrO₃ — $LaCrO_3$
Sample
Mullite
Rhenium
Thermocouple

940 Cement

A-5

A-6

A-4

LC-2

Oct-10-A+Slot

M-42

Re-5B

1.8 mm

M-41

Z-9

2.5 mm

1 mm
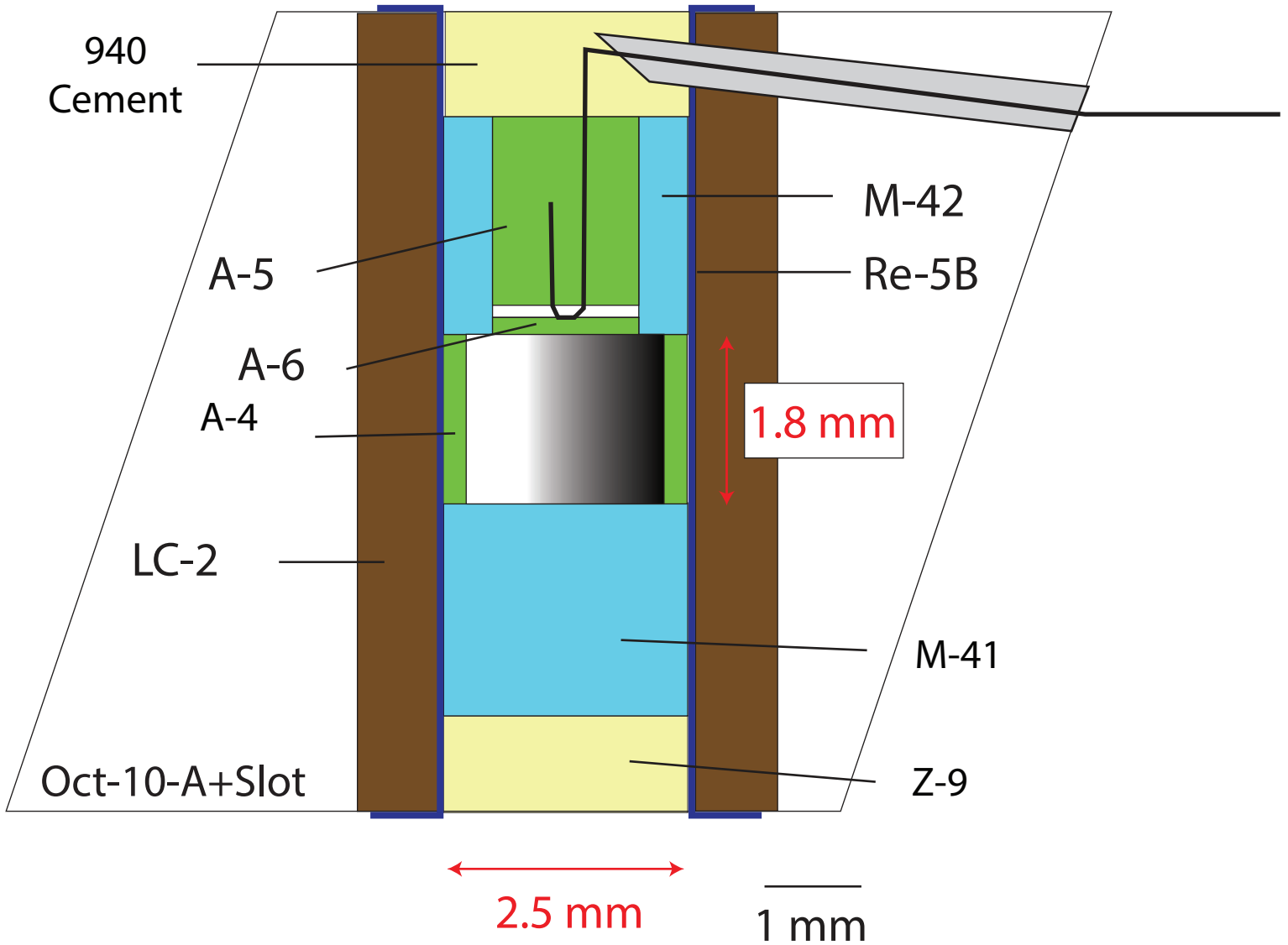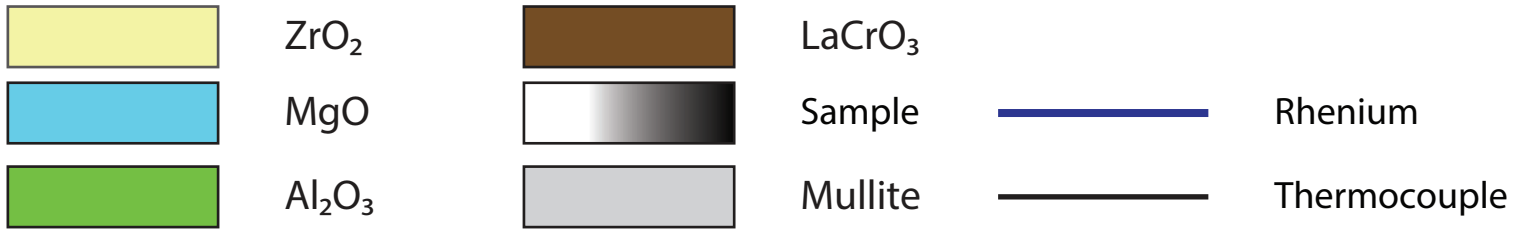
Updated 5/9/2022

