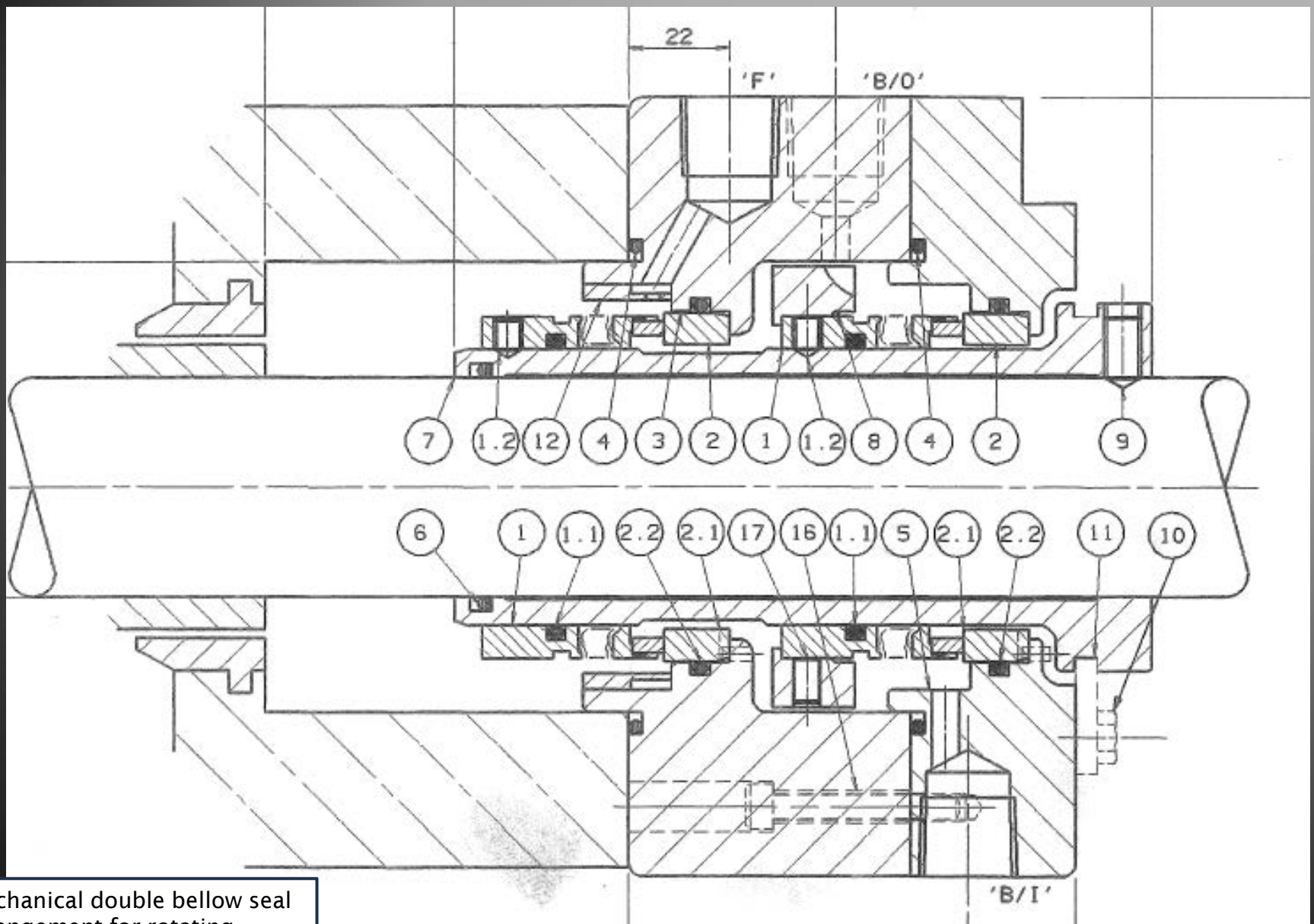


Professional Portfolio

Presentation By.

EUR ING Ray Faiers BSc (Hons) MEng MBA CEng CTPD CMgr IntPE RCADMan RCP MCMI MIED PRINCE2
CSWP

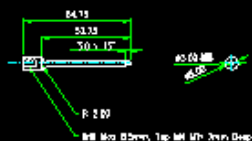
October 2025.



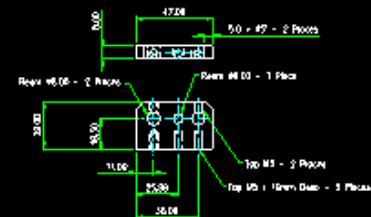
Mechanical double bellow seal arrangement for rotating pump machinery



LONG SLAB 8 PM
MNT: 5, STEEL
QTY 1
RUSH, CHINA BLACK

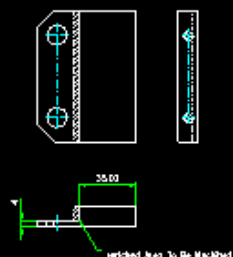


9:00 PM
DATE: 5/2/2011
DTY: 3
[Print] [Refresh] [Close]

FROM SUPPORT BLOCK
WAT. STED
DYE
DYE. CHROM. BLADES

NOTE: PULSED F-0 BEHAVIOR IS OFF! INFO AVAILABLE

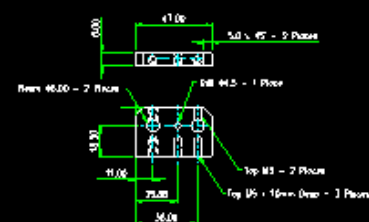
CYLINDER MOUNTING - MODIFICATIONS QTY - 1 OFF
MATERIAL - BRN STL
FINISH - CHEM BLACK



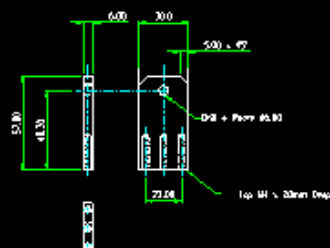
2000-05-05
 10:00:00
 10:00:00
 10:00:00



BACK SUPPORT BLOCK:
MM1 5000
CN: 1
FILES 0410 0402



SUPPORT BLADE:
MATERIAL: STEEL
DWT: 3
Finish: CHROME PLATE



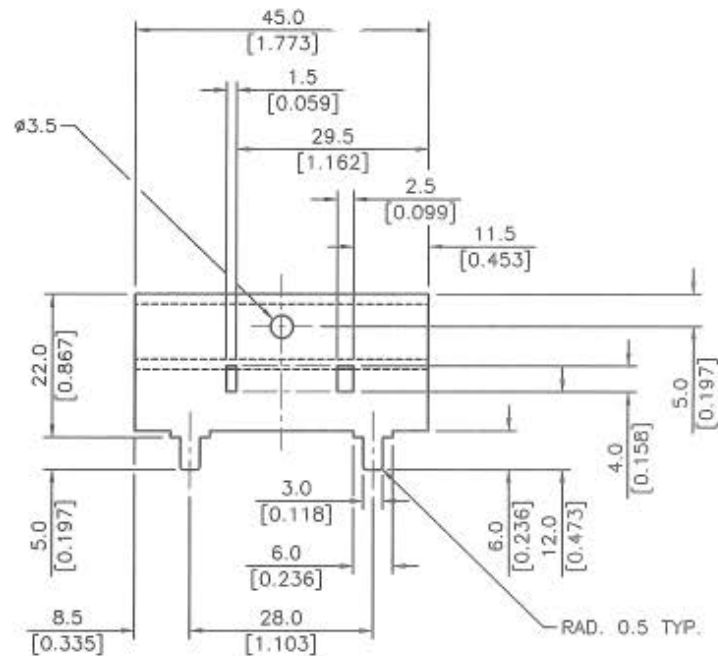
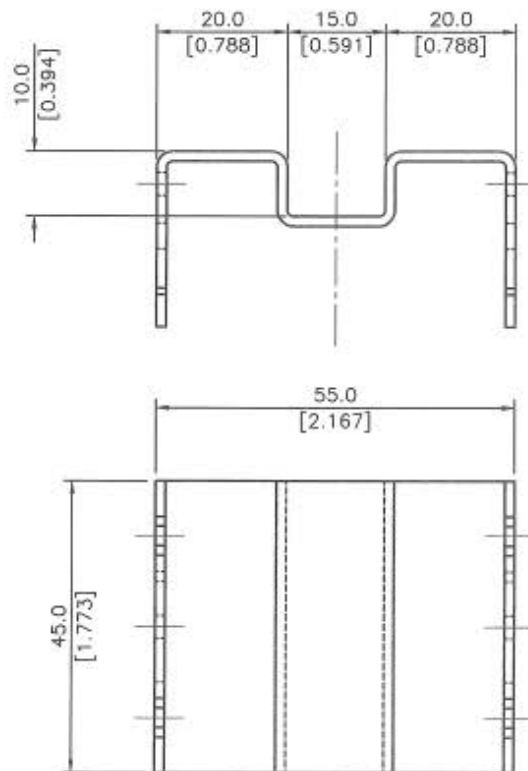
NOTE: Please Fill BC#09-05 (2 OFF) AND p6-20 = 0x1

24/6/1
MAY 6, 1961
QTR: 2
[unclear] 10/10/1



BLANDING WOODLAWN
WAT. BRASS
DTV 2
POLLER H/A

[illegible]



NOTE: ALL DIMENSIONS IN mm (INS)
 GENERAL TOLERANCE $\pm 0.20\text{mm}$
 FOR TIN PLATING: ELECTRO NICKEL FLASH
 UNDERCOAT THEN 3 - 6 MICRON PURE
 TIN PLATE
 SOLDERABILITY TO ATI 07.5.24



**AAVID
THERMALLOY**
EUROPE www.aavidthermalloy.com

Via XXV Aprile 32
40057 Cadriano Bologna
ITALY
Tel. +39 051 794011

Chenay Manor
Swindon Wiltshire SN2 2NS
UNITED KINGDOM
Tel. +44 1793 401400

Die n.	MATERIAL AL Alloy 1050 A - H14' 1.5mm THK
Factor	GENERAL TOLERANCES UN13879
Part n.	xxxx mm DIN 1427
Area	xxxx mm ² FINISH XXX
Weight	xxxx kg/m XXX
Note	XXX

Drawn
RdJF

Check
XX

1	08Jul02	ORIGINAL
REV	Date	Revision description

DRAWING n.
DEV SA014

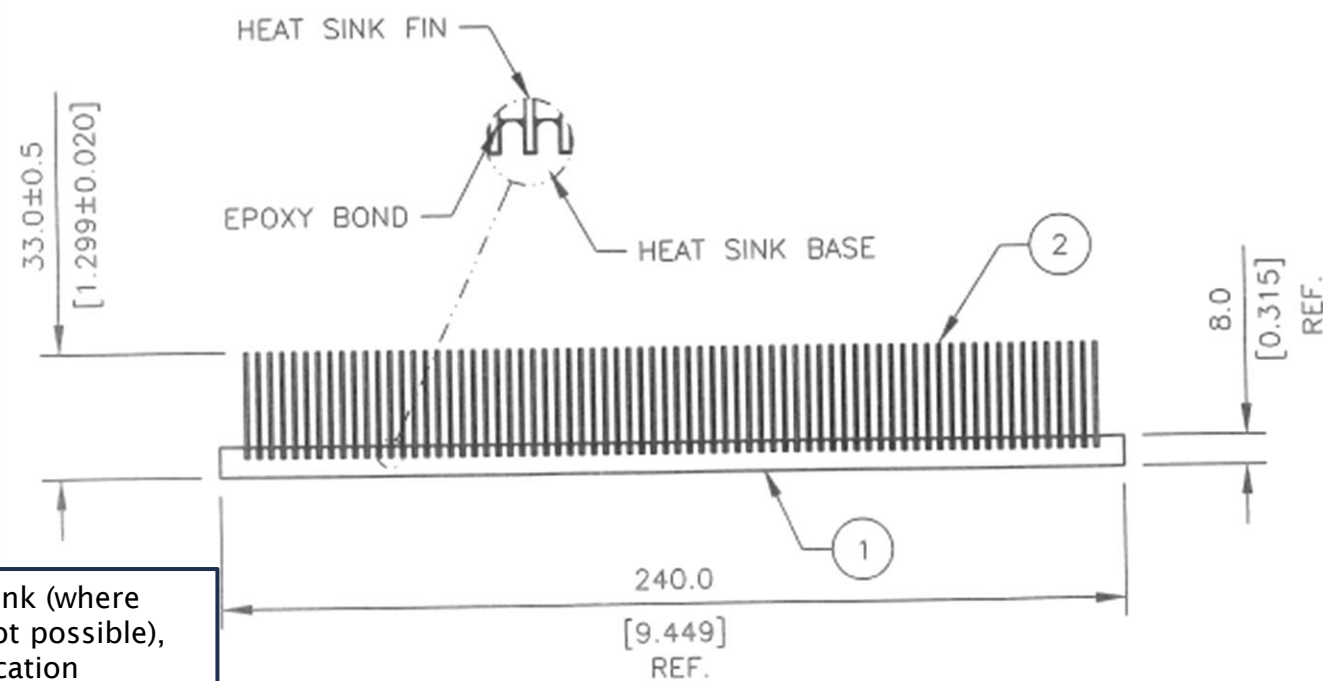
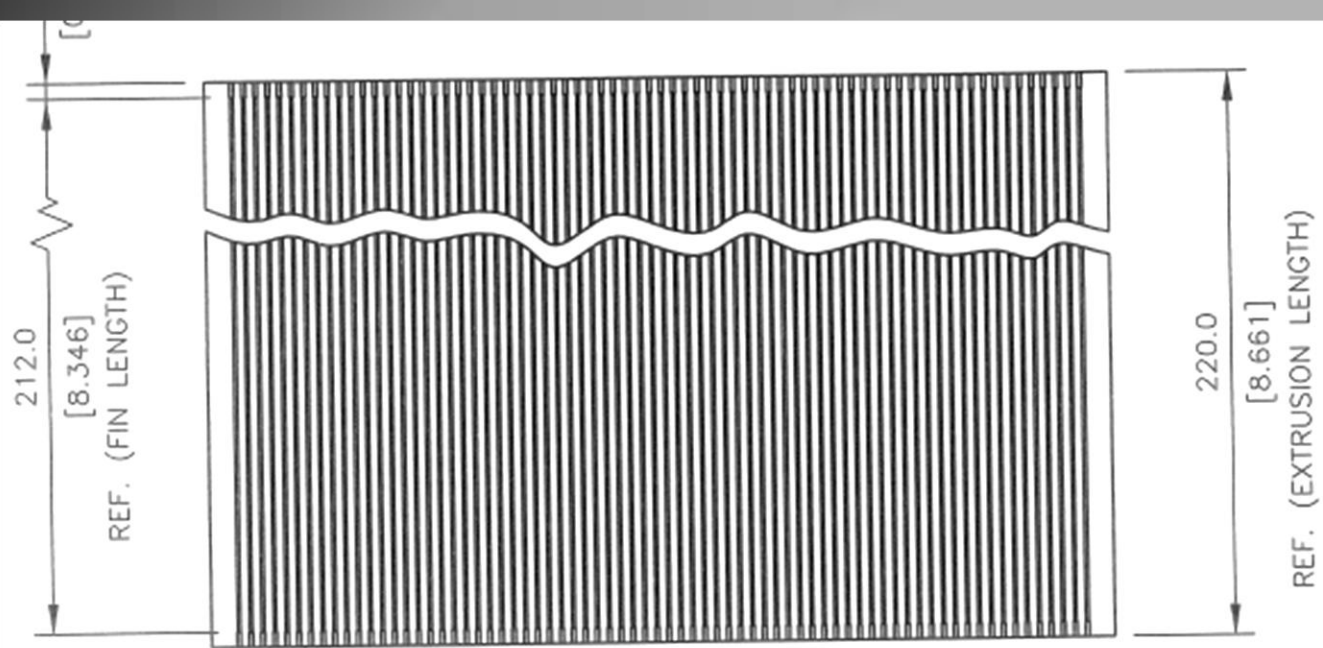
Ver. n. XXXXXX

Description: Customer Custom
Pressing

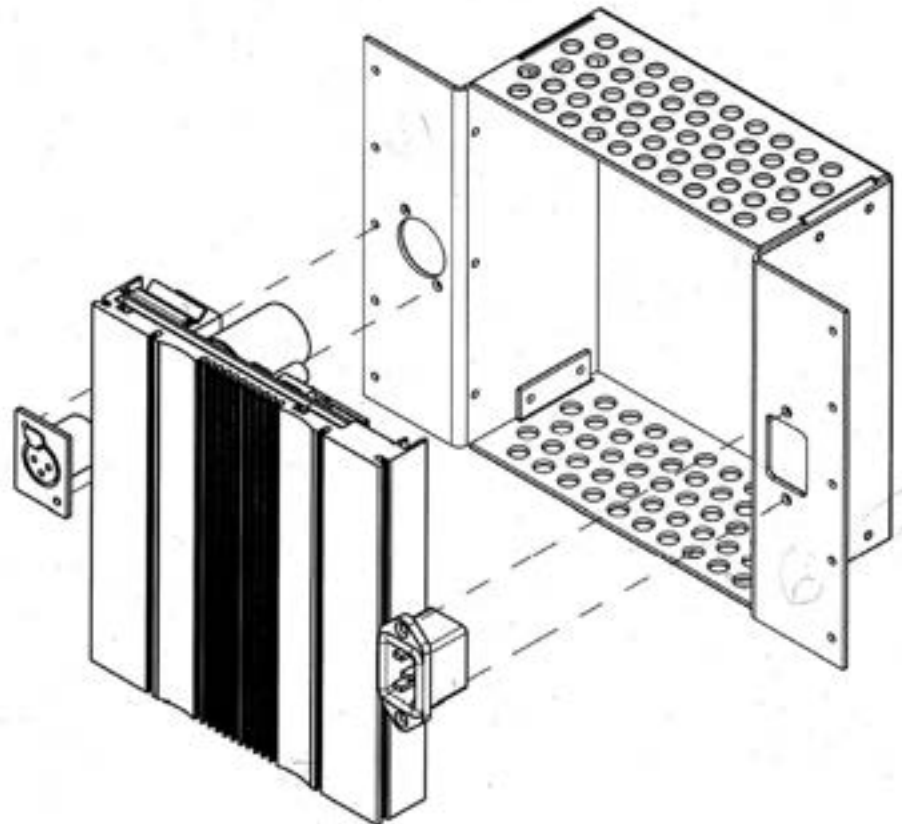
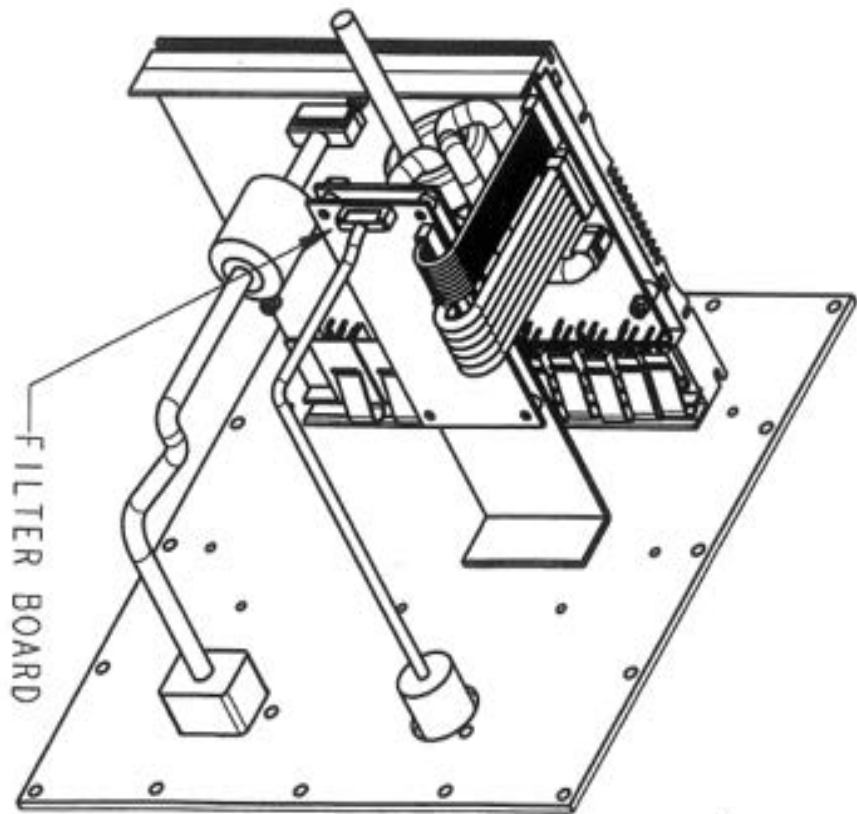
Approved
RdJF

Format A4	Scale NTS	3
--------------	--------------	---

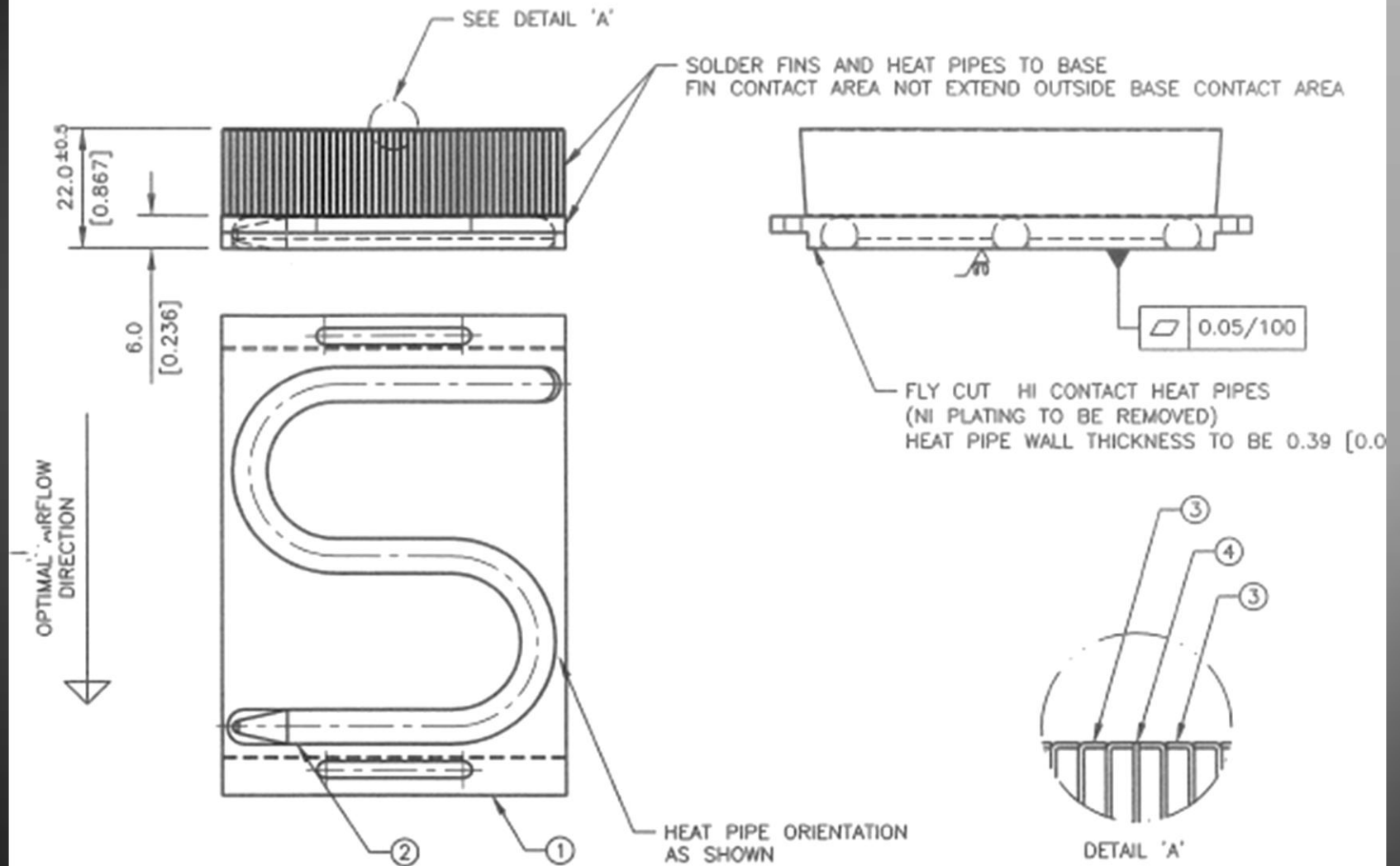
Sheet metal heatsink for PCB
board (progression tool
manufacture method)



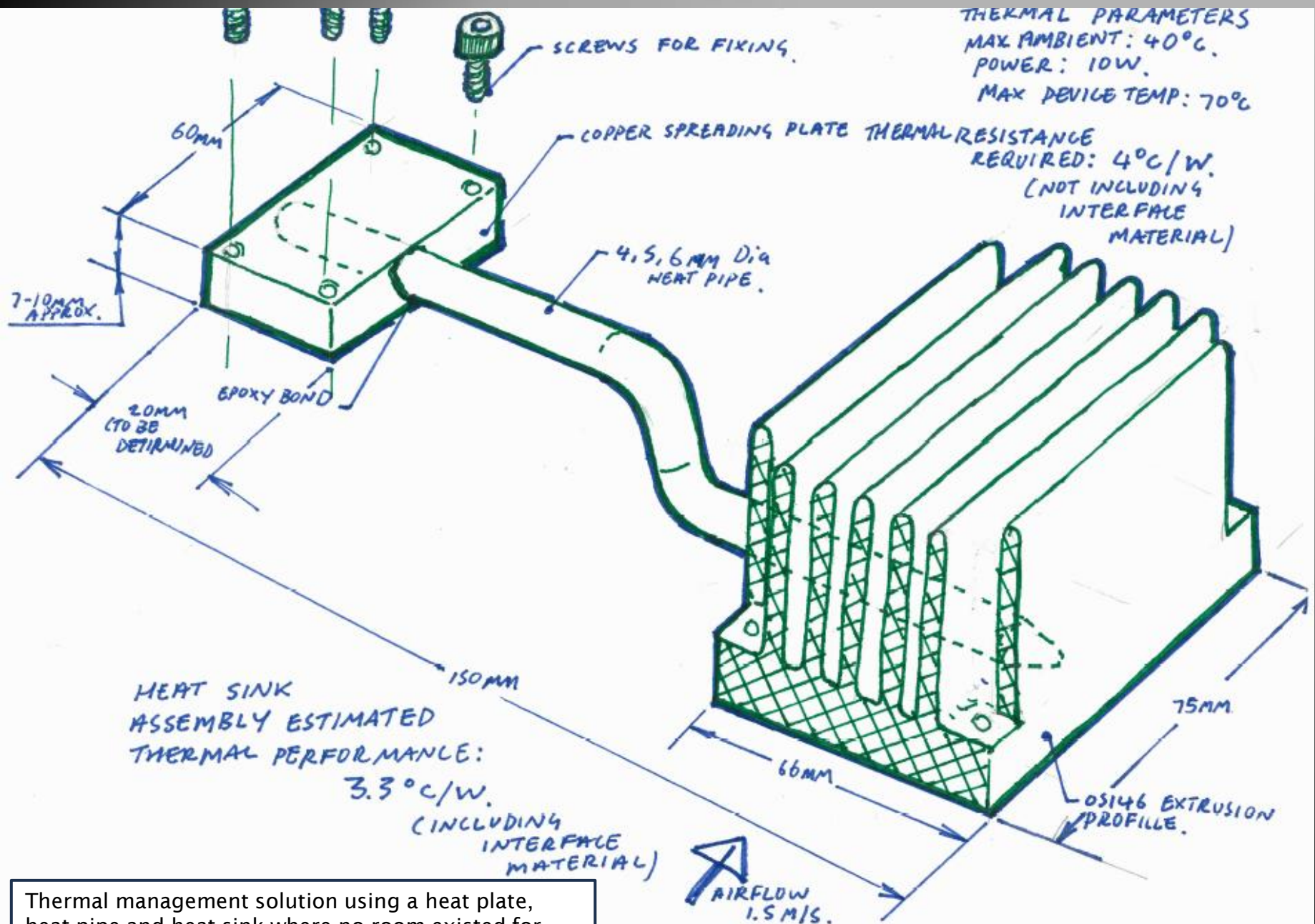
Bonded fin heatsink (where extrusion ratio not possible), high power application



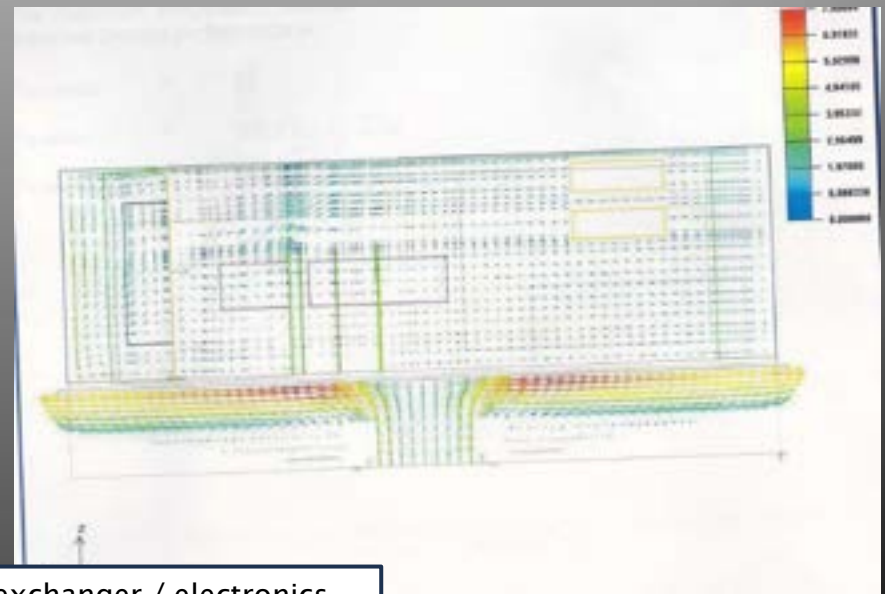
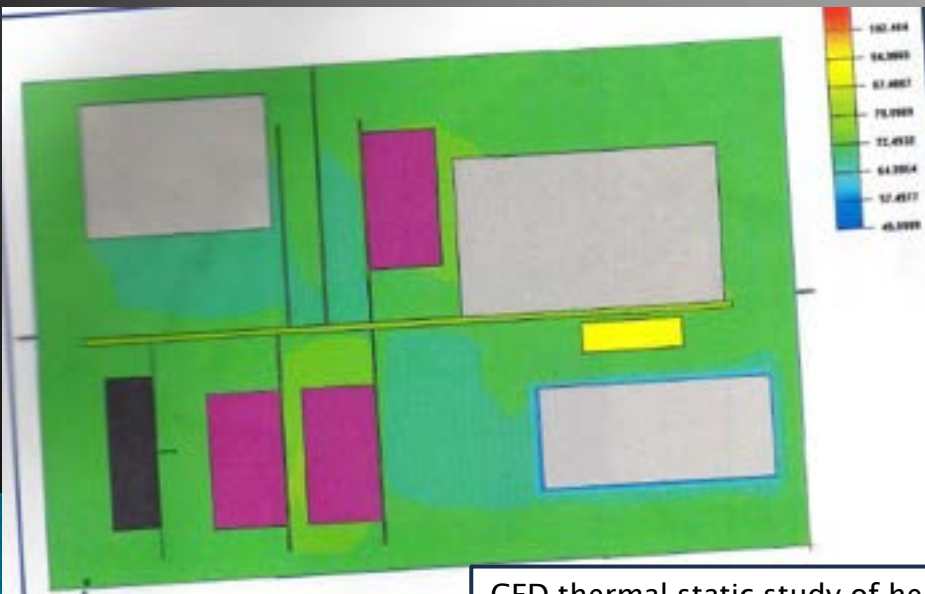
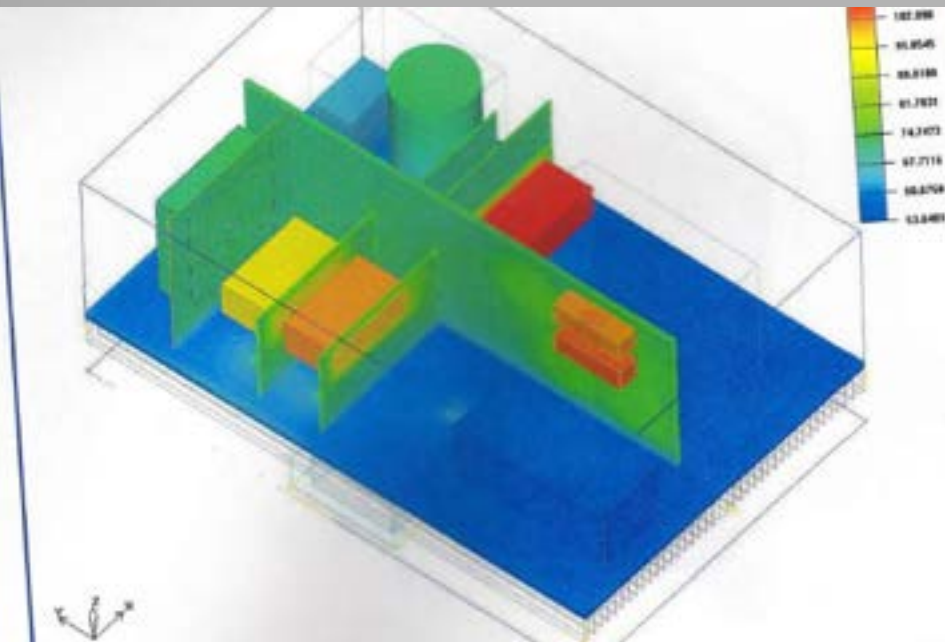
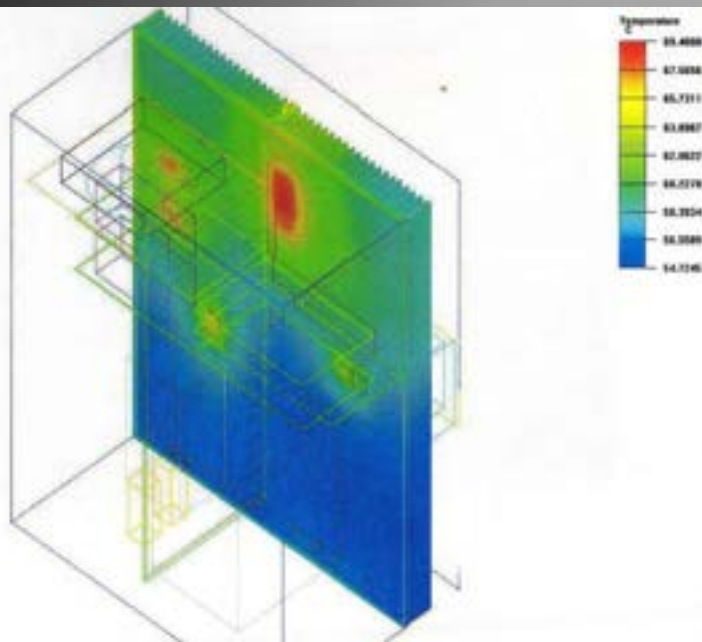
Mechanical heatsink / chassis amplifier for high end consumer stereo, extrusion profile designed for ID of client and to reduce manufacturing operation



High performance lightweight CPU heatsink
with embedded heat pipe for limited space
requirement (server application)

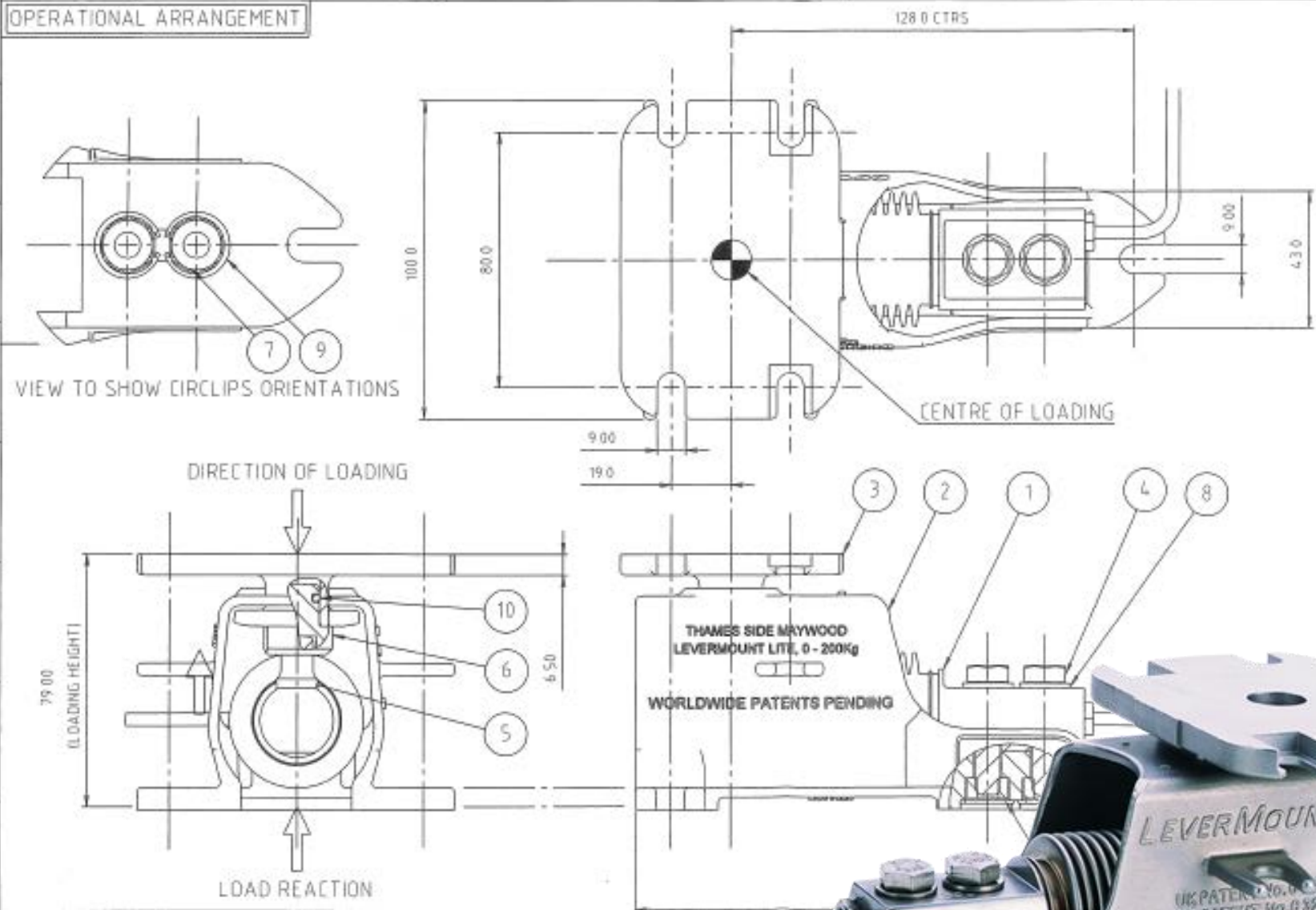


Thermal management solution using a heat plate, heat pipe and heat sink where no room existed for heat sink over electronics device



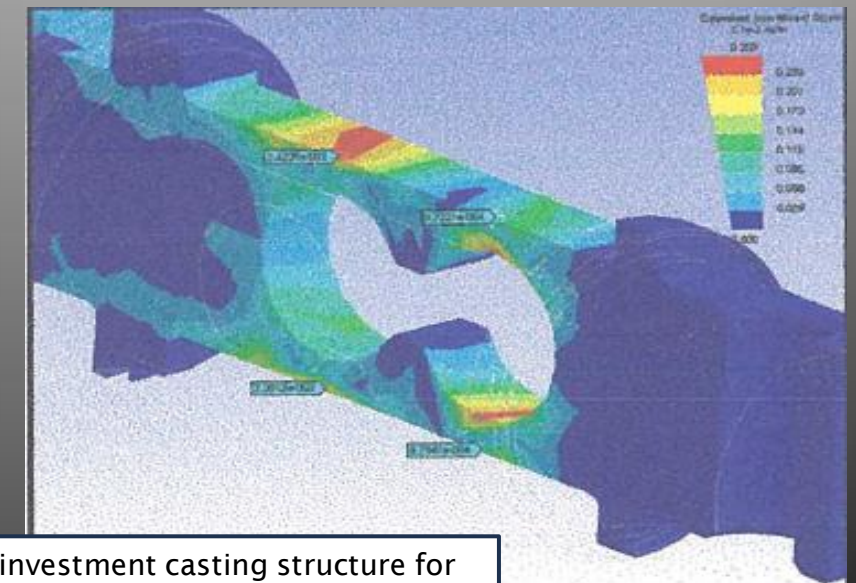
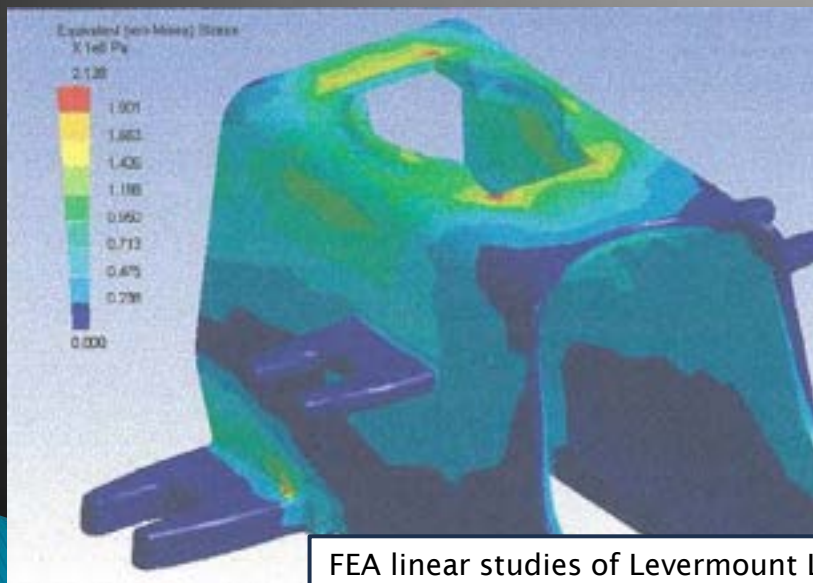
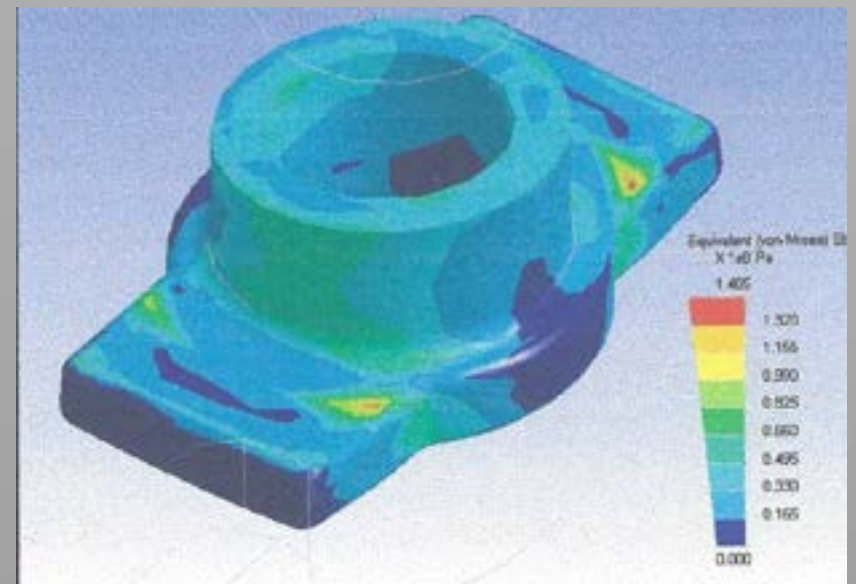
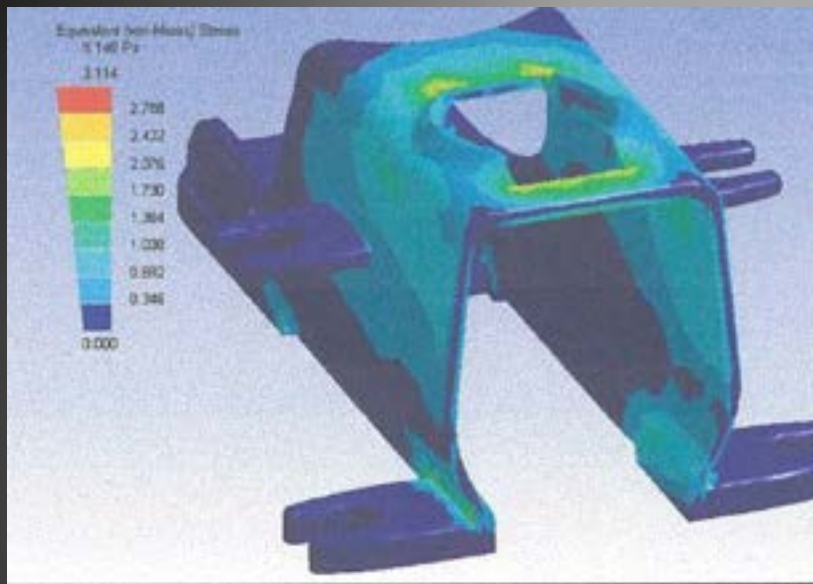
CFD thermal static study of heat exchanger / electronics enclosure, optimisation study for fan layout / selection / heat sink fin and base optimisation

OPERATIONAL ARRANGEMENT

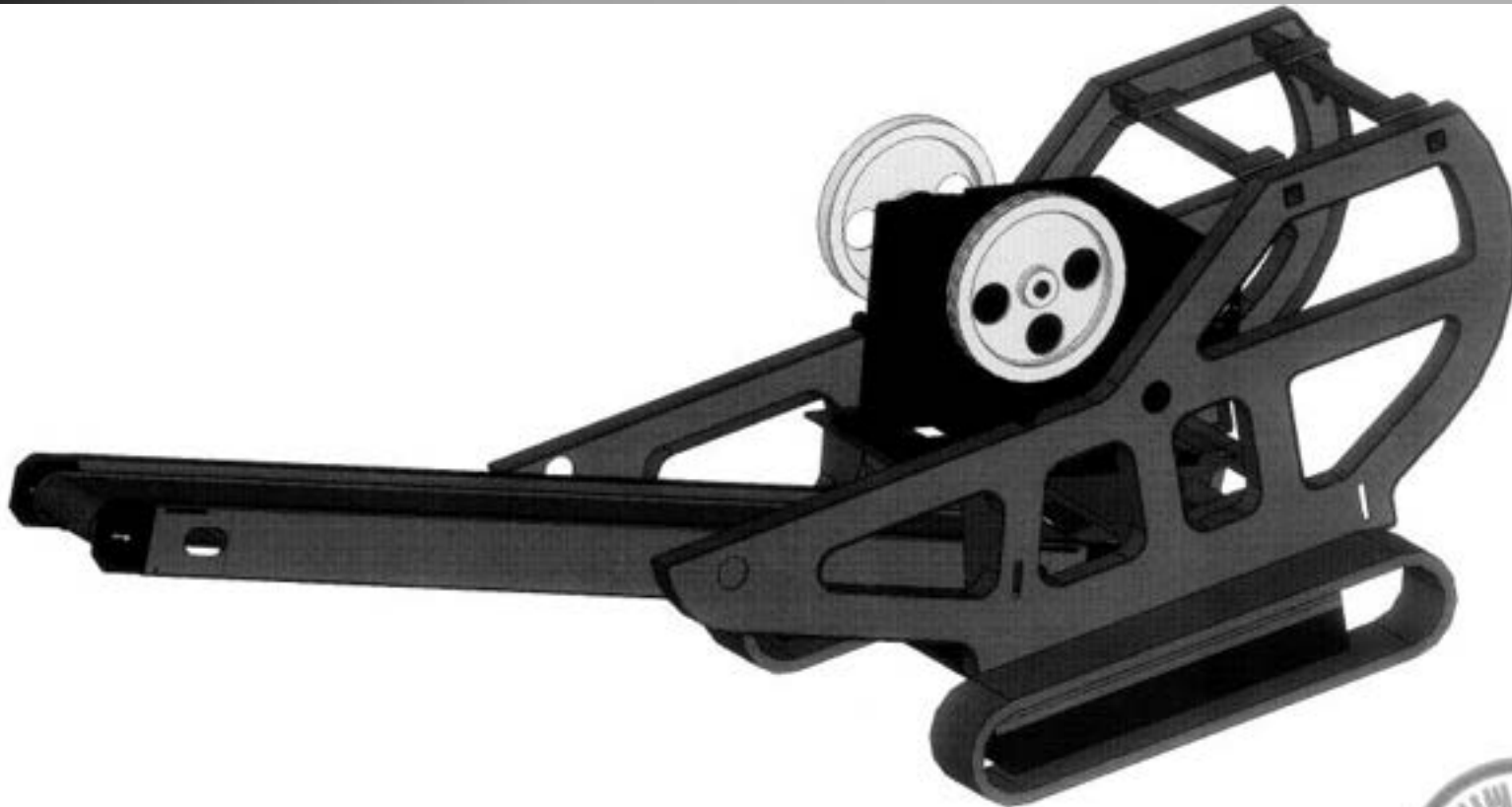


Straight forward, low cost installation for raising load cells on process weighing applications so structure can be built prior to load cell installation, therefore electric welding won't damage the strain gauges

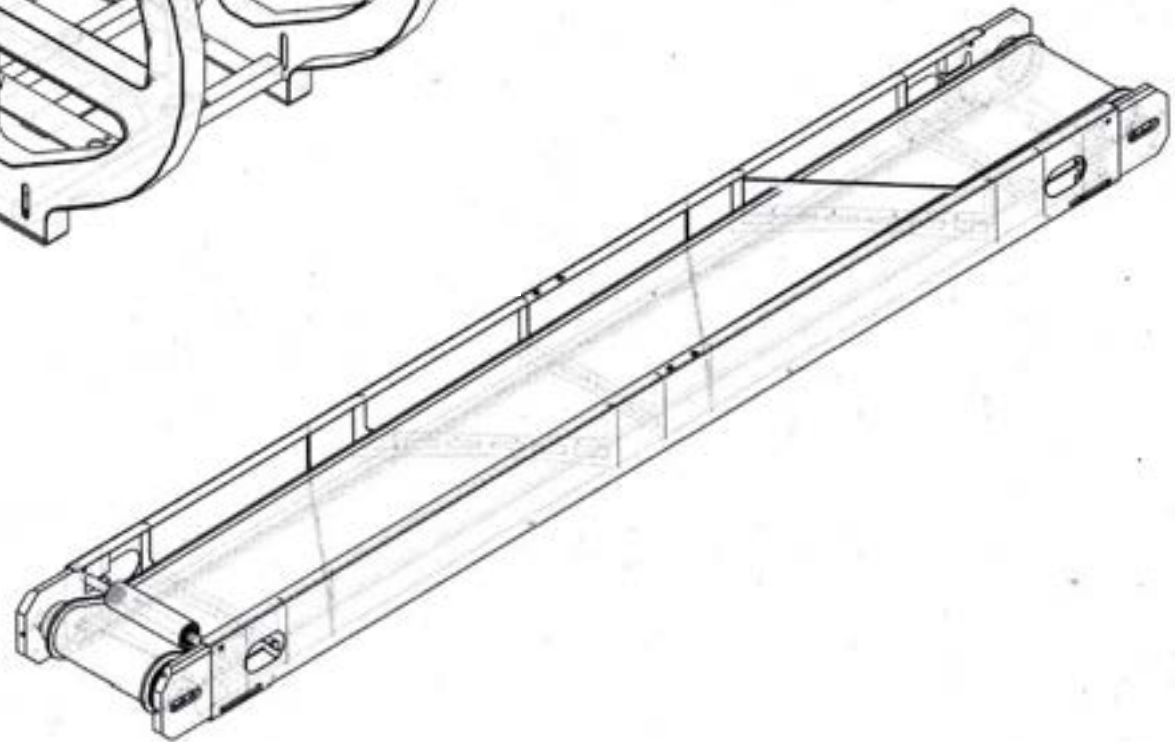
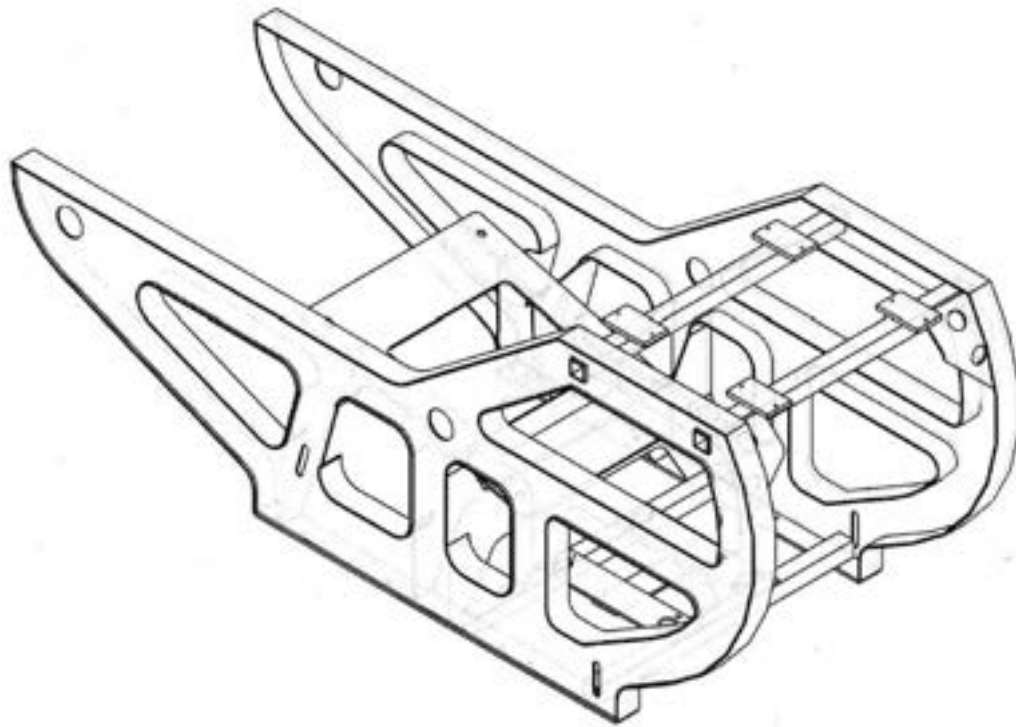




FEA linear studies of Levermount Lite investment casting structure for right first time structural performance. Structures were optimised to reduce stress concentrations by 40% still keeping stylish form of product



Design of conveyor system / structural frame / engine mounting and caterpillar track integration of concrete crushing machine, new styled design to reinvigorate product portfolio



Design of conveyor system / structural frame / engine mounting and caterpillar track integration of concrete crushing machine, new styled design to reinvigorate product portfolio

PART No: RDR-PT-061-206-01

DIMENSIONS IN MM THIRD ANGLE PROJECTION AD

ISSUE: 01

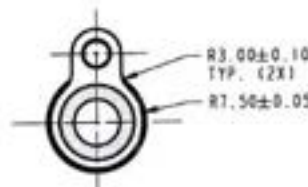
DATE MODIFIED: N/A

PRD Supplier: -

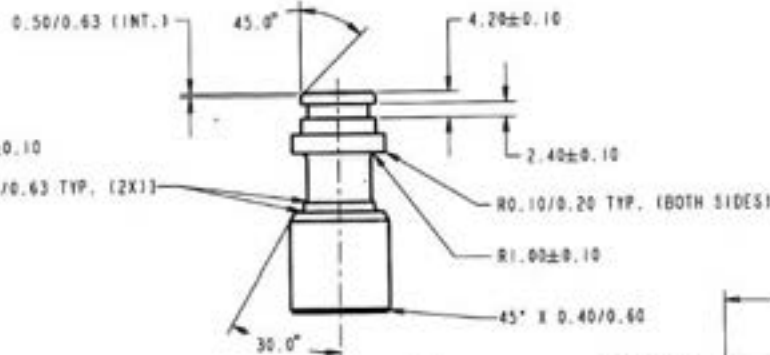
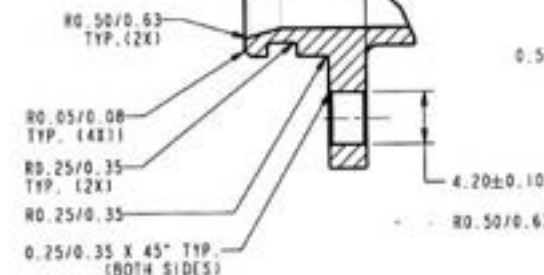
NOTICE TO ALL PERSONS RECEIVING THIS DRAWING
PROPRIETARY DATA NOTICE

INFORMATION CONTAINED IN THIS DOCUMENT WAS DEVELOPED BY AND AT THE EXPENSE OF OR Motorsport Design & Engineering Ltd. FOR THE USE OF OR Motorsport Design & Engineering Ltd. AND IS NOT TO BE REPRODUCED, COPIED, EITHER WHOLLY OR IN PART, OR BY ANY MEANS, WITHOUT THE PRIOR WRITTEN PERMISSION OF OR Motorsport Design & Engineering Ltd.

DETAIL X
SCALE 4.000



ISOMETRIC VIEW
SCALE 2.000



NO BURRS ALLOWABLE

Ø7.44±0.10

Ø8.80±0.10
INT.

30.0°

45° X 0.30/0.43
14.00±0.10

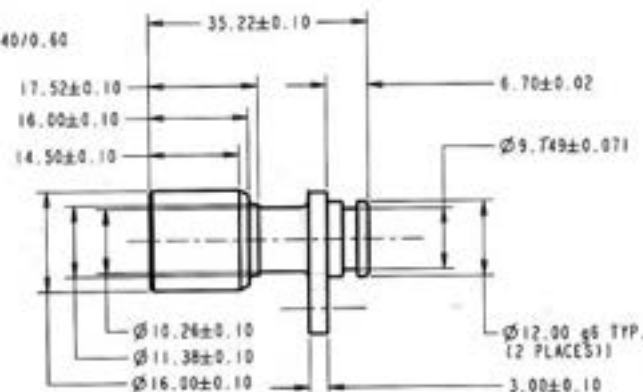
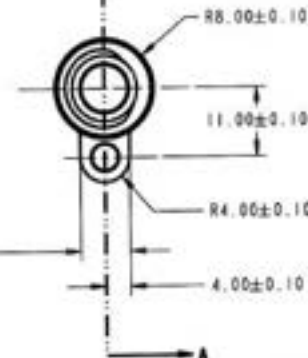
SECTION A-A

ANNO-06-PEEK-PROFILE

SEE DETAIL X

8.00±0.10

3.00±0.10 INT.



NOTE:
111 ALL DIMENSIONS ±0.10 UNLESS STATED.
112 ALL ANGULAR DIMENSIONS ±1° UNLESS STATED.
113 WTC ALL OVER 0.000 TO 0.5
114 DE-BURR ALL SHARP EDGES WITH MIN RAD UNLESS STATED.
115 ALL TURNED Ø TO BE CONCENTRIC TO Ø9.05 T.I.R.

NO LONGITUDINAL OR SPIRAL
GROOVES, BURRS OR VISIBLE
FLAT SPOTS

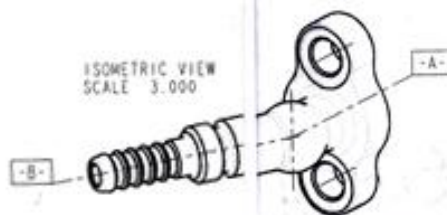
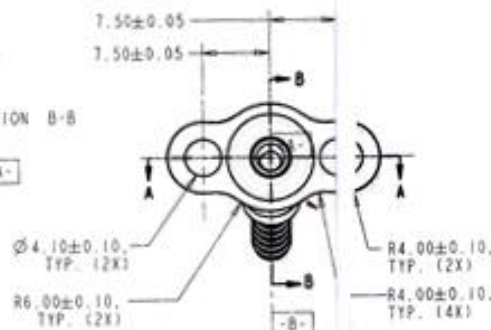
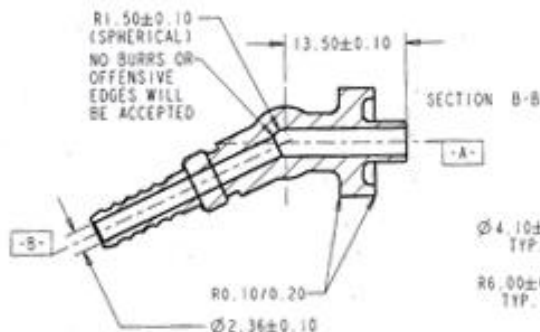
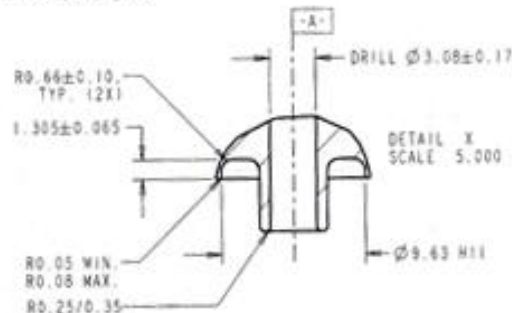
Motorsport hose connector for
Formula 1 cars

DATE: 16-Jun-04	SCALE: 2.000	MATL: Ti BAL - HV
DRAWN BY: RJF	CHECKED BY: RJF	
FINISH: WTC POLISH	TREATMENT: Tm	COLOUR: NAT / GOLD

PART No: AN2-FS40103-025-00-01

NOTICE TO ALL PERSONS RECEIVING THIS DRAWING
PROPRIETARY DATA NOTICE

INFORMATION CONTAINED IN THIS DOCUMENT WAS DEVELOPED BY AND AT THE EXPENSE OF AN Motorsport Design & AN Motorsport Design LTD. CONTENTS ARE UNCLASSIFIED PROPRIETARY AND ALL PATENT RIGHTS RESERVED. ANY DISCLOSURE IS A SPIRIT OF CONFIDENCE, AND ACCEPTANCE IS DEEMED TO BE ACKNOWLEDGEMENT OF THE CONFIDENTIAL RELATIONSHIP. INFORMATION CONTAINED HEREIN WAS LAWFULLY OBTAINED FROM ANY OTHER SOURCE SHALL NOT BE RELEASED, REPRODUCED, USED OR DISCLOSED IN WHOLE OR IN PART FOR ANY PURPOSES OR MANUFACTURE PURPOSES WITHOUT THE PRIOR WRITTEN PERMISSION OF THE PARTNER OR DIRECTORS OF AN Motorsport Design & AN Motorsport Design LTD.



NOTE :-
(1) ALL DIMENSIONS ±0.10 UNLESS STATED.
(2) ALL ANGULAR DIMENSIONS ± 1° UNLESS STATED.
(3) M/C ALL OVER 0.8mm U.O.S.
(4) DE-BURR ALL SHARP EDGES WITH MIN RAD UNLESS STATED.
(5) ALL TURNED Ø TO BE CONCENTRIC TO Ø9.05 T.I.R.

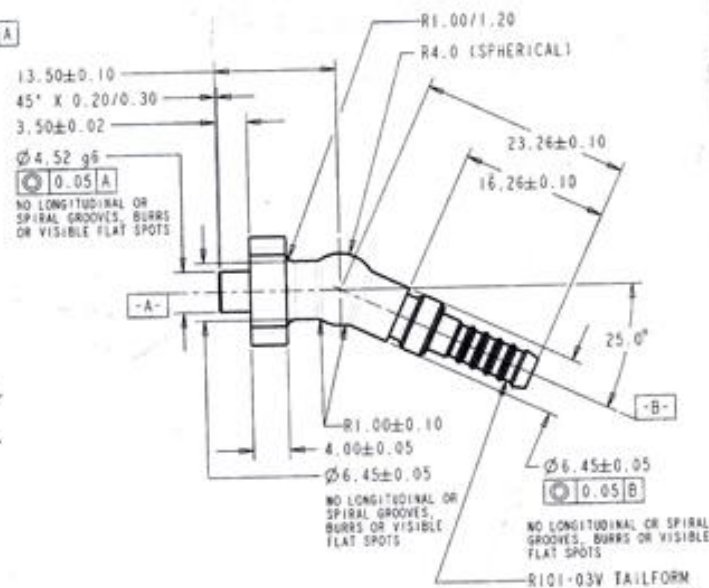
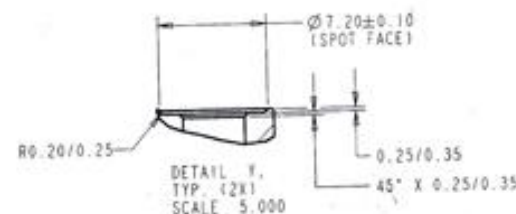
DIMENSIONS
IN MM

ANGLE
SECTION A2

ISSUE: 01

DATE MODIFIED: N/A

PRO Supplier: -



TITLE: -03 A- 25° FACE SEAL FITTING

Motorsport hose connector for
Formula 1 cars

DATE: 18-Jun-06	DRW by: RJF	CHECKED by: ---
FINISH: M/C POLISH	TREATMENT: U.S.C.	COLOUR: NAT

USED ON:

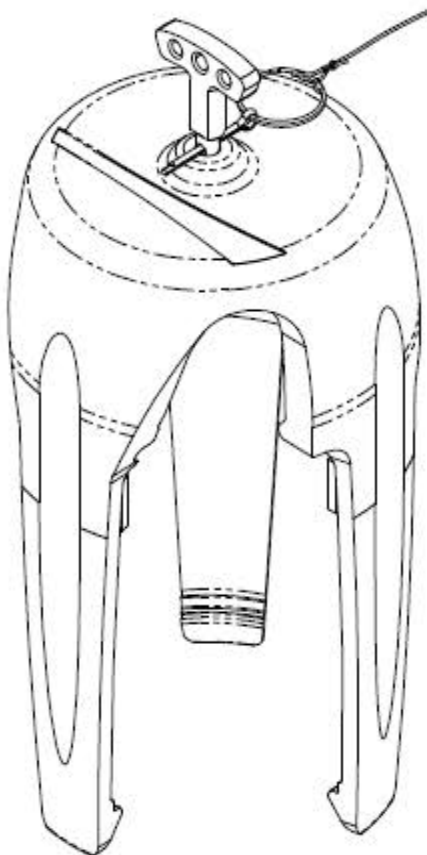
THIS DOCUMENT CONTAINS RAY FAIERS' INTELLECTUAL PROPERTY WHICH IS SUPPLIED IN CONFIDENCE; IT MUST NOT BE USED FOR ANY OTHER PURPOSE THAN WHICH IT IS SUPPLIED; IT MUST NOT BE REPRODUCED OR TENDERED FOR MANUFACTURE WITHOUT WRITTEN PERMISSION FROM THE OWNERS.



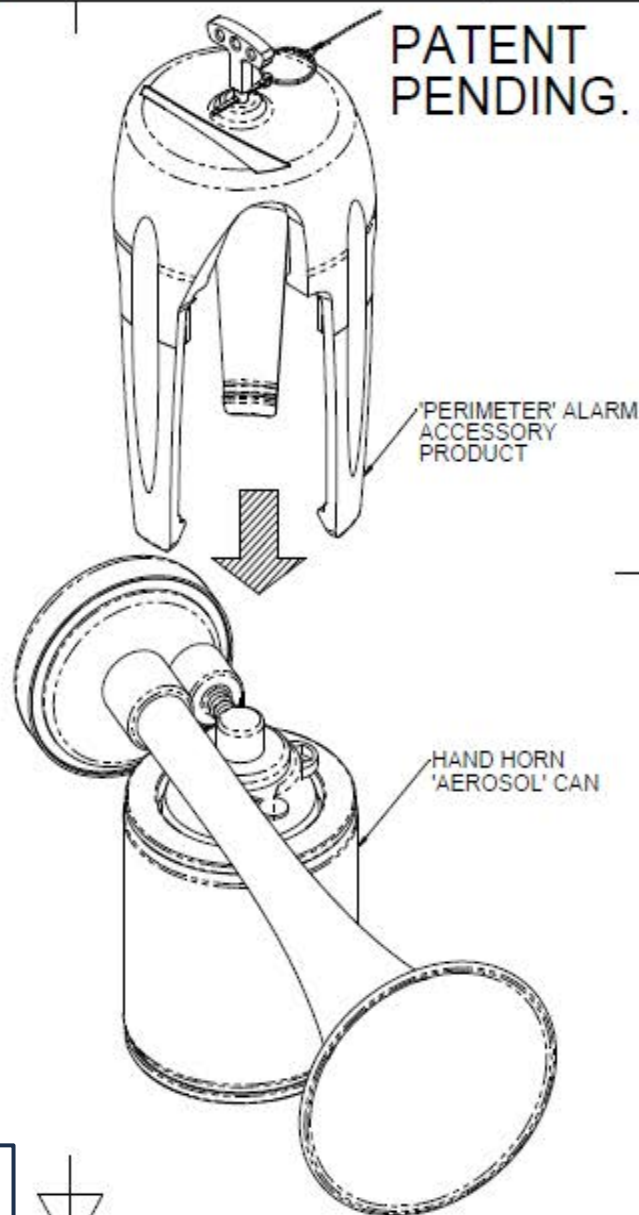
DRAWING No:
A3/0002/A00

PATENT PENDING.

*HAND HORN AEROSOL CAN
'PERIMETER ALARM'
ACCESSORY PRODUCT*



PATENT PENDING.



