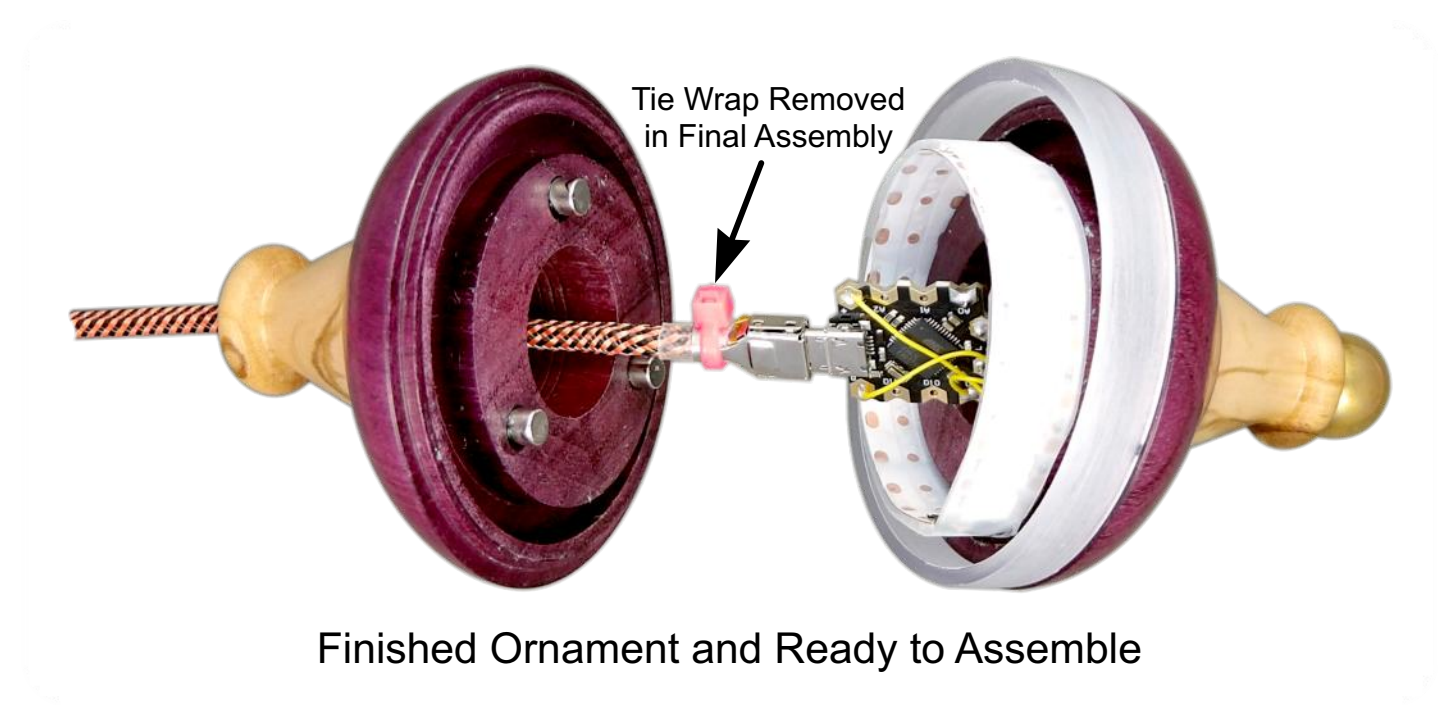
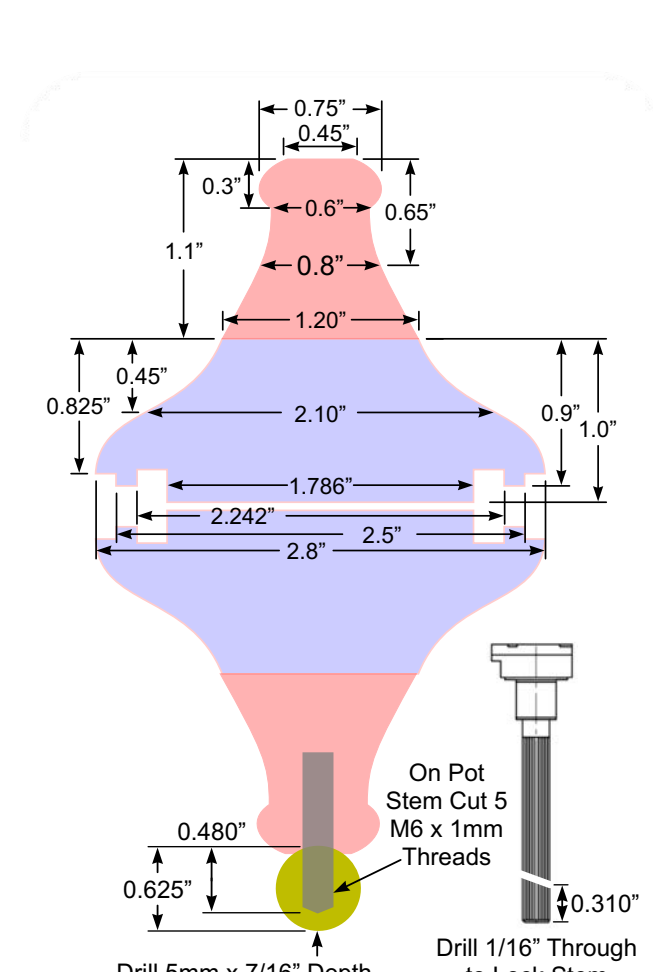