Miniature rhenium furnaces for high-pressure experiments. Design #5B.

2.091 mm   0.80 mm   2.468 mm   0.80 mm   2.091 mm

0.80 mm

2.0 mm

9.75 mm

0.80 mm

8.25 mm
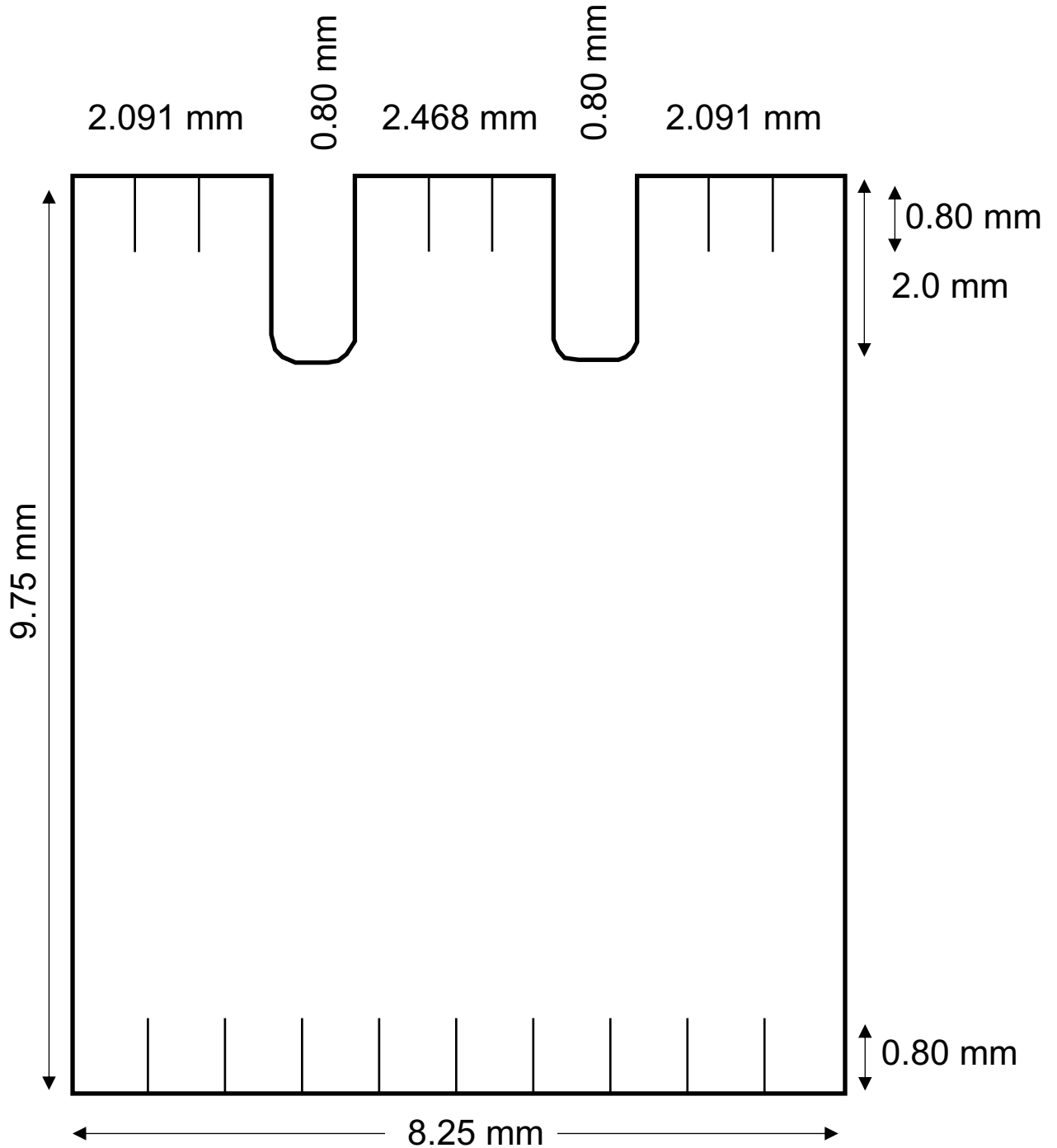
Thickness: 0.0025 inches (Material supplied by the customer). Yield approx. 189 pieces (7 by 27) from 3" x 10" sheet.

