MATERIAL PLASMA EXPOSURE EXPERIMENT (MPEX)

Engineering Drawing Package for

Internal Bore Support for Helicon Magnets

MPEX-02-PKG-002 R0

Total Pages: 15

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A **controlled copy** is provided on the network.

It is the user's responsibility to verify that work is being performed using the latest revision.

PACKAGE REVISION HISTORY

REVISION	DATE	DESCRIPTION OF REVISION
0	October 2025	Original Issue

REVISION 0 SIGNATURES

The signatures below affirm the text signatures in the attached drawings as indicated on the Package Drawing List (PDL).

Total Drawing Package Pages at time of signing: _15_____

Kirby Logan — Digitally signed by Kirby Logan Date: 2025.10.07 09:46:13 -04'00'

Kirby Logan — Date

Dustin Ottinger — Digitally signed by Dustin Ottinger Date: 2025.10.07 11:17:28 -04'00'

Dustin Ottinger — Date

David H Vandergriff — Digitally signed by David H Vandergriff Date: 2025.10.07 14:21:23 -04'00'

David Vandergriff — Date

Robert Duckworth — Digitally signed by Robert Duckworth Date: 2025.10.07 15:25:36 -04'00'

Robert Duckworth — Date

PACKAGE DRAWING LIST

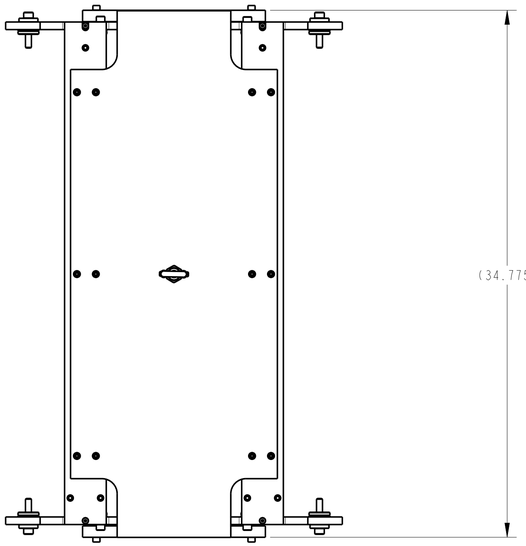
DRAWING NUMBER	REV	DESCRIPTION	Pages	Controlling Drawing Pkg (if not this Drawings Pkg)
MPEX-02-DES-02-A021	0	INTERNAL BORE SUPPORT	1	
MPEX-02-DES-02-A022	0	INTERNAL BORE SUPPORT	1	
MPEX-02-DES-02-A023	0	INNER BORE SUPPORT, LIFTING	1	
MPEX-02-DES-02-A024	0	CRADLE END SUPPORT	1	
MPEX-02-DES-02-A025	0	SUPPORT RAIL, RIGHT	1	
MPEX-02-DES-02-A026	0	SUPPORT RAIL, LEFT	1	
MPEX-02-DES-02-A027	0	LARGE WASHER	1	
MPEX-02-DES-02-A028	0	SMALL HOLE WASHER	1	
MPEX-02-DES-02-A029	0	ALIGNMENT PLATE	1	
MPEX-02-DES-02-A030	0	ALIGNMENT PLATE	1	
MPEX-02-DES-02-A031	0	ALIGNMENT SPACER	1	

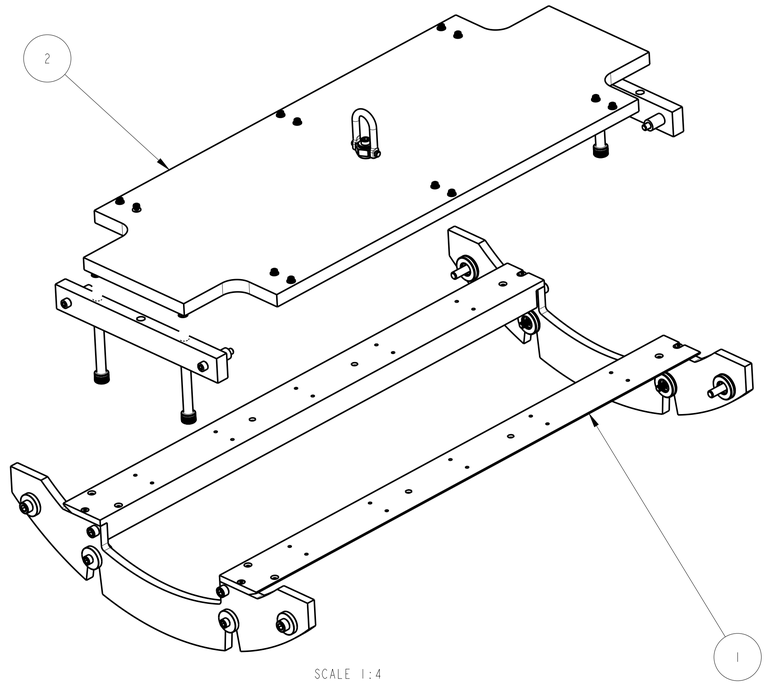
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

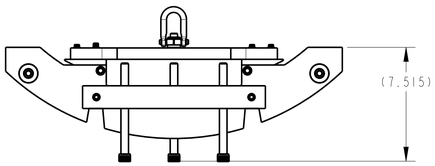
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			09/12/2025





SCALE 1:4



FIND NO.	QTY	PART NUMBER	DESCRIPTION	VENDOR PART NUMBER / VENDOR	MATERIAL / SPECIFICATION
2	1	MPEX-02-DES-02-A023	INNER BORE_SUPPORT LIFTING	--- ---	ALLOW STEEL ---
1	1	MPEX-02-DES-02-A022	INTERNAL BORE SUPPORT	--- ---	--- ---

PARTS LIST — TOTAL WEIGHT 17.94 LBS

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1	±.5°
X.XX ±.01	
X.XXX ±.005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS		
DESIGNER	K.LOGAN	DATE 09/12/2025
DETAILER	K.LOGAN	DATE 09/12/2025
CHECKER	D.OTTINGER	DATE 09/12/2025
ENGINEER	D.VANDERGRIFF	DATE 09/12/2025
QUALITY ENGINEER	N/A	DATE 09/12/2025
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	DATE 09/12/2025
MPEX GUIDE	MPEX-00-ENG-005	

THIS DRAWING IS THE PROPERTY OF
OAK RIDGE NATIONAL LABORATORY
DEPARTMENT OF ENERGY UNDER U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725
OAK RIDGE, TENNESSEE

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON MAGNET
INTERNAL BORE SUPPORT