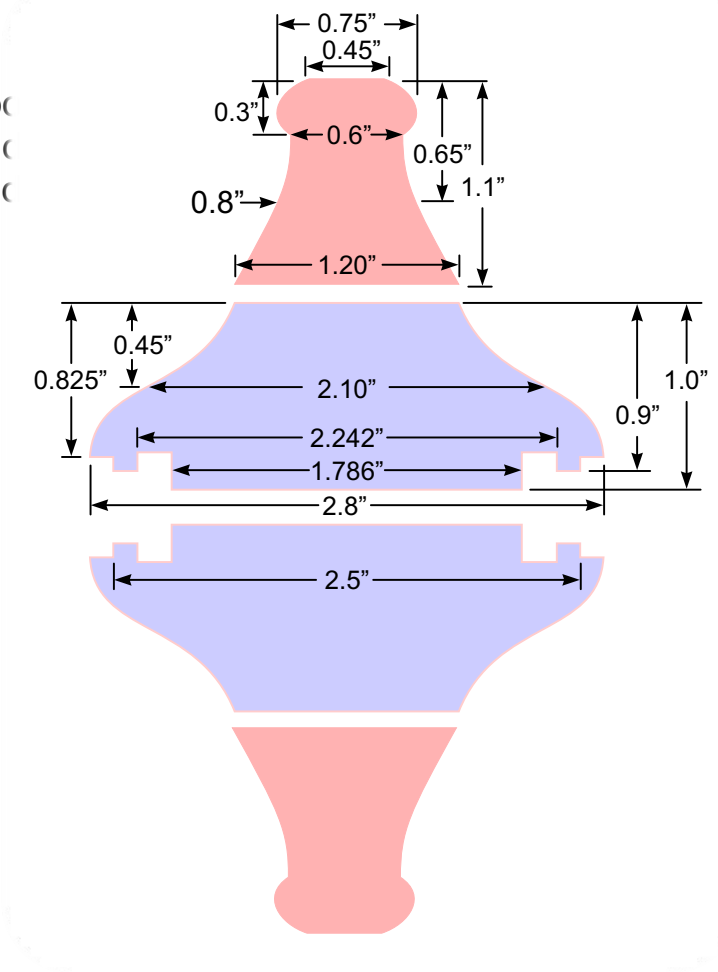