Two 0.8-mm wide notches on top as shown, 2.0 mm deep with approx. 0.2 mm radius at bottom. 6 slits, 0.8 mm deep, on top between the notches as shown.

9 slits on bottom side, 0.8 mm deep and equally spaced (0.825 mm apart).

All slits are approximately .003" wide.

Part LC-2: Sleeve with 2 grooves (for 10/5)
Material: Lanthanum Chromite
(Page 1 of 3) Quantity:
(3/31/21 - material S6)

OD = 0.1705" +/- 0.001" (as provided)

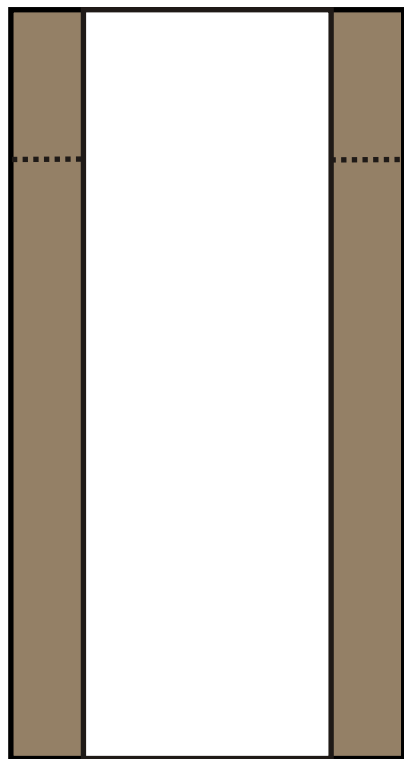ID = 0.1075" (+.002, -.001)*
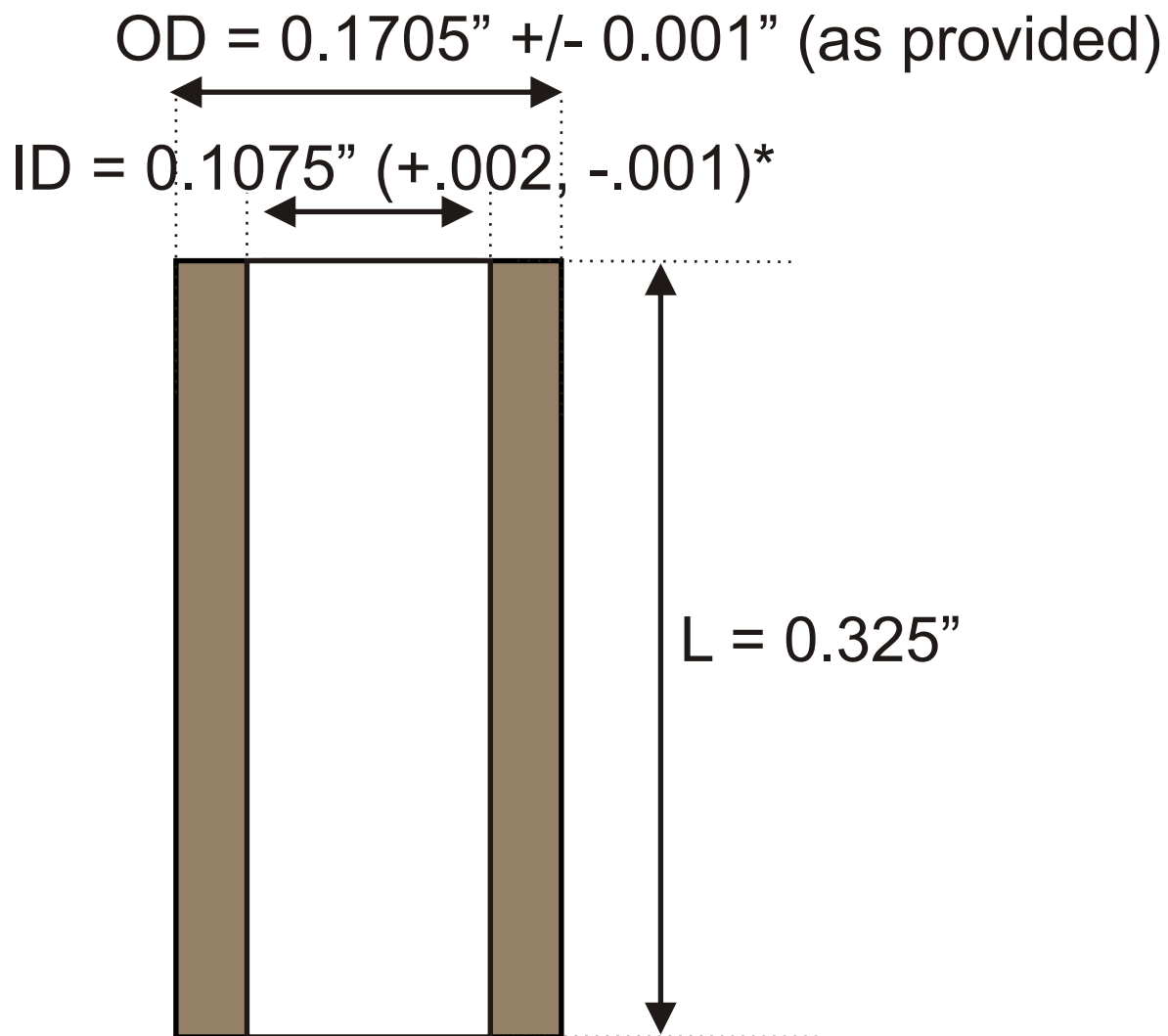
L = 0.325"