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A021	0

SCALE	CAD MODEL	MODEL REV	SHEET
1:5	MPEX-02-DES-02-A022	0	1 of 1

THIS DRAWING PREPARED ON CREO

DRAWING PACKAGE I.D.
MPEX-02-PKG-002

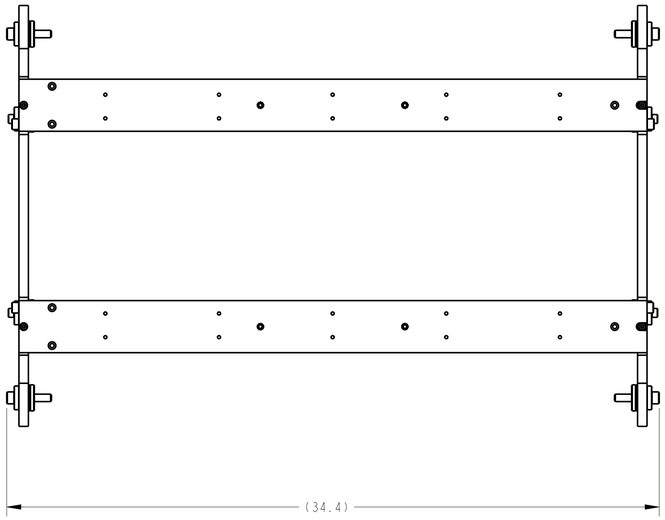
TBD
NEXT USED ASSEMBLIES

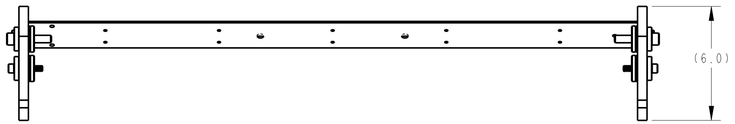
CERTIFIED FOR CONSTRUCTION

DRAWING MODIFIED ON: 02-Oct-25 10:44:13 AM
DWG NO: MPEX-02-DES-02-A021

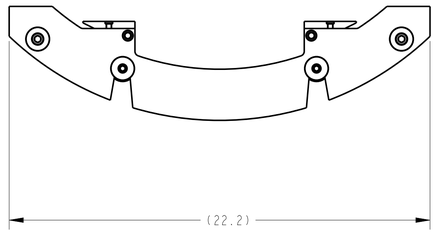
NOTES:

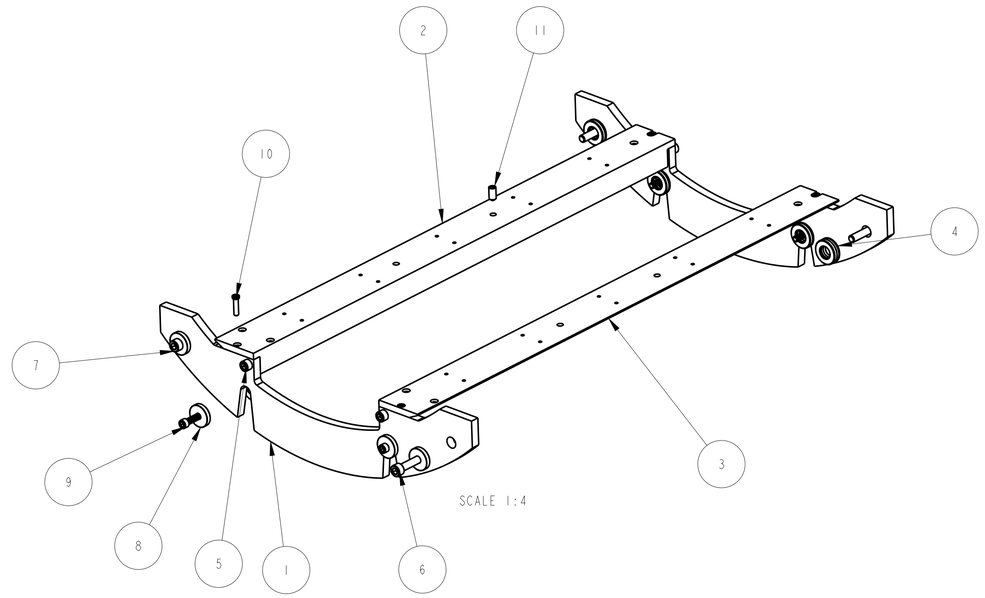
1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.





SCALE 1:4





SCALE 1:4

FIND NO.	QTY	PART NUMBER	DESCRIPTION	VENDOR PART NUMBER VENDOR	MATERIAL / SPECIFICATION
11	4	VMPEX-MMC-92991A922	BRASS SET SCREW	92991A922 WWW.MCMASTER.COM	BRASS ---
10	4	VMPEX-MMC-90666A019	1/4-20 LHSCS 1" LG.	90666A019 WWW.MCMASTER.COM	STAINLESS STEEL ---
9	4	VMPEX-MMC-92185A601	SHCS. 5/16-18 X 1.50 LG.	92185A601 WWW.MCMASTER.COM	316 STAINLESS STEEL RoHS COMPLIANT
8	4	MPEX-02-DES-02-A028	SMALL HOLE WASHER	--- ---	SS 304 (S30400) ---
7	4	MPEX-02-DES-02-A027	LARGE WASHER	--- ---	SS 304 (S30400) ---
6	4	VMPEX-MMC-92290A535	M10 X 1.5MM X 50MM LG SHCS	92290A535 WWW.MCMASTER.COM	316 SS
5	4	VMPEX-MMC-92488A495	3/8-16 X 1 1/4 LG. SHCS	92488A495 WWW.MCMASTER.COM	316 SS
4	8	VMPEX-MMC-91944A480	5/8 LEVELING WASHER	91944A480 WWW.MCMASTER.COM	SS
3	1	MPEX-02-DES-02-A026	SUPPORT RAIL LEFT	--- ---	SS 304 (S30400) ---
2	1	MPEX-02-DES-02-A025	SUPPORT RAIL RIGHT	--- ---	SS 304 (S30400) ---
1	2	MPEX-02-DES-02-A024	CRADLE END SUPPORT	--- ---	SS 304 (S30400) ---

PARTS LIST

TOTAL WEIGHT 17.94 LBS

REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			09/12/2025

DRAWING MODIFIED ON: 02-Oct-25 09:44:46 AM
DWG NO: MPEX-02-DES-02-A022
SH 1

CERTIFIED FOR CONSTRUCTION

DRAWING PACKAGE I.D.
MPEX-02-PKG-002

MPEX-02-DES-02-A021
NEXT USED ASSEMBLIES

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1	±.5°
X.XX ±.01	
X.XXX ±.005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS

		DATE
DESIGNER	K.LOGAN	09/12/2025
DETAILER	K.LOGAN	09/12/2025
CHECKER	D.OTTINGER	09/12/2025
ENGINEER	D.VANDERGRIFF	09/12/2025
QUALITY ENGINEER	N/A	09/12/2025
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	09/12/2025

MPEX GUIDE: MPEX-00-ENG-005

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON MAGNET
INTERNAL BORE SUPPORT