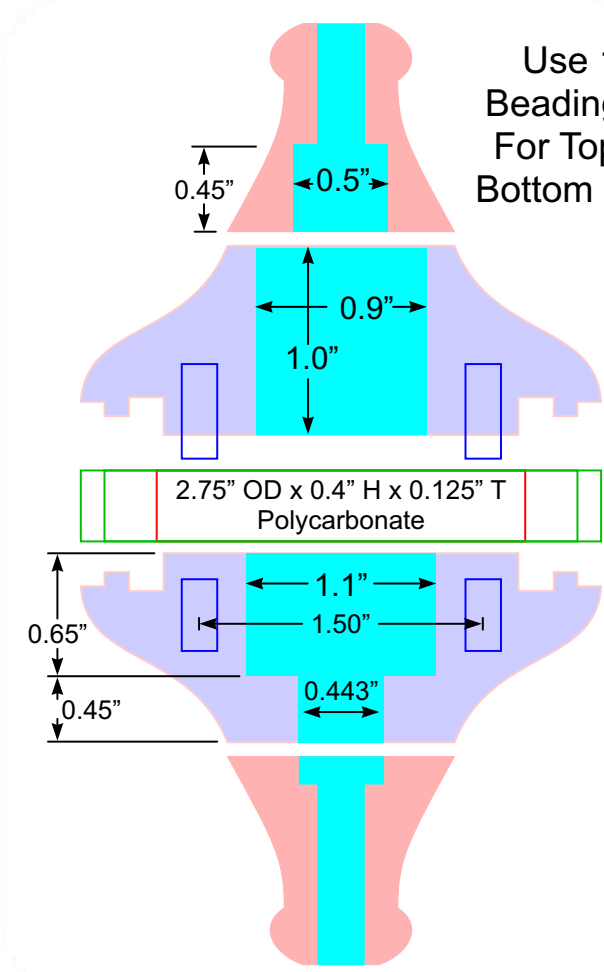
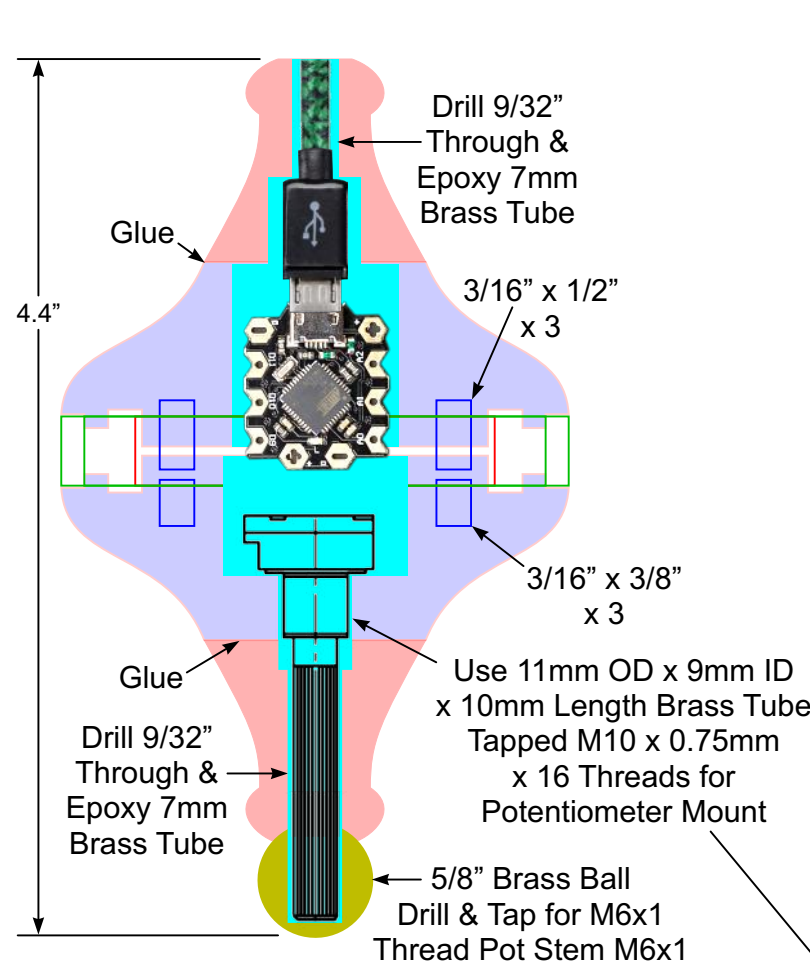