This part is provided.

Part LC-2: Sleeve with 2 grooves (for 10/5) Material: Lanthanum Chromite (Page 2 of 3)

A groove angle checker is provided for testing the angle of the grooves
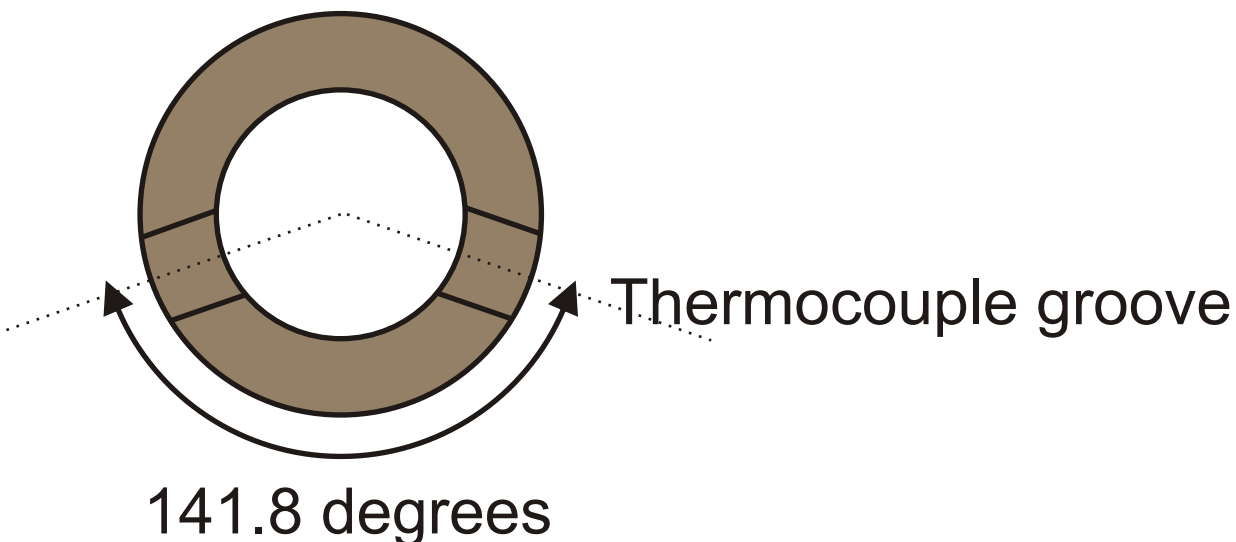
OD = 0.1705" +/- .001