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A022	0

SCALE	CAD MODEL	MODEL REV	SHEET
267:1600	MPEX-02-DES-02-A022	0	1 of 1

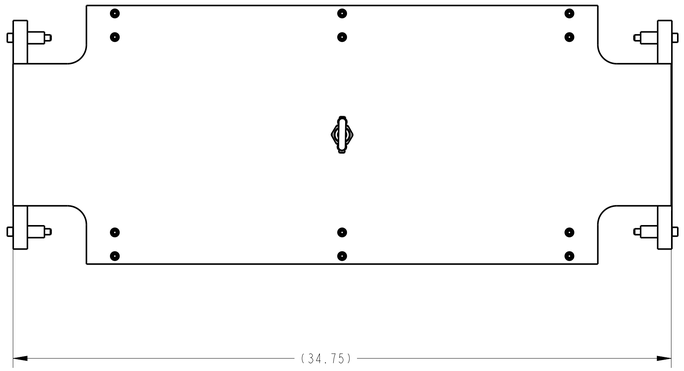
THIS DRAWING PREPARED ON CREO

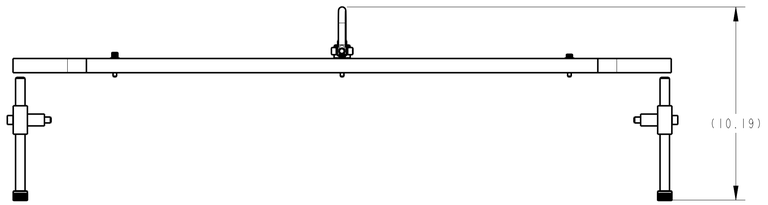
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

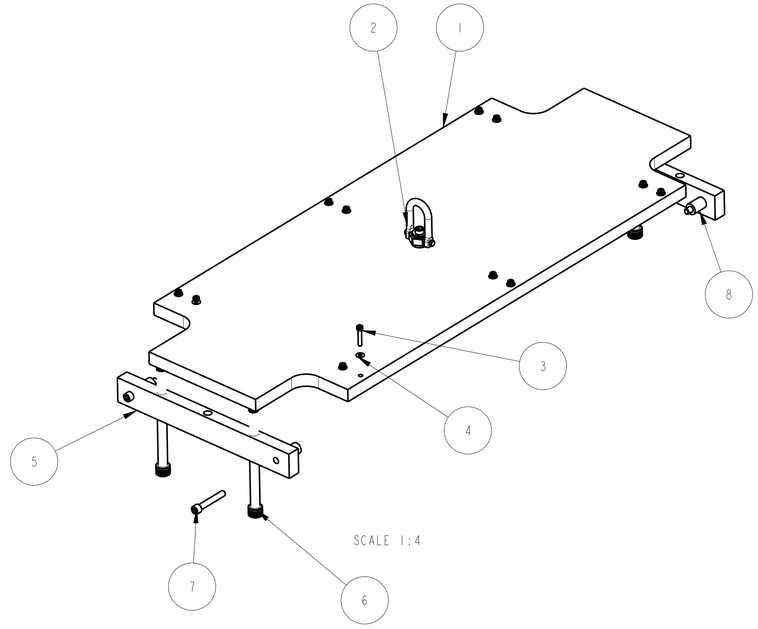
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			09/12/2025





SCALE 1:4



SCALE 1:4

STEEL 1018

FIND NO.	QTY	PART NUMBER	DESCRIPTION	VENDOR PART NUMBER / VENDOR	MATERIAL / SPECIFICATION
8	4	MPEX-02-DES-02-A031	ADJUSTMENT SPACER	--- ---	ALUM.6061 ---
7	4	VMPEX-MMC-90044A139	5/16-18 X 2.0 LG. SHCS	90044A139 WWW.MCMASTER.COM	ALLOY STEEL ---
6	3	VMPEX-MMC-90044A170	1/2-13 X 6.0 LG. SHCS	90044A170 WWW.MCMASTER.COM	ALLOY STEEL ---
5	2	MPEX-02-DES-02-A030	ADJUSTMENT BASE	--- ---	ALUM. 6061
4	12	VMPEX-MMC-92141A011	NO 10 SS WASHER	92141A011 WWW.MCMASTER.COM	STAINLESS STEEL ---
3	12	VMPEX-MMC-91251A247	10-24 X 1.0 SHCS	91251A247 www.mcmaster.com	STAINLESS STEEL ---
2	1	VMPEX-CRO-1065000	CROSBY 106500 SS SWIVEL HOIST RING 5/16-18	1065000 www.thecrosbygroup.com	SS 316 (S31600) ---
1	1	MPEX-02-DES-02-A029	ALIGNMENT PLATE	--- ---	ALU MIC 6 ---

PARTS LIST

TOTAL WEIGHT 23.56 LBS

CERTIFIED FOR CONSTRUCTION

DRAWING PACKAGE I.D.
MPEX-02-PKG-002

MPEX-02-DES-02-A021
NEXT USED ASSEMBLIES

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1 X.XX ±.01 X.XXX ±.005	±.5°

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS

		DATE
DESIGNER	K.LOGAN	09/12/2025
DETAILER	K.LOGAN	09/12/2025
CHECKER	D.OTTINGER	09/12/2025
ENGINEER	D. VANDERGRIFF	09/12/2025
QUALITY ENGINEER	N/A	09/12/2025
CONTROL ACCOUNT MANAGER	R. DUCKWOTH	09/12/2025

MPEX GUIDE: MPEX-00-ENG-005

OAK RIDGE NATIONAL LABORATORY
DEPARTMENT OF ENERGY UNDER U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725
OAK RIDGE, TENNESSEE

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON MAGNET
INNER BORE_SUPPORT LIFTING

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A023	0

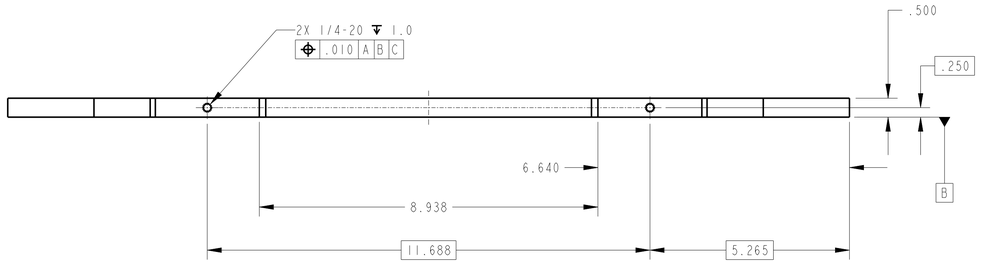
SCALE	CAD MODEL	MODEL REV	SHEET
267:1600	MPEX-02-DES-02-A023	0	1 of 1