SYSTEM FILE NAME:

N/A

DESCRIPTION:

PATENT APPLICATION
FOR PROJECT '0002'

PROJECT No:

0002

MATERIAL:

N/A

BILLET SIZE:

N/A

FINISH:

N/A

HEAT TREATMENT:

N/A

PACKAGING:

N/A

SURFACE TEXTURE:

(UNLESS OTHERWISE STATED) ✓

PRODUCT WEIGHT (kg):

N/A

SCALE:

1:2

FORMAT:

A3

DRAWN:

RJF

CHECKED:

RJF

APPROVED:

RJF

THIS DRAWING IS CAD
PRODUCED. ANY CHANGES
MUST BE MADE VIA THE CAD
SYSTEM

SHEET:
1 OF 7

IF IN DOUBT - ASK

REMOVE ALL BURRS AND SHARP EDGES

ALL DIMENSIONS IN MILLIMETRES

GENERAL TOLERANCES:

FRACTIONAL DECIMALS

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

± 0.0001

THREAD TOLERANCES:

ISO 2841: 1981 (PARTS 1 & 2)

ISO 2841: 1981 (PARTS 1 & 2)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

(UNLESS OTHERWISE STATED)

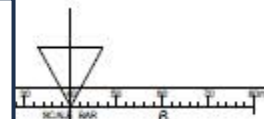
(UNLESS OTHERWISE STATED)

FAIERS
CONTRACT DESIGN SERVICE

18 WOODLAND MANOR PARK, WOODLAND GREEN, SURREY, HP10 8ET
Tel: +44 (0) 1888 727 026 Fax: +44 (0) 1888 727 027
WWW.FAIERS-ONLINE.COM

PRIVATE & CONFIDENTIAL

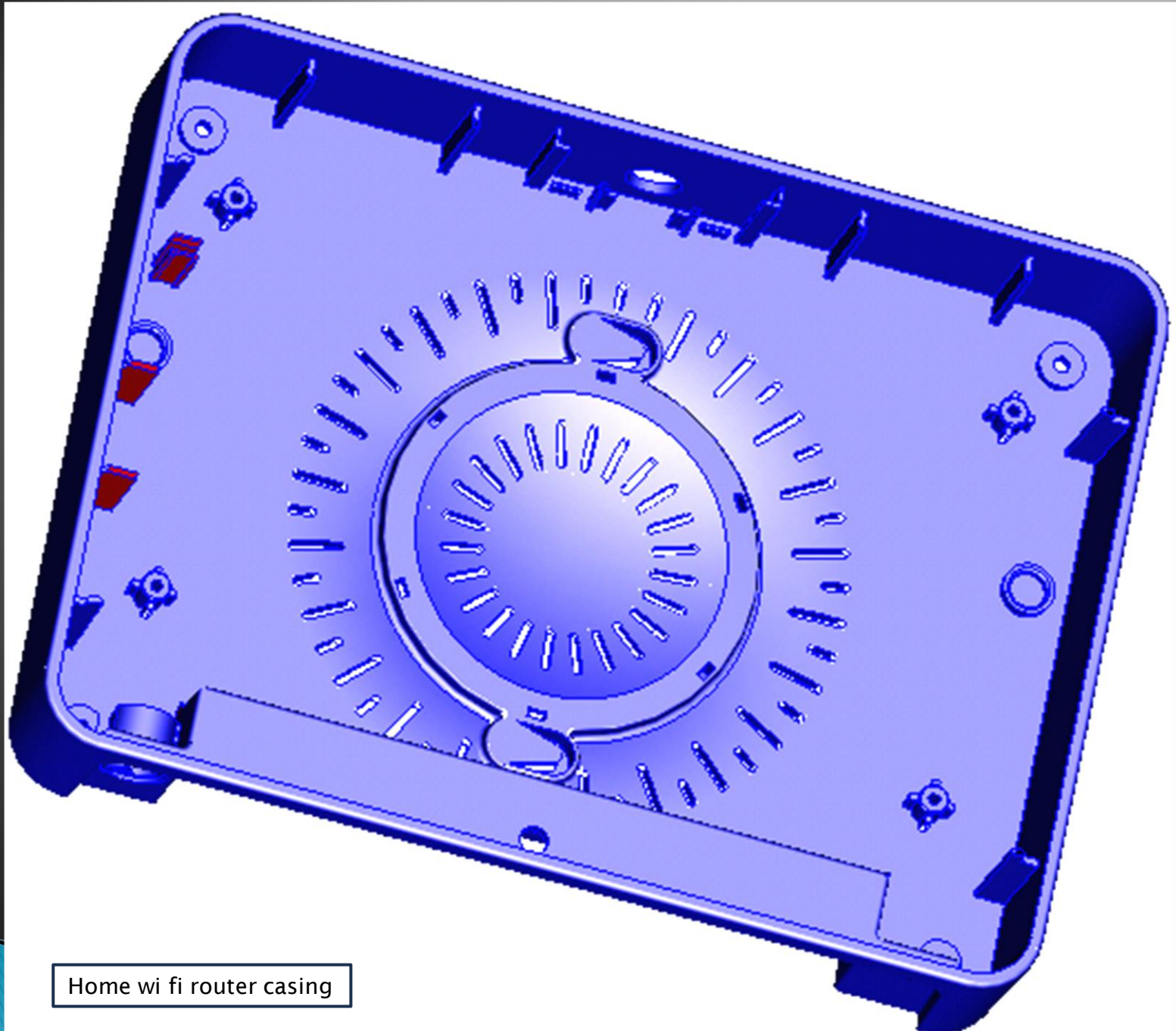
Concept of air trip wire activator keeping as much function in the main housing and styled for a modern sleek look



● 1.4 3D Views



Home wi fi router consumer product, high value look low cost production, design areas include form, thermal management, cosmetics, RF performance



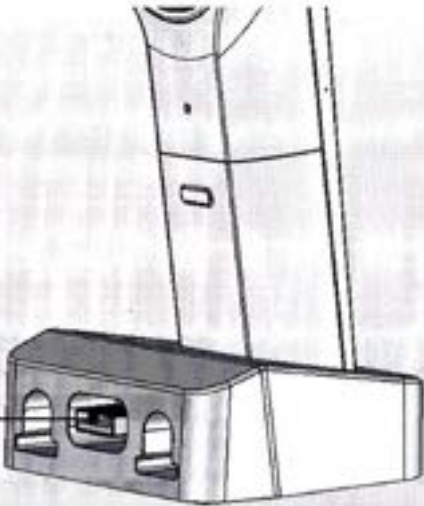
Home wi fi router casing



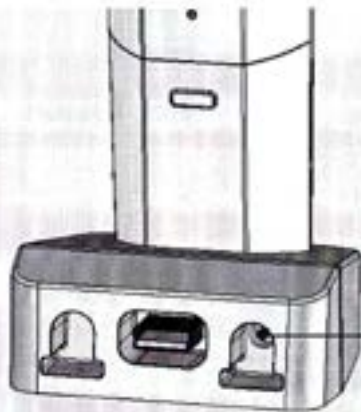
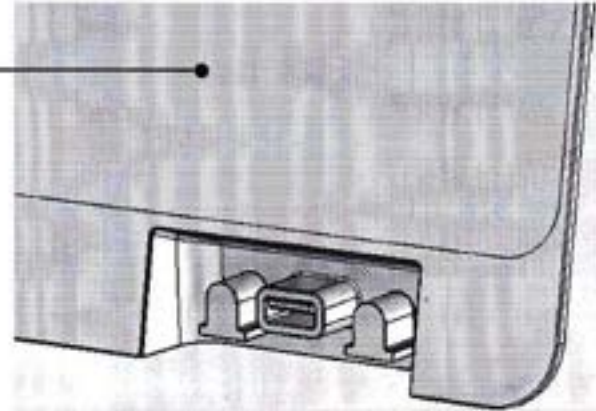




USB plug



Box front cabinet



Power charger
plug

Home wi fi router concept for
phone plug in module with
power and data connectors and
locking form feature

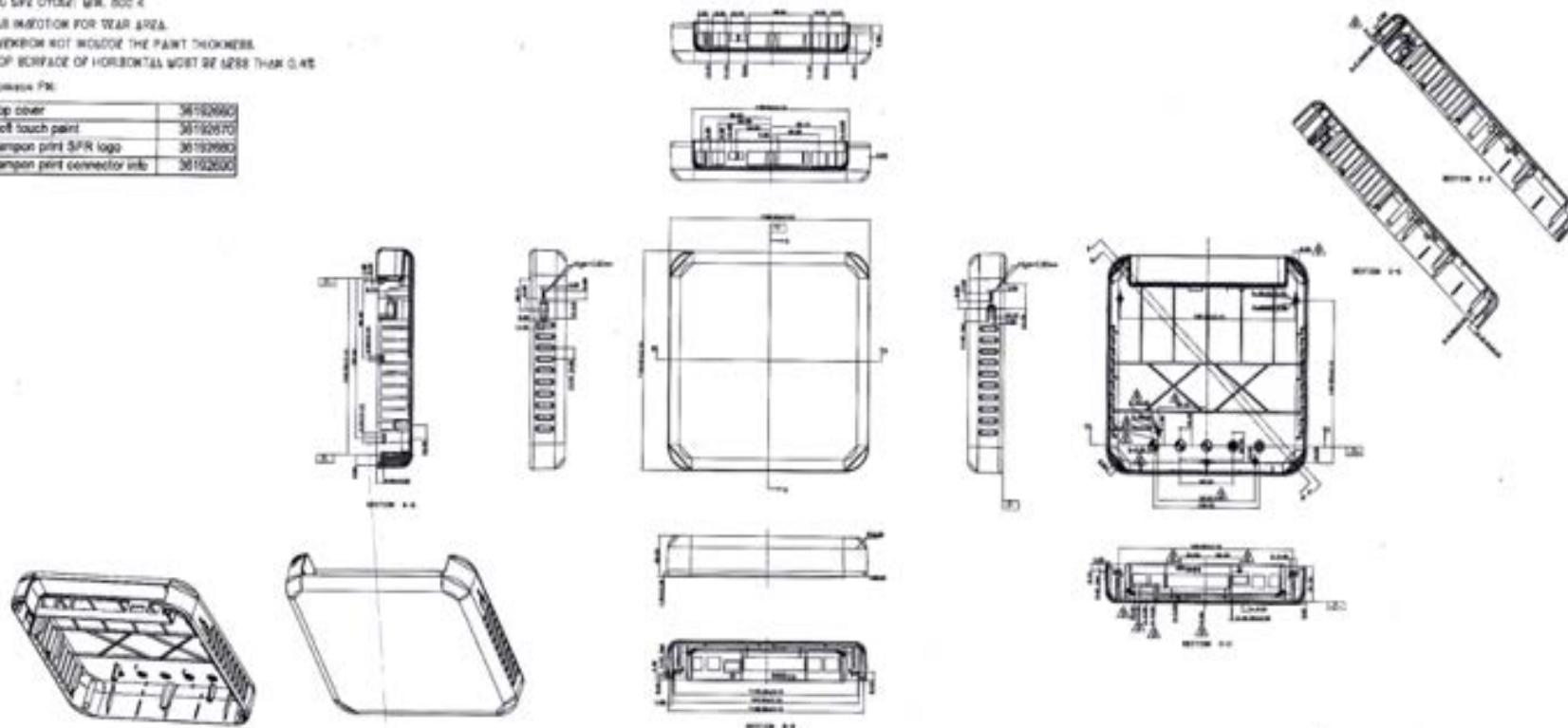
NOTE:

1. * MEANS CRITICAL DIMENSION
2. COLOR : WHITE (RAL9005-P)
3. PAINTING SPEC : (A35C) R22H-015-754 (55um +/- 5um)
4. PART TO BE FREE OF MANUFACTURING DEFECTS.
5. APPEARANCE TO BE OF FROM BHK, DATE, EXECTOR, BORNED MARKS AND OTHER COSMETIC DEFECTS.
6. THIS PART MUST BE COMPLETED WITH ED FREE AND ROHS RULE.
7. TOOLING SIZE CYCLE: MIN. 800 K
8. ONE GAS INJECTION FOR VEAR AREA.
9. ALL DIMENSION NOT INCLUDE THE PAINT THICKNESS.
10. THE TOP SURFACE OF HORIZONTAL MUST BE LESS THAN 0.15

Thickness PM

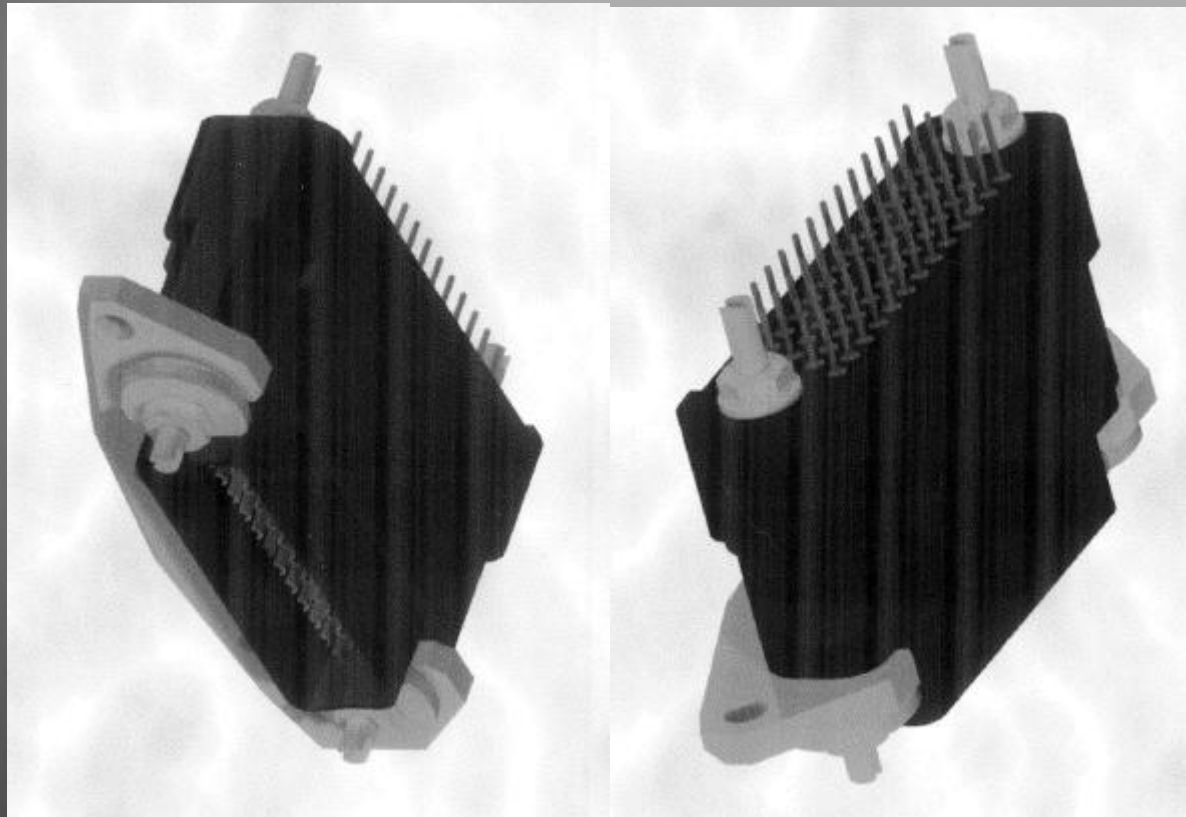
Top cover	36192660
Soft touch paint	36192660
Tampon print SPR logo	36192660
Tampon print connector info	36192660

REV.	ARK	FOR/FORM NO.	DATE	UPDATE DESCRIPTION	BY/DATE
0	M/A	M/A	08-12-08	First Release	Haik
1	M/A	M/A	07-01-05	Second Release	Haik
2	A	M/A	07-05-14	Change rear hooks dimension	Haik
3	A	M/A	07-05-19	Add ribs, 2 boss and change joint shape	Haik
4	M/A	M/A	07-06-20	Change the painting SPEC	Haik

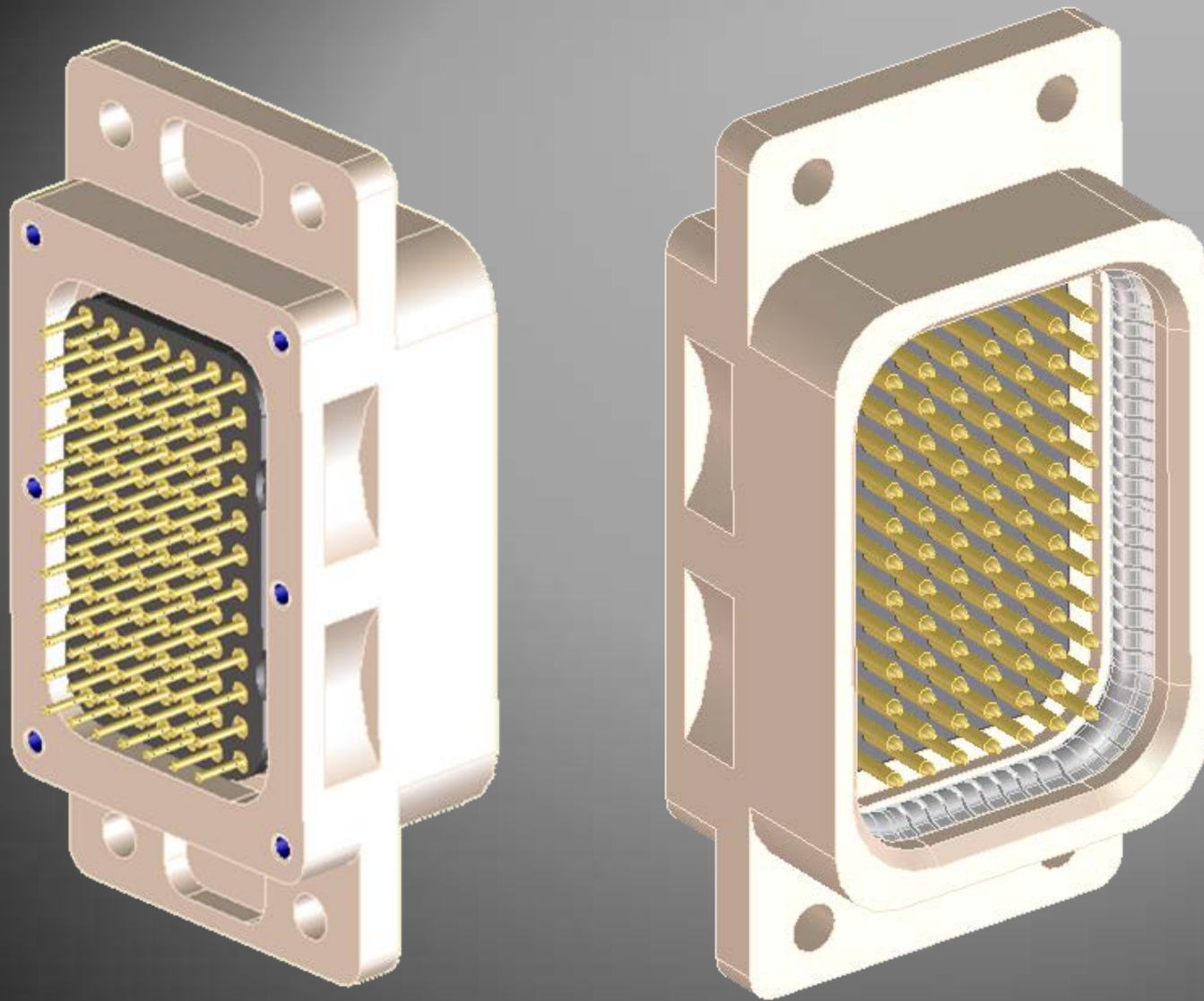


Home wi fi router casing

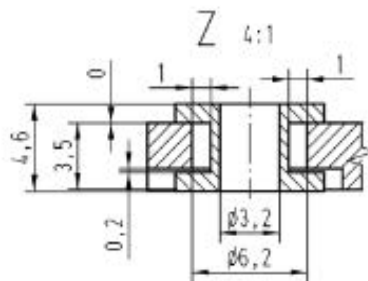
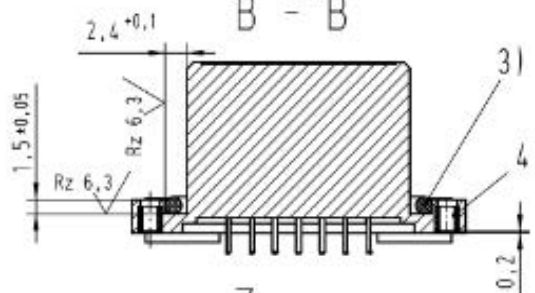
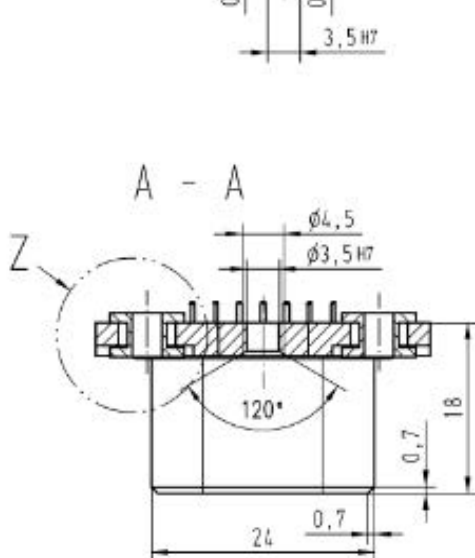
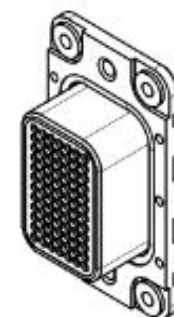
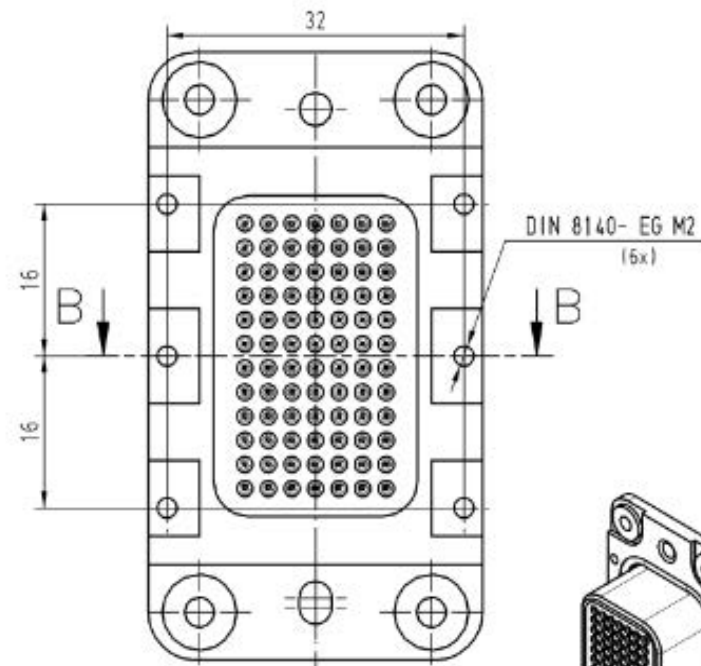
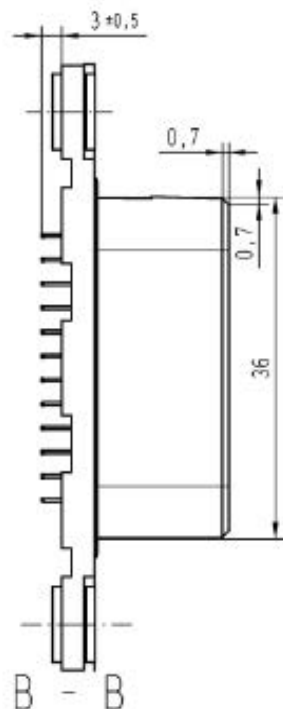
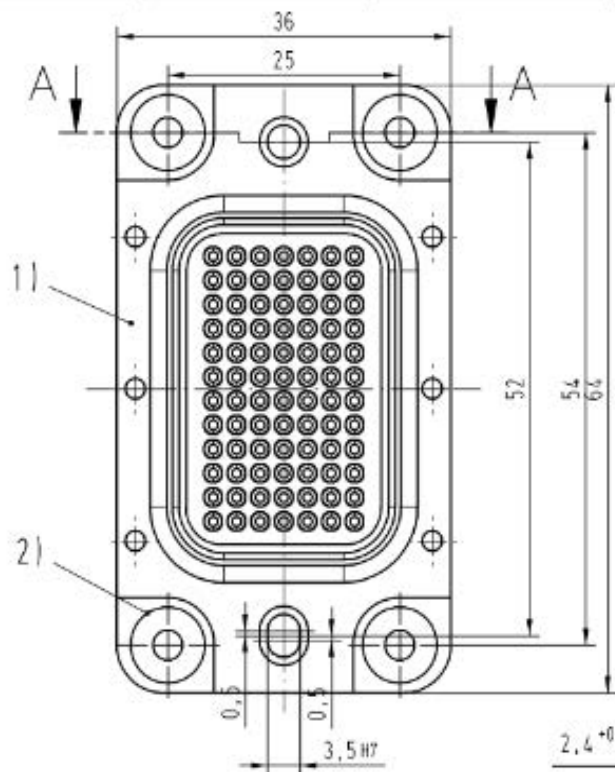
MATERIAL (SPEC.)		SCALE	FOXCONN HOA HAI PRECISION IND. CO., LTD. CM883		
AB3 PAV86		1:1			
FINISH		1/1			
SELECT		UNIT	PART NAME	HAMLET-top-cover	
DIM. / mm		mm	MODEL	D465083.00	
DIM. / mm		mm	PART NO.	440.000V8.005	
DIM. / mm		mm	DESIGNED	Haik Huang	
DIM. / mm		mm	CUSTOMER MODEL	CUSTOMER PART NO.	
DIM. / mm		mm	HAMLET	36192660	
DIM. / mm		mm	APPROVED	Allen	



Hyperboloid high performance electrical connector for aerospace application



Hyperboloid high performance electrical connector for military application



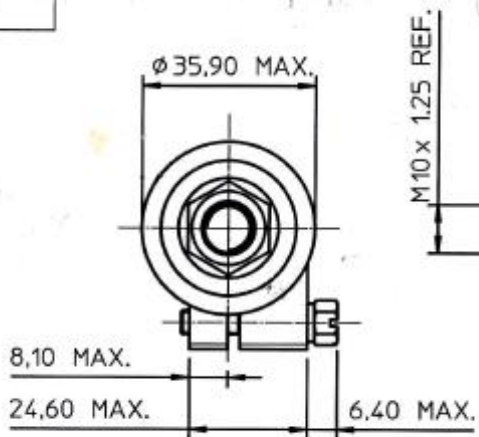
- 1) shell
EN AW-5083 D/H11
surf.: anticorrosive conductive plated finish;
preferred Ni finish
- 2) bushing
material: 1.4301; no surface
- 3) O-Ring 158 x 1.8±0.08
- 4) thread insert DIN 8140 - A M2x3 A2; tang removed

Drawing according PUD 30000876
(missing dimensions see associated 3D-models in MCAD-archive)

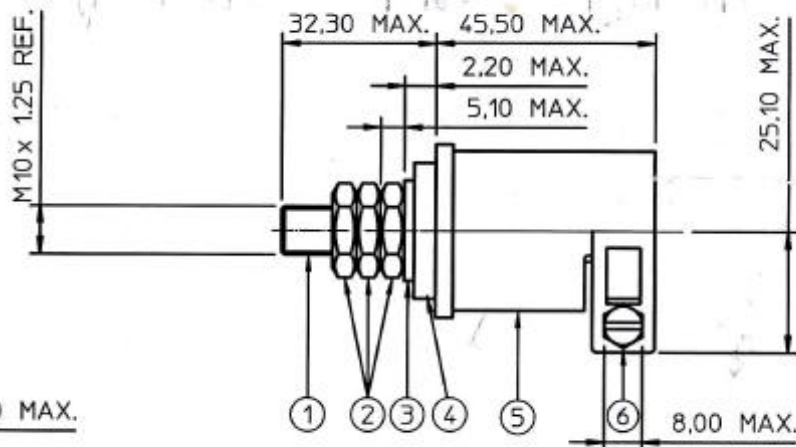
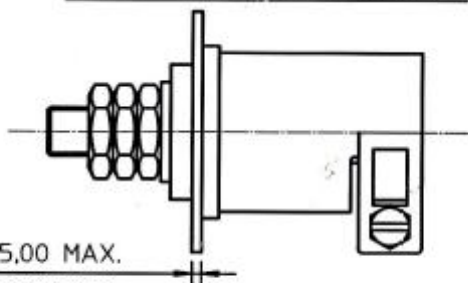
PLUG

1) auxiliary dimension

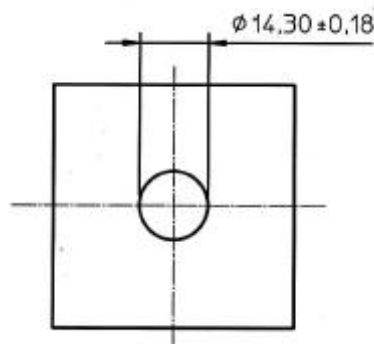
scale	2:1 4:1	tolerances	±0,1	material	weight
customer		created by /dept./date	Müller/ 07-08-17	approved by	responsible dept. MSOP41
EADS Deutschland GmbH					521317
C-Rack Connector					
Hyperboloid high performance electrical connector for military application					09-10 sheet 1 3



DETAIL OF PANEL THICKNESS



DETAIL OF PANEL DRILLING



THIS IS CUSTOMER DRAWING,
SEE SHEET 2 FOR HYPERTAC
ASSEMBLY DRAWING.

PLEASE NOTE: THERE IS NO O-RING
SUPPLIED WITH THIS ASSEMBLY

ITEM No	DESCRIPTION	QTY.	CODE	
1	SHANK	1	HQT-201	COPPER C109 HARD
2	NUT	3	HQT-504	BRASS CZ121 HARD
3	WASHER	1	HQT-505	BRASS CZ121 HARD
4	WASHER	1	HQT-102-M	PPS GF30 BK
5	INSULATOR CLAMP	1	HQT-101-M	PPS GF30 BK
6	CLAMP SCREW	1	HQT-502	SS 303S31 BS970

INFORMATION CONTAINED IN THIS
DOCUMENT IS CONFIDENTIAL TO SMITHS
GROUP PLC, AND MAY NOT BE
DISCLOSED OR REPRODUCED IN WHOLE
OR IN PART WITHOUT THEIR WRITTEN
CONSENT.

HYPERTAC LIMITED

TOLERANCES UNLESS STATED OTHERWISE



TO BE ON ALL TURNED PARTS
UNLESS STATED OTHERWISE

ANGLES ± .X ± mm

FRACTIONS ± .XXX ± mm

ALL BS STANDARDS TO LATEST ISSUE

3rd ANGLE PROJECTION

GENERAL NOTES

Hyperboloid high performance
electrical connector cable pin
connector

ISSUE MODIFICATION DATE C/N No

MATERIAL

SEE B.O.M.

MATERIAL CODE WT / 1000 LGTH / 1000

FINISH

FIRST USED ON

SIMILAR TO

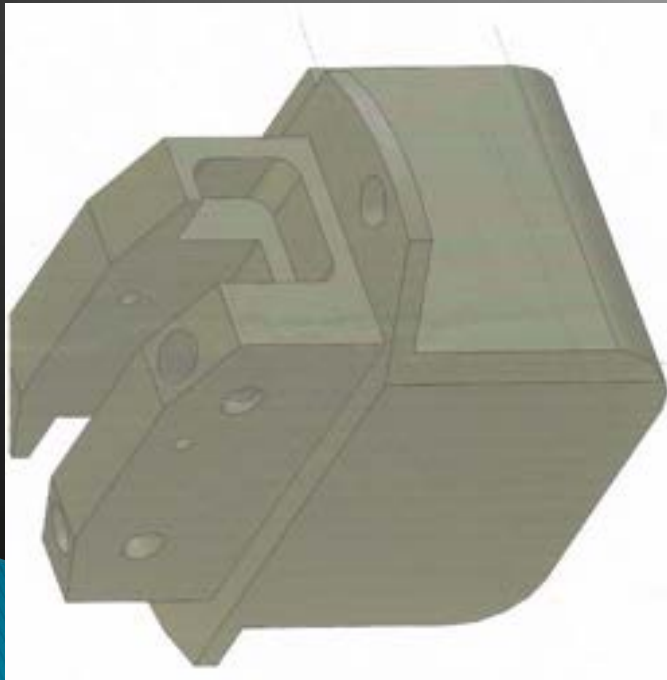
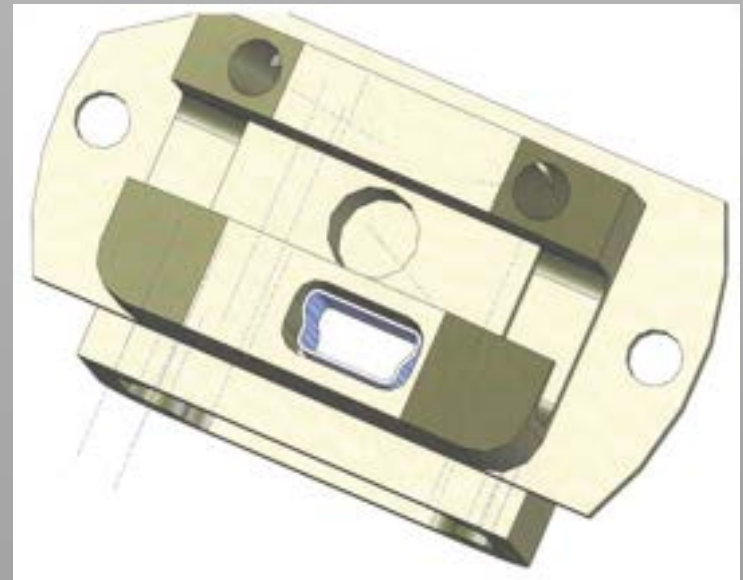
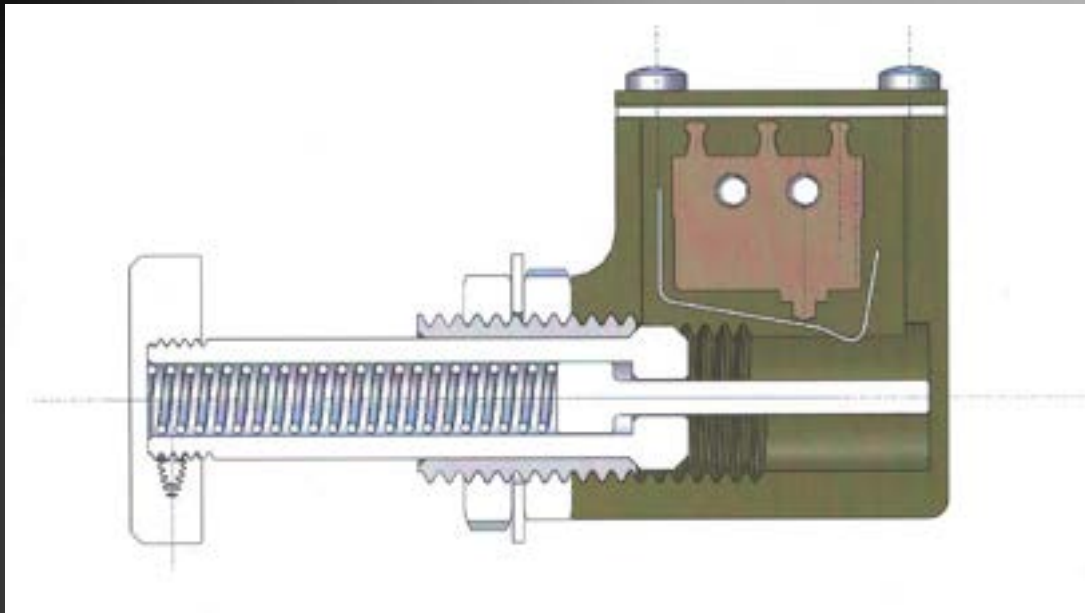
TITLE

CABLE TERMINATED
PIN CONNECTOR
ASSEMBLY

DRAWING No
HQT050RPC000
SHEET 1 OF 1

FORMERLY

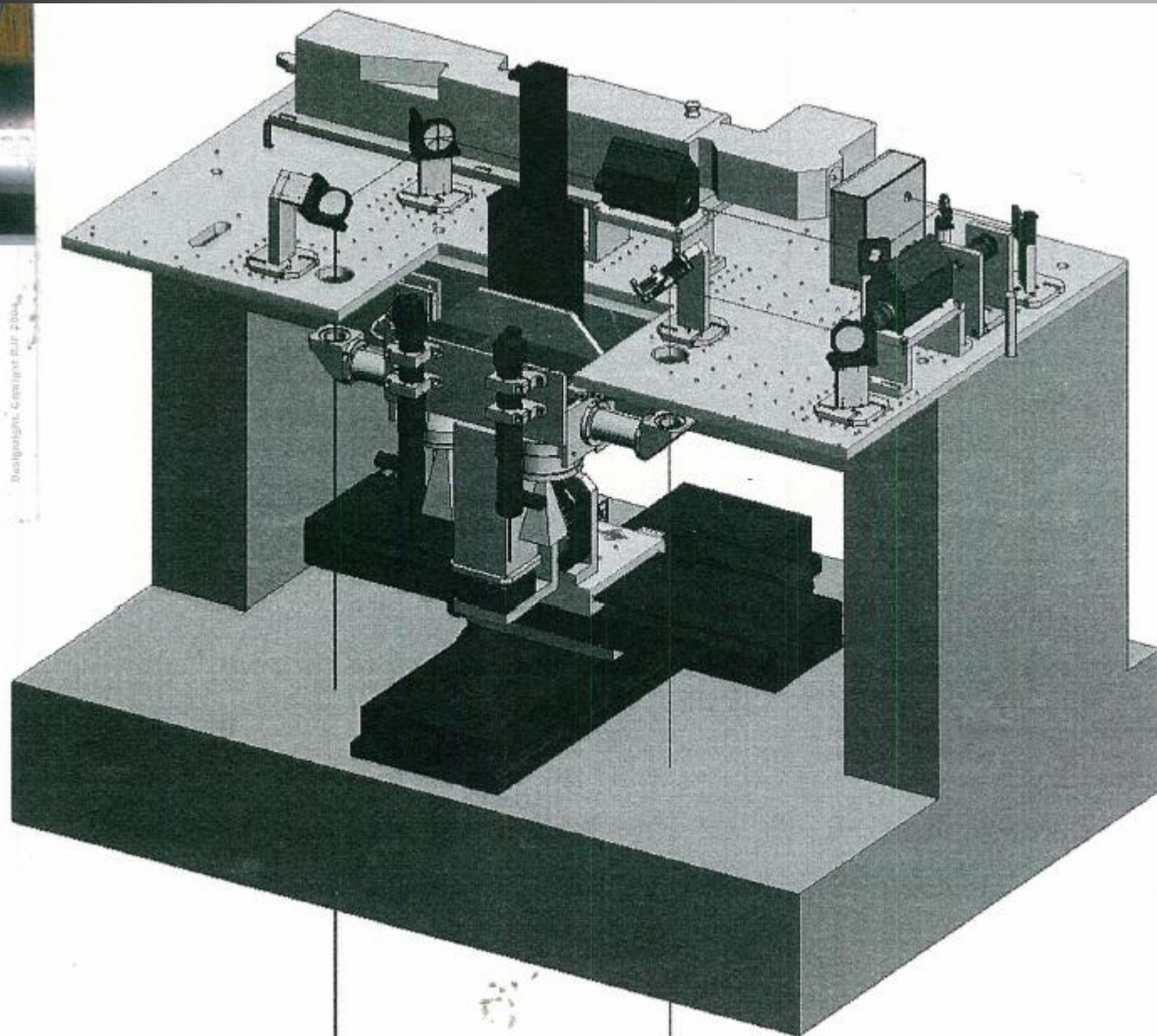
A3



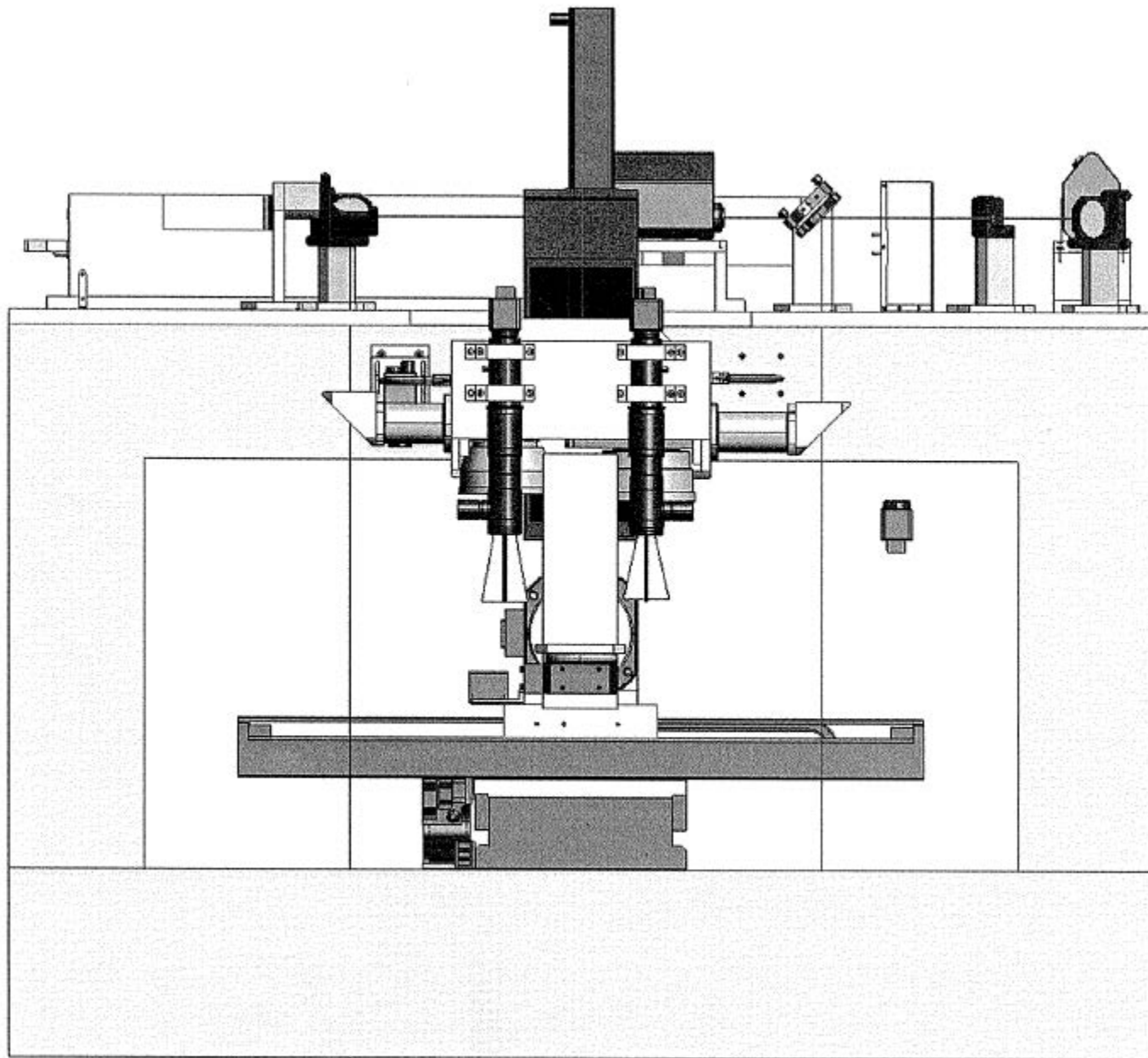
ACES Survival kit for personal locator beacon system including activation /toggle switch and interface panel for loading survival pack airman data, spring loaded switch mechanism

Email: rayf@rsi.com
Web: rsionline.com

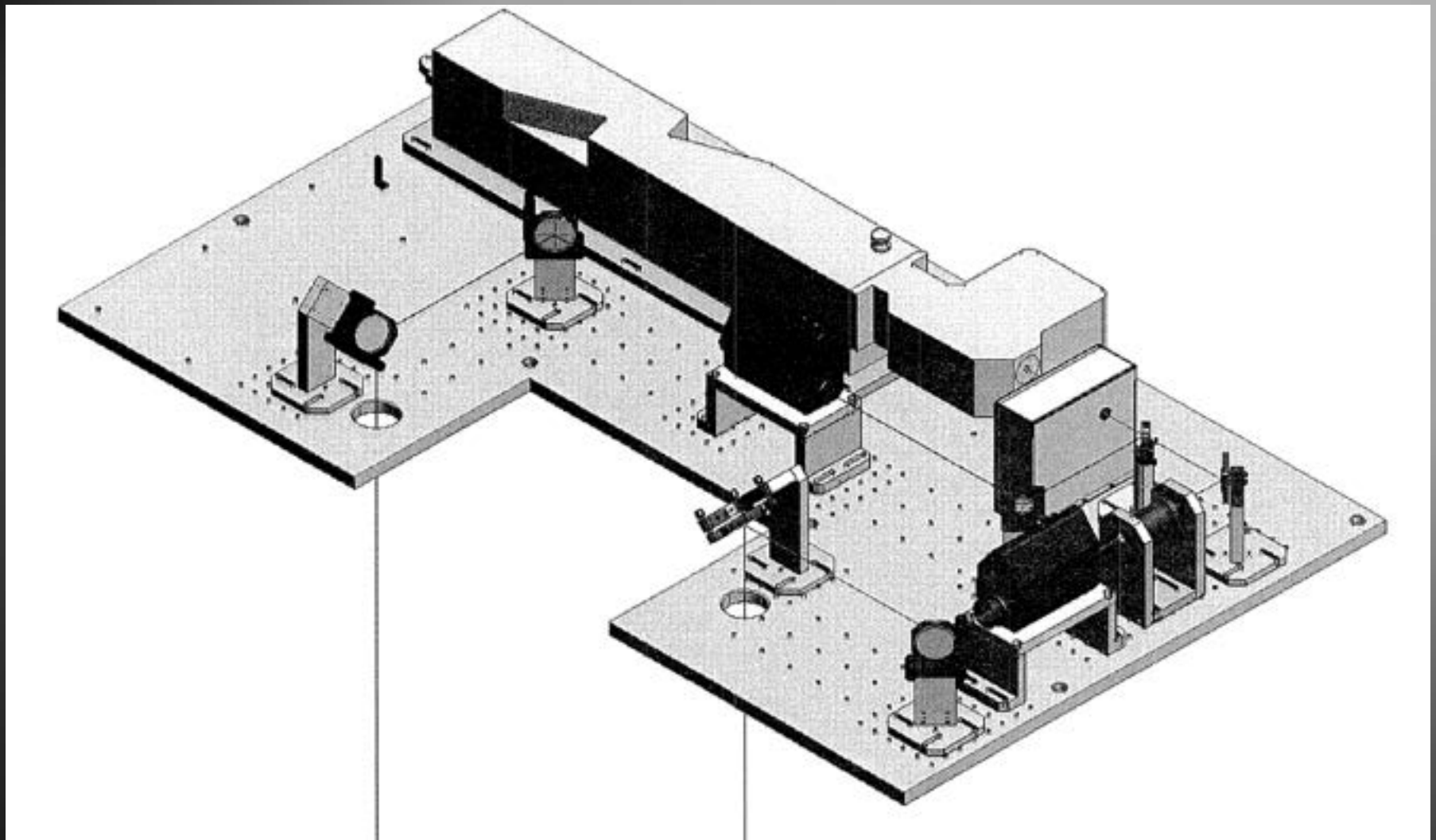
Redlight, Copyright 2004



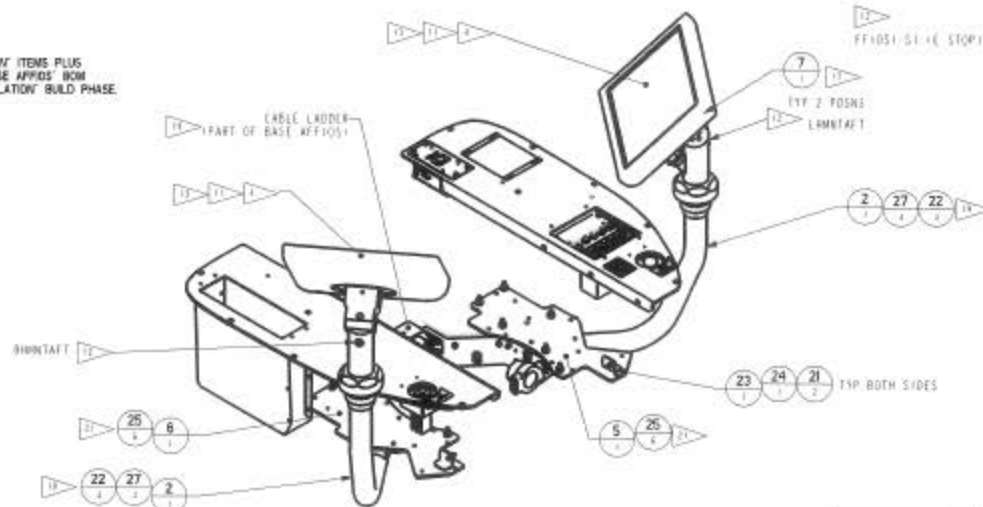
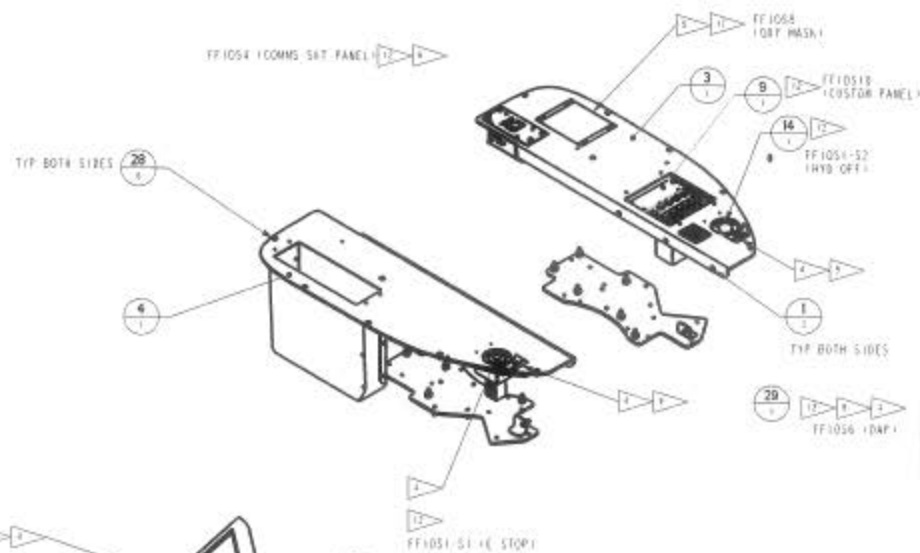
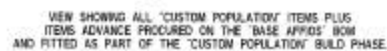
Custom 5 axis laser machining system for micron machining for research department of university allowing multiple beam paths and laser set ups



Custom 5 axis laser machining system



Custom 5 axis laser machining system laser /
beam set up top plate



DRG: B FAICRS	DRG: S A ELLIS	REC'D: S A ELLIS	APR 1981	PART 001	100%
ANGL: 0/0	PROD: B COOK	ELEC: S COLLIER		STAG	
					
TITLE CUSTOM POPULATION OF THE AFFRIS					
THALES		PROJECT: 61600930 CONC: 040 DIB: A PAK: 2			
SCALE: 1/1 EST 81		CODE: 108111182 2 / 3			

Flight simulator trainer seat with ergonomic touch screen displays and side arm interface buttons for A400M aircraft

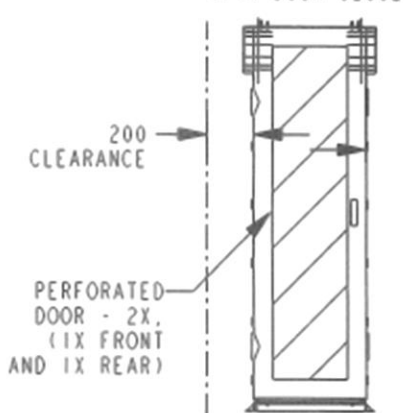
3RD ANGLE PROJECTION



GENERAL NOTES:

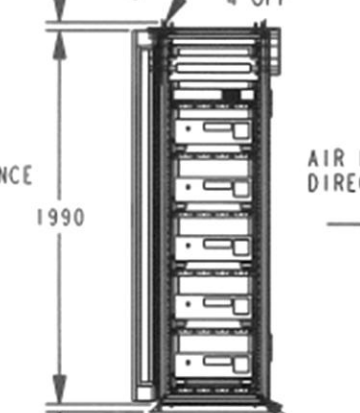
1. THERE ARE NO SPECIFIC HVAC REQUIREMENTS.
2. CABLE ACCESS IN UNDERSIDE OF CABINET VIA CABLE COMB TO ALLOW PRE-TERMINATED CABLE ASSEMBLIES TO ENTER.
3. THE REAR ACCESS DOOR WILL BE FIXED AND NOT OPERABLE IN THIS INSTALLATION.
4. CENTRE OF GRAVITY POSITION ESTIMATED WITH FULLY POPULATED RACK.

FRONT VIEW WITH DOOR CLOSED



32.25 (DOOR OPEN)

45 LIFTING EYES 4 OFF



AIR FLOW DIRECTION

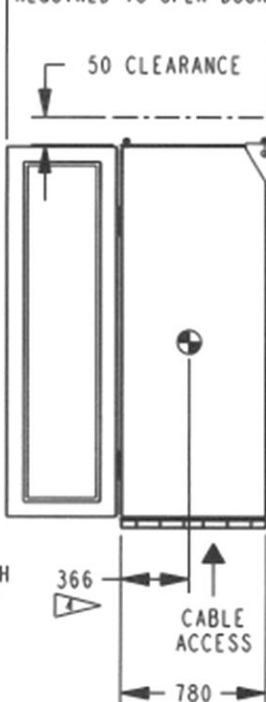
FRONT VIEW WITH DOOR OPEN

(RACK CONTENTS MAY VARY DEPENDING ON INSTANCE)

6 OFF - FIXING HOLES FOR M12 BOLTS (MATERIAL GRADE: T.B.D.)

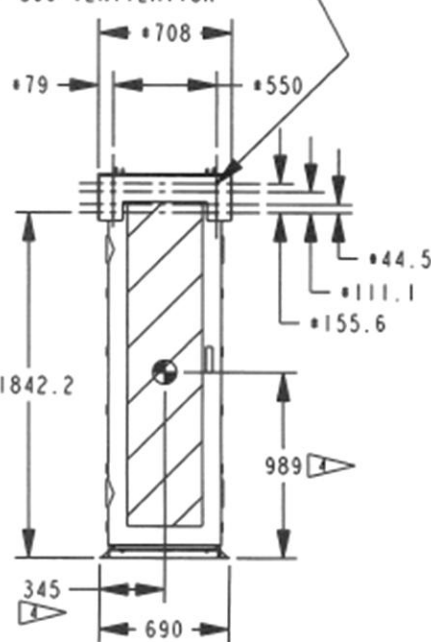
53.25 (DOOR CLOSED)

1450 REQUIRED TO OPEN DOOR



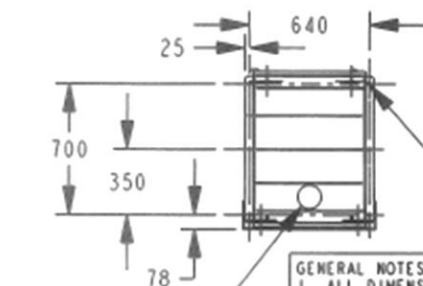
M8 x 1.25 TAPPED FIXING HOLES 8 POSITIONS

300 VENTILATION



REAR VIEW

* = DIMENSIONS TBC.



OPENING FOR CABLE ACCESS

GENERAL NOTES:

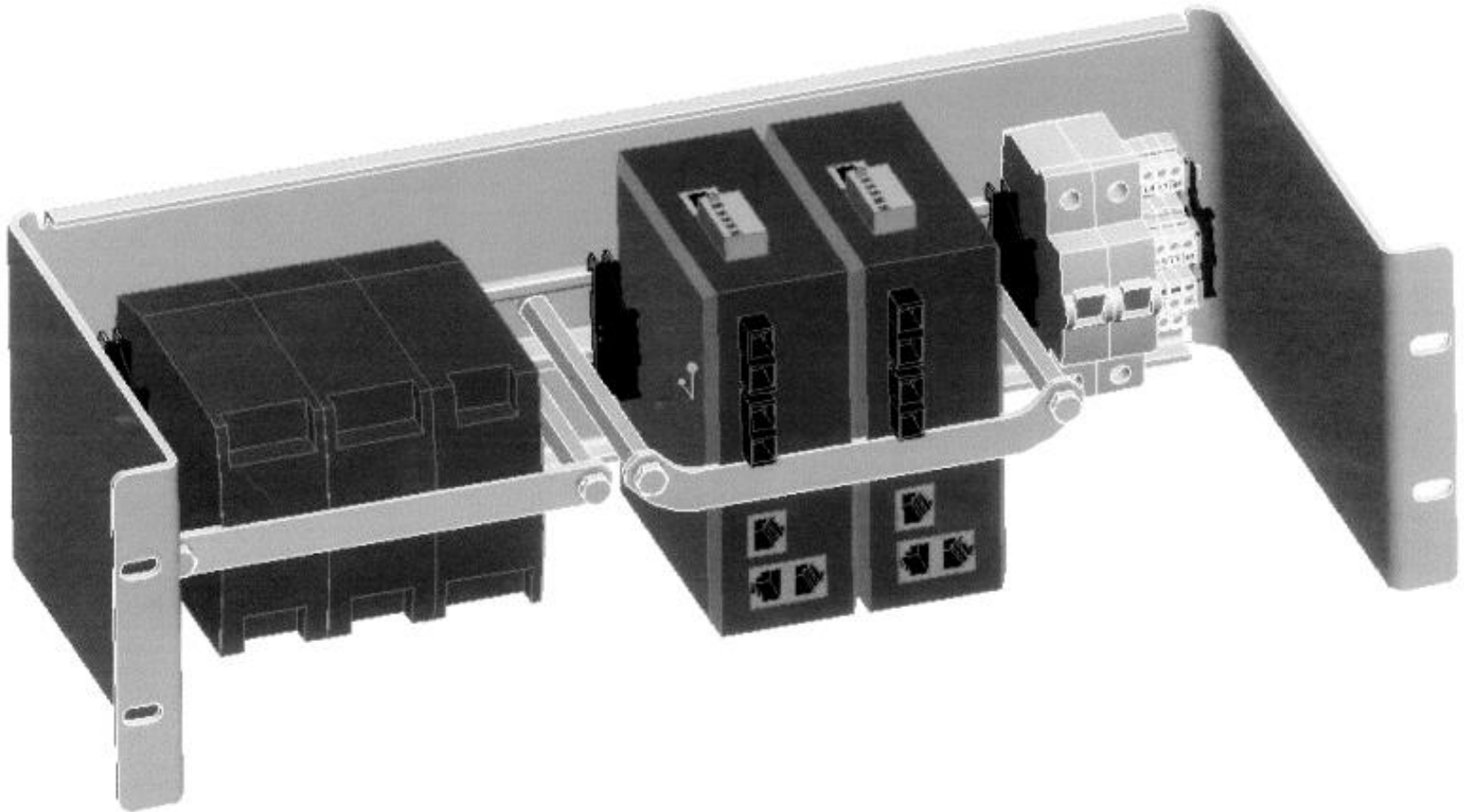
1. ALL DIMENSIONS IN MILLIMETERS

Custom military spec 19" racking configuration for Naval application

6 * STORTYLES ESTIMATED DIMENSIONS

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

PRO/ENG DESIGN



Custom military spec 19" racking electronics mounting for shock and vibration

1) * = INDICATES DIMENSION IS TO BE DETERMINED WITH THE CUSTOMER.



Diagram illustrating the installation of the Maritime Multi Display (MMD) into the PLATE. The diagram shows the PLATE with the KEYBOARD and MMD being installed. A detailed inset shows the MMD being secured with an M4 EARTH NUT (FOR MMD) and an M6 EARTH STUD.

1. ALL DIMENSIONS IN MILLIMETERS
2. EST WEIGHT = 21Kg
3. CENTRE OF GRAVITY POSITION SHOWN THUS 
4. WHEN MOUNTING UNIT ENSURE ADEQUATE CLEARANCE FOR SERVICE ACCESS
5. COMPASS SAFE DISTANCE
STANDARD:-
STEERING:-
6. # SIGNIFIES ESTIMATED DIMENSIONS

FIRST RELEASE	0	A			
MOD	SUFFIX	REV	DATE	APP	

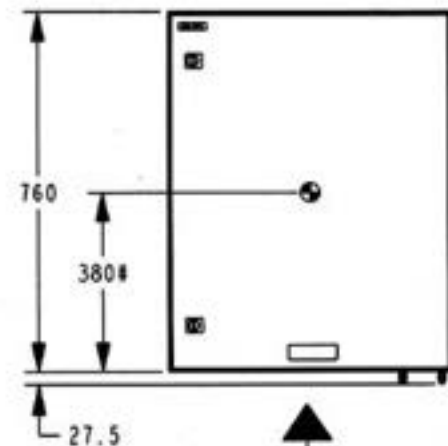
NEW MALDEN, ENGLAND

© NORTHROP GRUMMAN SPERRY MARINE BV 01.09.2004
Each modification of this drawing requires the approval from
NORTHROP GRUMMAN SPERRY MARINE BV in written form.

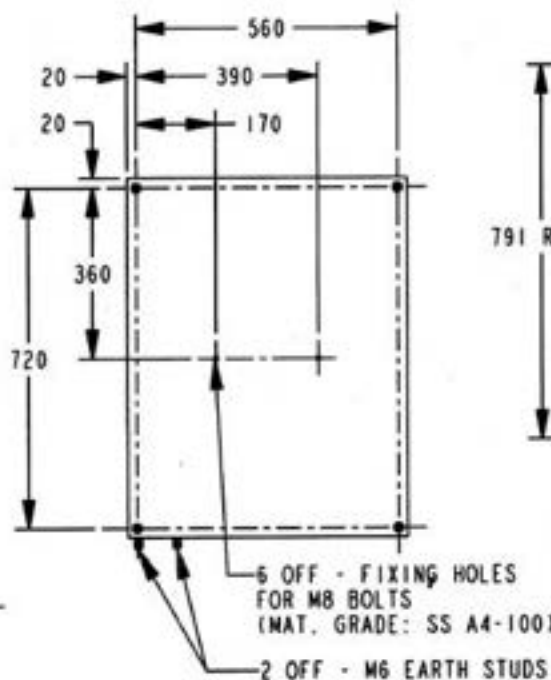
PRO/ENG DESIGN

Custom military spec naval control panel for ship electronics upgrade

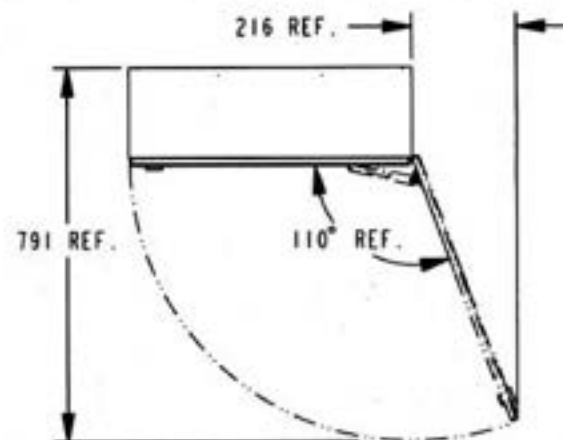
3RD ANGLE PROJECTION



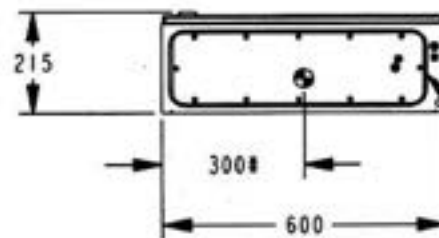
CABLE ACCESS



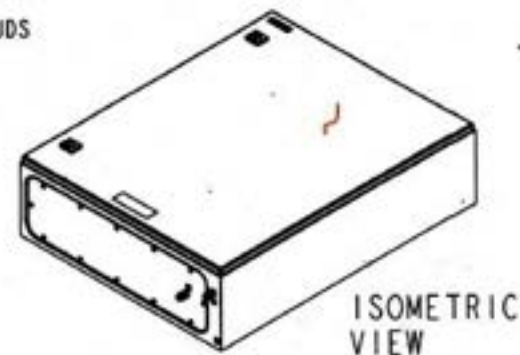
REAR VIEW
(SHOWING FIXING HOLES)



PLAN VIEW
(SHOWING SERVICE ACCESS - WITH DOOR FULLY OPENED)



CABLE ACCESS PLATE



ISOMETRIC VIEW

GENERAL NOTES:

1. ALL DIMENSIONS IN MILLIMETERS
2. EST WEIGHT = 40Kg
3. CENTRE OF GRAVITY POSITION SHOWN THUS
4. WHEN MOUNTING UNIT ENSURE ADEQUATE CLEARANCE FOR SERVICE ACCESS
5. COMPASS SAFE DISTANCE
STANDARD: -
STEERING: -
6. * SIGNIFIES ESTIMATED DIMENSIONS

SECURITY CLASSIFICATION
N.P.M.

DATE
22/06/88
NAME
R.J.F.

TITLE
OUTLINE AND INSTALLATION
DRAWING FOR PMS OUTSTATION

NORTHROP GRUMMAN

Sperry Marine

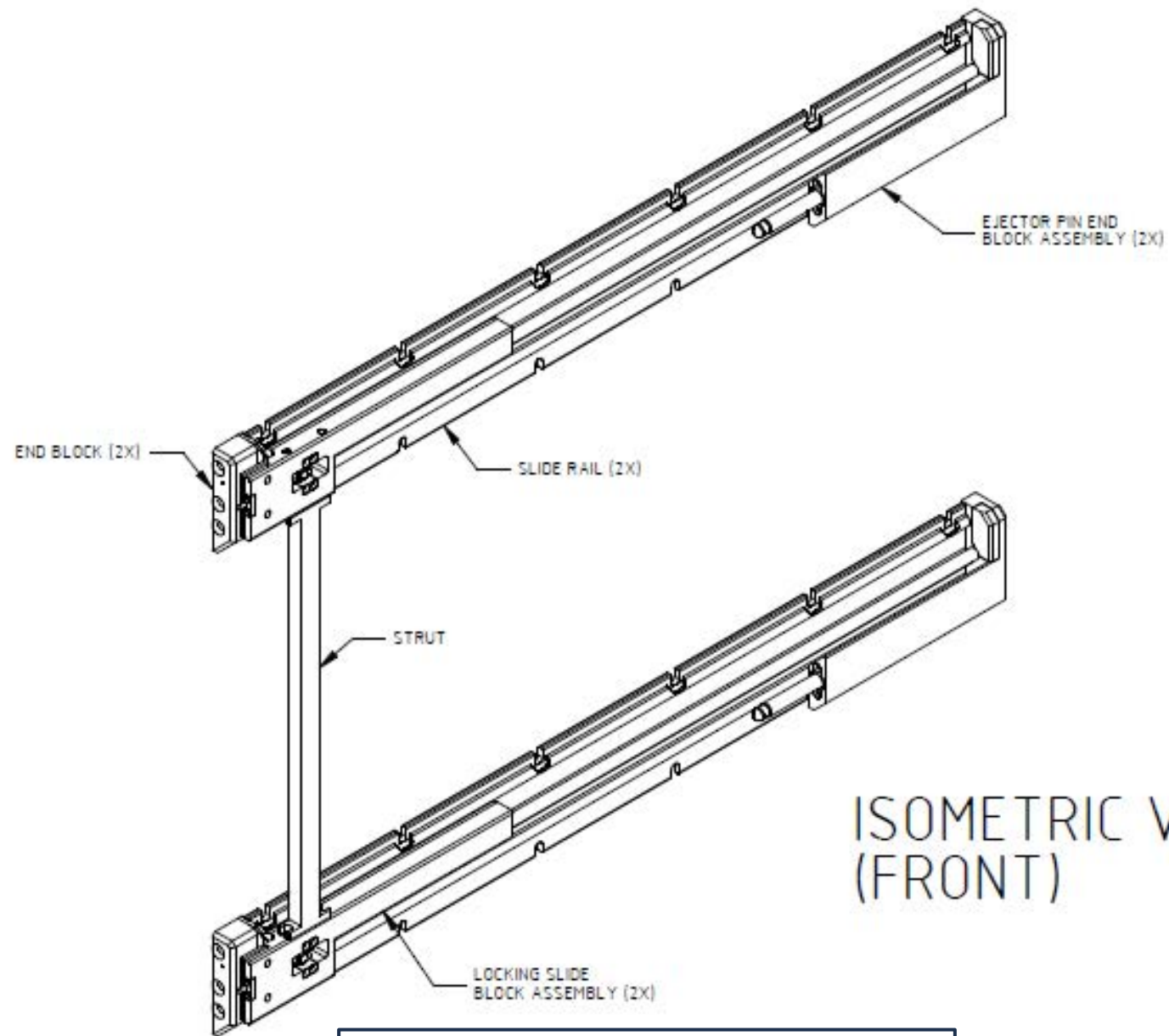
NEW MALDEN, ENGLAND

DRAWING No.
77600050

© NORTHROP GRUMMAN SPERRY MARINE BY 01.06.2000
Each modification of this drawing requires the approval from
NORTHROP GRUMMAN SPERRY MARINE OR its written form.

PROFENG DESIGN

Custom military spec electronics enclosure cabinet



Luxury fold and slide away door mechanism,
door opens and slides back into opening, to
release push the door and it springs out





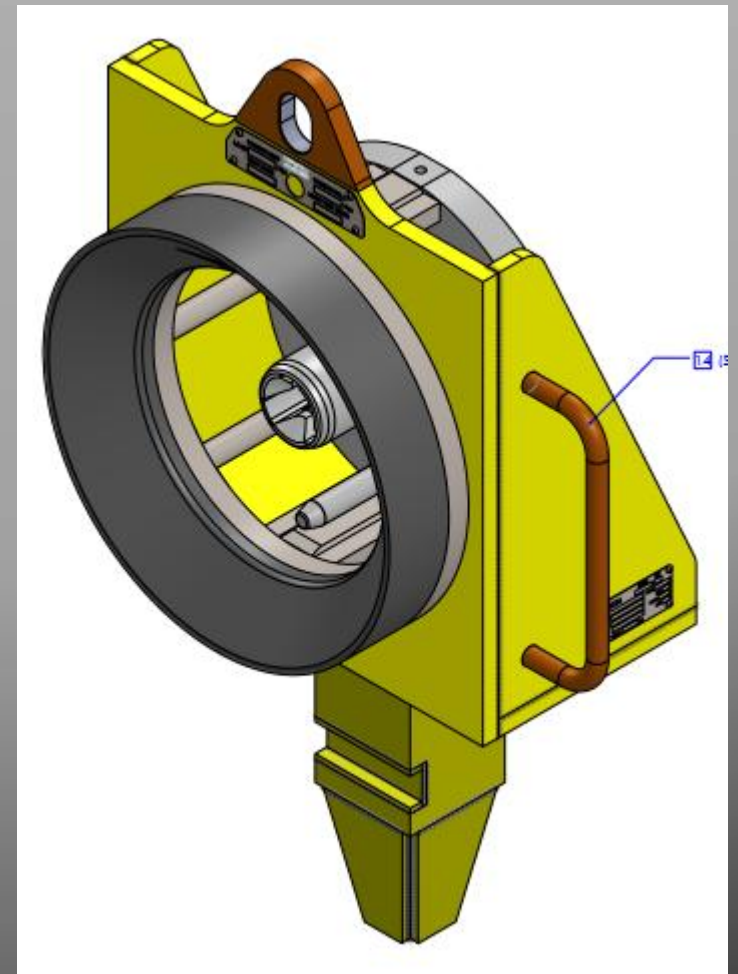
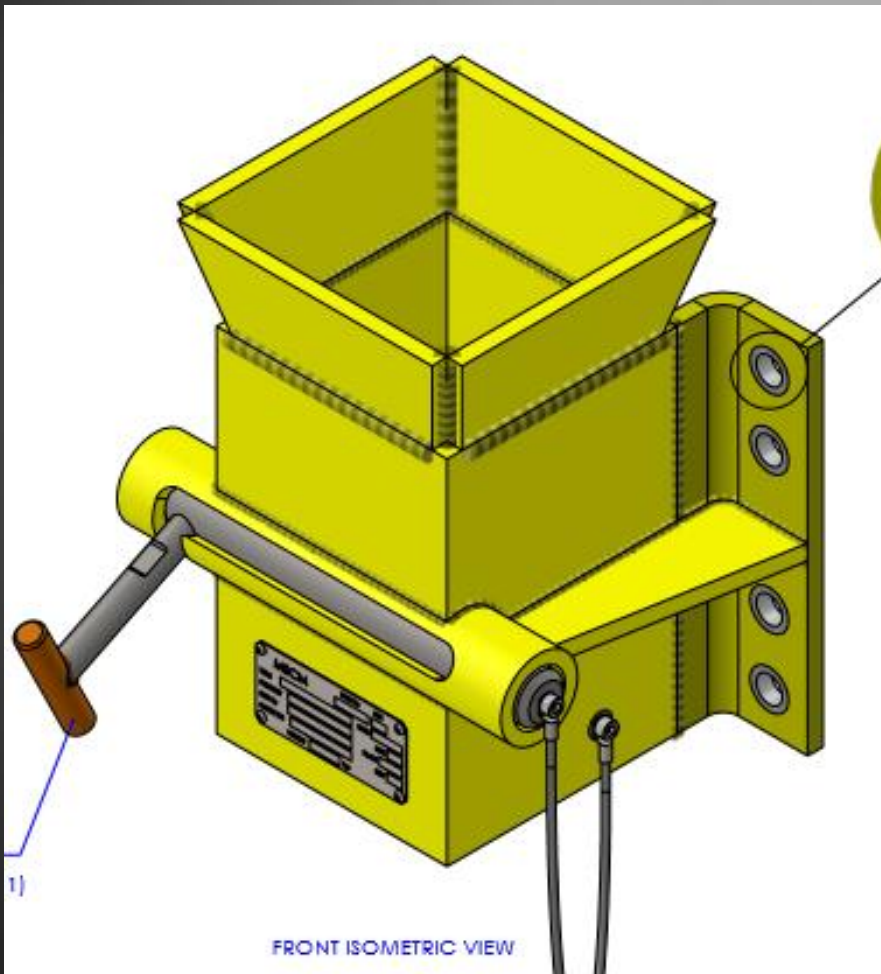
SOUNDING CONSTRAINTS AS STATED BY QUALIFICATION PROCEDURE SPECIFICATIONS	
VERTICAL AND LATERAL	0.75mm (3/32")
DEVIATION	0.400 (1/16")
ADHESIVE BEHAVIOR	0.400 (1/16")
SHRINKING	0.400 (1/16")

SOUNDING COURSE OPTIONS FOR PAUL BUILD	
MINIMUM 3.8" IN COURSE	
REINFORCING COURSE	1.22mm (1/8" or 1/16")
MAXIMUM COURSE	0.75mm (3/32" or 1/16")

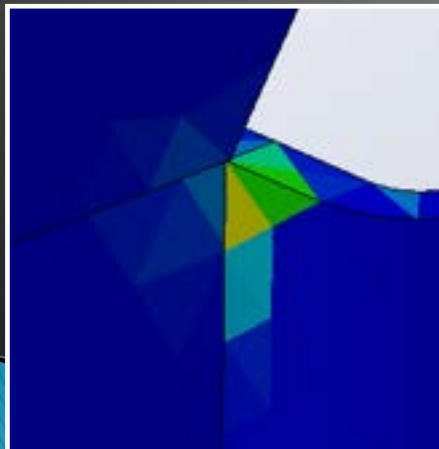
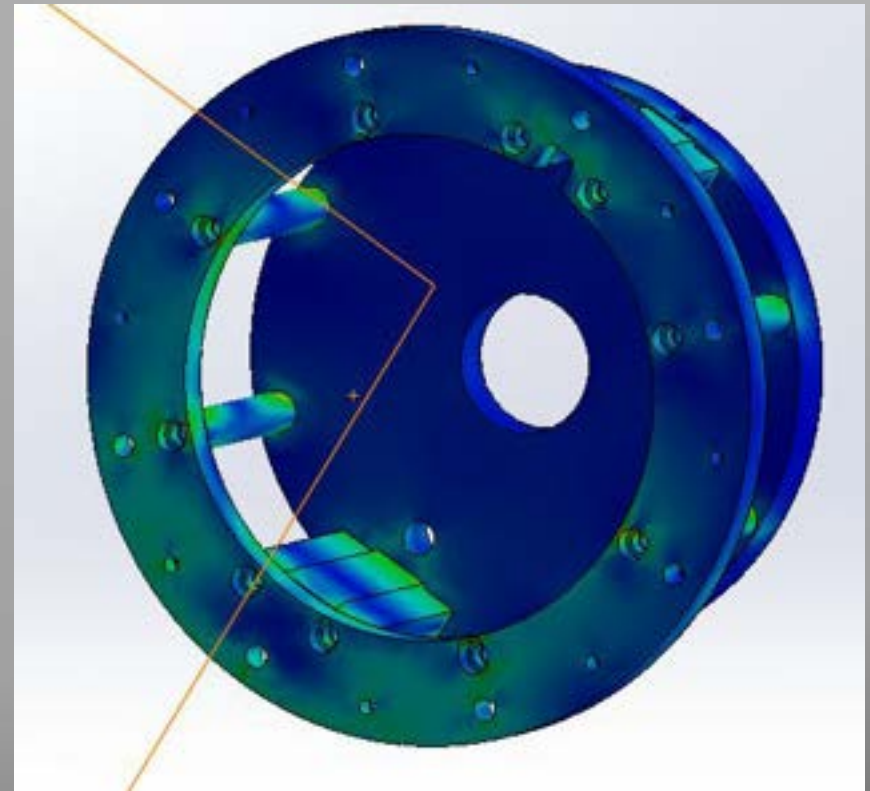
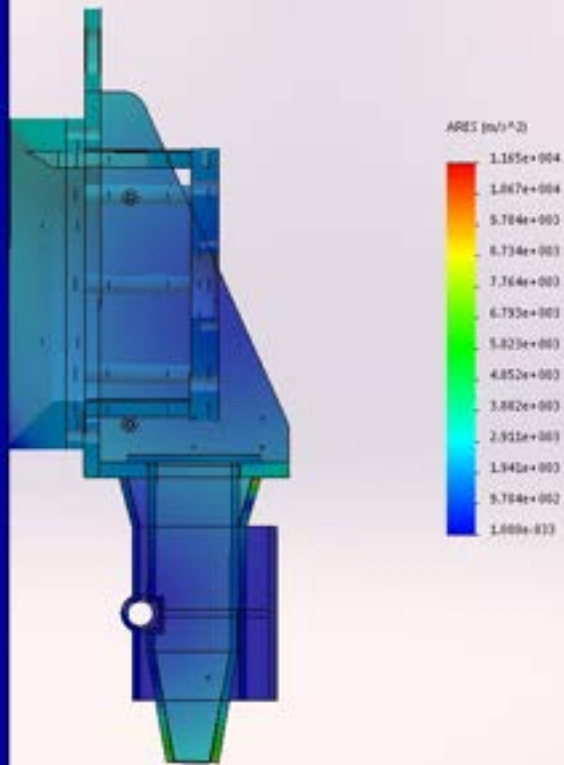
REV	DATE	BY	CHECKED BY	APPROVED BY	DATE
01	2016-10-18				
CONSTRUCTION ROAD CRUISE BUSSES PARK HIGH SPECIFICATION BUCKINGHAMSHIRE HP15 9JX					
					
TEL: +44 (0) 1494 713333 SUPPORTING THE OIL AND GAS INDUSTRY FAX: +44 (0) 1494 867175					
FREE STADPLATE HPL TYPE 2 MOUNTED 10 WAY BAHR ESSALAM II					
Drawing No:					
A5154010					
Date:	Sheet No.	Sheet Of			Rev
1-12	1	5			A5
DO NOT SCALE DRAWING					
TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONAL ± 0.2 ANGLES ± 0.5° SURFACE ± 0.1 FINISHES TO BS 2869			  ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED		
© MSCM 2014					
This Document Contains Information Proprietary to MSCM And Shall Not Be Reproduced Or Transferred To Other Documents Or Disclosed To Others Or Used For Any Purpose Other Than That From Which It Is Furnished Without The Prior Written Permission Of MSCM.					