ID = 0.1075"

L = 0.325"

Two round-bottomed grooves:
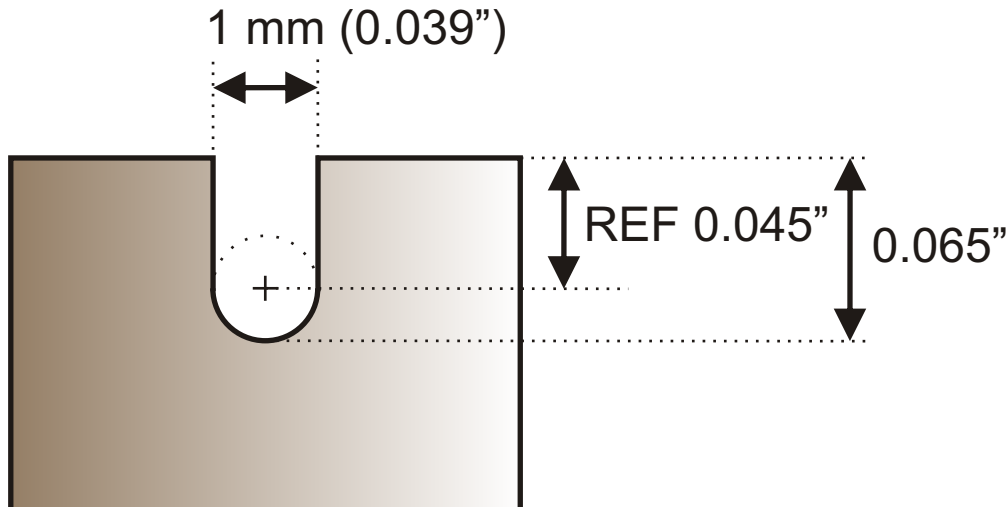1 mm wide
141.8 degrees apart.
Depth 0.065"

Thermocouple groove

141.8 degrees

A. Detail of groove:
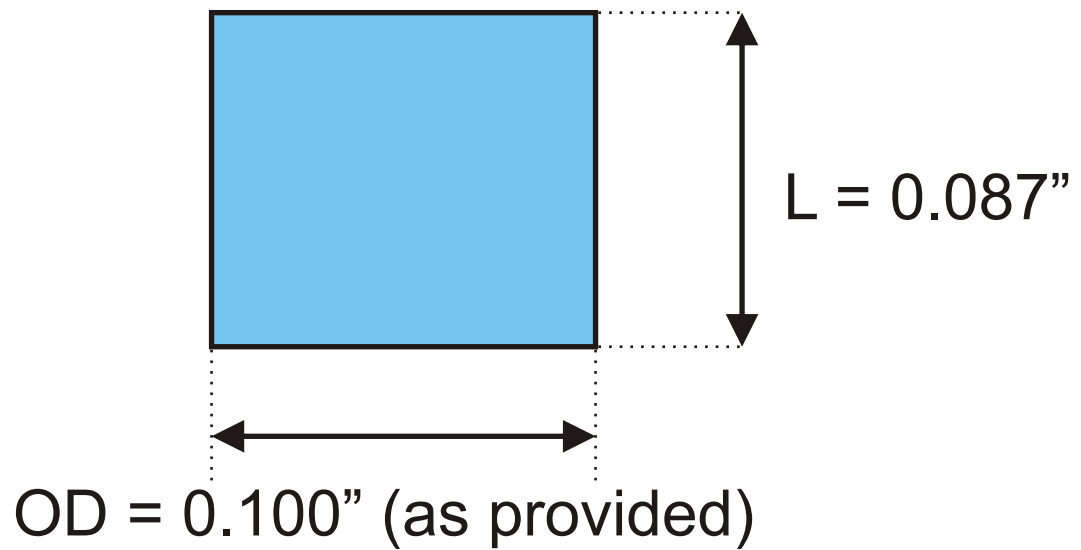

1 mm (0.039")

