

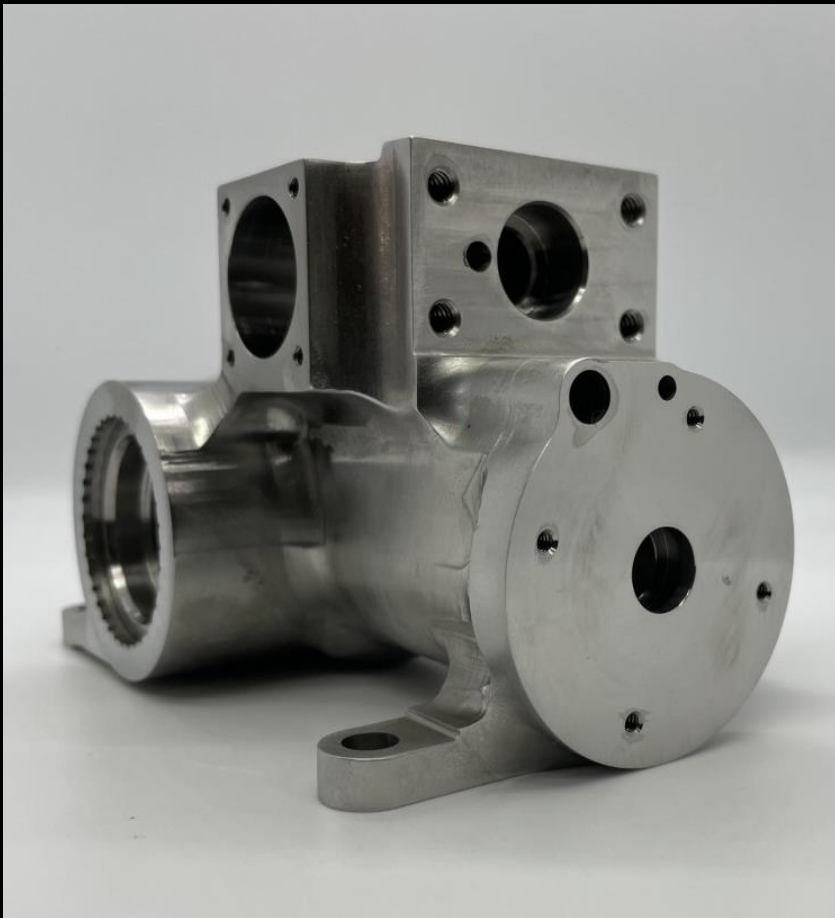


2021

# PARTS BROCHURE

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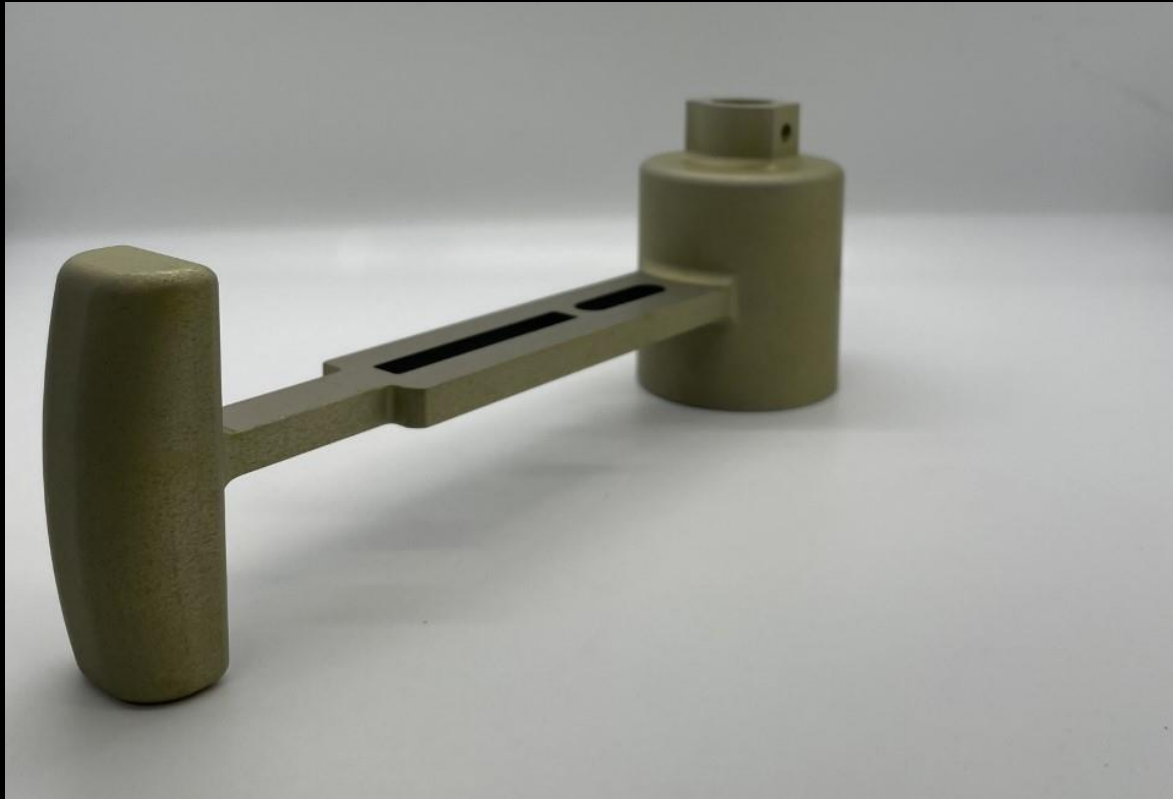
[www.graymatterprecision.com](http://www.graymatterprecision.com)