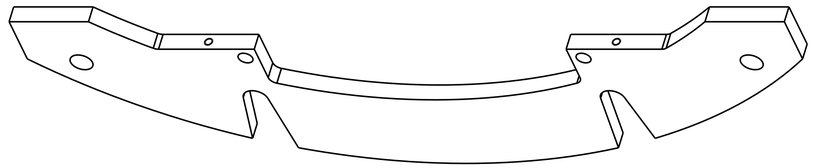
THIS DRAWING PREPARED ON CREO

DWG NO: MPEX-02-DES-02-A023 | SH 1
DRAWING MODIFIED ON: 02-Oct-25 09:47:34 AM

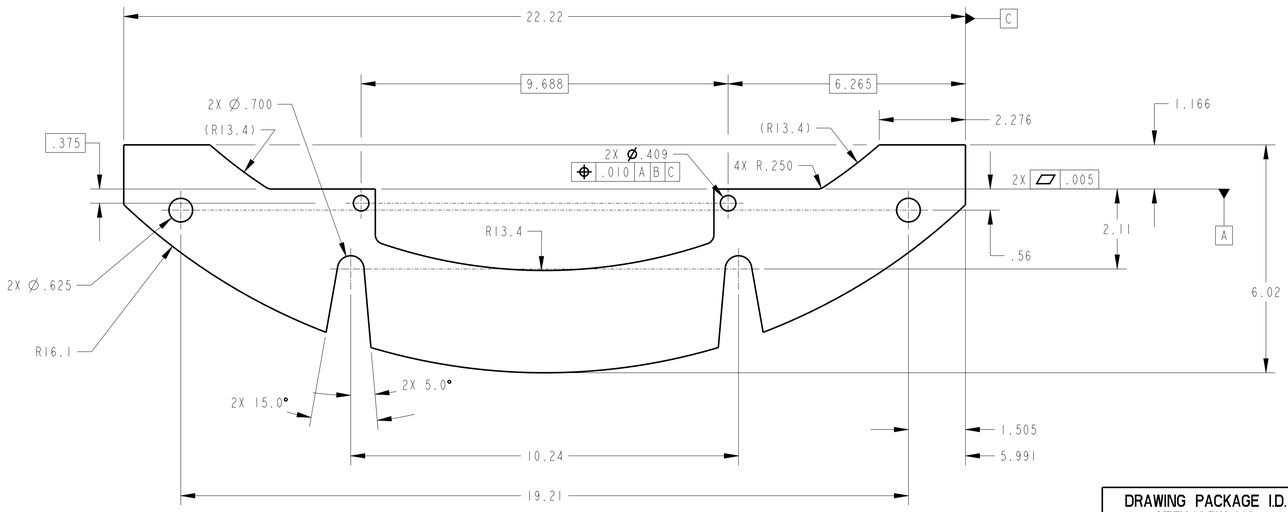
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.
4. MACHINE CRADLE END SUPPORTS PAIRS AS A SINGLE UNIT.





SCALE 1:2



SCALE 1:2

CERTIFIED FOR CONSTRUCTION

DRAWING PACKAGE I.D.
MPEX-02-PKG-002

MPEX-02-DES-02-A022
NEXT USED ASSEMBLIES

REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			8/15/25

DRAWING MODIFIED ON: 03-Oct-25 11:21:28 AM
DWG NO: MPEX-02-DES-02-A024 SH 1

CRADLE END SUPPORT	SS 304 (S30400) PRODEC OR EQUIVILANT ---	8.97 LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1	±.5°
X.XX ±.01	
X.XXX ±.005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS

		DATE
DESIGNER	K.LOGAN	8/18/25
DETAILER	K.LOGAN	8/18/25
CHECKER	D.OTTINGER	8/15/25
ENGINEER	D.VANDERGRIFF	8/15/25
QUALITY ENGINEER	N/A	N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	8/15/25

MPEX OUTDE
MPEX-00-ENG-005

ornl OAK RIDGE NATIONAL LABORATORY
DEPARTMENT OF ENERGY UNDER U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725
OAK RIDGE, TENNESSEE

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON MAGNETS
CRADLE END SUPPORT

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A024	0

SCALE	CAD MODEL	MODEL REV	SHEET
533:1600	MPEX-02-DES-02-A024	0	1 of 1

THIS DRAWING PREPARED ON CREO

NOTES:

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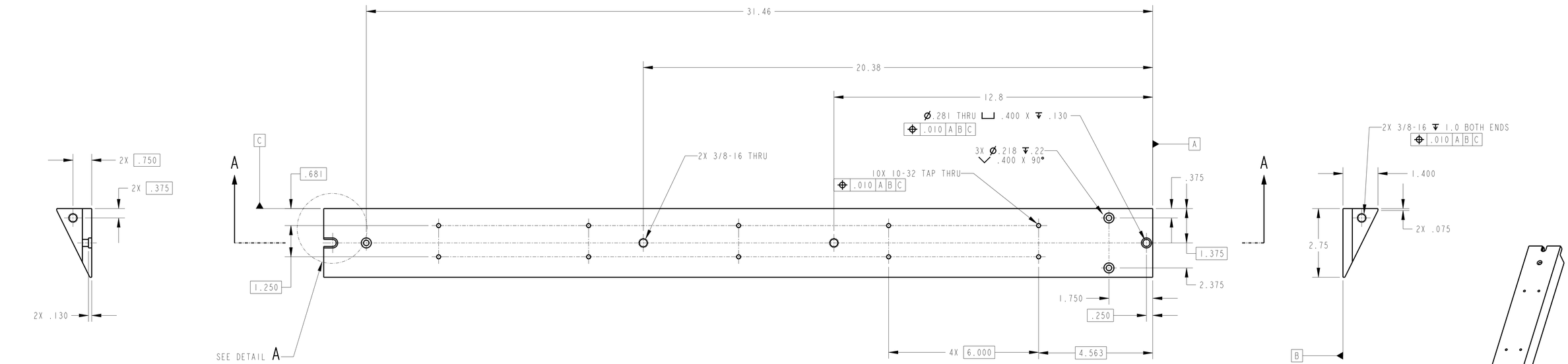
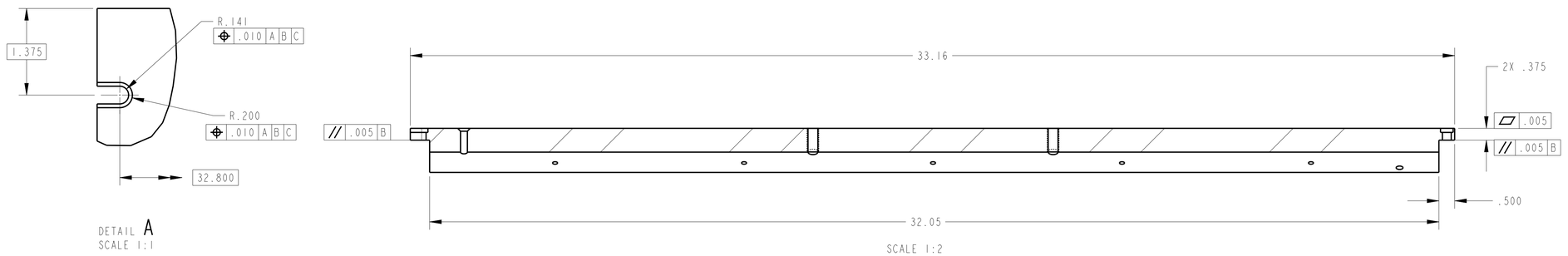
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			09/12/2025