REF 0.045"

0.065"

Procedure: The ceramic is brittle and a bit weak. Please use an emergency collet and hold the pieces gently in the collet. There should be an emergency collet already made for this purpose (in Bill Chapin's collection?).
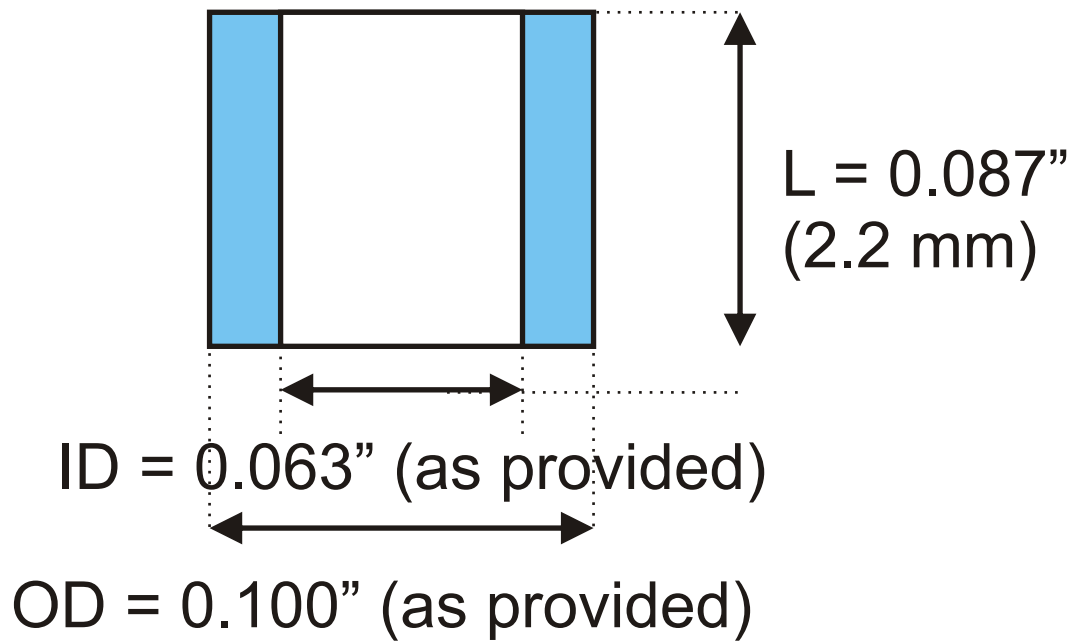
1 mm coated carbide end mills are supplied.

