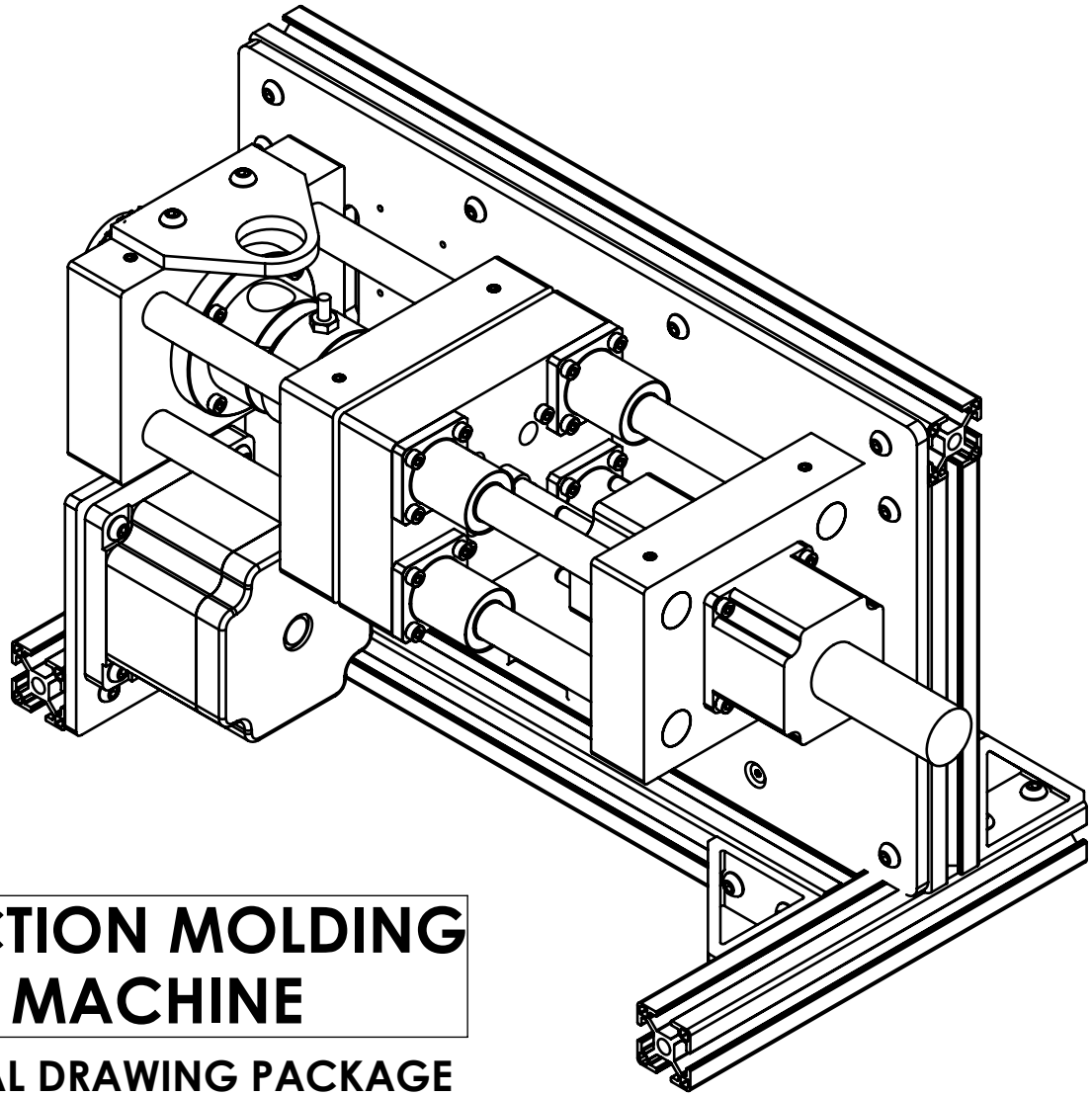


INJECTION MOLDING MACHINE

IMPERIAL DRAWING PACKAGE

DESIGNED FOR CNC MACHINING

ITEM NO.	PART	QTY.	MATERIAL/VENDOR
1	001-101 - Motor Bracket	1	ALUMINUM 6061-T6
2	001-102 - Frame Wall	1	ALUMINUM 6061-T6
3	002-101 - Motor Plate	1	ALUMINUM 6061-T6
4	002-102 - Fixed Mold Plate	1	ALUMINUM 6061-T6
5	002-103 - Moving Mold Plate	1	ALUMINUM 6061-T6
6	002-104 - Actuator Plate	1	ALUMINUM 6061-T6
7	002-105 - Hopper Bracket	1	ALUMINUM 6061-T6
8	002-106 - Extractor Block	1	ALUMINUM 6061-T6
9	002-107 - Blank Mold Cavity	1	ALUMINUM 6061-T6
10	003-101 - Screw Support	1	ALUMINUM 6061-T6
11	003-102 - Screw	1	STAINLESS STEEL 304L
12	003-103 - Extruder Barrel	1	ALUMINUM 6061-T6
13	003-104 - Nozzle	1	ALUMINUM 6061-T6
14	005-101 - Blank Core	1	ALUMINUM 6061-T6
15	005-102 - Blank Ejector Plate	1	STAINLESS STEEL 304L
16	SP - Bearing LMK16UU - Phidgets LMN4219_0	4	Phidgets Inc.
17	SP - M3x5 SHCS - McMaster-Carr 91292A110	20	McMaster-Carr
18	SP - M3xM3x8 Standoff - McMaster-Carr 98952A106	20	McMaster-Carr
19	SP - M4x10 FHCS - McMaster-Carr 91294A190	4	McMaster-Carr
20	SP - M4x12 SHCS - McMaster-Carr 91290A148	32	McMaster-Carr
21	SP - M4x20 SHCS - McMaster-Carr 91290A168	4	McMaster-Carr
22	SP - M4x25 SHCS - McMaster-Carr 91290A176	4	McMaster-Carr
23	SP - M4x6 CPSS - McMaster-Carr 91390A112	4	McMaster-Carr
24	SP - M6 TNUT - Phidgets TSL4203_0	33	Phidgets Inc.
25	SP - M6 Thermocouple - Amazon DLM-B0711DRCVG	1	Amazon
26	SP - M6x10 CPSS - McMaster-Carr 91390A128	8	McMaster-Carr
27	SP - M6x14 BHCS - McMaster-Carr 91239A319	35	McMaster-Carr
28	SP - M6x15 FHCS - McMaster-Carr 92125A111	6	McMaster-Carr
29	SP - M6x40 DWL - McMaster-Carr 91585A692	4	McMaster-Carr
30	SP - M6x8 SPSS - McMaster-Carr 94085A127	4	McMaster-Carr

ITEM NO.	PART	QTY.	MATERIAL/VENDOR
31	SP - N23 Actuator - Haydon-Kerk 57M43-3_25-910	1	Haydon-Kerk
32	SP - NEMA34 Motor - Phidgets 3335_0	1	Phidgets Inc.
33	SP - Phidgets HUB0000_0	1	Phidgets Inc.
34	SP - Phidgets REL1100_0	1	Phidgets Inc.
35	SP - Phidgets STC1000_0	2	Phidgets Inc.
36	SP - Phidgets TMP1101_0	1	Phidgets Inc.
37	SP - 16TxHTD5 Pulley - Phidgets TRM4125_0	1	Phidgets Inc.
38	SP - 16x295mm Rail - Phidgets LMN4002_0	4	Phidgets Inc.
39	SP - 18x25x6 Wave Spring - McMaster-Carr 1561T430	1	McMaster-Carr
40	SP - 24V PSU - Phidgets PSU4016_0	1	Phidgets Inc.
41	SP - 3030 Extrusion Bracket - McMaster-Carr 5537T659	4	McMaster-Carr
42	SP - 3030x200mm Extrusion - Phidgets TSL4002_0	2	McMaster-Carr
43	SP - 3030x225mm Extrusion - Phidgets TSL4002_0	2	McMaster-Carr
44	SP - 3030x265mm Extrusion - Phidgets TSL4002_0	1	McMaster-Carr
45	SP - 3030x295mm Extrusion - Phidgets TSL4002_0	1	McMaster-Carr
46	SP - 34TxHTD5 Pulley - Phidgets TRM4122_0	1	Phidgets Inc.
47	SP - 3_4 Bearing - McMaster-Carr 5709K770	2	McMaster-Carr
48	SP - 3_4-16 NUTT - McMaster Carr 91847A555	1	McMaster-Carr
49	SP - 6x20 Heater - Amazon 258RK-3-U5	3	Amazon

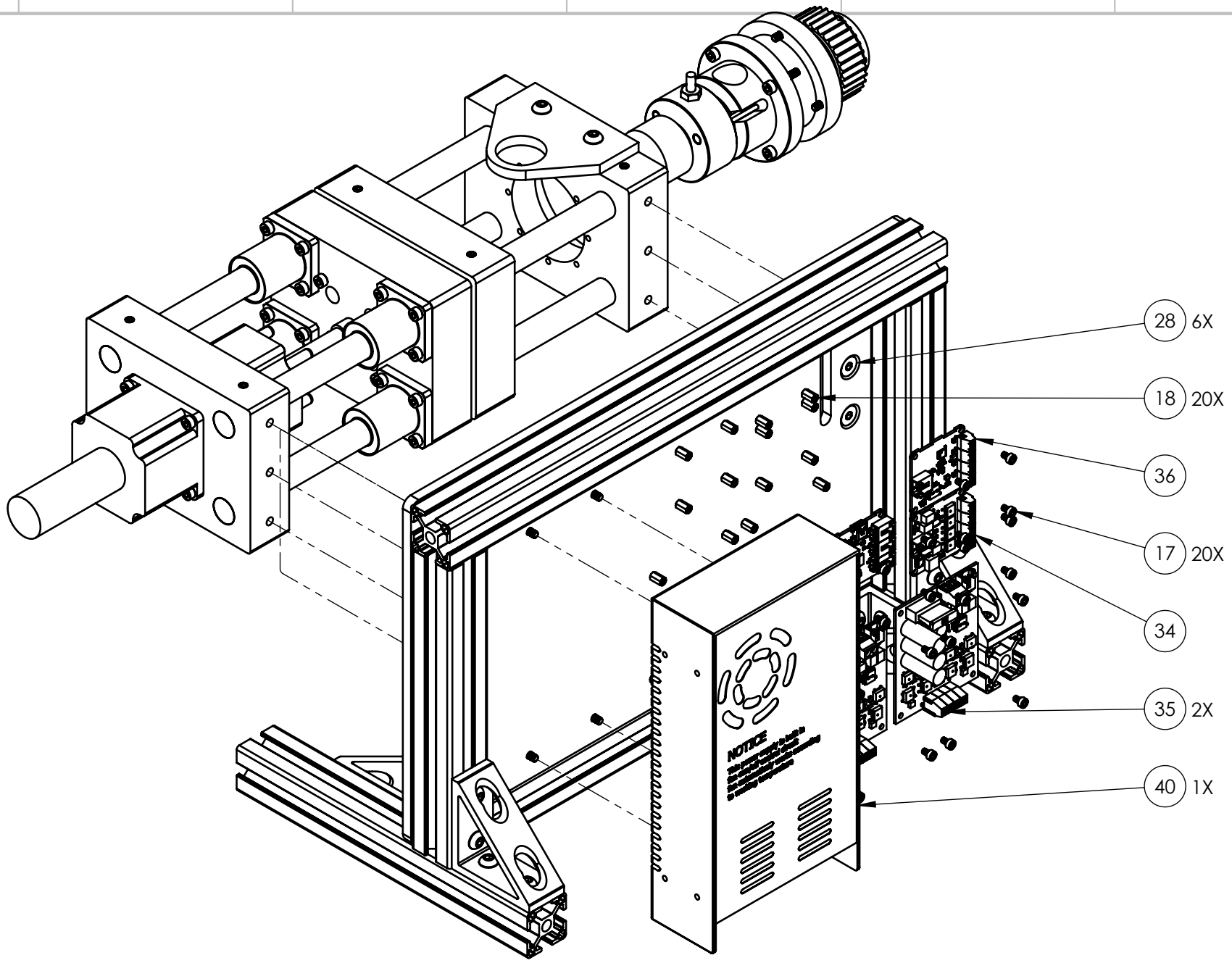
NOTE:

-VENDOR PART NUMBERS ARE INCLUDED AT THE END OF THE PART NAME

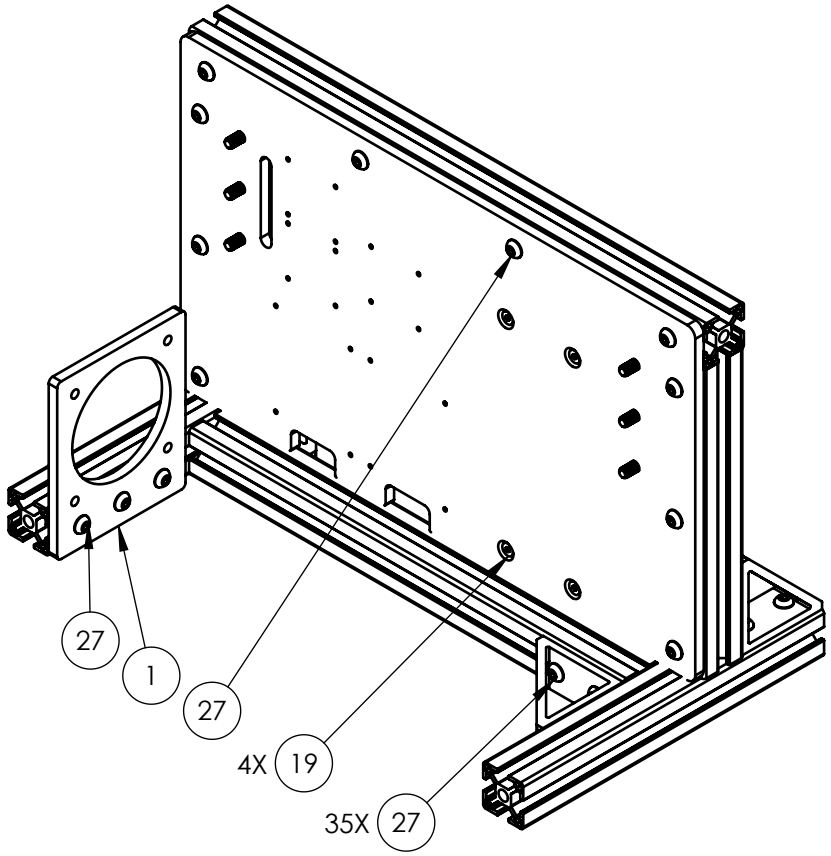
-THIS PACKAGE DEALS MOSTLY WITH MECHANICAL COMPONENTS. I MAY PUBLISH WIRING DIAGRAMS SEPARATELY, HOWEVER I WILL NOT SPEC SPECIFIC WIRING COMPONENTS.