**MATERIAL:** 15-5 Stainless Heat treated to H1025

**SIZE:** Ø 5.000 by 5 inches long.

**NOTES:** Machined in 2 lathe operations and 2 mill operation complete utilizing full 4<sup>th</sup> axis simultaneous machining. In house honing operations as well as broaching.



**MATERIAL:** 2024 AL Alloy

**SIZE:** 7.910 Over All Length

**NOTES:** Machined from bar material utilizing our Large Engine lathe for initial roughing operation. Finished on CNC Mill.



**MATERIAL:** Aluminum Alloy 7075

**SIZE:** Started using 5.000 inch diameter material.

**NOTES:** 2 CNC lathe operations prior to mill work. For the mill operation we utilized 4<sup>th</sup> axis simultaneous machining complete in one operation. All dimensions apply after anodize with a .001 true positional and .001 flatness on the ports.



**MATERIAL:** Aluminum Casting

**SIZE:** Varies

**NOTES:** Machined utilizing our CNC lathes and CNC mills. Parts get chromic anodize and chem film. .001 concentricity and .005 perpendicularity.



**MATERIAL:** 316 Stainless Steel

**SIZE:** .312 max diameter by 1.000 inch long

**NOTES:** Smallest diameter is .060 in the middle of the part. Used a sine plate to machine the 20 degree slot. Part was hand deburred under the microscope.





**MATERIAL:** Aluminum Alloy 7075

**SIZE:** Ø 1.375 x 1.600 long

**NOTES:** Machined in 2 lathe operations with a 1.250 long ¼-28 UNJ thread. 2 mill operations with a slot lining up to .023 Ø holes. Dimensions apply after chromic anodize. This belongs to a 4-part valve body assembly in which we manufacture all 4 components.





**MATERIAL:** 7075 Aluminum

**SIZE:** Ø 3.250

**NOTES:** Tight clocking requirements with a  $\pm .0003$  bearing bore finished in our Honing Department.





**MATERIAL:** 7075  
Aluminum Alloy

**SIZE:** 3.031 T x 6.100 Wide  
x 6.950 L

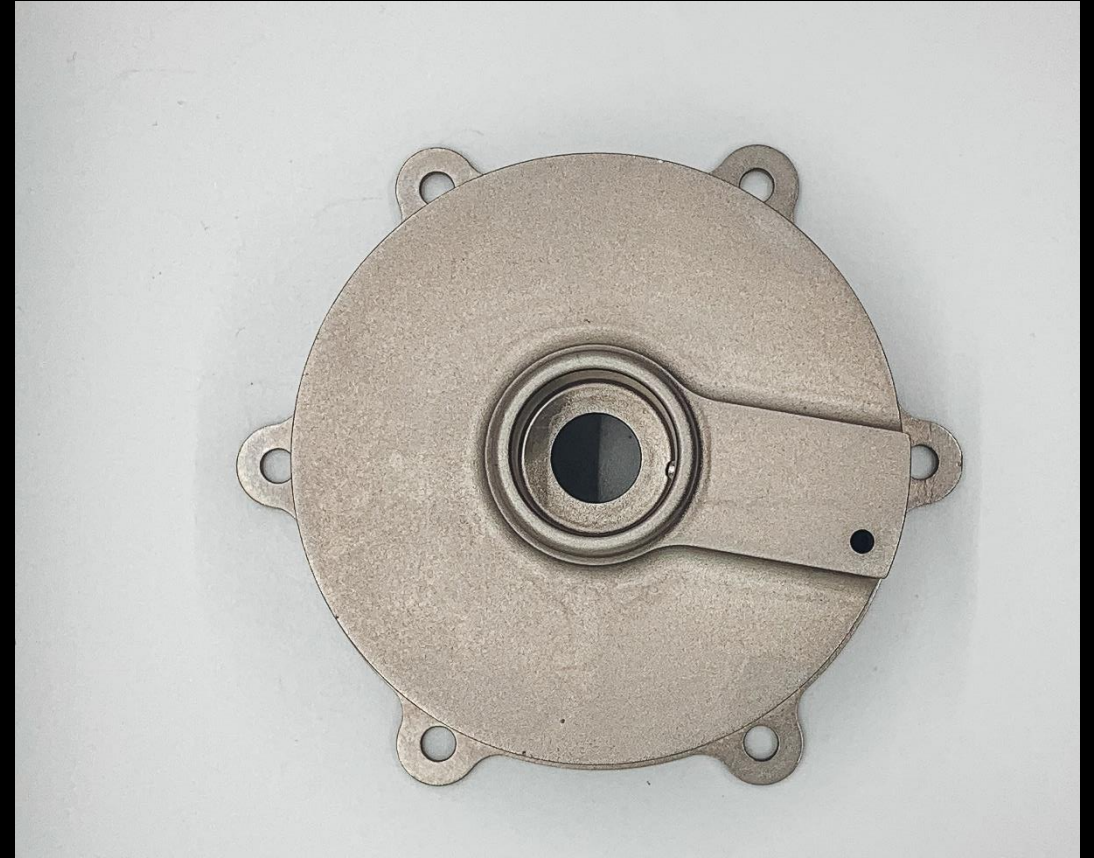
**NOTES:** Full CNC  
machined Housing. Part  
has more than 200  
characteristics with tight  
tolerance. Hole to hole  
locations as well as  
 $\leq .002$  Flatness,  
Perpendicularity and  
Parallelism requirements.