Ornament Assembled After CNC Milling and Ready To Turn on a Lathe





For Brass Insert Drill Out 11mm OD x 9mm ID Brass Tube with 3/8" Drill to a Depth of 5/8". Cut 16 Threads with M10 x 0.75mm Tap. Cut to 0.4" Length.


>> Body Shaping Steps Prior To Milling


1. On Band Saw : Cut sections to length plus 0.050" to 0.100".
2. On lathe : Center drill through each section with 1/4" drill.
3. On Lathe : Use Mandrel Saver and round off each section.

>> Body Shaping Steps On Mill (Center bit on 1/4" Center Hole)

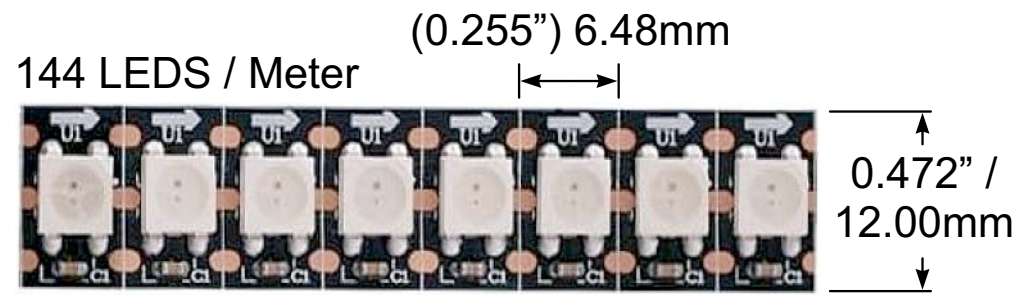
4. Surface each piece flat both ends.
5. Mill Top - Bottom Side, Mill Upper - Bottom Side, Mill Lower - Top Side, Mill Bottom - Top Side.
6. Mill opposing sides holding each piece by recessed center area, and centering on the 1/4" center hole.
7. On Lathe - Drill top and bottom 9/32" (0.281") drill for 7mm brass tubes.

144 LEDS / METER, 22 LEDS
Core Diameter = 1.786"
Circumference = 5.61"

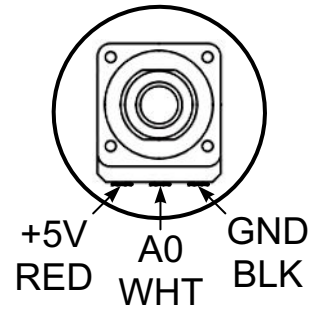
 Red Heart Spindle Blank x 2
(1-1/2" x 1-1/2" PSI #WX016-2)
(2" x 2" Exotic Woods USA RH-002)

 Bloodwood Spindle Blank x 2
(2" x 2" PSI #WX06-3)
or Yellowheart Spindle Blank x 2
(2" x 2" Exotic Woods USA YH-004)

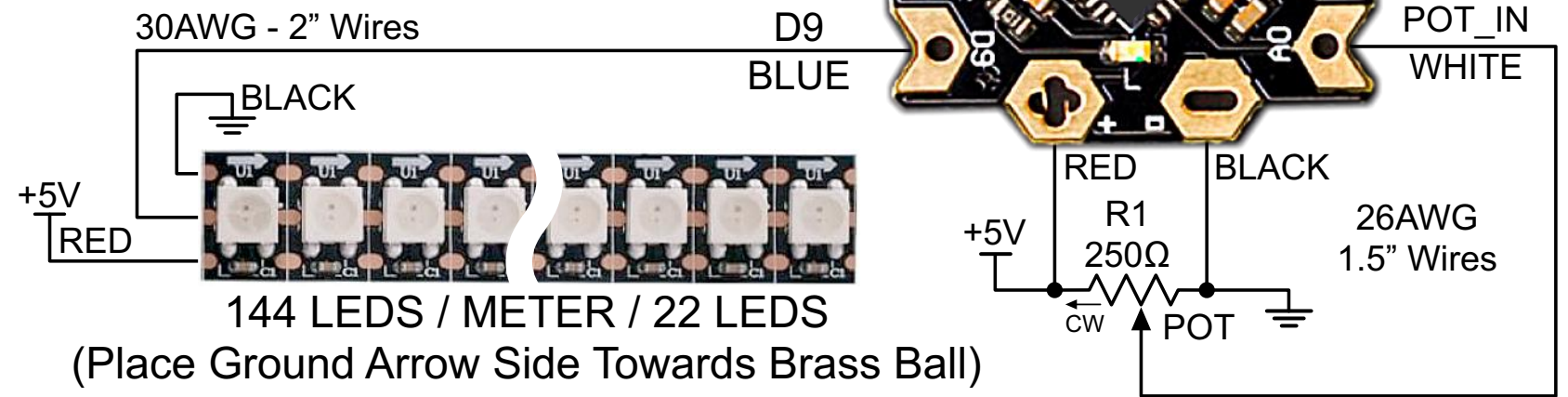
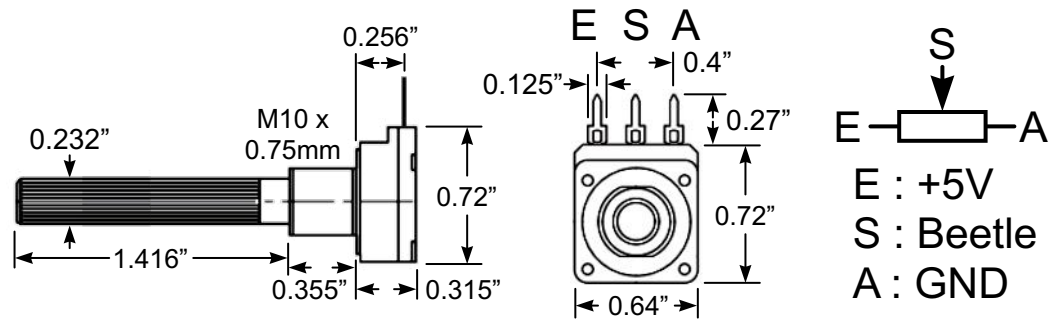
 Purpleheart Pepper Mill Blank x 1
(3" x 3" Exotic Wood Zone)
or (3" x 3" Exotic Woods USA PH-004)