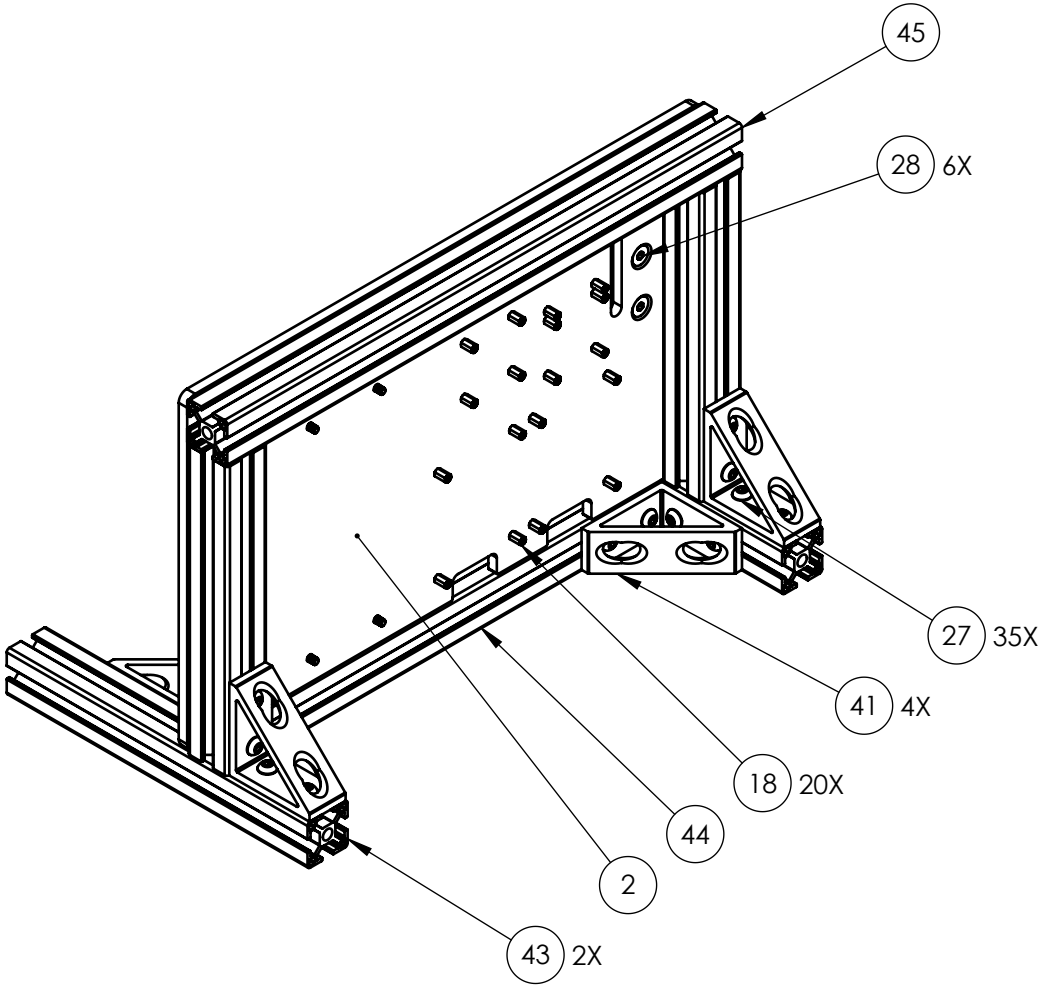
ITEM	PART NUMBER	VENDOR	QUANTITY
VINT CABLE	3004_0	PHIDGETS INC	4
ASSORTED WIRE	-	-	-
POWER ENTRY CONNECTOR*	-	-	-
POWER CABLE*	-	-	-

* I PURPOSELY OMITTED POWER COMPONENTS DUE TO VARYING REGIONAL STANDARDS AND LIABILITY

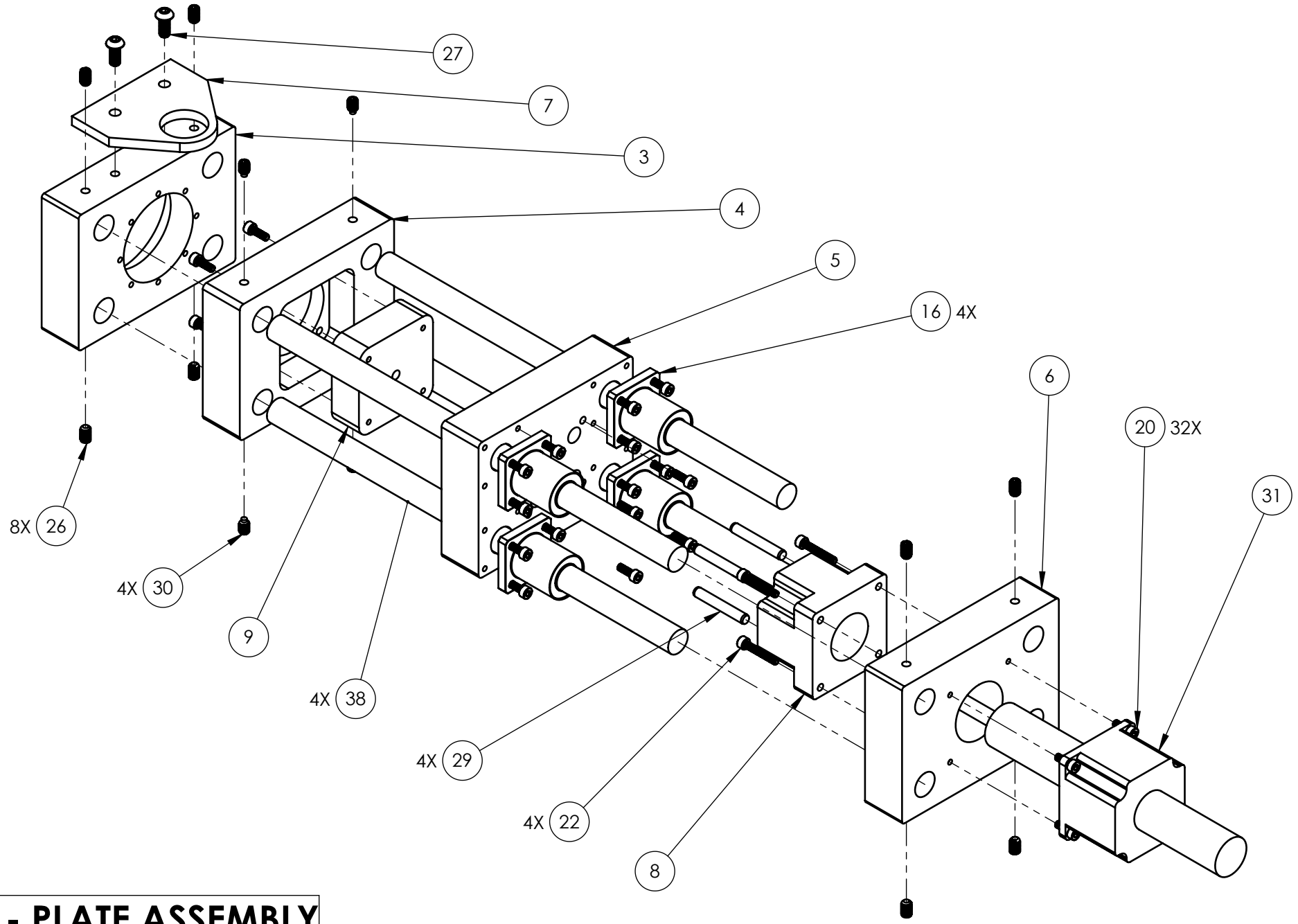


000 - Injection Molding Machine





001 - Machine Frame



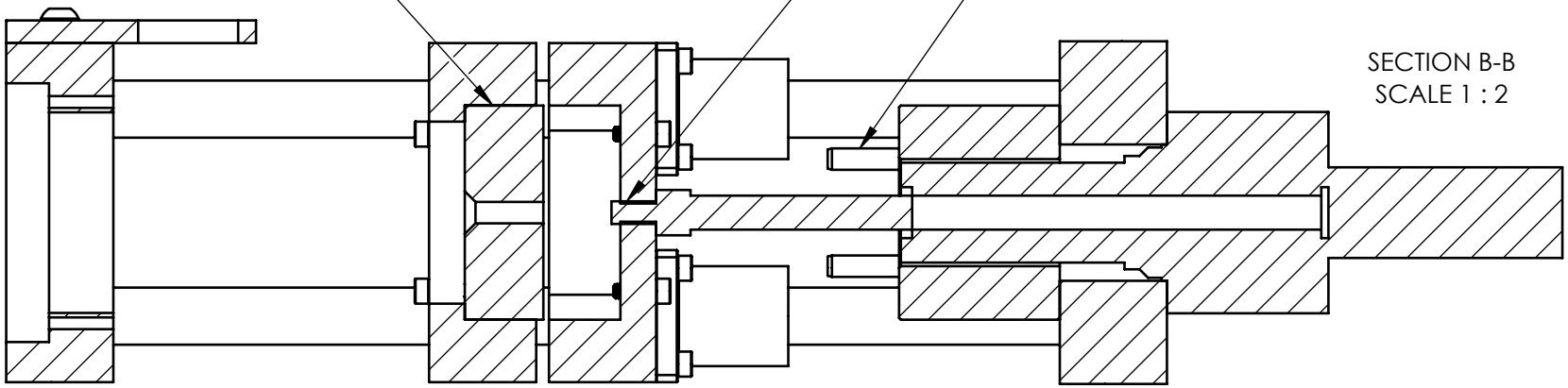
002 - PLATE ASSEMBLY

BLANK MOLD CAVITY INCLUDED. CORE SHOWN IN DIFFERENT VIEW.

LIMIT THREAD ENGAGEMENT TO PREVENT THREAD FROM INTERFERING WITH MOLD CORE ASSEMBLY

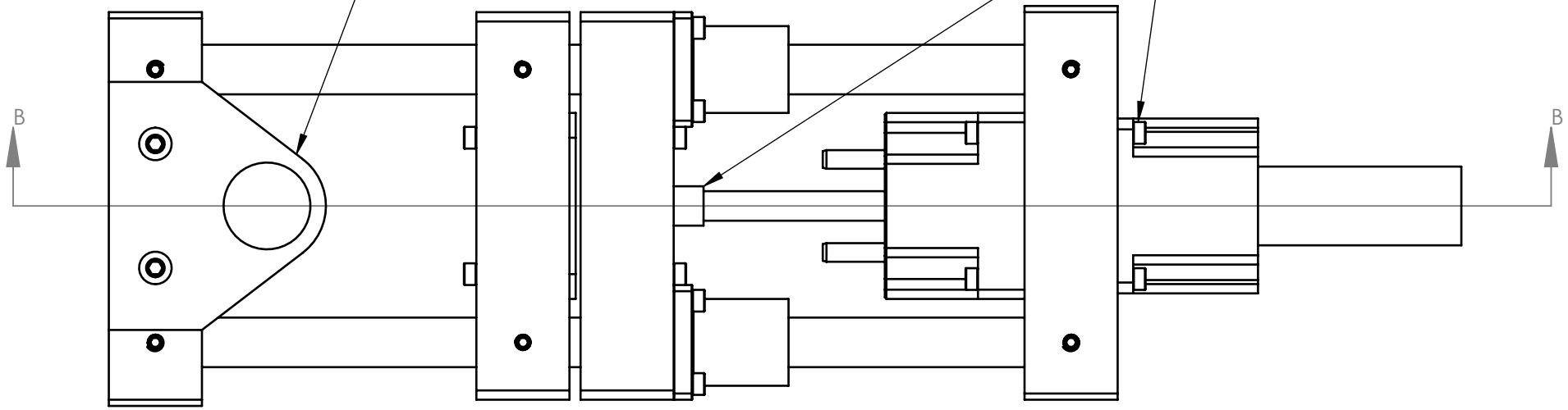
PINS REPLACEABLE FOR LONGER EJECTOR PLATE