**MATERIAL:** Aluminum Alloy 7075

**SIZE:**  $\varnothing$  .8125 Hex x 1.650 Long

**NOTES:** Machined 2 Ops utilizing CNC Lathes with live tooling. Mill slot has a  $\pm .002$  linear dimension from a bore face.



**MATERIAL:** 6061 Aluminum

**SIZE:** Ø4.000

**NOTES:** True Positional callout of .001 to thru hole.



**MATERIAL:** 6061 Aluminum

**SIZE:** 3.000 Square

**NOTES:** Machined utilizing our CAM system producing surfacing tool paths achieving a flatness of .0005 on most surfaces.





**MATERIAL:** 15-5 SS

**SIZE:** Ø .375

**NOTES:** Tight tolerances machined finished in 3 operations.





**MATERIAL:** 15-5 SS

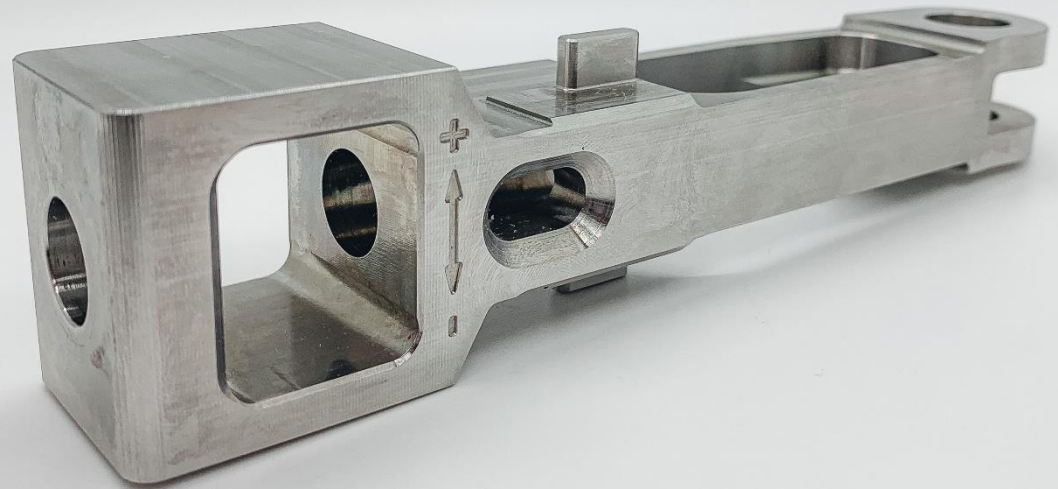
**SIZE:** Ø .250 by .200 long

**NOTES:** Machined complete in 1 operation on our Emco CNC Lathes.

**MATERIAL:** 13-8 MO

**SIZE:**  $\varnothing$  1.875 by 6.5 inches long

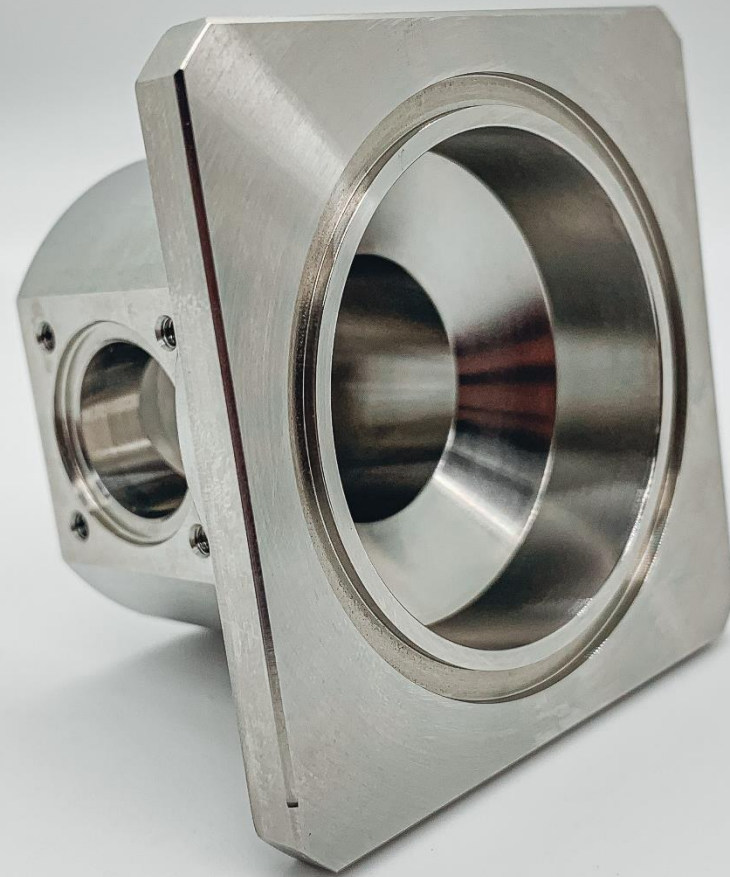
**NOTES:** 2 Lathe operations to start drilling out a  $\varnothing$  .500 bore by 4 inches long. Part is then machined complete on our 4<sup>th</sup> axis simultaneous rotary table. We finish hone .503 DIA  $\pm$ .0005 on our Sunnen Hone Machine in in our honing department.