250Ω Potentiometer
Wiring Top View
Full Counter-Clockwise for LEDS Off



250Ω Potentiometer with 45mm Adjustment Post Length
(ESA Connections As Seen From Post Side)

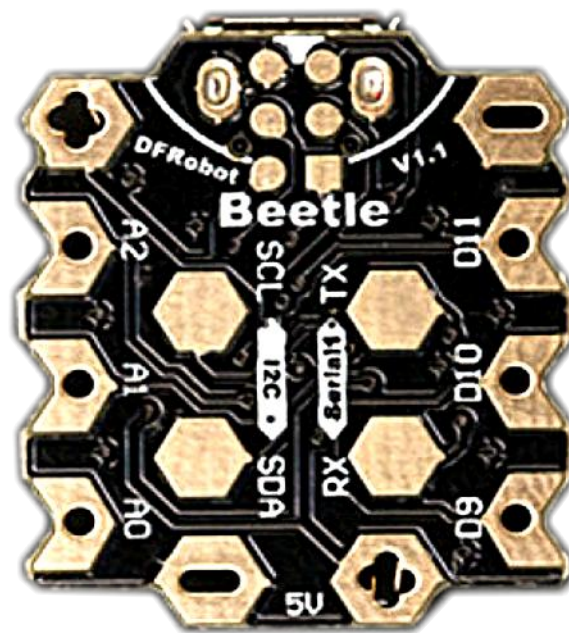
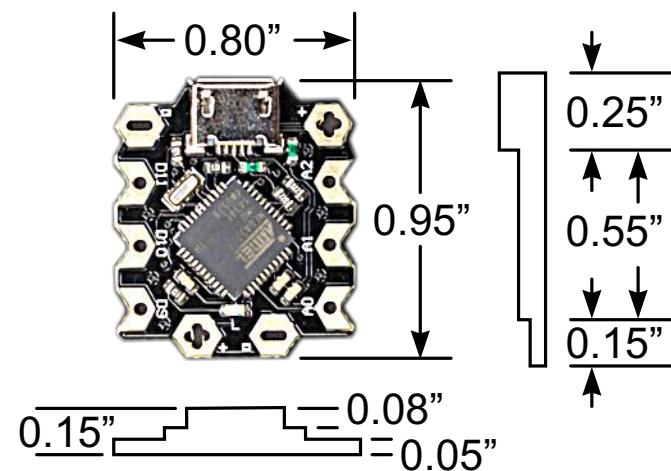


144 LEDS / METER / 22 LEDS
(Place Ground Arrow Side Towards Brass Ball)

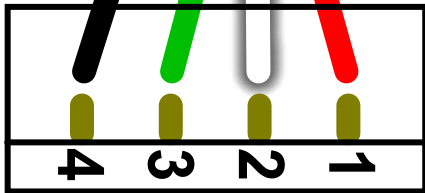
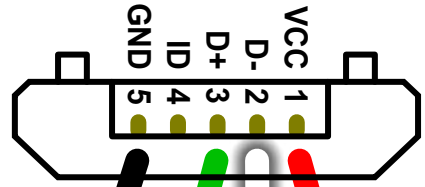
DF Robot's Beetle Pin Assignments:

PIN	PWM?	NAME	PIN FUNCTIONS
29	YES	D9	PB5 : (ADC12 / OC1A / #OC4B / PCINT5)
30	YES	D10	PB6 : (ADC13 / OC1B / OC4B / PCINT6)
12	YES	D11	PB7 : (#RTS / OC0A / OC1C / PCINT7)
18	YES	D3/SCL	PD0 : (OC0B / SCL / INT0)
19		D2/SDA	PD1 : (SDA / INT1)
20		D0/RX	PD2 : (RXD1 / AIN1 / INT2)
21		D1/TX	PD3 : (TXD1 / INT3)
38		A2	PF5 : (ADC5 / TMS)
37		A1	PF6 : (ADC6 / TDO)
36		A0	PF7 : (ADC7 / TDI)

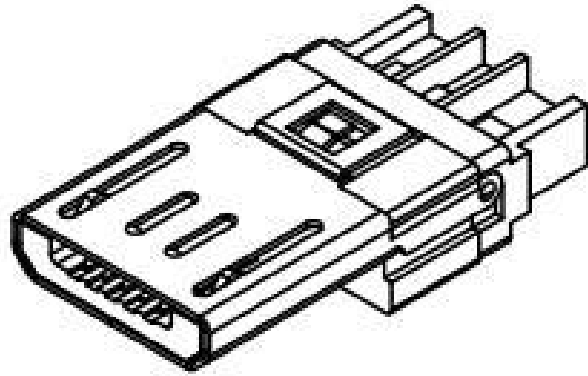
**DFRobot Beetle DFR0280
Microcontroller Card**



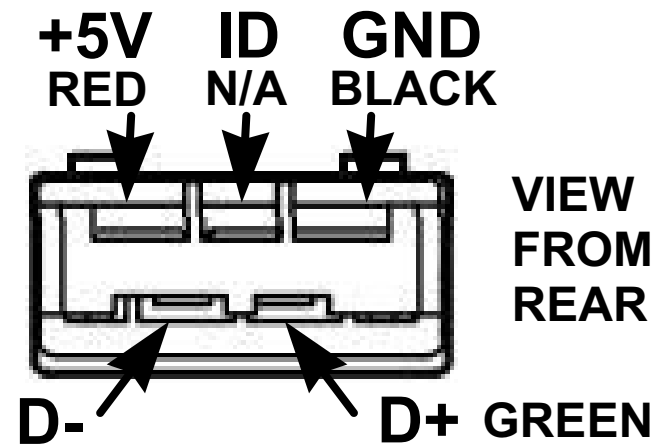
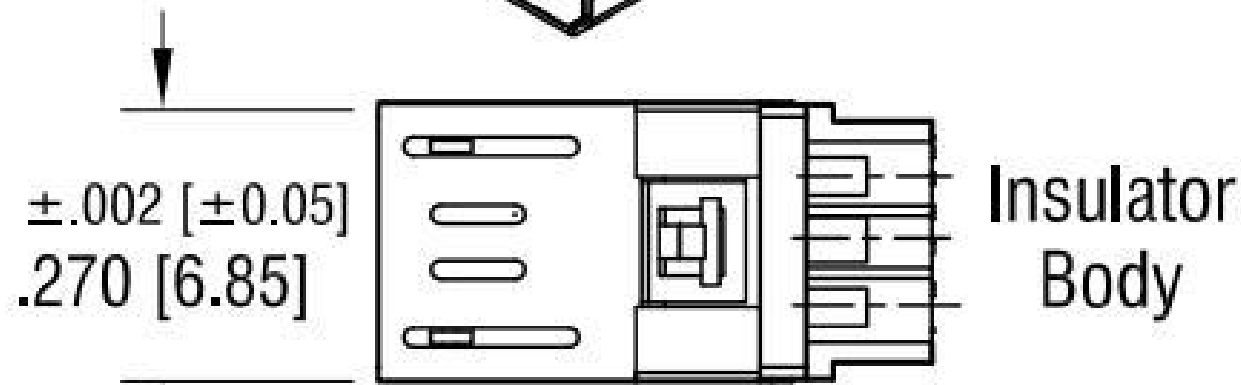
USB TYPE-B MALE