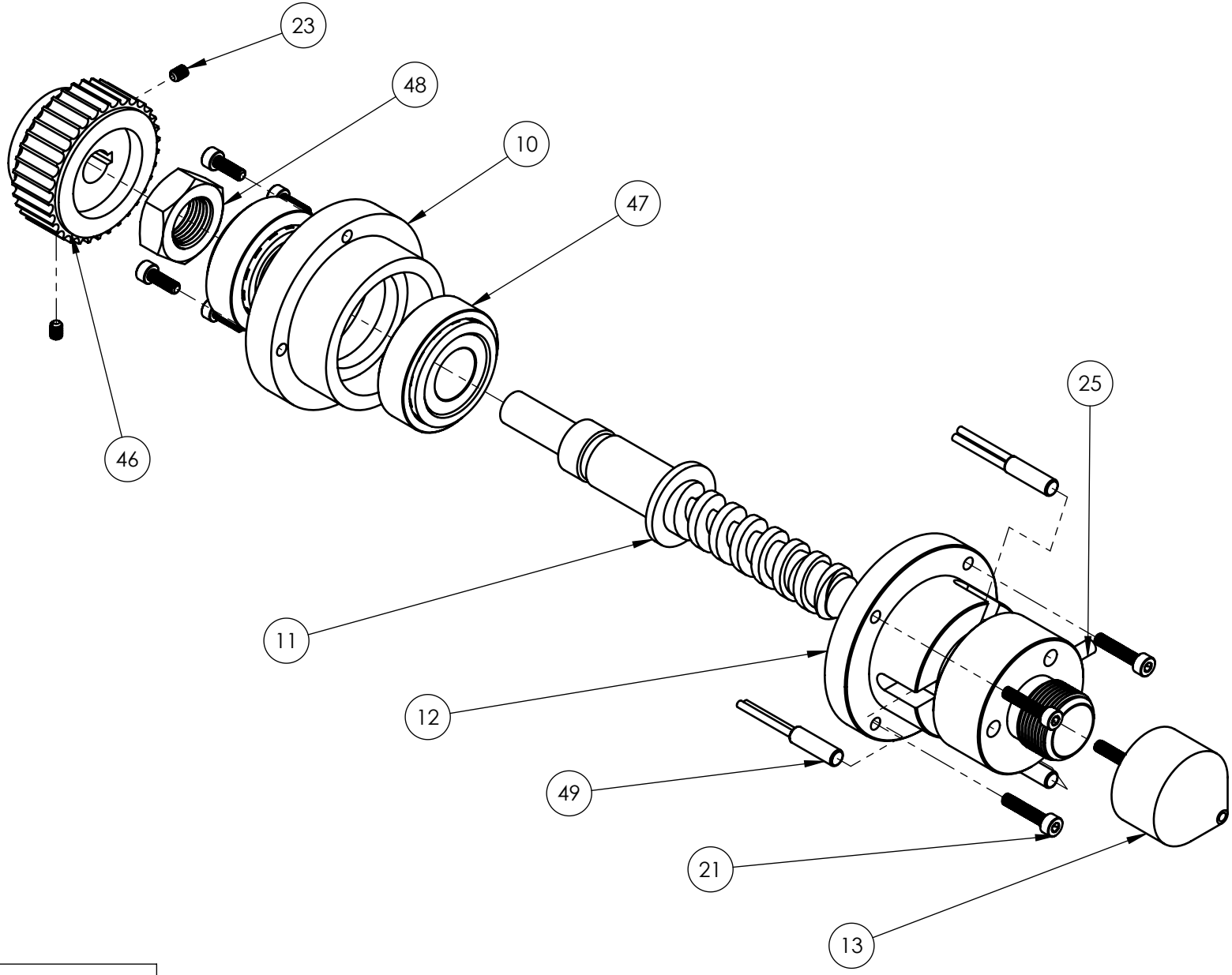
SECTION B-B
SCALE 1 : 2



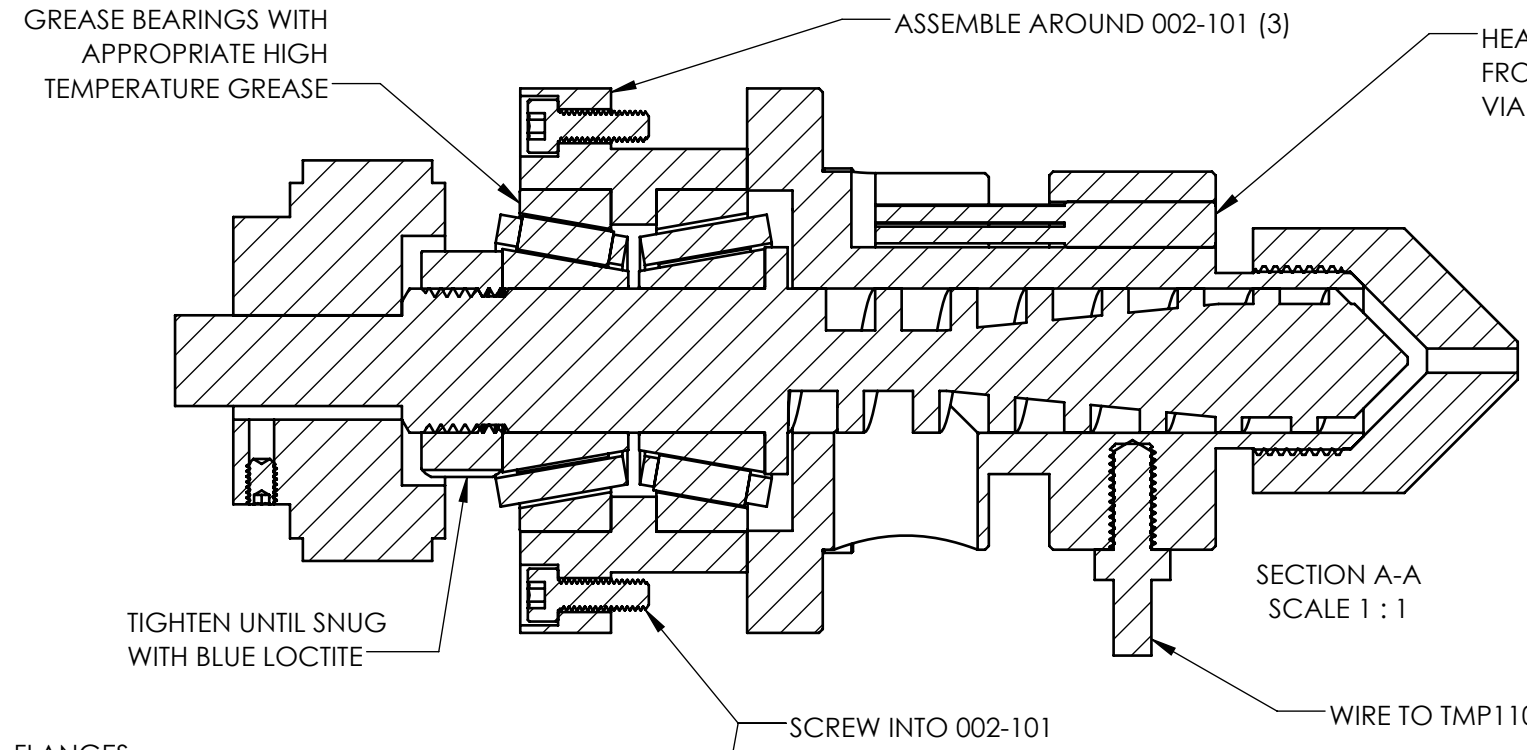
HOPPER AND ADAPTER DESIGNS NOT PROVIDED

ACTUATOR MUST BE SCREWED INTO 002-103 BEFORE BEING FASTENED TO 002-104

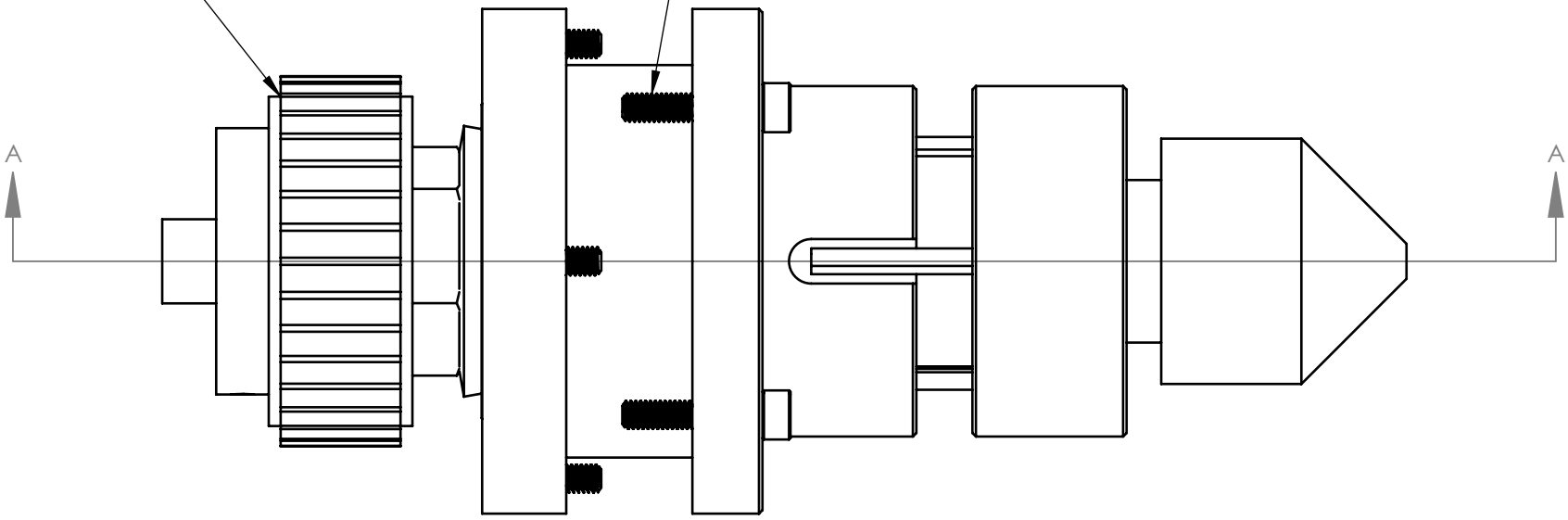


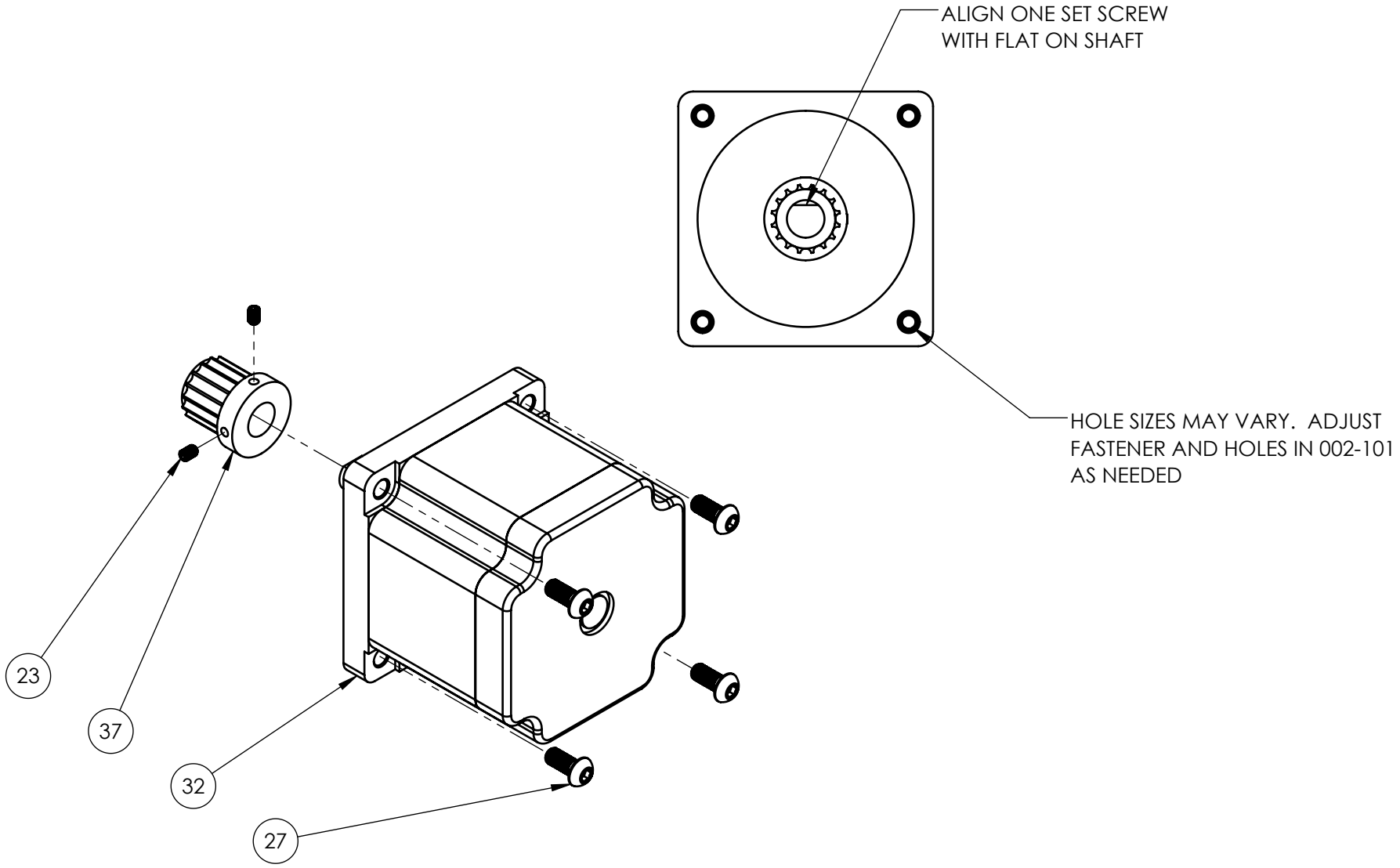


003 - EXTRUDER

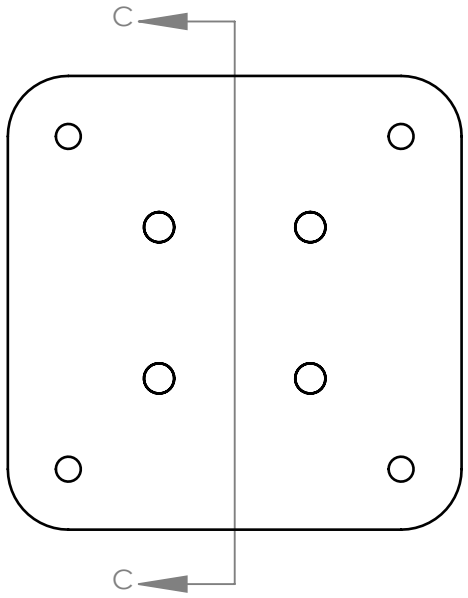


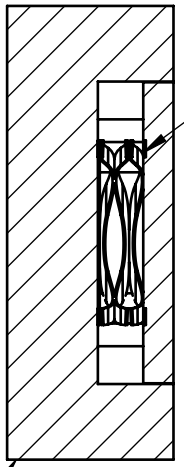
SECTION A-A
SCALE 1 : 1





004 - MOTOR SUBASSEMBLY



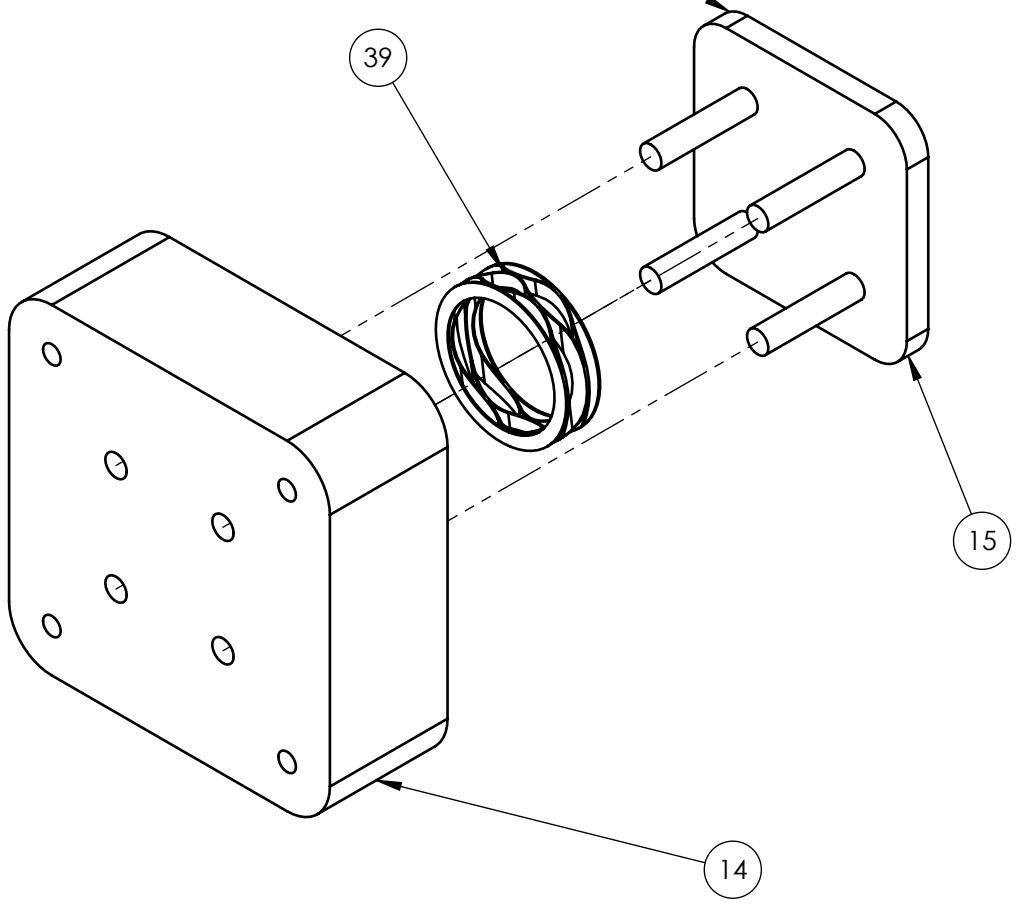


SECTION C-C

SPRING AND PIN PLACEMENT WILL VARY WITH MOLD DESIGN AND APPLICATION. THE SPRING SHOWN HERE IS MERELY AN EXAMPLE OF APPLICABLE HARDWARE

ASSEMBLY IS HELD TOGETHER WHEN INSERTED INTO THE POCKET IN 002-103