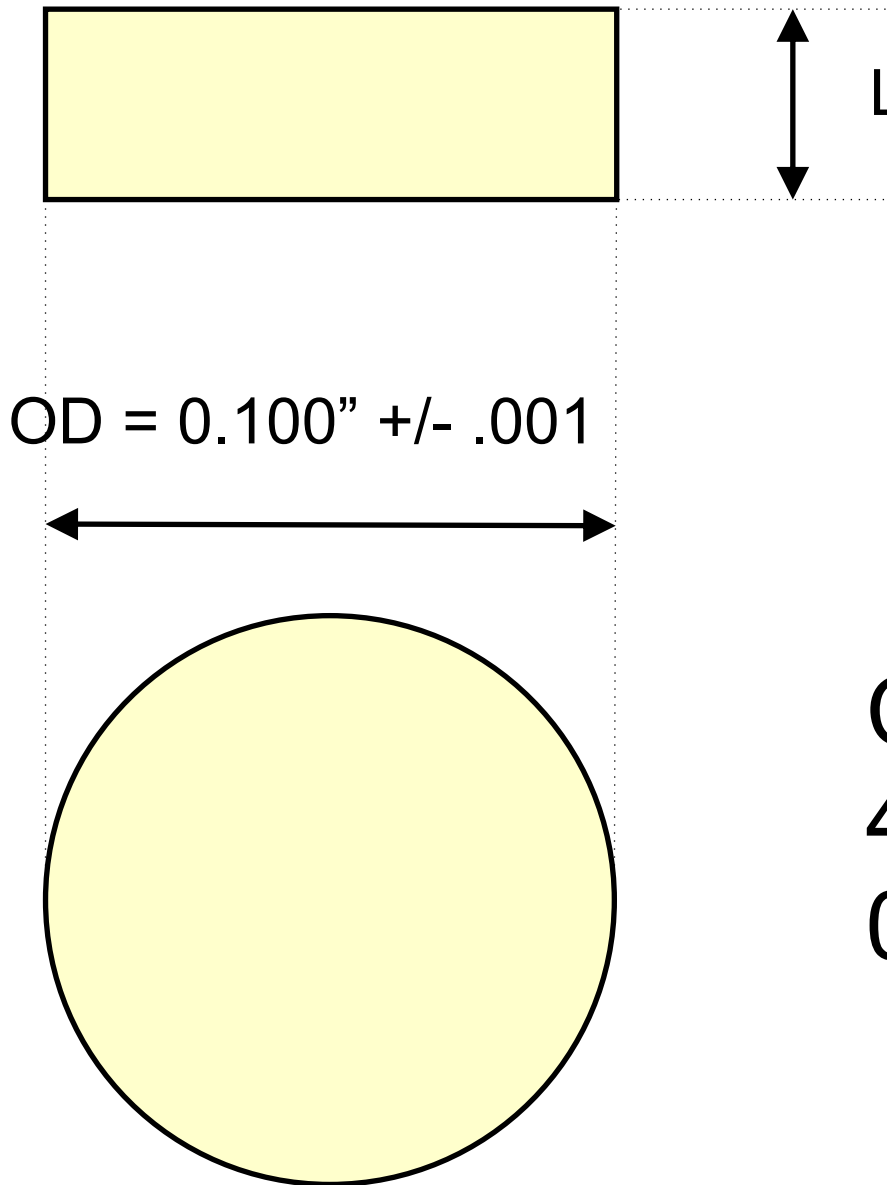Part # M-41. MgO plug, for 10/5 assembly Scale 20:1

Material: MgO.

L = 0.087"

OD = 0.100" (as provided)

Part # M-42. MgO tc sleeve, for 10/5.assembly
Scale 20:1

L = 0.087"
(2.2 mm)

ID = 0.063" (as provided)

OD = 0.100" (as provided)

ASU zirconia part Z-9.
Bottom end plug for 10/5 assembly
Material: Zirconia OZ-8C.
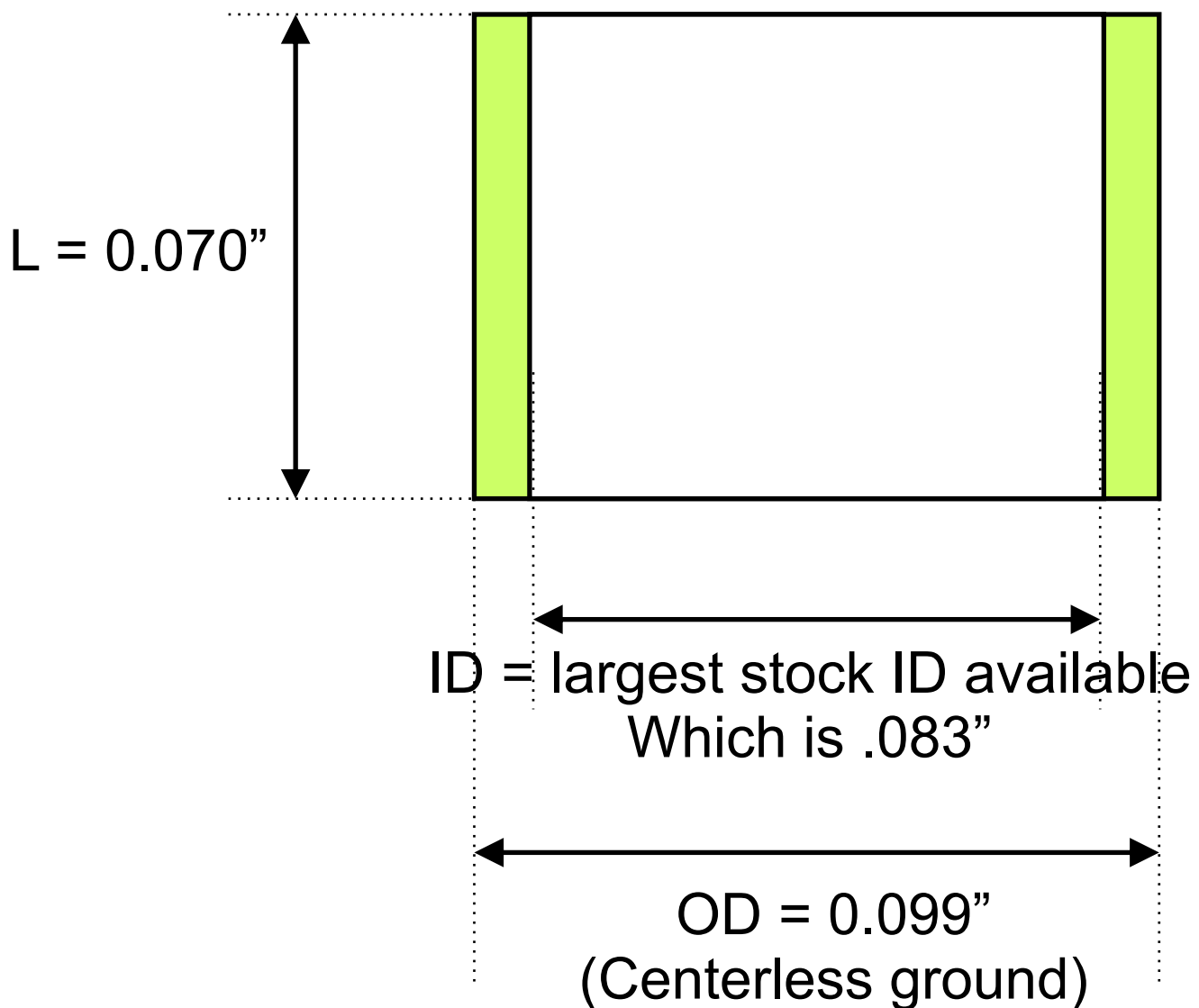
L = 0.039"