USB TYPE-A MALE

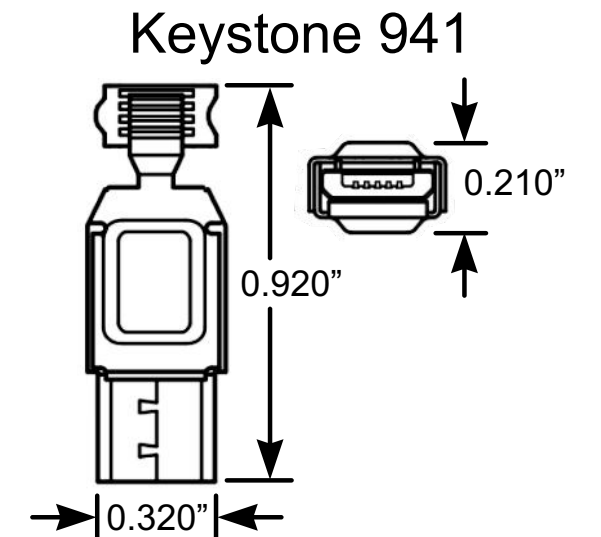
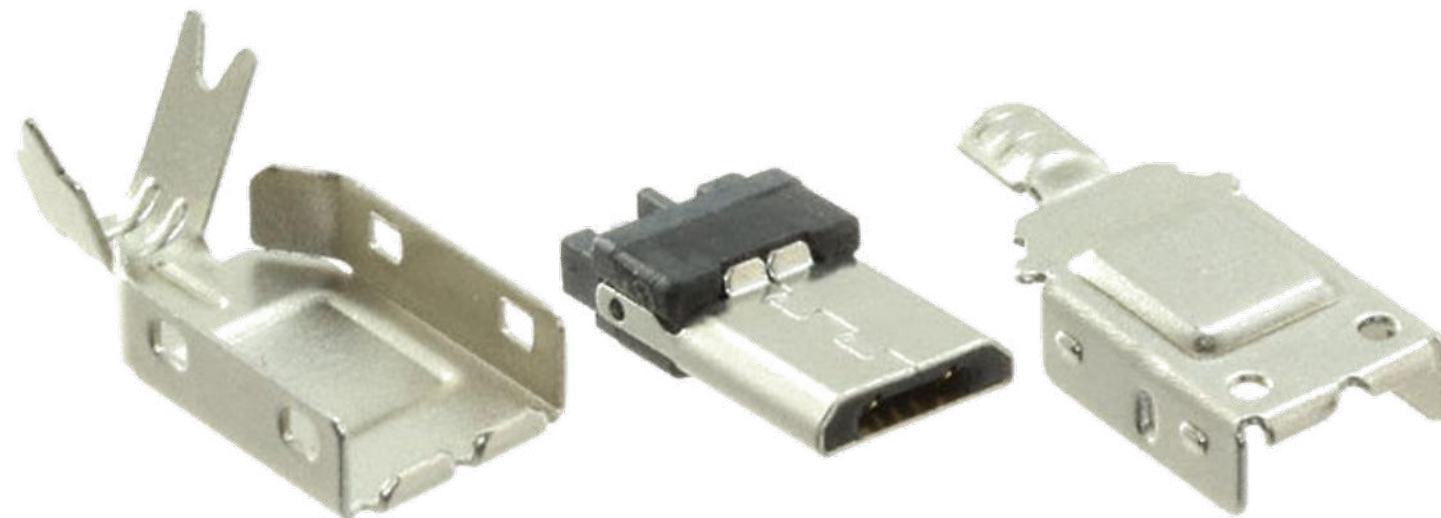
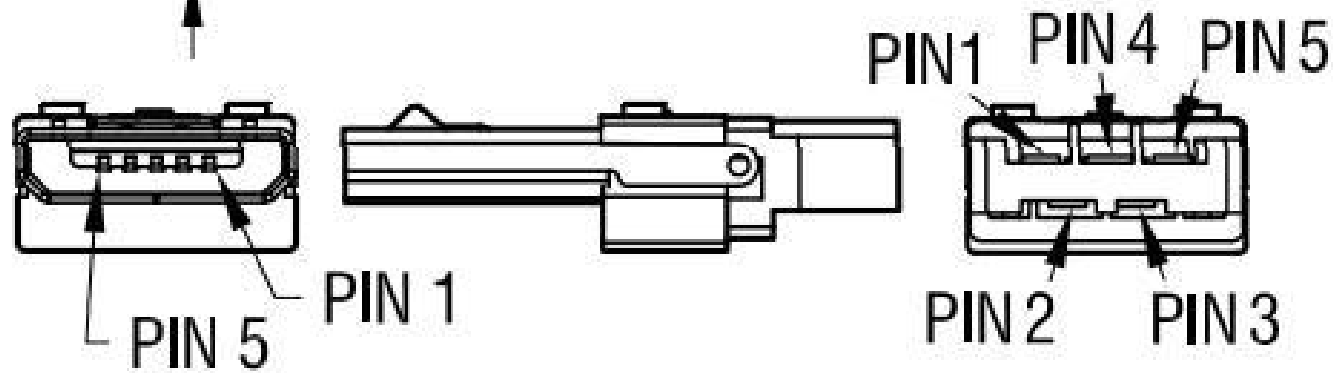
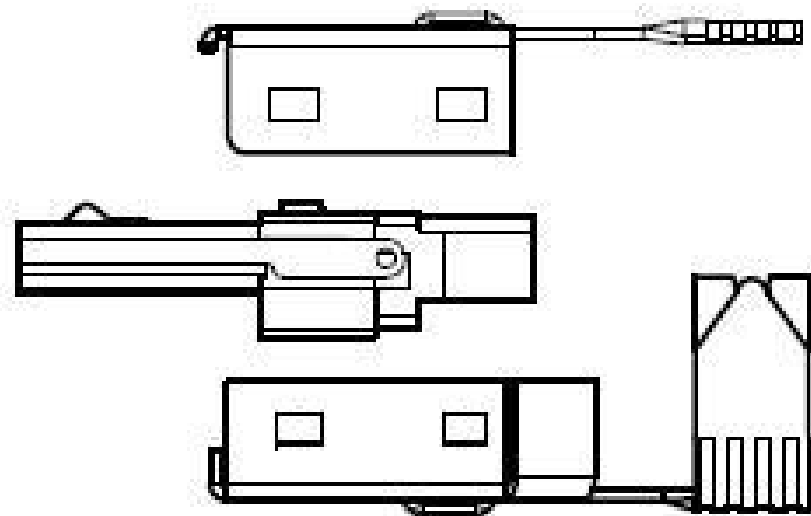