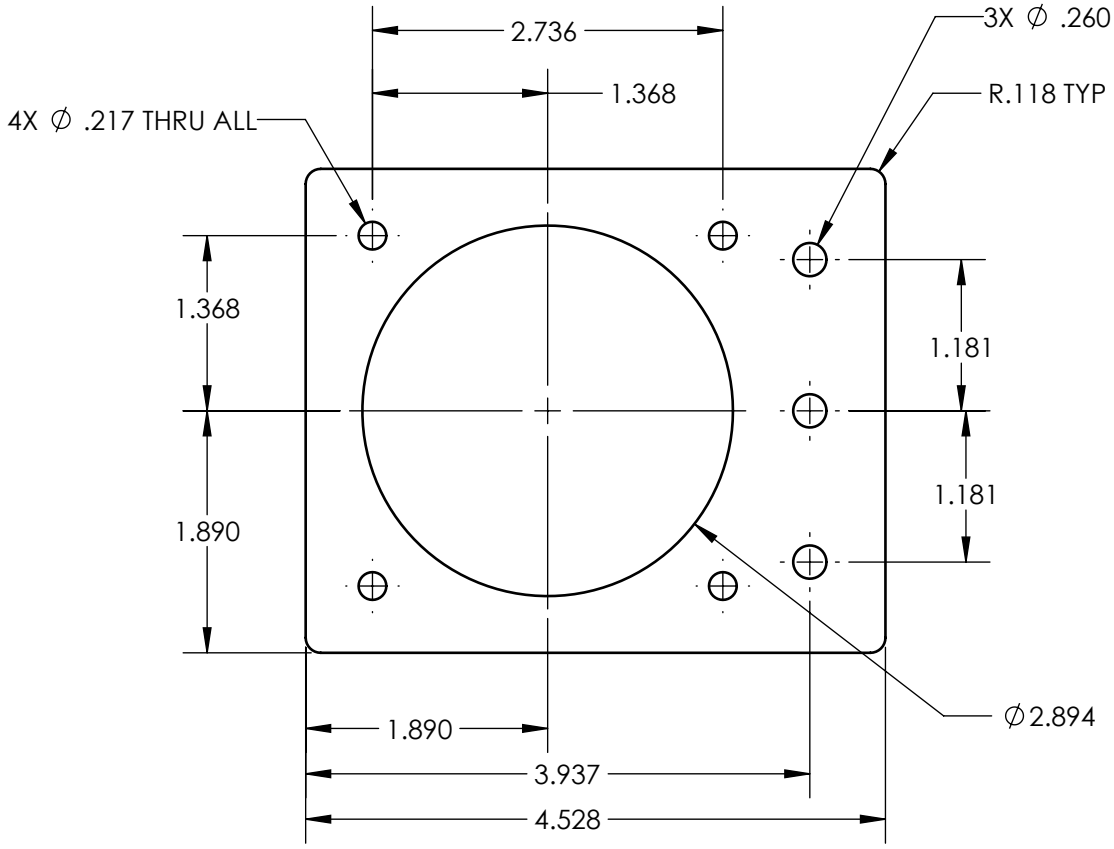
EJECTOR PINS ARE ACTUATED BY CONTACT PINS INSERTED IN 002-106.

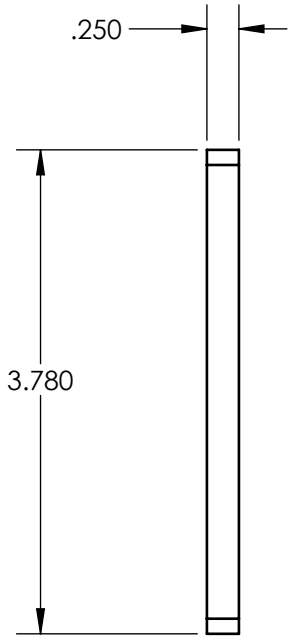


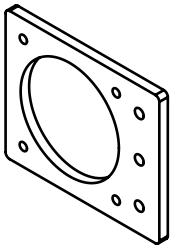
NOTES:

- THE DRAWINGS OF THE INDIVIDUAL PARTS SPECIFY AN H7/g7 FIT
  - THIS DOES NOT ACCOUNT FOR POSITIONAL TOLERANCES WHICH ARE DICTATED BY YOUR MOLD DESIGN

005 - BLANK MOLD CORE







ISO VIEW NTS

LAST EDITED: 2019-06-25

TITLE:

001-101 - Motor Bracket

MATERIAL:

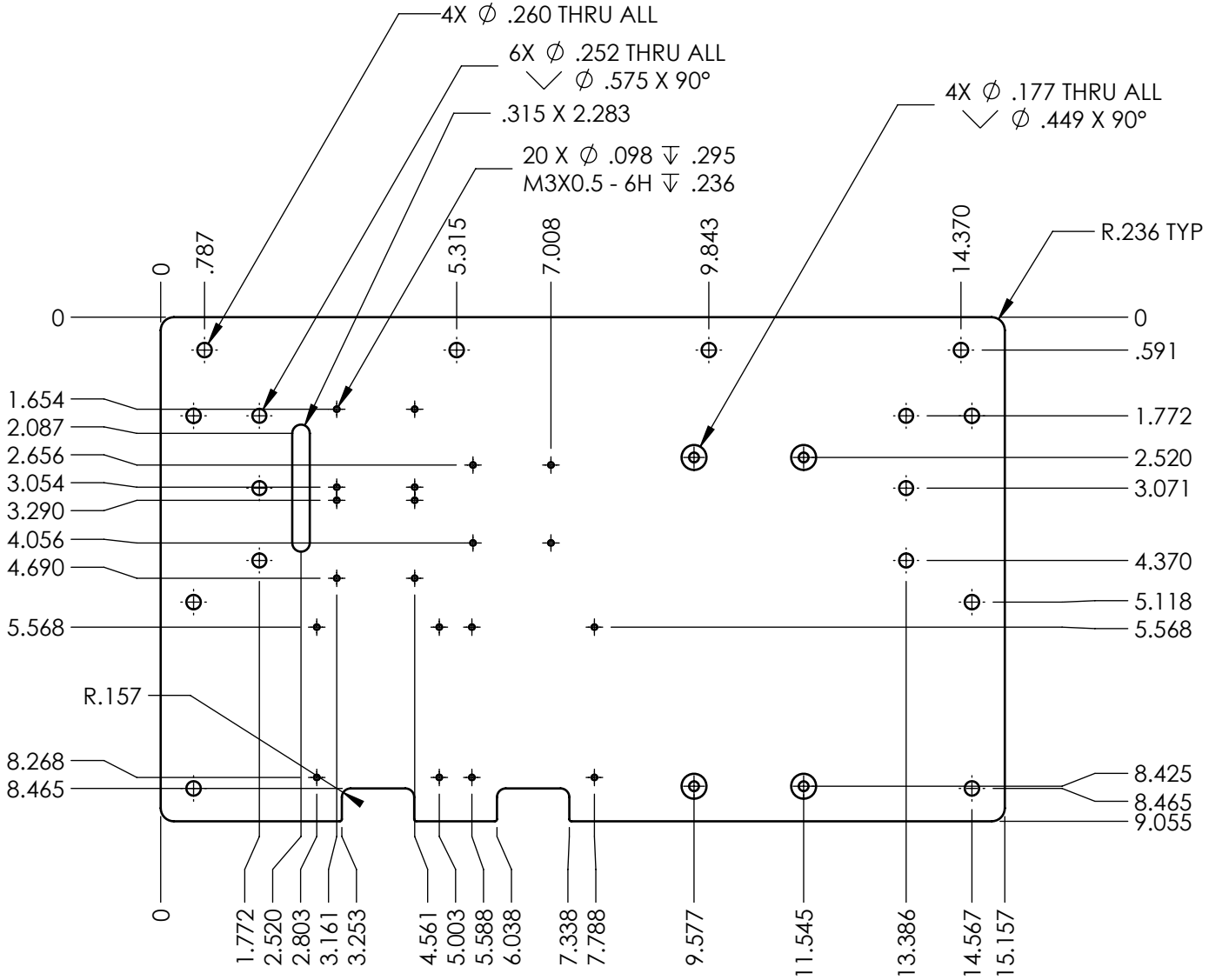
ALUMINUM 6061-T6

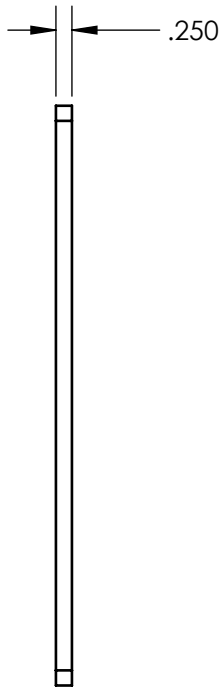
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:1

A4





LAST EDITED: 2019-06-25

TITLE:

001-102 - Frame Wall

MATERIAL:

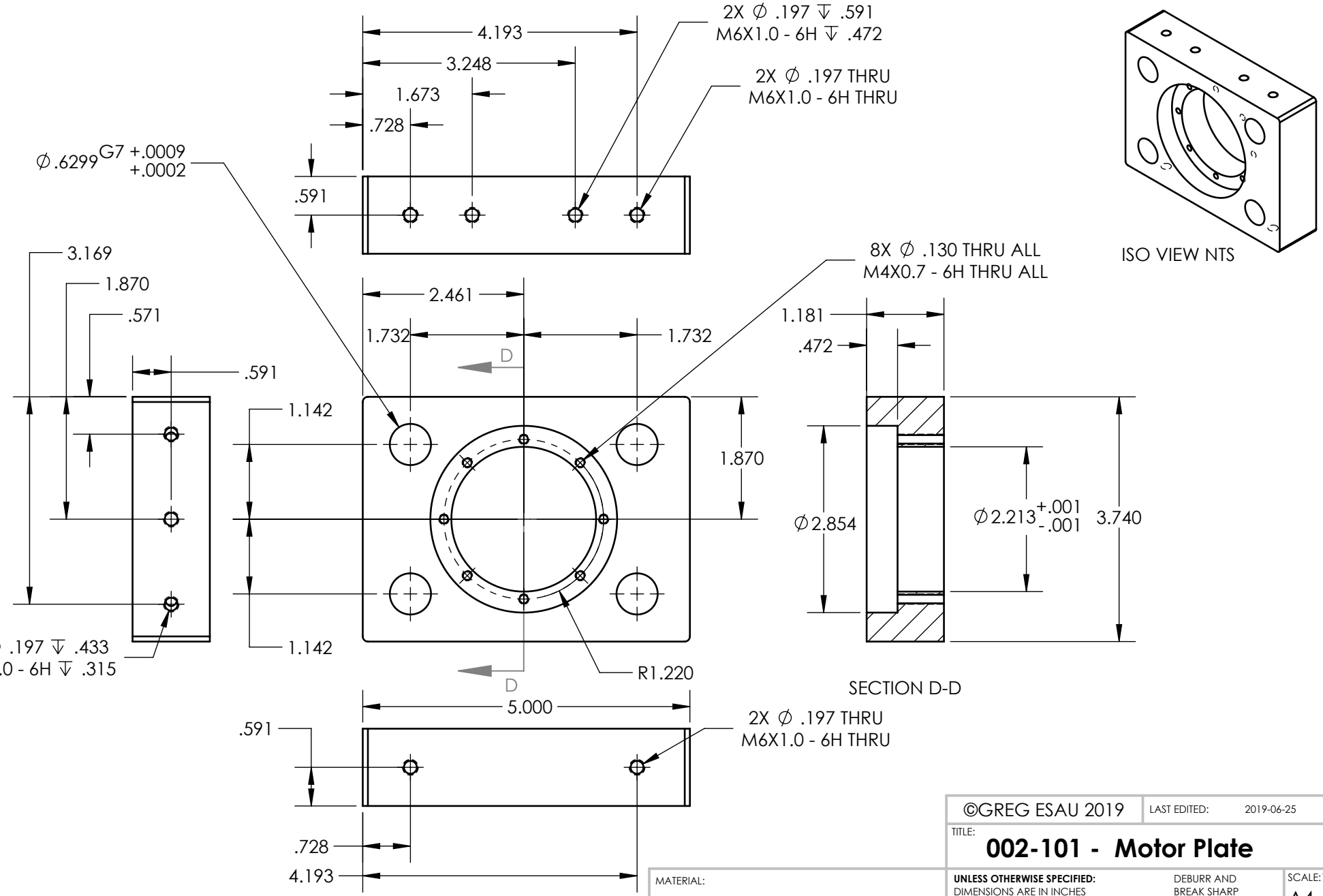
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:5

A4



LAST EDITED: 2019-06-25

TITLE:

002-101 - Motor Plate

MATERIAL:

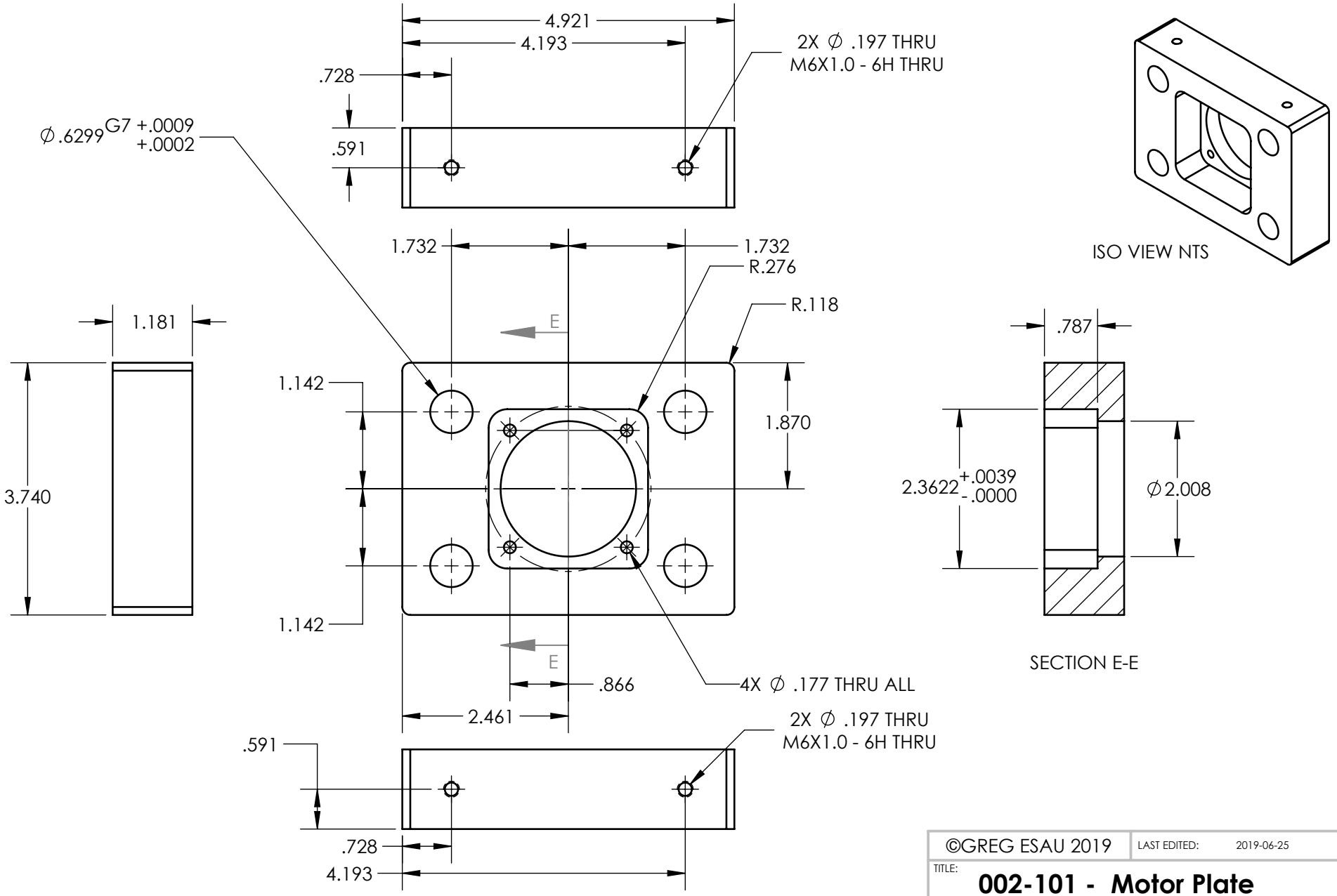
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:2

A4



LAST EDITED: 2019-06-25

TITLE:

002-101 - Motor Plate

MATERIAL:

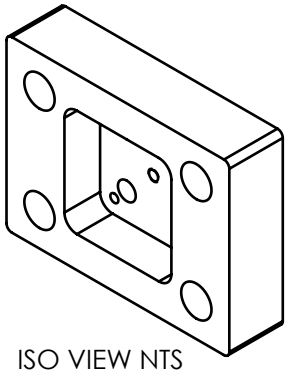
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

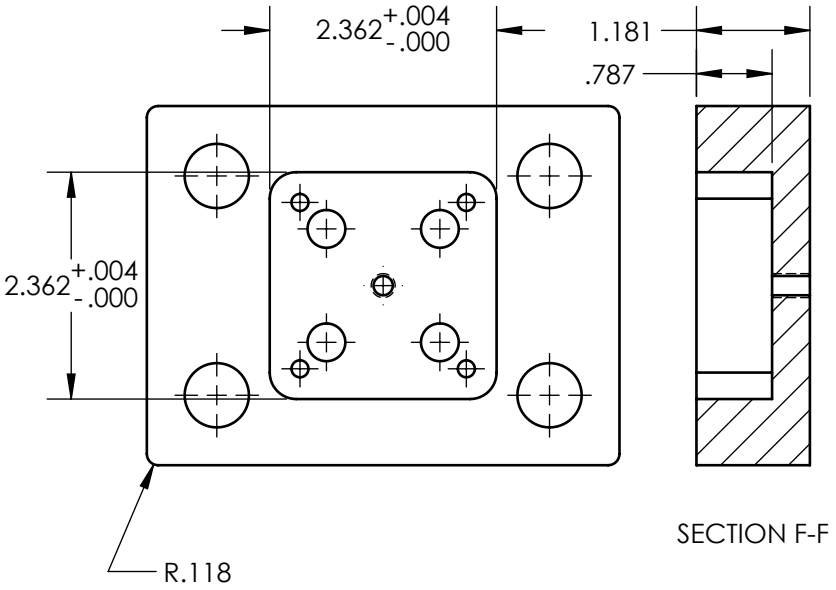
DEBURR AND BREAK SHARP EDGES

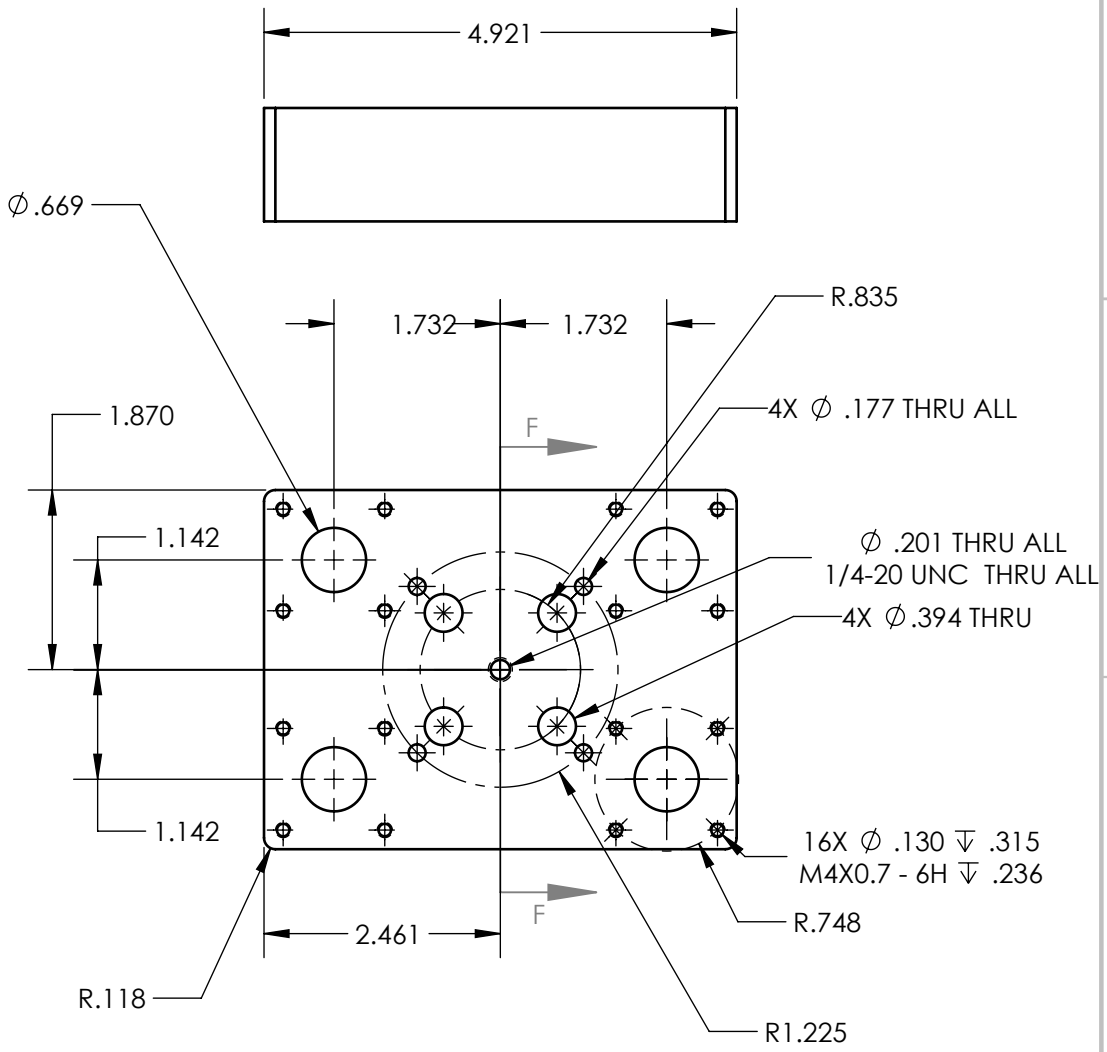
SCALE:1:2

A4



ISO VIEW NTS





LAST EDITED: 2019-06-25

TITLE:

002-103 - Moving Mold Plate

MATERIAL:

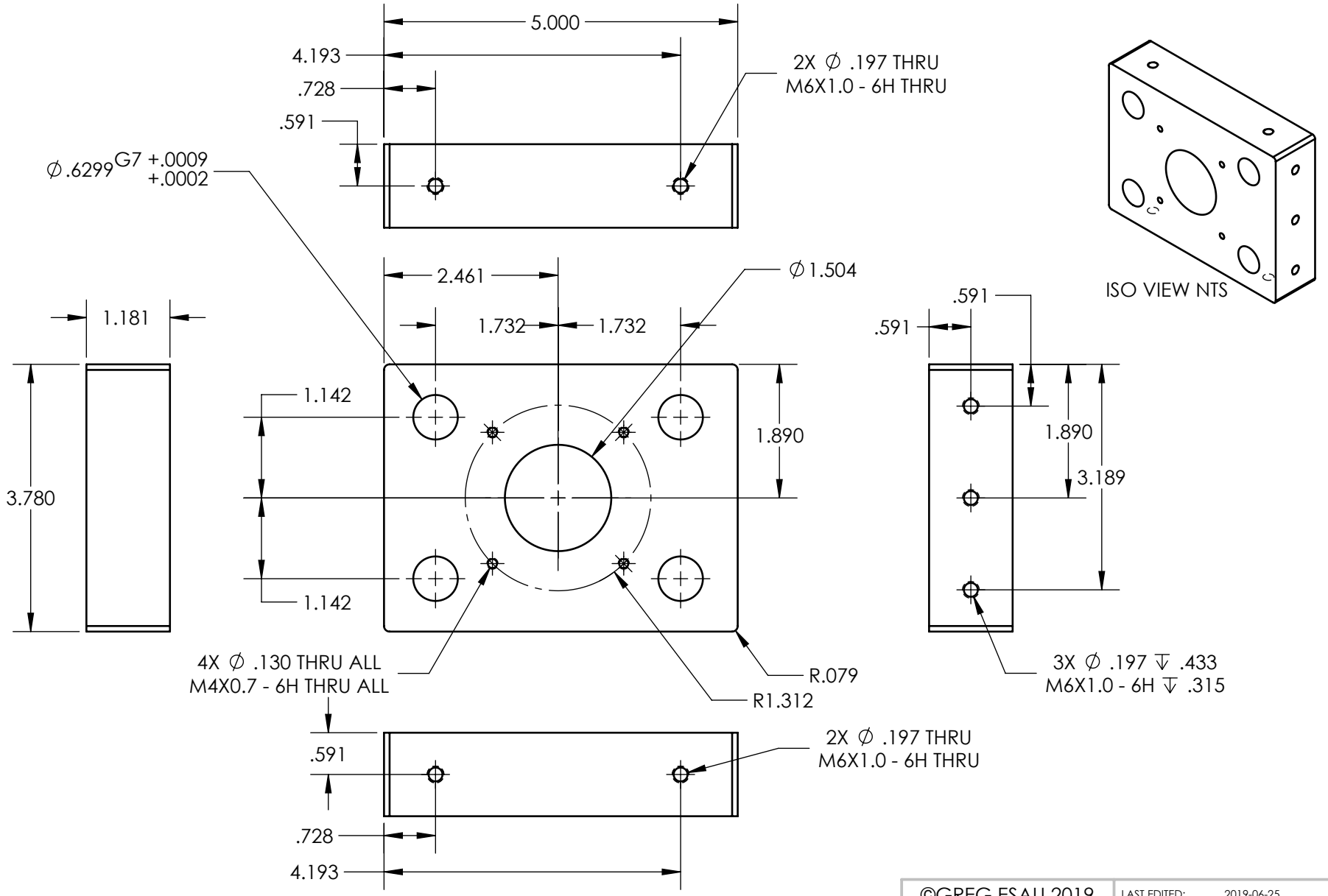
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:2