OD = 0.100" +/- .001

Cored from a
4.75" x 4.75" x
0.970" block

COLOR is
LIGHT YELLOW

Alumina Part A-4: Sample sleeve for 10/5 assembly
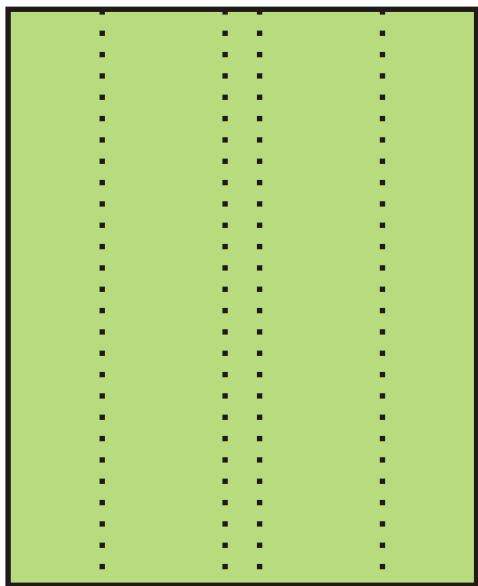## Scale 40:1
Material:Alumina

L = 0.070"

ID = largest stock ID available
Which is .083"

OD = 0.099"
(Centerless ground)

Alumina Part A-5:
Thermocouple sleeve for 8/3, 10/5, and 18/12 assemblies.
Scale 40:1
Material: Alumina
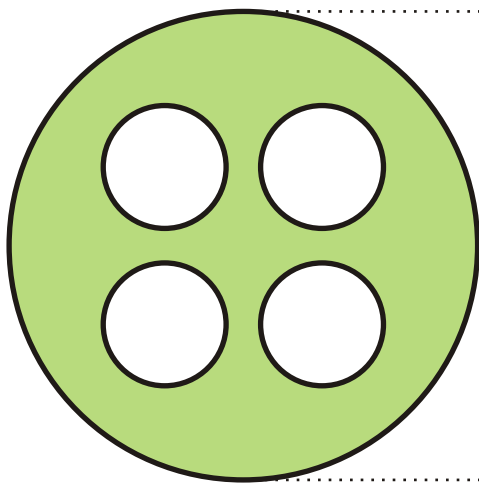
OD = .061
(centerless ground)

Length = 1.9 mm

Alumina Part A-6:
Thin alumina sliver for 8/3 and10/5 assemblies
Scale 40:1
Material: Alumina

OD = .061"
(centerless ground)

L = 0.009"
(reground)