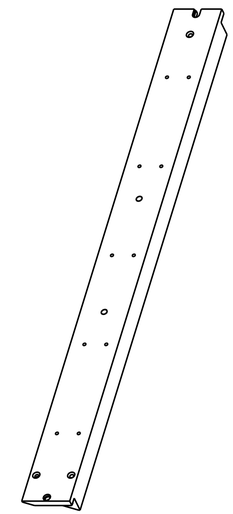




DETAIL A
SCALE 1:1

SCALE 1:2

SECTION A-A



SUPPORT RAIL RIGHT	SS 304 (S30400) PRODEC OR EQUIVALENT ---	19.37 LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ± .1	± .5°
X.XX ± .01	
X.XXX ± .005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS		
DESIGNER	K.LOGAN	DATE 09/12/2025
DETAILER	K.LOGAN	DATE 09/12/2025
CHECKER	D.OTTINGER	DATE 09/12/2025
ENGINEER	D. VANDERGRIFF	DATE 09/12/2025
QUALITY ENGINEER	N/A	DATE N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	DATE 09/12/2025
MPEX GUIDE	MPEX-00-ENG-005	

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON_MAGNET
SUPPORT RAIL RIGHT

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A025	0

SCALE	CAD MODEL	MODEL REV	SHEET
1:4	MPEX-02-DES-02-A025	0	1 of 1

THIS DRAWING PREPARED ON CREO

DRAWING PACKAGE I.D.
MPEX-02-PKG-002

MPEX-02-DES-02-A022
NEXT USED ASSEMBLIES

CERTIFIED FOR CONSTRUCTION

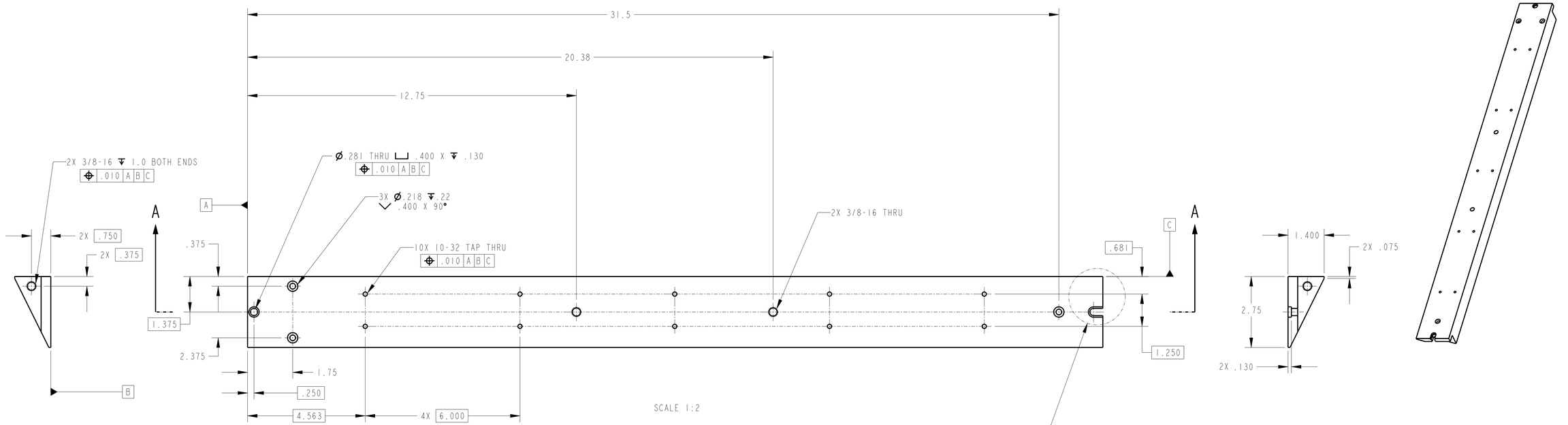
DWG NO: MPEX-02-DES-02-A025 | SH 1
DRAWING MODIFIED ON: 02-Oct-25 09:51:58 AM

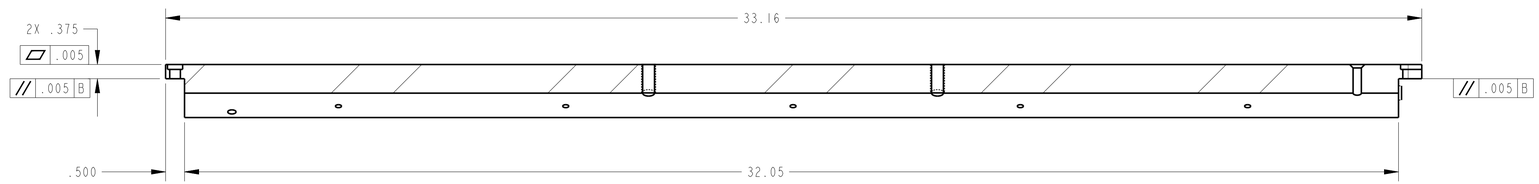
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

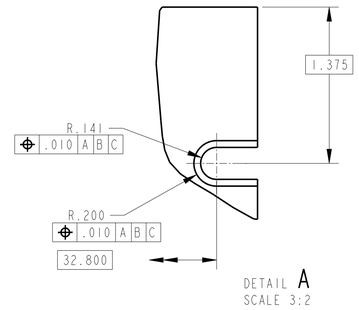
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			09/12/2025





SECTION A - A



DETAIL A
SCALE 3:2

SUPPORT RAIL LEFT	SS 304 (S30400) PRODEC OR EQUIVALENT ---	19.37 LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1	±.5°
X.XX ±.01	
X.XXX ±.005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

MPEX GUIDE: MPEX-00-ENG-005

APPROVALS

	NAME	DATE
DESIGNER	K.LOGAN	09/12/2025
DETAILER	K.LOGAN	09/12/2025
CHECKER	D.OTTINGER	09/12/2025
ENGINEER	D.VANDERGRIFF	09/12/2025
QUALITY ENGINEER	N/A	N/A
CONTROL ACCOUNT MANAGER	R. DUCKWORTH	09/12/2025

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON MAGNET
SUPPORT RAIL LEFT

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A026	0

SCALE	CAD MODEL	MODEL REV	SHEET
1:4	MPEX-02-DES-02-A026	0	1 of 1

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DRAWING PACKAGE I.D.
MPEX-00-PKG-002