MicroB PIN	TypeA PIN	NAME	COLOR	DESCRIPTION
1	1	VCC	RED	+5 VDC
2	2	D-	WHITE	DATA-
3	3	D+	GREEN	DATA+
4		ID	N/A	N/A
5	4	GND	BLACK	GROUND



Conn Plug USB2.0 Micro USB B Solder
 DigiKey : 36-941-ND
 Keystone Electronics : 941

Supplied Unassembled



List of Parts for Christmas Ornament:

1. Bethlehem Olivewood 1.5" x 1.5" x 12" Spindle Blank : Cut 1.15" Length : Exotic Woods USA : Olive-002 : 2 Each
2. Purpleheart 3" x 3" x 12" Spindle Blank : Cut 1.05" Length : Exotic Woods USA : PH-004 : 2 Each
3. DFRobot Beetle ATMEGA32U4 Eval Board : DigiKey Electronics : DFR0282 : 1 Each
4. 250Ω Single Turn Potentiometer : DigiKey Electronics : PC16SH-10IP06-251A2020-TA : 1 Each : End of Shaft Threaded as M6x1mm
5. Neodymium Cylinder Magnets 3/16" x 3/8" : K&J Magnetics : D36-N52 : Or Amazon : 4 Each : Lower Set
6. Neodymium Cylinder Magnets 3/16" x 1/2" : K&J Magnetics : D38-N52 : Or Amazon : 4 Each : Upper Set
7. Aioneus USB Type-A Male to USB-Micro Male 10' Cable : Amazon : 1 Each
8. Connector Plug USB2.0 MicroUSB Type B Male : Keystone Electronics 941 : DigiKey 36-941-ND (Solder to cable end inside ornament)
9. Impact Resistant Polycarbonate : 2.75" O.D. x 2.5" I.D. x 0.125" Wall Thickness x 0.380" Height : McMaster-Carr 8585K36 (12 inch tube)
10. 5/8" Brass Ball : Amazon : 1 Each : Drilled and Tapped for M6x1mm Threads
11. WS2812B 5 Volt DC RGB LED Strip with 144 LEDS Per Meter : Amazon : 1 Each (Cut strip to 22 LEDS)
12. Minwax Polycrylic Crystal Clear Topcoat : Semi-Gloss

List of Parts for Desk-Top Stand:

1. Hard White Maple Lumber (for example) 5" x 5" x 3/4" : Wood Workers Source (MacBeath Hardwood) : 1 Each
2. Varathane Classic Penetrating Wood Stain : Sedona Red (for example)
3. Minwax Polycrylic Crystal Clear Topcoat : Semi-Gloss
4. Ultra-Formable 260 Brass Rod : 3/32" x 12" : McMaster-Carr 8859K52