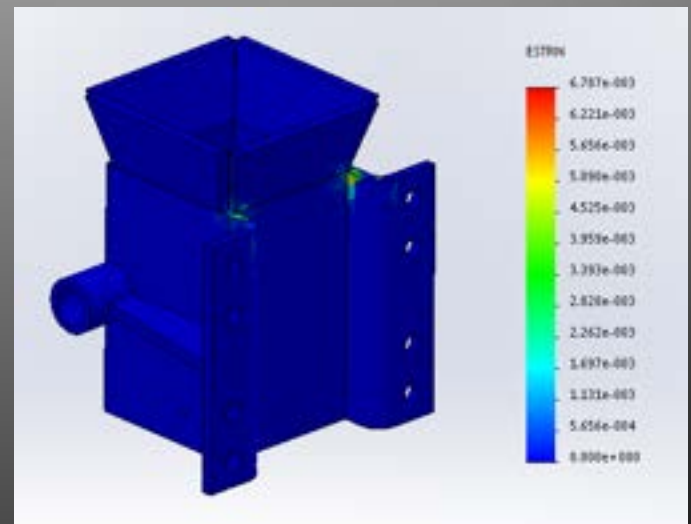
Subsea high pressure hydraulic stabplate and chassis

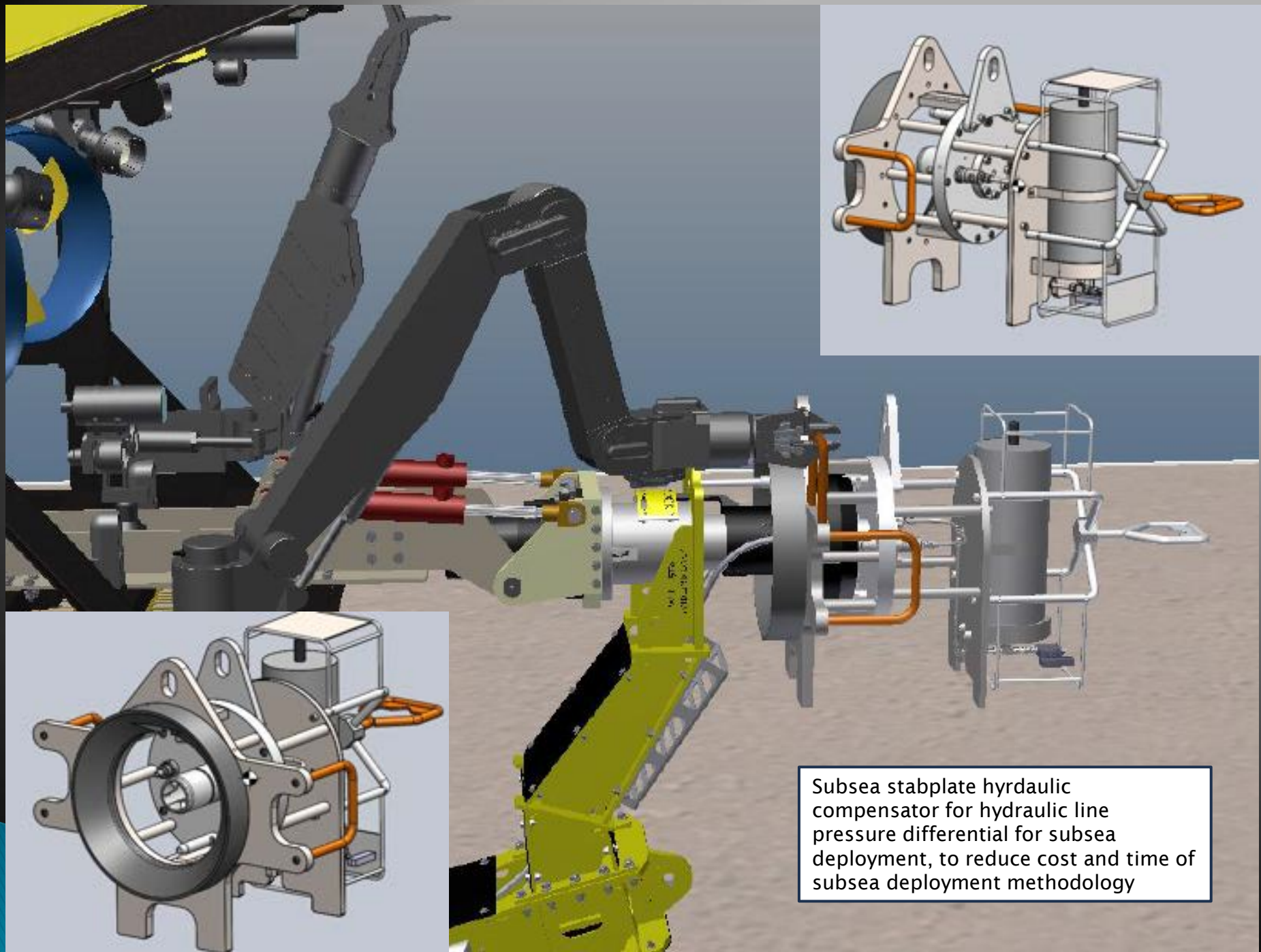


Subsea temporary parking plate
and receptacle (for stab plates)
for Xmas tree

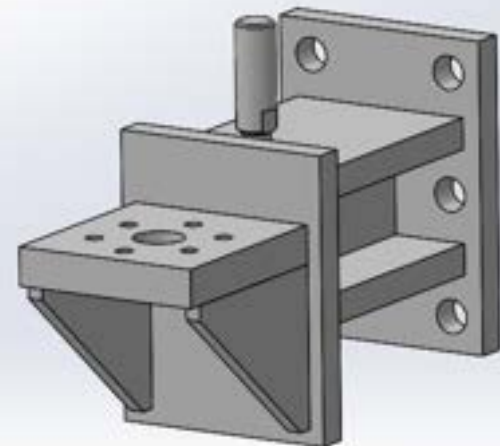
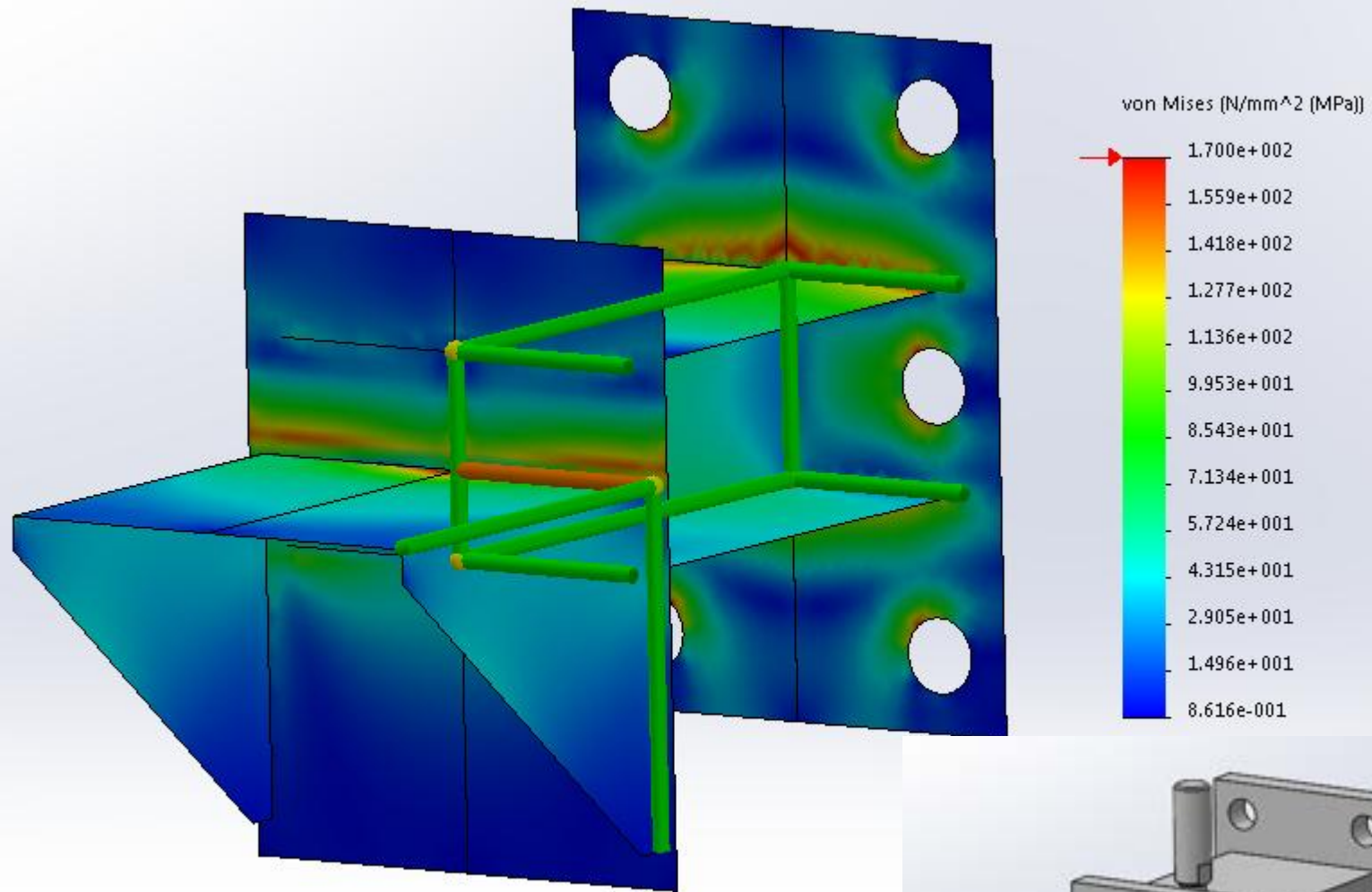


Dynamic FEA of
Subsea
temporary
parking plate
and receptacle to
verify it meets
DNV impact
requirements





Subsea stabplate hydraulic compensator for hydraulic line pressure differential for subsea deployment, to reduce cost and time of subsea deployment methodology



FEA welded joint and beam structural analysis

Reaction Boss Linearization Results (SCP Top of Fillet)

The allowable stress values, based on DNV-RP-F112 are:

Yield Strength of Super Duplex = 550MPa

Allowable Membrane Stress = 80% of Yield Strength = 440MPa

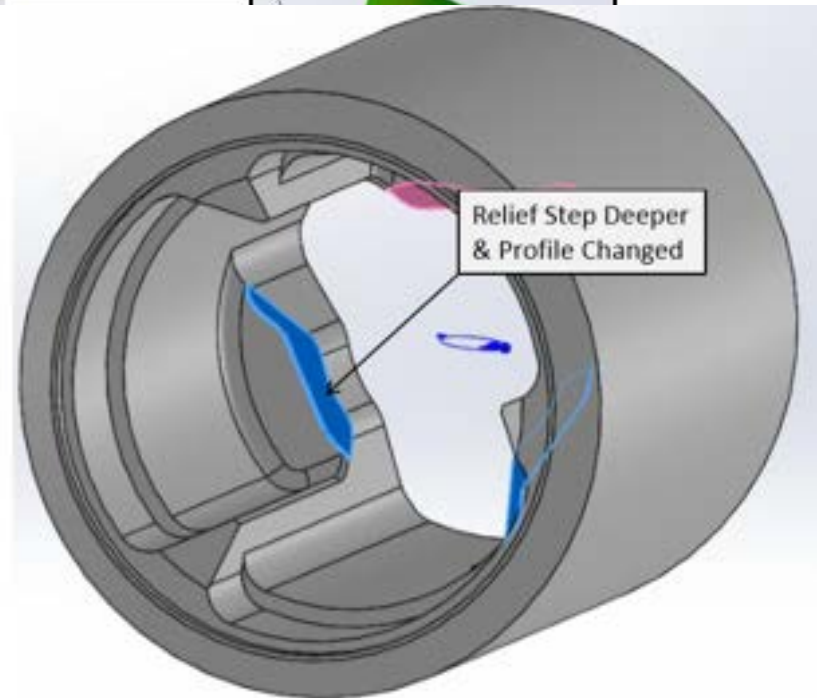
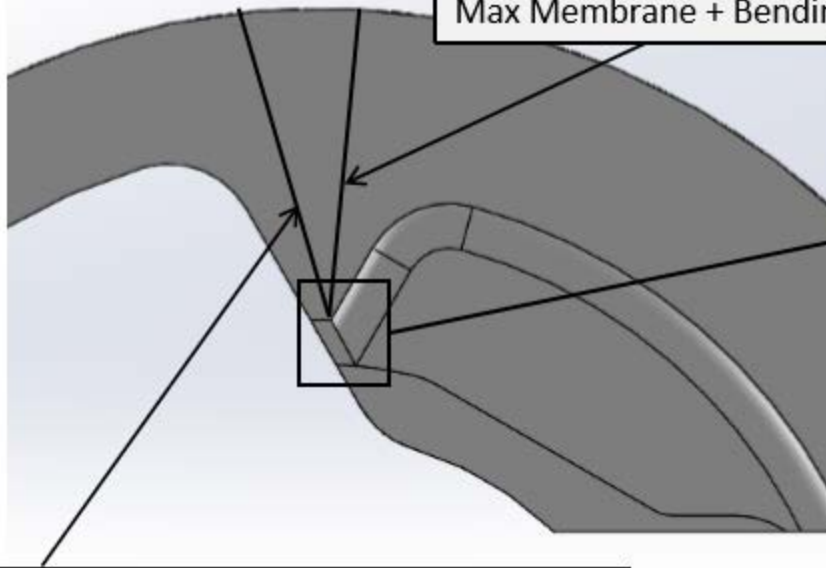
Allowable Membrane + Bending Stress = 90% of Yield Strength = 495MPa

FEA Stress
linearization to
DNV of reaction
boss

Membrane Stress = 199 MPa VM
Max Membrane + Bending = 489 MPa VM

Membrane Stress = 173 MPa VM
Max Membrane + Bending = 413 MPa VM

Relief Step Deeper
& Profile Changed



Tri Probe Linearization Results

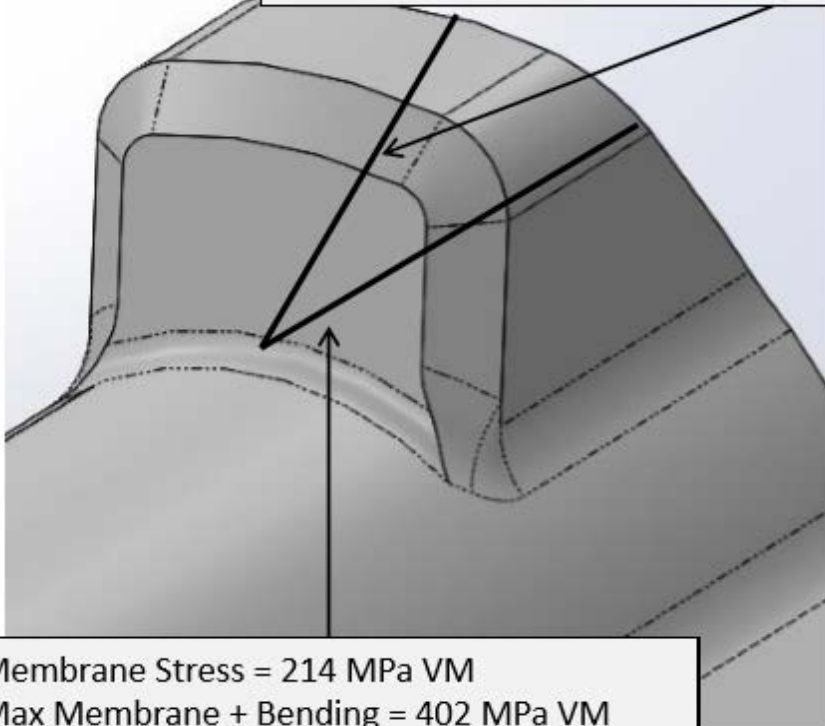
Yield Strength of Hiduron = 630MPa

Allowable Membrane Stress = 80% of Yield Strength = 504MPa

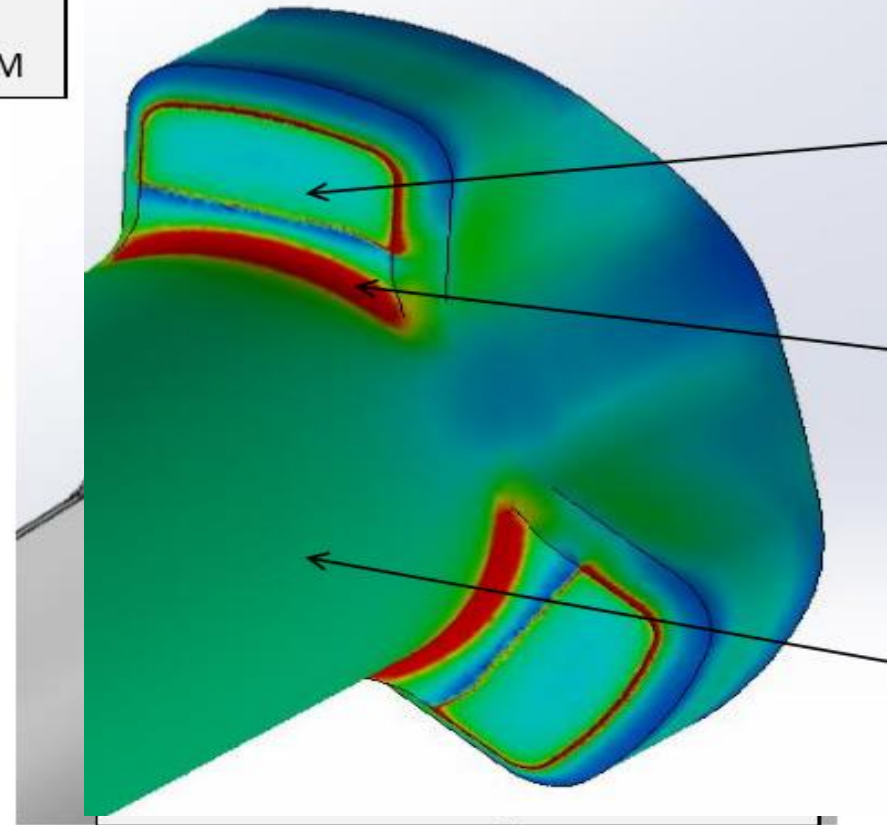
Allowable Membrane + Bending Stress = 90% of Yield Strength = 567MPa

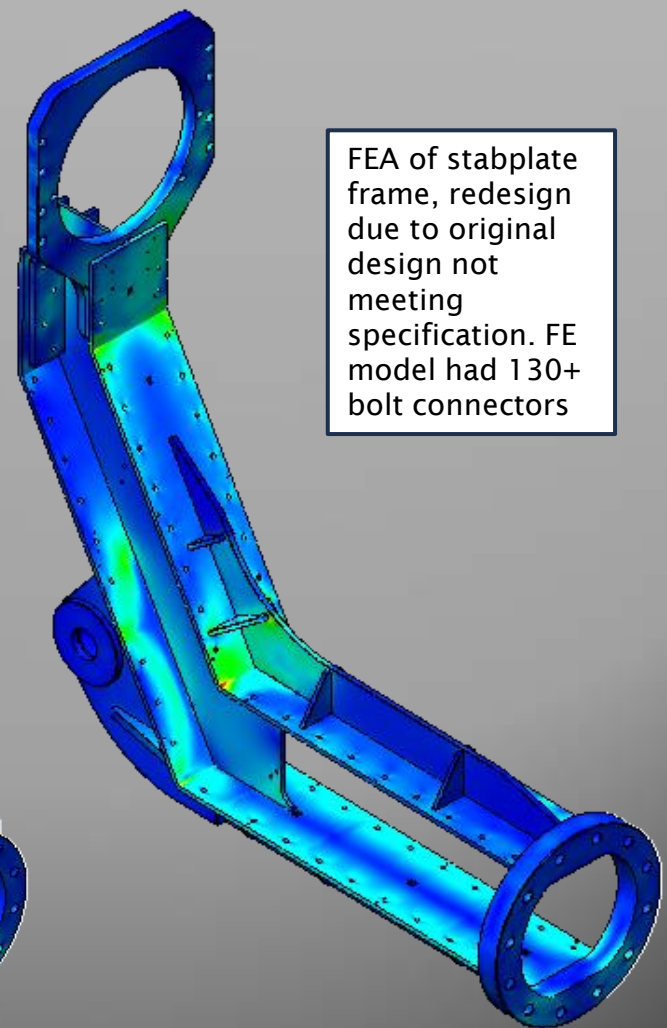
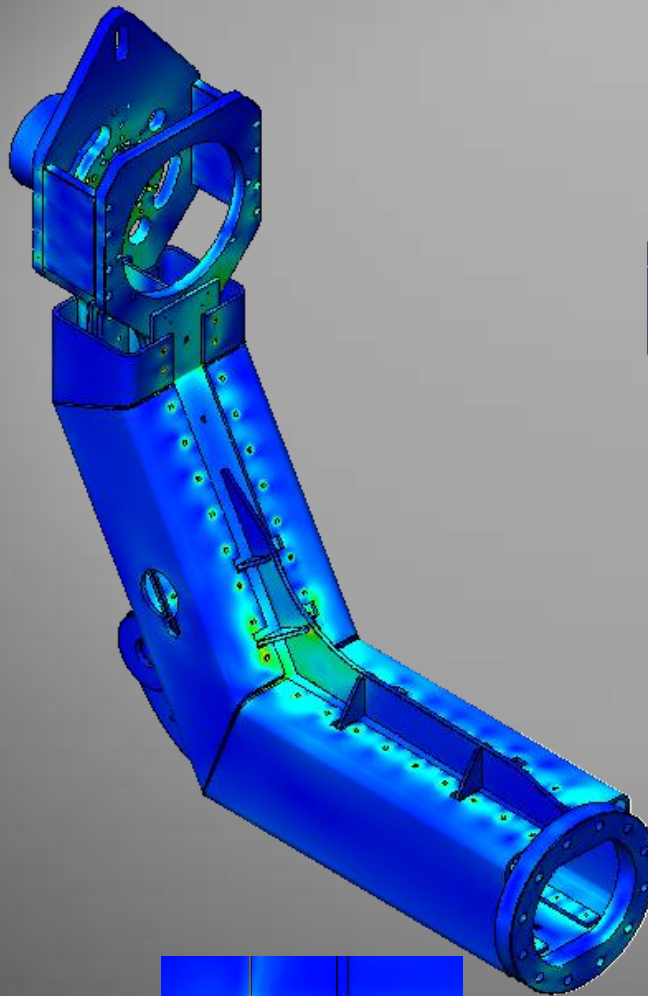
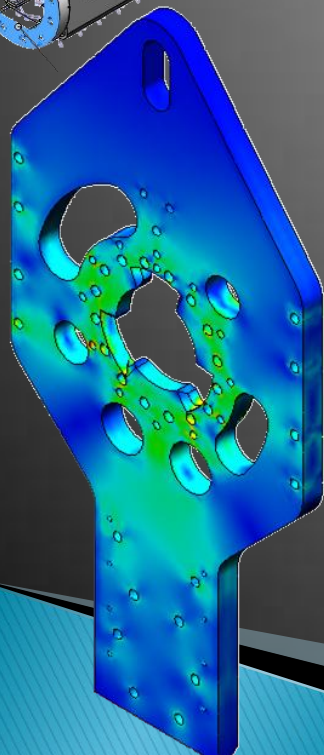
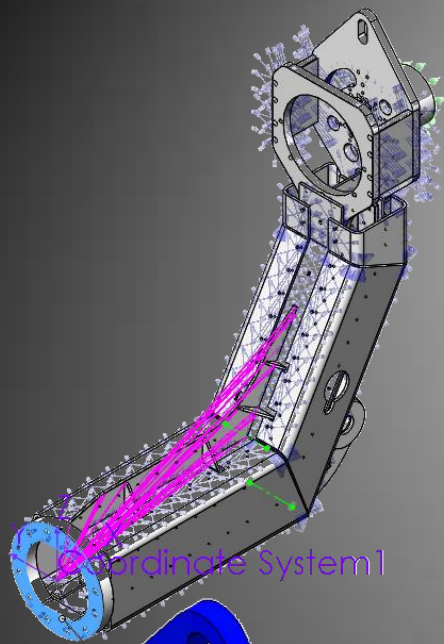
FEA Stress linearization to DNV of tri probe, redesign of part due to failure, strength increased by 40% within same size envelope

Membrane Stress = 277 MPa VM
Max Membrane + Bending = 552 MPa VM

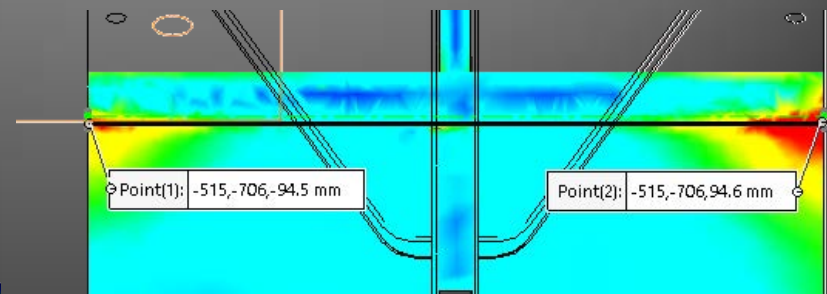
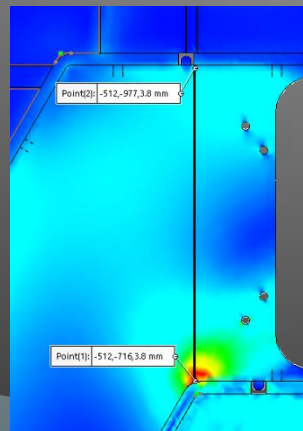


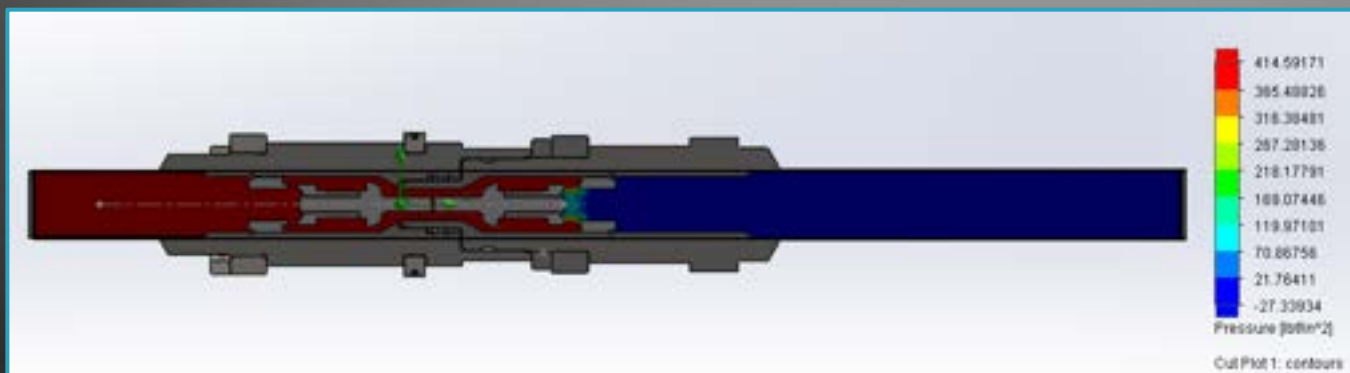
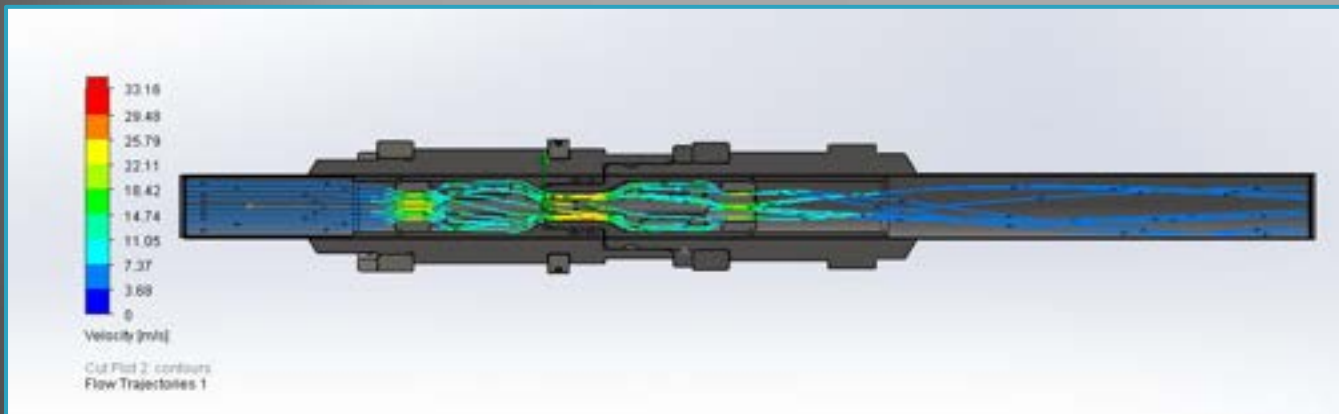
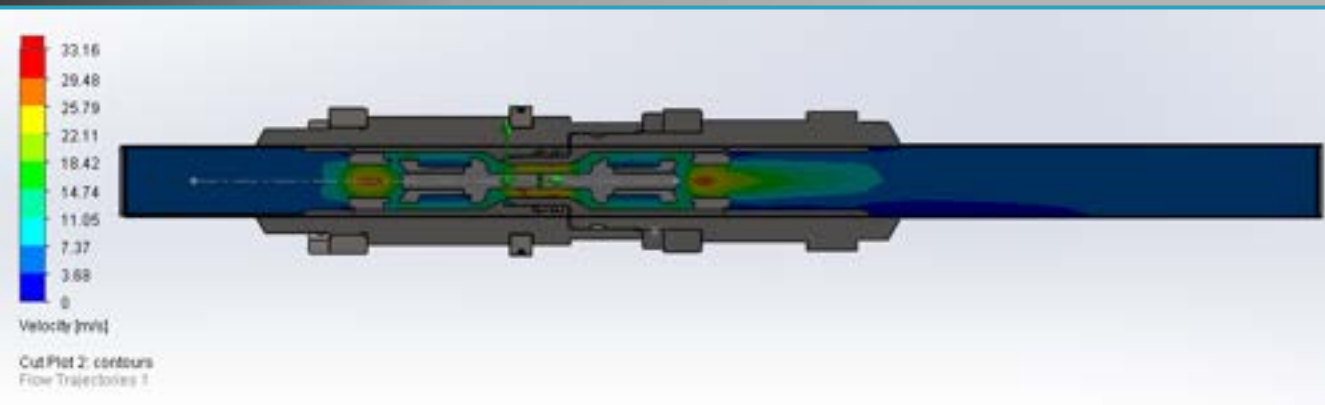
Membrane Stress = 214 MPa VM
Max Membrane + Bending = 402 MPa VM



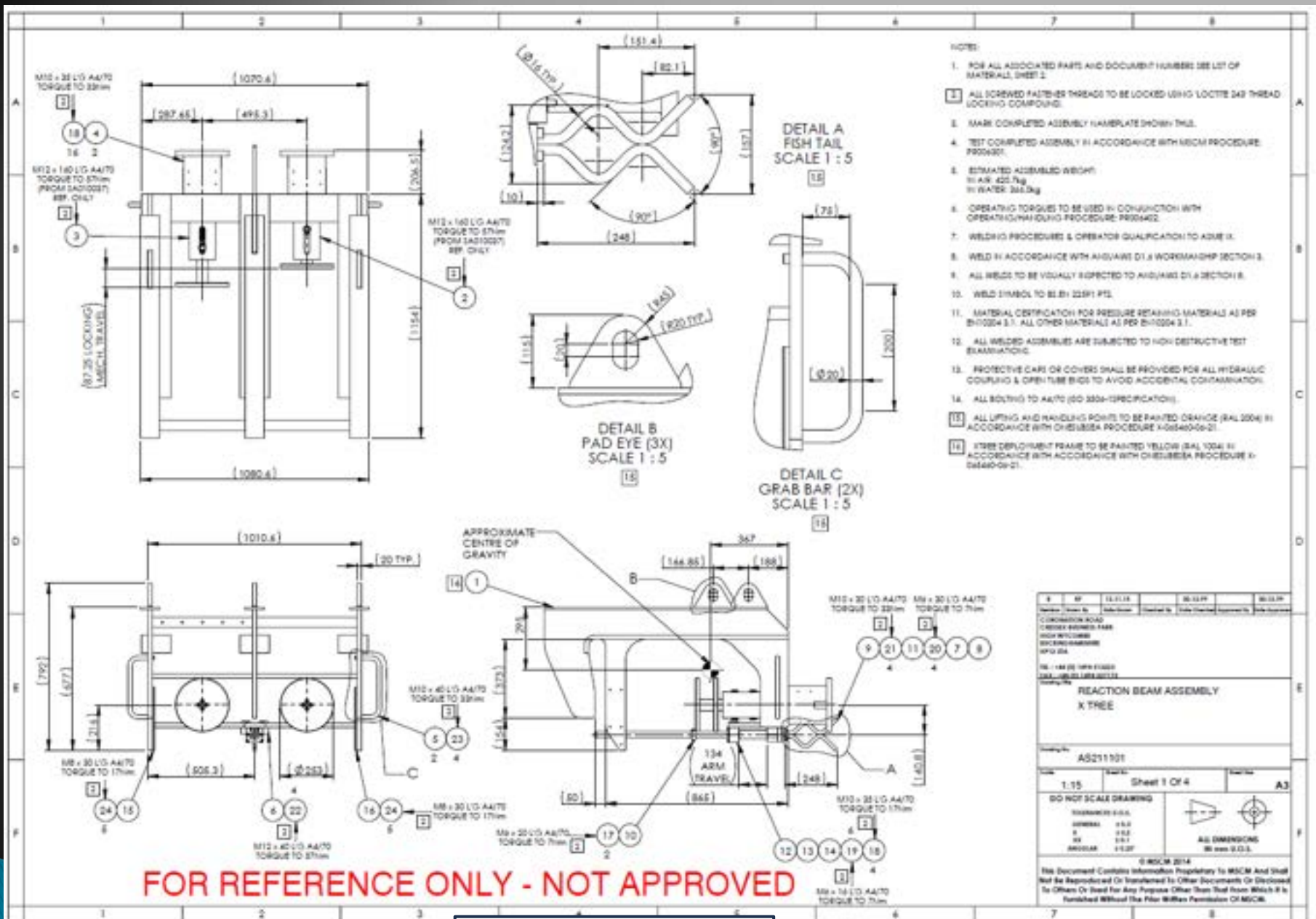


FEA of stabplate frame, redesign due to original design not meeting specification. FE model had 130+ bolt connectors



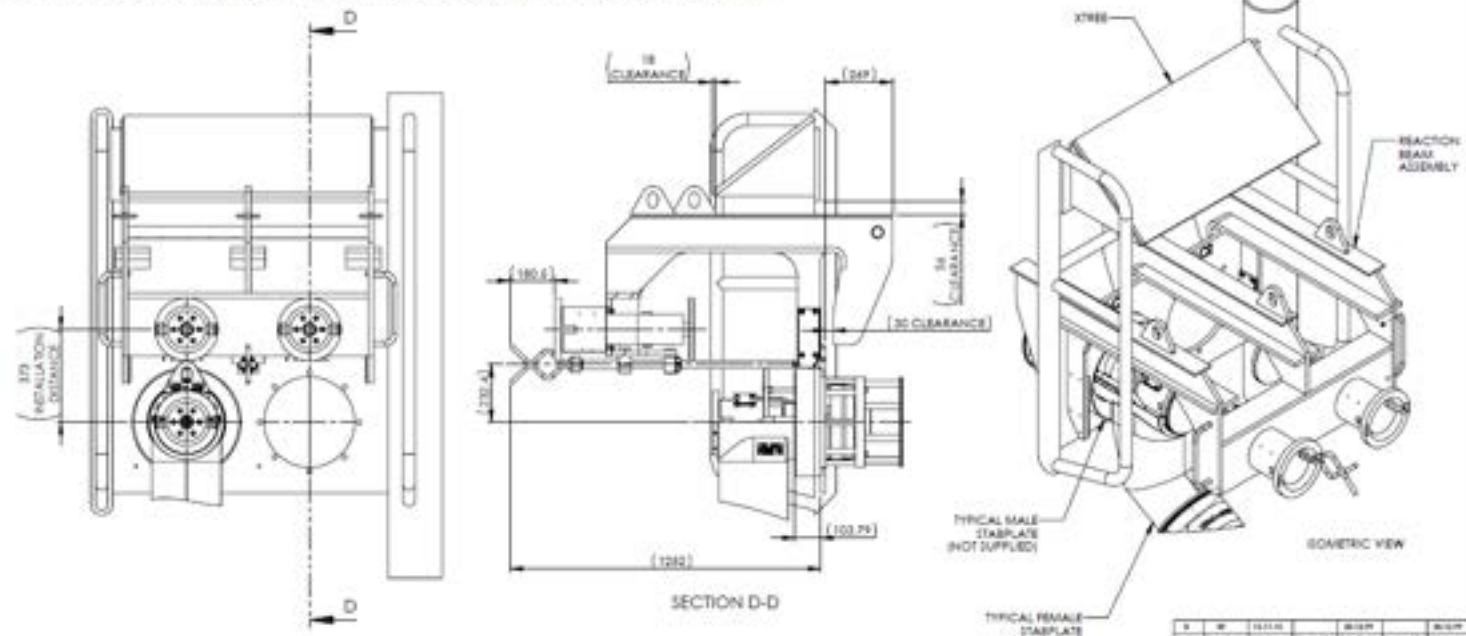


Design and CFD of high flow subsea coupling assembly, reduced pressure drop by 60%

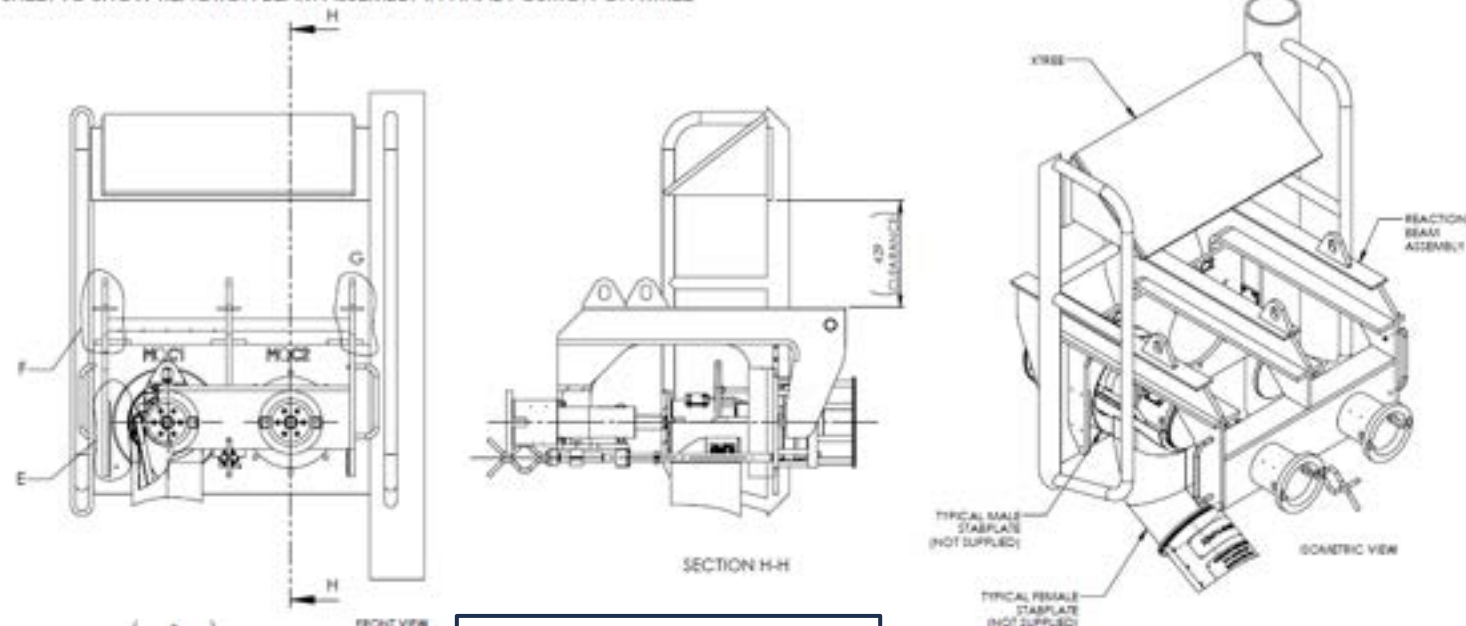


Stabplate subsea recovery structure for failed unit

SHEET TO SHOW REACTION BEAM ASSEMBLY IN INSTALLATION POSITION ON XTREE

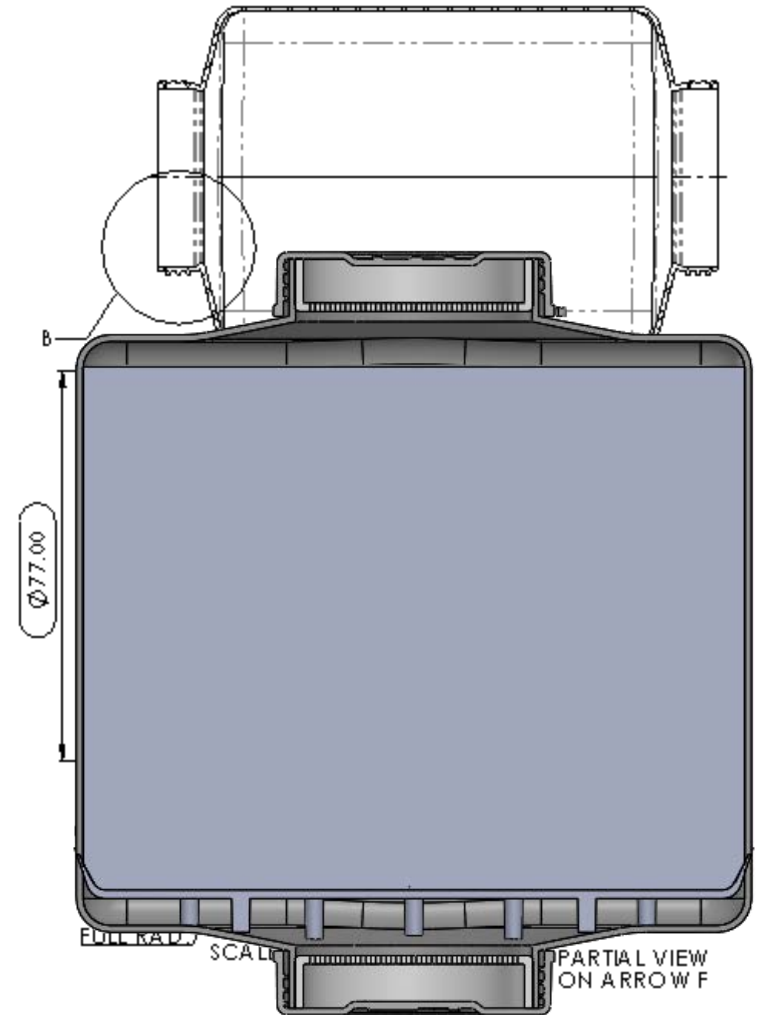
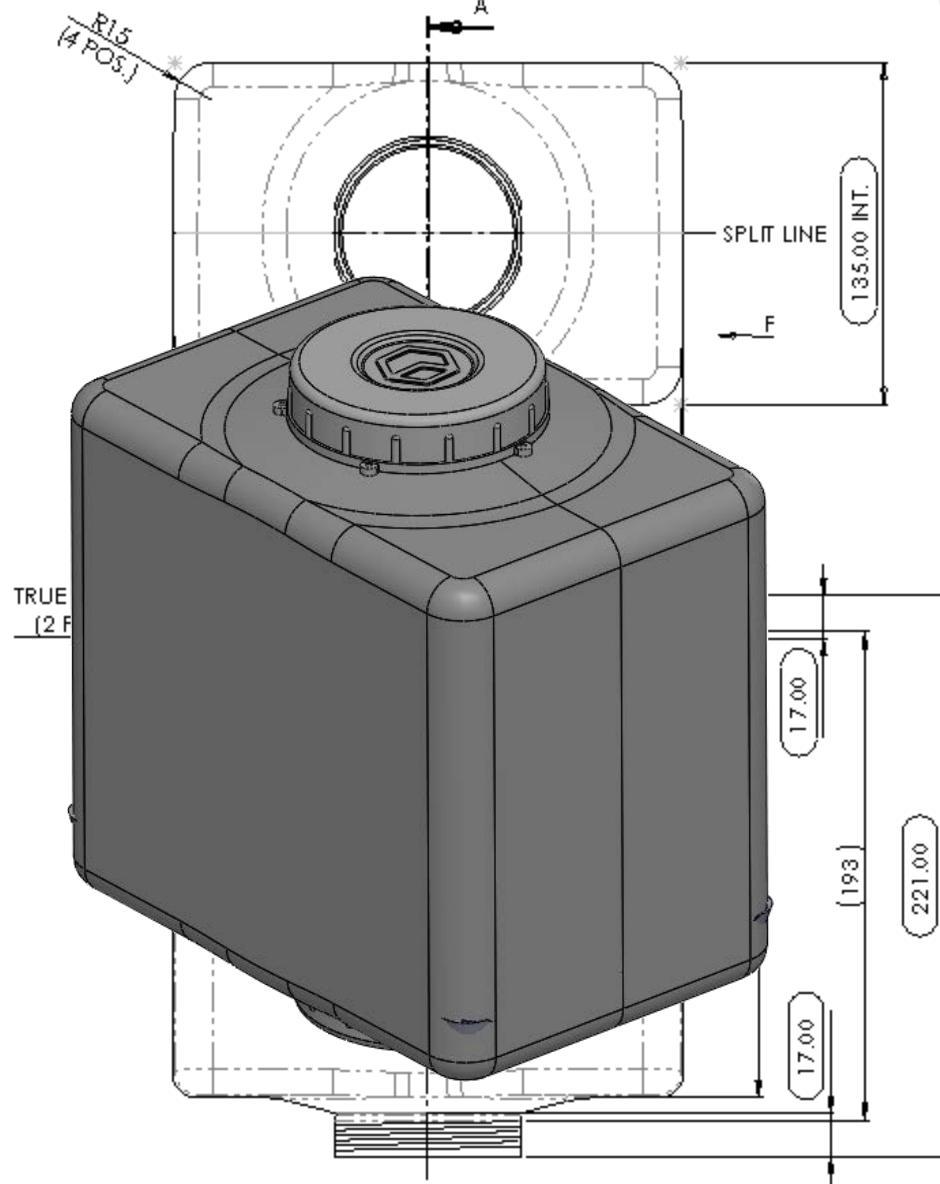


SHEET TO SHOW REACTION BEAM ASSEMBLY IN FINAL POSITION ON XTREE



Stabplate subsea recovery structure for failed unit

NOTES: SEE



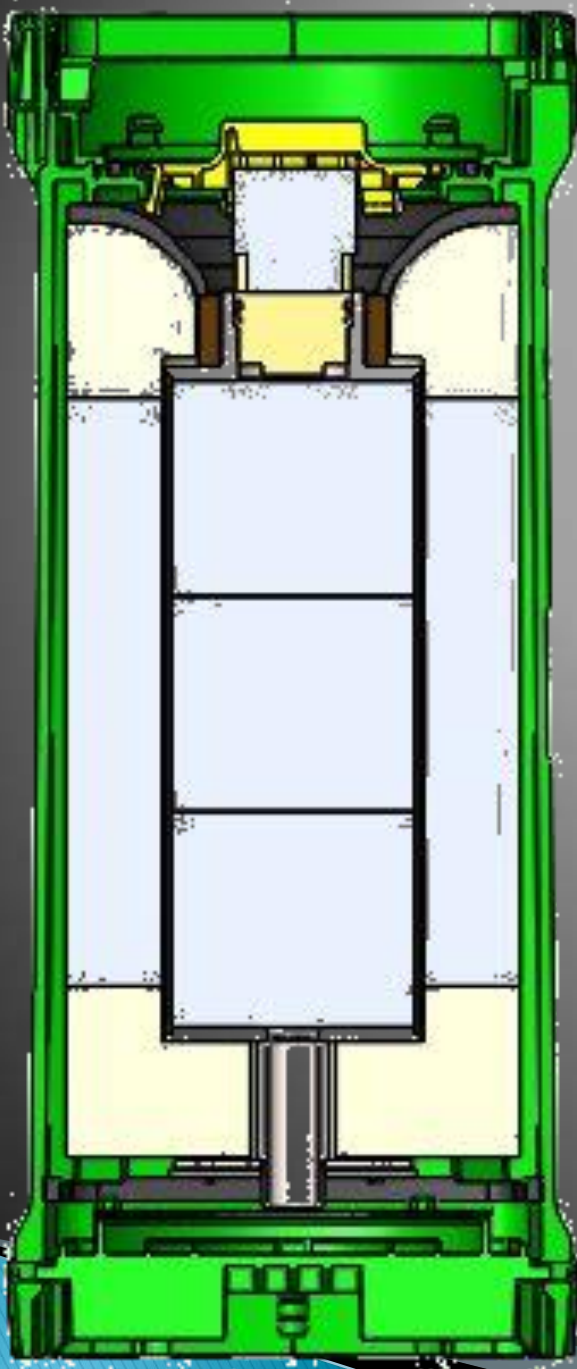
DRAFT

Blow moulded and injection moulded CO2 chemical absorber (military specification) for submarine naval systems

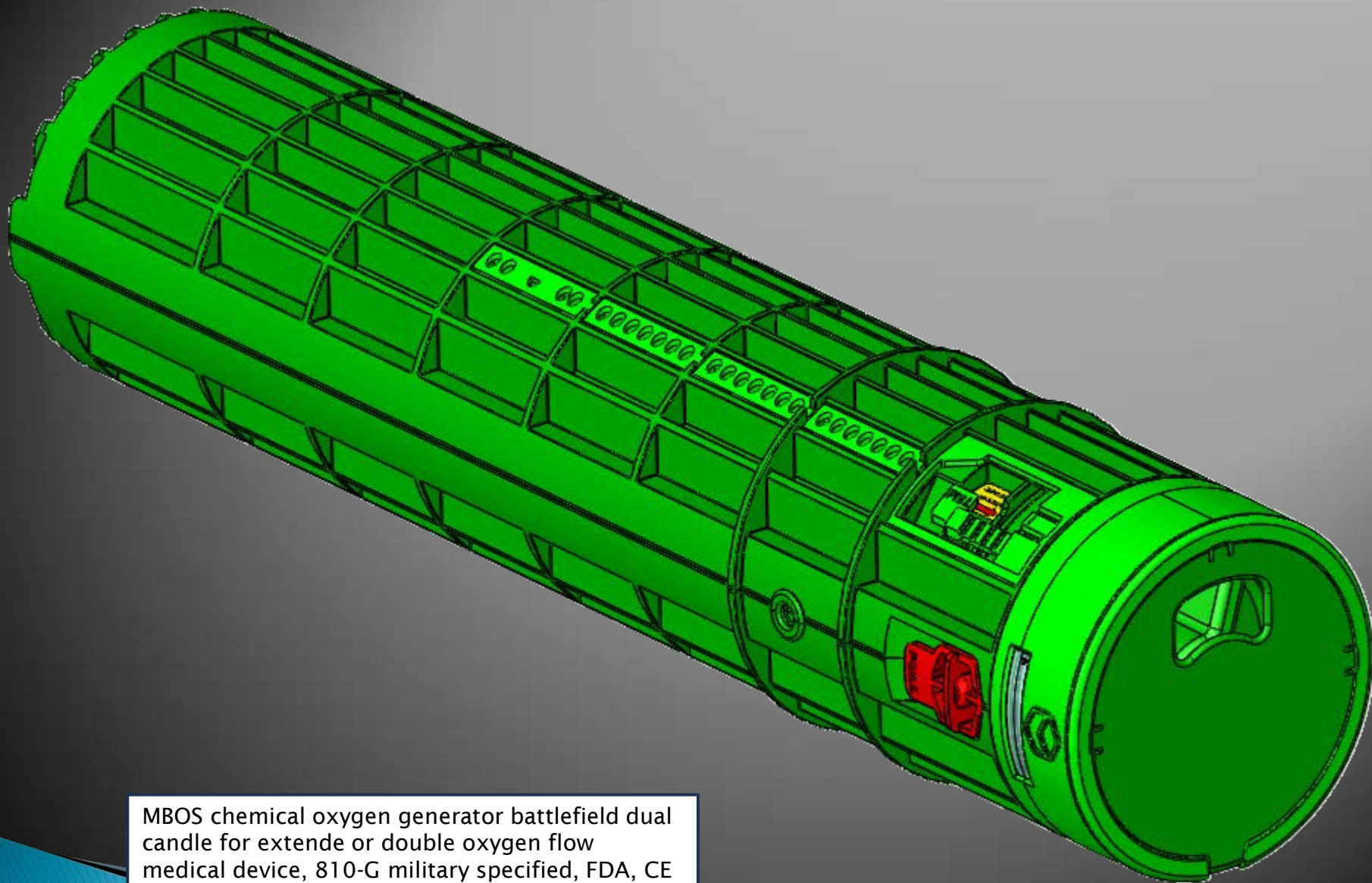
ONLY

APPROVED BY REVIEWED BY				DESIGNED AND DRAWN BY		CHECKED AND APPROVED BY	
DATE				DATE		DATE	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY				BY		BY	
FOR				FOR		FOR	
BY							

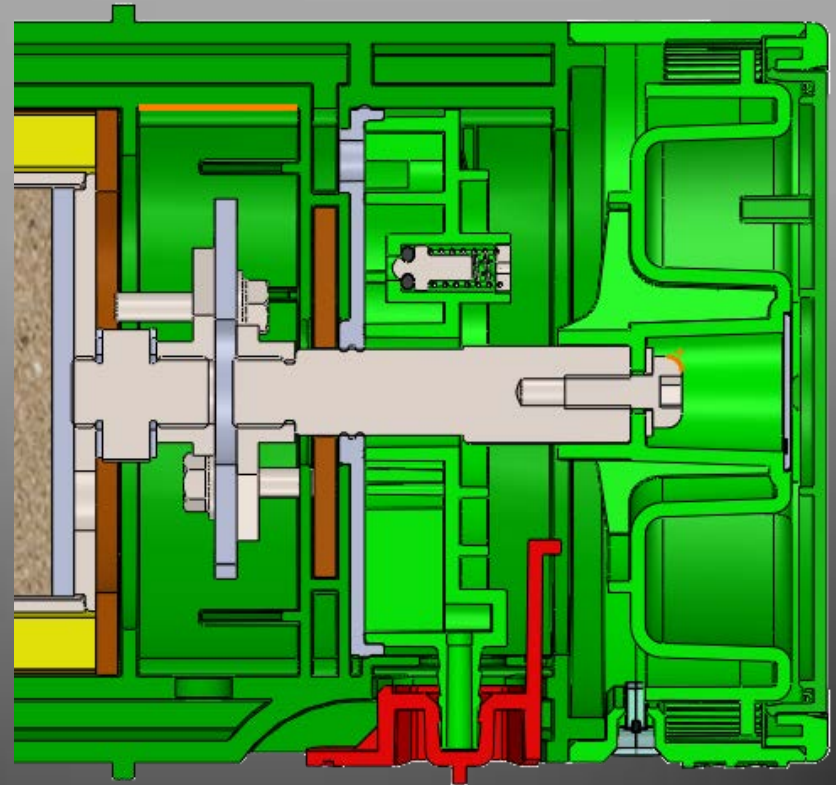
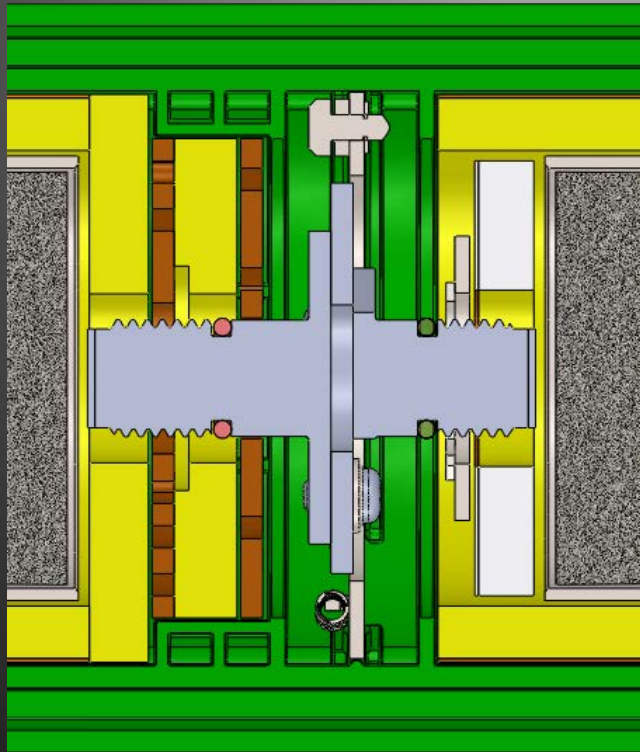
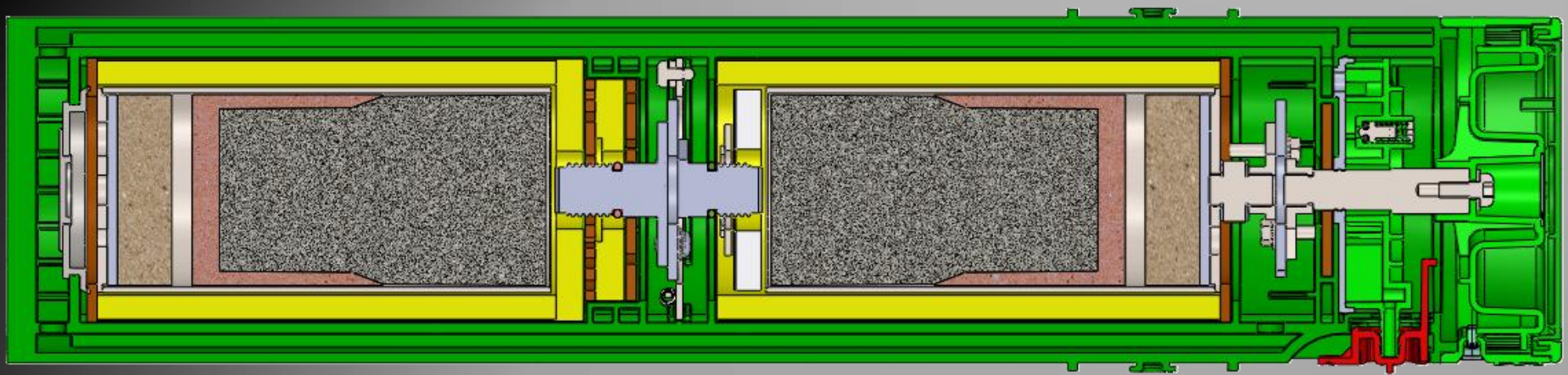




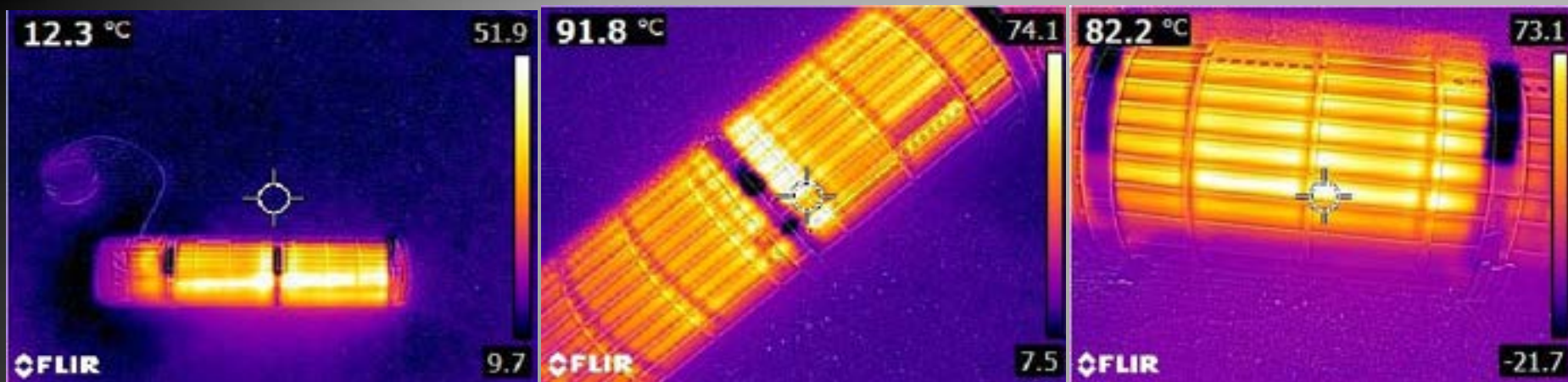
ROG chemical oxygen generator battlefield medical device, 810-G military specified, FDA, CE approved medical device



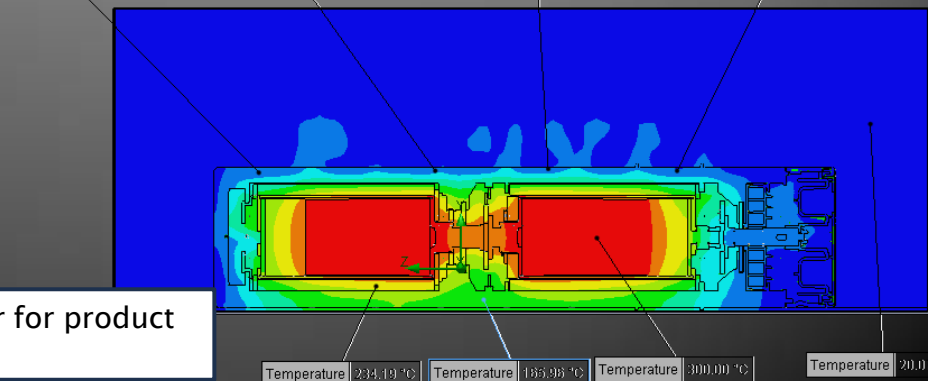
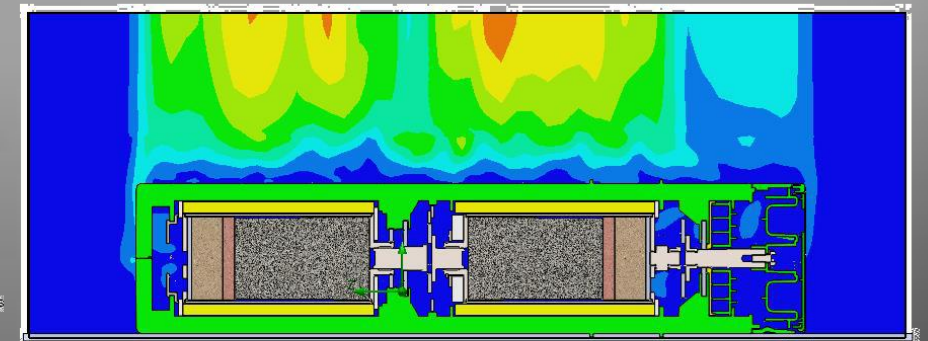
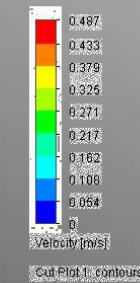
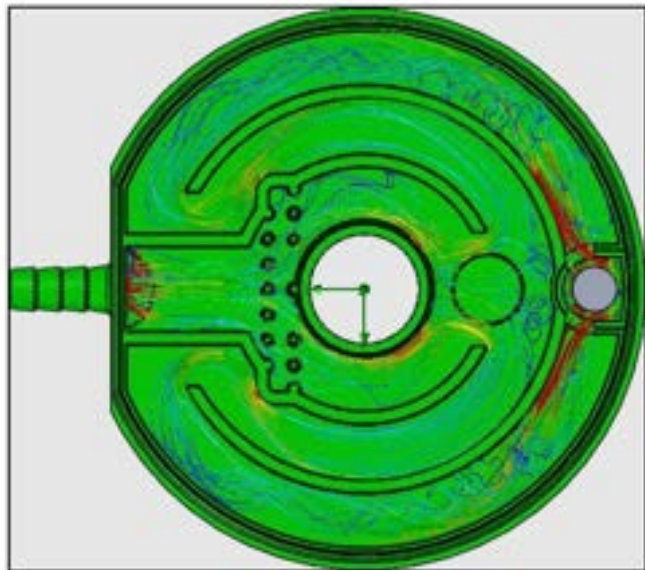
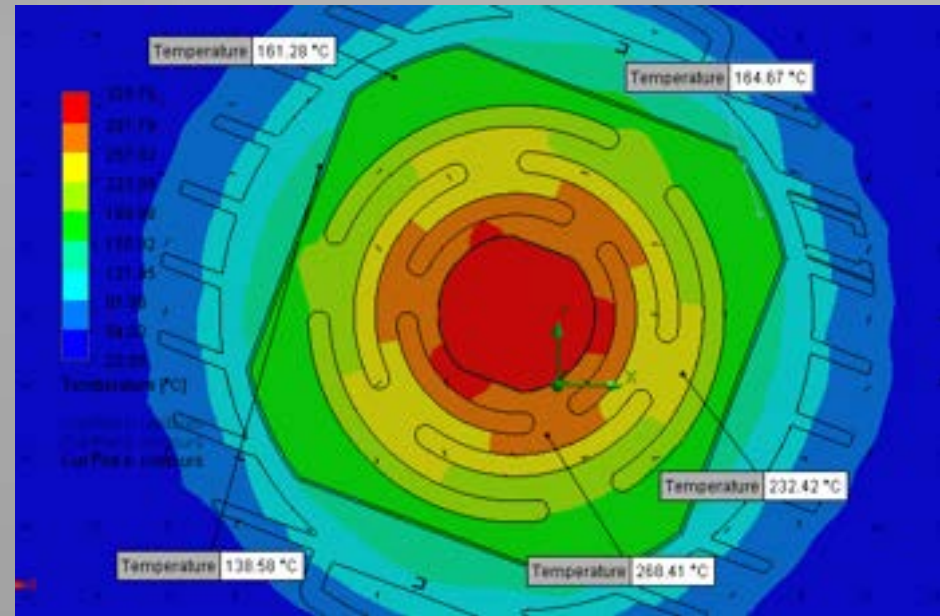
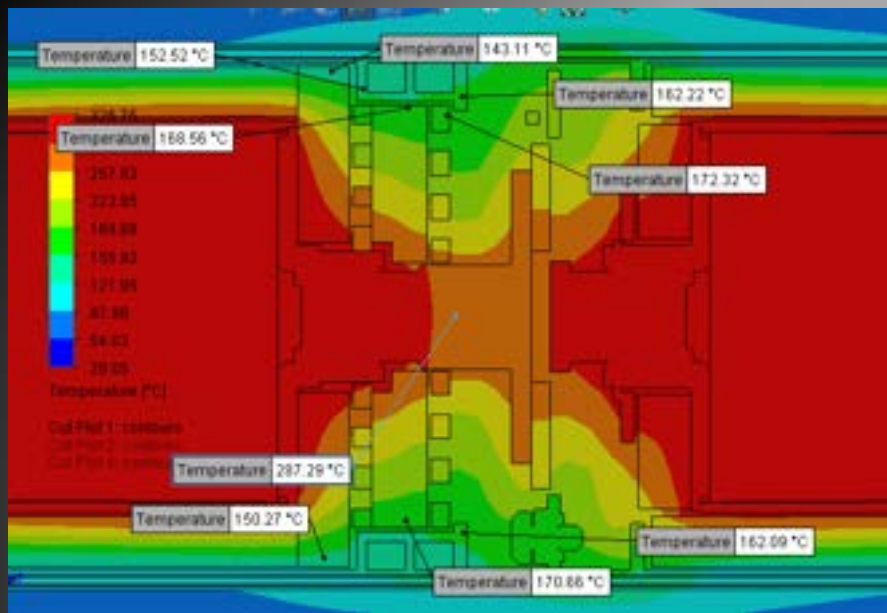
MBOS chemical oxygen generator battlefield dual candle for extend or double oxygen flow medical device, 810-G military specified, FDA, CE approved medical device



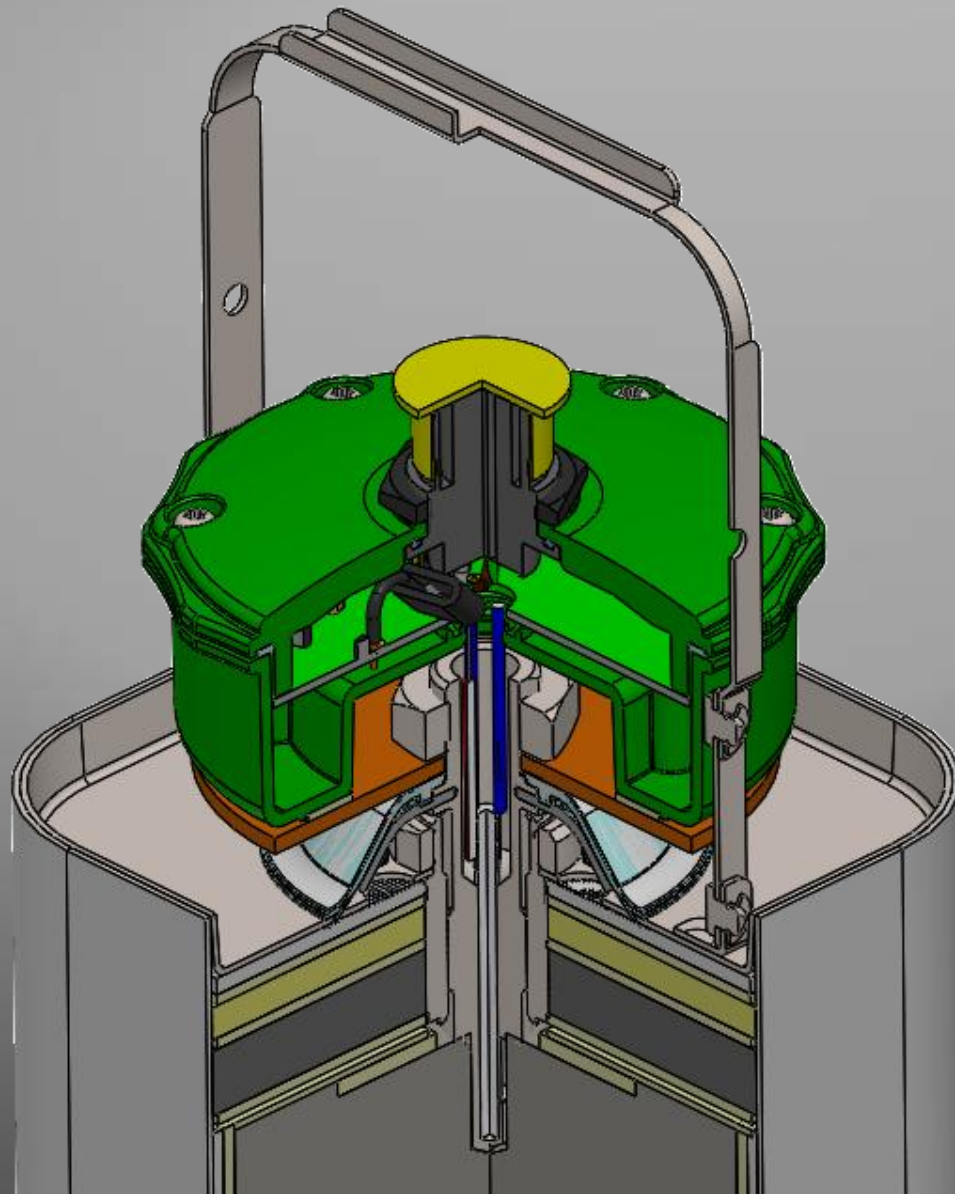
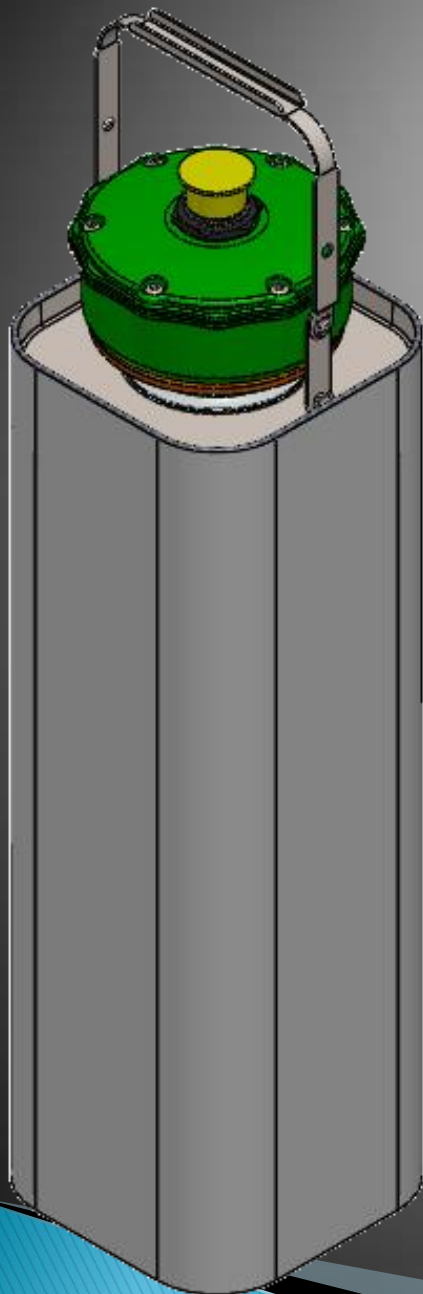
MBOS chemical oxygen generator battlefield dual candle for extend or double oxygen flow medical device, 810-G military specified, FDA, CE approved medical device



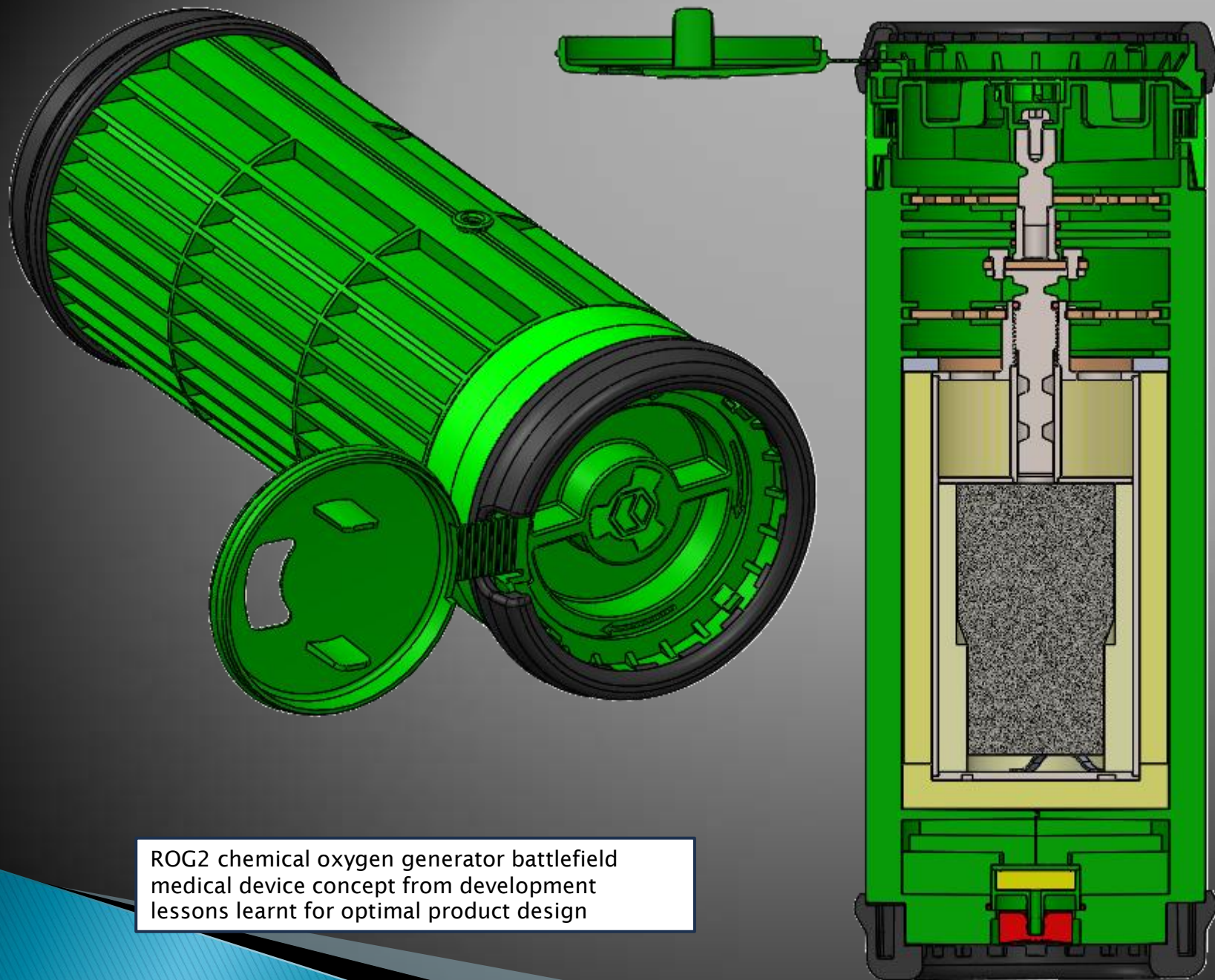
MBOS chemical oxygen generator battlefield dual candle for extend or double oxygen flow medical device, 810-G military specified, FDA, CE approved medical device



CFD (airflow and thermal) of MBOS chemical oxygen generator for product optimisation and to reduce prototyping stages

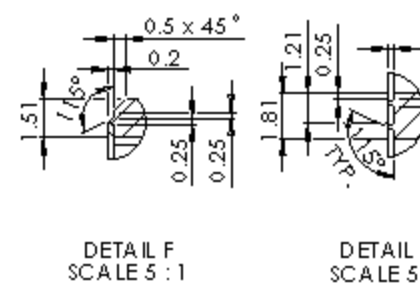
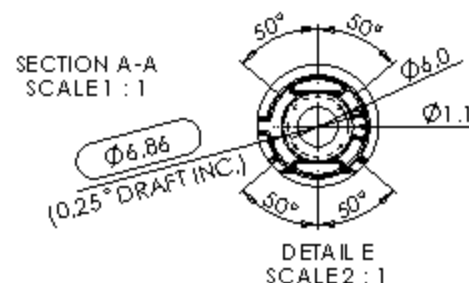
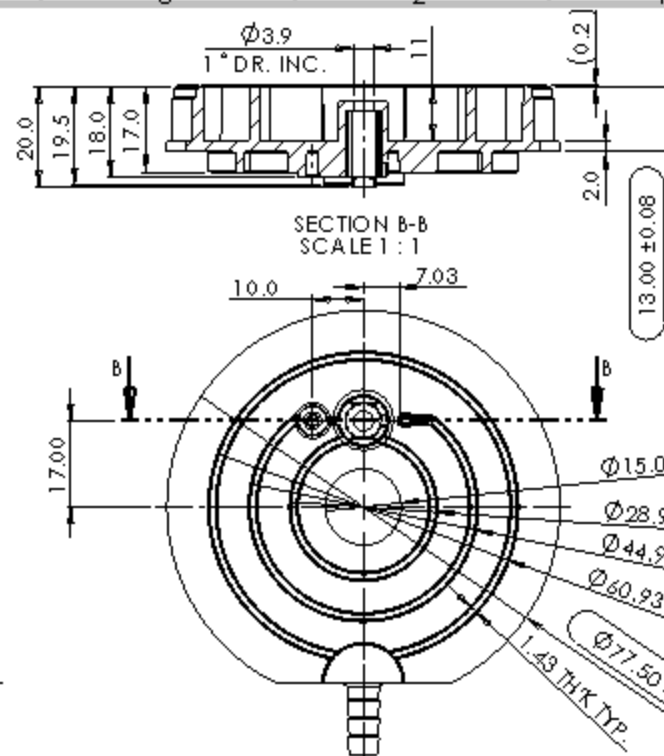
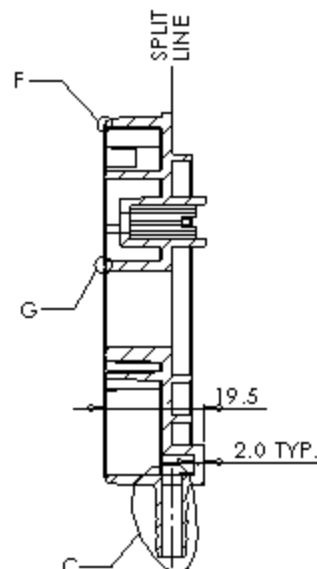
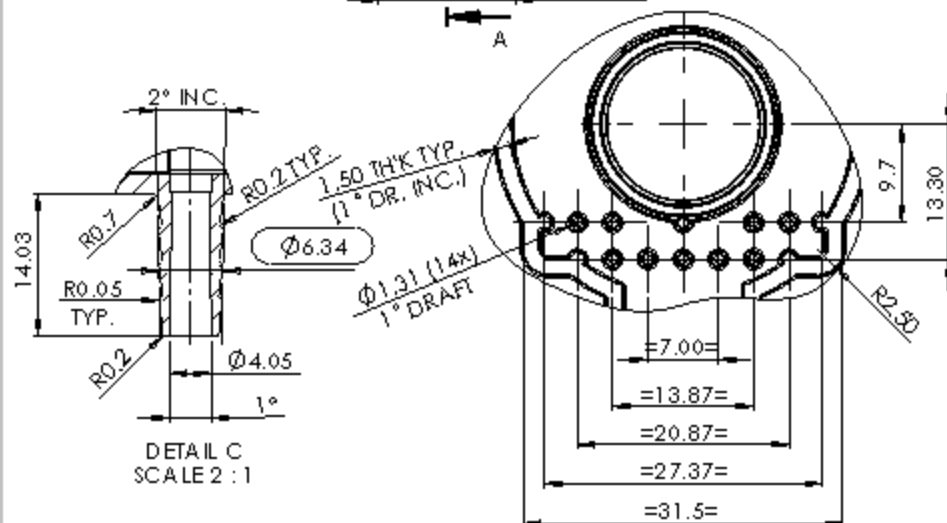
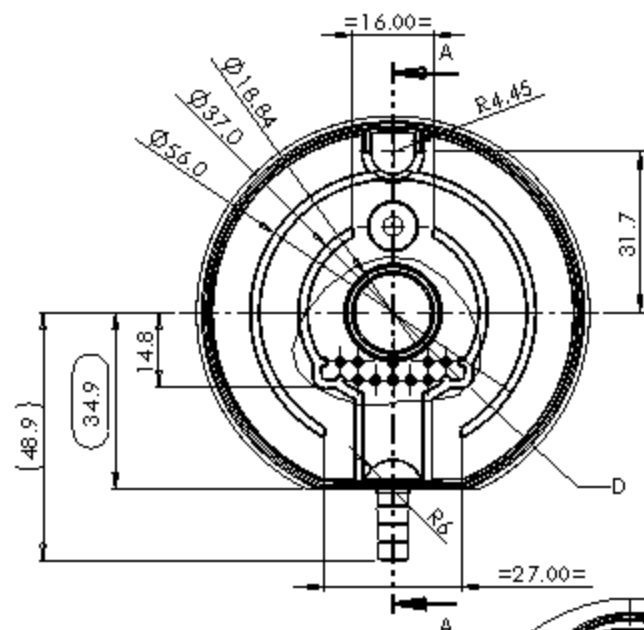