**MATERIAL:** 316 SS

**SIZE:** Ø 2.500 by 1.875 Long

**NOTES:** Machined complete in 2 lathe operations and 1 mill operation.

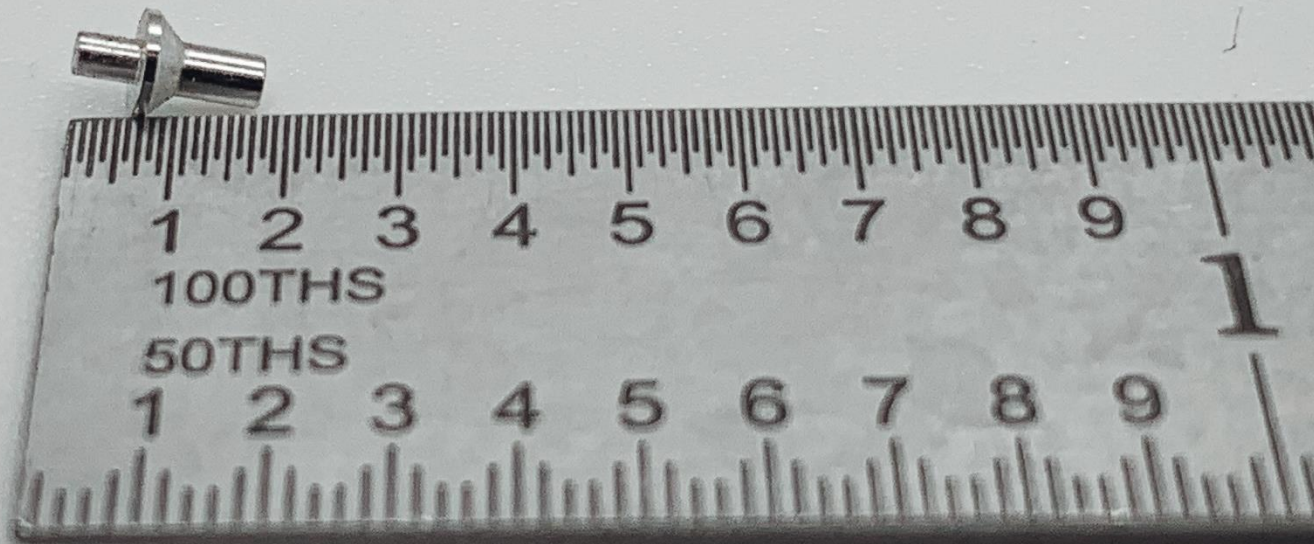




**MATERIAL:** 6061 Aluminum

**SIZE:**  $\varnothing$  .125 by .200 long

**NOTES:** Machined complete in 1 operation holding  $\pm .0003$  on all diameters.





**MATERIAL:** Titanium 6AL-4V

**SIZE:** Ø .875 by 4 inches long

**NOTES:** Machined complete in 2 operations on our multi-axis CNC Lathe.