MPEX-02-DES-02-A022
NEXT USED ASSEMBLIES

CERTIFIED FOR CONSTRUCTION

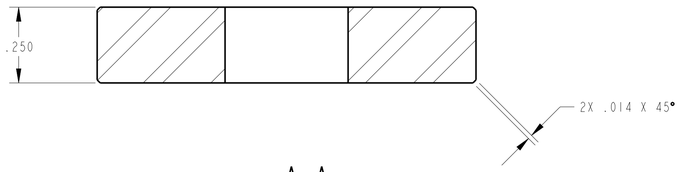
DRAWING MODIFIED ON 02-Oct-25 09:53:46 AM
DWG NO: MPEX-02-DES-02-A026 REV 1

NOTES:

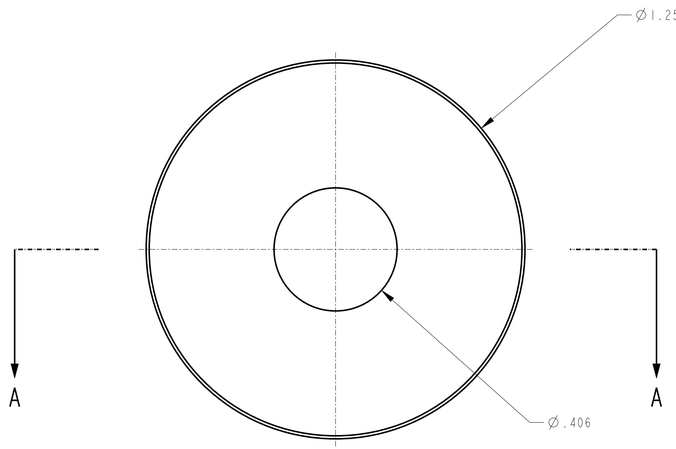
1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

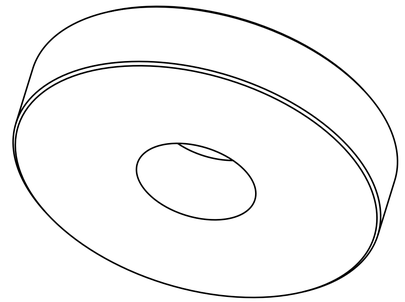
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	RD	NA	RD			09/12/2025



SECTION A-A





DRAWING MODIFIED ON: 05-Oct-25 09:07:04 PM
DWG NO: MPEX-02-DES-02-A027 SH 1

LARGE WASHER	SS 304 (S30400) ---	0.08 LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1	±.5°
X.XX ±.01	
X.XXX ±.005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS		
DESIGNER	K.LOGAN	DATE 09/12/2025
DETAILER	K.LOGAN	DATE 09/12/2025
CHECKER	D.OTTINGER	DATE 09/12/2025
ENGINEER	D.VANDERGRIFF	DATE 09/12/2025
QUALITY ENGINEER	N/A	DATE N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	DATE 09/12/2025

MPEX OUTDE: MPEX-00-ENG-005

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OAK RIDGE, TENNESSEE

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HELICON MAGNET
LARGE WASHER

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A027	0

SCALE	CAD MODEL	MODEL REV	SHEET
4:1	MPEX-02-DES-02-A027	0	1 of 1

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MPEX-02-DES-02-A022
NEXT USED ASSEMBLIES

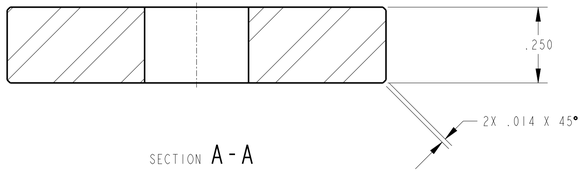
CERTIFIED FOR CONSTRUCTION

NOTES:

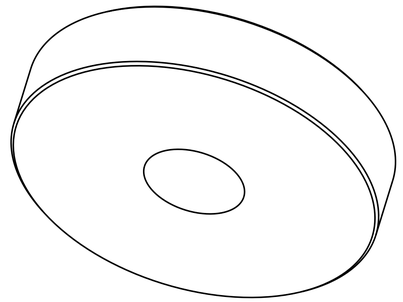
1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

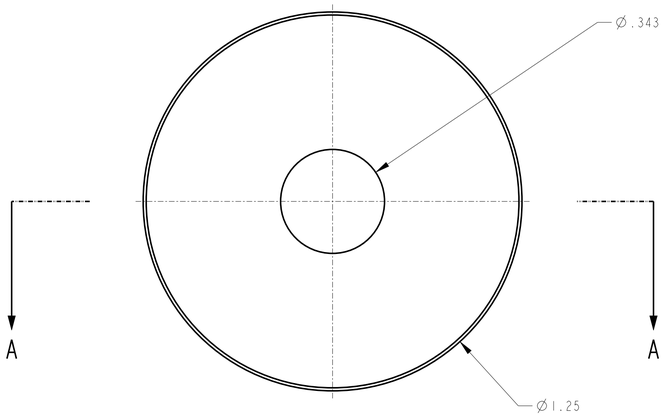
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			09/12/2025



SECTION A-A





CERTIFIED FOR CONSTRUCTION

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MPEX-02-PKG-002

MPEX-02-DES-02-A022
NEXT USED ASSEMBLIES

SMALL HOLE WASHER	SS 304 (S30400) ---	0.08 LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1	±.5°
X.XX ±.01	
X.XXX ±.005	

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS		
DESIGNER	K.LOGAN	09/12/2025
DETAILER	K.LOGAN	09/12/2025
CHECKER	D.OTTINGER	09/12/2025
ENGINEER	D.VANDERGRIFF	09/12/2025
QUALITY ENGINEER	N/A	N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	09/12/2025

MPEX OUTDE: MPEX-00-ENG-005

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OAK RIDGE, TENNESSEE

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE
HEICON MAGNETS
SMALL HOLE WASHER