MILSPEC electronic activated chemical oxygen generator for critical life support in safe havens



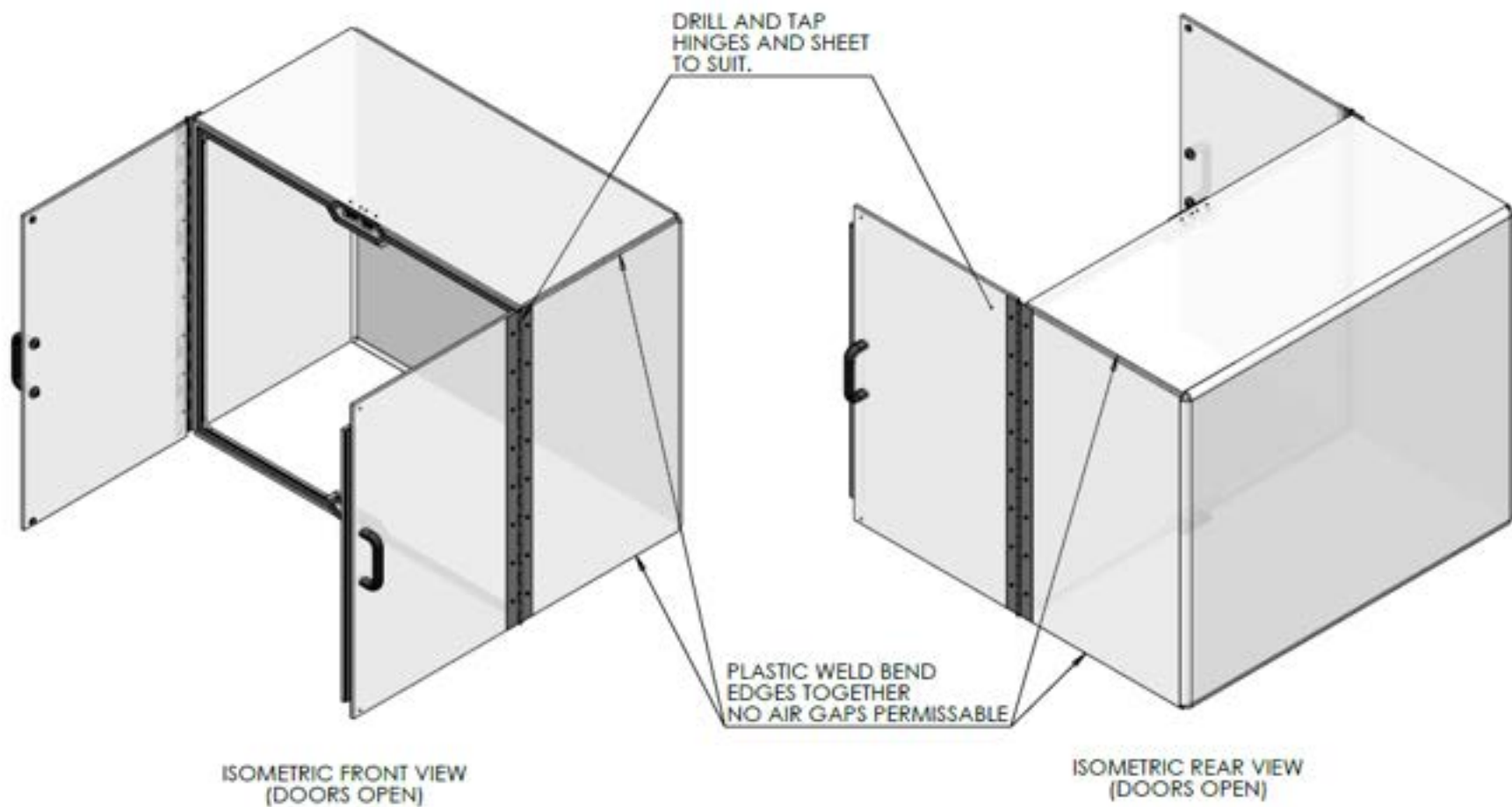
ROG2 chemical oxygen generator battlefield medical device concept from development lessons learnt for optimal product design

DRAFT COPY,
FOR REFERENCE ONLY

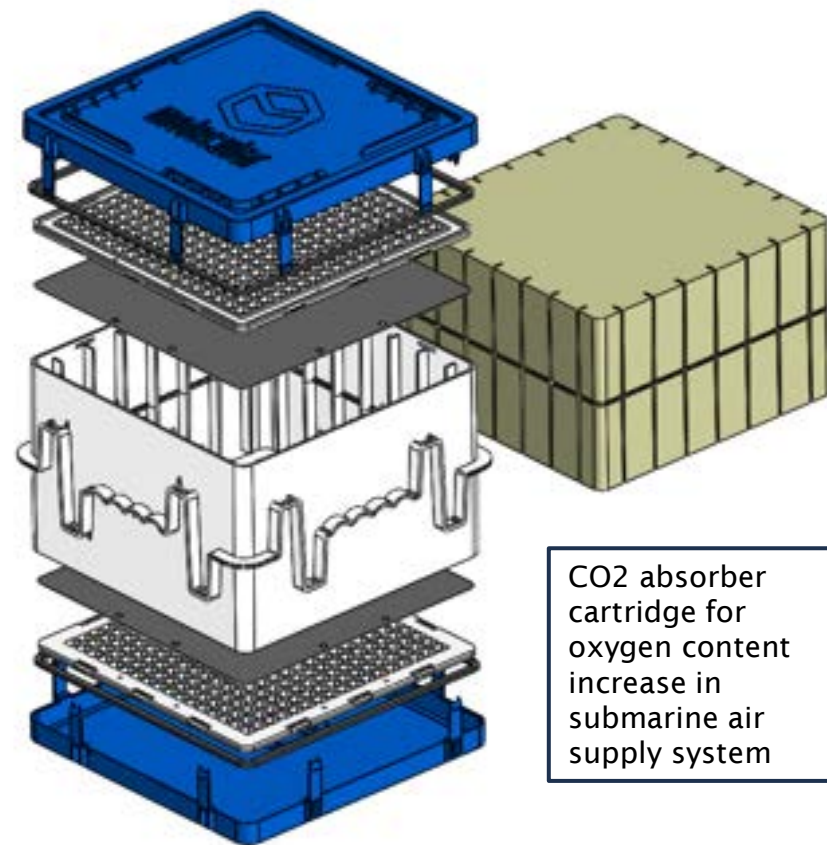
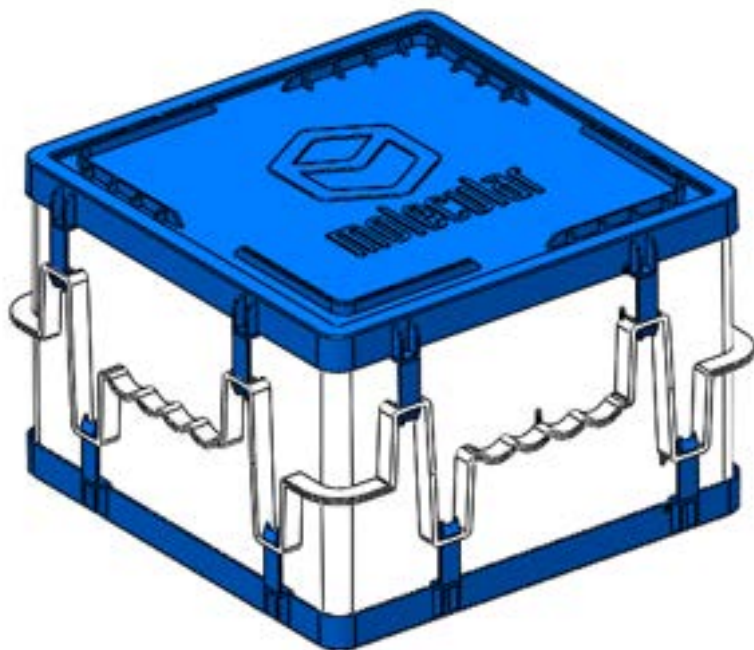
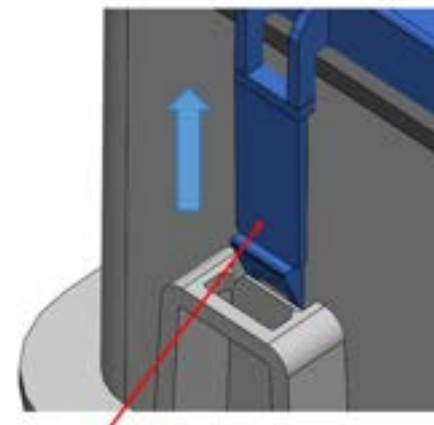
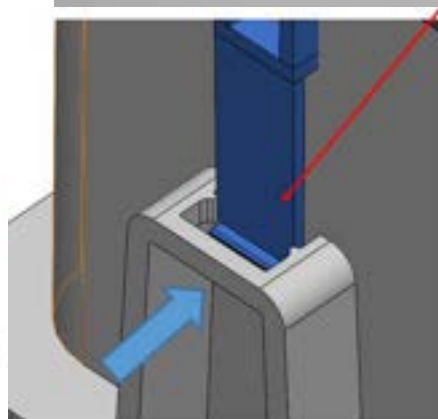
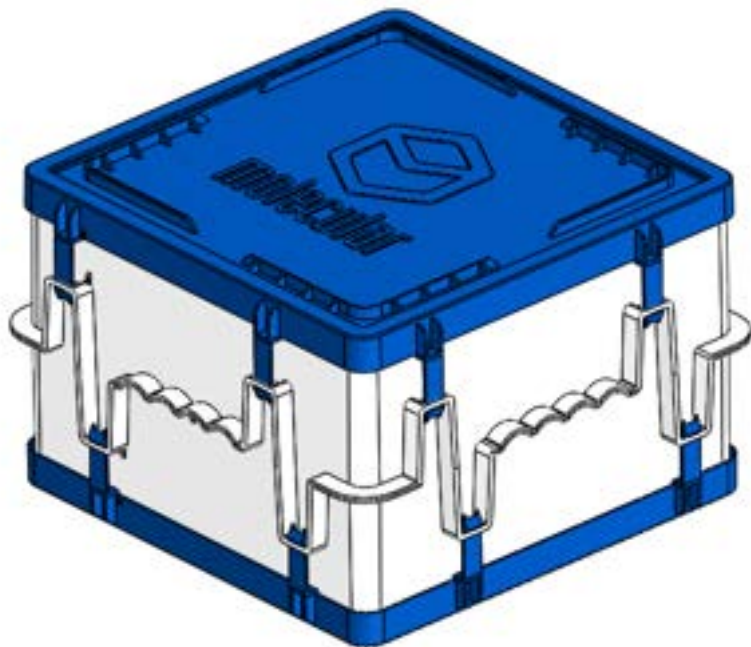


Drawing of chemical oxygen generator labyrinth to reduce patient oxygen temperature

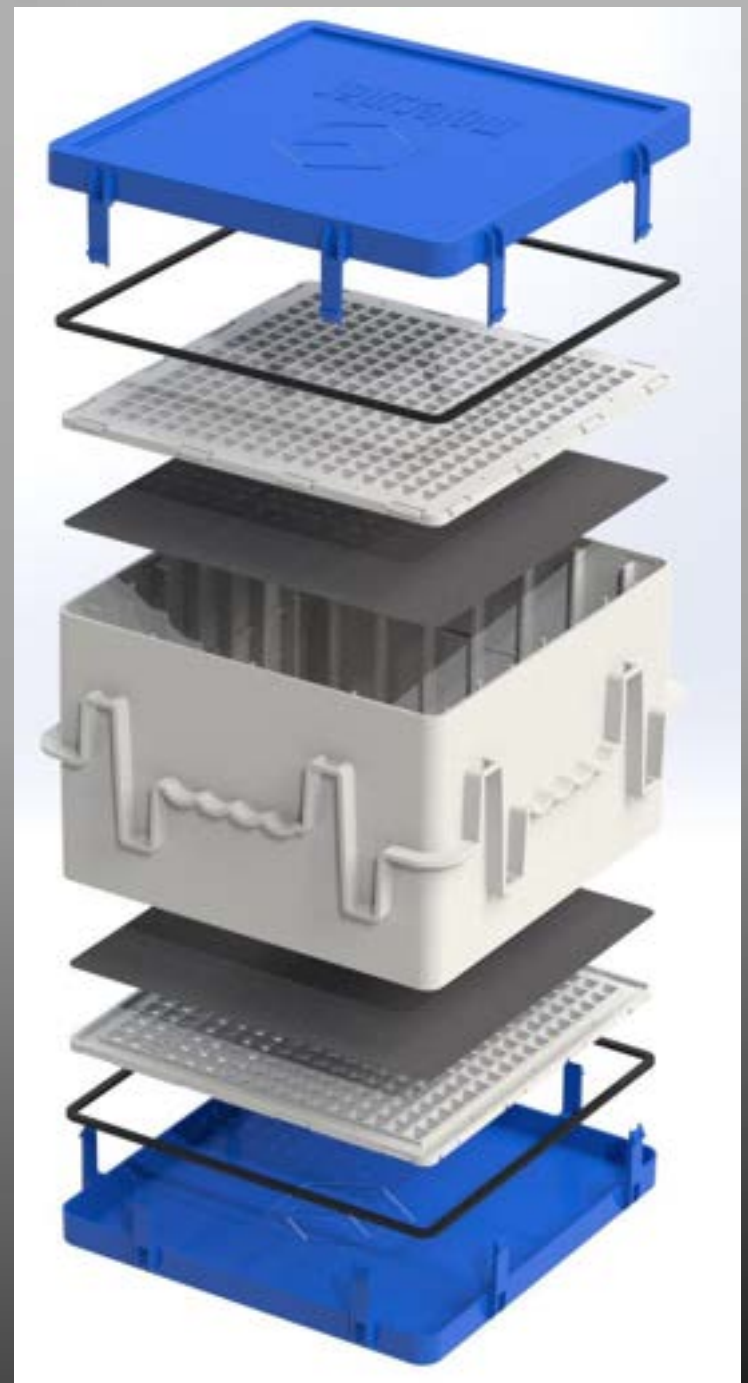
[illegible]



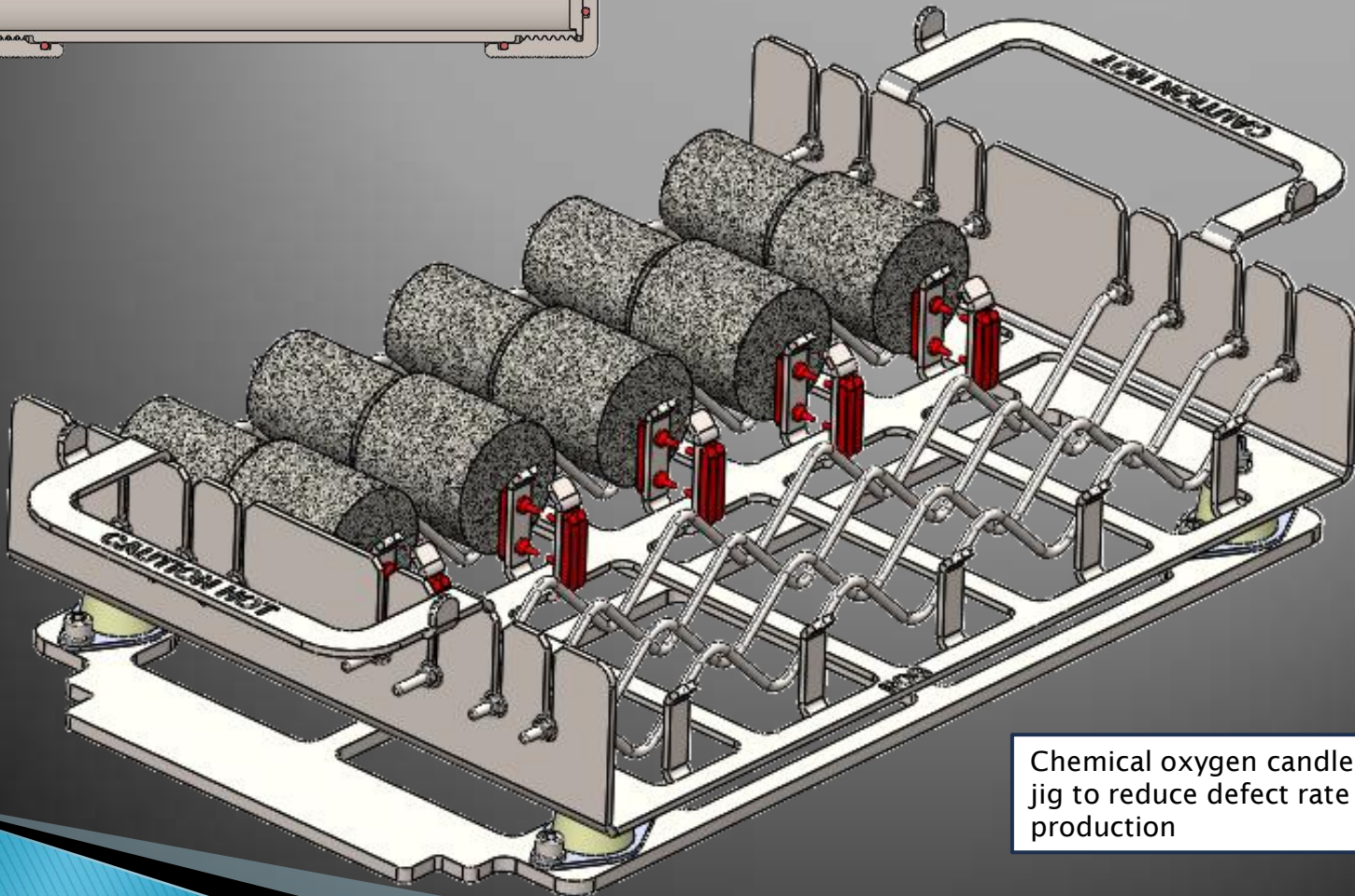
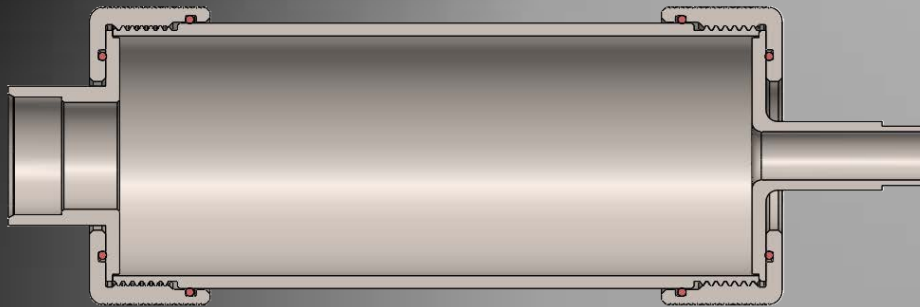
Electronic Equipment Chemical
Production Dust Cover



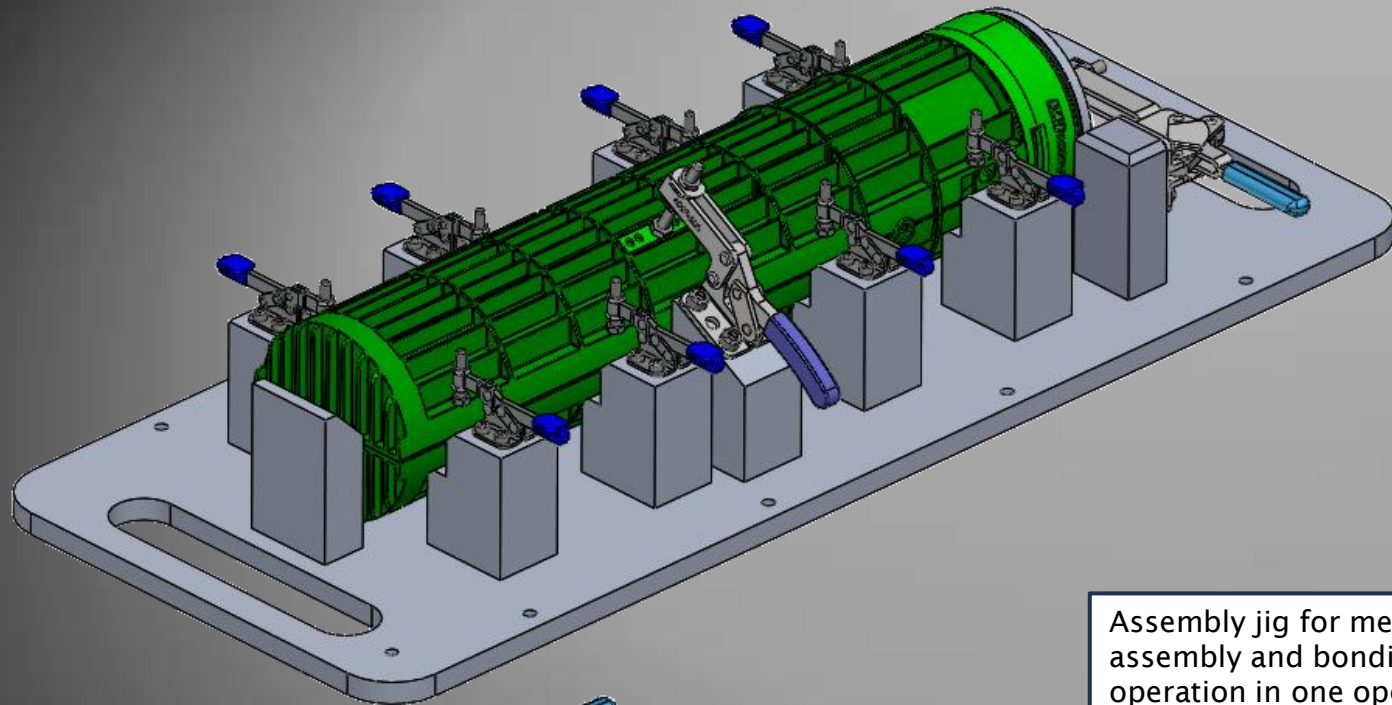
CO2 absorber
cartridge for
oxygen content
increase in
submarine air
supply system



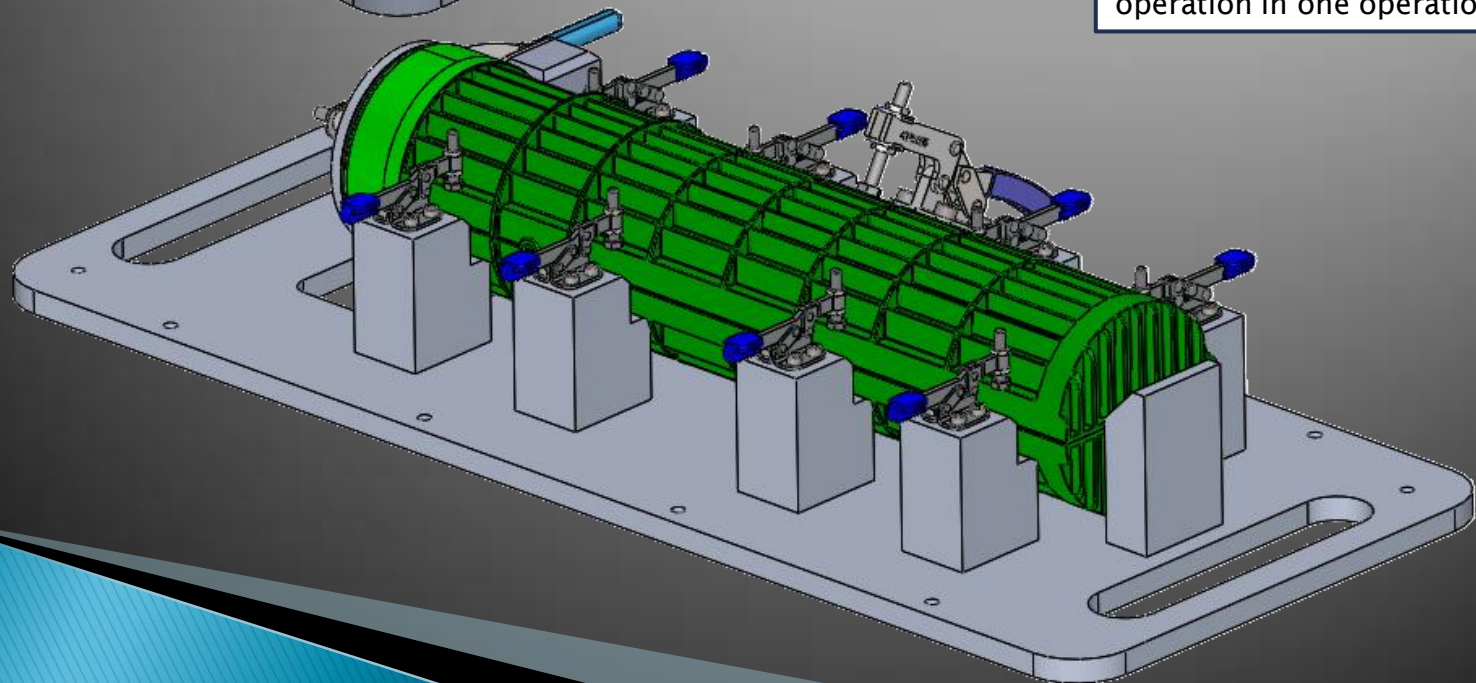
Reusable canister for chemical oxygen generator testing to lower time and cost of development

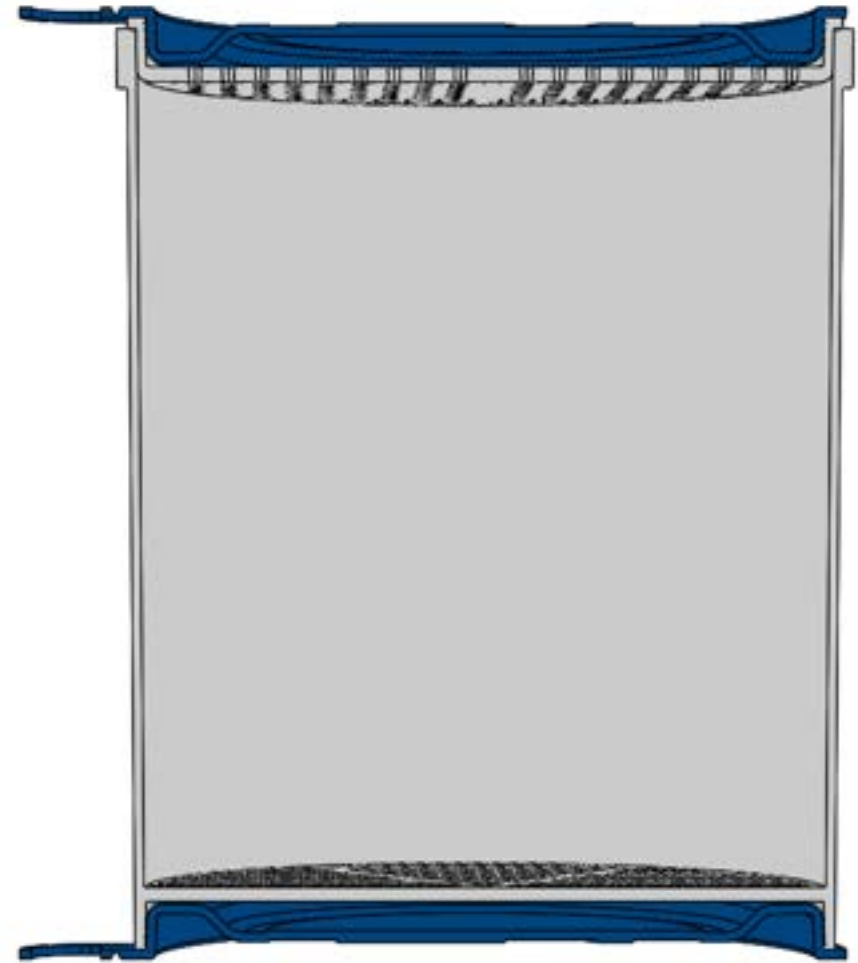
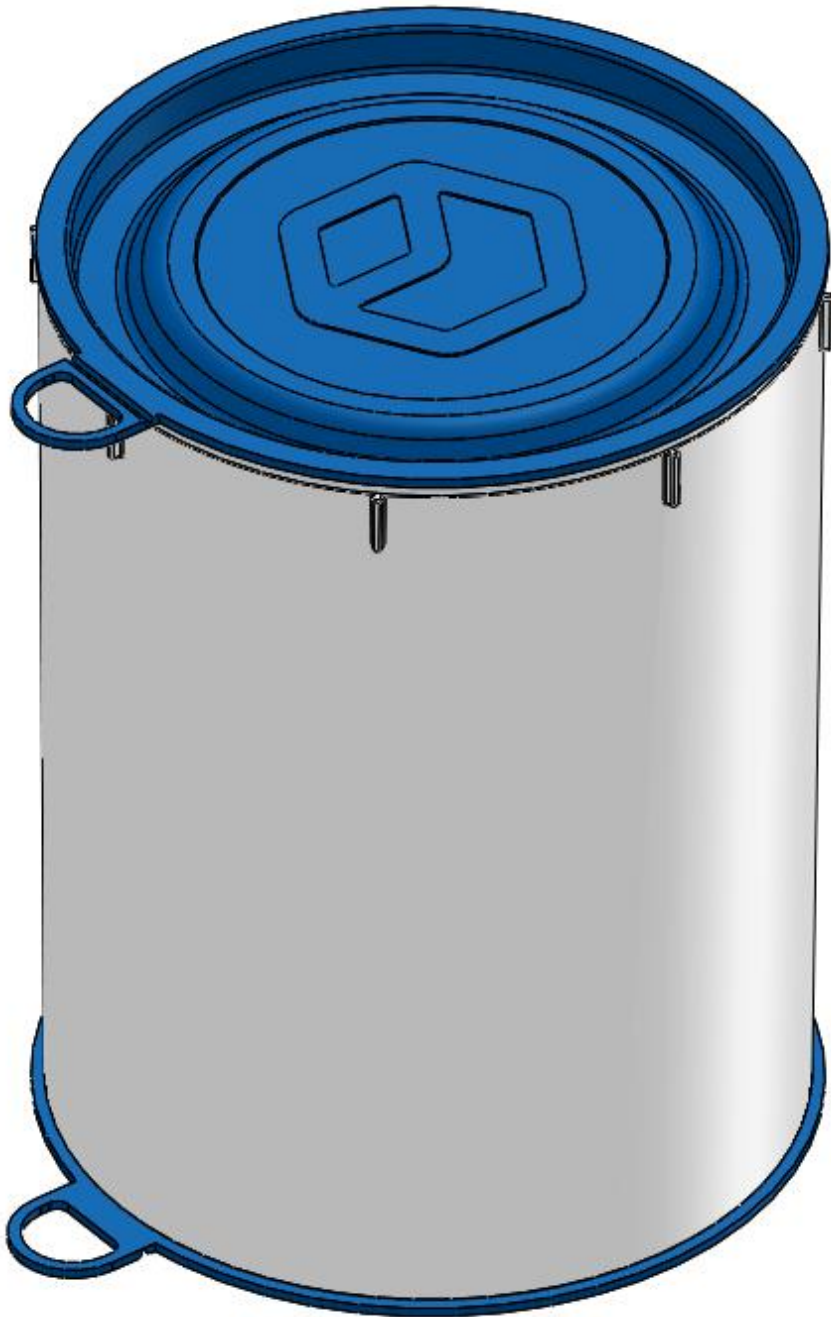


Chemical oxygen candle baking jig to reduce defect rate of production

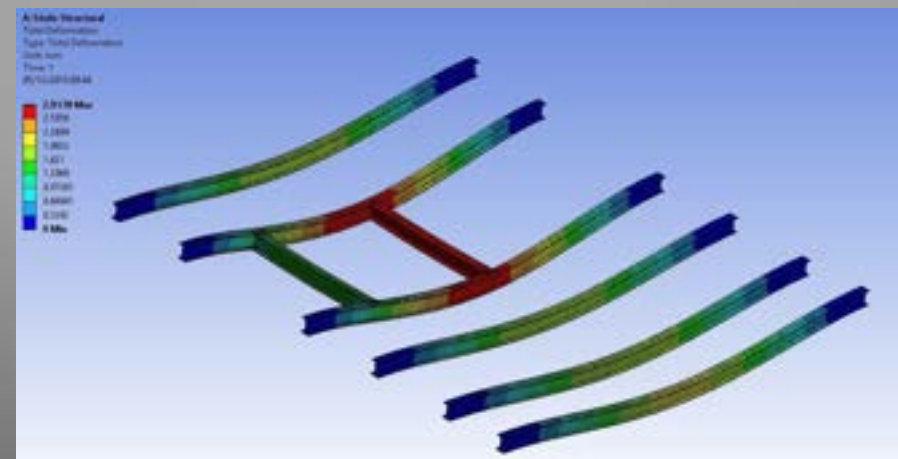
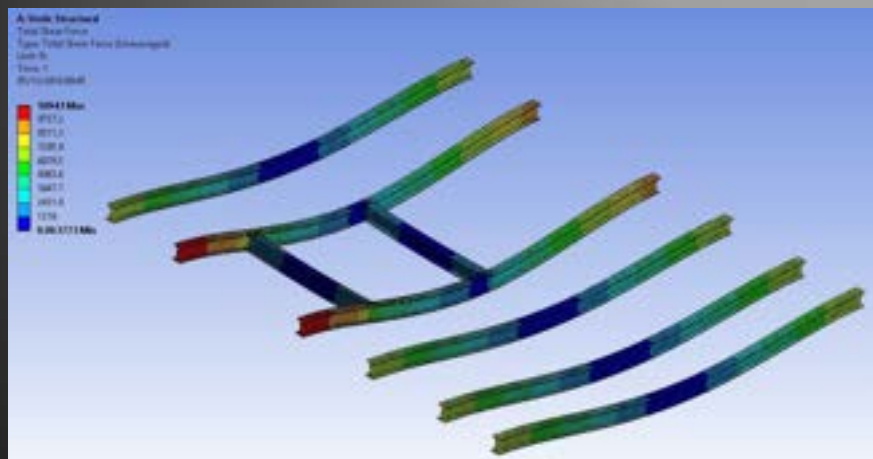
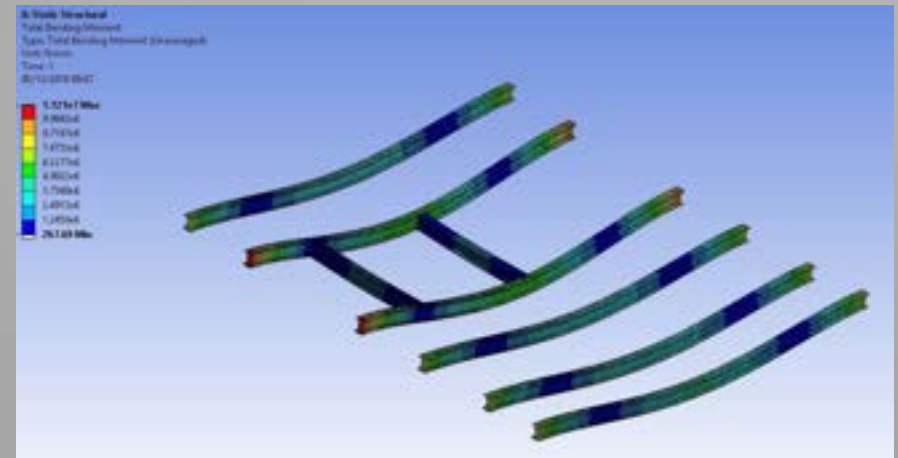
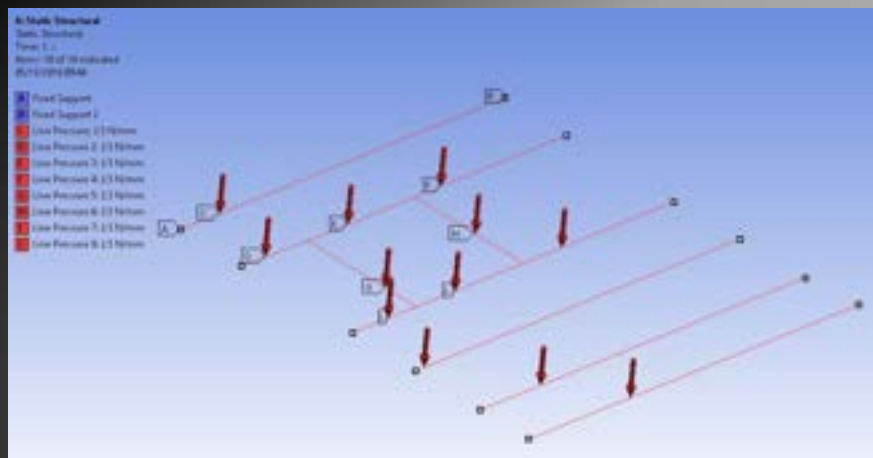


Assembly jig for mechanical
assembly and bonding
operation in one operation

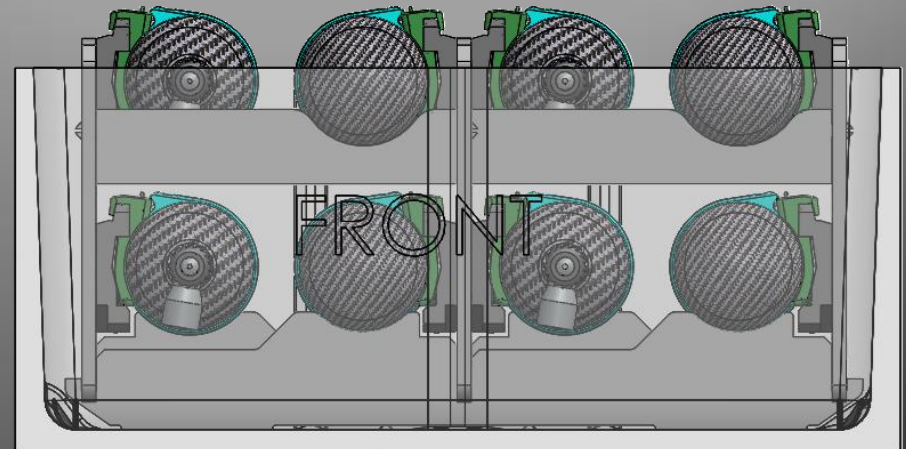
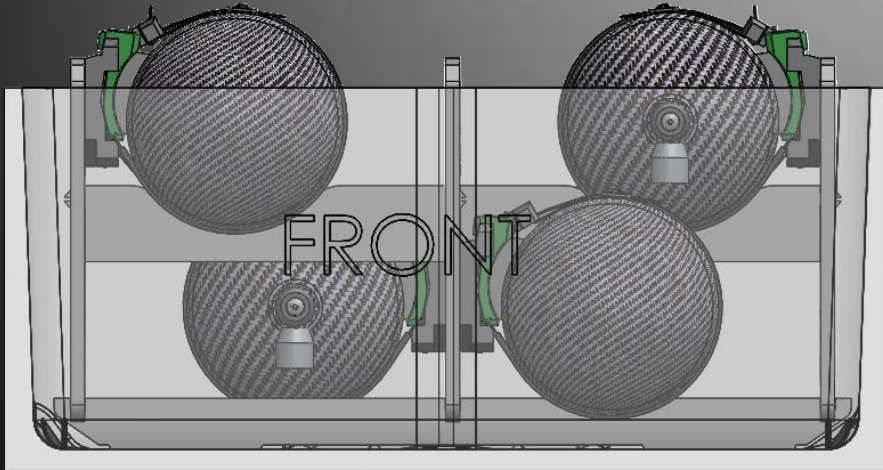
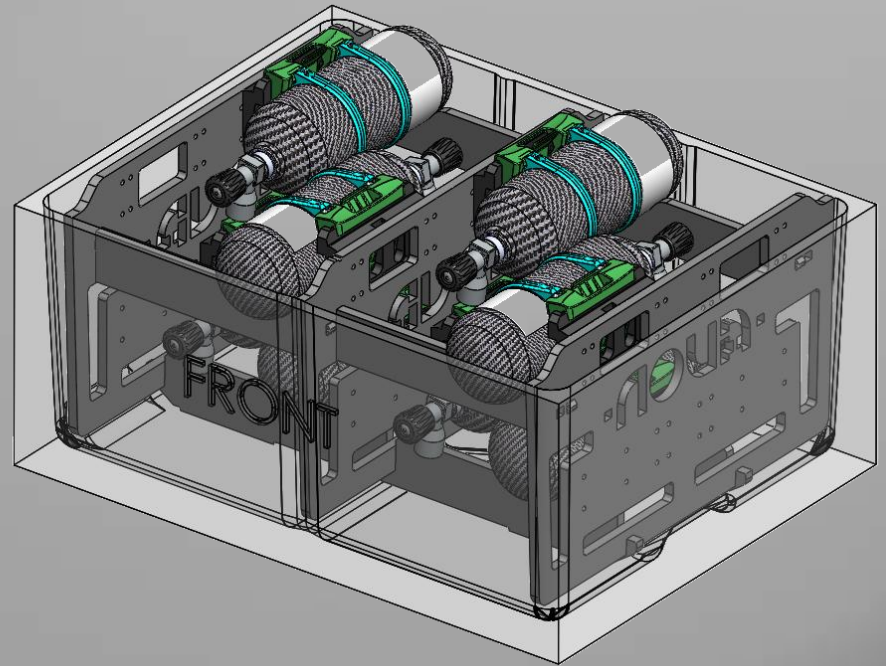
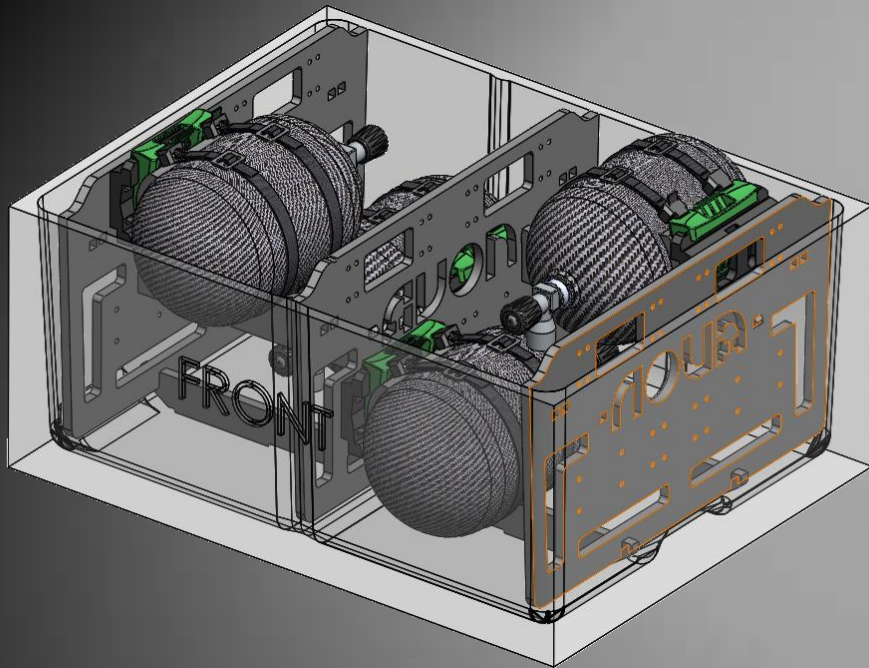




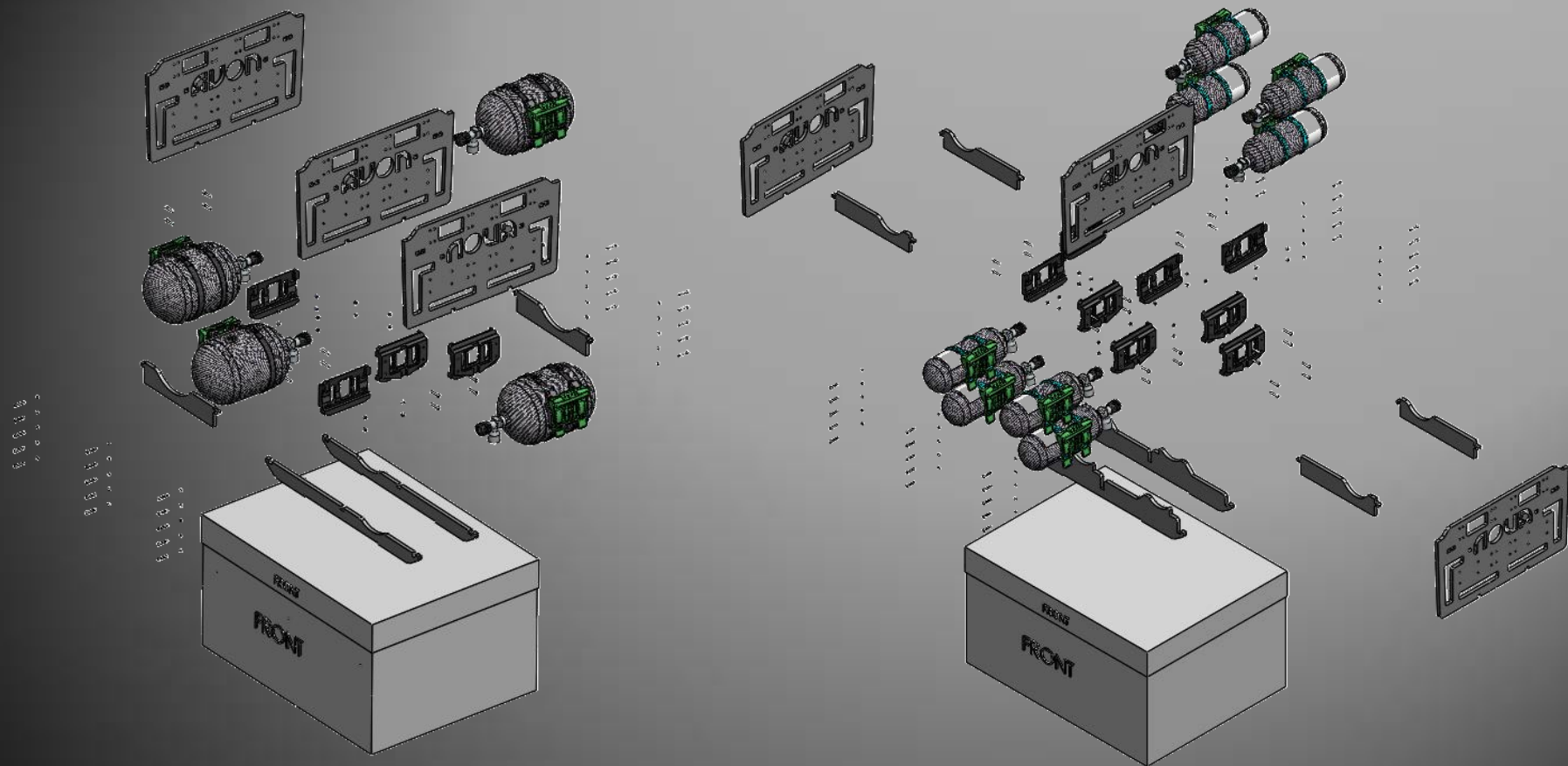
CO₂ absorber cartridge for oxygen content increase in diving equipment



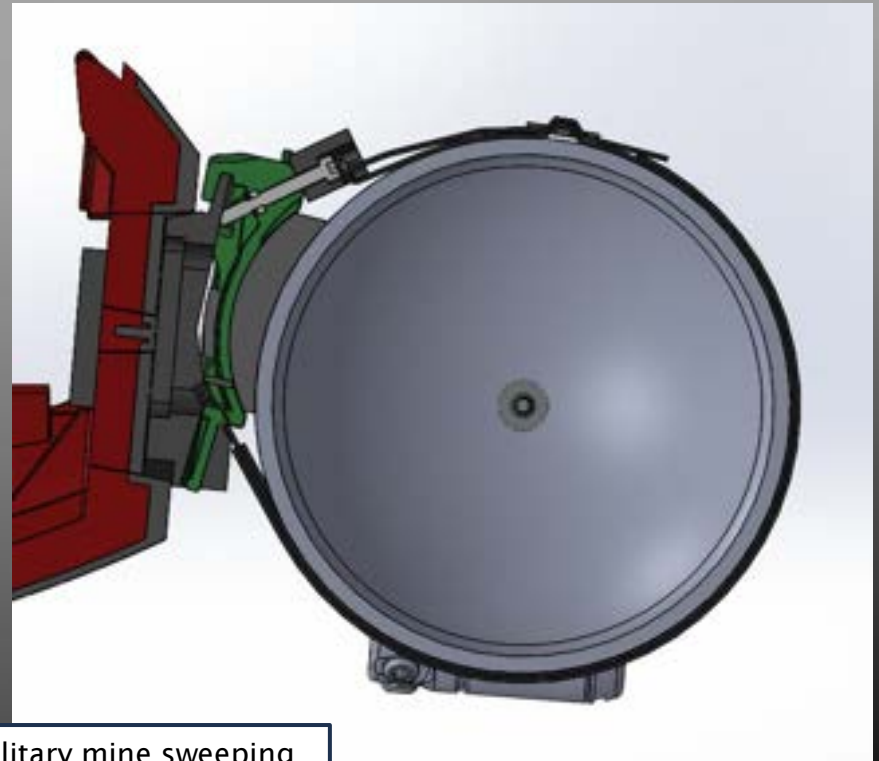
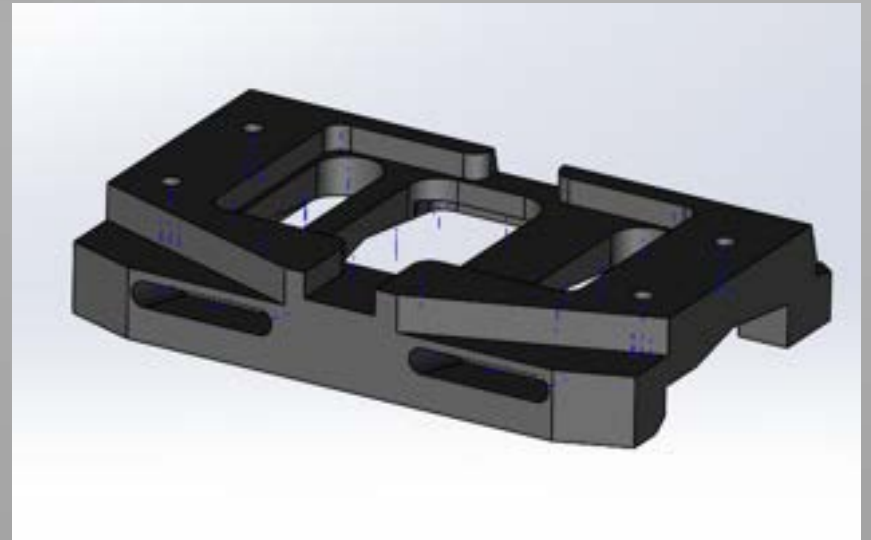
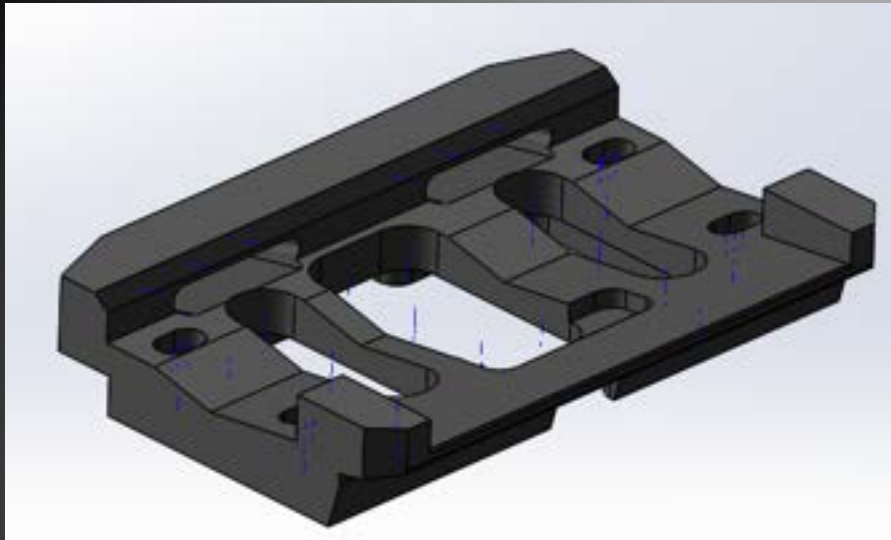
Beam element FEA of mezzanine floor structural beams



MILSPEC diver oxygen tank transport system,
modular design provides for 4 off larger tanks or 8
off smaller tanks with minimal changing of parts



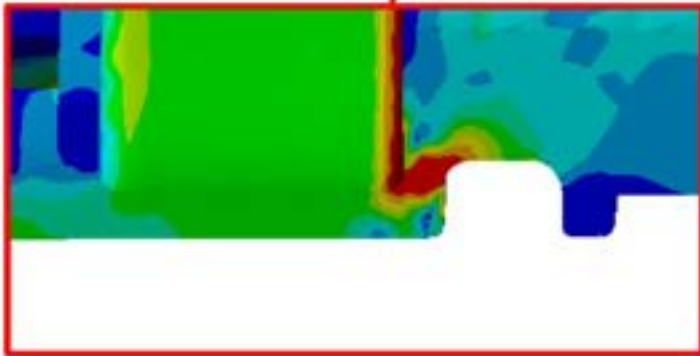
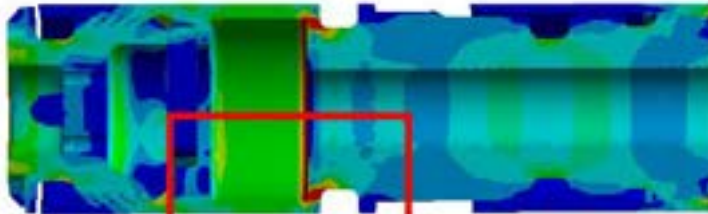
MILSPEC diver oxygen tank transport system, modular design provides for 4 off larger tanks or 8 off smaller tanks with minimal changing of parts



Custom oxygen tank locator for military mine sweeping diving equipment and strap assembly method

IN 137.5 LBF TORQUE
Equivalent Stress
Type: Equivalent (von Mises) Stress
Unit: psi
Time: 1
25/04/2016 09:53

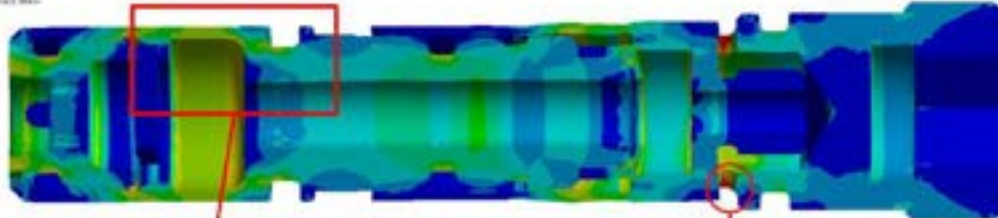
14748 Max
42071
31136
24616
21242
20520
17130
16136
13077 Min
6.246E-11 Min



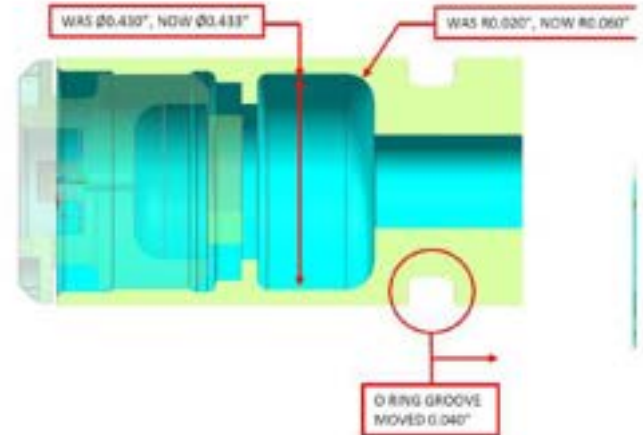
TORQUE LOAD = 137.5 LBF.IN

IN 137.5 LBF TORQUE NEW CONCEPT
Equivalent Stress
Type: Equivalent (von Mises) Stress
Unit: psi
Time: 1
25/04/2016 09:45

39113 Max
42071
31136
24616
21242
20520
17130
16136
13077 Min
6.246E-11 Min

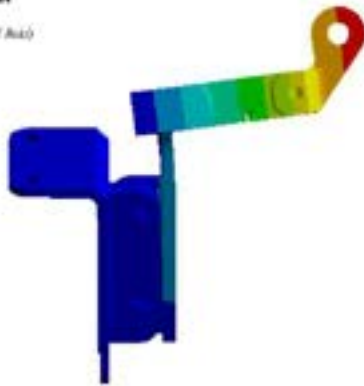
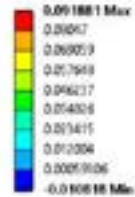


PEAK STRESSES NOW HERE



Root cause analysis and correction (FEA) of installation of ejection seat explosive cartridge, redesign allowing same explosive performance and remove stress concentration from housing

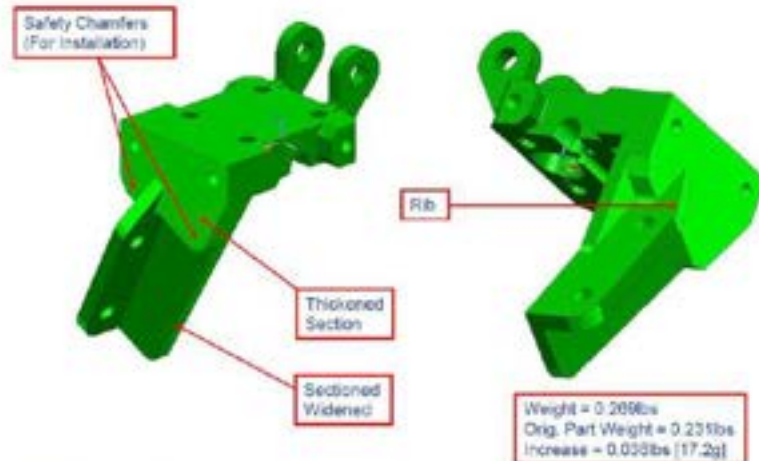
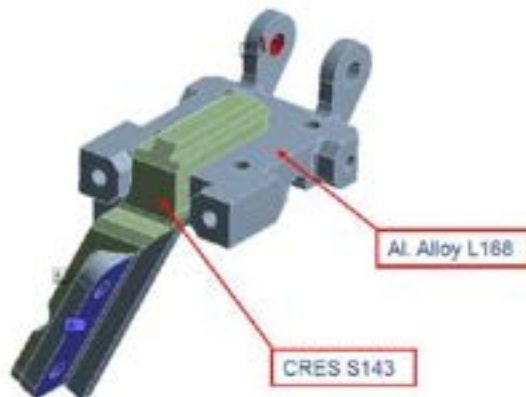
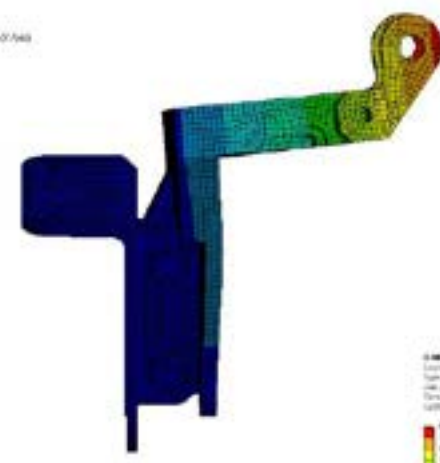
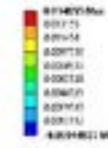
E: FULL ASSY ORIGINAL DESIGN
 Directional Deformation
 Type: Directional Deformation(Y Axis)
 Unit: in
 Global Coordinate System
 Time: 1
 06/05/2018 15:12



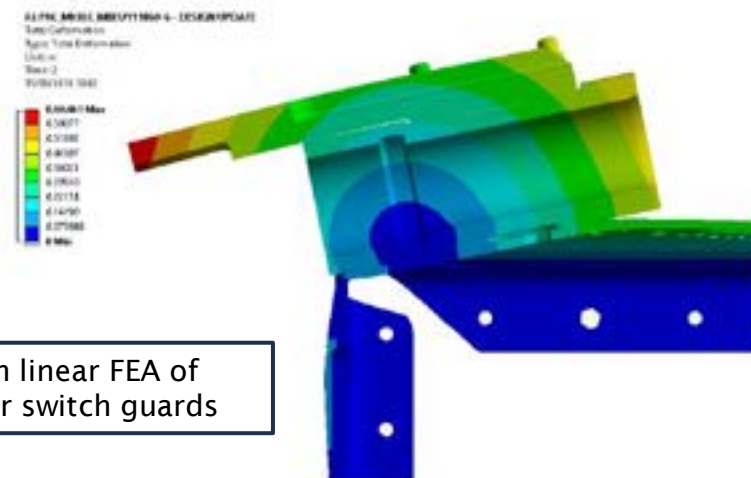
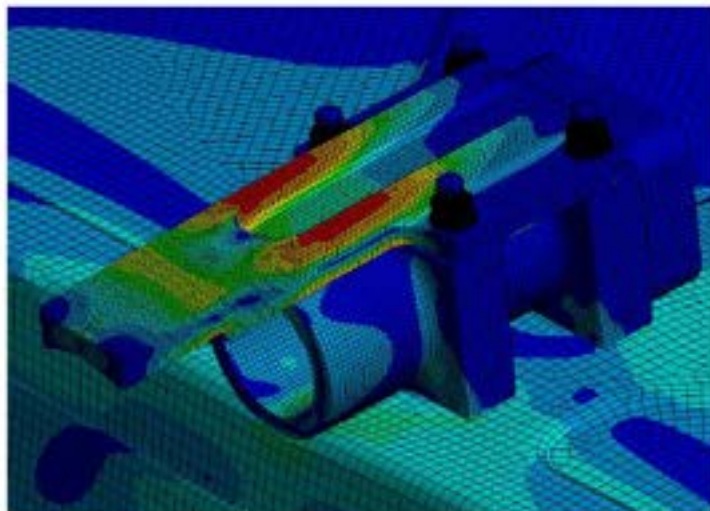
D: FULL ASSY NEW DESIGN
 Directional Deformation
 Type: Directional Deformation(Y Axis)
 Unit: in
 Global Coordinate System
 Time: 1
 06/05/2018 15:12



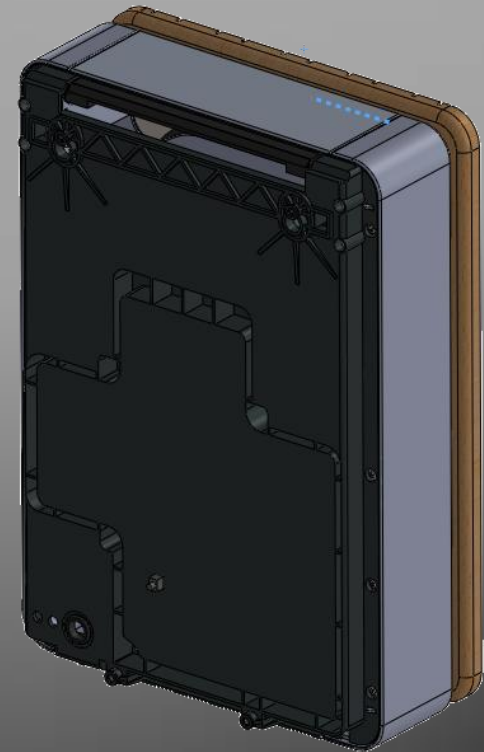
F: FULL ASSY NEW DESIGN
 Directional Deformation
 Type: Directional Deformation(Y Axis)
 Unit: in
 Global Coordinate System
 Time: 2
 06/05/2018 15:12



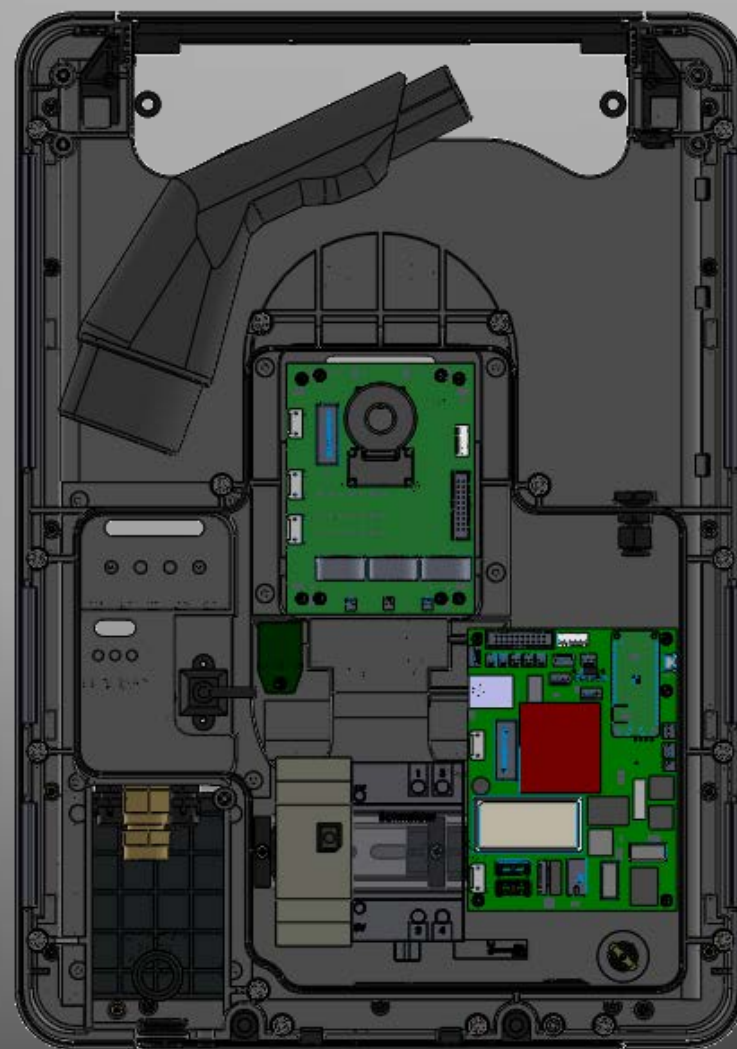
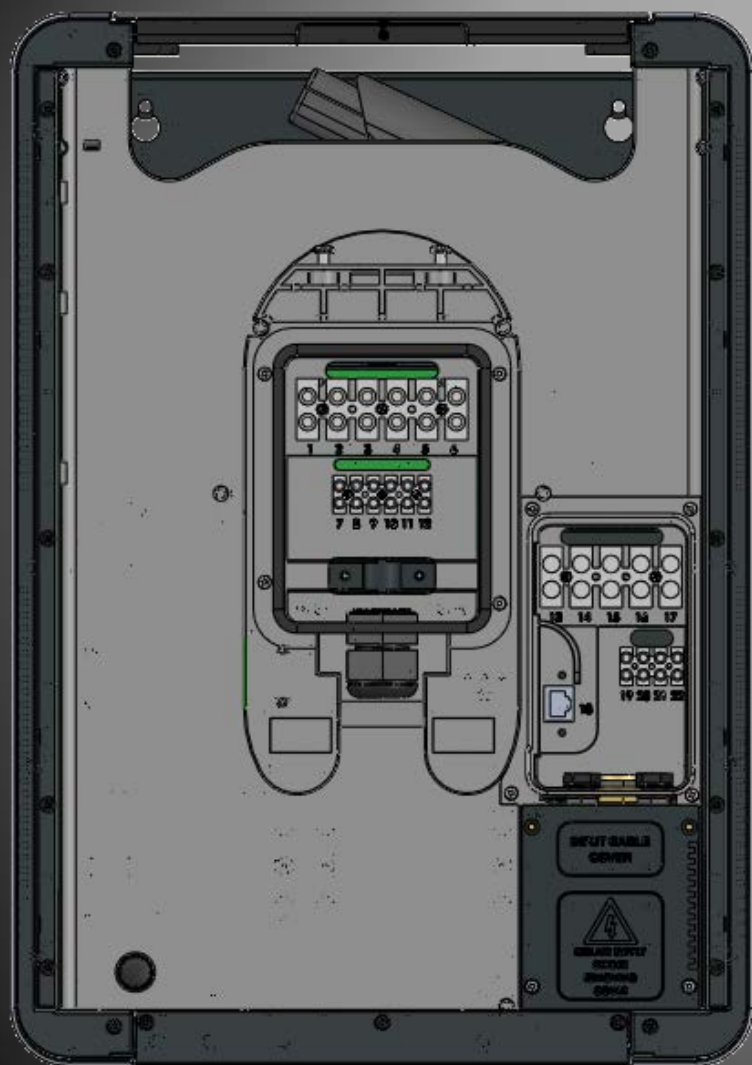
Root cause analysis of ejection dummy head hitting canopy in zero/zero ejection test determined to be flex in bracket, stiffening bracket added that allows retro fit without redoing detonation chord on canopy saving on rework cost, design saved 4 milliseconds of 17 millisecond ejection to canopy time

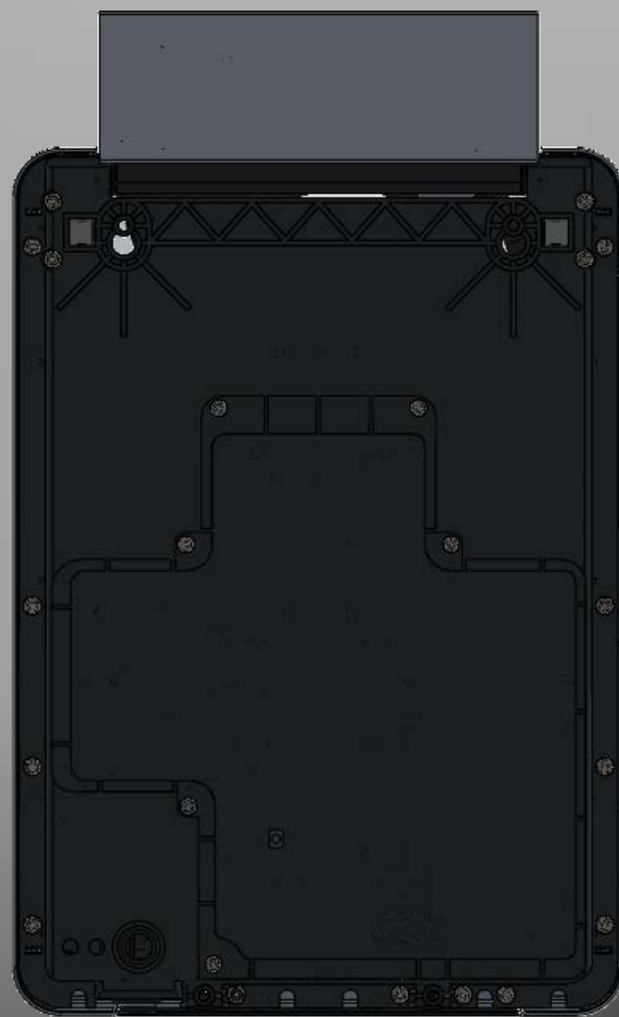
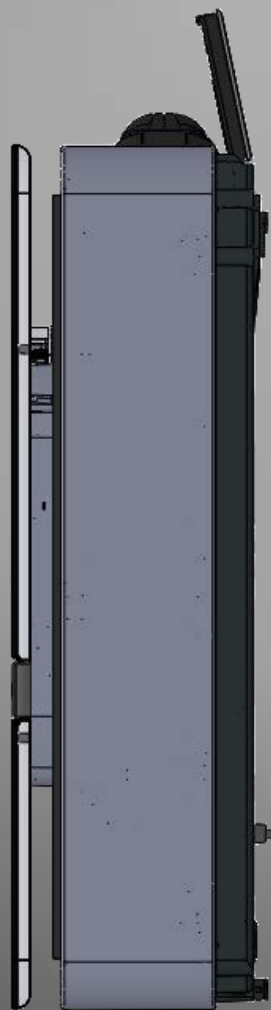
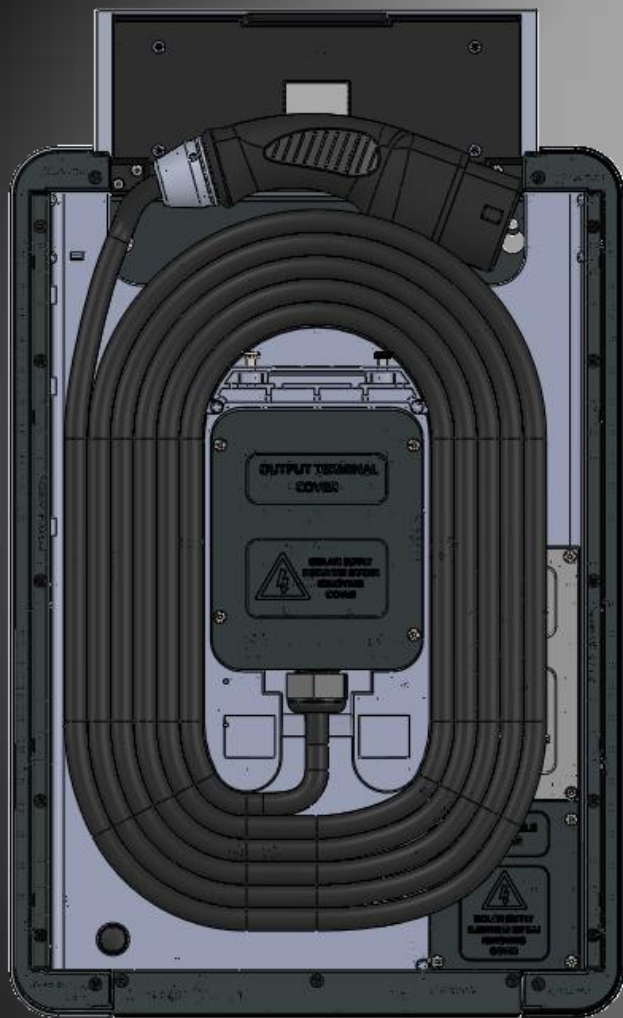