**MATERIAL:** Titanium 6AL-4V

**SIZE:** Ø .875 by 5 inches long

**NOTES:** Holding  $\pm .0005''$  on tapered bore.  
Smallest wall thickness is .004 thick.

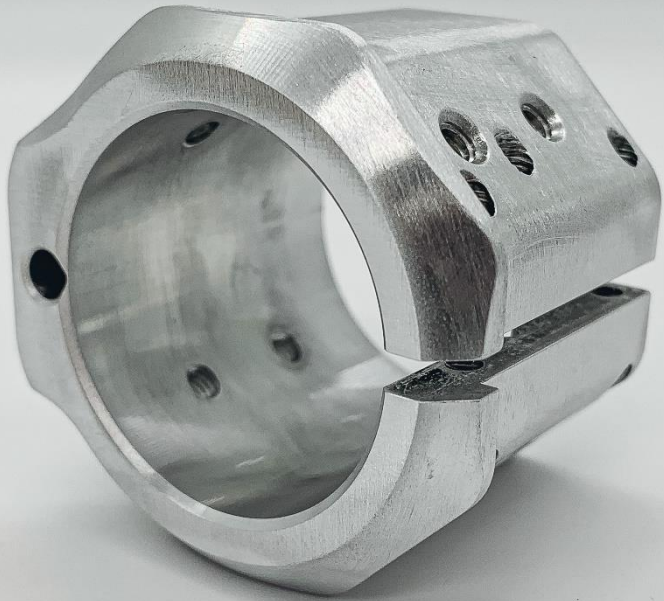




**MATERIAL:** 316 SS

**SIZE:** Ø 3.250"

**NOTES:** +/- .0005" on all outer diameter with .005" max O-ring groove edge breaks.



**MATERIAL:** 7075 Aluminum

**SIZE:**  $\varnothing$  1.875"

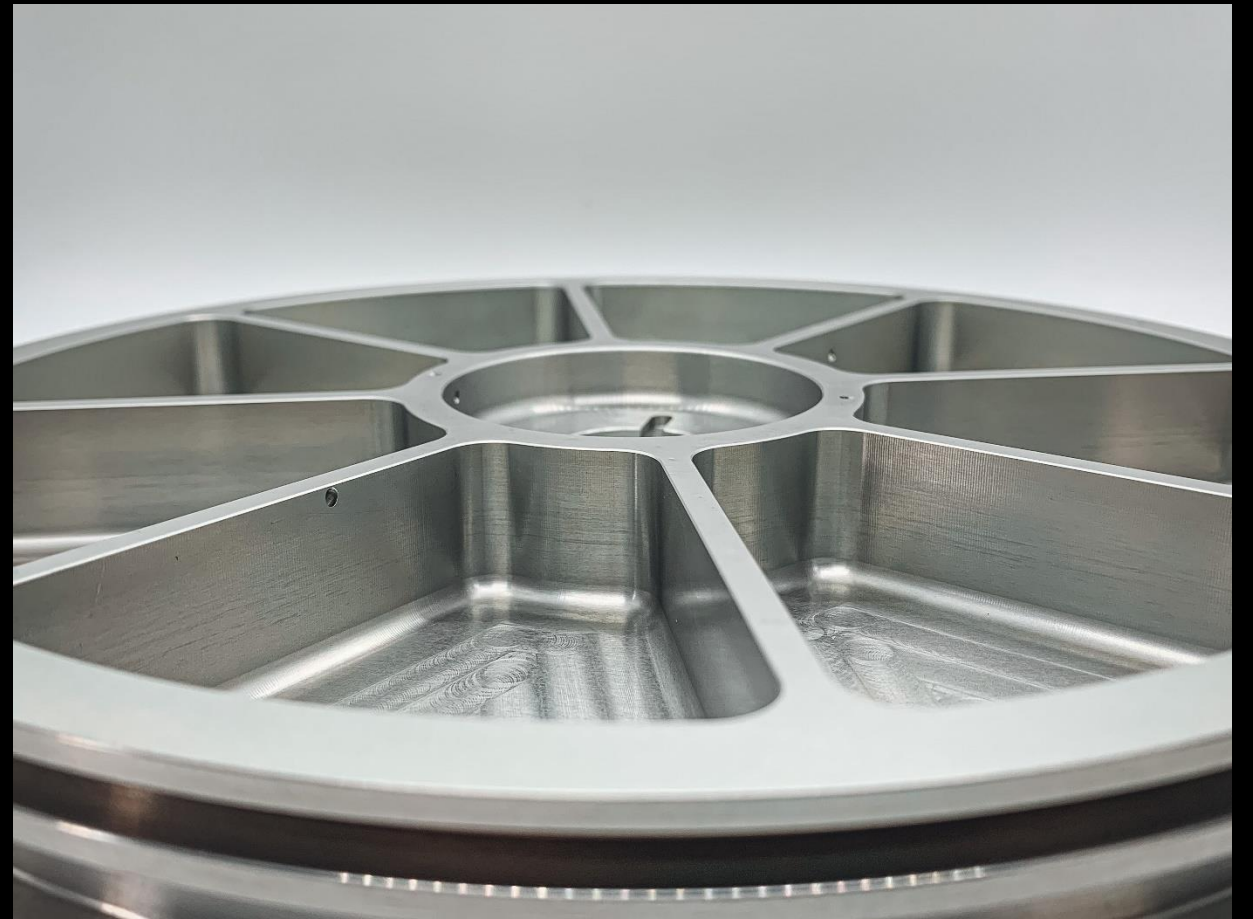
**NOTES:** Machined complete  
in 1 lathe operation on out  
multi axis sub spindle lathe.