A4



LAST EDITED: 2019-06-25

TITLE:

002-104 - Actuator Plate

MATERIAL:

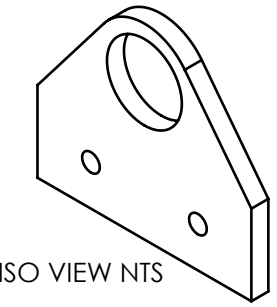
ALUMINUM 6061-T6

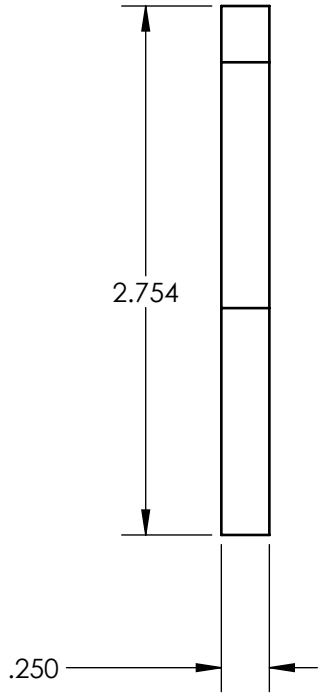
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

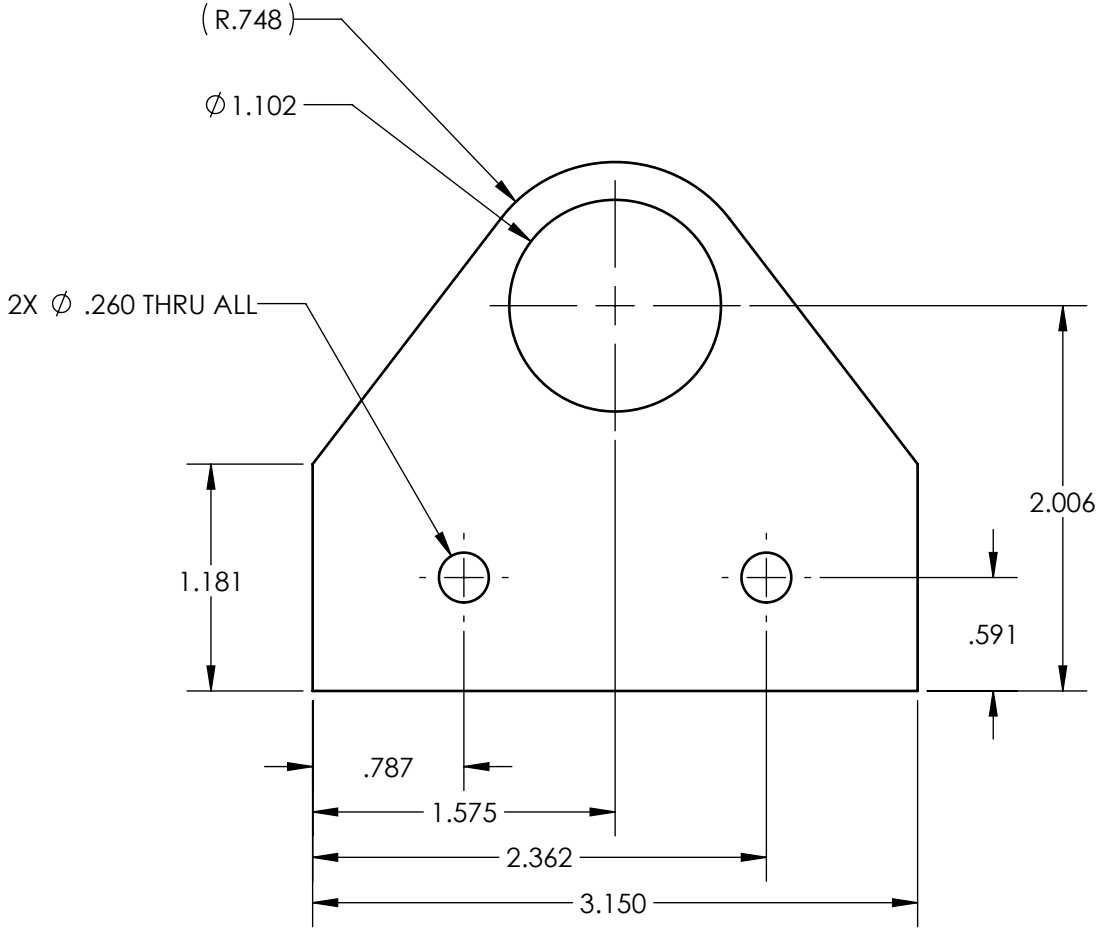
DEBURR AND BREAK SHARP EDGES

SCALE:1:2

A4







LAST EDITED: 2019-06-25

TITLE:

002-105 - Hopper Bracket

MATERIAL:

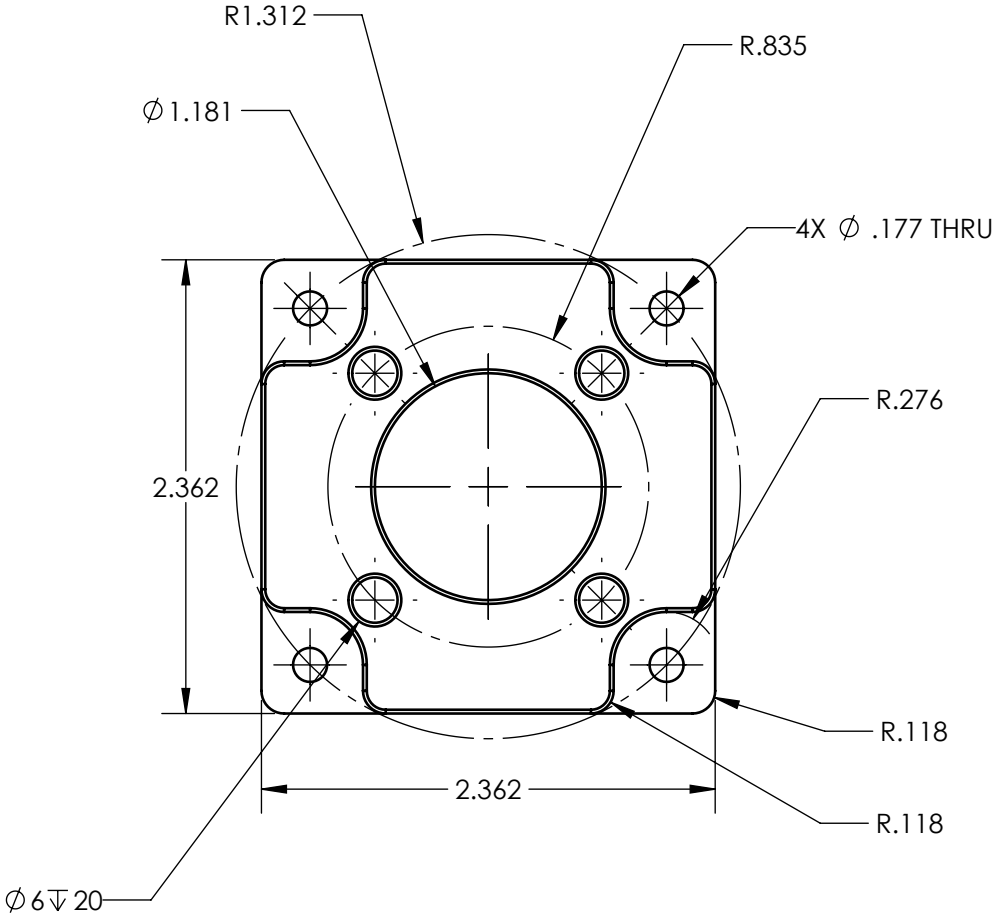
ALUMINUM 6061-T6

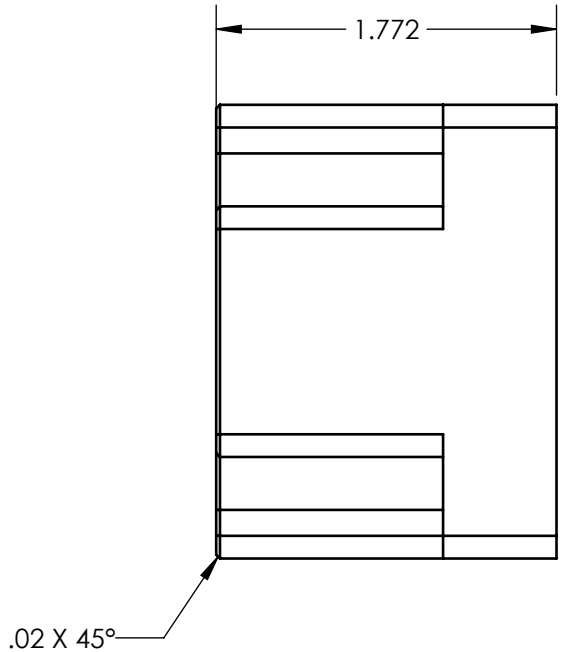
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

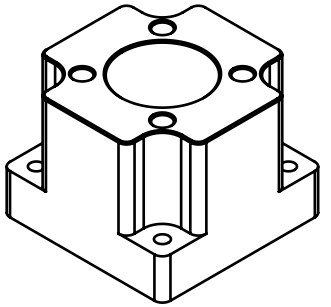
DEBURR AND BREAK SHARP EDGES

SCALE:1:1

A4







ISO VIEW NTS

NOTES:

- DOWEL HOLE DEPTHS WITH 20MM DOWELS ACCOMODATE 12MM EXTRACTOR PIN STROKE
  - CHANGING DOWELS CAN CHANGE THIS

LAST EDITED: 2019-06-25

TITLE:

002-106 - Extractor Block

MATERIAL:

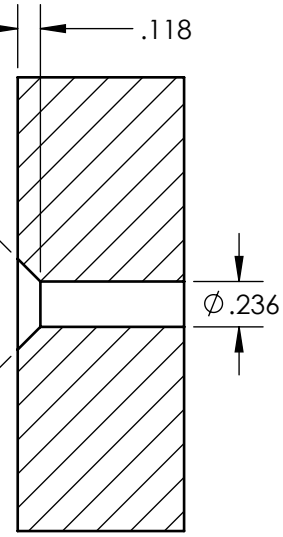
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

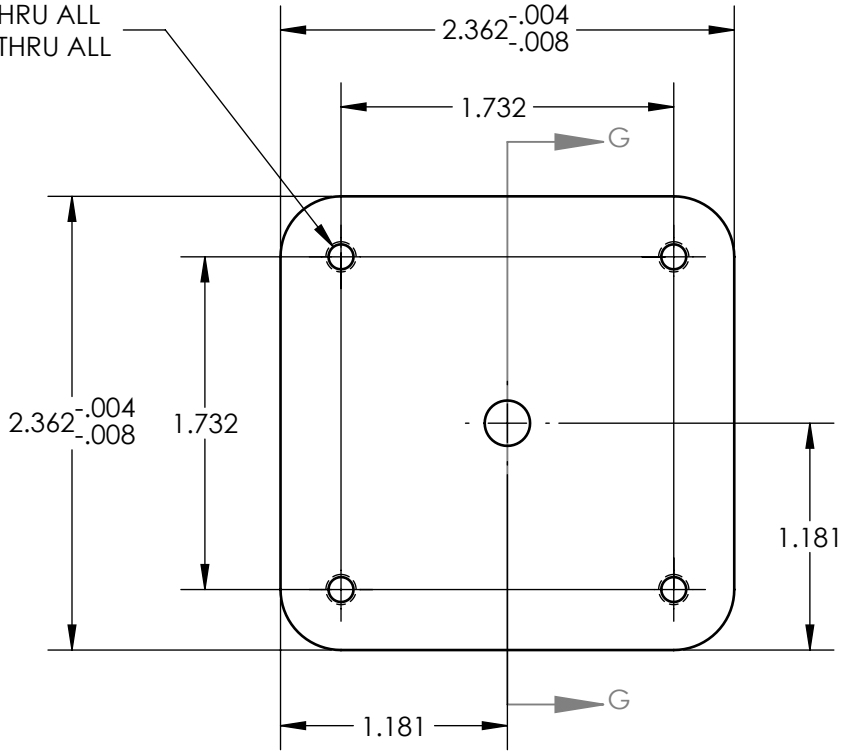
DEBURR AND BREAK SHARP EDGES

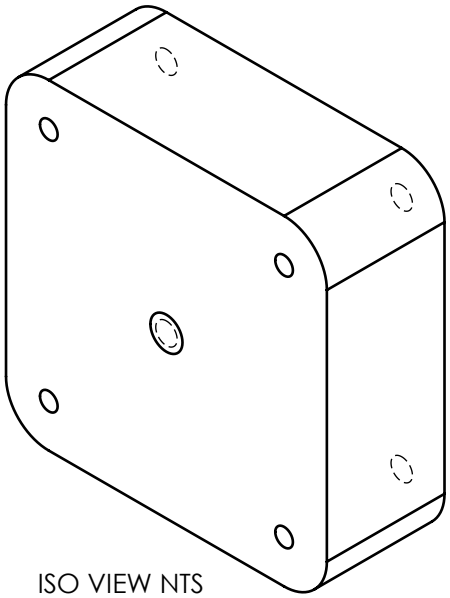
SCALE:1:1

A4



SECTION G-G





ISO VIEW NTS

LAST EDITED: 2019-06-25

TITLE:

002-107 - Blank Mold Cavity

MATERIAL:

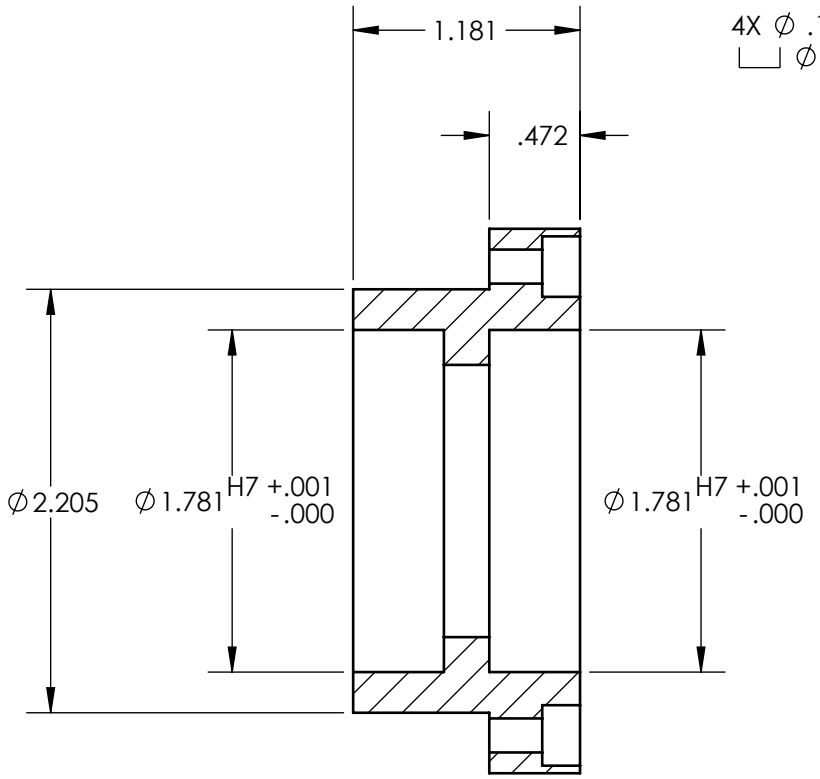
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

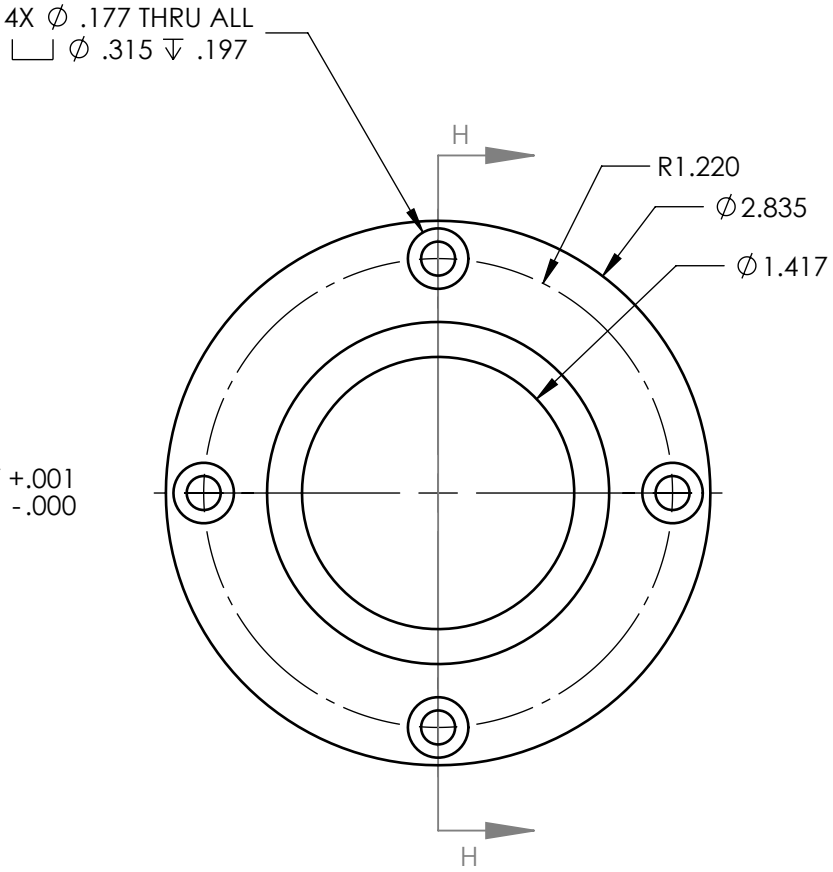
DEBURR AND BREAK SHARP EDGES

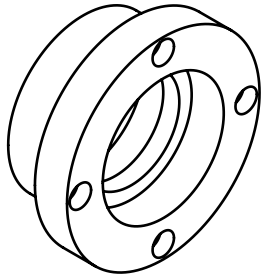
SCALE:1:1

A4



SECTION H-H
SCALE 1 : 1





ISO VIEW NTS

LAST EDITED: 2019-06-25

TITLE:

003-101 - Screw Support

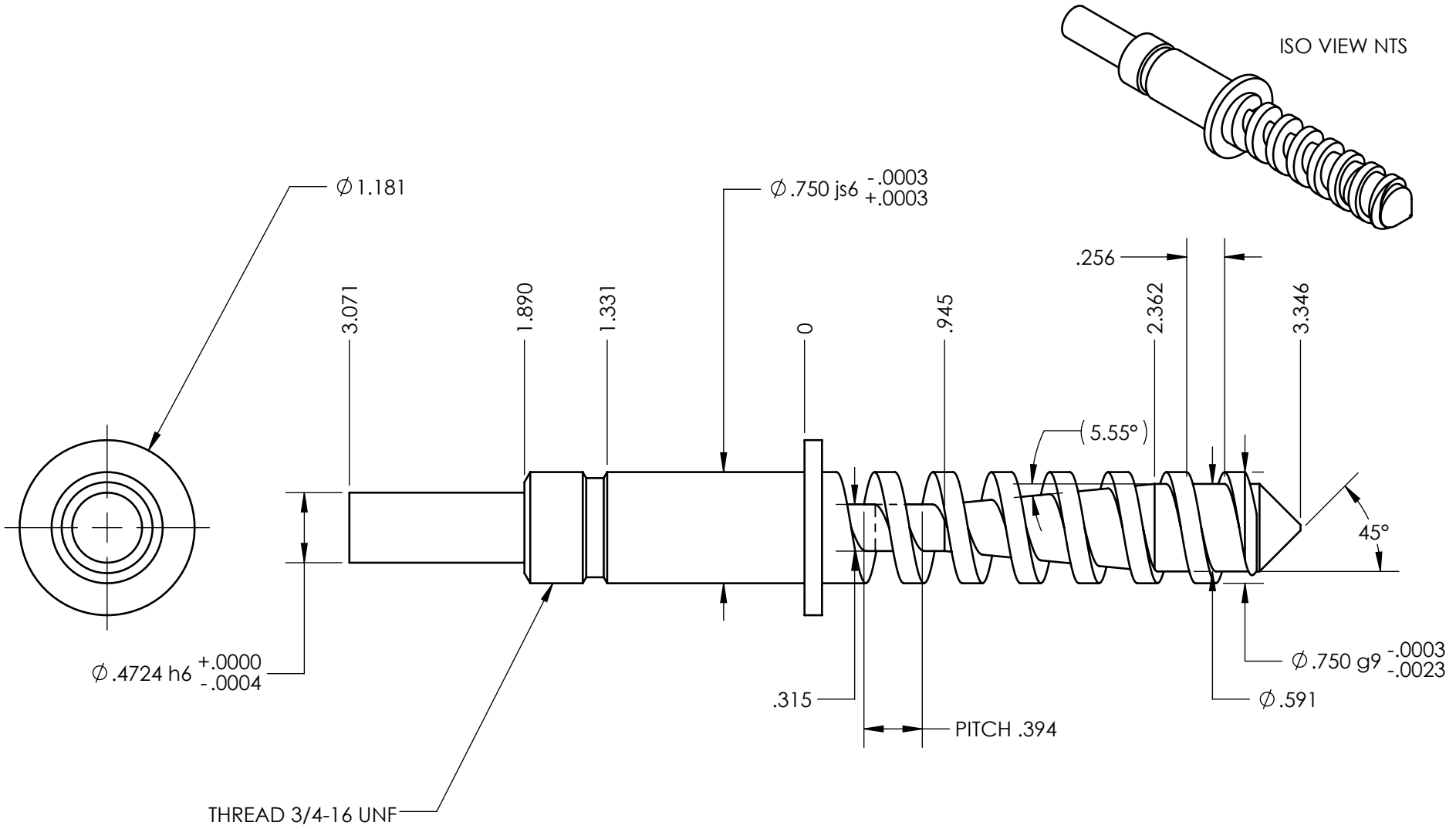
MATERIAL:

ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:2
A4



NOTES:

- THIS PART CAN BE THREADED WITH A 10MM LEAD
  - A THE LATHE TOOL WILL REQUIRE 10DEG OF SIDE CLEARANCE

LAST EDITED: 2019-06-25

TITLE:

003-102 - Screw

MATERIAL:

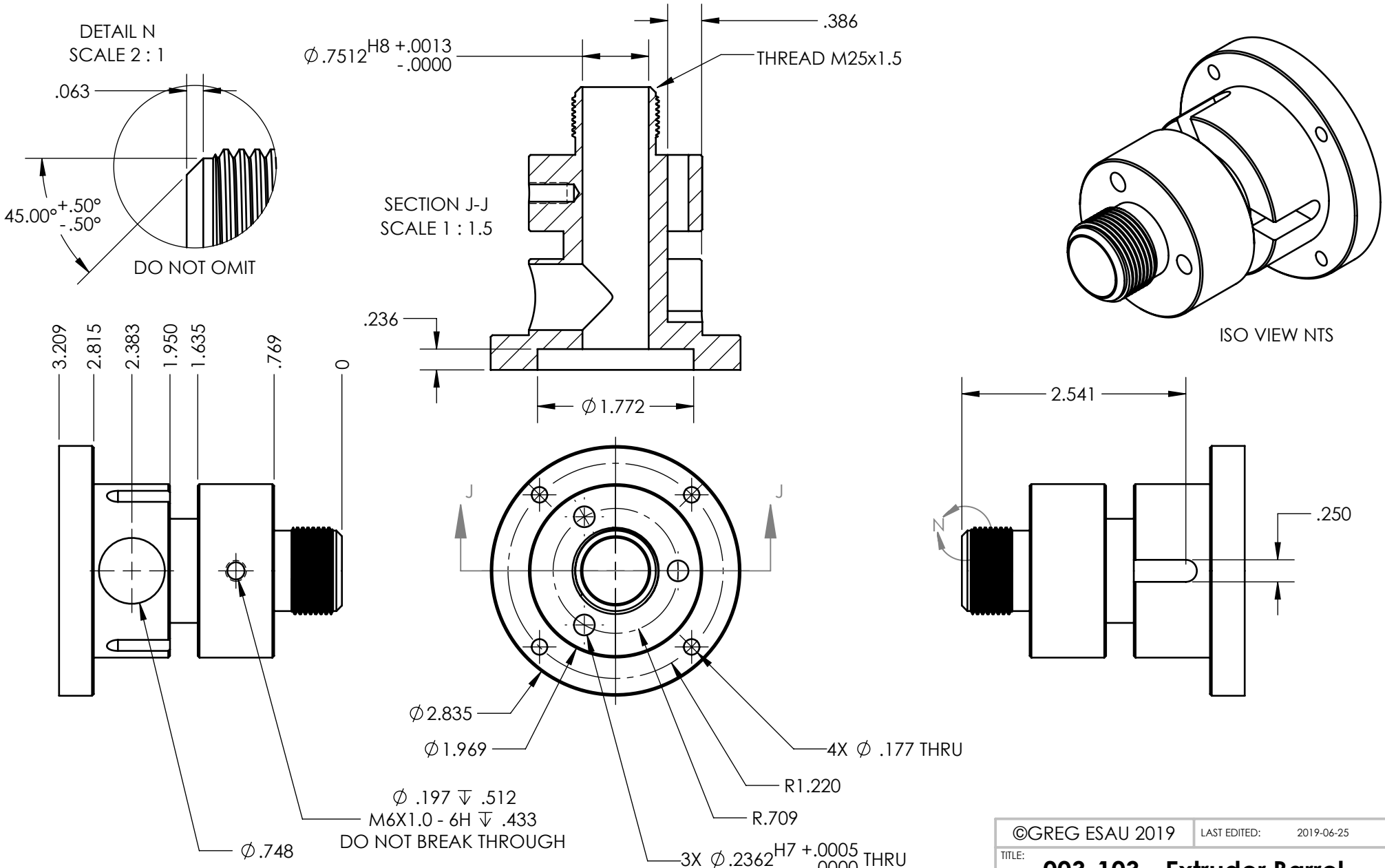
STAINLESS 304L

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:2

A4



NOTES:
-THREE SLOTS ARE IDENTICAL AND IN LINE WITH HOLES
-CHAMFER DIMENSION ON THREAD IS IMPORTANT

LAST EDITED: 2019-06-25

TITLE: **003-103 - Extruder Barrel**

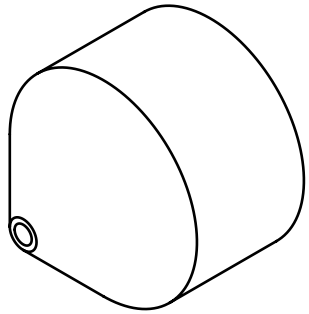
MATERIAL: **ALUMINUM 6061-T6**

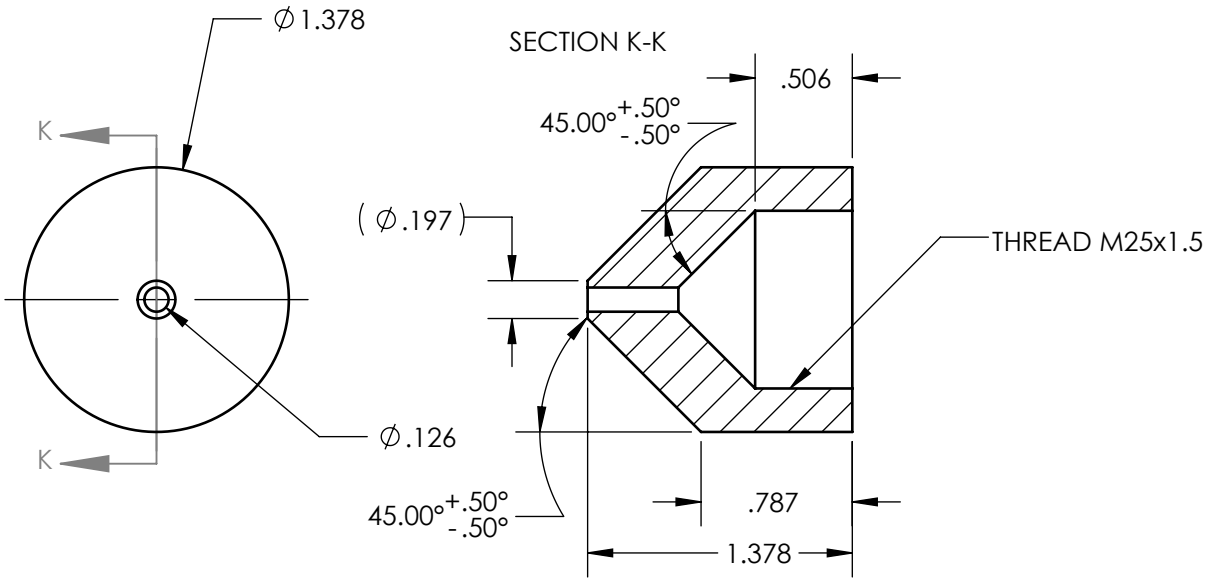
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:2
A4

ISO VIEW NTS





NOTES:

- BOTH 45 DEGREE ANGLES FORM SEALING SURFACE
  - ANGULAR ACCURACY AND SURFACE FINISH SHOULD BE OPTIMIZED

LAST EDITED: 2019-06-25

TITLE:

003-104 - NOZZLE

MATERIAL:

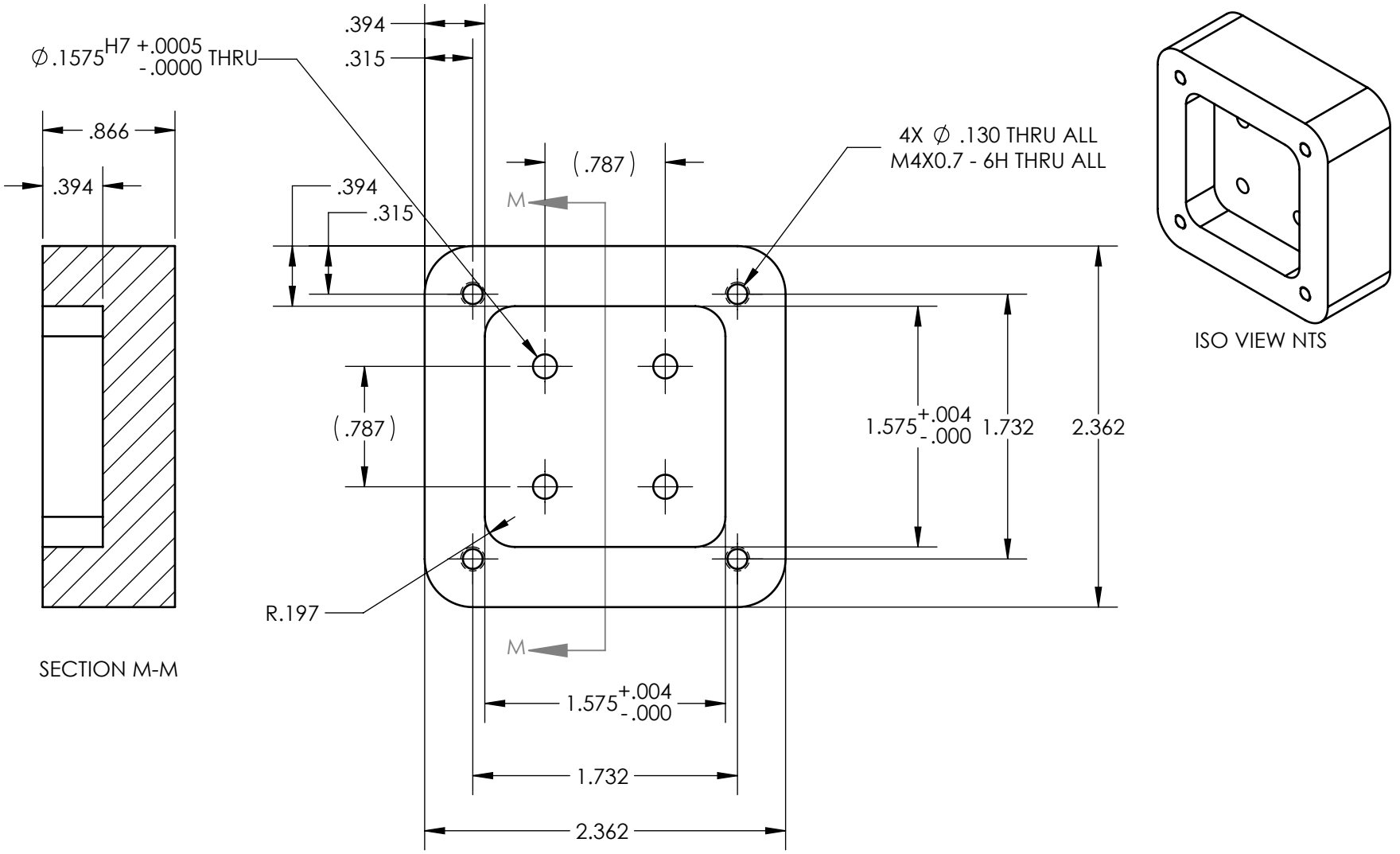
ALUMINUM 6061-T6

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:1

A4



NOTES:

- THE DRAWINGS OF THE INDIVIDUAL PARTS SPECIFY AN H7/g7 FIT
  - THIS DOES NOT ACCOUNT FOR POSITIONAL TOLERANCES WHICH ARE DICTATED BY YOUR MOLD DESIGN

LAST EDITED: 2019-06-25

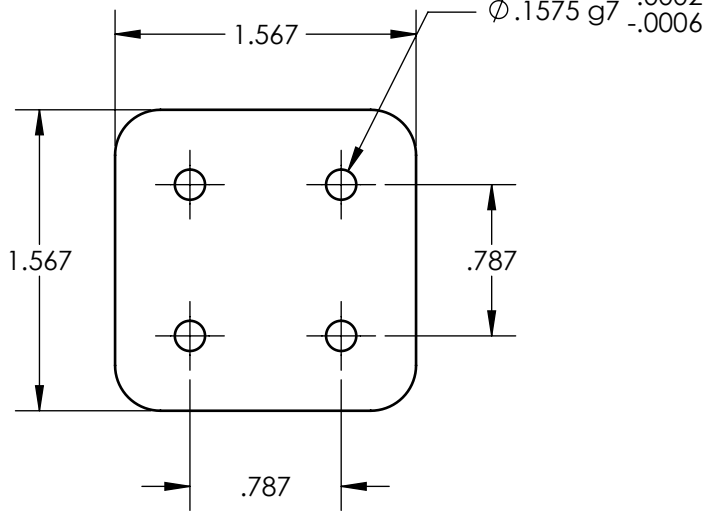
TITLE: **005-101 - Blank Core**

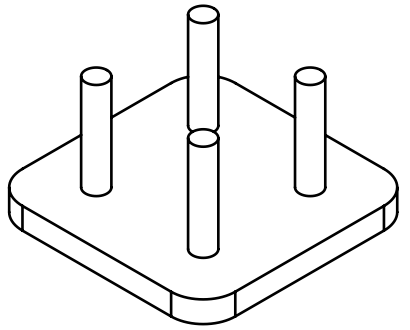
MATERIAL: **ALUMINUM 6061-T6**

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

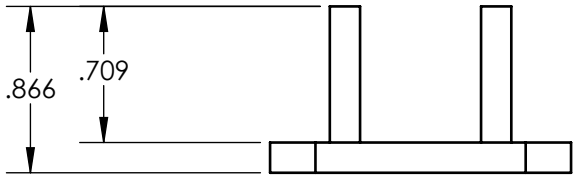
DEBURR AND BREAK SHARP EDGES

SCALE:1:1
A4





ISO VIEW NTS



NOTES:

- THE DRAWINGS OF THE INDIVIDUAL CORE AND CAVITY BLANK PARTS SPECIFY AN H7/g7 FIT
  - THIS DOES NOT ACCOUNT FOR POSITIONAL TOLERANCES WHICH ARE DICTATED BY YOUR MOLD DESIGN

LAST EDITED: 2019-06-25

TITLE: **005-102 - Blank Ejector Plate**

MATERIAL: **ALUMINUM 6061-T6**

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE FINISH: 36 RMS
TOLERANCES:
LINEAR: 0.004
ANGULAR: 0.1

DEBURR AND BREAK SHARP EDGES

SCALE:1:1
A4

NOTES

DRAWING NOTES

- THIS DRAWING PACKAGE OMITS ANY GD&T FORM, PROFILE, ORIENTATION AND LOCATION CONTROLS
  - THESE SHOULD BE FAIRLY INTUITIVE FOR MAKING ONE MACHINE
- FOR ANY DIMENSIONS THAT ARE NOT SHOWN, REFER TO THE ACCOMPANYING CAD

BUILDING NOTES

- WHILE THIS PROJECT MAY APPEAR SIMPLE, IT WILL REQUIRE MAINTAINING PRECISE TOLERANCES, THUS IT IS NOT SUITED TO HAND TOOLS OR BASIC DIY TOOLS
- I MAY RELEASE SOFTWARE FOR RUNNING THIS MACHINE LATER, HOWEVER I DO NOT CURRENTLY PLAN ON IT. MY SOFTWARE IS OFTEN INELEGANT AND REQUIRES CONSTANT TROUBLESHOOTING
- THE ELECTRONICS SPECIFIED IN THIS PACKAGE, PHIDGETS, ARE WELL SUITED TO USERS WITH A MODERATE COMPETANCY IN SCRIPTING LANGUAGES AND OBJECT ORIENTED PROGRAMMING. THEY ARE DECIDEDLY MORE COMPLICATED THAN ARDUINO-STYLE SYSTEMS. IF YOU ARE NOT COMFORTABLE WITH THIS FORMAT, RETROFITTING THE DESIGN WITH ARDUINO MAY BE A GOOD OPTION (I PROBABLY WILL AFTER TESTING)
- I DID NOT INCLUDE A HOPPER SYSTEM AS I INTEND TO USE A 2L SODA BOTTLE WITH A FABRICATED ADAPTOR
- THIS DESIGN WILL LIKELY BE SUPERCEDED IN THE FUTURE WITH A LONGER-BARREL VERSION
- I HAVE INCLUDED .STEP FILES AS WELL AS SOLIDWORKS FILES
  - IF ANY OF THE FILES CONTAIN CAM, I RECOMMEND IGNORING IT AND RESTARTING THE CAM FROM SCRATCH

TERMS OF USE

-This project is intended to express my appreciation for my Patreon backers who make it possible for me to make projects like these
-I have done NO calculations or simulations about the strength, failure modes, or longevity of this design
  -These will all depend on the materials used, hardening condition, and cut parameters

INTELLECTUAL PROPERTY AND COPYRIGHT

-This device was designed and produced entirely by me
-There are no active patents in this device
-Some CAD files were acquired legally from the McMaster-Carr website and included in this model as a demonstration of compatible hardware offered by McMaster-Carr
-This model and drawing package were created on a legal copy of SolidWorks

BY DOWNLOADING THIS DRAWING PACKAGE AND/OR THE INCLUDED MODELS, YOU AGREE THAT:

1) I, the designer, hold no responsibility for injuries sustained with this device
2) I hold no responsibility for legal reprecussions caused by production or possession of this device
3) I hold no responsibility for objects that get damaged in the production or use of this device
4) You, the donator, will not redistribute in whole or in part any of the information in this drawing package or the included solid models in any format
5) You, the donator, are free to make this device for yourself or for gifts, but you are not entitled to produce this device for commercial gain without my expressed permission.
6) While I will try my best to help where possible, I reserve the right to discontinue maintenance on this drawing and to provide no further assistance
7) I reserve the right to withdraw the availability of this drawing package or the models
8) I reserve the right to make this drawing package or models available on other platforms
9) You, the donator, are entitled to modify this design as you see fit, however modifications based on this original document or models remain subject to terms 1, 2, 3 and 4.