Flex in bracket before and after stiffening
bracket modification

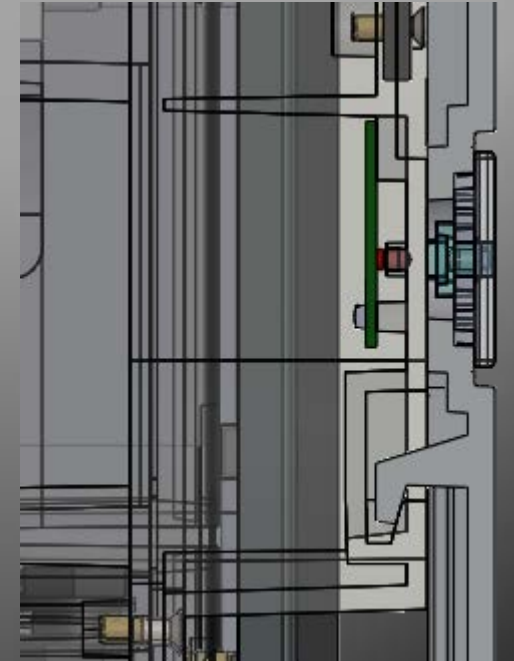
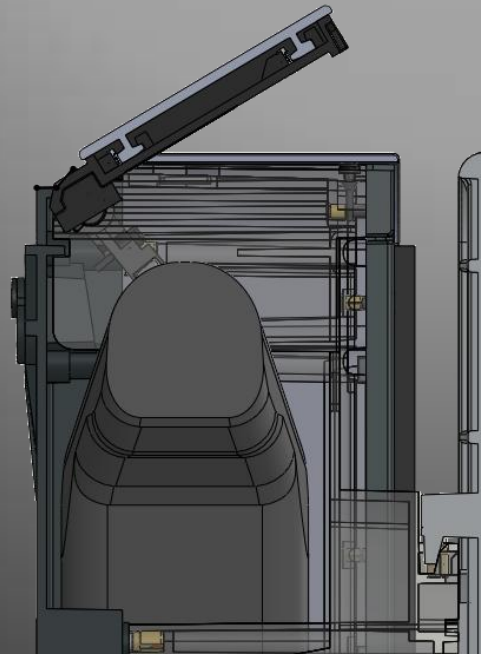
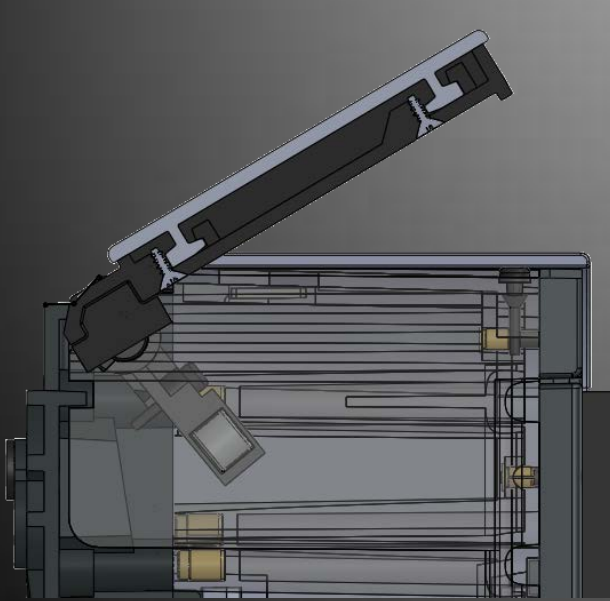
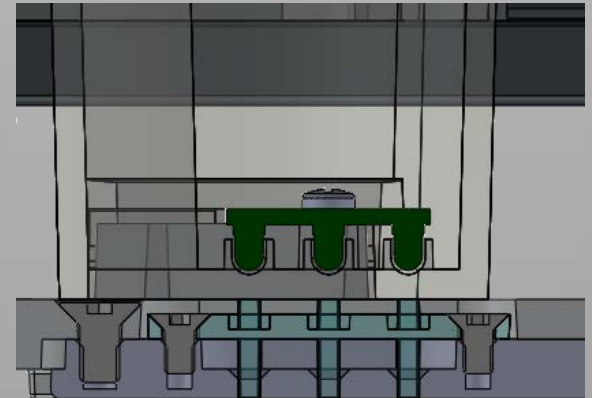
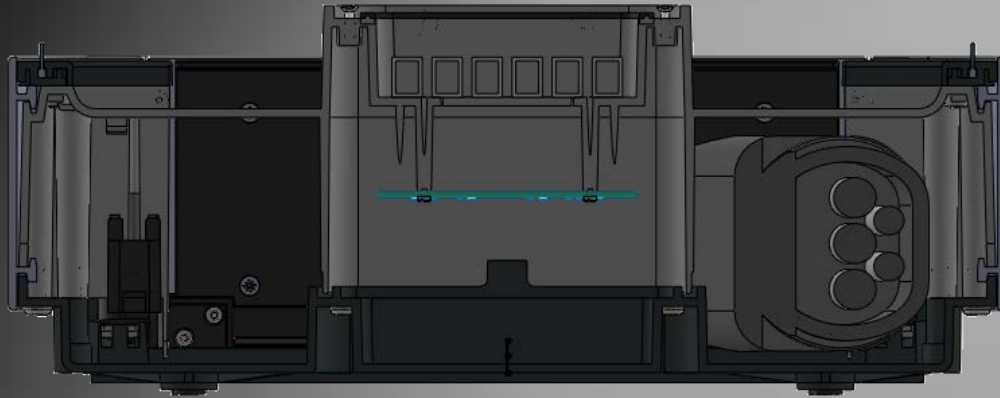


A2 high end luxury electric vehicle charging point, customisable for wooden or metal front and different colour bands that can be assembled on installation, design for mass production and three different configurations of electronics. Styling has to fit with clients branding and allow interchangeability, easy installation and IP sealing of electronics . Project delivered in tight time scale

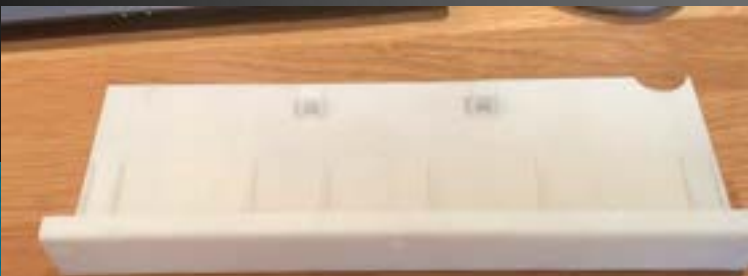




A2 high end luxury electric vehicle charging point - front, side and rear view



A2 high end luxury electric vehicle charging point hinge mechanism design and removable light pipe design



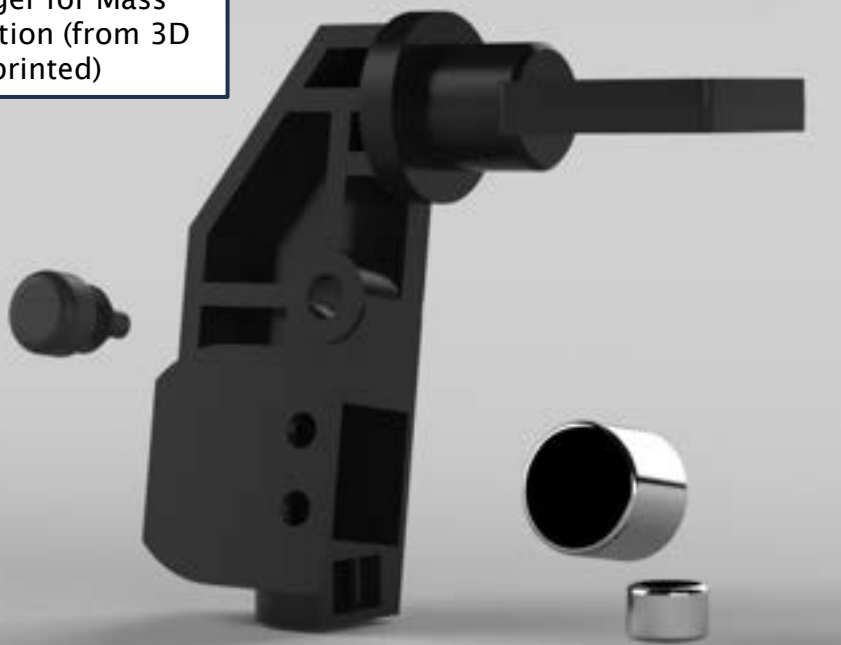
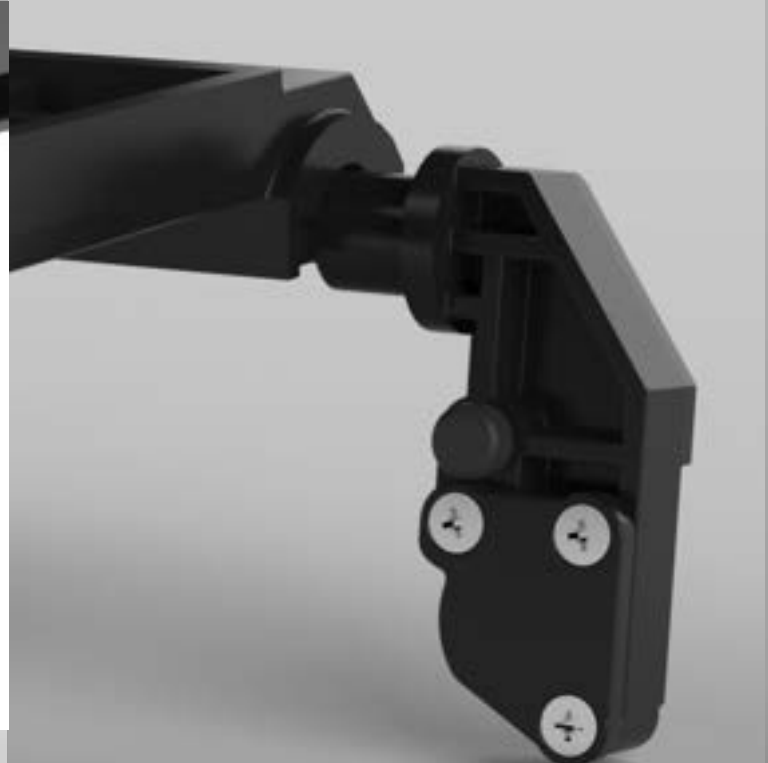
A2 high end luxury electric vehicle charging point - prototype images





Cost Reduction of Machined Electric
Charger Parts to Die Cast Aluminium to
Reduce Piece Part Costs

Magnetic Hinge
Assembly for EV
Charger for Mass
Production (from 3D
printed)



Wireless EV Charger
Form Concepts





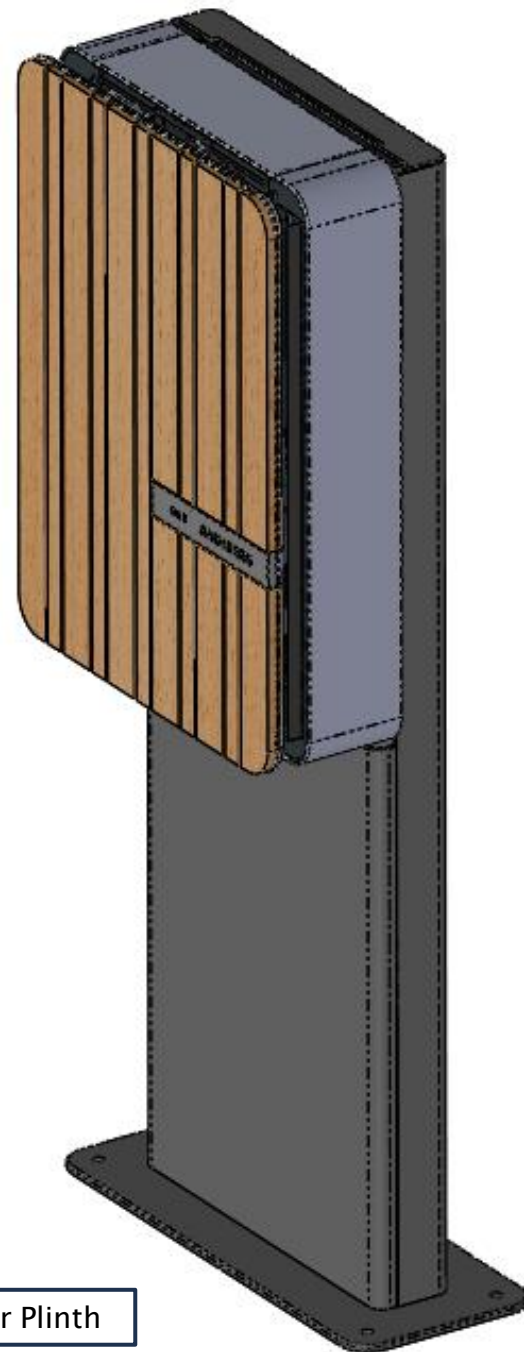




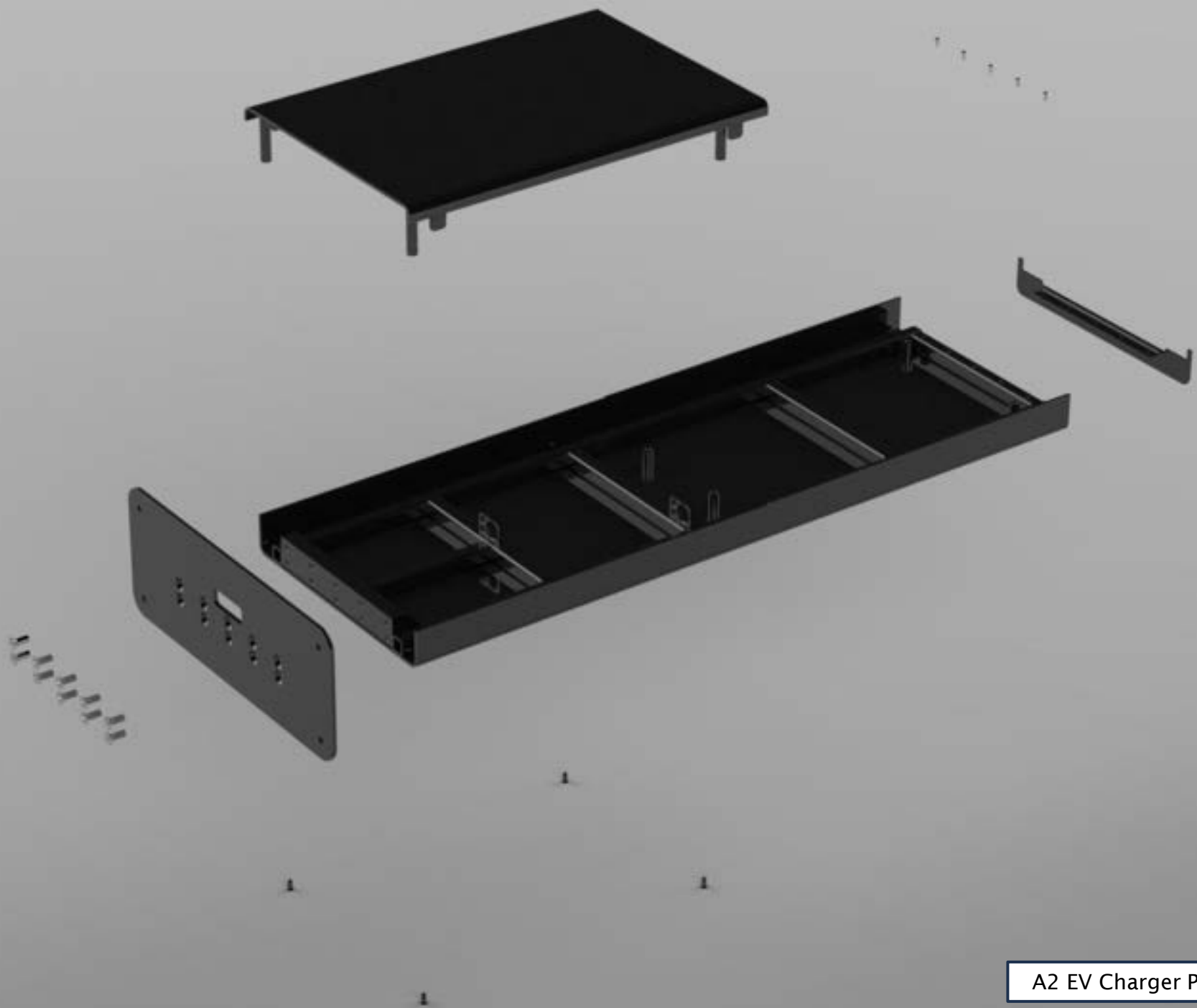


P6 EV Charger
Concept with
additional Plinth

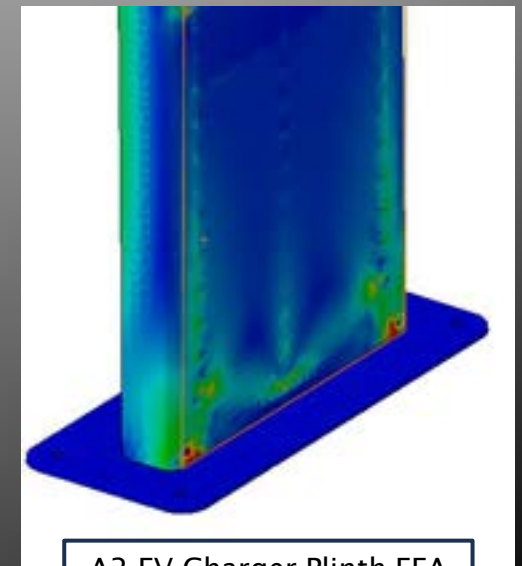
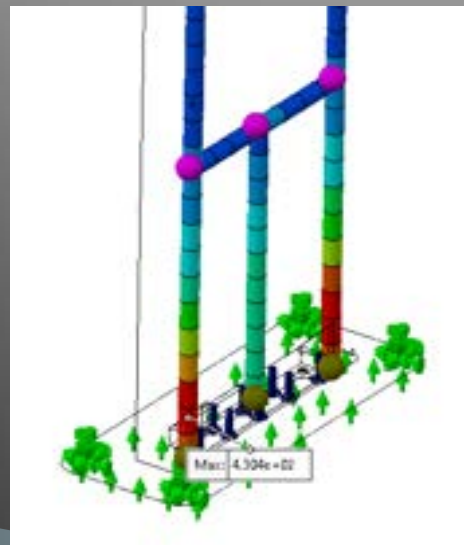
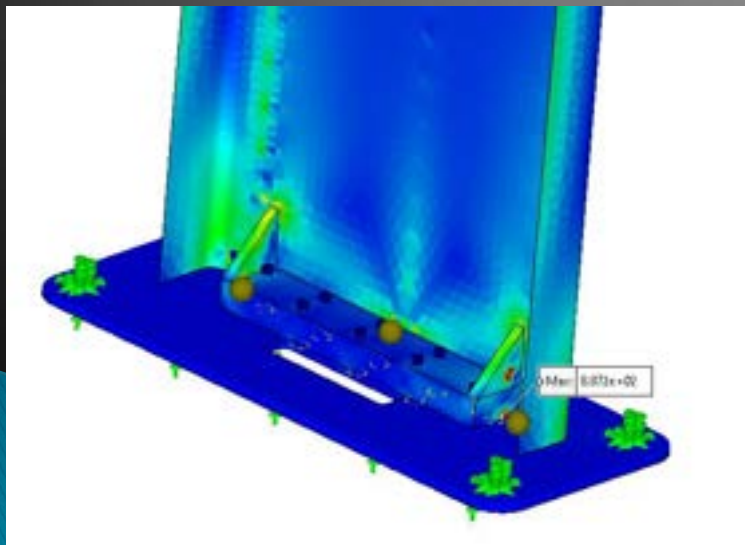
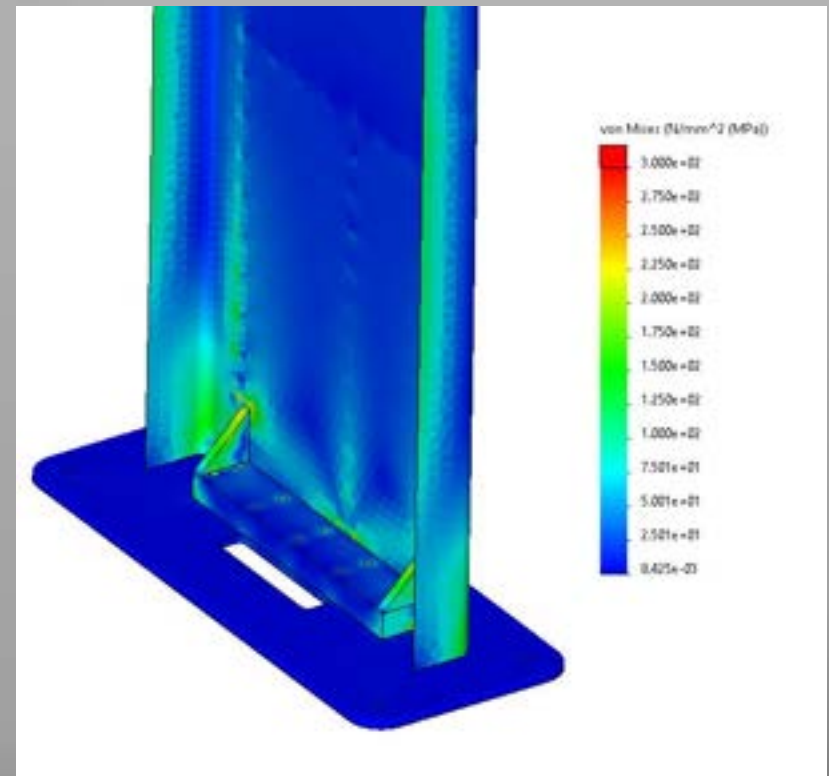
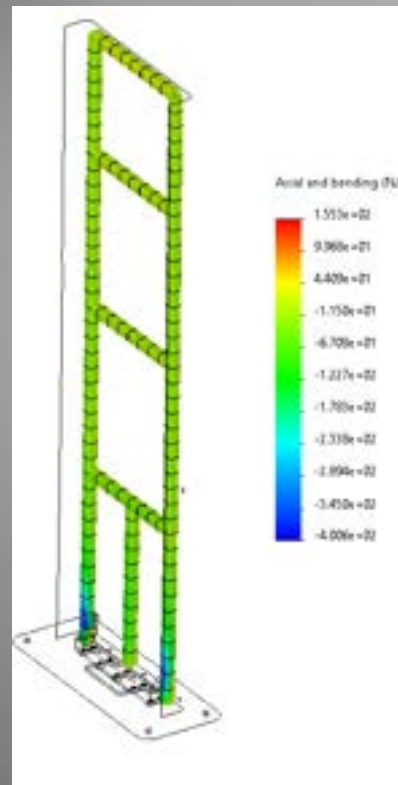
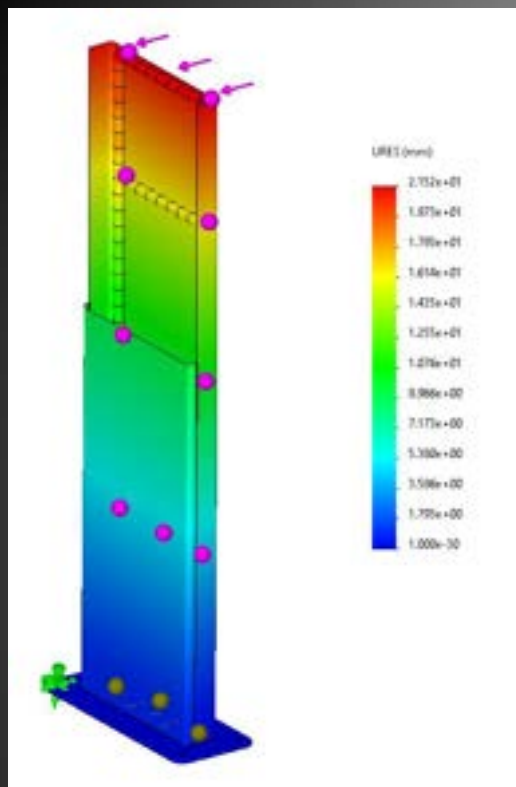




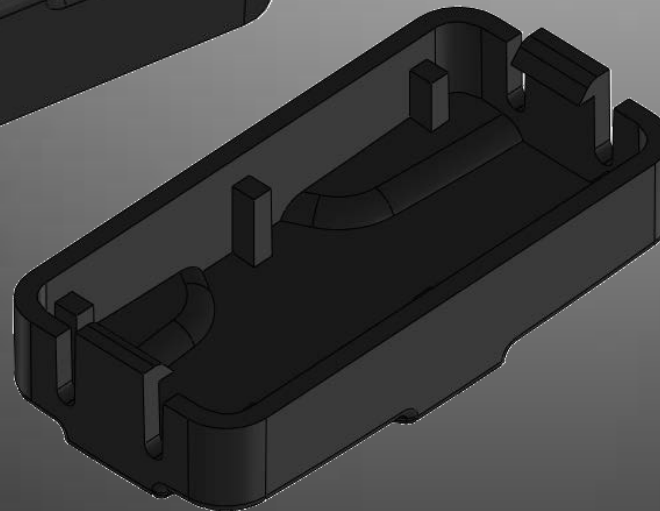
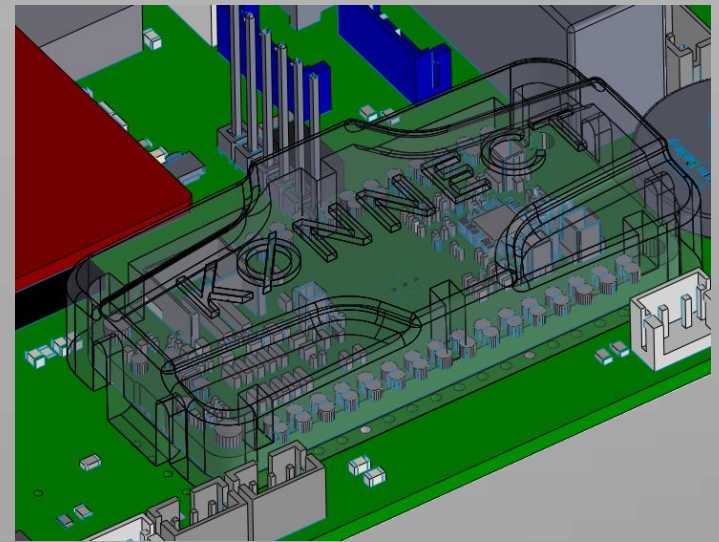
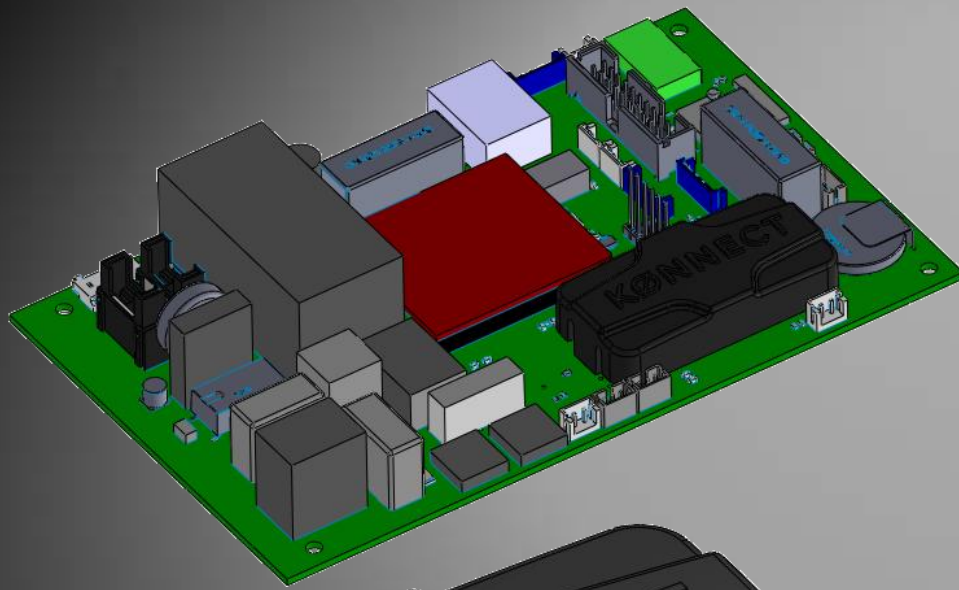
A2 EV Charger Plinth



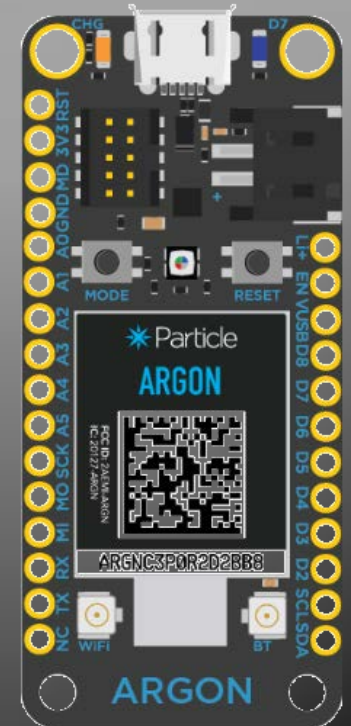
A2 EV Charger Plinth

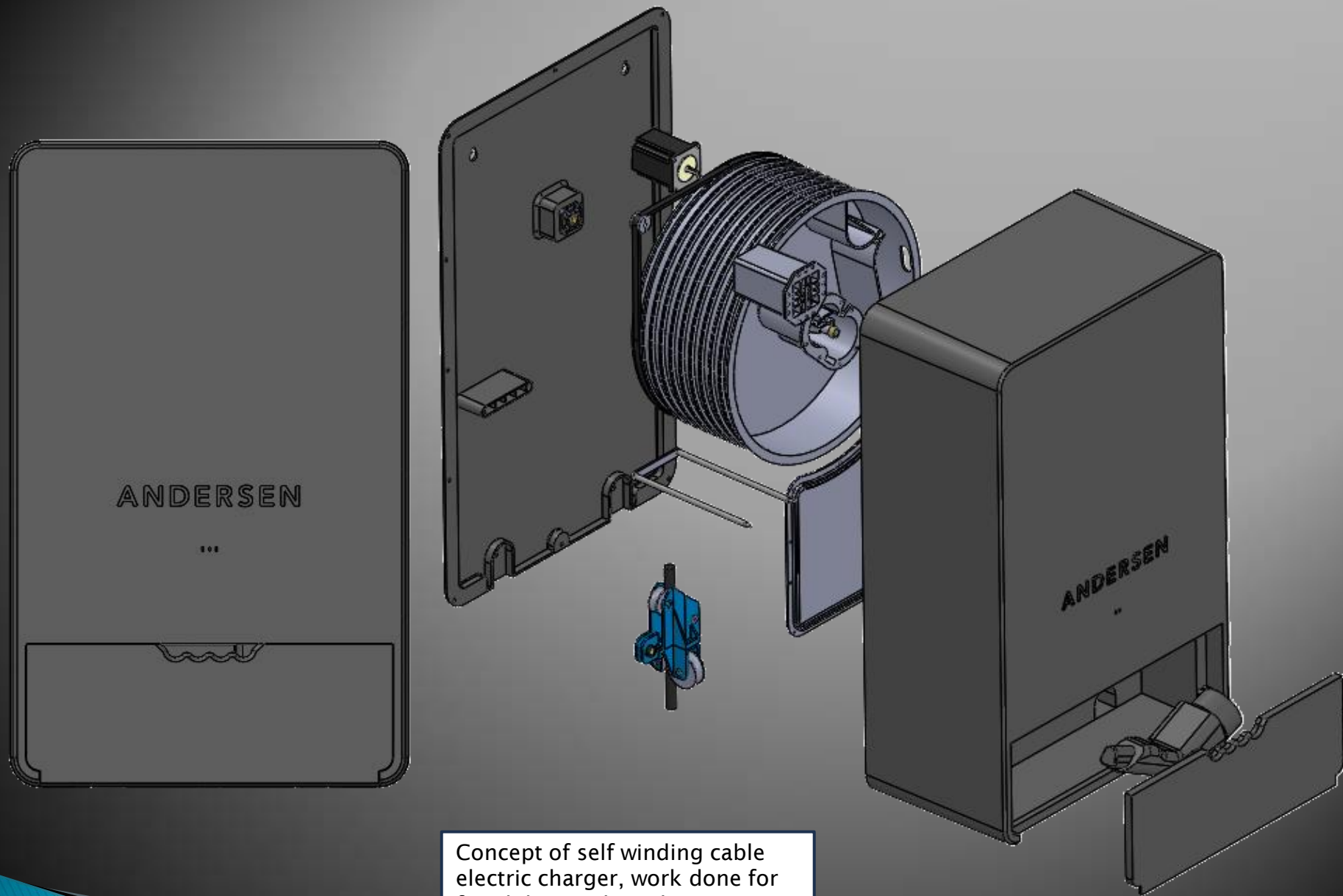


A2 EV Charger Plinth FEA

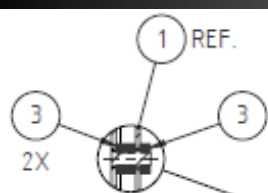


PCB cover for company branding, clip fit, logo and form fit design language of client

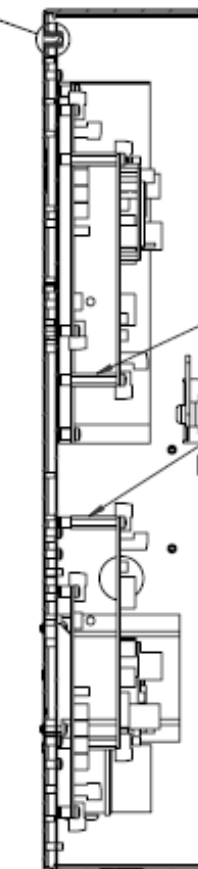




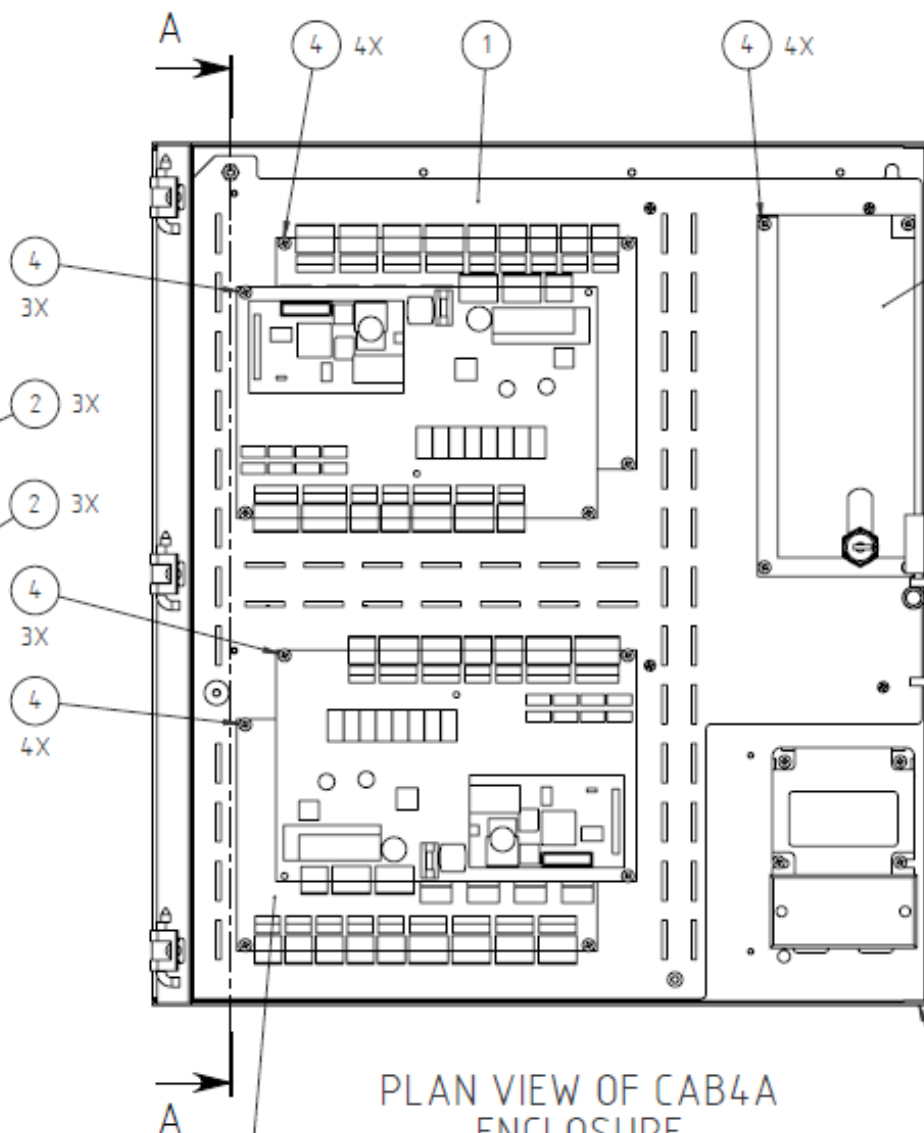
Concept of self winding cable
electric charger, work done for
feasibility study and grant
application



DETAIL B
SCALE 1:2



SECTION A-A



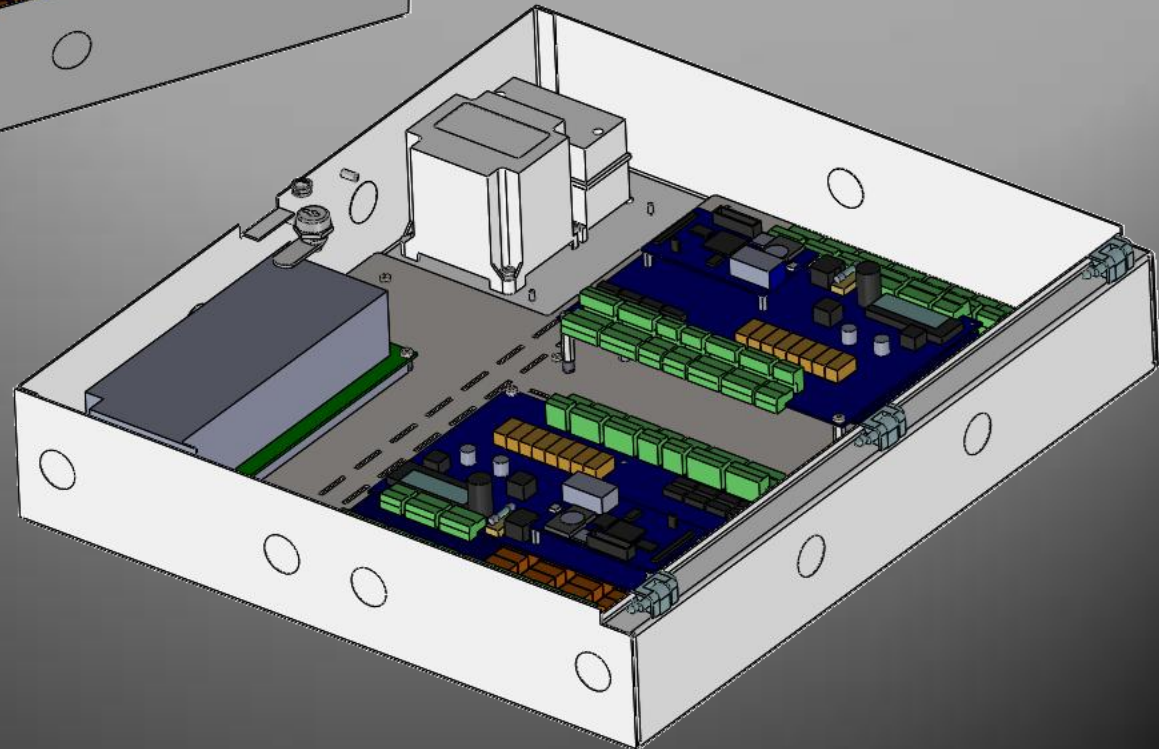
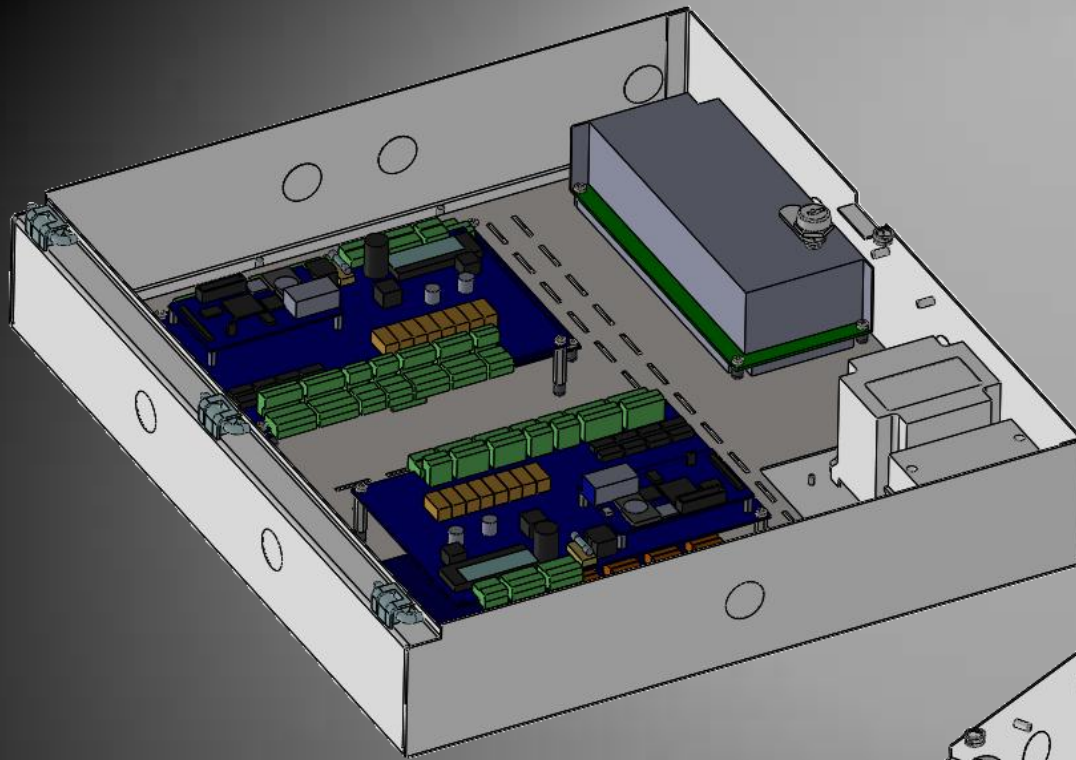
PLAN VIEW OF CAB4A
ENCLOSURE
(LID REMOVED)

M4000 PCBS
TYP.
NOT SUPPLIED
WITH THIS KIT

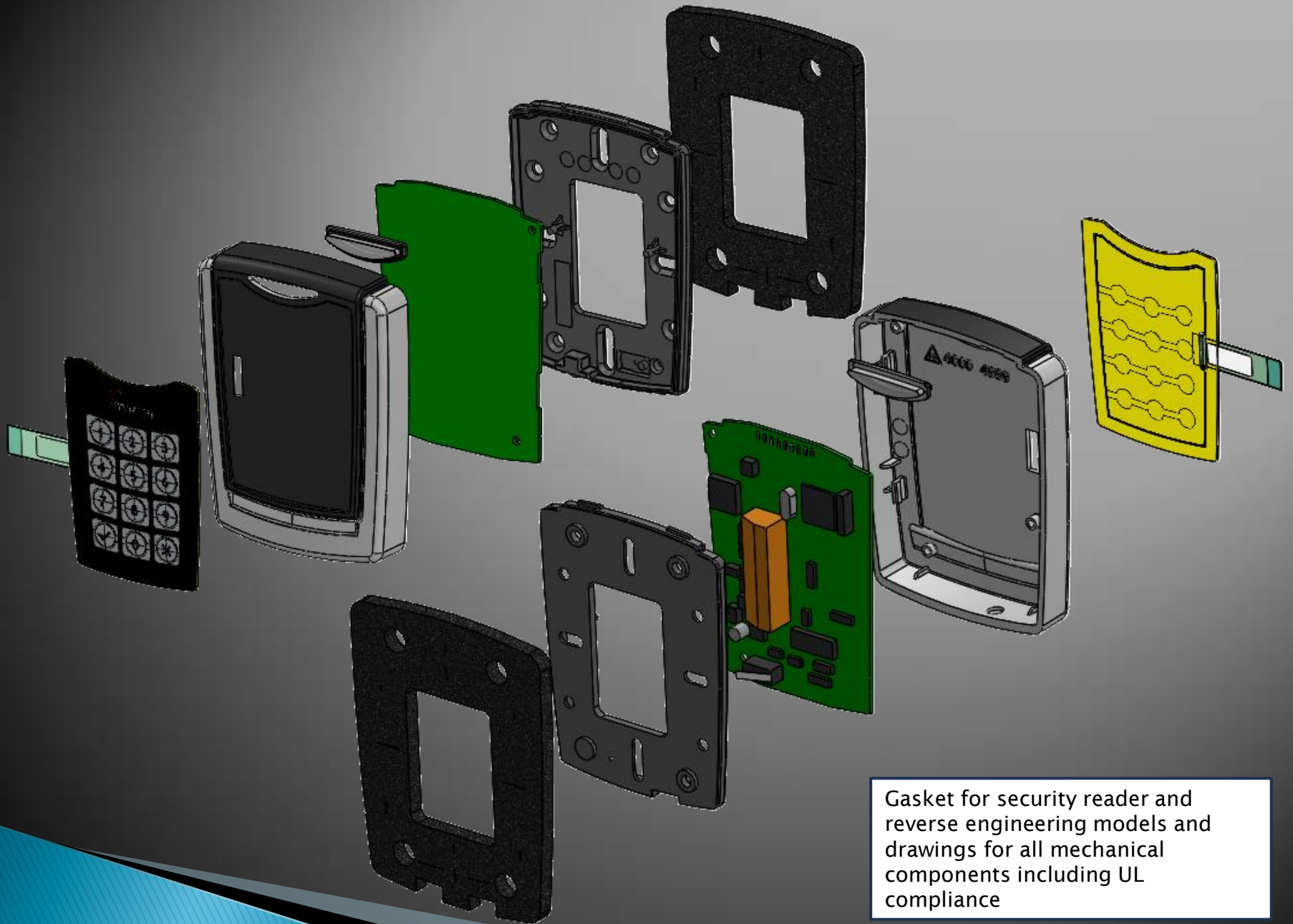
POWER SUPPLY
(IPS-100)
NOT SUPPLIED WITH
THIS KIT

CAB4A ENCLOSURE
(7000-0348)
NOT SUPPLIED WITH
THIS KIT

Custom electronics enclosure
mounting plate for upgraded
electronics to existing cabinet
(retro fit)



Custom electronics enclosure
mounting plate for upgraded
electronics to existing cabinet
(retro fit)



Gasket for security reader and reverse engineering models and drawings for all mechanical components including UL compliance

DRAWING / PART No
U-4000-5003-P2

SYSTEM FILE NAME
U-4000-5003-P2 S87X-XX
Reader Membrane Keypad (UL
RC QMF22 00QW2)

DESCRIPTION
S87X-XX Reader Membrane
Keypad (UL RC QMF22, 000w2)

PROJECT Name / No.
BTX

MATERIALS

BULLET SIZE
N/A

Pitarum
 MATT

PAINTING
LAYER 1 SCREEN PRINTED. SEE SHEET 3

10 PER LOW CHARGING BAG

SURFACE TEXTURE
UNLESS OTHERWISE STATED

PRODUCT WEIGHT (mg)
0.0047

SCALE	2:3	FORMAT	A3
-------	-----	--------	----

DRAWN RJF	CHECKED AJ	APPROVED (SUPPLIER) LYL Mkn
--------------	---------------	-----------------------------------

THIS DRAWING IS CAD PRODUCED.
ANY CHANGES MUST BE MADE VIA
THE CAD SYSTEM

SHEET
1 OF 5

伊 194 000 港币 + 45000

REMOVE ALL SURF AND SHARP EDGES

ALL DIMENSIONS IN MILLIMETRES (U O S)

[illegible]

AMAG TECHNOLOGY LTD

AMAG TECHNOLOGY LTD, CHALLENGE HOUSE
INTERNATIONAL DRIVE, TEWKESBURY,
GLOUCESTERSHIRE GL20 2JQ, UK

WWW.AMAG.COM Tel: +44 (0) 1854 850977

PRIVATE & CONFIDENTIAL

1. 12 x Tactile dome membrane keys.
2. Material Autotex V200 XE (Matte Finish, 200 Micron).
For exterior use IP65 and Direct Sunlight.
3. Temp. Range bought in item -40 to +55 degrees °C. AHAG to independently qualify membrane to -40 to +70 degrees °C.
4. Membrane dome height 0.4mm.
5. Adhesive backed with peelable paper liner.
6. Mark keypad tail label with manufacture batch number, part number & date code.
7. Keypad thickness: 0.97±0.2mm (Reference Items 1, 2, 3, 4, 5 & 6).
8. UL Critical item - Ensure material is as specified on drawing [UL R/C GHF22, 00GWI]. All deliveries of this item must be supplied to AHAG Technology in accordance with the latest release of UL Traceability Requirements 90-UM-C0927.
9. Pip on Key 5.
10. Circuit paths and shunting pads to be determined by supplier.
11. Colour tolerance on Layer 1 Artwork: ±12% ΔE (CIELAB L*a*b) (see Sheet 3).
12. Layer profile geometry to match views on Sheet 5.
13. Tail length/body can be any shape / width as long as contact sizes are as per this drawing.

SPECIFICATION	
OPERATING TEMPERATURE	-40 TO +70°C
STORAGE TEMPERATURE	-40 TO +85°C
OPERATING HUMIDITY	95% NON-CONDENSING
CIRCUIT LAYER LOOP RESISTANCE	<50 $\mu\Omega$
ENDURANCE LEVEL	500,000 CYCLES

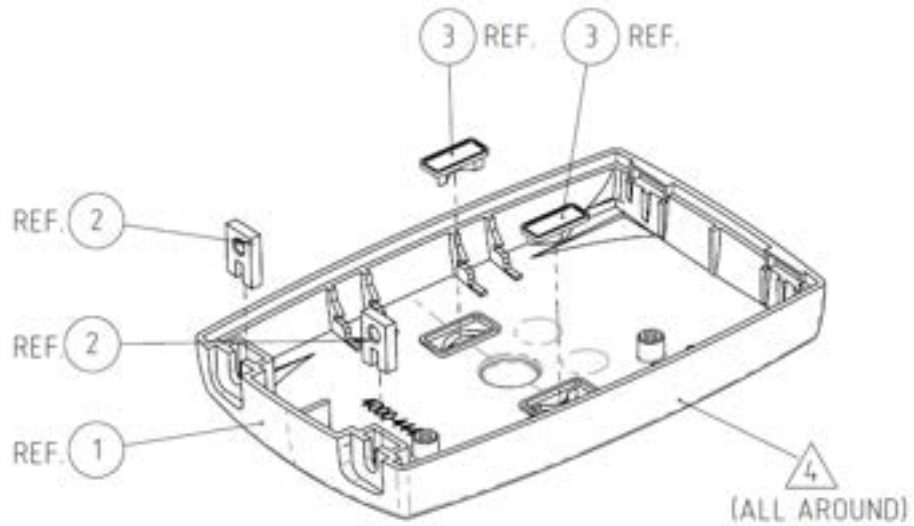
ITEM NO	NAME	MATERIAL	THICKNESS	REMARK
1	TOP OVERLAY	AUTOTEX V300 VE	0.2mm	TEXTURED, MATT FINISH, SCREEN PRINT (SEE SHEET 3). DOME EMBOSSED TO CREATE TACTILE RESPONSE. HEIGHT OF EMBOS = 0.4mm
2	OVERLAY ADHESIVE	3M 7953	0.07mm	
3	SHORTING PAD / UPPER CIRCUIT	ST505	0.125mm	SUPPLIER TO DETERMINE CIRCUIT PATHS / SHORTING PADS.
4	DOME ADHESIVE SPACER	3M 7959	0.225mm	
5	LOWER SHORTING CIRCUIT	ST505	0.125mm	SUPPLIER TO DETERMINE CIRCUIT PATHS / SHORTING PADS.
6	REAR ADHESIVE PAD	3M 7953	0.22mm	THICKNESS INCLUDES LAYER OF LINER. 0.26mm ADHESIVE LAYER + 0.2mm LINER.
7	SKINSET	7L7-126	0.4mm	PET 1/8 / 0.25-3048-PET / 0.30 SKINSET TO INCLUDE ITEMS 2 & 5
8	SUPPENER	PT-05	0.75mm	ADHESIVE WITH 1 SIDED ADHESIVE. ANY COLOUR BUT CLEAR
9	POLYCAP	PO17B	0.45mm	ADHESIVE WITH 1 SIDED ADHESIVE. ANY COLOUR BUT CLEAR
10	LABEL	-	-	ALL APPROVED MARKING AND LABELLING SYSTEMS (PODCC OR PD IQ). WHITE BACKGROUND. BLACK TEXT.

Switch membrane drawing

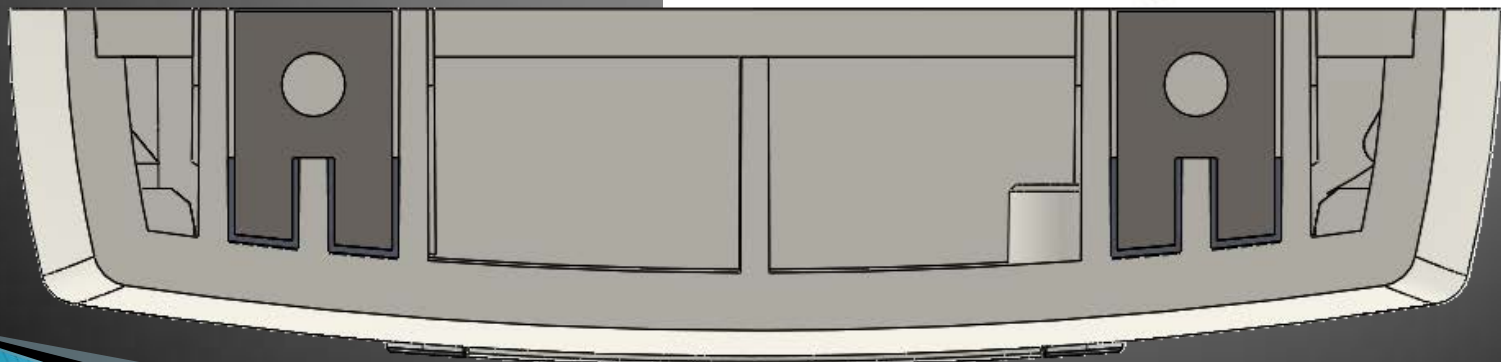
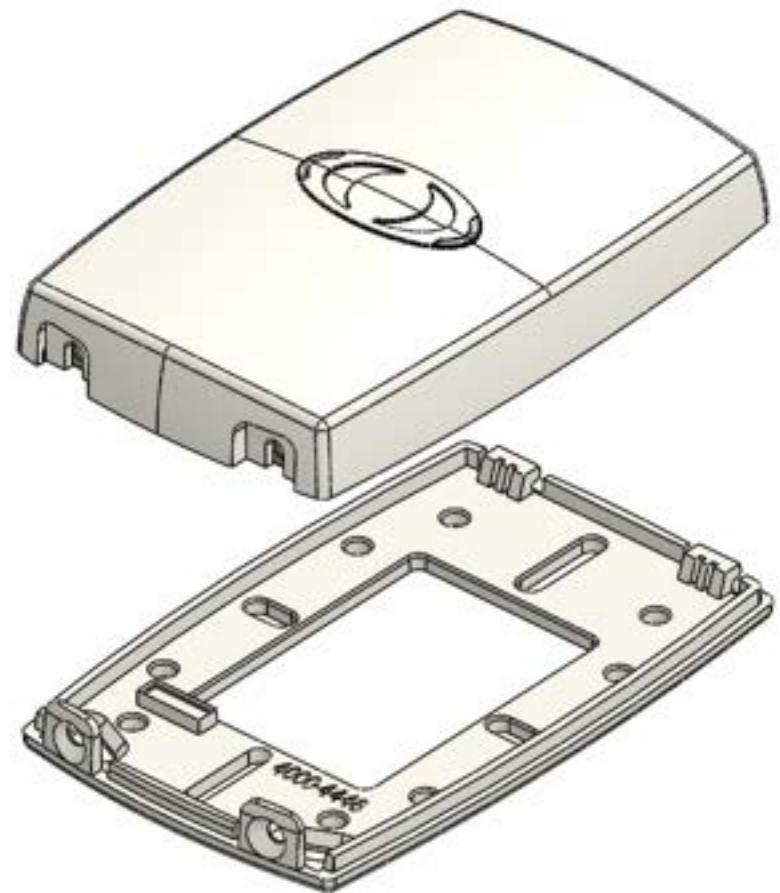


PRIVATE & CONFIDENTIAL

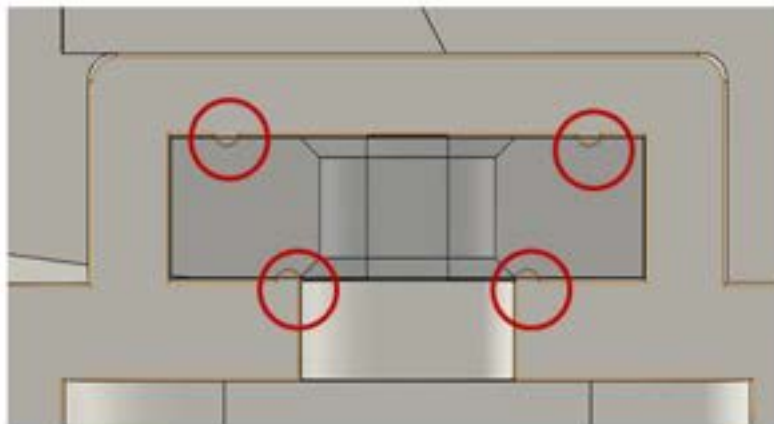
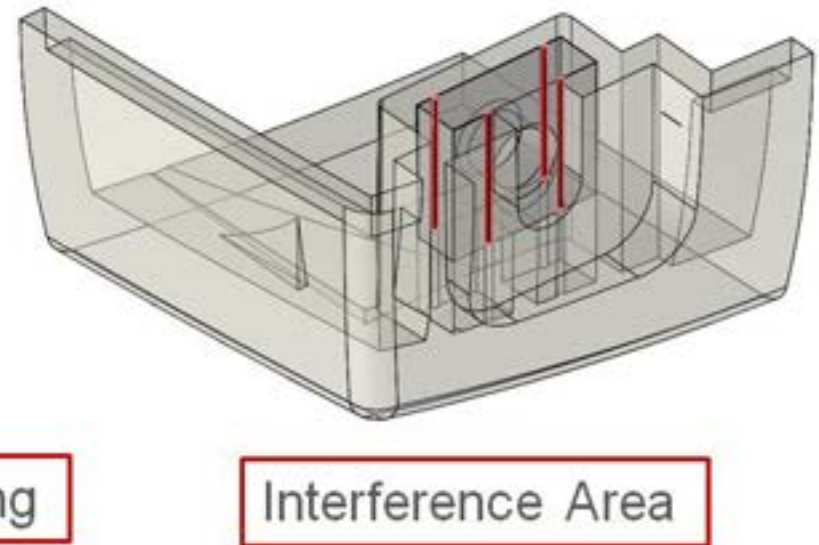
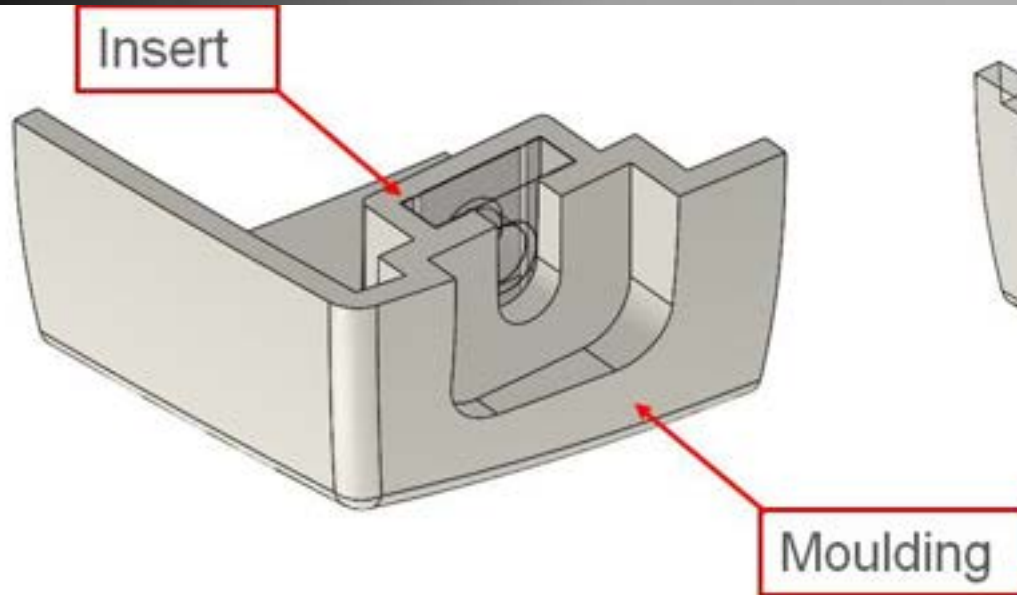
Switch membrane drawing



ISOMETRIC VIEW



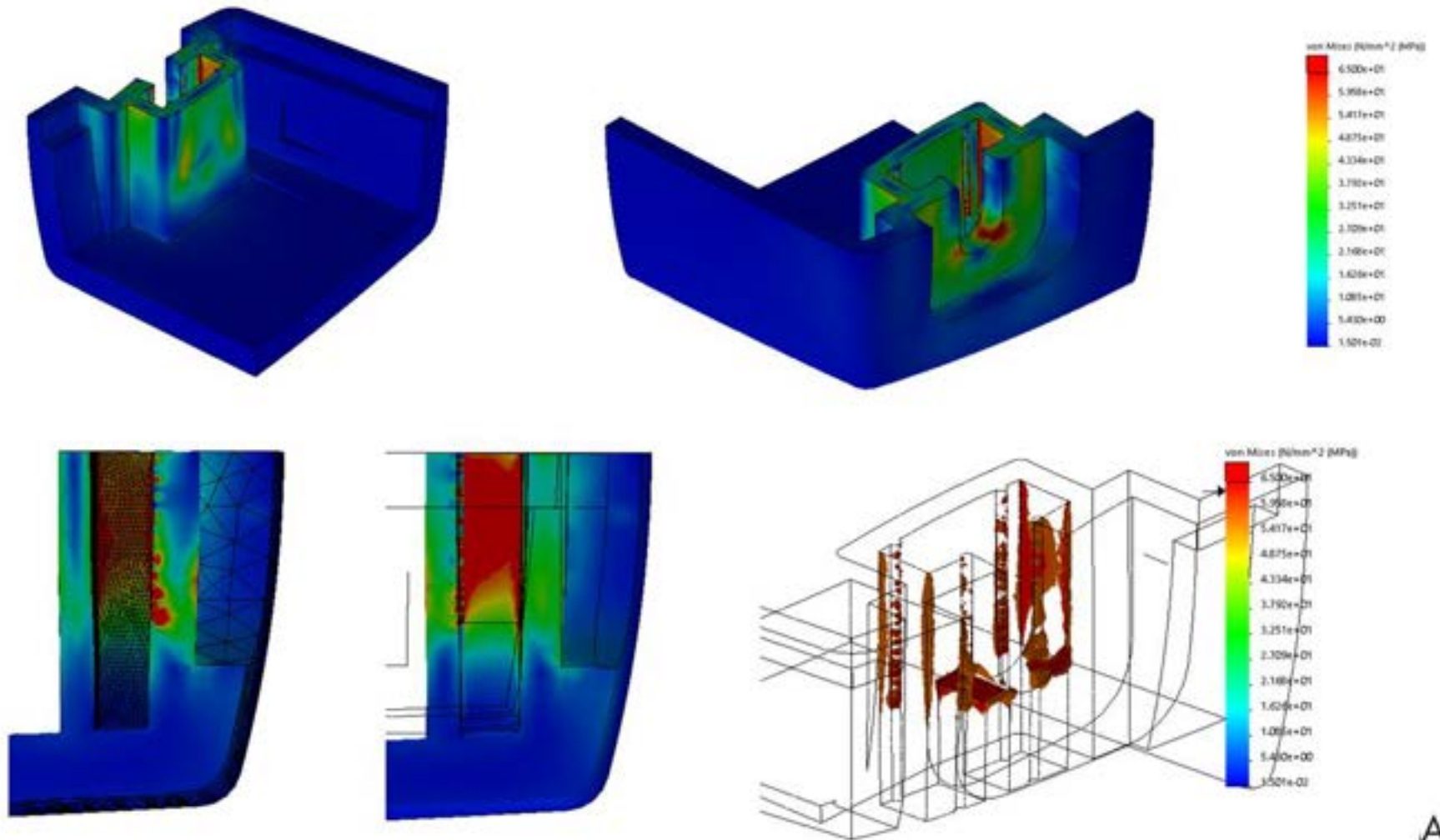
Security card reader insert production issue product modification of toothed (increase adhesive area) insert that is bonded in place



Crush Rib Locations

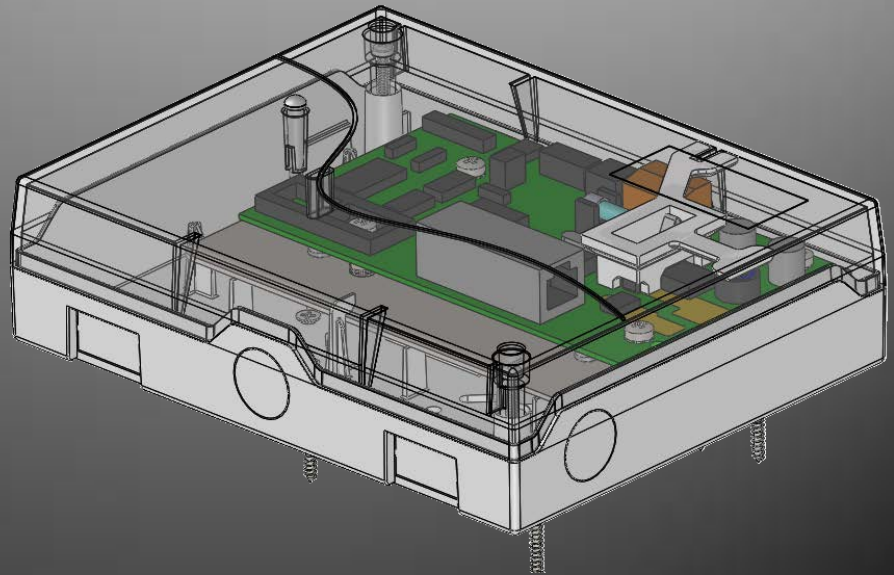
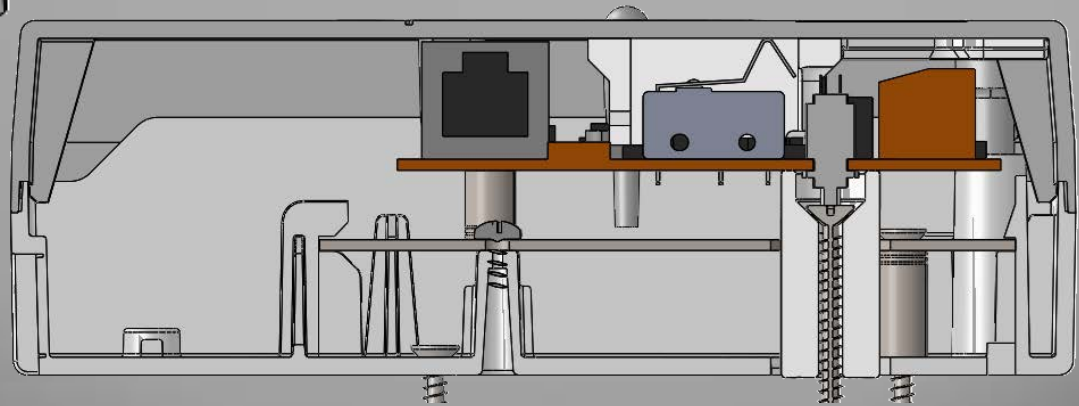
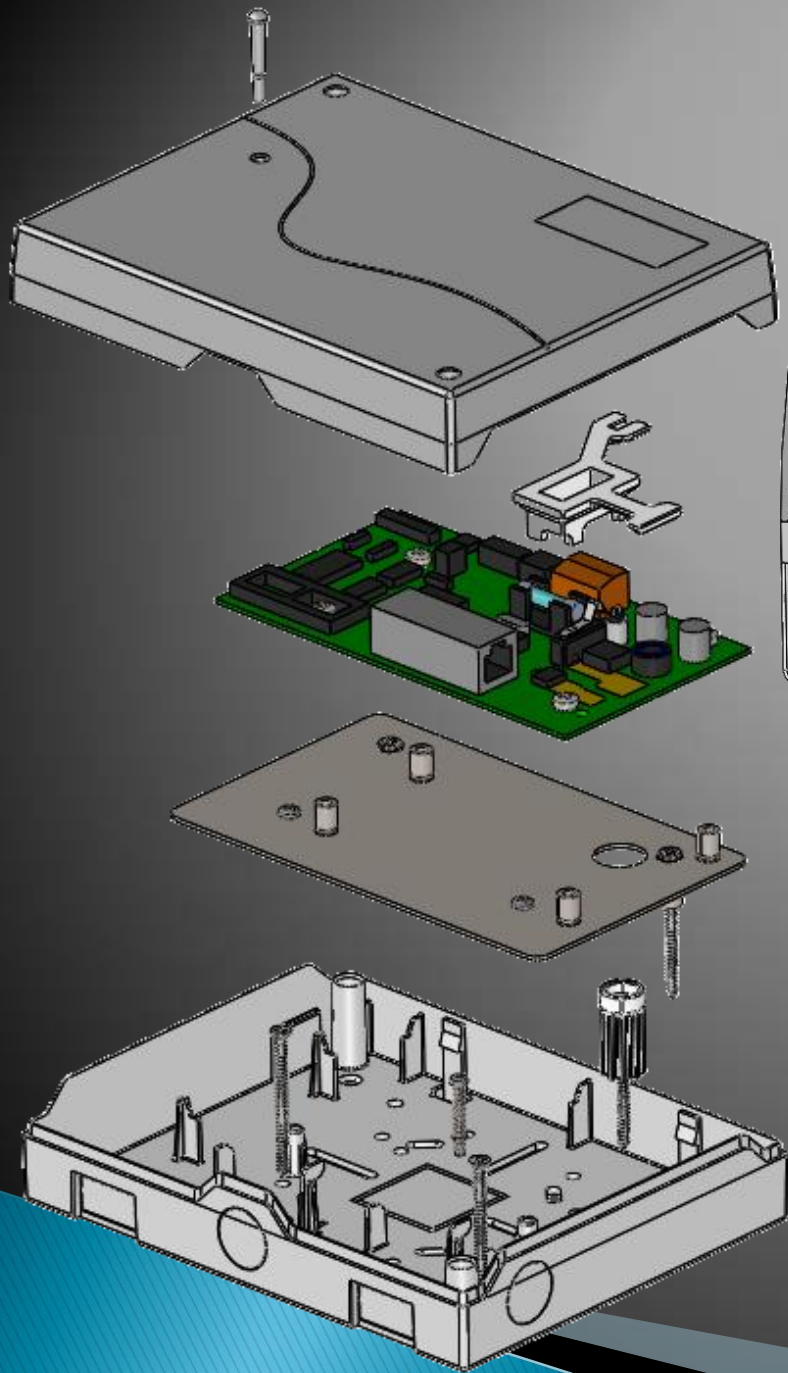
Steel Sheet Metal Tolerances Table Chart			
Gauge	Nominal in. (mm)	Max in. (mm)	Min in. (mm)
7	0.1793	0.1883 (4.78)	0.1703 (4.32)
8	0.1644	0.1734(44.04)	0.1554(3.95)
9	0.1495	0.1585(4.03)	0.1405(3.56)
10	0.1345 (3.42)	0.1405 (3.57)	0.1285 (3.26)
11	0.1196 (3.04)	0.1256 (3.19)	0.1136 (2.89)
12	0.1046 (2.66)	0.1106 (2.81)	0.0986 (2.50)

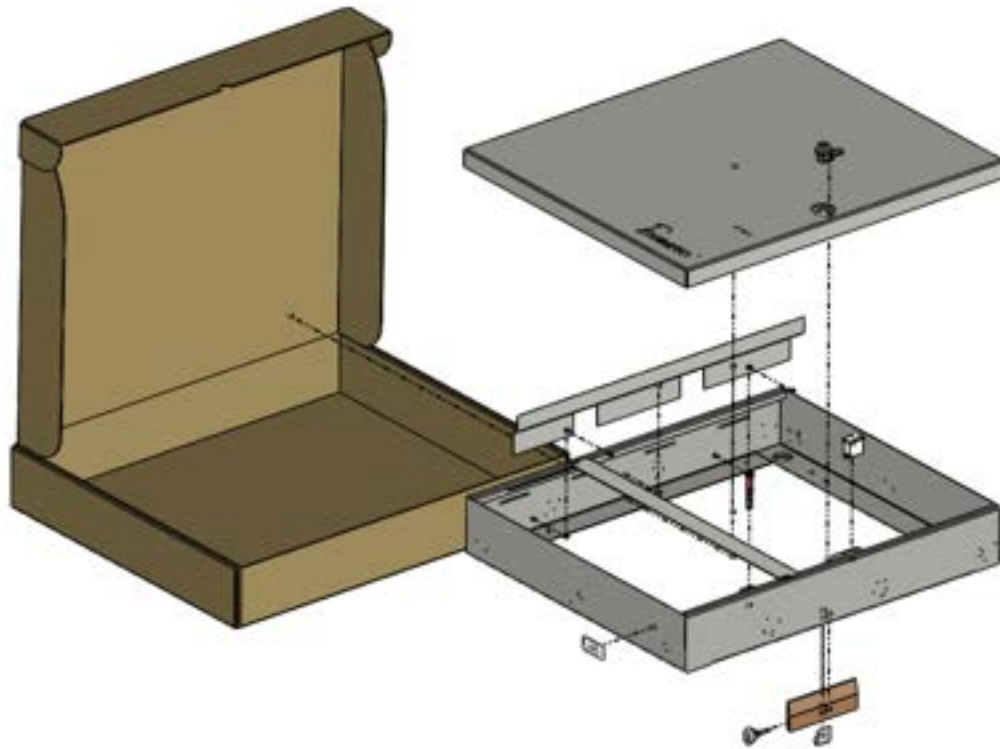
Security card reader insert production issue product modification of adding crush ribs to ensure tolerances allow for press fit



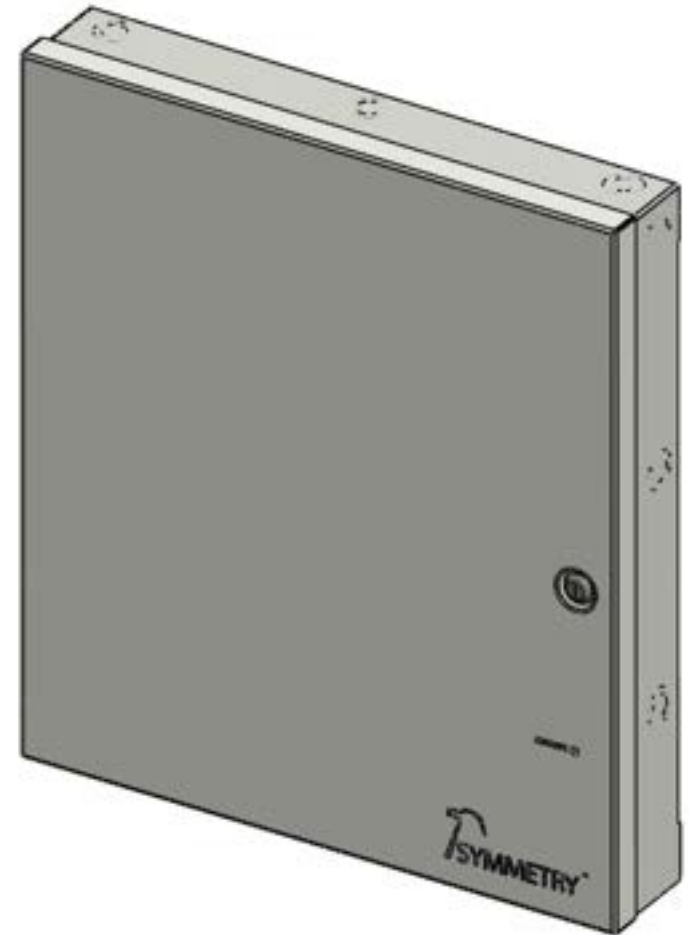
Security card reader insert production issue product modification of adding crush ribs interference fit FEA to see if moulding will fail

