EML2322L – MAE Design and Manufacturing Laboratory

Dimensioning for Manufacture vs. Reference

Dimensioning for Manufacture

Purpose:
Clearly and unambiguously provide all information required to manufacture the part.

In general, dimensioning for manufacture results in an information dense document.

Goals:

a) Dimension every feature's location and geometry
b) Note required finish for every surface
c) Attempt to minimize number of datums to reduce manufacturing time
d) Note exact material specification
e) Include debur instructions
f) Define manufacturing tolerances for every part feature
g) Never provide redundant dimensions unless clearly specified as reference dimensions (denoted in parentheses)

Dimensioning for Reference

Purpose:
Clearly indicate the location and size of all features with which other components interface.

In general, dimensioning for reference results in a document that is easy to reference.

Goals:

a) Dimension interfacing feature's location and geometry
b) Note surface finish only where required for interfacing components
c) Dimension feature positions relative to other useful or similar features
d) Note useful material information (often only a general material class)
e) Debur notes unnecessary
f) Define tolerances for interfacing (these are always equal to or looser than those defined for manufacturing the part)
g) Provide dimensions that simplify the drawing; whether redundant or not

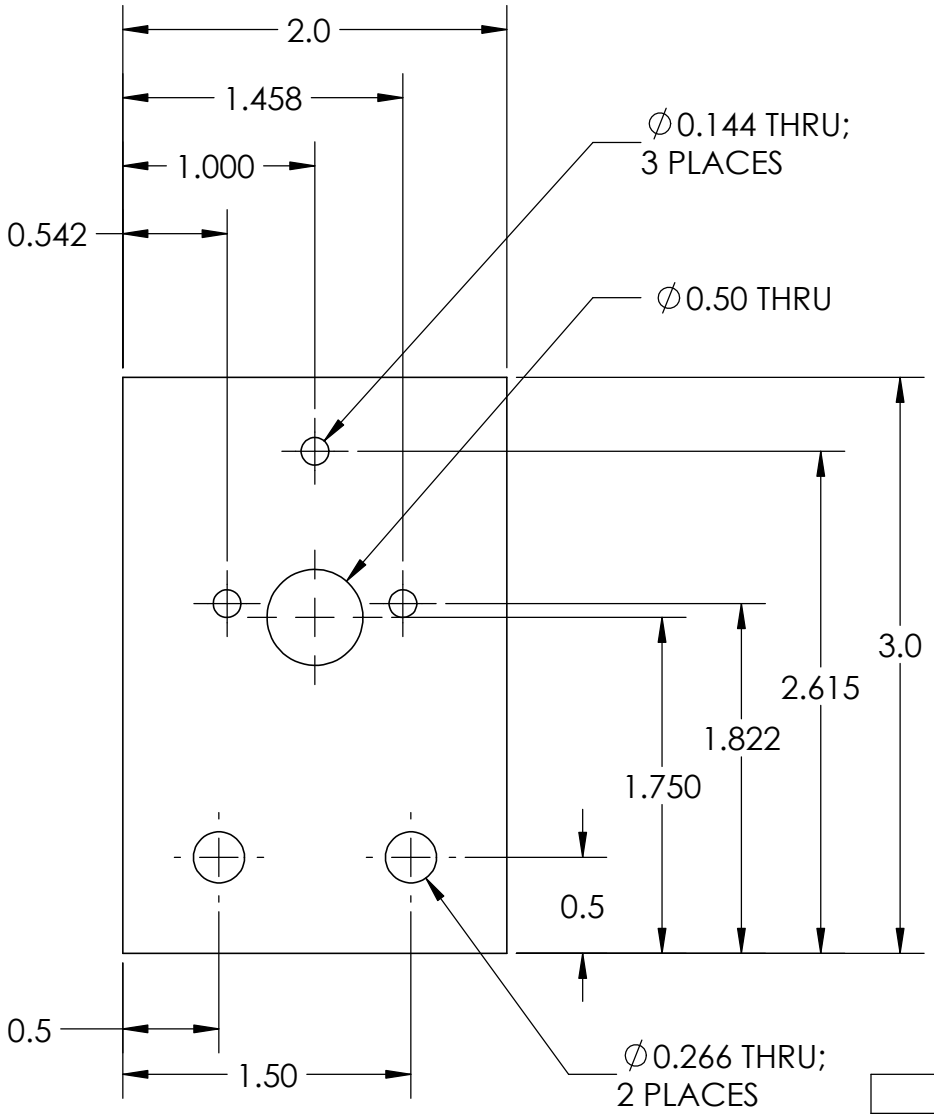
Similarities:

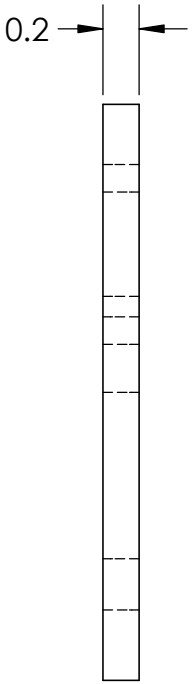
a) State units of measurement
b) Keep drawings uncluttered
    a. Use a tolerance table if more than three dimensions are provided
    b. Use multiple sheets as required
    c. Use consistent formatting
c) Provide a proper title block
d) Produce a high quality print
e) Provide tolerances for EVERY dimension

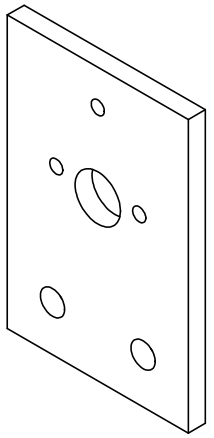
Examples:

The following pages contain examples of parts dimensioned for manufacture and for reference.

Dimensioned for manufacture. This note would not be on the drawing.





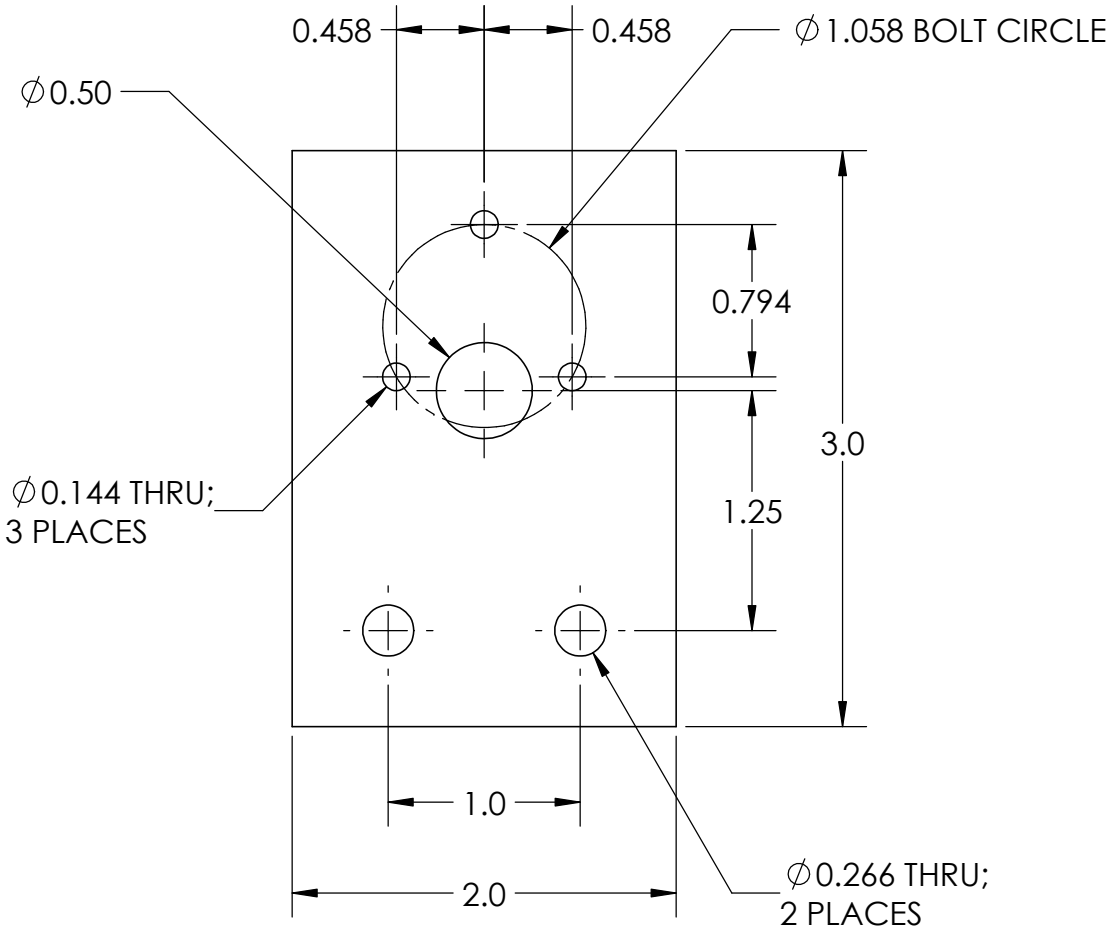


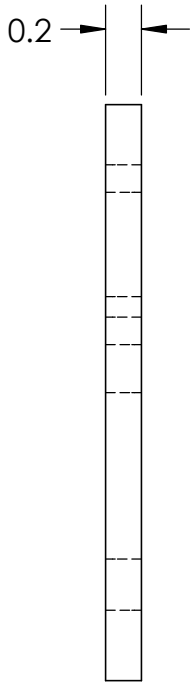
NOTES:
1. DIMS IN INCHES