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A028	0

SCALE	CAD MODEL	MODEL REV	SHEET
4:1	MPEX-02-DES-02-A028	0	1 of 1

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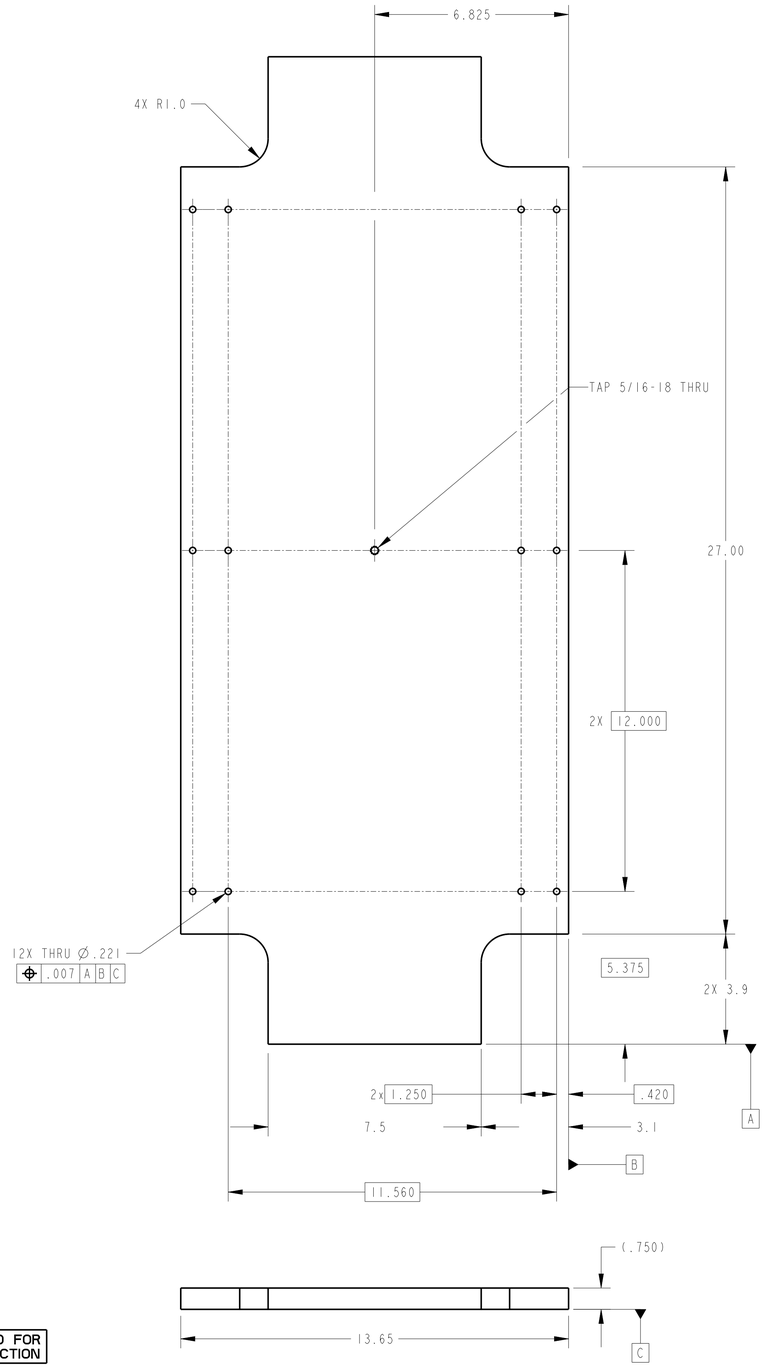
DRAWING MODIFIED ON: 25-Sep-25 03:33:19 PM
DWG NO: MPEX-02-DES-02-A028 SH 1

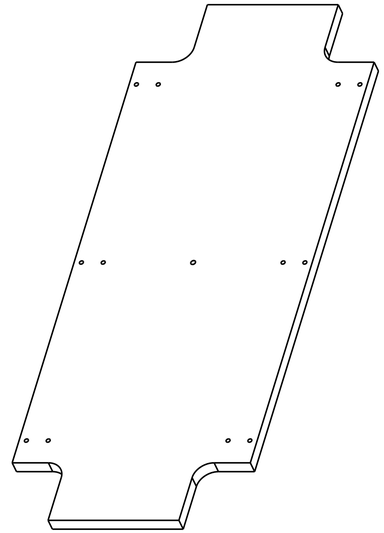
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.



SCALE 3:8

CERTIFIED FOR CONSTRUCTION



REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			08/17/2025

DRAWING MODIFIED ON: 05-Oct-25 09:27:59 PM
DWG NO: MPEX-02-DES-02-A029 | 1

ALIGNMENT PLATE	Mic 6 ALUMINUM PLATE 24"X 72" 3/4 THK. MMC-86825K39	31.24 LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1 X.XX ±.01 X.XXX ±.005	±.5°

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS		
DESIGNER	K.LOGAN	DATE 08/17/2025
DETAILER	K.LOGAN	DATE 08/17/2025
CHECKER	D.OTTINGER	DATE 08/17/2025
ENGINEER	D.VANDERGRIFF	DATE 08/17/2025
QUALITY ENGINEER	N/A	DATE N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	DATE 08/17/2025
MPEX OUTDE	MPEX-00-ENG-005	

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE HELICON MAGNETS ALIGNMENT PLATE

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A029	0

SCALE	CAD MODEL	MODEL REV	SHEET
1:4	MPEX-02-DES-02-A029	0	1 of 1

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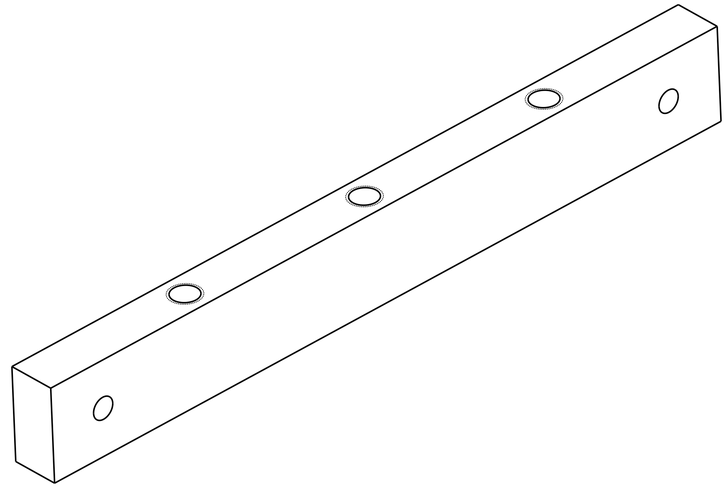
MPEX-02-DES-02-A023
NEXT USED ASSEMBLIES