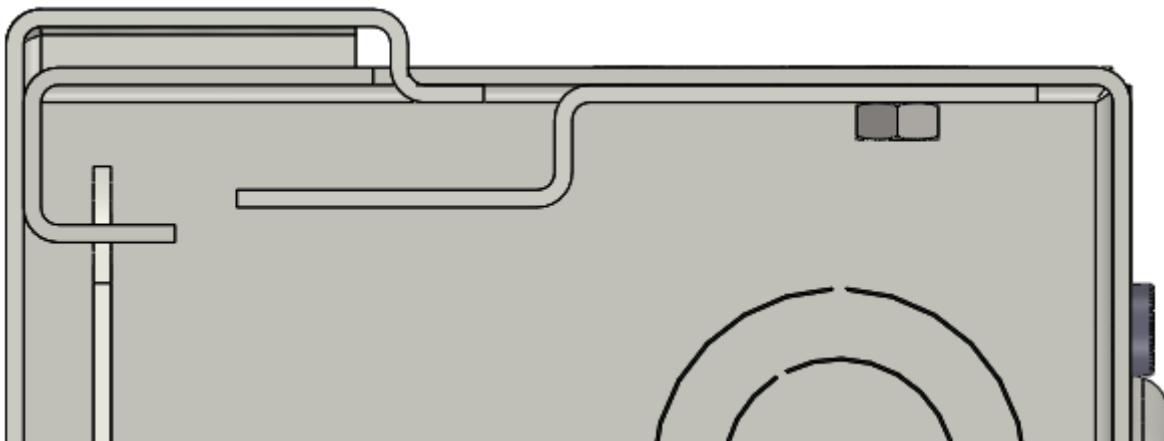
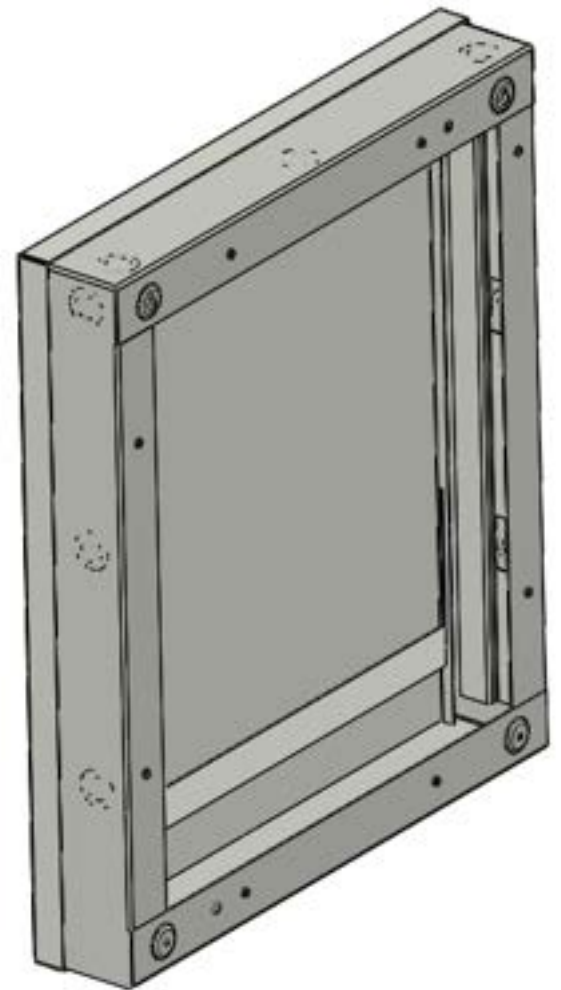
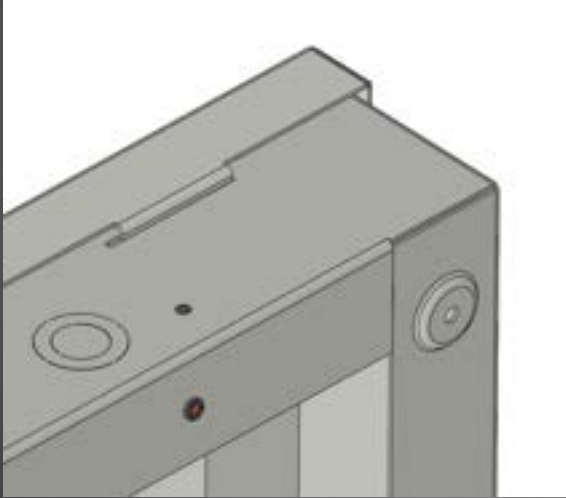
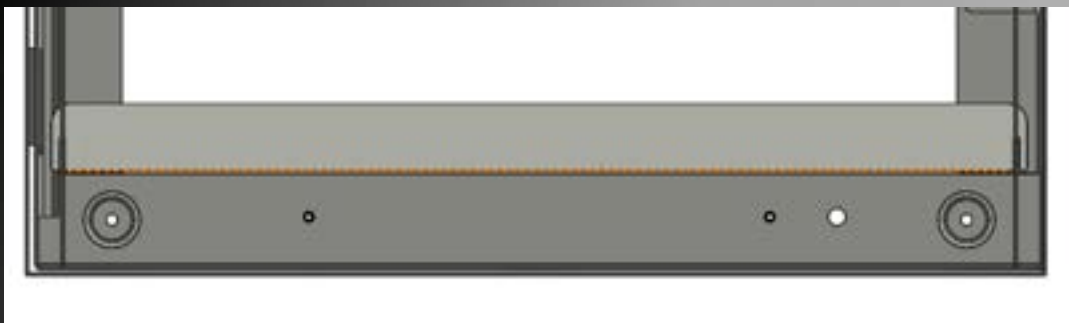
New product using existing moulded housing with custom components to pass nuclear standard for shock, vibration, penetration and impact testing

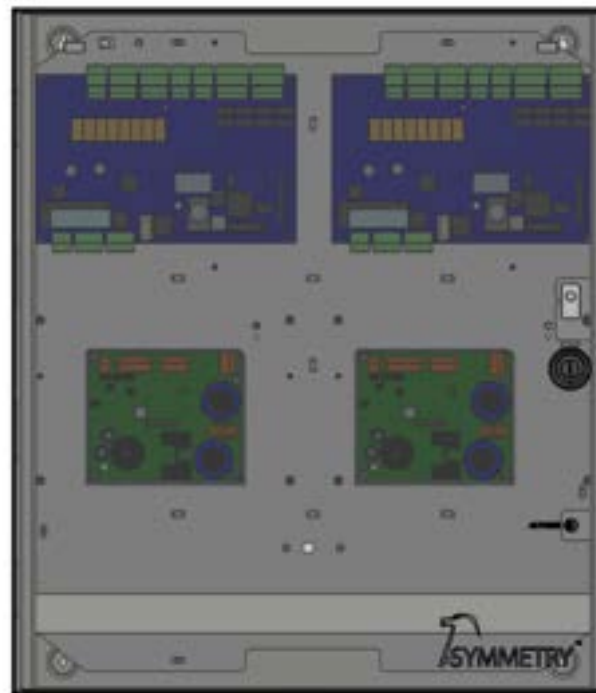
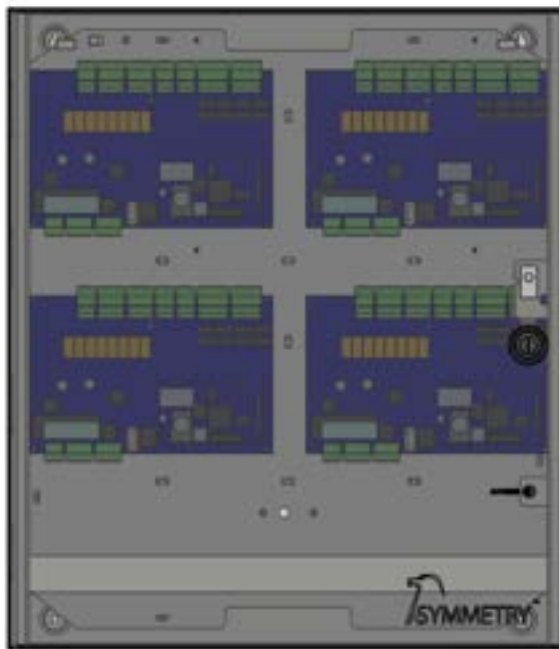




Custom Electronics Enclosure, modular backplate to allow for different configurations of electronics components for customer's system. Penetration / tamper proof, shock and vibration tested







Modular Electronics
Layout via backplate in
cabinet

THIS DOCUMENT CONTAINS AMAG TECHNOLOGY'S INTELLECTUAL PROPERTY WHICH IS SUPPLIED IN CONFIDENCE; IT MUST NOT BE USED FOR ANY OTHER PURPOSE THAN WHICH IT IS SUPPLIED; IT MUST NOT BE REPRODUCED, TENDERED FOR MANUFACTURE OR DISCLOSED TO OTHERS WITHOUT PRIOR WRITTEN PERMISSION FROM THE OWNERS. COPYRIGHT, DESIGN RIGHT AMAG TECHNOLOGY LTD 2019

(C)

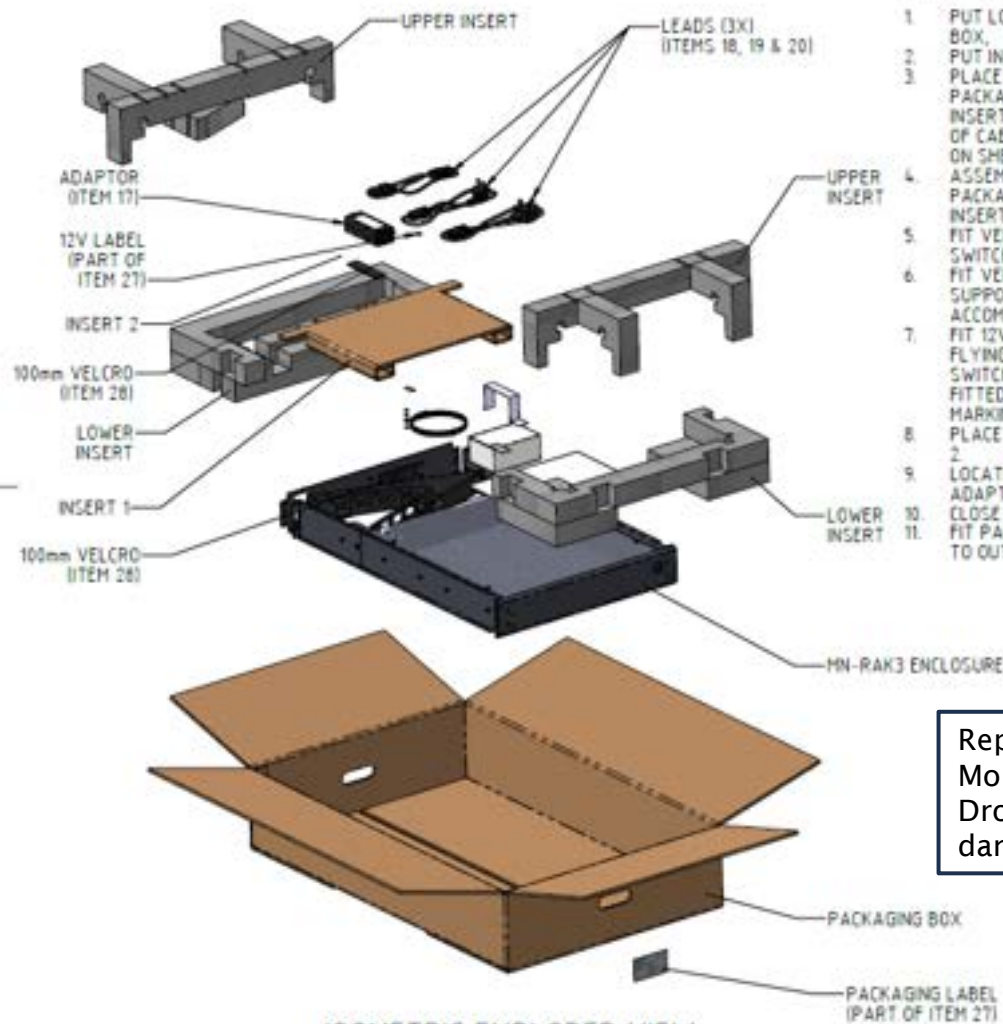
(DR)

DRAWING / PART No
8000-1365-P3

SHEET 5: MN-RAK3 ENCLOSURE FINAL METAL WORK ASSEMBLY & PACKAGING

FINAL PACKAGING ASSEMBLY INSTRUCTIONS:

1. PUT LOWER INSERTS INTO PACKAGING BOX,
2. PUT INSERT 1 IN PLACE.
3. PLACE MN-RAK3 ENCLOSURE INTO PACKAGING BOX LOCATING IN BOTTOM INSERTS. ENSURE CORRECT POSITIONING OF CABLE SUPPORT (ITEM 5) AS SHOWN ON SHEET 4, DETAIL B.
4. ASSEMBLE UPPER INSERTS INTO PACKAGING BOX (LOCATING INTO LOWER INSERTS).
5. FIT VELCRO (ITEM 28) TO UNDERSIDE OF SWITCHING ADAPTOR.
6. FIT VELCRO (ITEM 28) TO REAR OF CABLE SUPPORT (ITEM 5) AS SHOWN (TO ACCOMMODATE SWITCHING ADAPTOR).
7. FIT 12V LABEL (PART OF ITEM 27) TO FLYING LEAD FROM OUTPUT OF SWITCHING ADAPTOR. ENSURE 12V LABEL FITTED TO WIRE WITH WHITE TEXT MARKINGS.
8. PLACE ADAPTOR AND LEADS IN INSERT 2.
9. LOCATE INSERT 2 (WITH LEADS AND ADAPTOR IN) INTO PACKAGING BOX. CLOSE AND TAPE BOX CLOSED.
10. FIT PACKING LABEL (PART OF ITEM 27) TO OUTSIDE OF PACKAGING BOX.
- 11.



ISOMETRIC EXPLODED VIEW

PACKAGING LABEL (PART OF ITEM 27)

Repacking of Rack Mount Product for Drop Test and stop damage in transit

DRAFT COPY - NOT FOR PRODUCTION

SYSTEM FILE NAME
8000-1365-P3 MN-RAK3
Enclosure Metalwork Assembly & Packaging

DESCRIPTION
MN-RAK3 ENCLOSURE METAL WORK ASSEMBLY & PACKAGING

PROJECT Name / No
MN-RAK3

MATERIAL
SEE BOM

BULLET SIZE
N/A

FINISH
N/A

PAINTING
N/A

PACKAGING
SEE BOM / SEE NOTES

SURFACE TEXTURE
(UNLESS OTHERWISE STATED)

PRODUCT WEIGHT (Kg)
15 (ESTIMATED)

SCALE
1:10

FORMAT
A3

DRAWN
RJP

CHECKED
AJ

APPROVED (SUPPLIER)
XXX

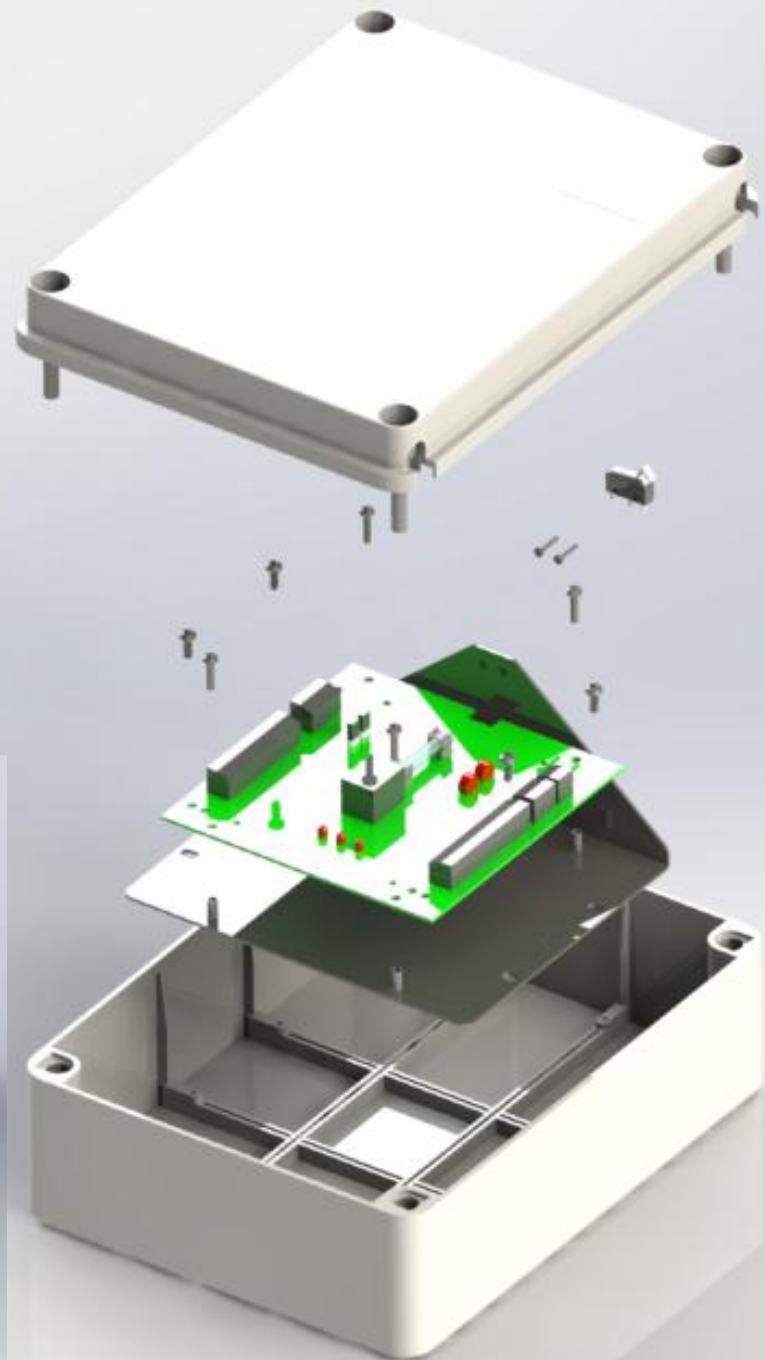
THIS DRAWING IS CAD PRODUCED. ANY CHANGES MUST BE MADE VIA THE CAD SYSTEM.

IF IN DOUBT - ASK!
REMOVE ALL BURRS AND SHARP EDGES.
ALL DIMENSIONS IN MILLIMETRES (M.M.S.I.)

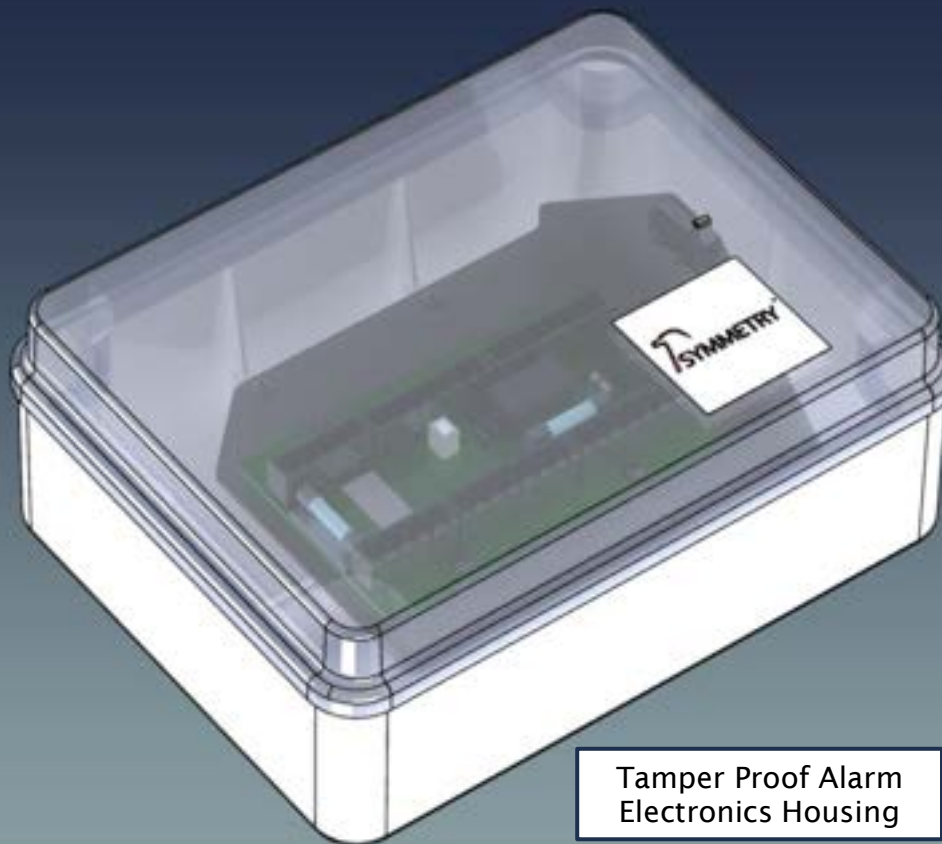
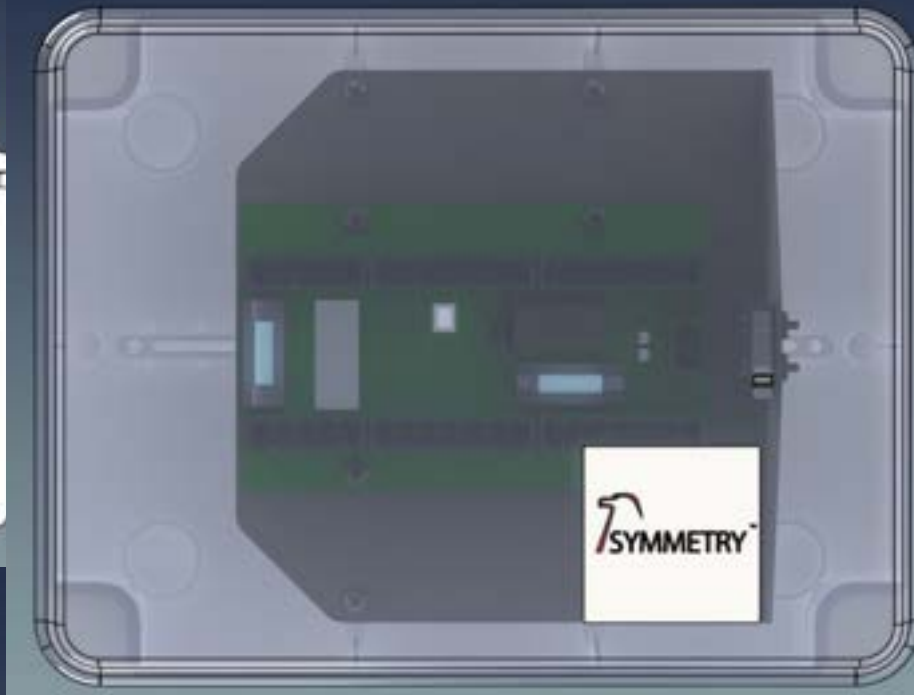
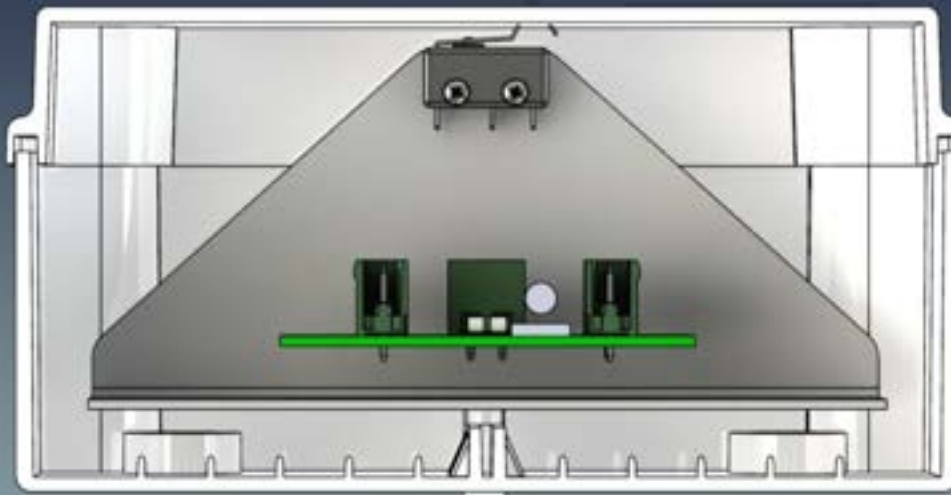
GENERAL TOLERANCES:
FRACTIONS: 1/16, 1/8, 3/16, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 2 3/4, 3, 3 1/4, 3 1/2, 3 3/4, 4, 4 1/4, 4 1/2, 4 3/4, 5, 5 1/4, 5 1/2, 5 3/4, 6, 6 1/4, 6 1/2, 6 3/4, 7, 7 1/4, 7 1/2, 7 3/4, 8, 8 1/4, 8 1/2, 8 3/4, 9, 9 1/4, 9 1/2, 9 3/4, 10, 10 1/4, 10 1/2, 10 3/4, 11, 11 1/4, 11 1/2, 11 3/4, 12, 12 1/4, 12 1/2, 12 3/4, 13, 13 1/4, 13 1/2, 13 3/4, 14, 14 1/4, 14 1/2, 14 3/4, 15, 15 1/4, 15 1/2, 15 3/4, 16, 16 1/4, 16 1/2, 16 3/4, 17, 17 1/4, 17 1/2, 17 3/4, 18, 18 1/4, 18 1/2, 18 3/4, 19, 19 1/4, 19 1/2, 19 3/4, 20, 20 1/4, 20 1/2, 20 3/4, 21, 21 1/4, 21 1/2, 21 3/4, 22, 22 1/4, 22 1/2, 22 3/4, 23, 23 1/4, 23 1/2, 23 3/4, 24, 24 1/4, 24 1/2, 24 3/4, 25, 25 1/4, 25 1/2, 25 3/4, 26, 26 1/4, 26 1/2, 26 3/4, 27, 27 1/4, 27 1/2, 27 3/4, 28, 28 1/4, 28 1/2, 28 3/4, 29, 29 1/4, 29 1/2, 29 3/4, 30, 30 1/4, 30 1/2, 30 3/4, 31, 31 1/4, 31 1/2, 31 3/4, 32, 32 1/4, 32 1/2, 32 3/4, 33, 33 1/4, 33 1/2, 33 3/4, 34, 34 1/4, 34 1/2, 34 3/4, 35, 35 1/4, 35 1/2, 35 3/4, 36, 36 1/4, 36 1/2, 36 3/4, 37, 37 1/4, 37 1/2, 37 3/4, 38, 38 1/4, 38 1/2, 38 3/4, 39, 39 1/4, 39 1/2, 39 3/4, 40, 40 1/4, 40 1/2, 40 3/4, 41, 41 1/4, 41 1/2, 41 3/4, 42, 42 1/4, 42 1/2, 42 3/4, 43, 43 1/4, 43 1/2, 43 3/4, 44, 44 1/4, 44 1/2, 44 3/4, 45, 45 1/4, 45 1/2, 45 3/4, 46, 46 1/4, 46 1/2, 46 3/4, 47, 47 1/4, 47 1/2, 47 3/4, 48, 48 1/4, 48 1/2, 48 3/4, 49, 49 1/4, 49 1/2, 49 3/4, 50, 50 1/4, 50 1/2, 50 3/4, 51, 51 1/4, 51 1/2, 51 3/4, 52, 52 1/4, 52 1/2, 52 3/4, 53, 53 1/4, 53 1/2, 53 3/4, 54, 54 1/4, 54 1/2, 54 3/4, 55, 55 1/4, 55 1/2, 55 3/4, 56, 56 1/4, 56 1/2, 56 3/4, 57, 57 1/4, 57 1/2, 57 3/4, 58, 58 1/4, 58 1/2, 58 3/4, 59, 59 1/4, 59 1/2, 59 3/4, 60, 60 1/4, 60 1/2, 60 3/4, 61, 61 1/4, 61 1/2, 61 3/4, 62, 62 1/4, 62 1/2, 62 3/4, 63, 63 1/4, 63 1/2, 63 3/4, 64, 64 1/4, 64 1/2, 64 3/4, 65, 65 1/4, 65 1/2, 65 3/4, 66, 66 1/4, 66 1/2, 66 3/4, 67, 67 1/4, 67 1/2, 67 3/4, 68, 68 1/4, 68 1/2, 68 3/4, 69, 69 1/4, 69 1/2, 69 3/4, 70, 70 1/4, 70 1/2, 70 3/4, 71, 71 1/4, 71 1/2, 71 3/4, 72, 72 1/4, 72 1/2, 72 3/4, 73, 73 1/4, 73 1/2, 73 3/4, 74, 74 1/4, 74 1/2, 74 3/4, 75, 75 1/4, 75 1/2, 75 3/4, 76, 76 1/4, 76 1/2, 76 3/4, 77, 77 1/4, 77 1/2, 77 3/4, 78, 78 1/4, 78 1/2, 78 3/4, 79, 79 1/4, 79 1/2, 79 3/4, 80, 80 1/4, 80 1/2, 80 3/4, 81, 81 1/4, 81 1/2, 81 3/4, 82, 82 1/4, 82 1/2, 82 3/4, 83, 83 1/4, 83 1/2, 83 3/4, 84, 84 1/4, 84 1/2, 84 3/4, 85, 85 1/4, 85 1/2, 85 3/4, 86, 86 1/4, 86 1/2, 86 3/4, 87, 87 1/4, 87 1/2, 87 3/4, 88, 88 1/4, 88 1/2, 88 3/4, 89, 89 1/4, 89 1/2, 89 3/4, 90, 90 1/4, 90 1/2, 90 3/4, 91, 91 1/4, 91 1/2, 91 3/4, 92, 92 1/4, 92 1/2, 92 3/4, 93, 93 1/4, 93 1/2, 93 3/4, 94, 94 1/4, 94 1/2, 94 3/4, 95, 95 1/4, 95 1/2, 95 3/4, 96, 96 1/4, 96 1/2, 96 3/4, 97, 97 1/4, 97 1/2, 97 3/4, 98, 98 1/4, 98 1/2, 98 3/4, 99, 99 1/4, 99 1/2, 99 3/4, 100, 100 1/4, 100 1/2, 100 3/4, 101, 101 1/4, 101 1/2, 101 3/4, 102, 102 1/4, 102 1/2, 102 3/4, 103, 103 1/4, 103 1/2, 103 3/4, 104, 104 1/4, 104 1/2, 104 3/4, 105, 105 1/4, 105 1/2, 105 3/4, 106, 106 1/4, 106 1/2, 106 3/4, 107, 107 1/4, 107 1/2, 107 3/4, 108, 108 1/4, 108 1/2, 108 3/4, 109, 109 1/4, 109 1/2, 109 3/4, 110, 110 1/4, 110 1/2, 110 3/4, 111, 111 1/4, 111 1/2, 111 3/4, 112, 112 1/4, 112 1/2, 112 3/4, 113, 113 1/4, 113 1/2, 113 3/4, 114, 114 1/4, 114 1/2, 114 3/4, 115, 115 1/4, 115 1/2, 115 3/4, 116, 116 1/4, 116 1/2, 116 3/4, 117, 117 1/4, 117 1/2, 117 3/4, 118, 118 1/4, 118 1/2, 118 3/4, 119, 119 1/4, 119 1/2, 119 3/4, 120, 120 1/4, 120 1/2, 120 3/4, 121, 121 1/4, 121 1/2, 121 3/4, 122, 122 1/4, 122 1/2, 122 3/4, 123, 123 1/4, 123 1/2, 123 3/4, 124, 124 1/4, 124 1/2, 124 3/4, 125, 125 1/4, 125 1/2, 125 3/4, 126, 126 1/4, 126 1/2, 126 3/4, 127, 127 1/4, 127 1/2, 127 3/4, 128, 128 1/4, 128 1/2, 128 3/4, 129, 129 1/4, 129 1/2, 129 3/4, 130, 130 1/4, 130 1/2, 130 3/4, 131, 131 1/4, 131 1/2, 131 3/4, 132, 132 1/4, 132 1/2, 132 3/4, 133, 133 1/4, 133 1/2, 133 3/4, 134, 134 1/4, 134 1/2, 134 3/4, 135, 135 1/4, 135 1/2, 135 3/4, 136, 136 1/4, 136 1/2, 136 3/4, 137, 137 1/4, 137 1/2, 137 3/4, 138, 138 1/4, 138 1/2, 138 3/4, 139, 139 1/4, 139 1/2, 139 3/4, 140, 140 1/4, 140 1/2, 140 3/4, 141, 141 1/4, 141 1/2, 141 3/4, 142, 142 1/4, 142 1/2, 142 3/4, 143, 143 1/4, 143 1/2, 143 3/4, 144, 144 1/4, 144 1/2, 144 3/4, 145, 145 1/4, 145 1/2, 145 3/4, 146, 146 1/4, 146 1/2, 146 3/4, 147, 147 1/4, 147 1/2, 147 3/4, 148, 148 1/4, 148 1/2, 148 3/4, 149, 149 1/4, 149 1/2, 149 3/4, 150, 150 1/4, 150 1/2, 150 3/4, 151, 151 1/4, 151 1/2, 151 3/4, 152, 152 1/4, 152 1/2, 152 3/4, 153, 153 1/4, 153 1/2, 153 3/4, 154, 154 1/4, 154 1/2, 154 3/4, 155, 155 1/4, 155 1/2, 155 3/4, 156, 156 1/4, 156 1/2, 156 3/4, 157, 157 1/4, 157 1/2, 157 3/4, 158, 158 1/4, 158 1/2, 158 3/4, 159, 159 1/4, 159 1/2, 159 3/4, 160, 160 1/4, 160 1/2, 160 3/4, 161, 161 1/4, 161 1/2, 161 3/4, 162, 162 1/4, 162 1/2, 162 3/4, 163, 163 1/4, 163 1/2, 163 3/4, 164, 164 1/4, 164 1/2, 164 3/4, 165, 165 1/4, 165 1/2, 165 3/4, 166, 166 1/4, 166 1/2, 166 3/4, 167, 167 1/4, 167 1/2, 167 3/4, 168, 168 1/4, 168 1/2, 168 3/4, 169, 169 1/4, 169 1/2, 169 3/4, 170, 170 1/4, 170 1/2, 170 3/4, 171, 171 1/4, 171 1/2, 171 3/4, 172, 172 1/4, 172 1/2, 172 3/4, 173, 173 1/4, 173 1/2, 173 3/4, 174, 174 1/4, 174 1/2, 174 3/4, 175, 175 1/4, 175 1/2, 175 3/4, 176, 176 1/4, 176 1/2, 176 3/4, 177, 177 1/4, 177 1/2, 177 3/4, 178, 178 1/4, 178 1/2, 178 3/4, 179, 179 1/4, 179 1/2, 179 3/4, 180, 180 1/4, 180 1/2, 180 3/4, 181, 181 1/4, 181 1/2, 181 3/4, 182, 182 1/4, 182 1/2, 182 3/4, 183, 183 1/4, 183 1/2, 183 3/4, 184, 184 1/4, 184 1/2, 184 3/4, 185, 185 1/4, 185 1/2, 185 3/4, 186, 186 1/4, 186 1/2, 186 3/4, 187, 187 1/4, 187 1/2, 187 3/4, 188, 188 1/4, 188 1/2, 188 3/4, 189, 189 1/4, 189 1/2, 189 3/4, 190, 190 1/4, 190 1/2, 190 3/4, 191, 191 1/4, 191 1/2, 191 3/4, 192, 192 1/4, 192 1/2, 192 3/4, 193, 193 1/4, 193 1/2, 193 3/4, 194, 194 1/4, 194 1/2, 194 3/4, 195, 195 1/4, 195 1/2, 195 3/4, 196, 196 1/4, 196 1/2, 196 3/4, 197, 197 1/4, 197 1/2, 197 3/4, 198, 198 1/4, 198 1/2, 198 3/4, 199, 199 1/4, 199 1/2, 199 3/4, 200, 200 1/4, 200 1/2, 200 3/4, 201, 201 1/4, 201 1/2, 201 3/4, 202, 202 1/4, 202 1/2, 202 3/4, 203, 203 1/4, 203 1/2, 203 3/4, 204, 204 1/4, 204 1/2, 204 3/4, 205, 205 1/4, 205 1/2, 205 3/4, 206, 206 1/4, 206 1/2, 206 3/4, 207, 207 1/4, 207 1/2, 207 3/4, 208, 208 1/4, 208 1/2, 208 3/4, 209, 209 1/4, 209 1/2, 209 3/4, 210, 210 1/4, 210 1/2, 210 3/4, 211, 211 1/4, 211 1/2, 211 3/4, 212, 212 1/4, 212 1/2, 212 3/4, 213, 213 1/4, 213 1/2, 213 3/4, 214, 214 1/4, 214 1/2, 214 3/4, 215, 215 1/4, 215 1/2, 215 3/4, 216, 216 1/4, 216 1/2, 216 3/4, 217, 217 1/4, 217 1/2, 217 3/4, 218, 218 1/4, 218 1/2, 218 3/4, 219, 219 1/4, 219 1/2, 219 3/4, 220, 220 1/4, 220 1/2, 220 3/4, 221, 221 1/4, 221 1/2, 221 3/4, 222, 222 1/4, 222 1/2, 222 3/4, 223, 223 1/4, 223 1/2, 223 3/4, 224, 224 1/4, 224 1/2, 224 3/4, 225, 225 1/4, 225 1/2, 225 3/4, 226, 226 1/4, 226 1/2, 226 3/4, 227, 227 1/4, 227 1/2, 227 3/4, 228, 228 1/4, 228 1/2, 228 3/4, 229, 229 1/4, 229 1/2, 229 3/4, 230, 230 1/4, 230 1/2, 230 3/4, 231, 231 1/4, 231 1/2, 231 3/4, 232, 232 1/4, 232 1/2, 232 3/4, 233, 233 1/4, 233 1/2, 233 3/4, 234, 234 1/4, 234 1/2, 234 3/4, 235, 235 1/4, 235 1/2, 235 3/4, 236, 236 1/4, 236 1/2, 236 3/4, 237, 237 1/4, 237 1/2, 237 3/4, 238, 238 1/4, 238 1/2, 238 3/4, 239, 239 1/4, 239 1/2, 239 3/4, 240, 240 1/4, 240 1/2, 240 3/4, 241, 241 1/4, 241 1/2, 241 3/4, 242, 242 1/4, 242 1/2, 242 3/4, 243, 243 1/4, 243 1/2, 243 3/4, 244, 244 1/4, 244 1/2, 244 3/4, 245, 245 1/4, 245 1/2, 245 3/4, 246, 246 1/4, 246 1/2, 246 3/4, 247, 247 1/4, 247 1/2, 247 3/4, 248, 248 1/4, 248 1/2, 248 3/4, 249, 249 1/4, 249 1/2, 249 3/4, 250, 250 1/4, 250 1/2, 250 3/4, 251, 251 1/4, 251 1/2, 251 3/4, 252, 252 1/4, 252 1/2, 252 3/4, 253, 253 1/4, 253 1/2, 253 3/4, 254, 254 1/4, 254 1/2, 254 3/4, 255, 255 1/4, 255 1/2, 255 3/4, 256, 256 1/4, 256 1/2, 256 3/4, 257, 257 1/4, 257 1/2, 257 3/4, 258, 258 1/4, 258 1/2, 258 3/4, 259, 259 1/4, 259 1/2, 259 3/4, 260, 260 1/4, 260 1/2, 260 3/4, 261, 261 1/4, 261 1/2, 261 3/4, 262, 262 1/4, 262 1/2, 262 3/4, 263, 263 1/4, 263 1/2, 263 3/4, 264, 264 1/4, 264 1/2, 264 3/4, 265, 265 1/4, 265 1/2, 265 3/4, 266, 266 1/4, 266 1/2, 266 3/4, 267, 267 1/4, 267 1/2, 267 3/4, 268, 268 1/4, 268 1/2, 268 3/4, 269, 269 1/4, 269 1/2, 269 3/4, 270, 270 1/4, 270 1/2, 270 3/4, 271, 271 1/4, 271 1/2, 271 3/4, 272, 272 1/4, 272 1/2, 272 3/4, 273, 273 1/4, 273 1/2, 273 3/4, 274, 274 1/4, 274 1/2, 274 3/4, 275, 275 1/4, 275 1/2, 275 3/4, 276, 276 1/4, 276 1/2, 276 3/4, 277, 277 1/4, 277 1/2, 277 3/4, 278, 278 1/4, 278 1/2, 278 3/4, 279, 279 1/4, 279 1/2, 279 3/4, 280, 280 1/4, 280 1/2, 280 3/4, 281, 281 1/4, 281 1/2, 281 3/4, 282, 282 1/4, 282 1/2, 282 3/4, 283, 283 1/4, 283 1/2, 283 3/4, 284, 284 1/4, 284 1/2, 284 3/4, 285, 285 1/4, 285 1/2, 285 3/4, 286, 286 1/4, 286 1/2, 286 3/4, 287, 287 1/4, 287 1/2, 287 3/4, 288, 288 1/4, 288 1/2, 288 3/4, 289, 289 1/4, 289 1/2, 289 3/4, 290, 290 1/4, 290 1/2, 290 3/4, 291, 291 1/4, 291 1/2, 291 3/4, 292, 292 1/4, 292 1/2, 292 3/4, 293, 293 1/4, 293 1/2, 293 3/4, 294, 294 1/4, 294 1/2, 294 3/4, 295, 295 1/4, 295 1/2, 295 3/4, 296, 296 1/4, 296 1/2, 296 3/4, 297, 297 1/4, 297 1/2, 297 3/4, 298, 298 1/4, 298 1/2, 298 3/4, 299, 299 1/4, 299 1/2, 299 3/4, 300, 300 1/4, 300 1/2, 300 3/4, 301, 301 1/4, 301 1/2, 301 3/4, 302, 302 1/4, 302 1/2, 302 3/4, 303, 303 1/4, 303 1/2, 303 3/4, 304, 304 1/4, 304 1/2, 304 3/4, 305, 305 1/4, 305 1/2, 305 3/4, 306, 306 1/4, 306 1/2, 306 3/4, 307, 307 1/4, 307 1/2, 307 3/4, 308, 308 1/4, 308 1/2, 308 3/4, 309, 309 1/4, 309 1/2, 309 3/4, 310, 310 1/4, 310 1/2, 310 3/4, 311, 311 1/4, 311 1/2, 311 3/4, 312, 312 1/4, 312 1/2, 312 3/4, 313, 313 1/4, 313 1/2, 313 3/4, 314, 314 1/4, 314 1/2, 314 3/4, 315, 315 1/4, 315 1/2, 315 3/4, 316, 316 1/4, 316 1/2, 316 3/4, 317, 317 1/4, 317 1/2, 317 3/4, 318, 318 1/4, 318 1/2, 318 3/4, 319, 319 1/4, 319 1/2, 319 3/4, 320, 320 1/4, 320 1/2, 320 3/4, 321, 321 1/4, 321 1/2, 321 3/4, 322, 322 1/4, 322 1/2, 322 3/4, 323, 323 1/4, 323 1/2, 323 3/4, 324, 324 1/4, 324 1/2, 324 3/4, 325, 325 1/4, 325 1/2, 325 3/4, 326, 326 1/4, 326 1/2, 326 3/4, 327, 327 1/4, 327 1/2, 327 3/4, 328, 328 1/4, 328 1/2, 328 3/4, 329, 329 1/4, 329 1/2, 329 3/4, 330, 330 1/4, 330 1/2, 330 3/4, 331, 331 1/4, 331 1/2, 331 3/4, 332, 332 1/4, 332 1/2, 332 3/4, 333, 333 1/4, 333 1/2, 333 3/4, 334, 334 1/4, 334 1/2, 334 3/4, 335, 335 1/4, 335 1/2, 335 3/4, 336, 336 1/4, 336 1/2, 336 3/4, 337,



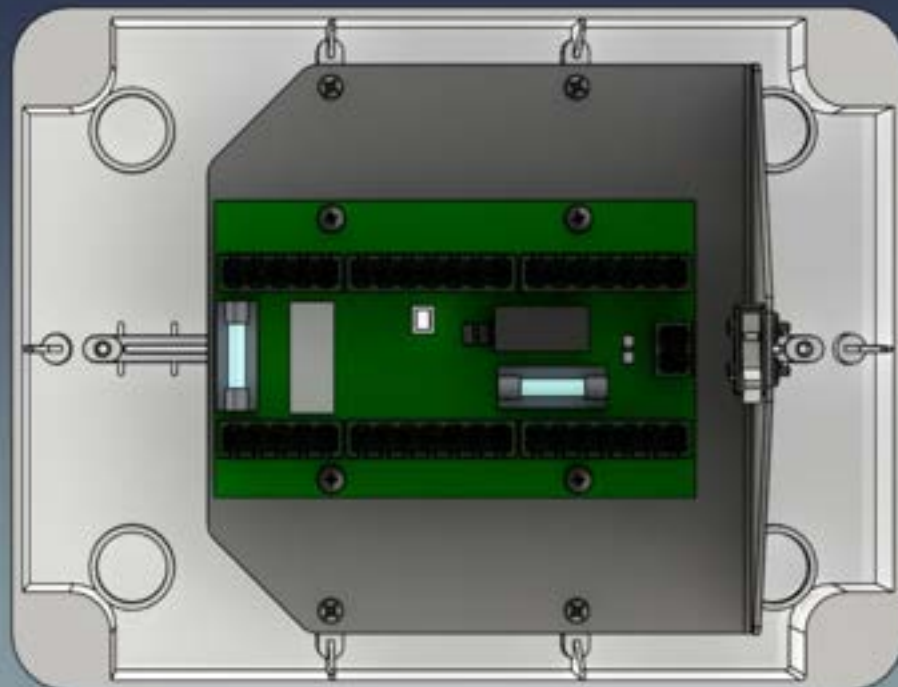
Card Reader Security
System Injection
Moulding

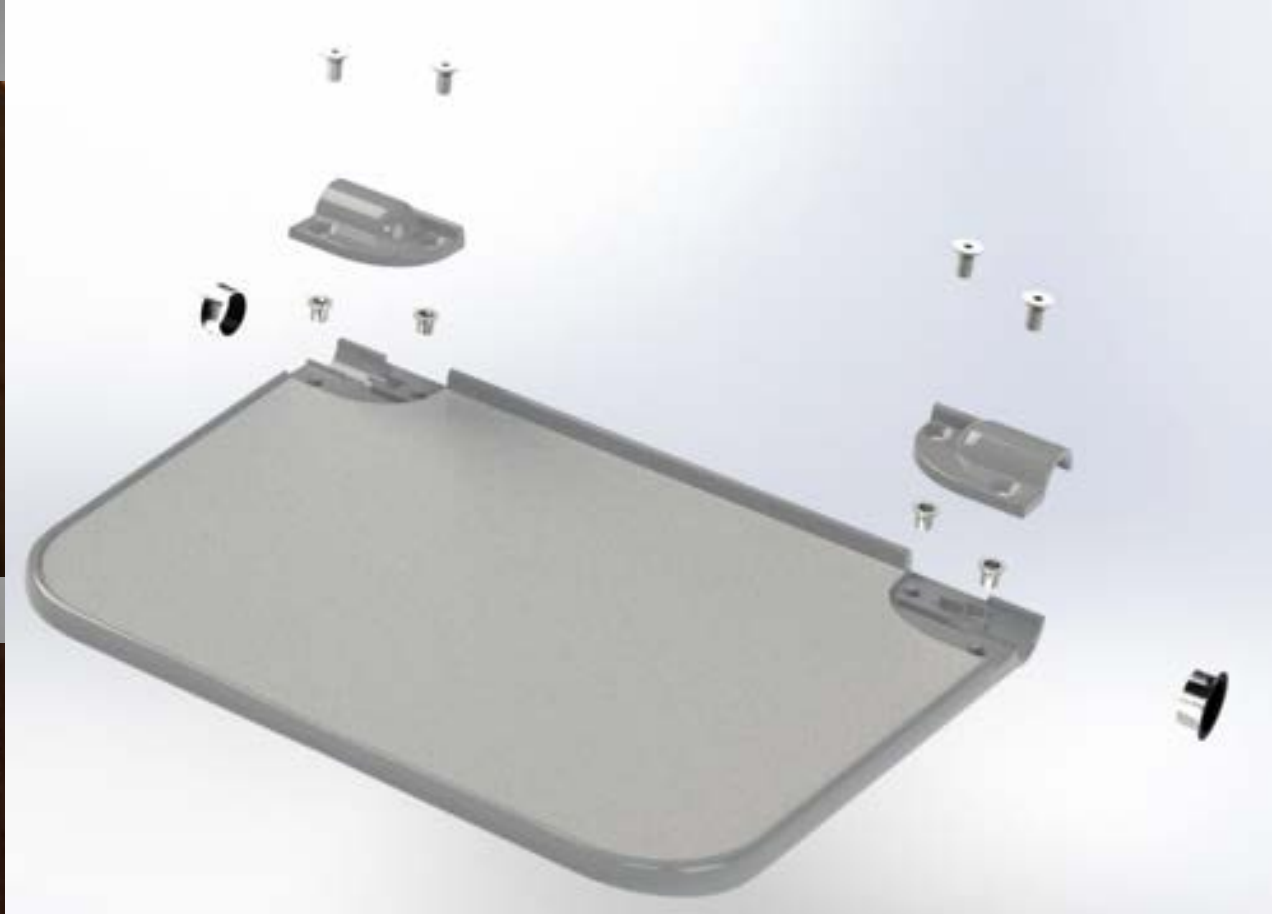


Tamper-Proof Alarm
Electronics Housing



Tamper Proof Alarm
Electronics Housing





Reverse
Engineering Tip
Plate for Train



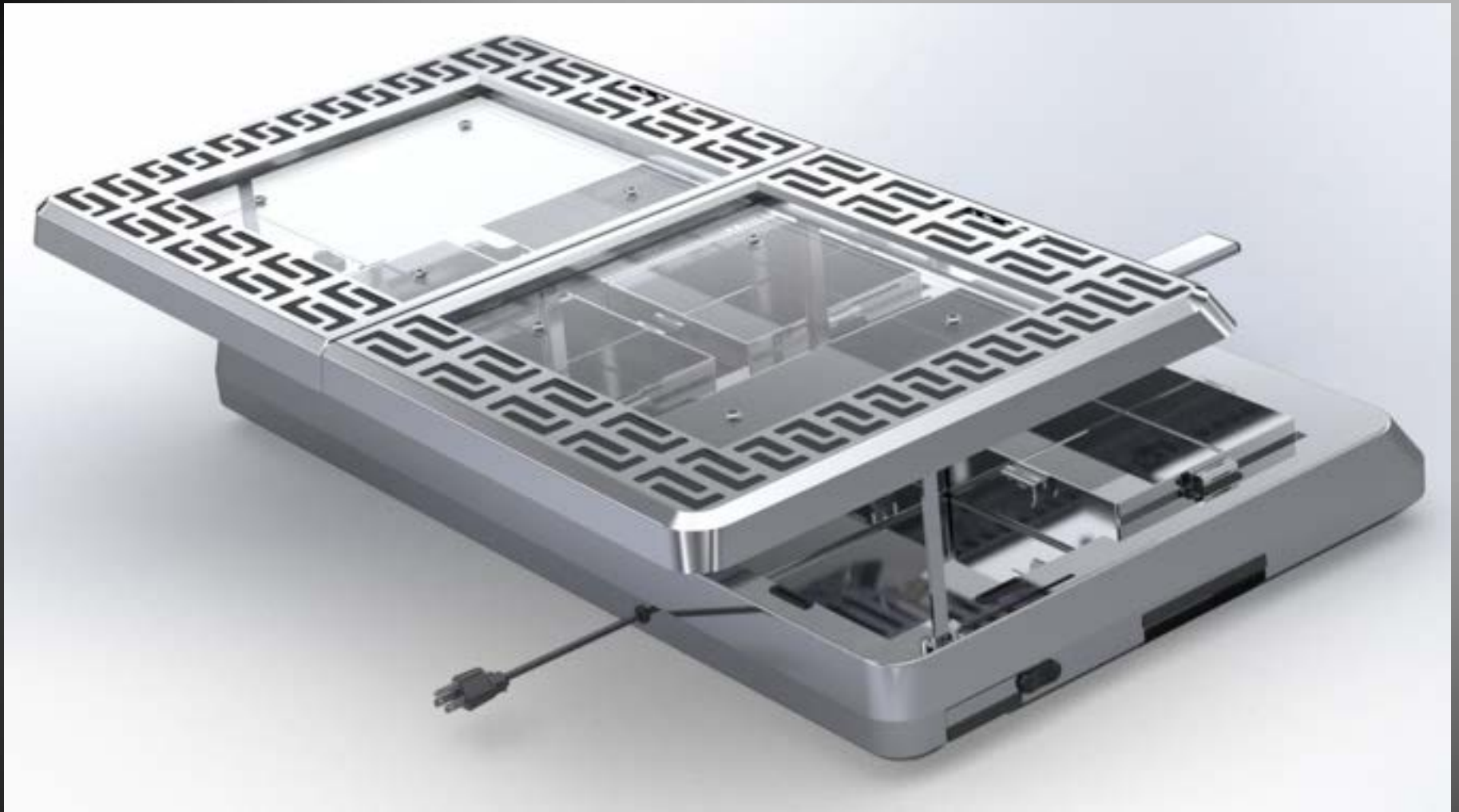
Tubular Steel
Construction Train
Seat Frame



Tubular Steel
Construction Train
Under Carriage Seat
Frame



Fletchef Portable Luxury
Induction Cooker Concept



Fletchef Portable Luxury
Induction Cooker Concept



Fletchef Portable Luxury
Induction Cooker Concept

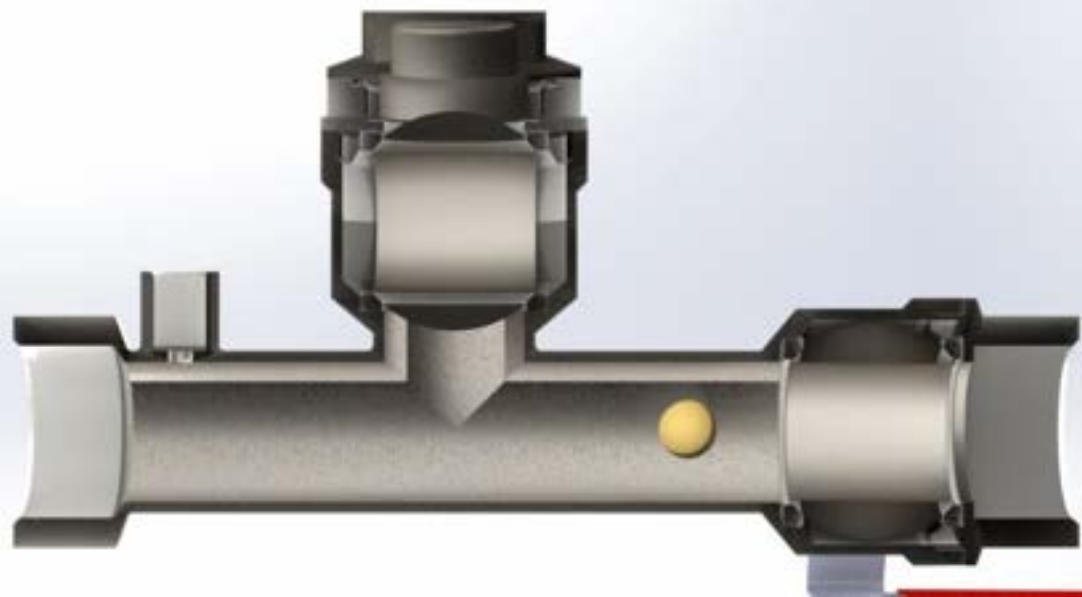
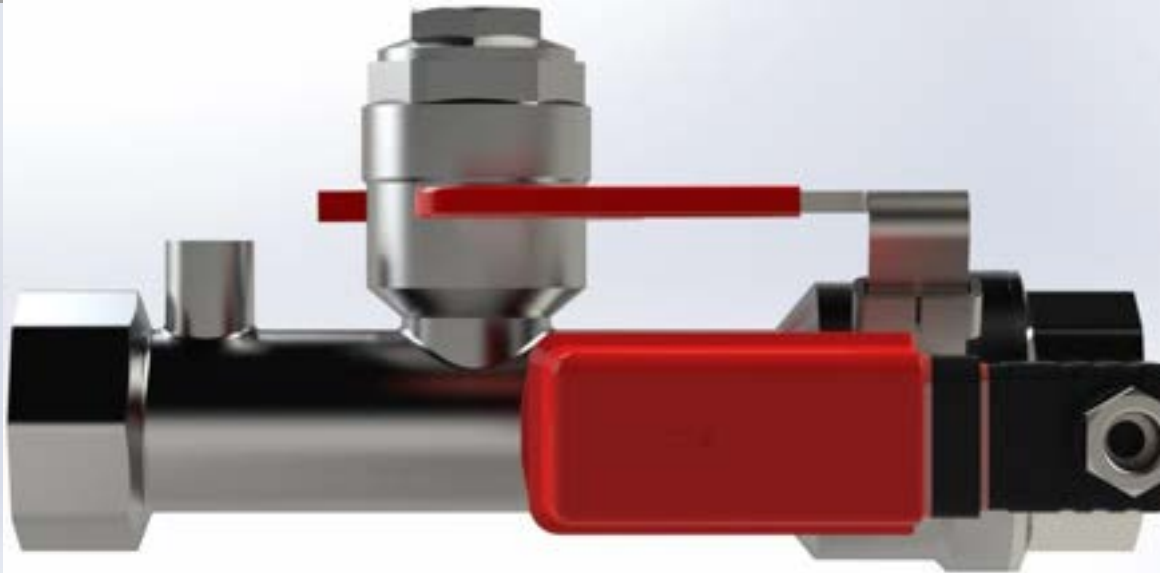


Fletchef Portable Luxury
Induction Cooker Concept





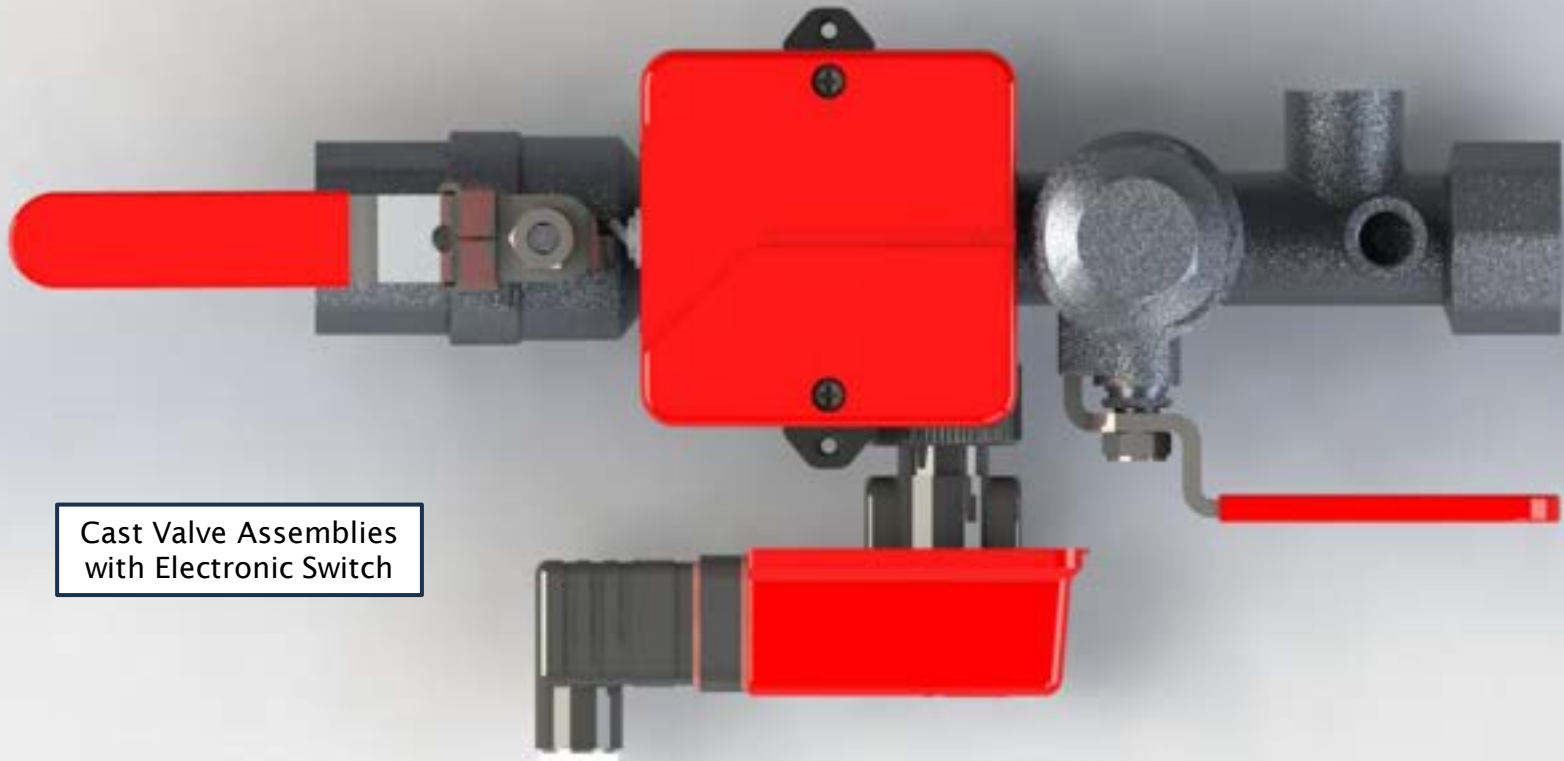
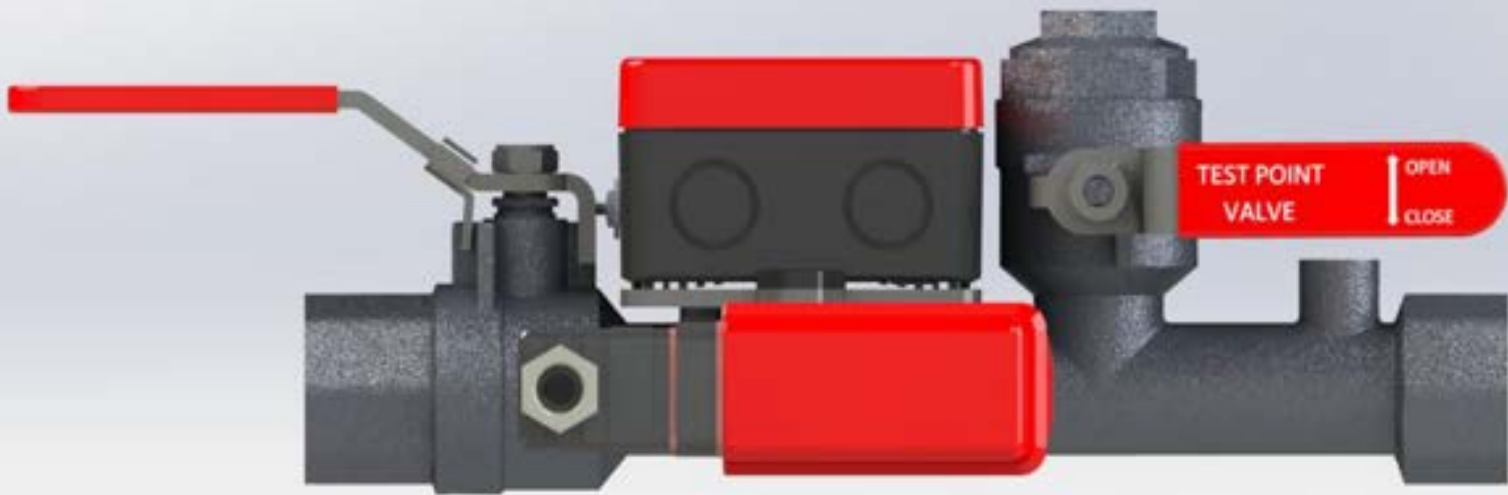
Cast Valve Assemblies



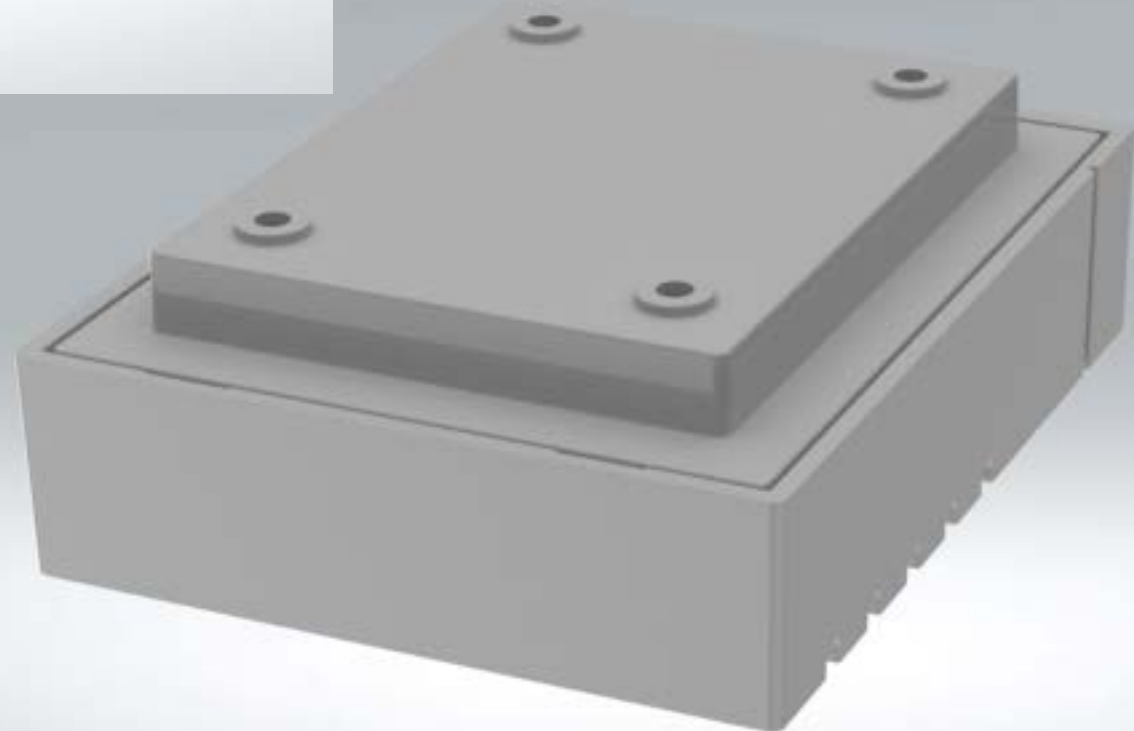
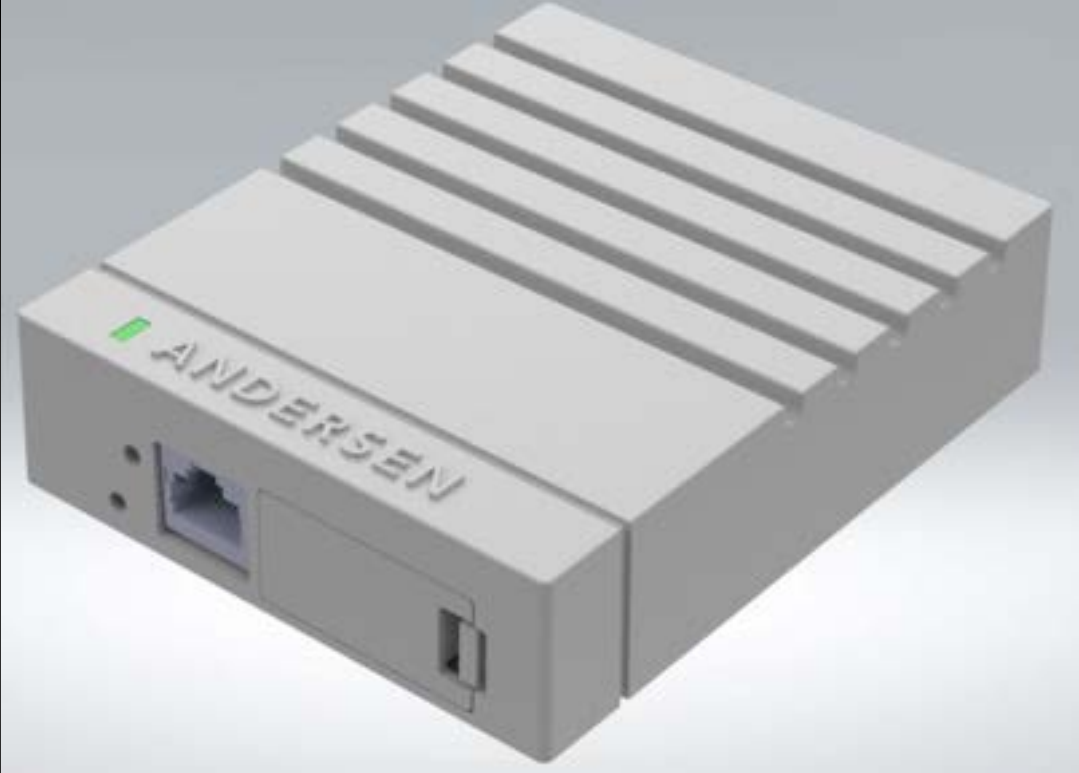
Cast Valve Assemblies



Cast Valve Assemblies
with Electronic Switch



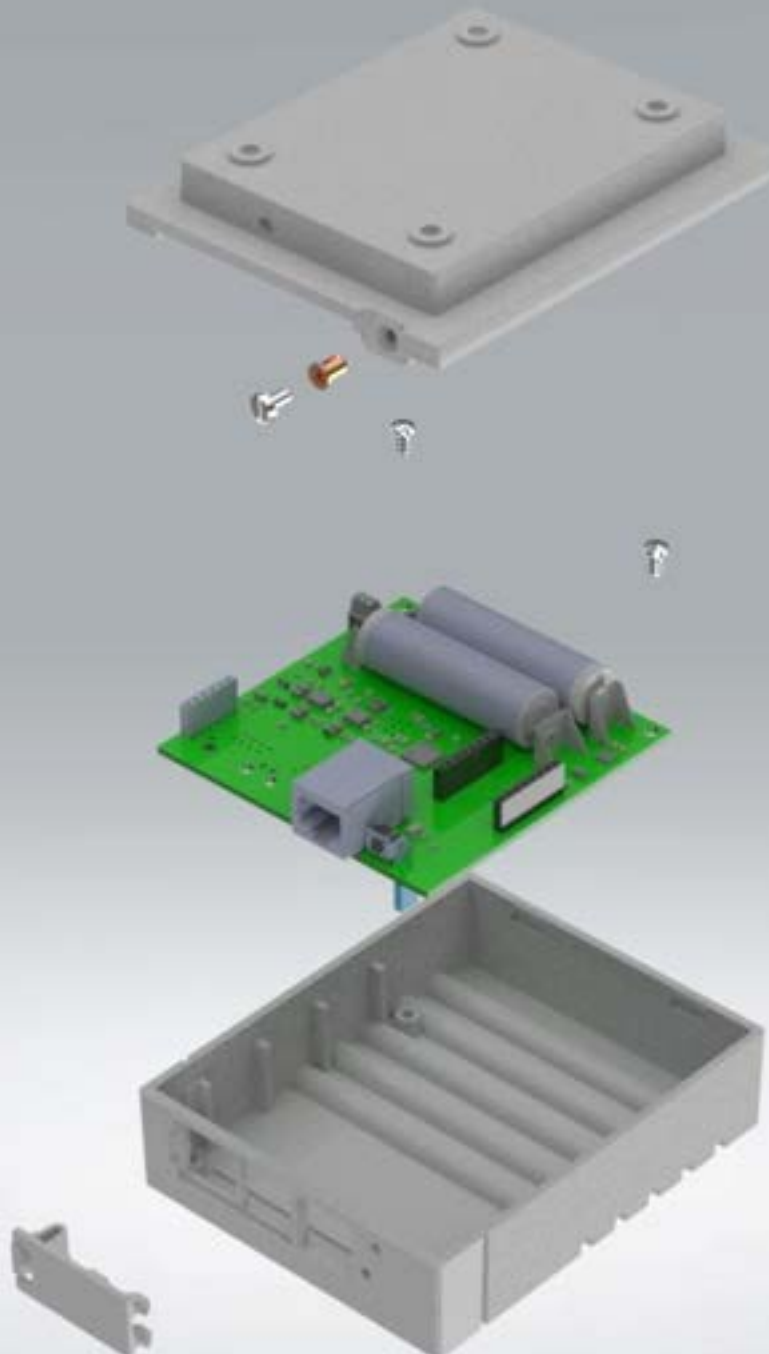
Cast Valve Assemblies
with Electronic Switch



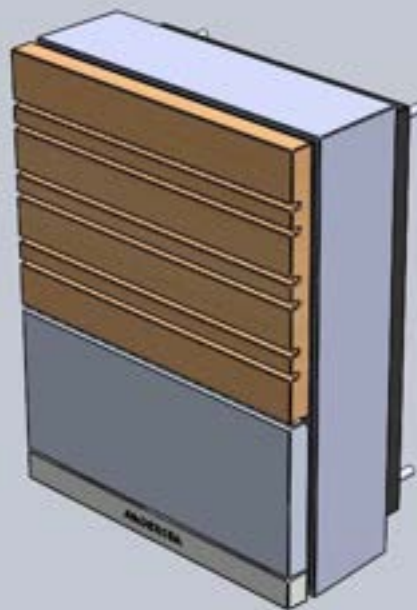
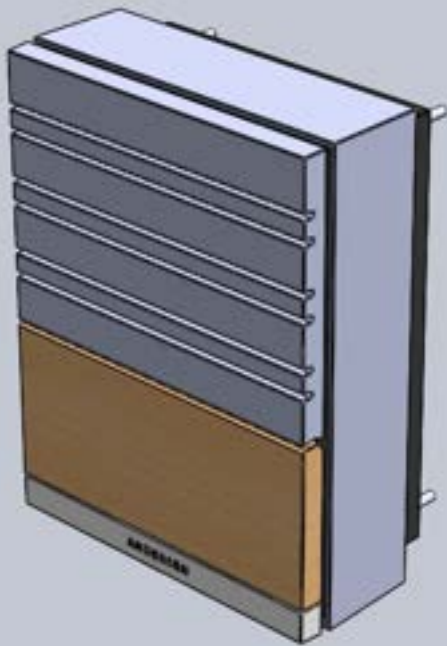
EV Solar Charge Unit
Add On



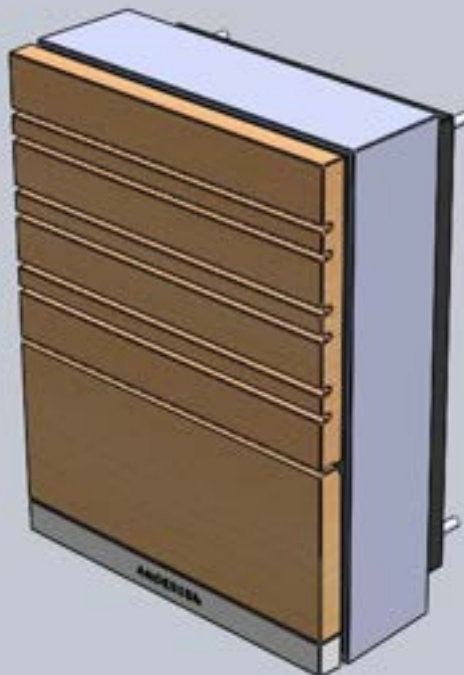
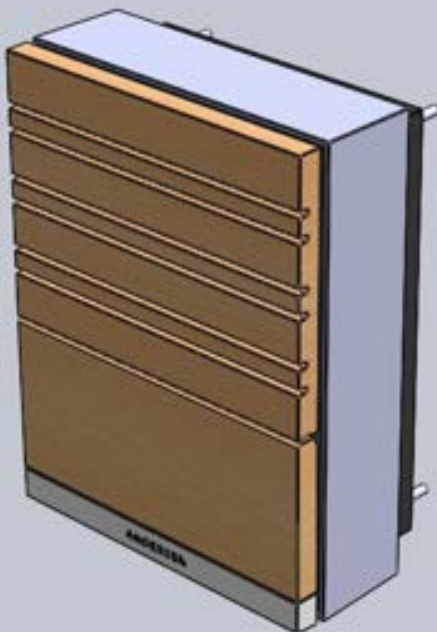
EV Solar Charge Unit
Add On



EV Solar Charge Unit
Add On

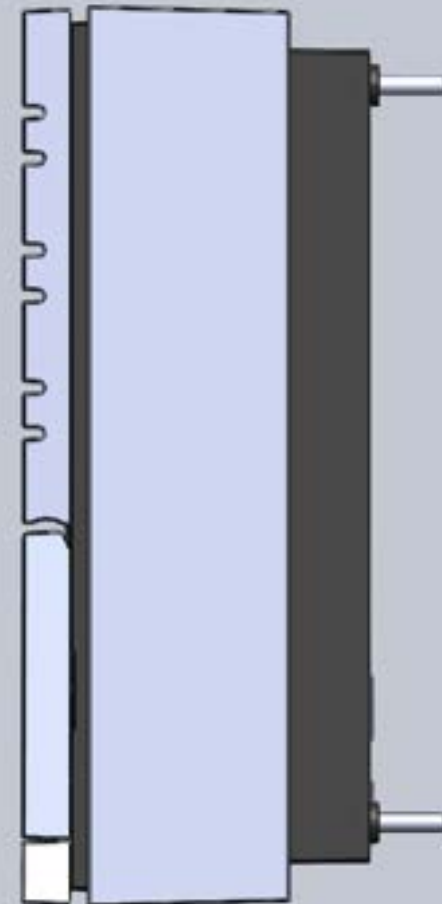
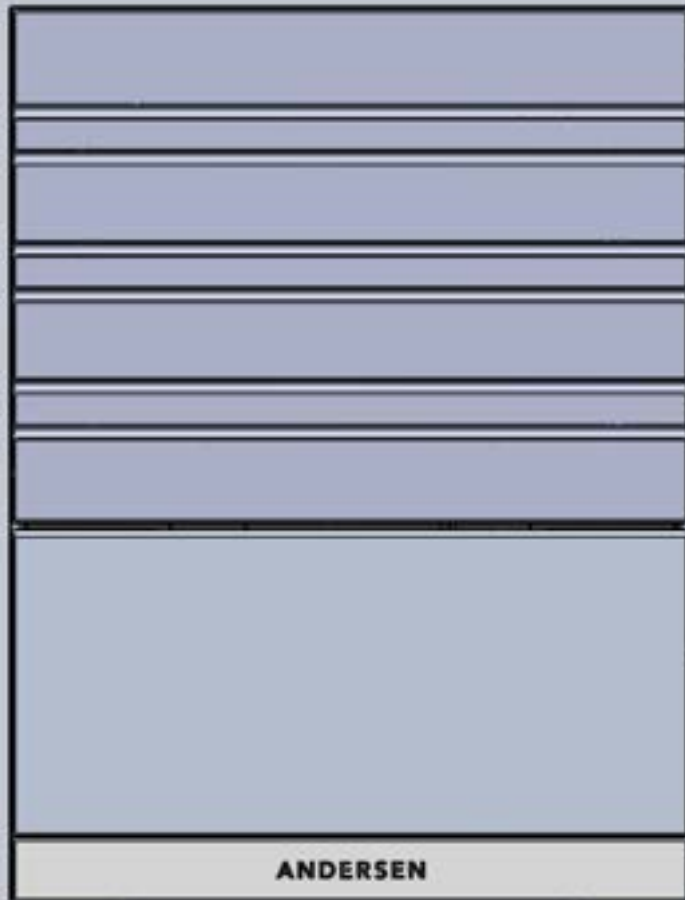