2. QUANTITY: 2
3. MAT'L: 6061-T6 ALUMINUM
4. BREAK ALL EDGES
5. NO SURFACE FINISH REQ.

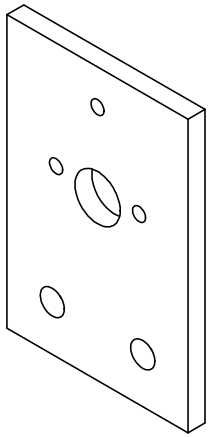
TOLERANCE UNLESS NOTED				TITLE: Buehler Motor Mount		
OPERATION	PLACES IN DIMENSION					
	0.0	0.00	0.000	DRAWN J. DERSCH		
MACHINING	±0.050	±0.020	±0.005	DESIGNED J. DERSCH		
CUT OFF (SAW, BURN, SHEAR)	±0.1	±0.060		SIZE A	DWG. NO. EML2322L-DvR1	REV A
WELDING	±0.1	±0.060				
ANGULAR DIMS	±5	±2	±0.5	SCALE: 1:1		SHEET 1 OF 2

4 3 2 1

Dimensioned for reference. This note would not be on the drawing.





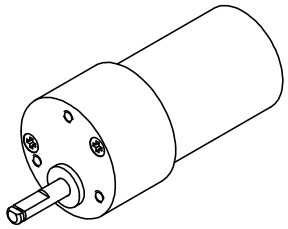


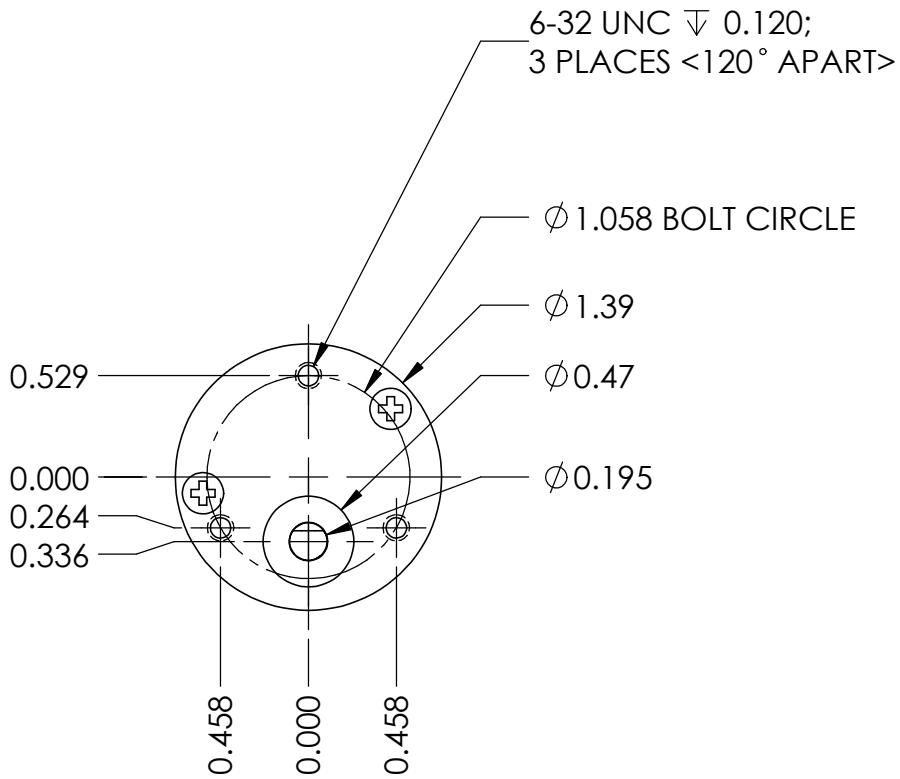
NOTES:
1. DIMS IN INCHES
2. MAT'L: ALUMINUM