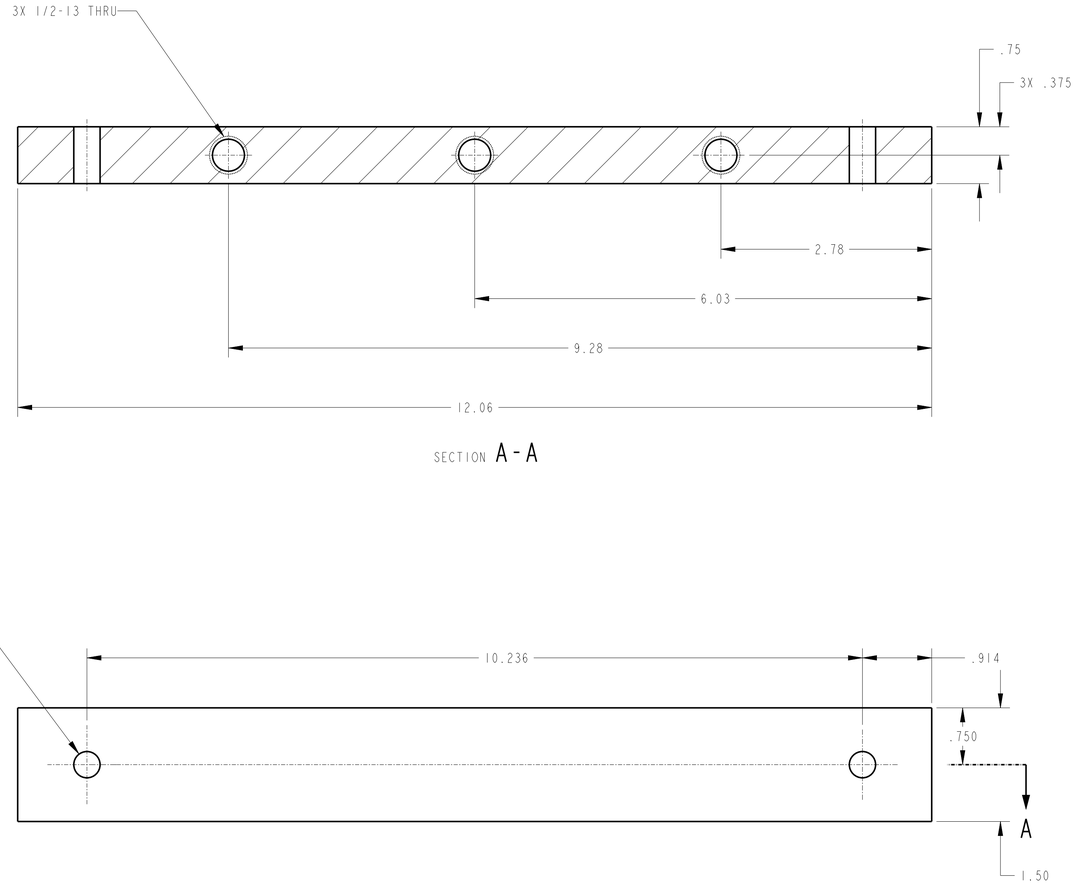
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			08/17/2025





CERTIFIED FOR CONSTRUCTION

ADJUSTMENT BLOCK	ALU. 6061 ---	1.2 LBS LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR: X.X ±.1, X.XX ±.01, X.XXX ±.005
ANGULAR: ±.5°

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS

		DATE
DESIGNER	K.LOGAN	08/17/2025
DETAILER	K.LOGAN	08/17/2025
CHECKER	D.OTTINGER	08/17/2025
ENGINEER	D.VANDERGRIFF	08/17/2025
QUALITY ENGINEER	N/A	N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	08/17/2025

MPEX OUTDE: MPEX-00-ENG-005

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE HELICON MAGNETS ALIGNMENT PLATE

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A030	0

SCALE	CAD MODEL	MODEL REV	SHEET
1:4	MPEX-02-DES-02-A030	0	1 of 1

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MPEX-02-PKG-002

MPEX-02-DES-02-A023
NEXT USED ASSEMBLIES

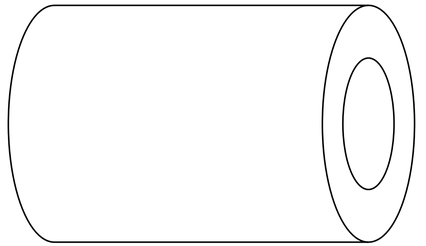
DWG NO: MPEX-02-DES-02-A030 SH 1
DRAWING MODIFIED ON: 06-Oct-25 10:58:16 AM

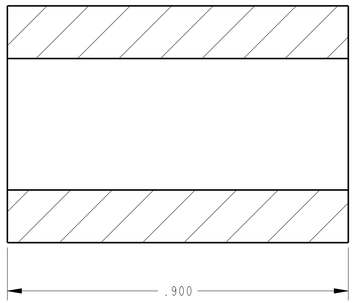
NOTES:

1. USE ONLY WATER SOLUBLE, NON-SULFUROUS CUTTING FLUID.
2. ALL COMPONENTS SHALL BE CLEAN, FREE OF DIRT, GREASE, CUTTING FLUIDS.
3. USE LOCTITE LB8013 ANTI-SIEZE OR EQUIVALENT IN THREADS.

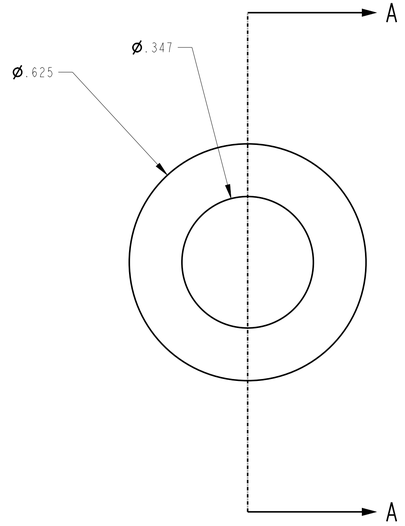
REVISIONS

REV	DESCRIPTION OF CHANGE	DES	DET	CK	ENG	QLY	CAM			DATE
0	ORIGINAL ISSUE	KL	KL	DO	DV	NA	RD			08/17/2025





SECTION A - A
SCALE 5:1



DRAWING MODIFIED ON: 06-Oct-25 03:16:07 PM
DWG NO: MPEX-02-DES-02-A031 | SH 1

ADJUSTMENT BLOCK	ALU. 6061 ---	.3 LBS LBS
DESCRIPTION	MATERIAL / SPECIFICATION	WEIGHT

PART INFORMATION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5, 2018

DO NOT SCALE DRAWING

DEFAULT TOLERANCES

LINEAR	ANGULAR
X.X ±.1 X.XX ±.01 X.XXX ±.005	±.5°

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.03 MAX

SURFACE ROUGHNESS: 125 RMS

THIRD ANGLE PROJECTION

APPROVALS		
DESIGNER	K.LOGAN	DATE 08/17/2025
DETAILER	K.LOGAN	DATE 08/17/2025
CHECKER	D.OTTINGER	DATE 08/17/2025
ENGINEER	D.VANDERGRIFF	DATE 08/17/2025
QUALITY ENGINEER	N/A	DATE N/A
CONTROL ACCOUNT MANAGER	R.DUCKWORTH	DATE 08/17/2025
MPEX GUIDE	MPEX-00-ENG-005	

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OAK RIDGE, TENNESSEE

MATERIAL PLASMA EXPOSURE EXPERIMENT

MPEX DEVICE HELICON MAGNETS ALIGNMENT SPACER

SIZE	DRAWING NUMBER	REV
D	MPEX-02-DES-02-A031	0

SCALE	CAD MODEL	MODEL REV	SHEET
1:4	MPEX-02-DES-02-A031	0	1 of 1

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MPEX-02-DES-02-A023
NEXT USED ASSEMBLIES

CERTIFIED FOR CONSTRUCTION