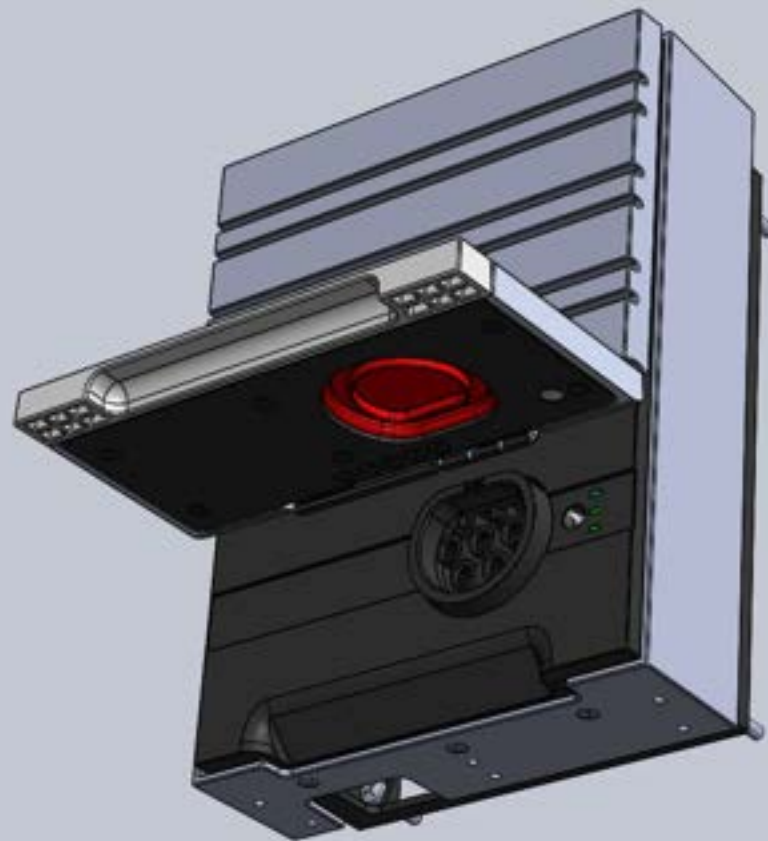
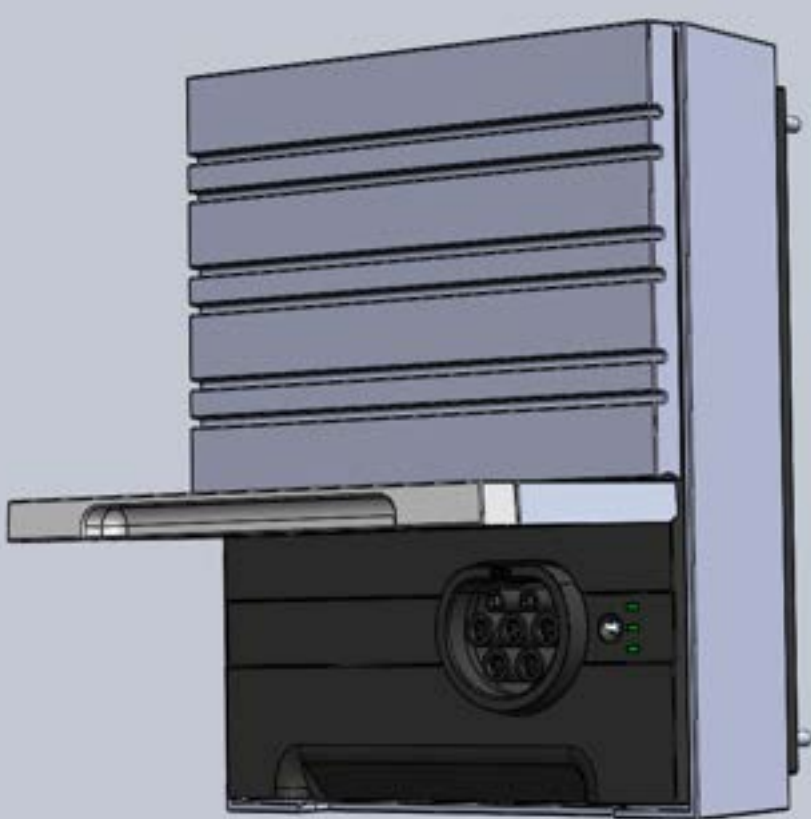
P6 EV Charger



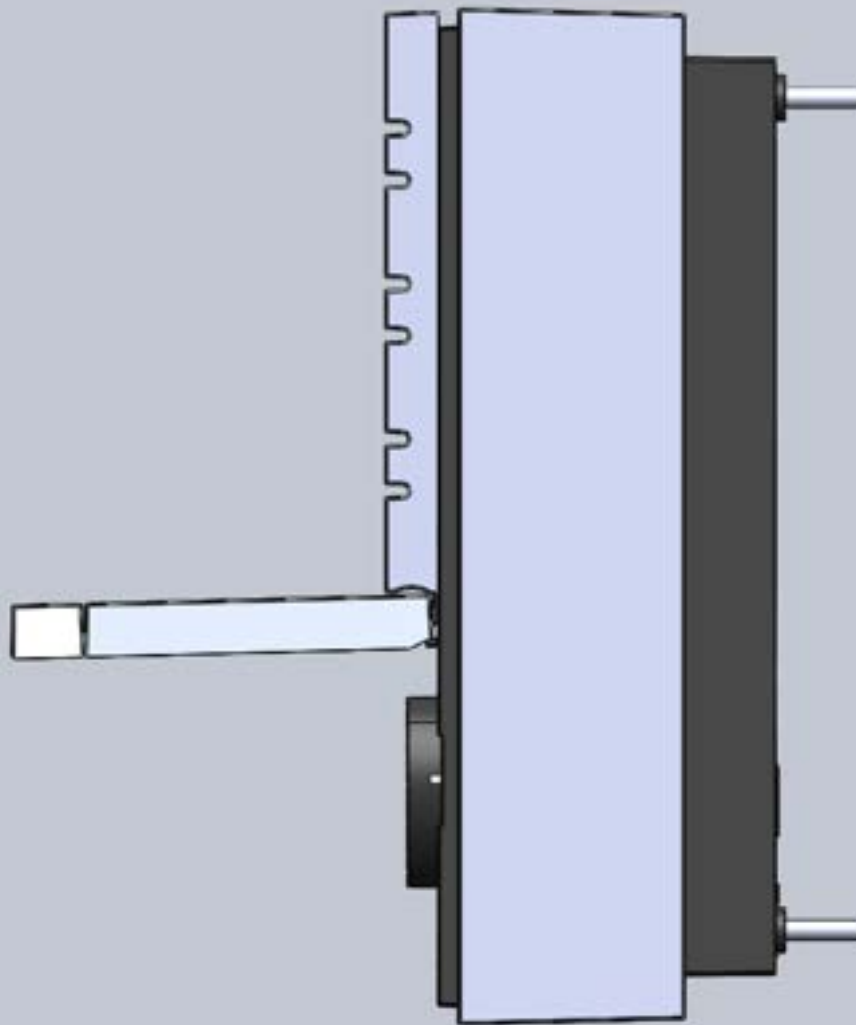
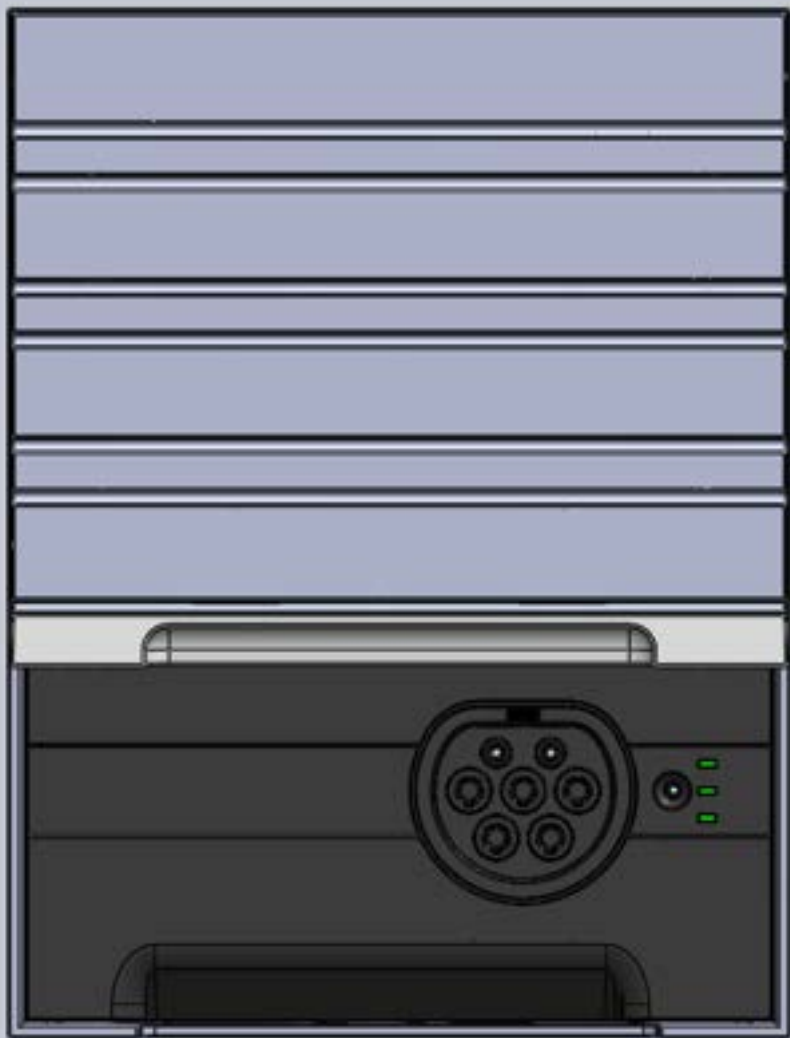


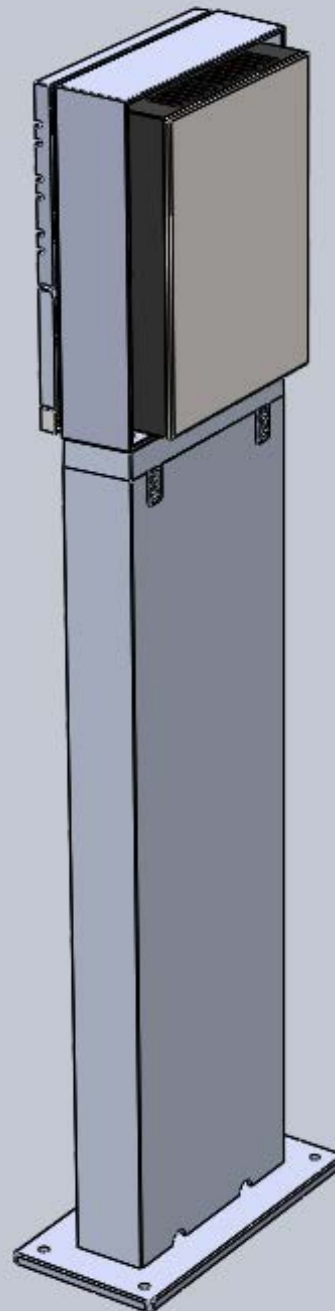
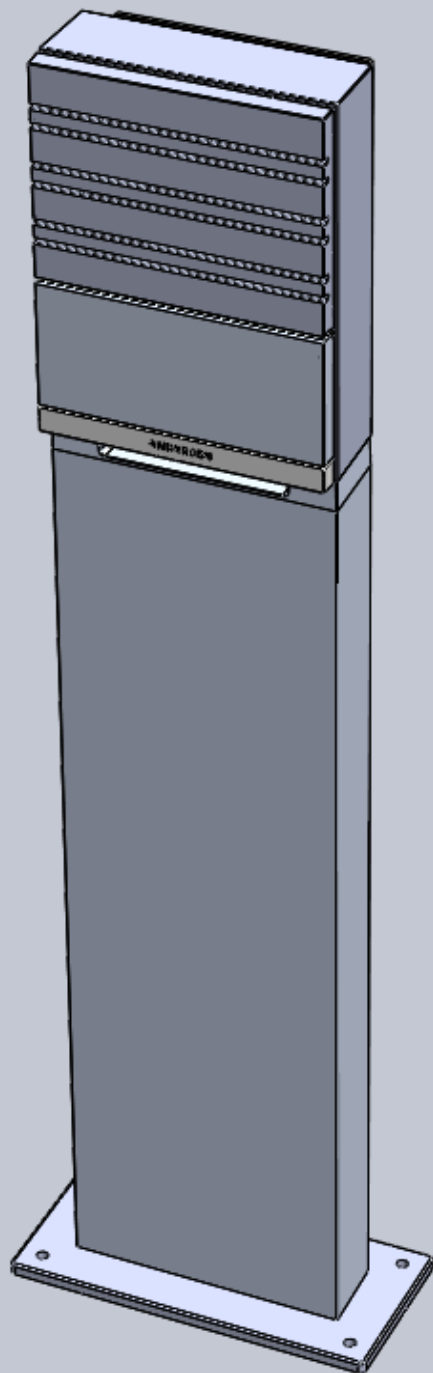
P6 EV Charger





P6 EV Charger

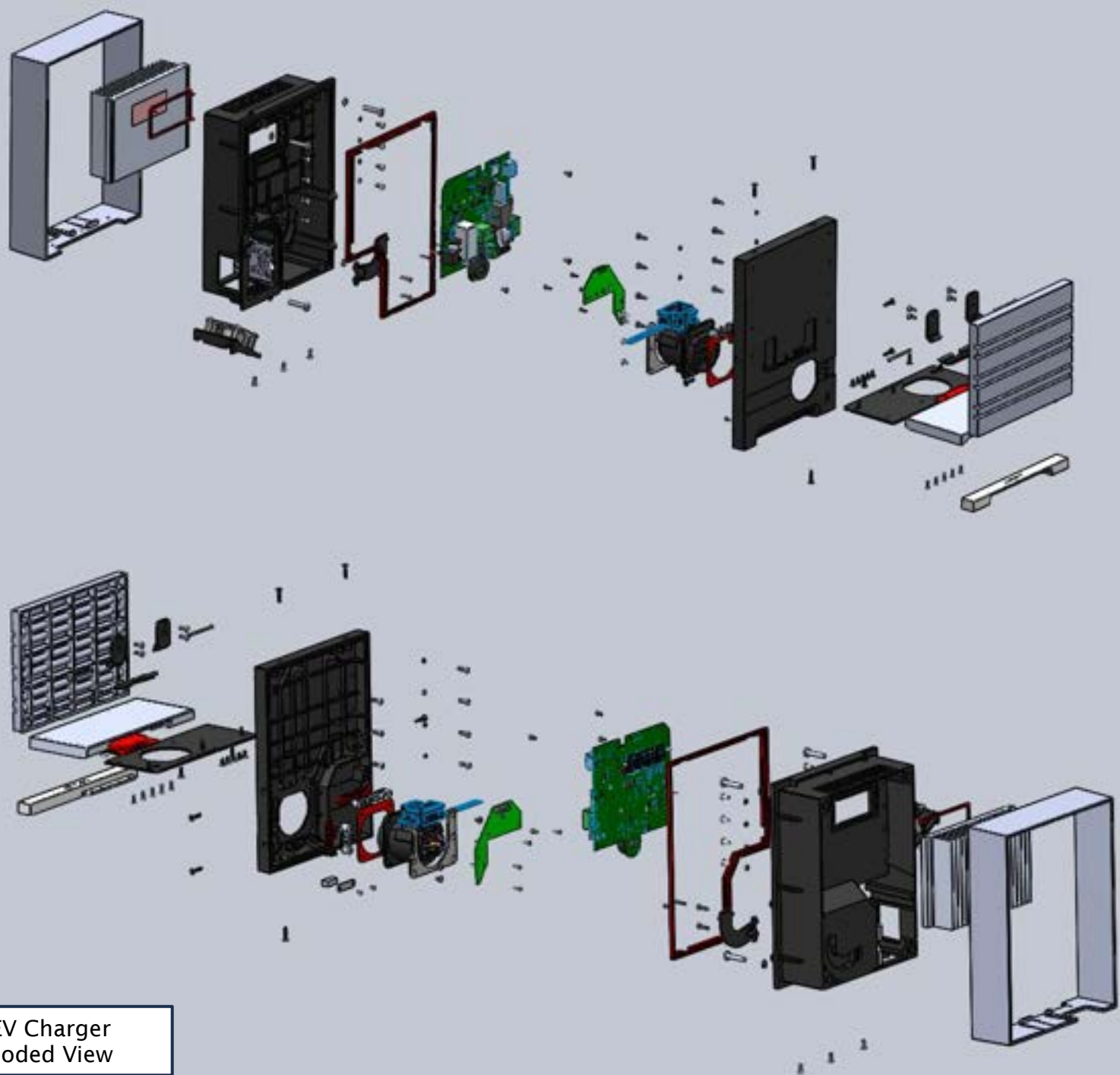




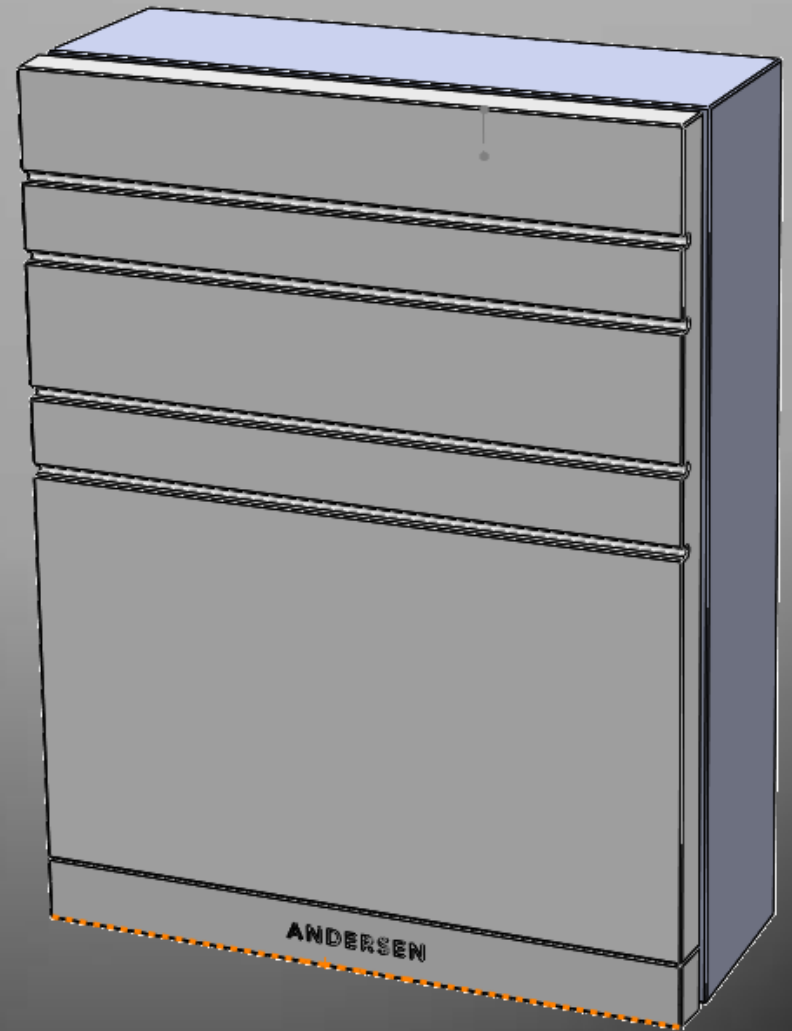
P6 EV Charger



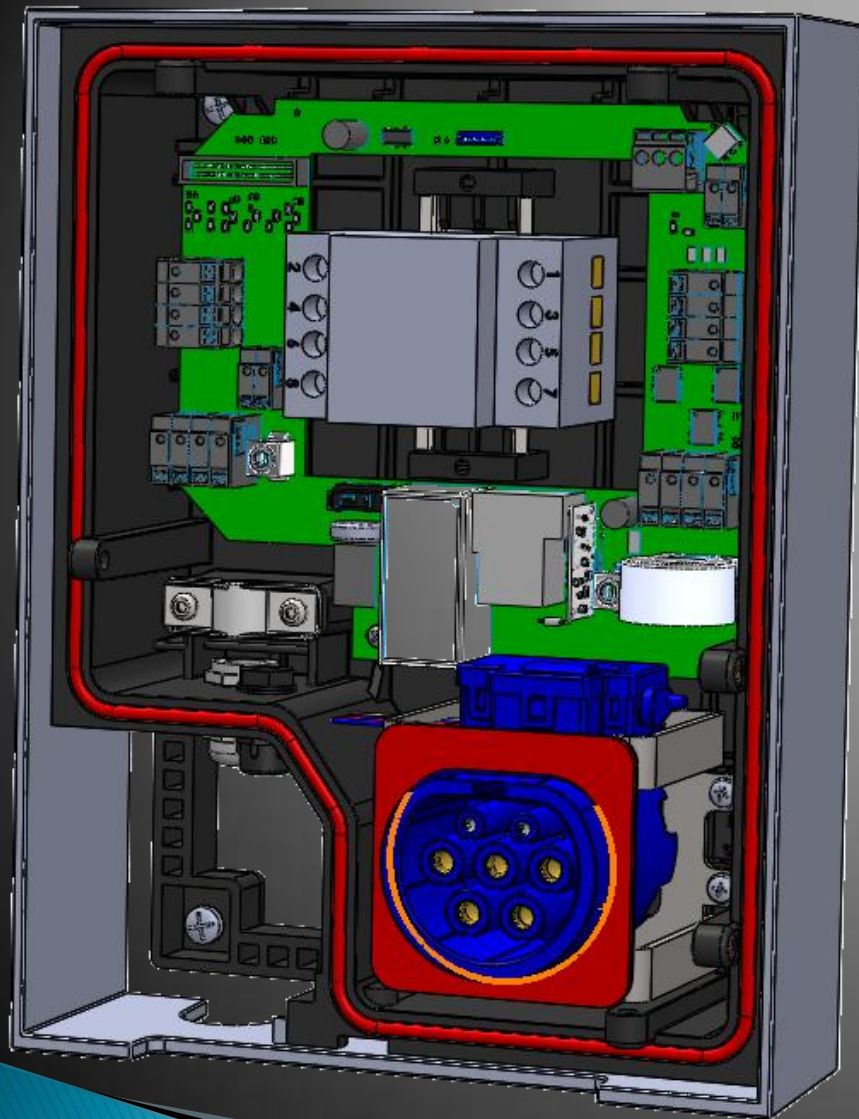
P6 EV Charger



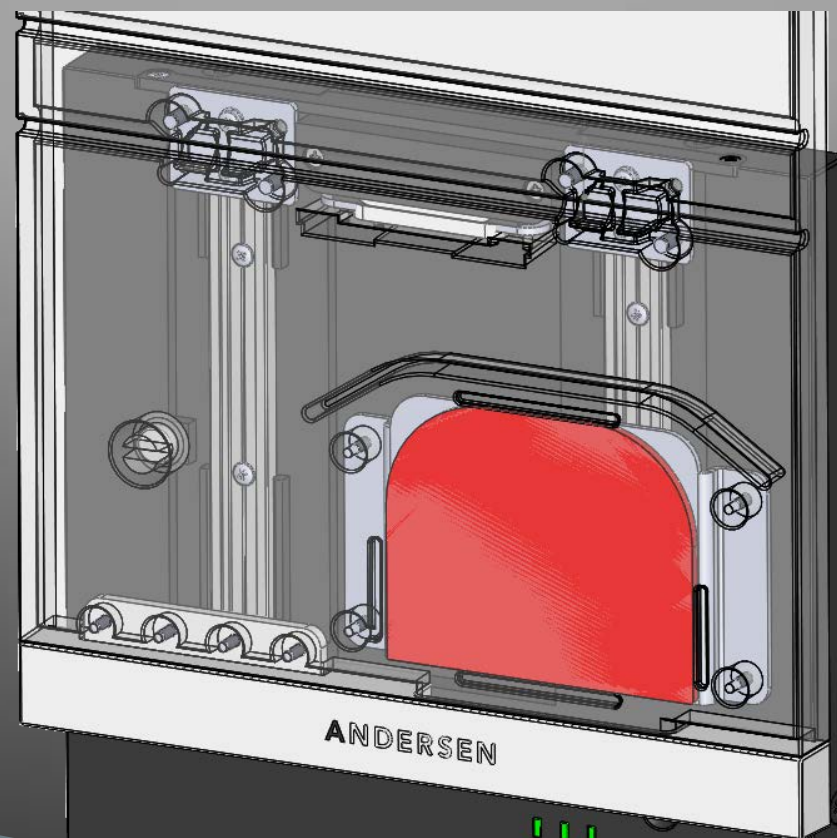
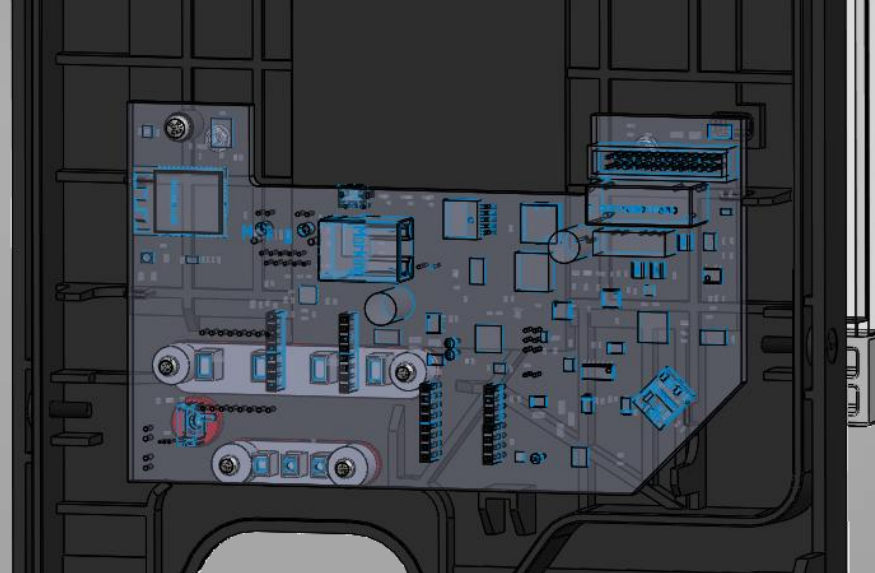
P6 EV Charger
Exploded View



P6 EV Charger



P6 EV Charger



P6 EV Charger









ISO Clean Room Vacuum
Flange Rack



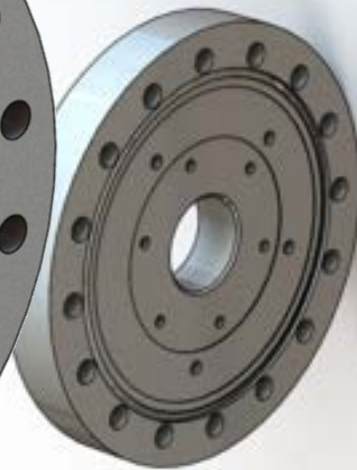
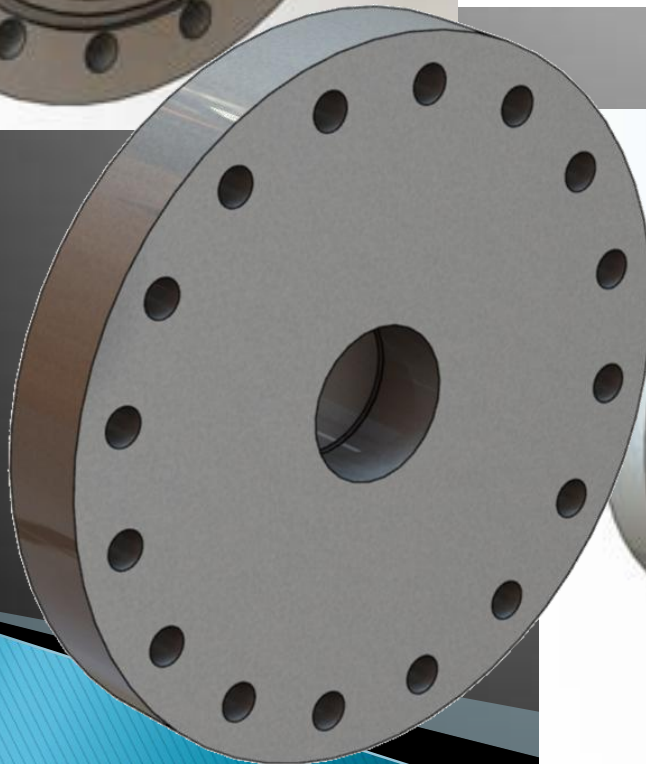


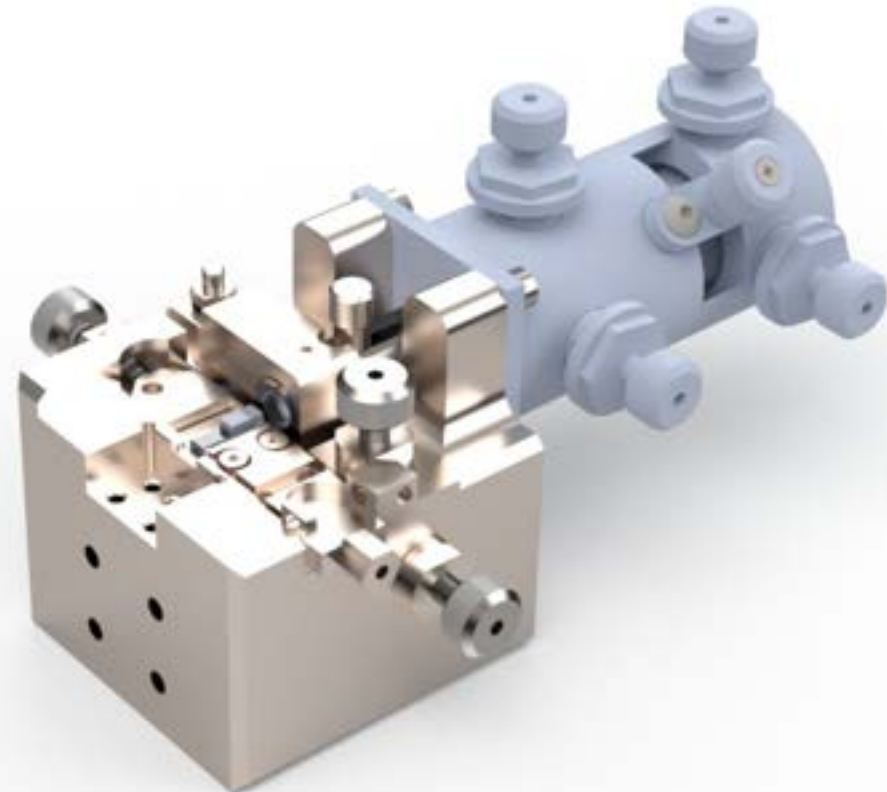
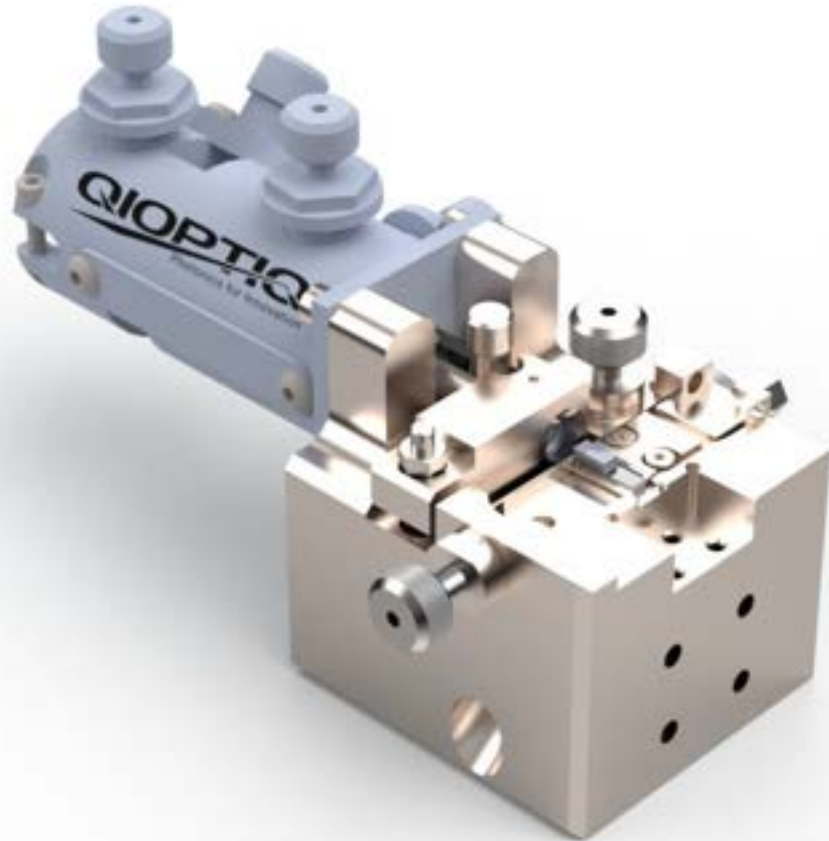
Fibre Optic Vacuum
Flange Assembly
Racking



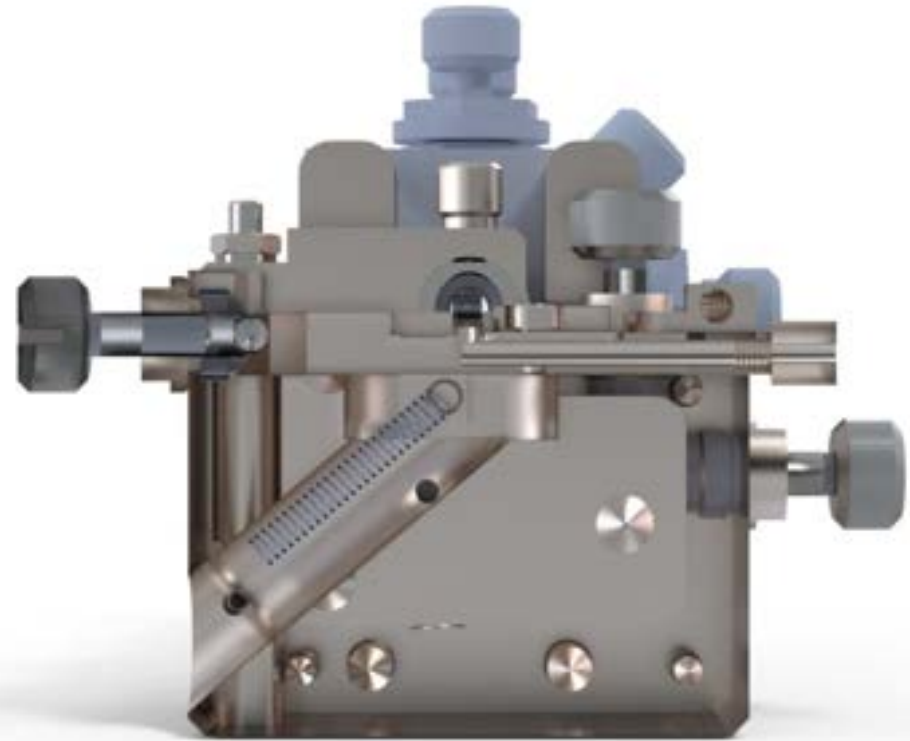
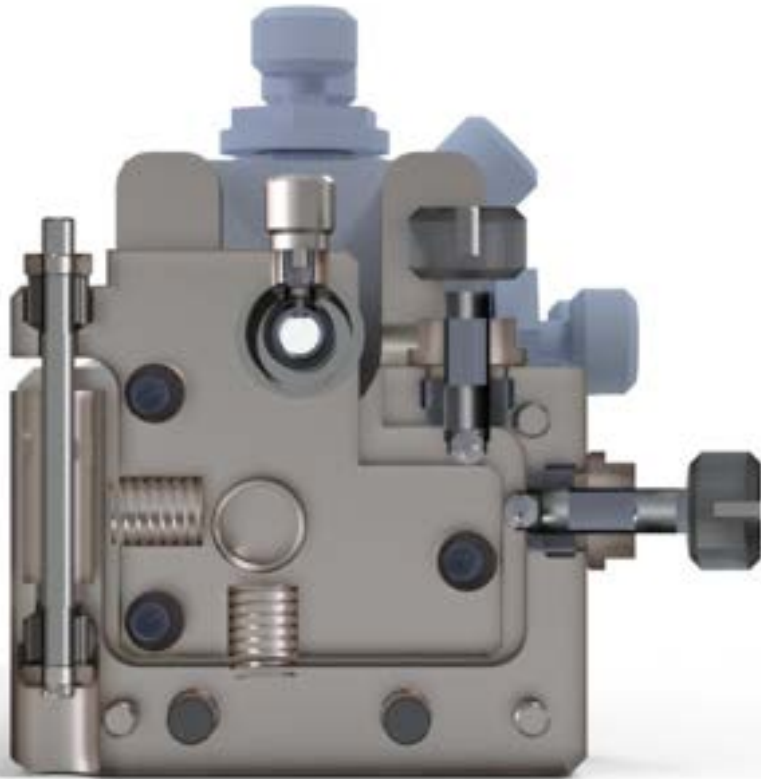


Vacuum Flange
Assembly

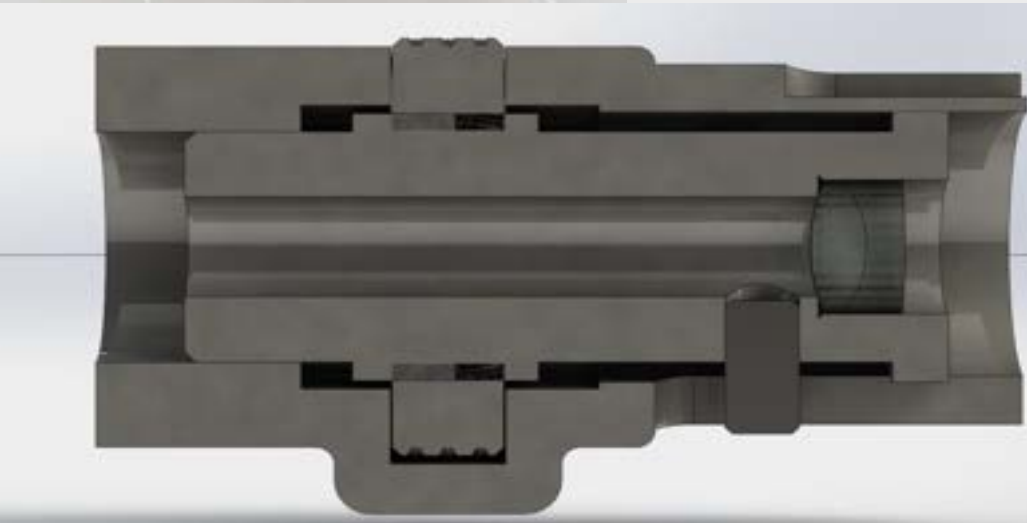




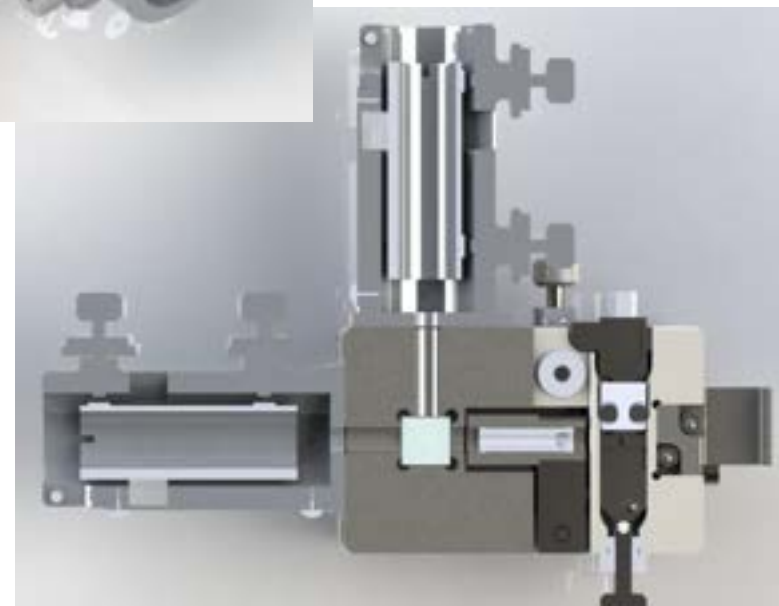
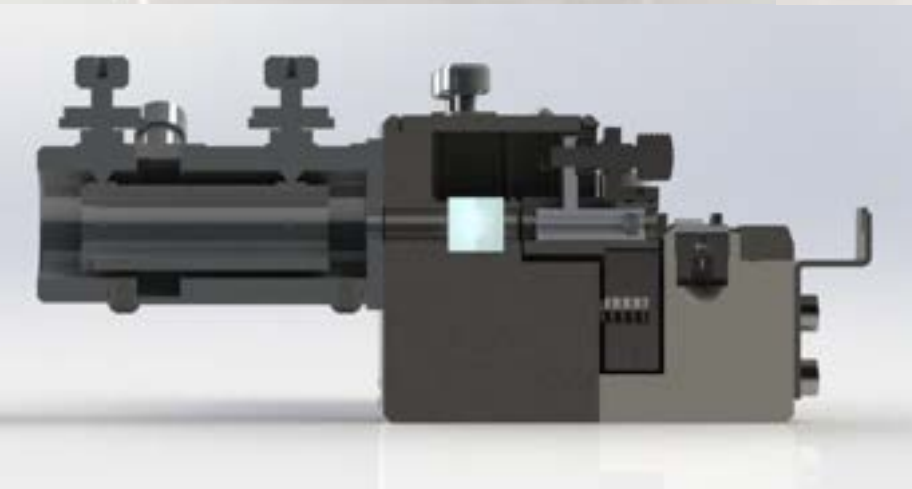
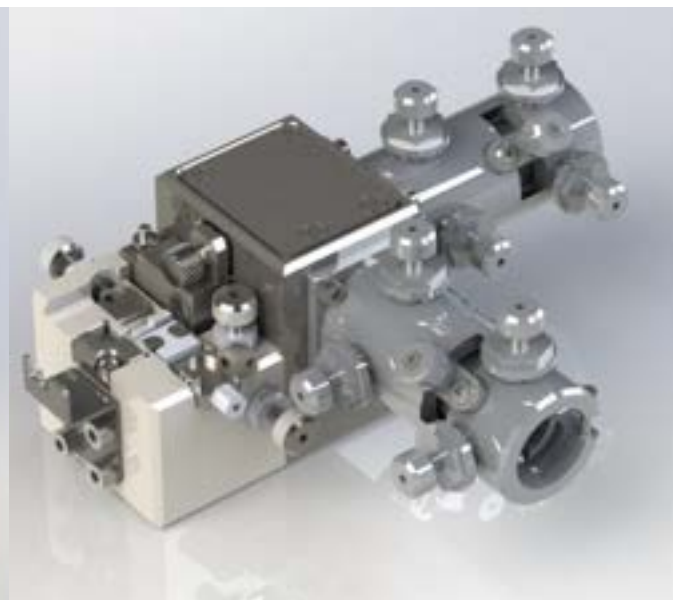
Fibre Optic 6-axis
Micron Alignment Jig



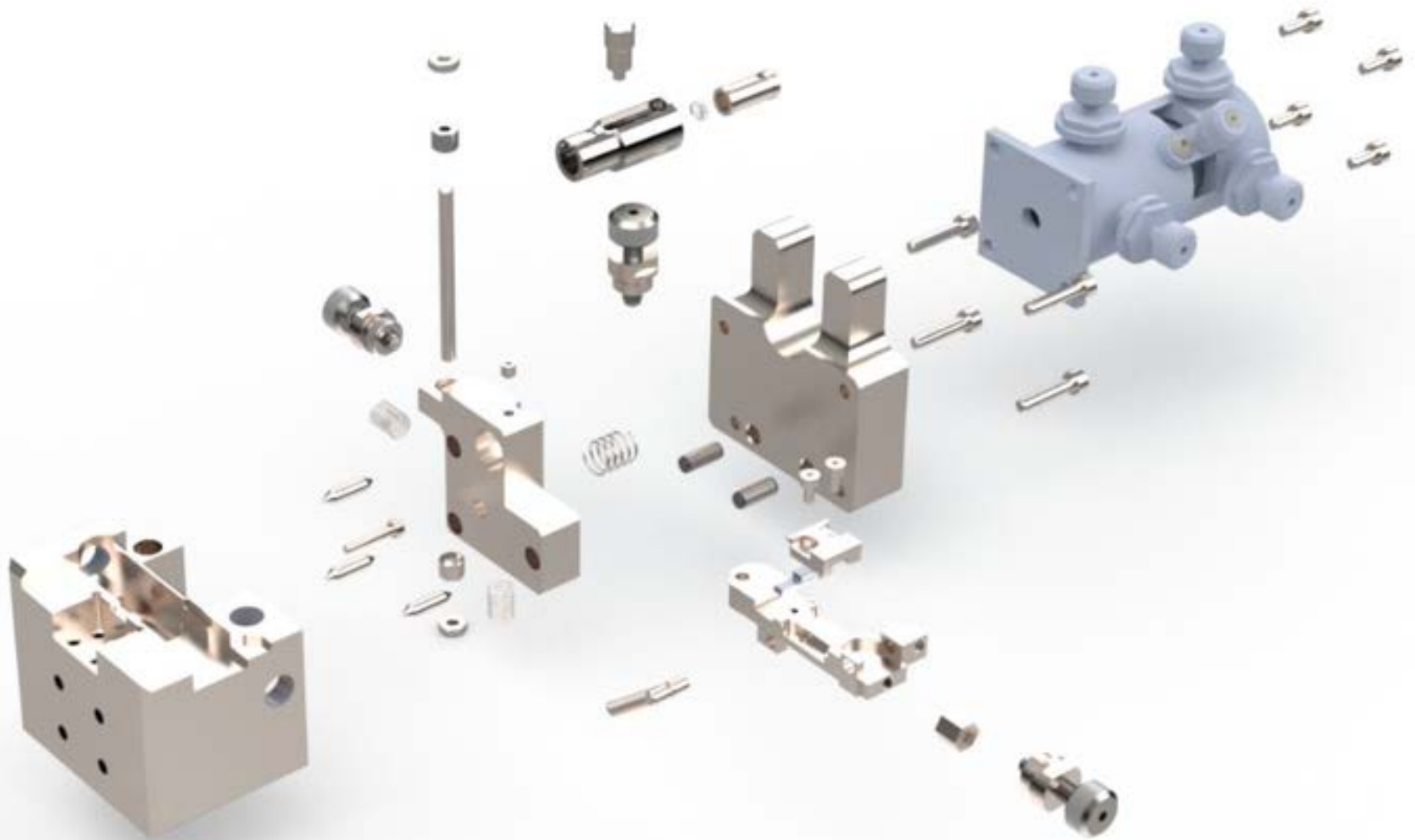
Fibre Optic 6-axis
Micron Alignment Jig



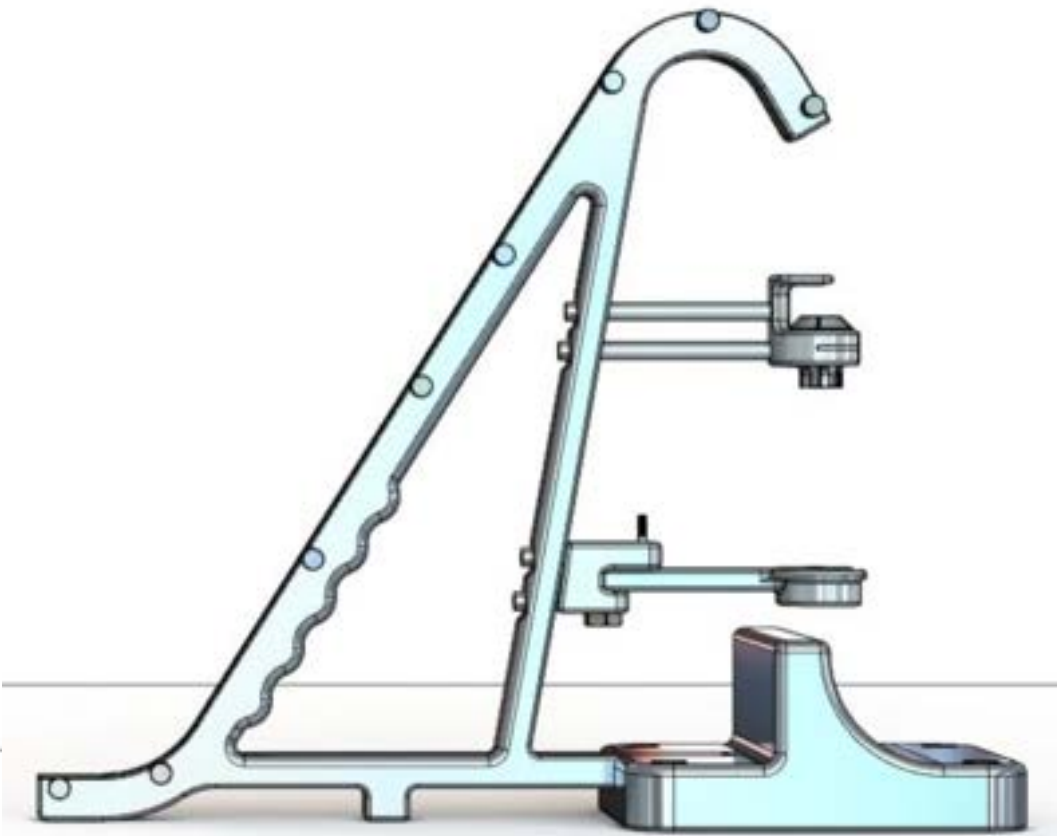
Laser Lens Adjustable
Assembly



Fibre Optic 6-axis
Micron Alignment Jig
Full Assembly



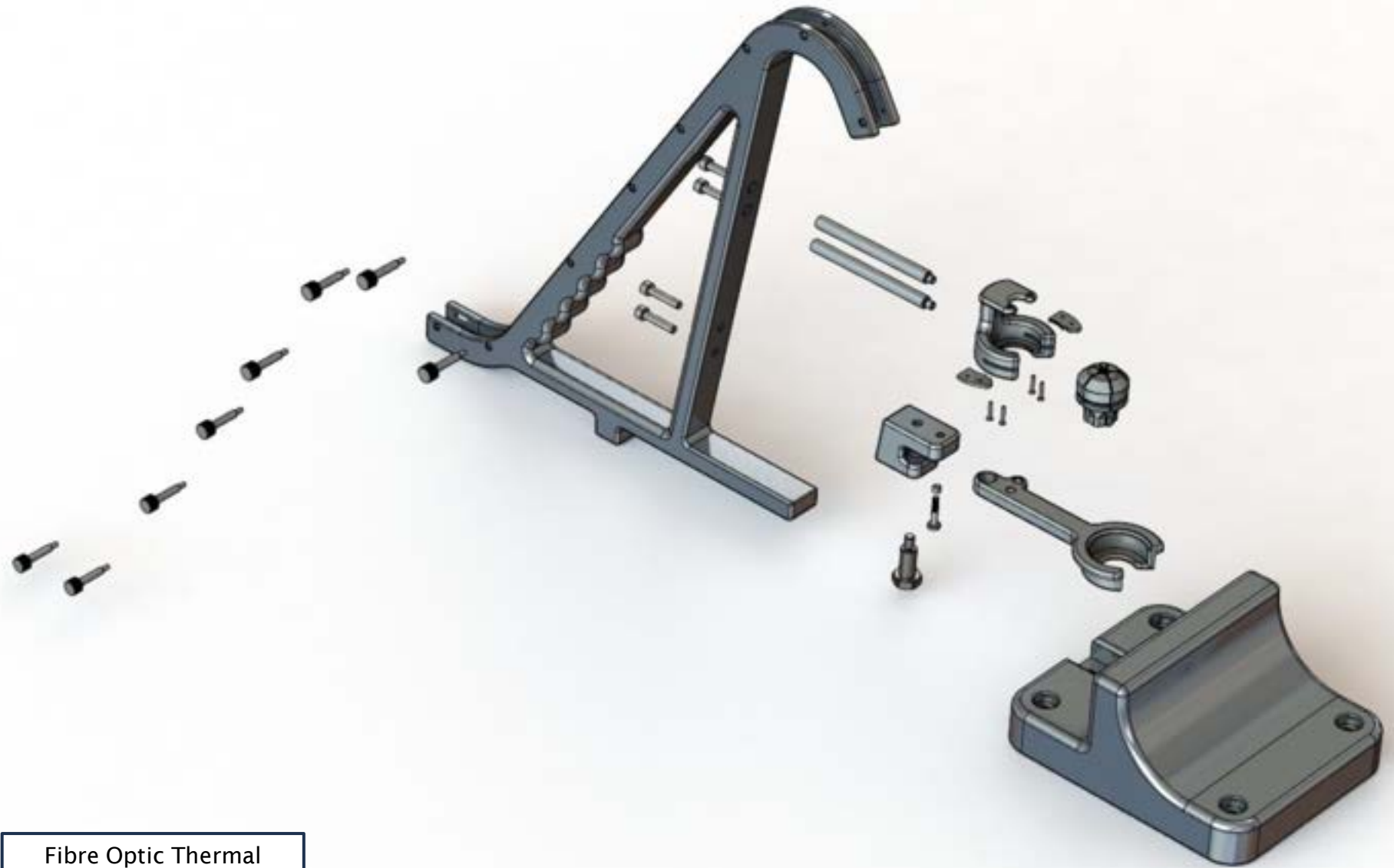
Fibre Optic 6-axis
Micron Alignment Jig
Full Assembly



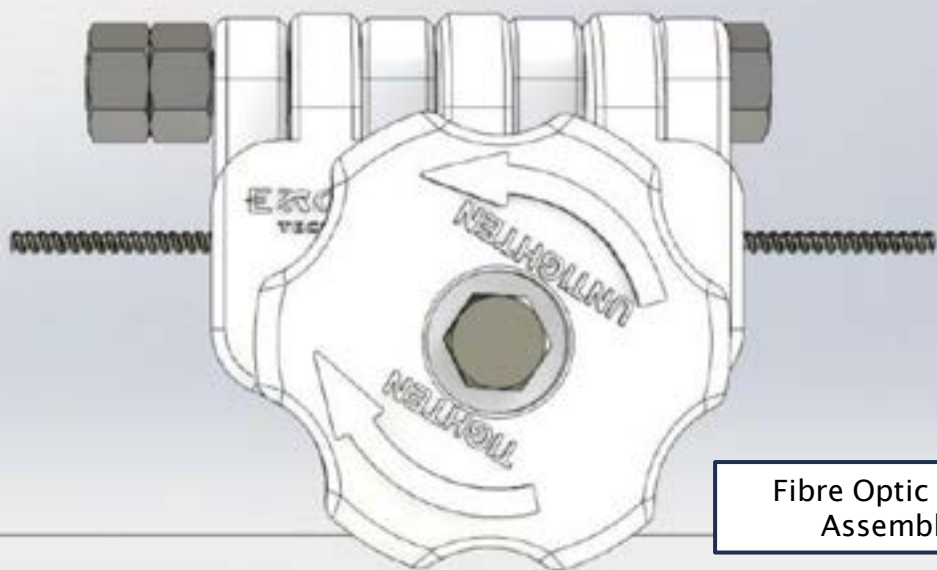
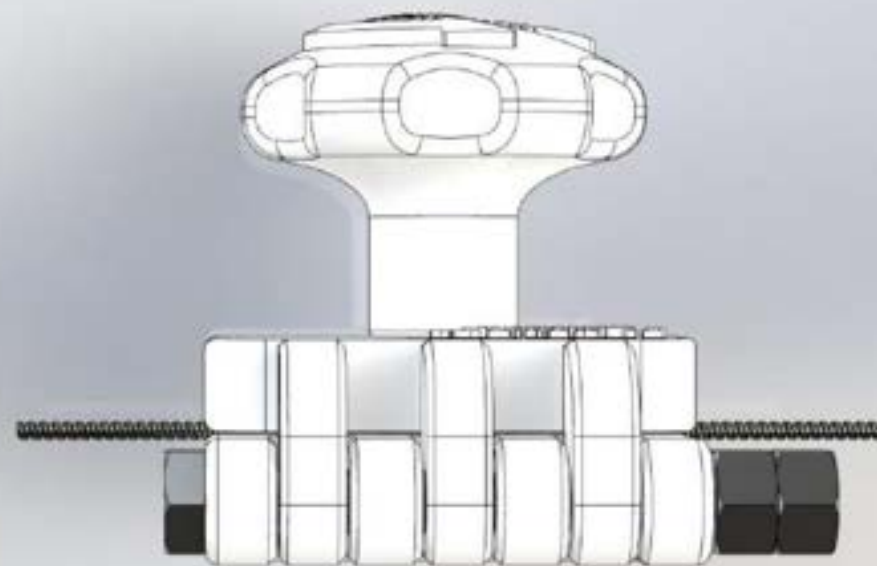
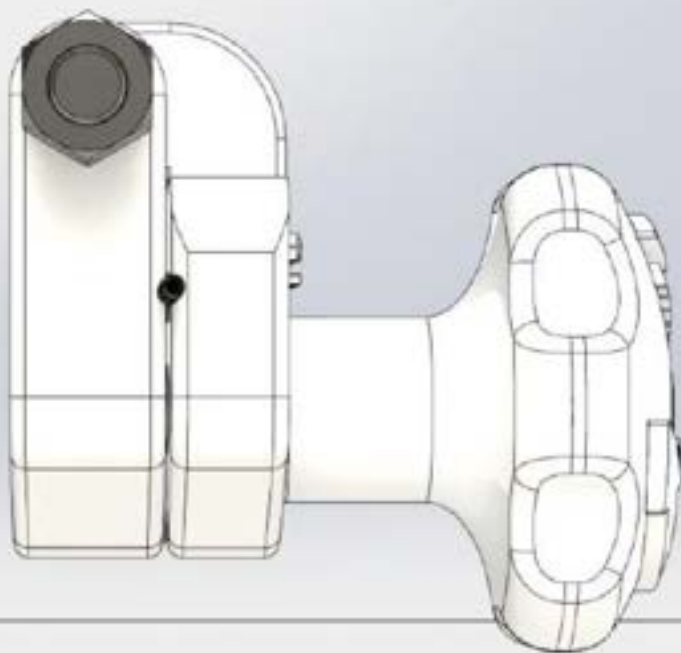
Fibre Optic Thermal
Assembly Jig



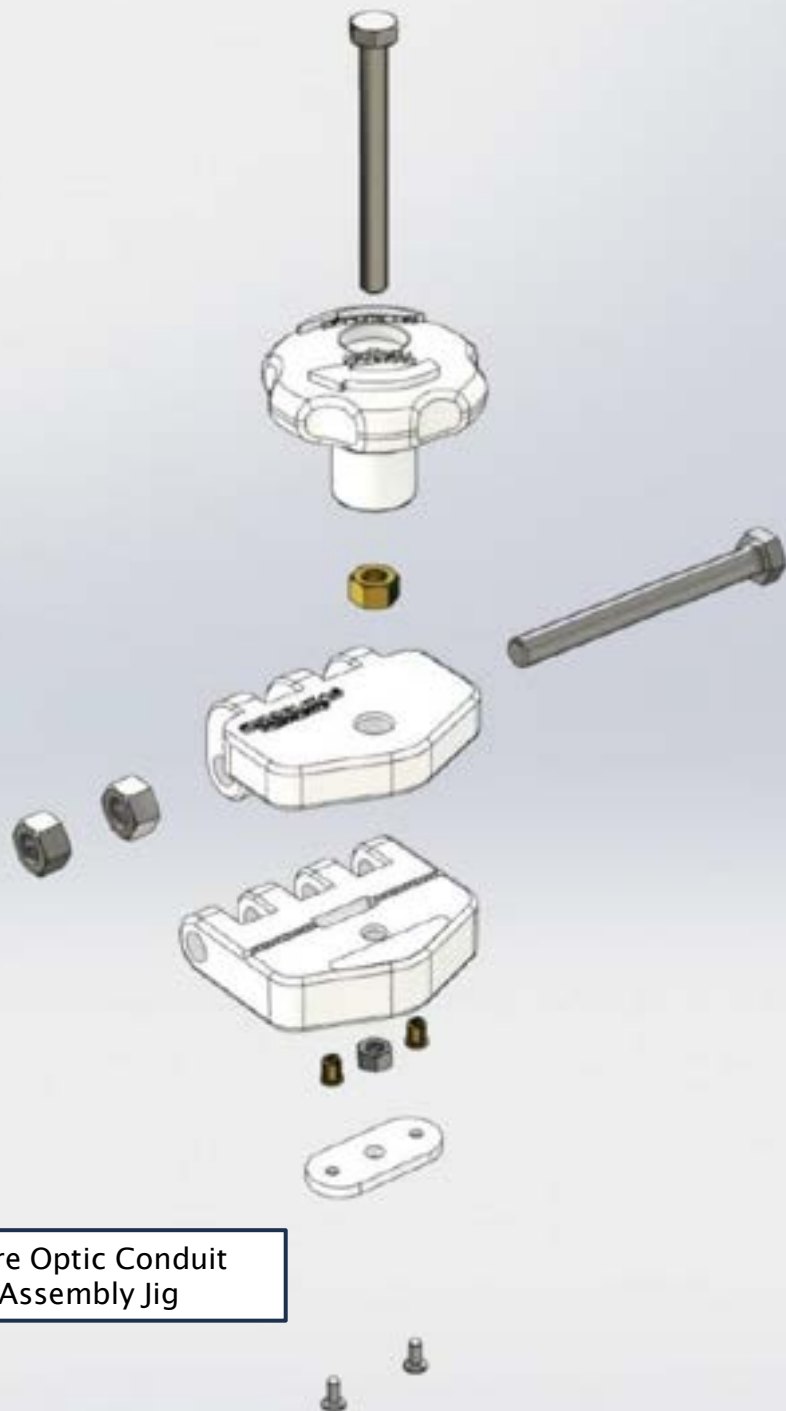
Fibre Optic Thermal
Assembly Jig



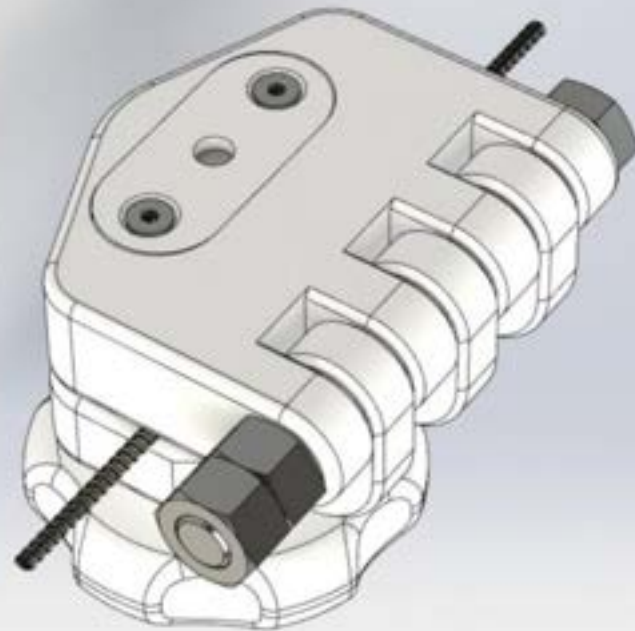
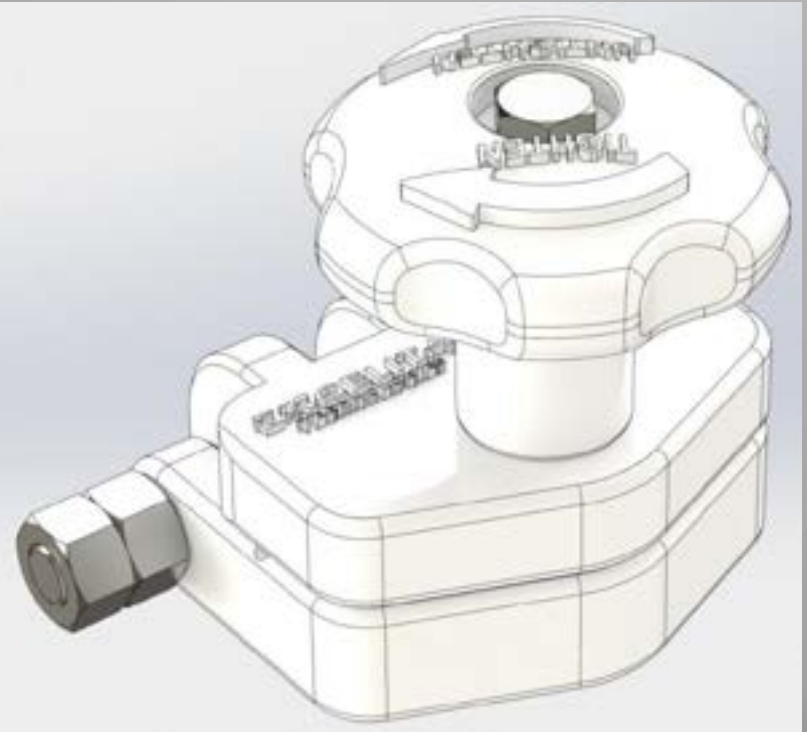
Fibre Optic Thermal
Assembly Jig

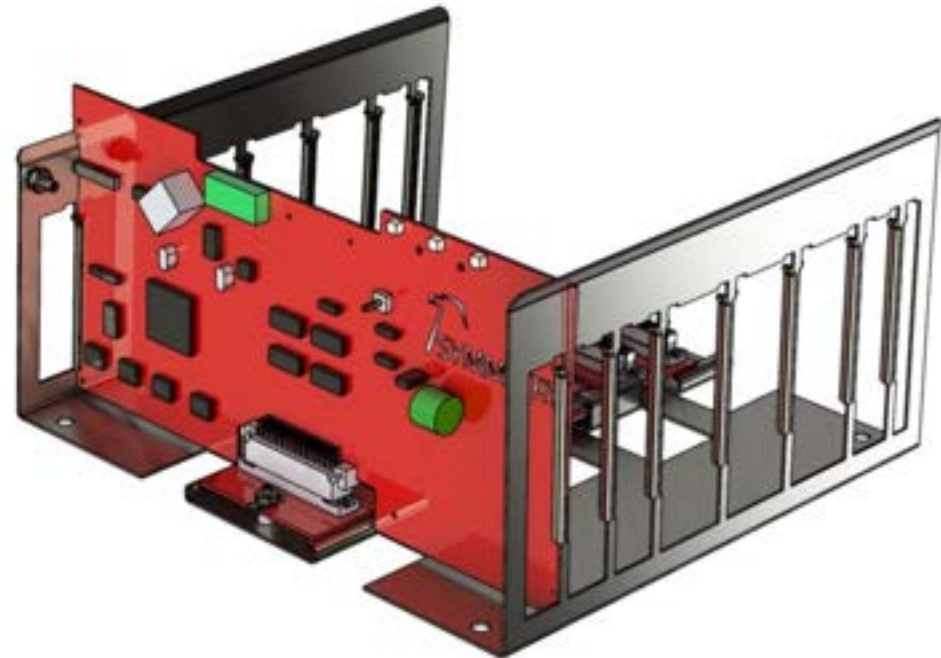
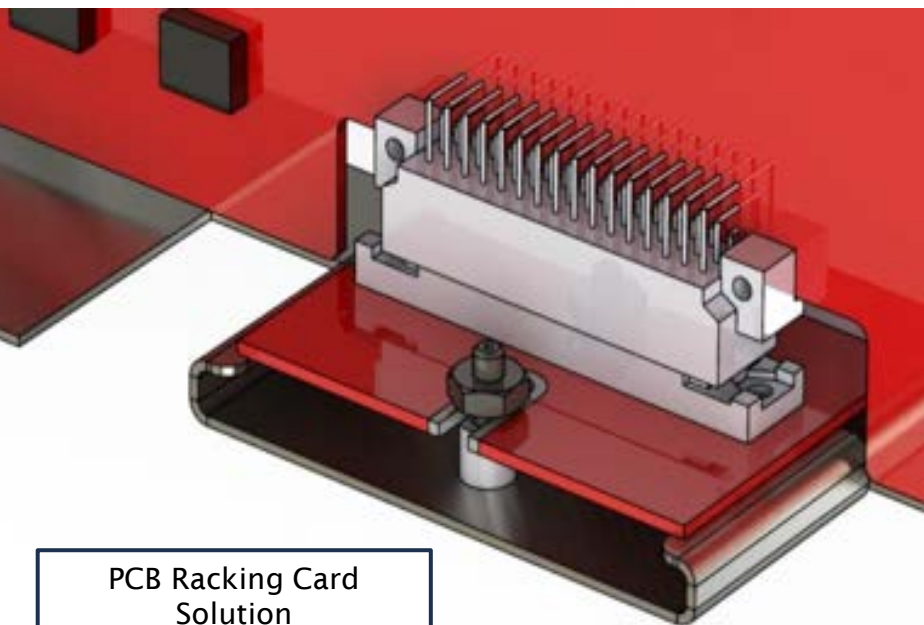
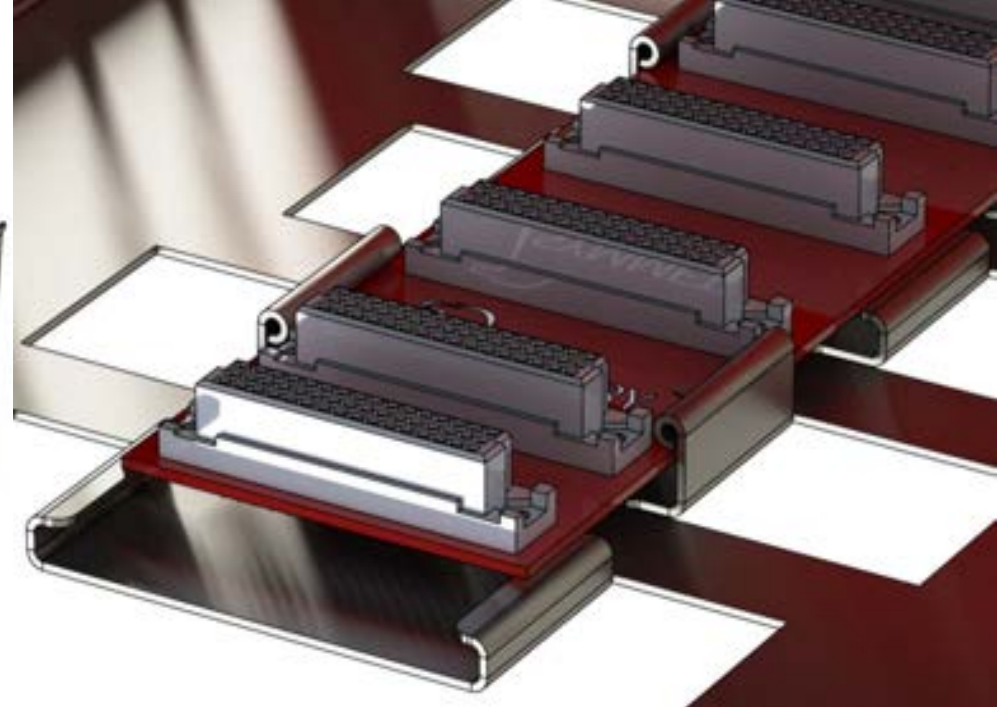


Fibre Optic Conduit
Assembly Jig

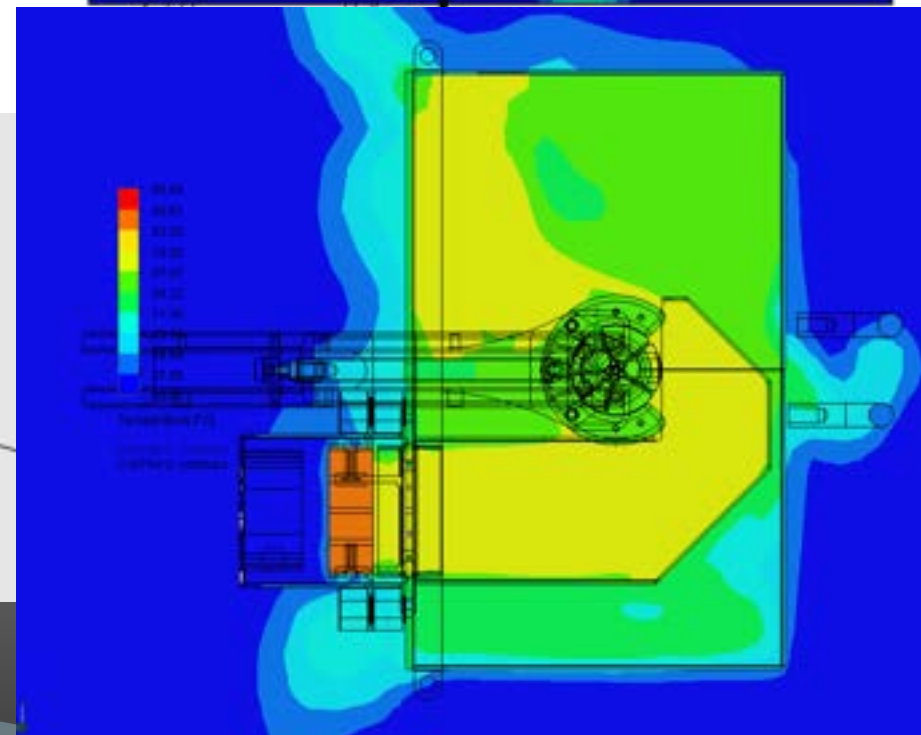
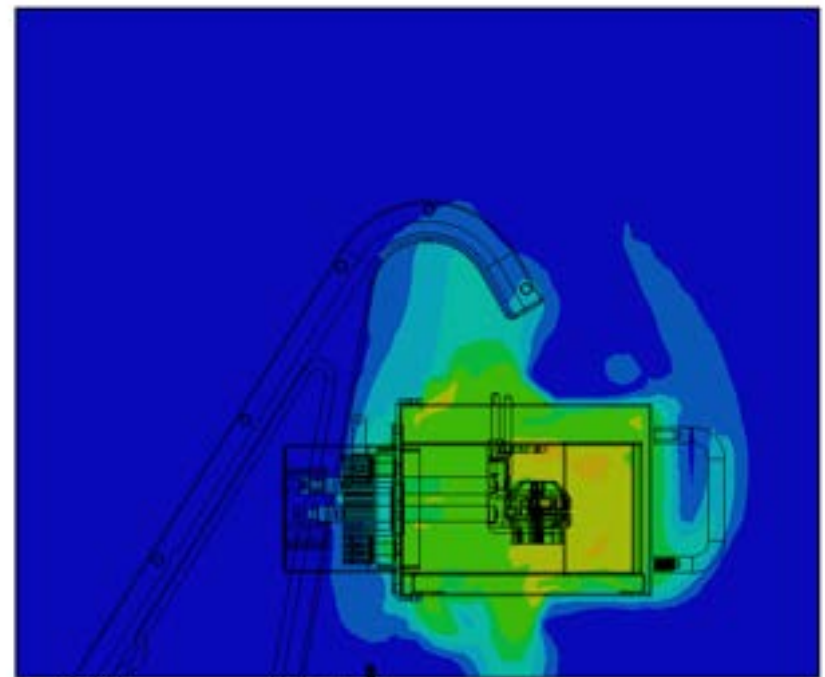
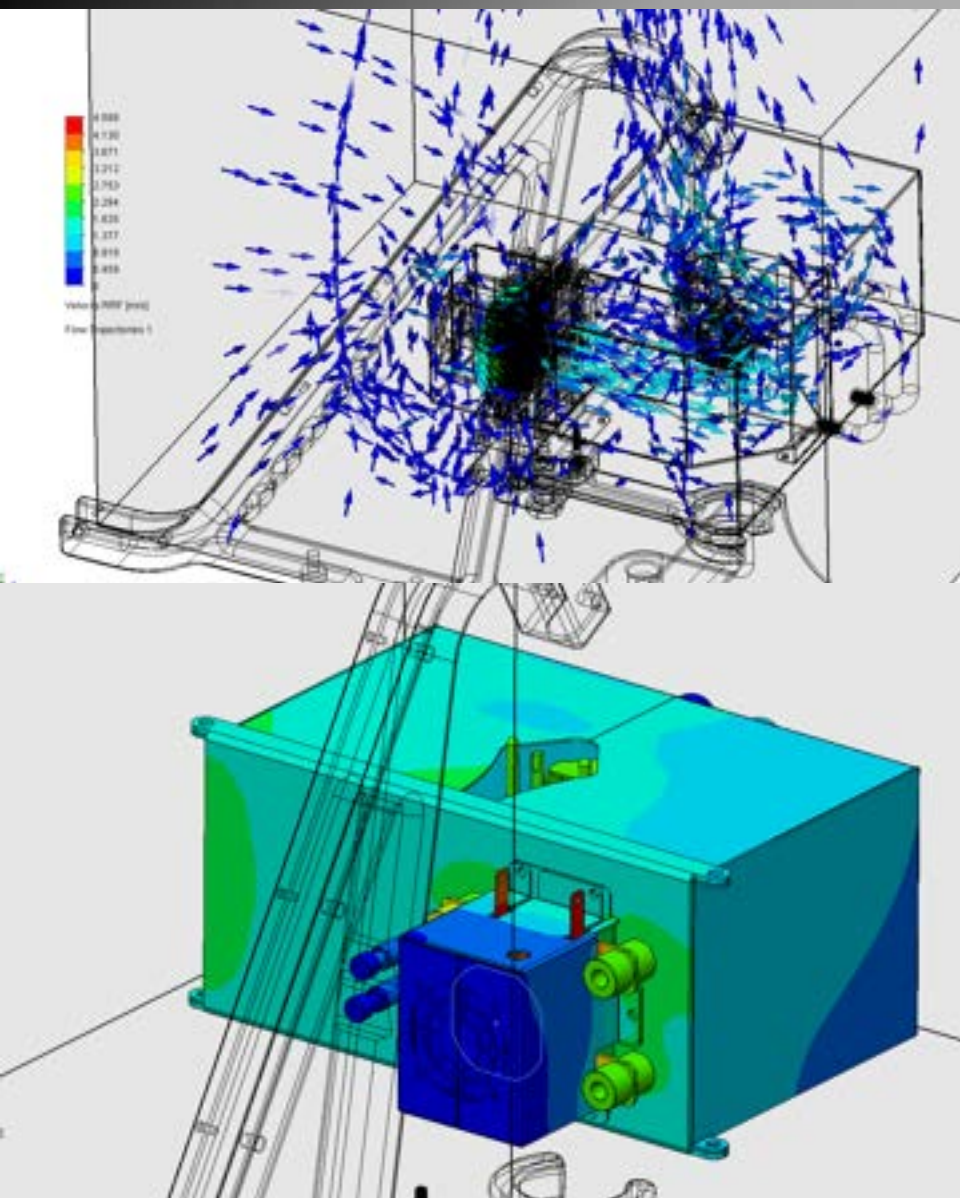