**MATERIAL:** 303 SS

**SIZE:** Ø 1.000" by .800" long

**NOTES:** Hydraulic actuation for one of our Aerospace customers. Machined in 2 lathe operations.



**MATERIAL:** 7075 Aluminum

**SIZE:** Ø 8" by 1.500" thick

**NOTES:** Piston parts require double disk grinding holding  $\pm .0003$  flatness with a 16 finish. All dimensions apply post process.



**MATERIAL:** 6061 Aluminum

**SIZE:** 3.500" DIA

**NOTES:** Critical tolerances apply post hard anodize.





**MATERIAL:** 7075 Aluminum

**SIZE:**  $\varnothing$  3.250

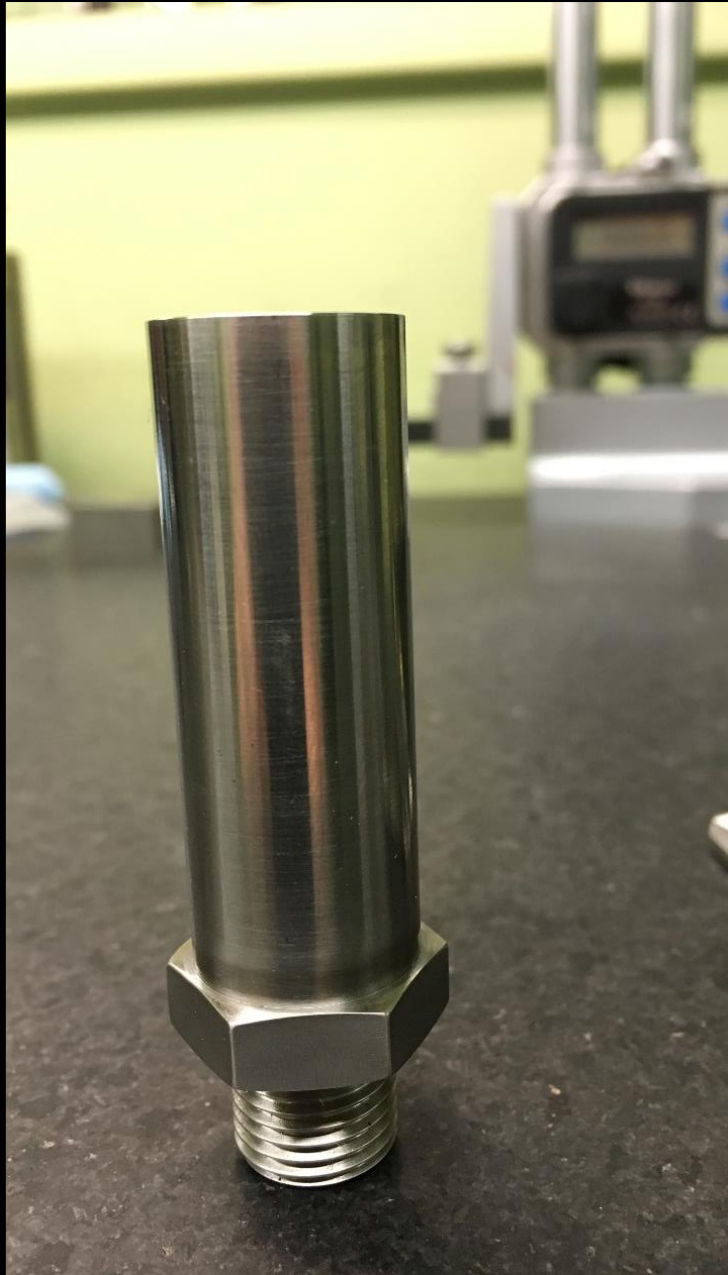
**NOTES:** Parts require hard anodize. Finished machined holding  $\pm .0005$  tolerances and true positional tolerances of  $.001''$  to 3 Datums.



**MATERIAL:** 15-5PH Cres Heat Treated Cond H1025

**SIZE:** .900 length x  $\varnothing$ .859

**NOTES:** Parts have plus or minus .001 diameters  $\leq 32$  surface finish requirements as well as other tight tolerance dimensions.