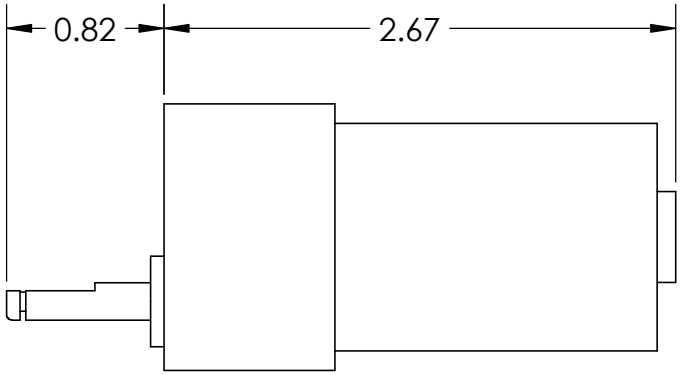
TOLERANCE UNLESS NOTED			TITLE: Buehler Motor Mount	
PLACES IN DIMENSION				
0.0	0.00	0.000	DRAWN	J. DERSCH
		±0.005	DESIGNED	DESIGN AND MANUFACTURING LAB
	±0.030		SIZE: A	DWG. NO.: EML2322L-DvR1 / REV: A
±0.075				
±10	±5	±2	SCALE: 2:1	SHEET 2 OF 2

4 3 2 1

Dimensioned for reference. This note would not be on the drawing.





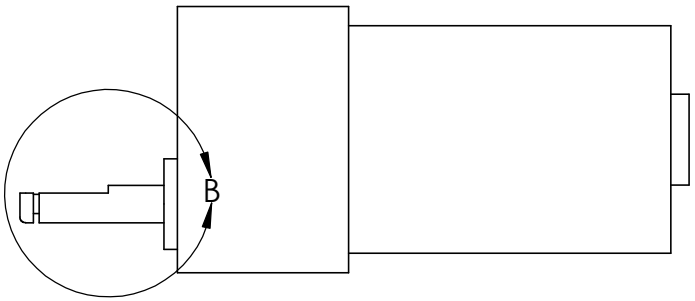


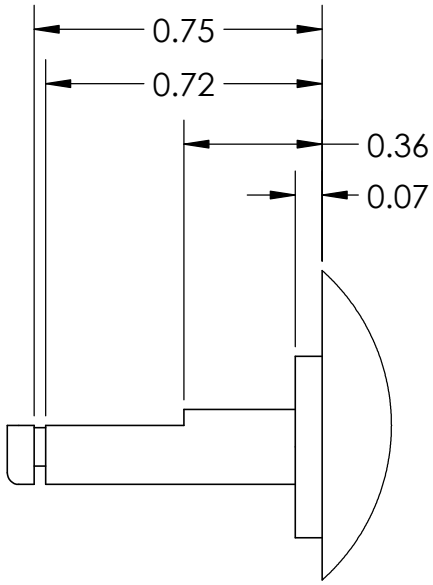
NOTES:
1. DIMS IN INCHES
2. SHAFT MAT'L: STAINLESS

TOLERANCE UNLESS NOTED			TITLE: 17 RPM Buehler Gear Motor	
PLACES IN DIMENSION				
0.0	0.00	0.000	DRAWN J. DERSCH	
		±0.005	DESIGNED BUEHLER	
	±0.030		SIZE A	DWG. NO. EML2322L-DvR2 / REV A
±0.075				
±10	±5	±2	SCALE: 1:1	SHEET 1 OF 2

4 3 2 1

Dimensioned for reference. This note would not be on the drawing.





DETAIL B
SCALE 2 : 1

NOTES:
1. DIMS IN INCHES
2. SHAFT MAT'L: STAINLESS

TOLERANCE UNLESS NOTED			TITLE: 17 RPM Buehler Gear Motor	
PLACES IN DIMENSION				
0.0	0.00	0.000	DRAWN J. DERSCH	
		±0.005	DESIGNED BUEHLER	
	±0.030		SIZE: A	DWG. NO. EML2322L-DvR2 / REV: A
±0.075				
±10	±5	±2	SCALE: 1:1	SHEET 2 OF 2

4 3 2 1