**MATERIAL:** 625 Inconel

**SIZE:** 2.719 long x .813 (Hex Width)

**NOTES:** Parts have +/- .003 ID tolerances and  $\leq 63$  surface finish requirements. Threaded and machined per AS4375E06 port spec on CNC Lathe.



**MATERIAL:** 6061-T6 Aluminum

**SIZE:** 2.95 long x  $\varnothing$ 1.490

**NOTES:** +/- .003 diameters and groove widths. Parts are tapped with M10x1 thread with all dimensions applying after the application of Nickel Plate.



**MATERIAL:** 15-5 PH Cres Heat Treated

**SIZE:** 1.101 long x  $\text{Ø}.434/.435$

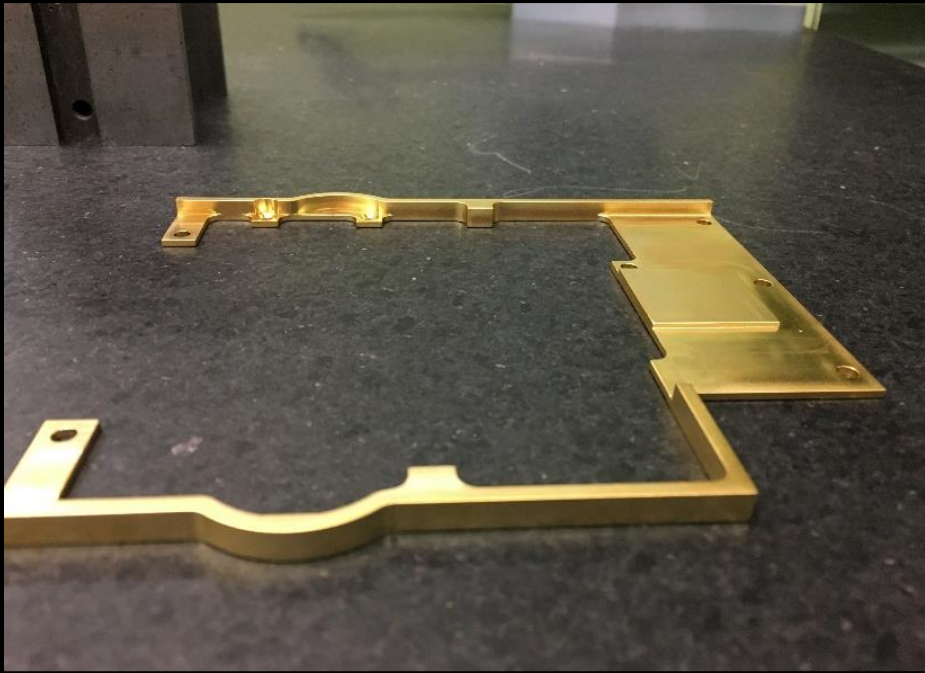
**NOTES:** .0005 tolerance ID with a  $\leq 16$  finish and .001 total tolerance for the OD. Parts are cross drilled and hand deburred in house to achieve a .005-.010 edge break at intersecting point without affecting  $\leq 16$  finish.



**MATERIAL:** 7075-T73 Aluminum Plate

**SIZE:** 1.000 x .680

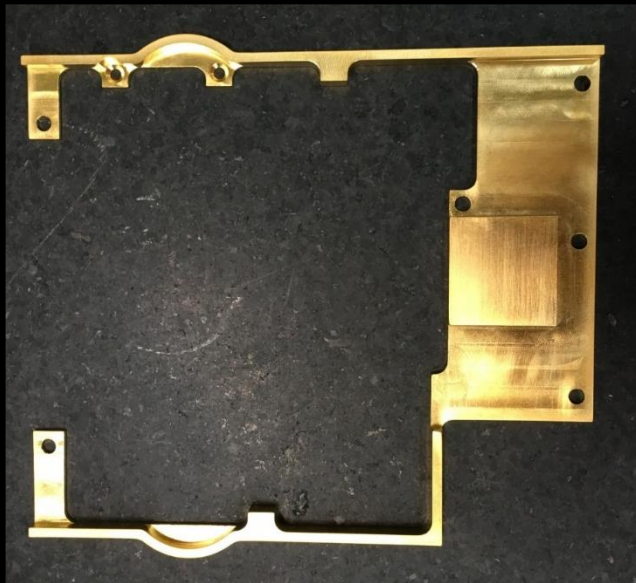
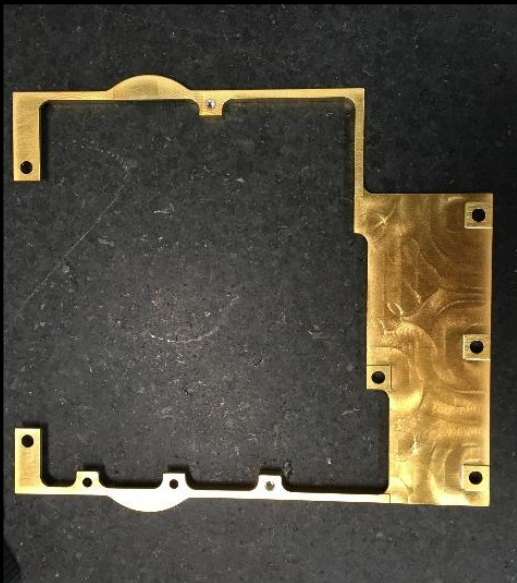
**NOTES:** Full CNC part with .002 tolerance ID with  $\leq .002$  True Position. All linear dimensions  $\pm .005$ .

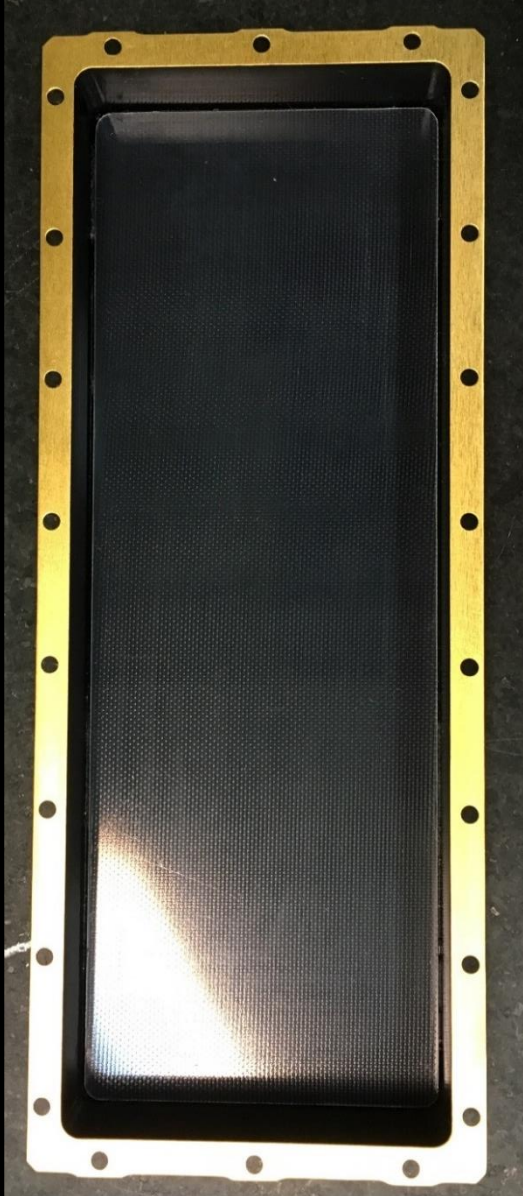


**MATERIAL:** 6061 T6 Aluminum Plate

**SIZE:** 5.350 x 4.585 .108 thick

**NOTES:** Part is plated in Gold. All dimensions met after plating. All dimensions met when inspected unrestrained. At the thinnest point this part is .060 thick.





**MATERIAL:** (ASSY) 6061 T651  
Plate/Glass Laminate

**SIZE:** 7.922 x .680 thick

**NOTES:** CNC machined from  
CAD Model. Parts are Black  
Anodized and Gold plated.  
Glass Laminate is epoxied in the  
cavity of aluminum Part. All  
dimensions inspected against  
CAD Model.





**MATERIAL:** Titanium 6AL-4V Plate

**SIZE:** 10.375 L x 3.75 W x 1.00 T

**NOTES:** CNC machined and Jig Bored to achieve  $\leq .00003$  perpendicularity requirement on 2.6252/2.6256 ID. Parts also have  $\leq .001$  Flatness throughout the entire length of part.



**MATERIAL:** Copper Wire

**SIZE:**  $\emptyset$ .032 x .135 L

**NOTES:** Parts are made from  $\emptyset$ .032 copper wire and parted off to .135 using our LEVIN jewelers Lathe.



**MATERIAL:** 440C Heat Treated to 58-60 HRC

**SIZE:** 2.320 L x  $\varnothing$ .200

**NOTES:** .002 tolerance on all linear dimensions. 440C material very tough and difficult to machine, requiring a skilled and knowledgeable machinist to consistently and accurately manufacture parts.



**MATERIAL:** Invar Bar

**SIZE:** Ø2.220 x 1.617 W

**NOTES:** Full CNC machined part with very close Tolerance dimensions including  $\leq .003$  Flatness, Perpendicularity and Parallelism. Part also has 12 .086-56 tapped holes and a .020 wall thickness.



**MATERIAL:** Aluminum Alloy 6061-T651

**SIZE:** 2.270 L x 1.500 Hex

**NOTES:** Turned utilizing our CNC turning center and mill. Part has several  $\pm.005$  linear dimensions and  $\pm.001$  diameters. All dimensions apply after anodize coating.