Fibre Optic Conduit Assembly Jig

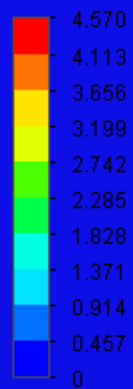




PCB Racking Card
Solution



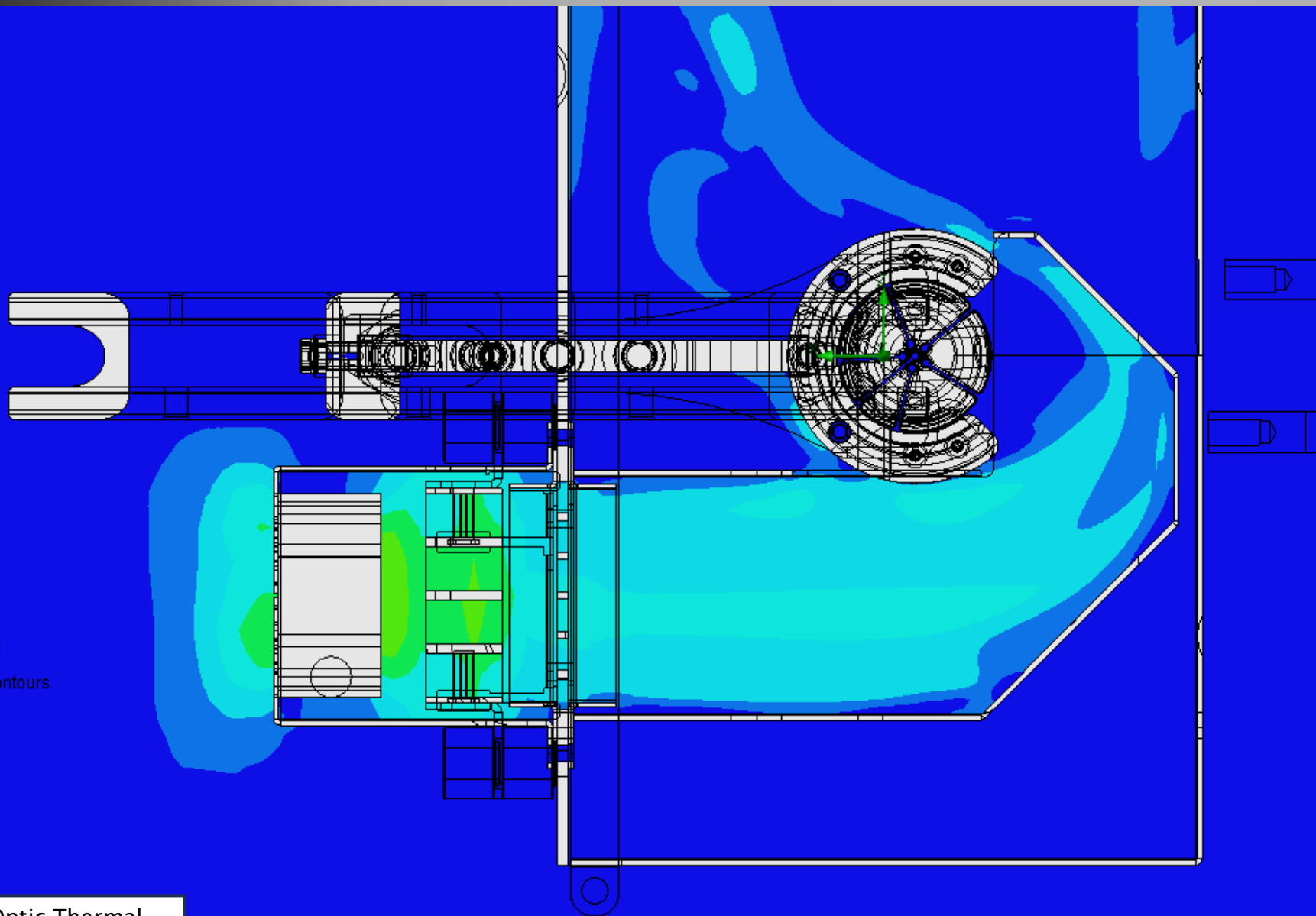
Fibre Optic Thermal
Assembly Jig CFD of
Bonding Chamber



Velocity [m/s]

Cut Plot 3: contours

Fibre Optic Thermal
Assembly Jig CFD of
Bonding Chamber

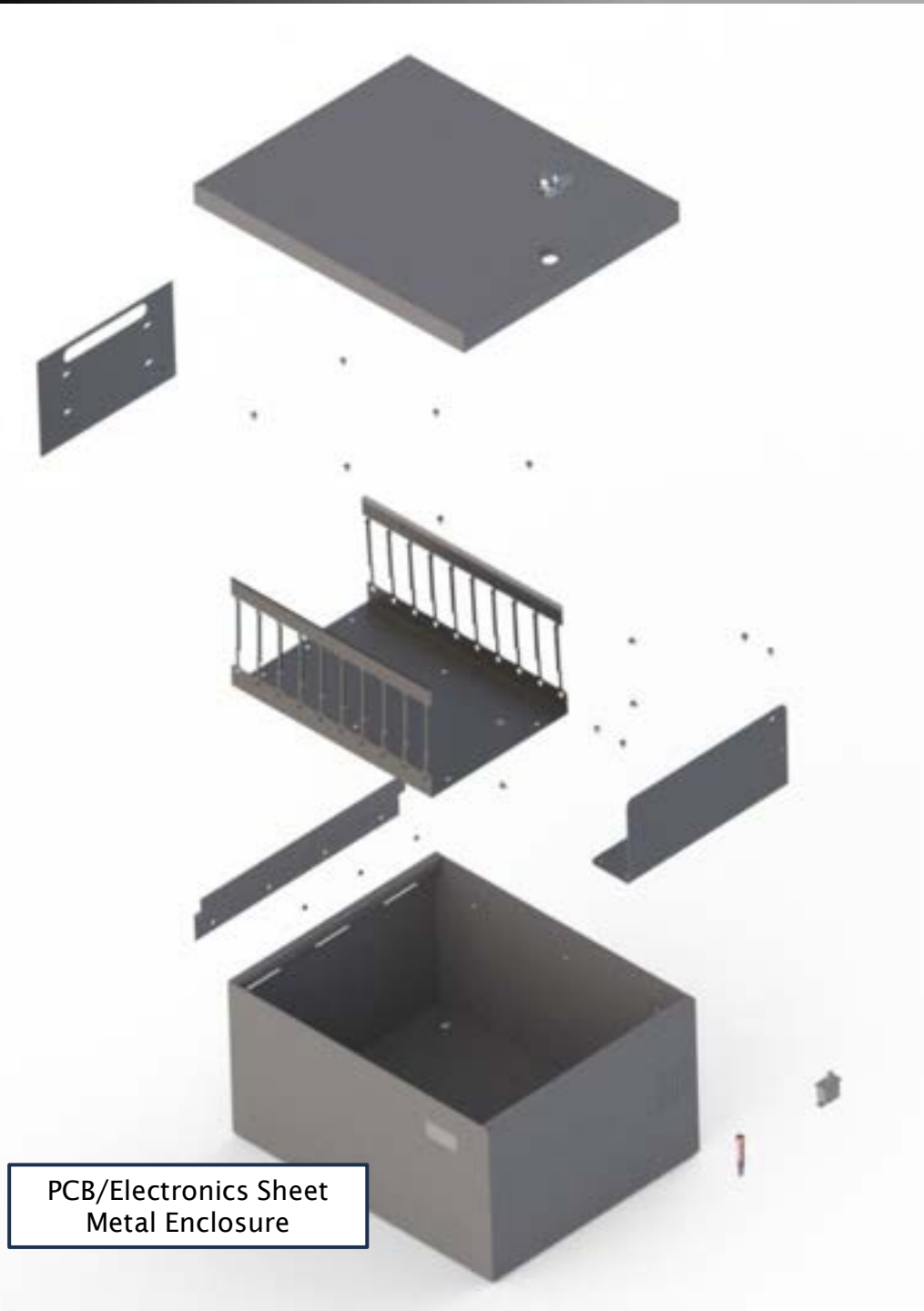


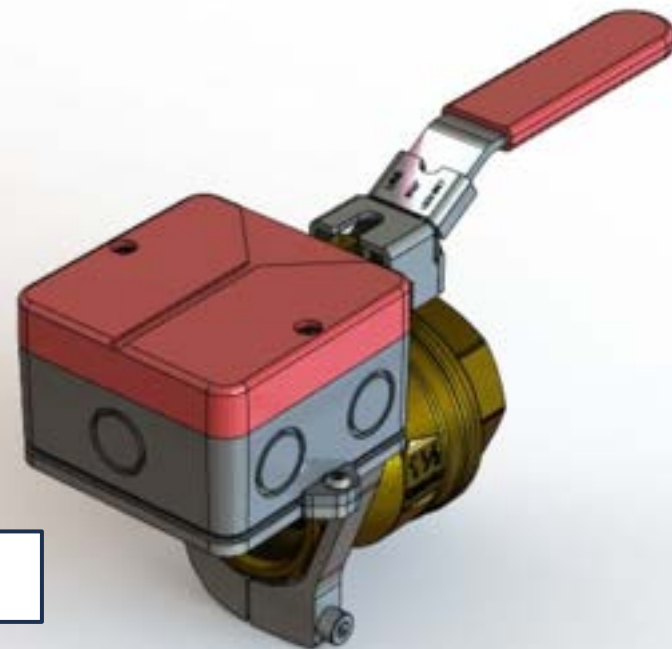
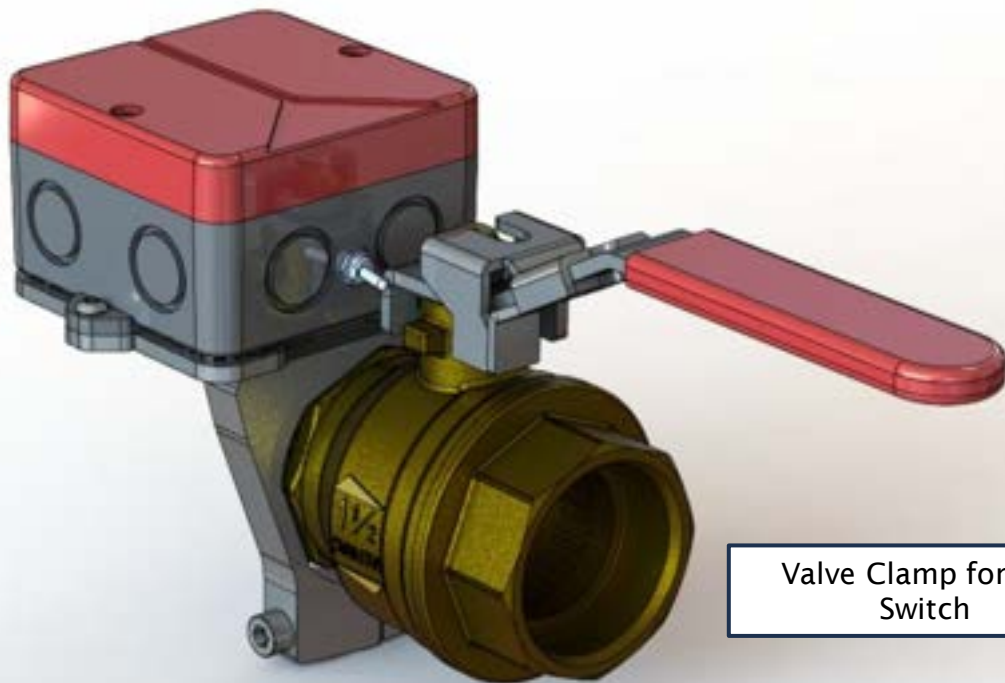
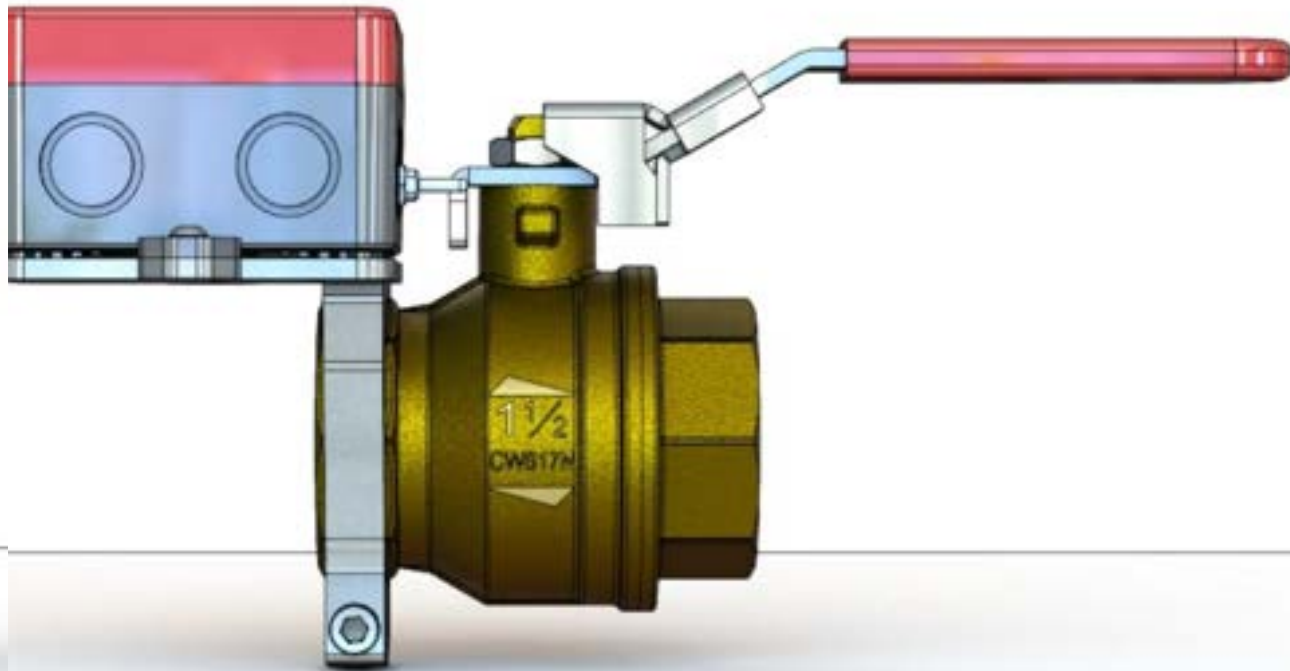
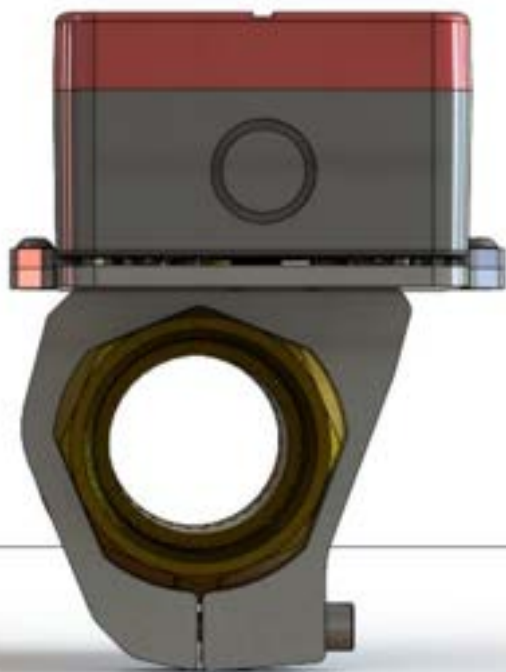


Chipset Protective Cover

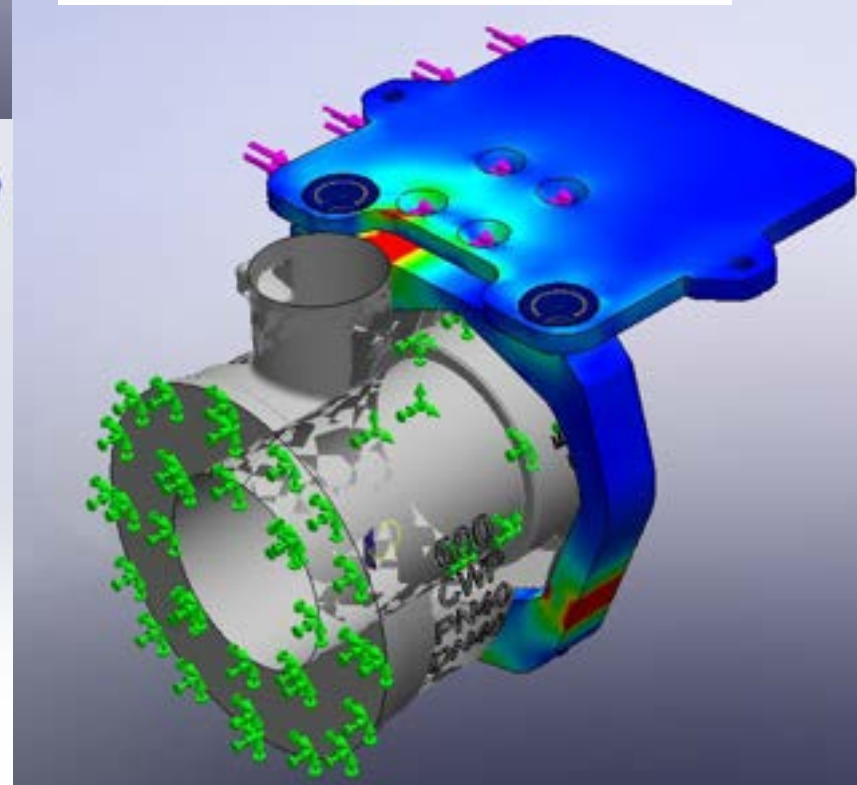
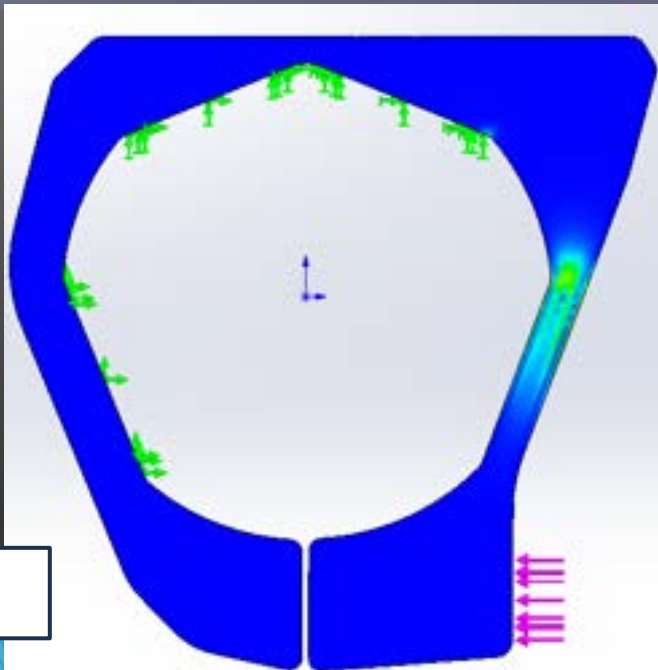
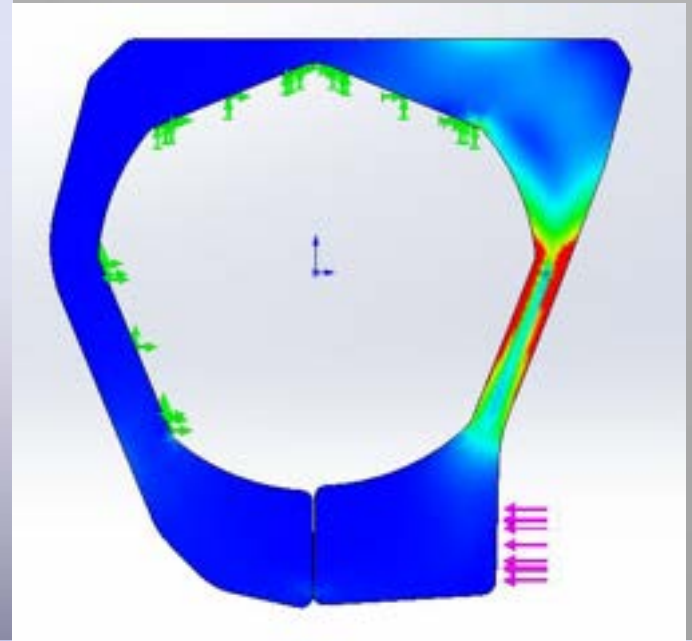
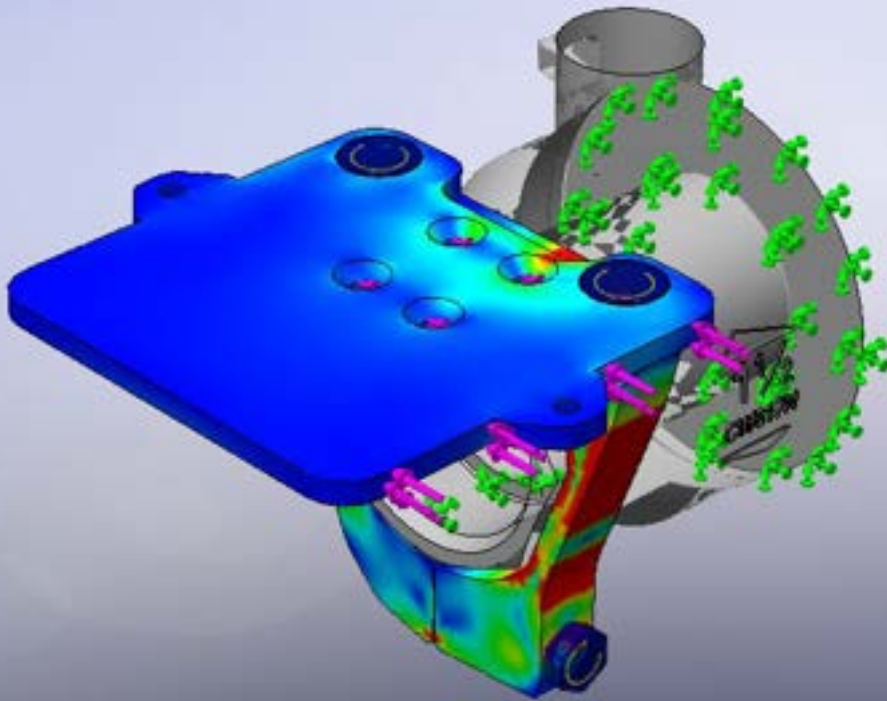


PCB/Electronics Sheet
Metal Enclosure

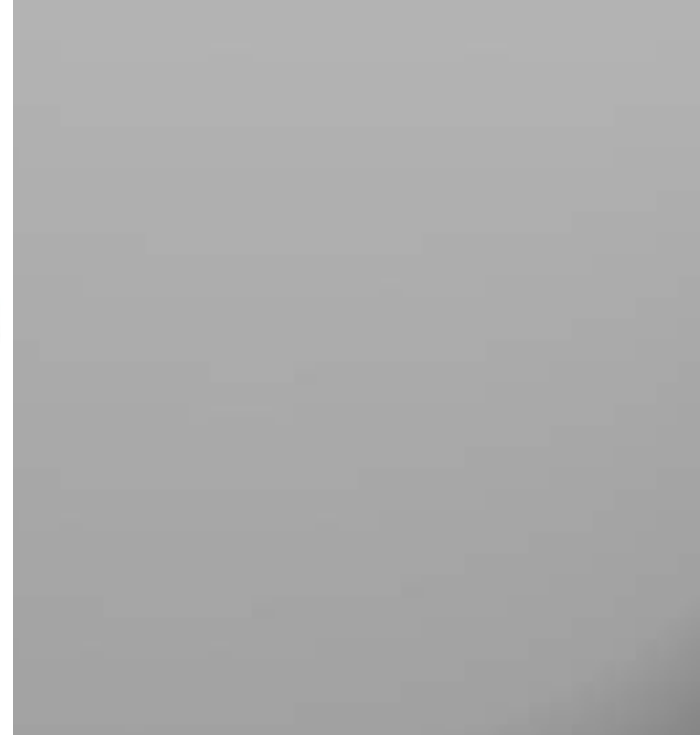
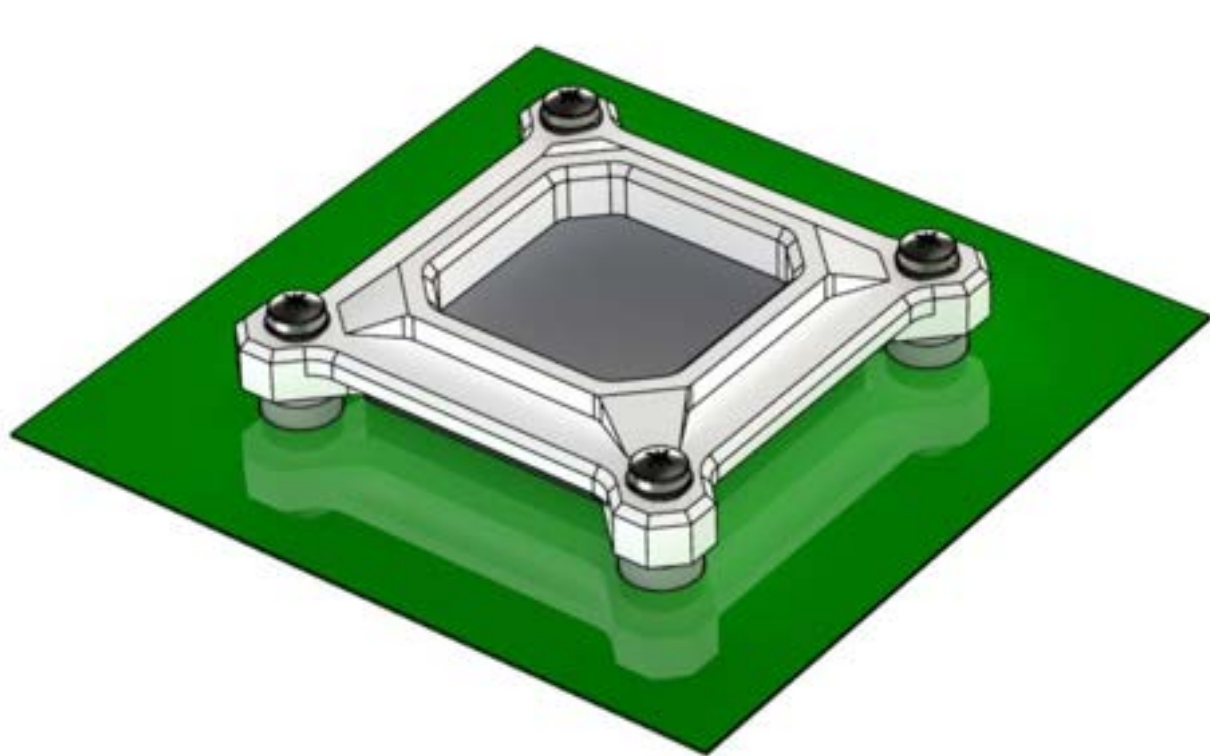




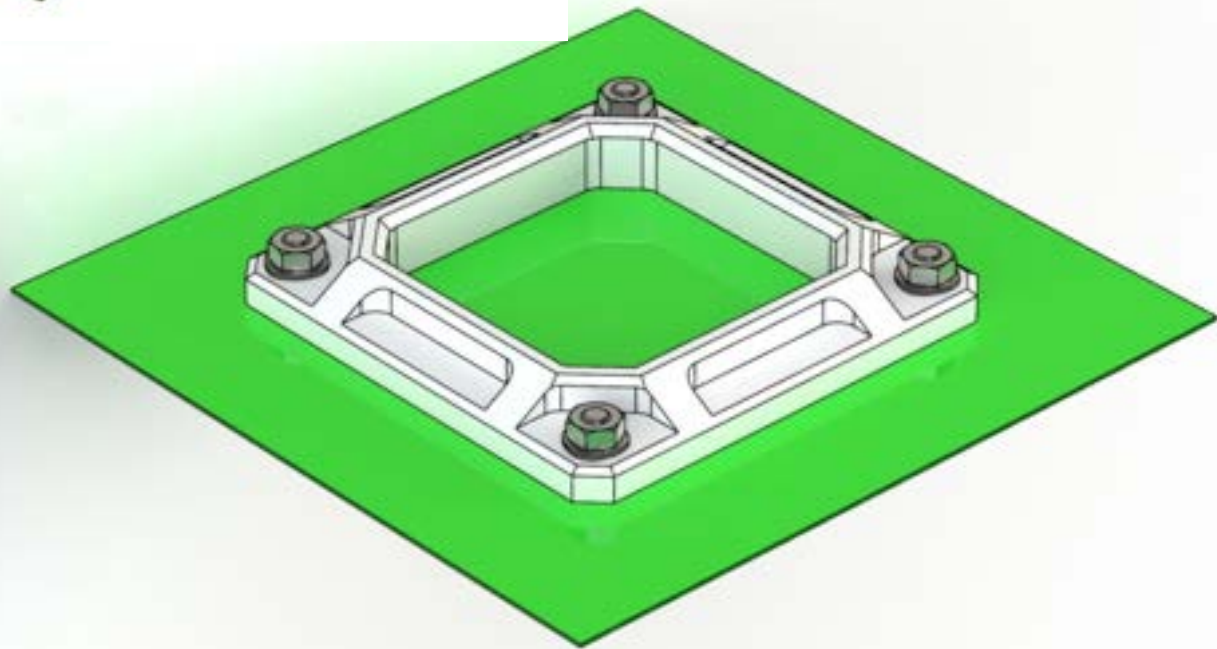
Valve Clamp for PCB
Switch



Valve Clamp for PCB
Switch FEA

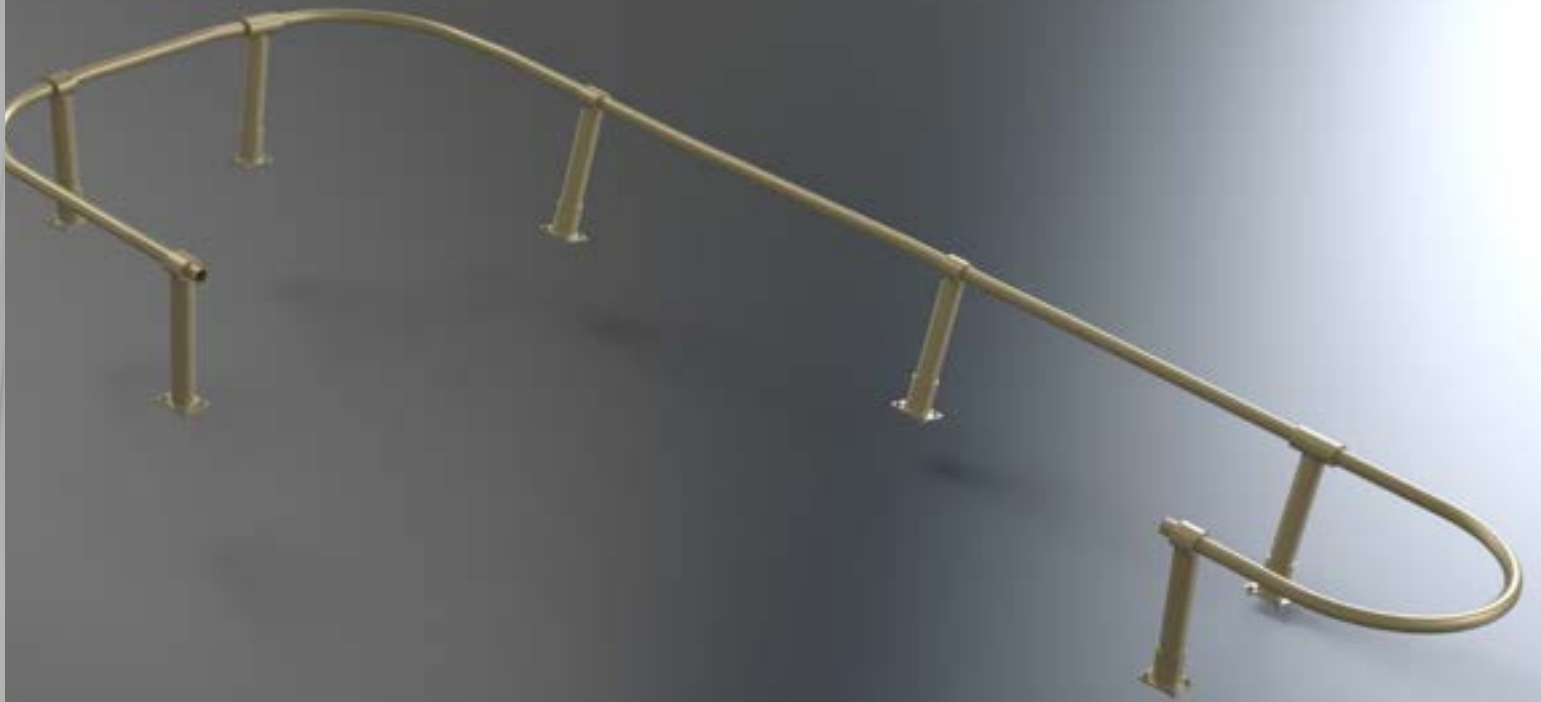


Military Patch
Antenna Shock and
Vibration Mount

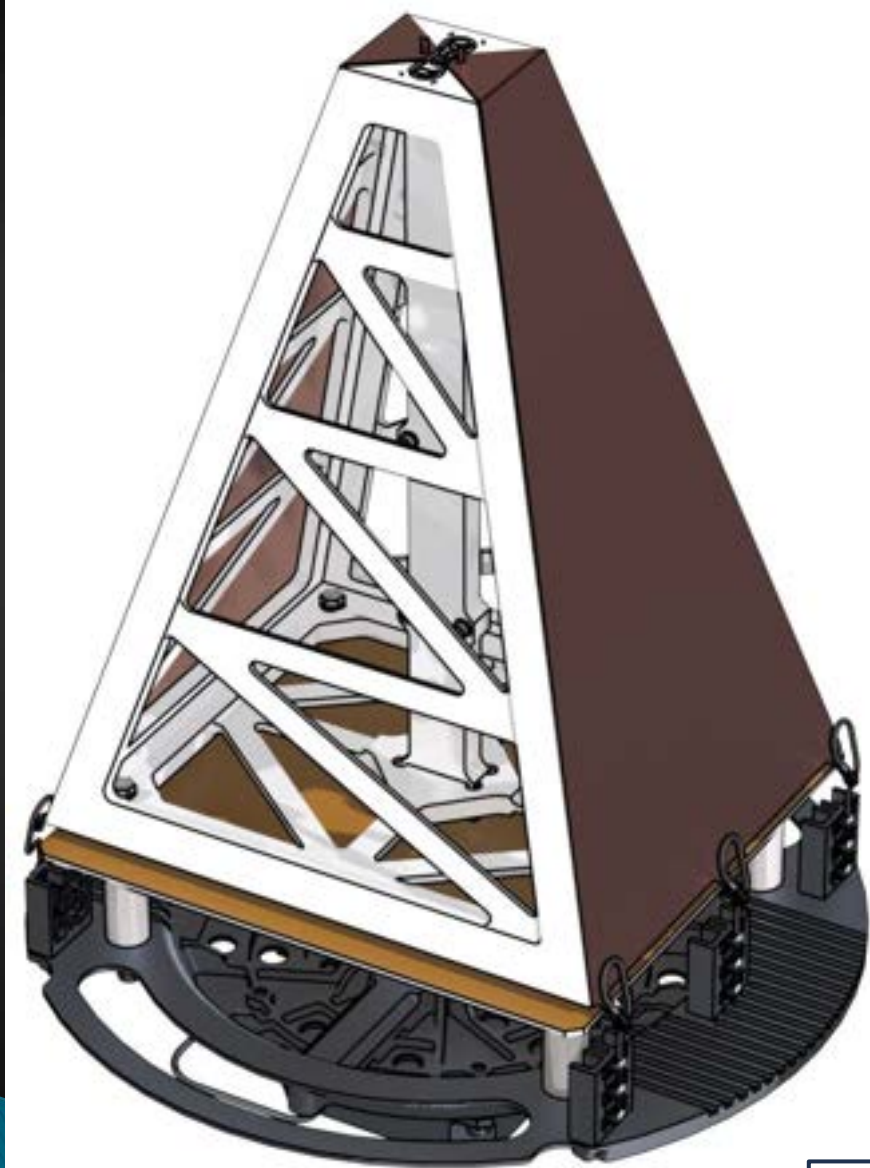


Military Antenna





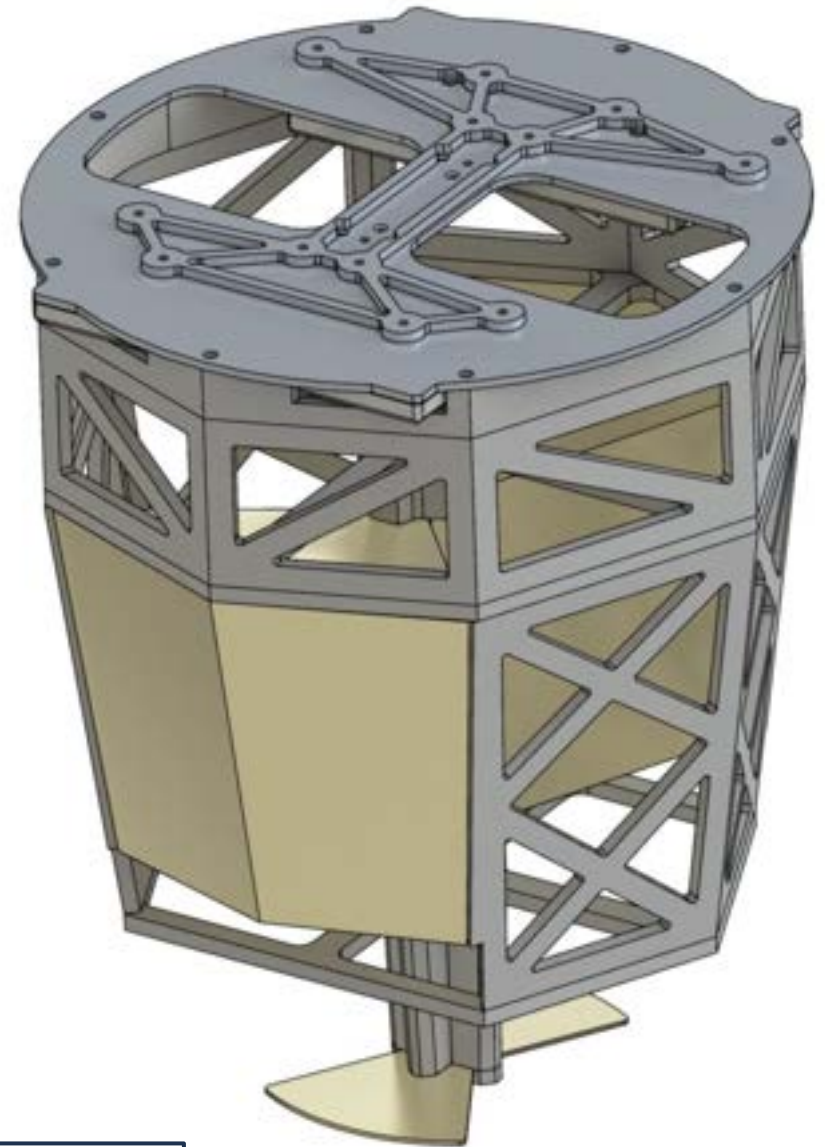
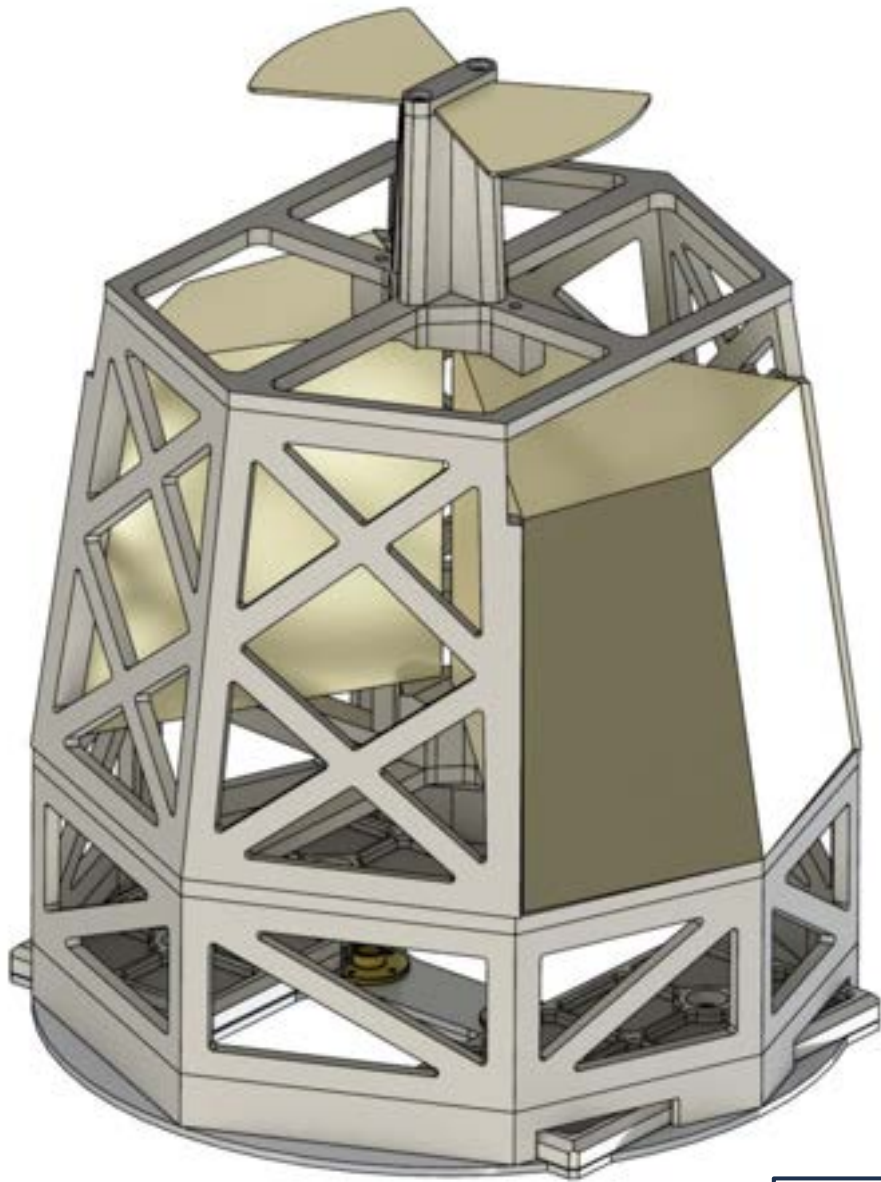
Helicopter Rail Antenna



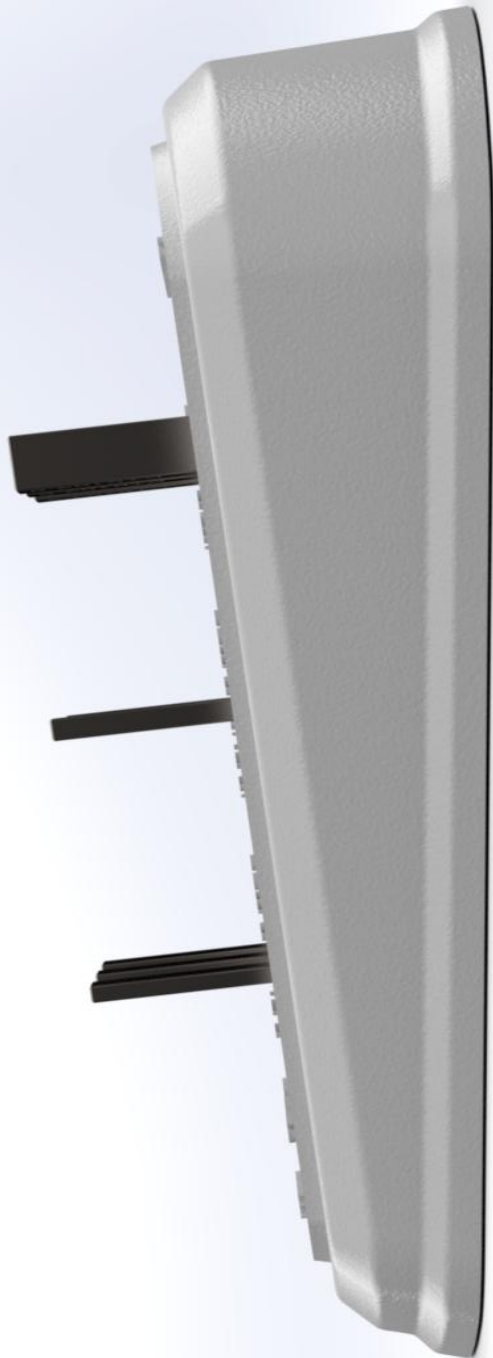
Airborne Fighter Jet Pod
Antenna



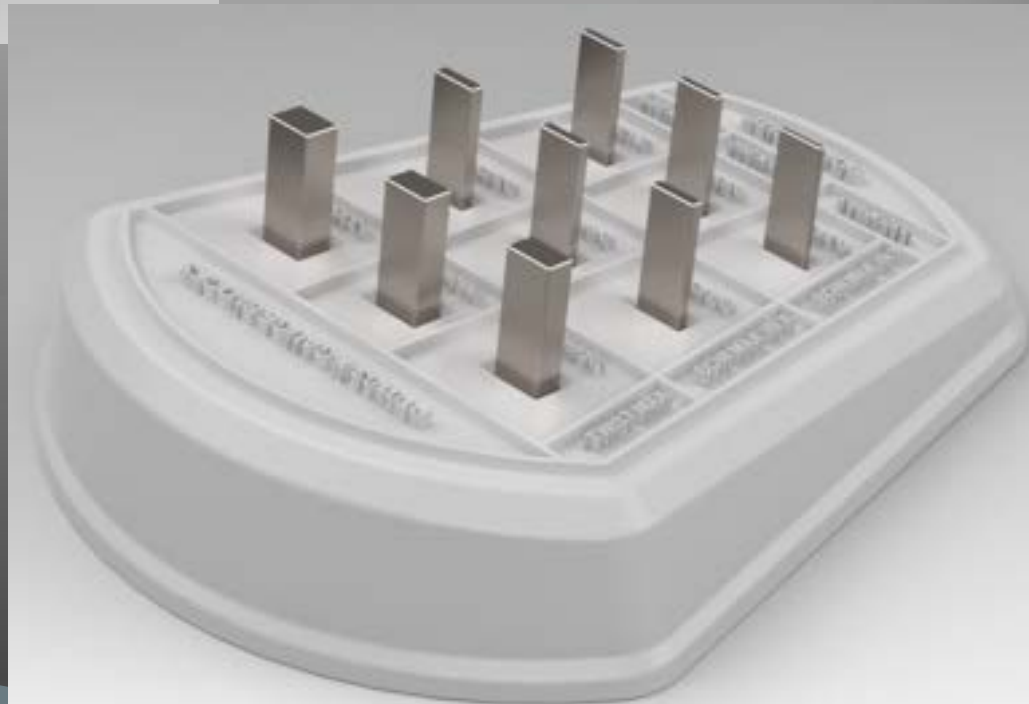
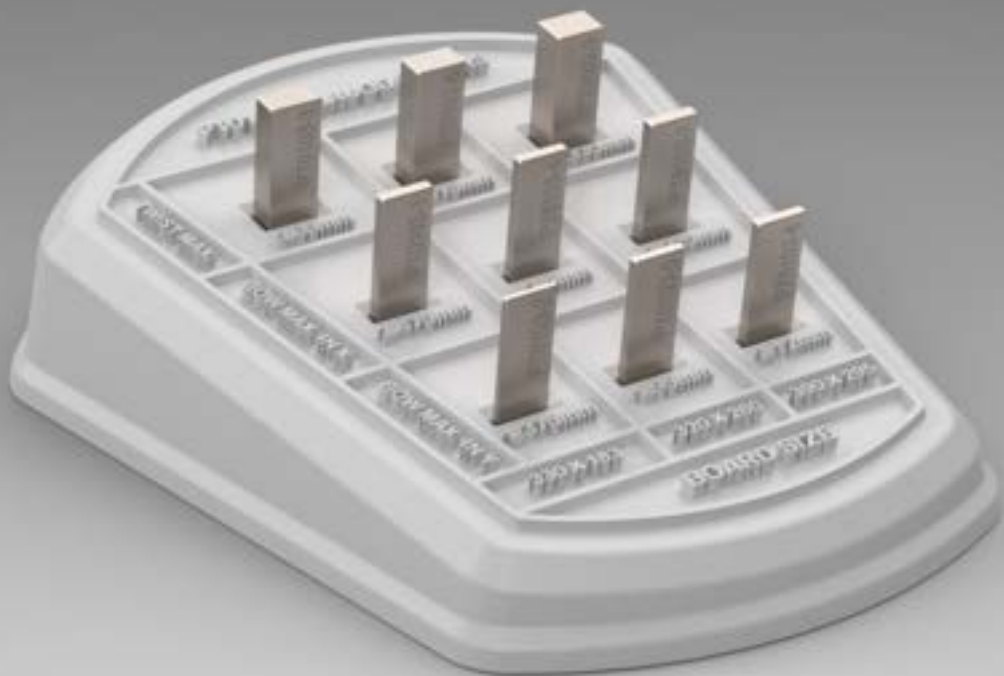
Airborne Fighter Jet Pod
Antenna



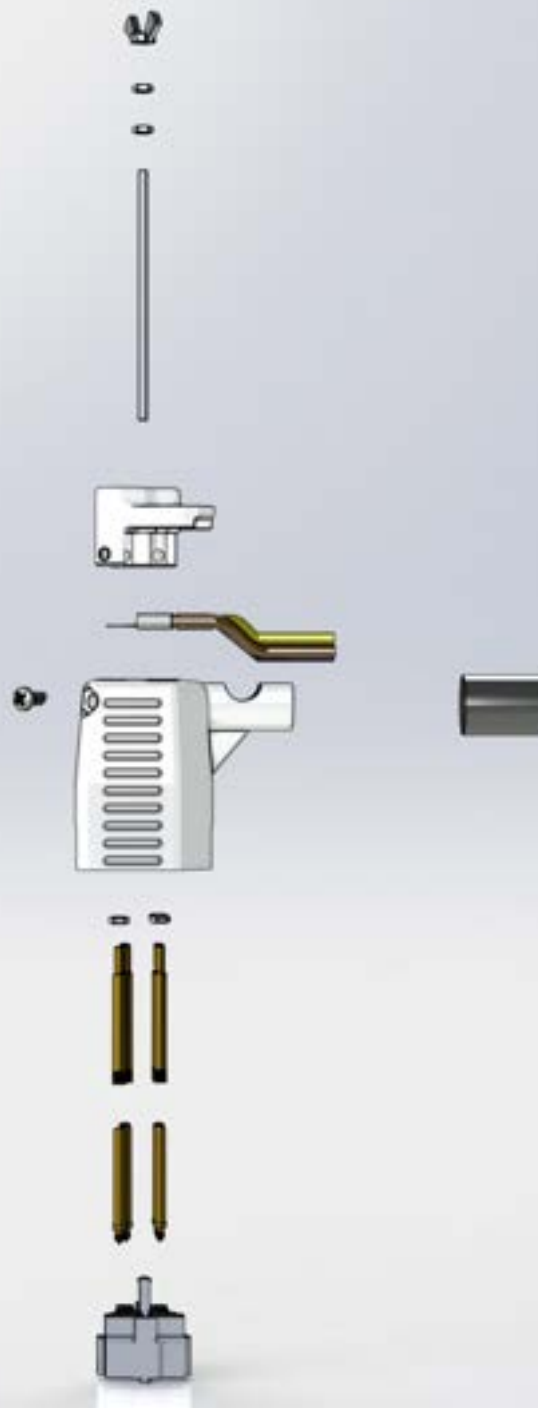
Airborne Fighter Jet Pod
Antenna



3D Printed Slip Gauge Holder

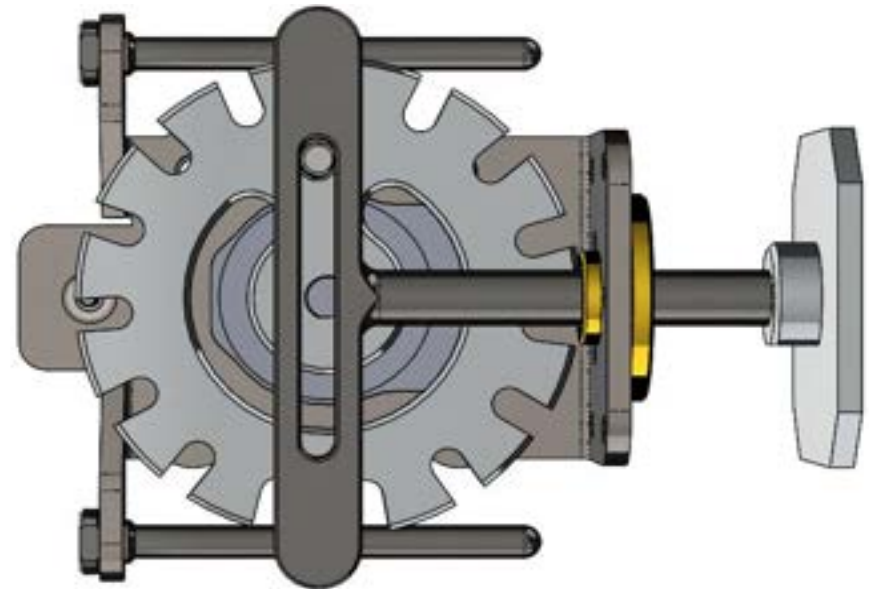
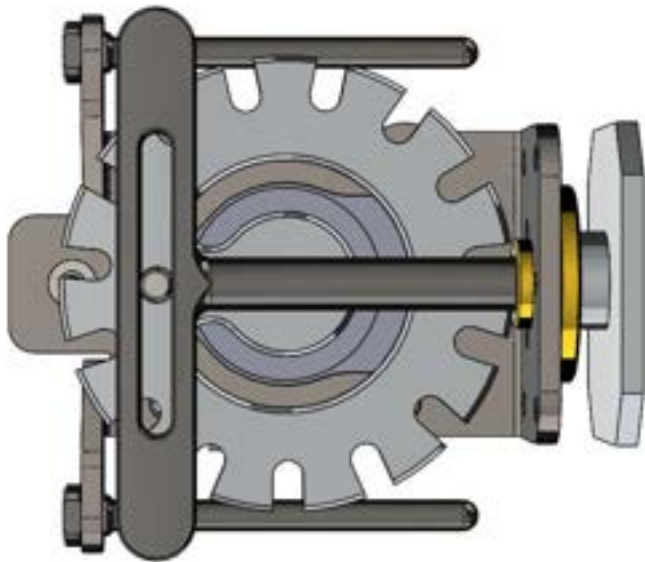
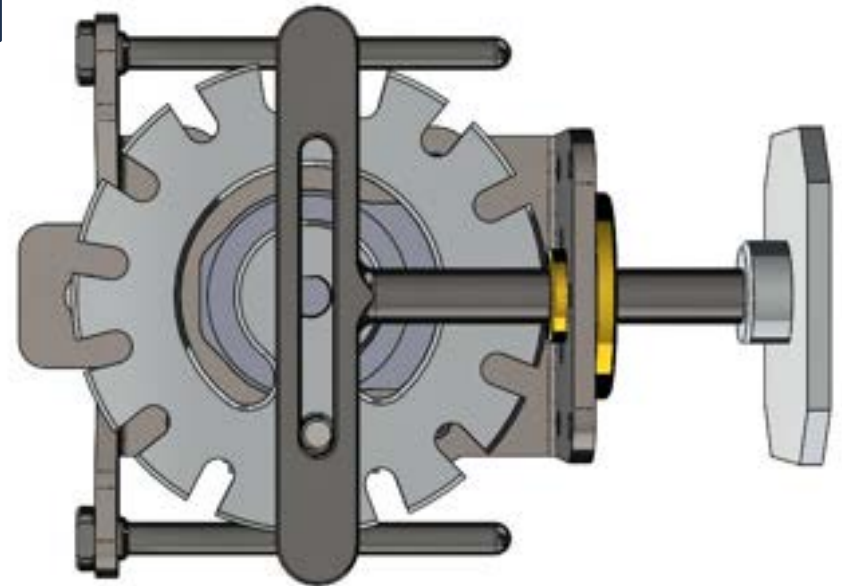
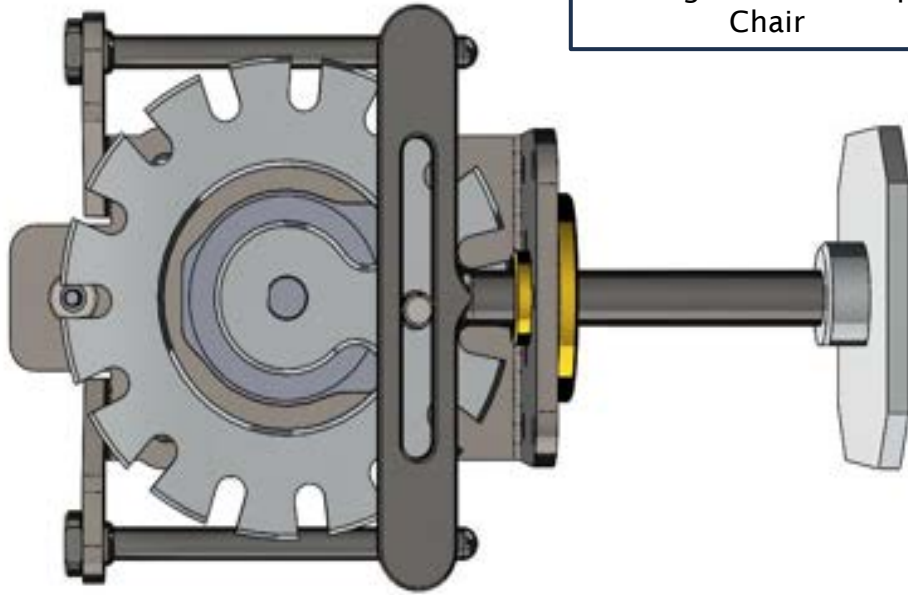


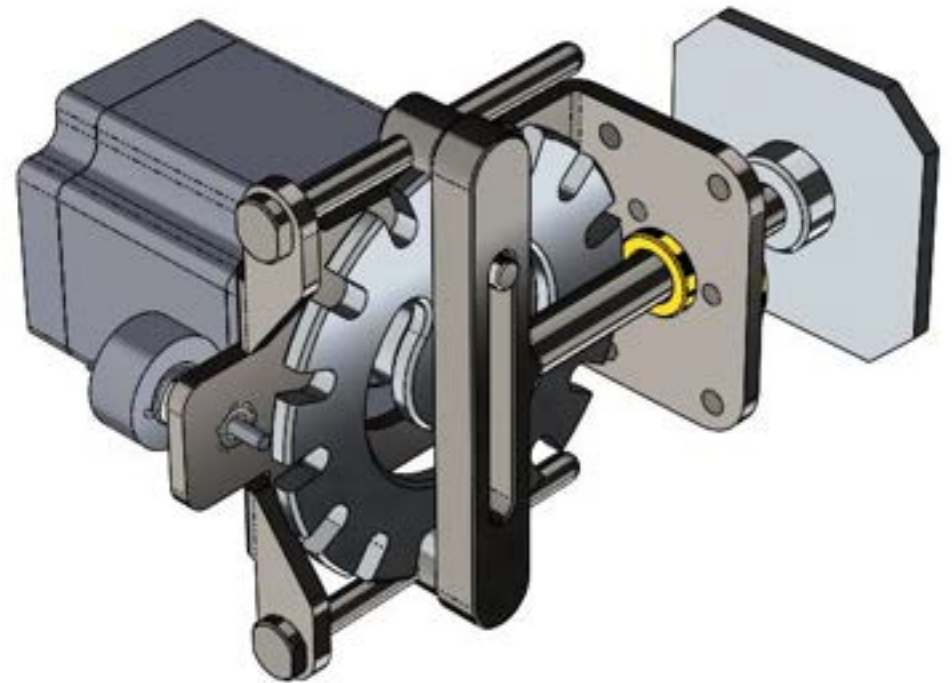
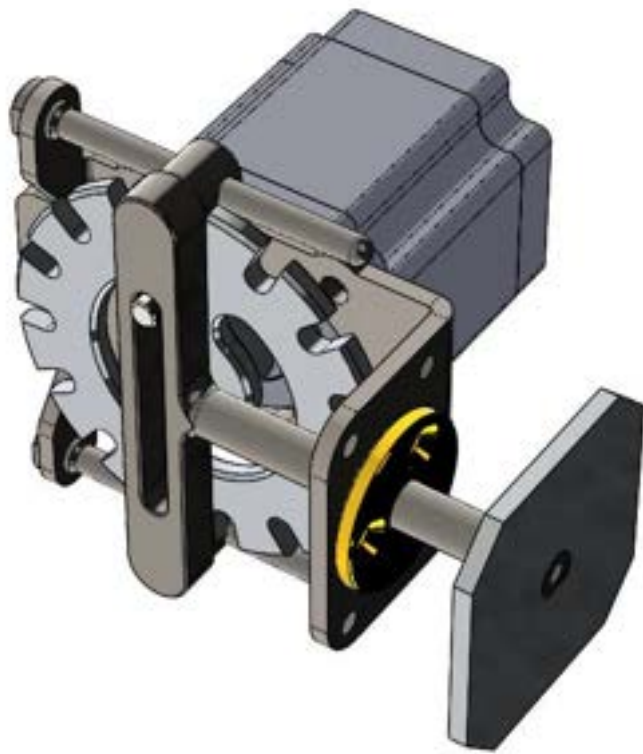
3D Printed Slip Gauge
Holder



3d Printed Electrical Test Tooling

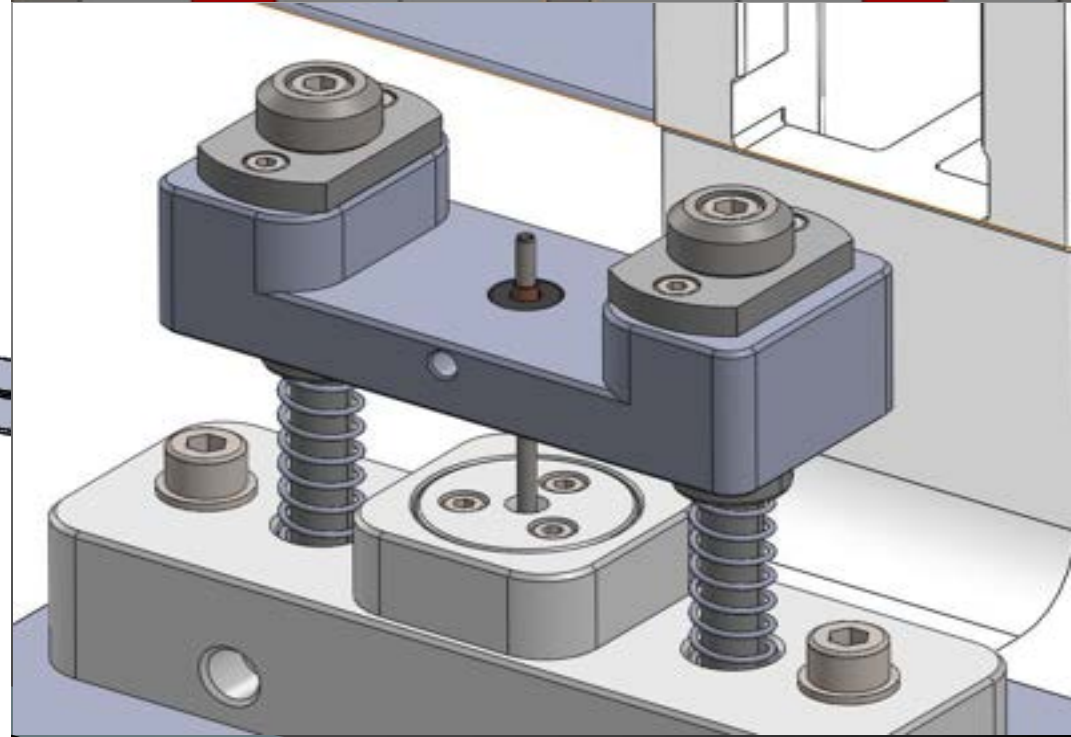
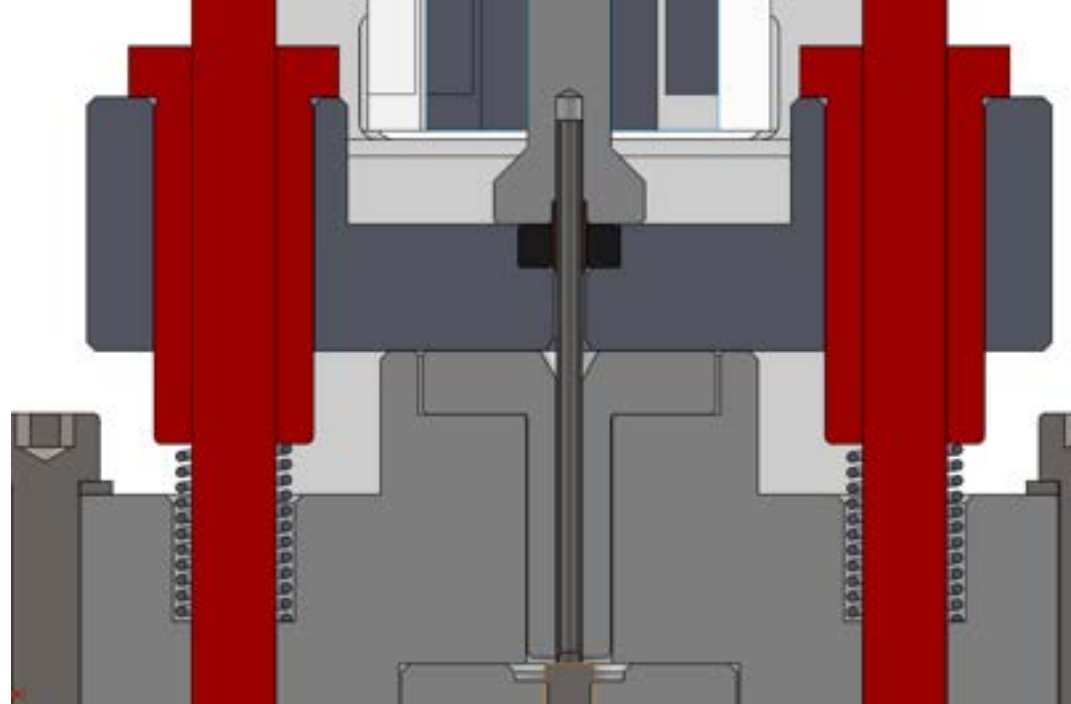
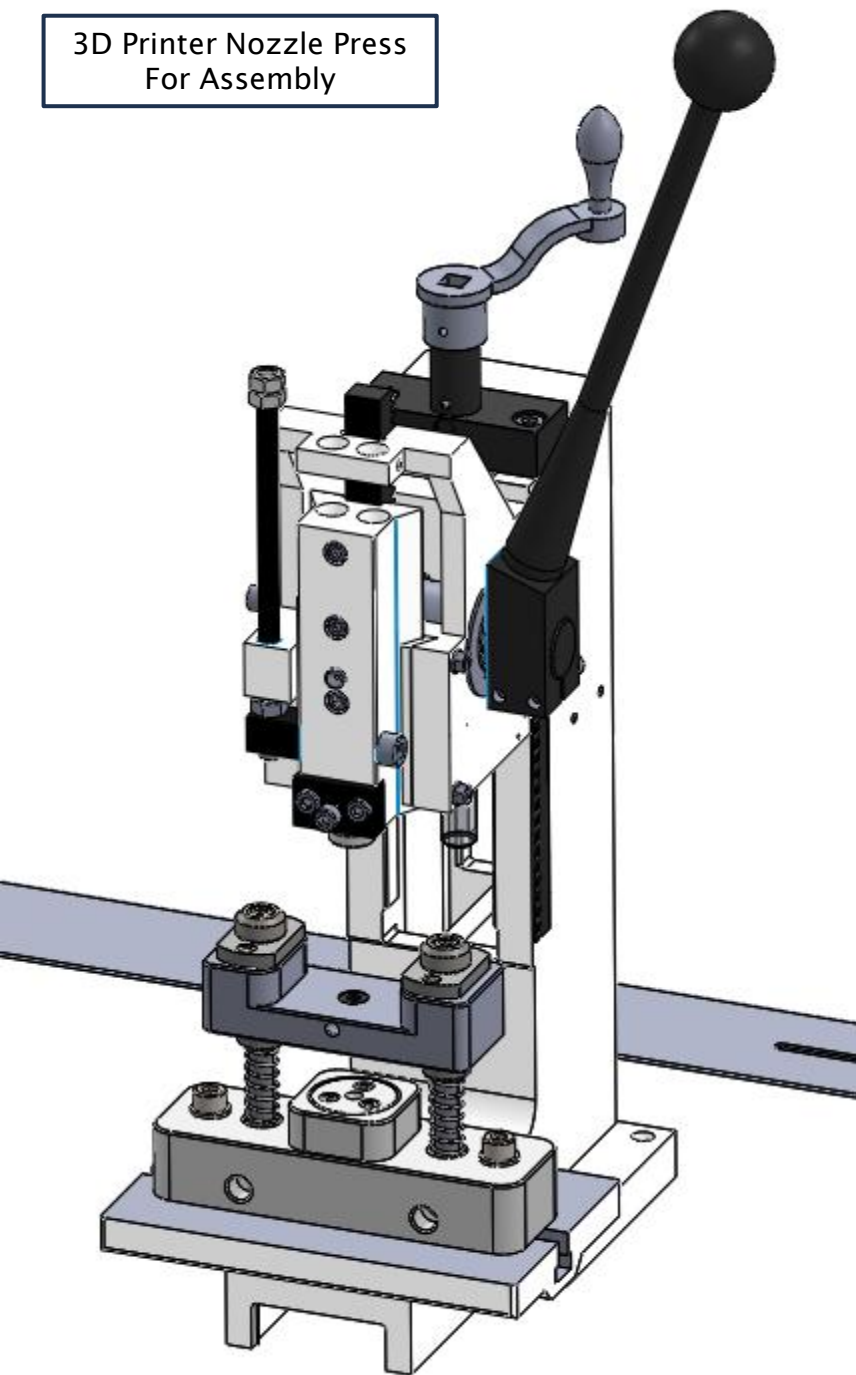
Lateral Force Mechanism
for Ergonomic Therapy
Chair

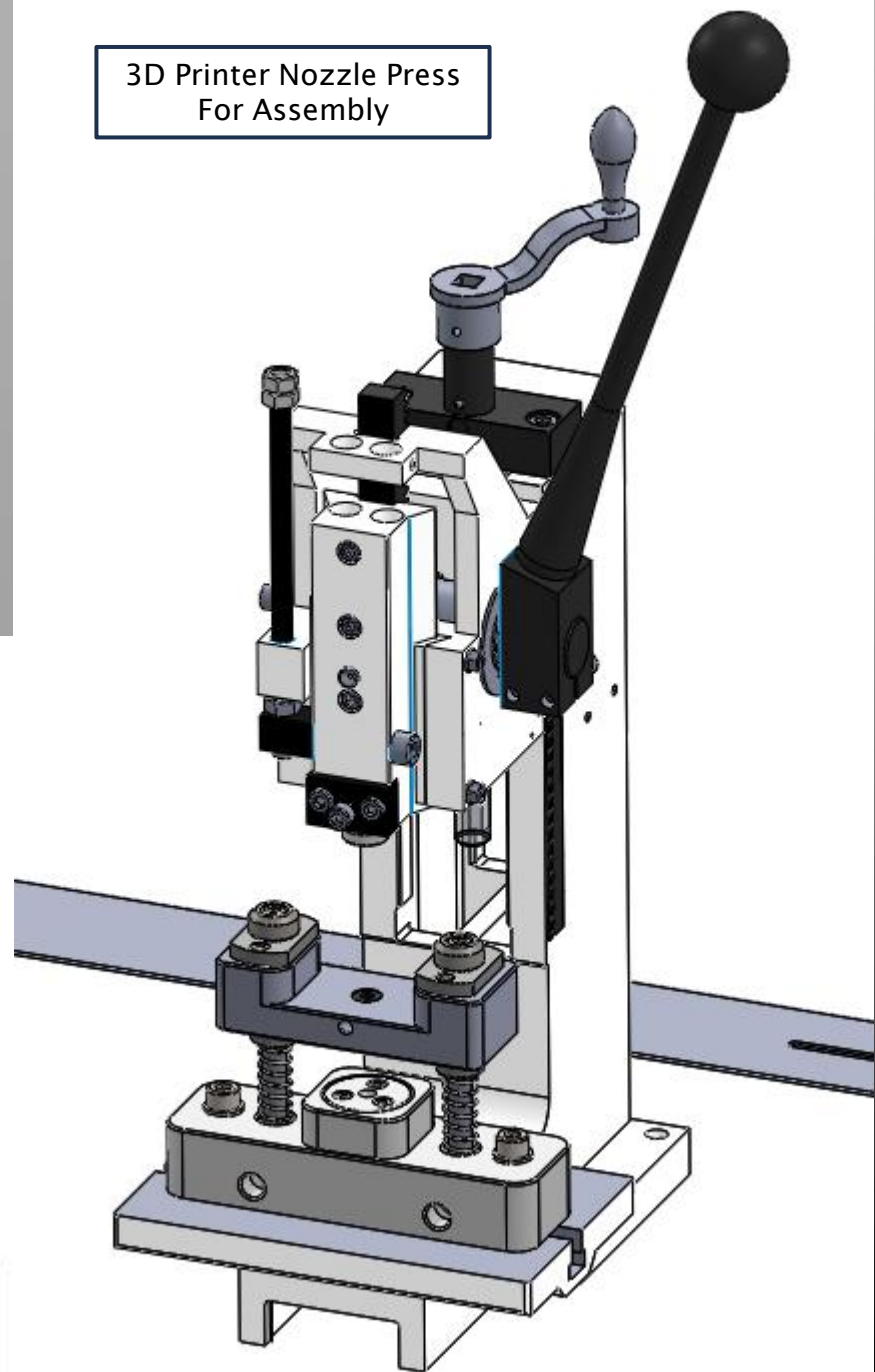
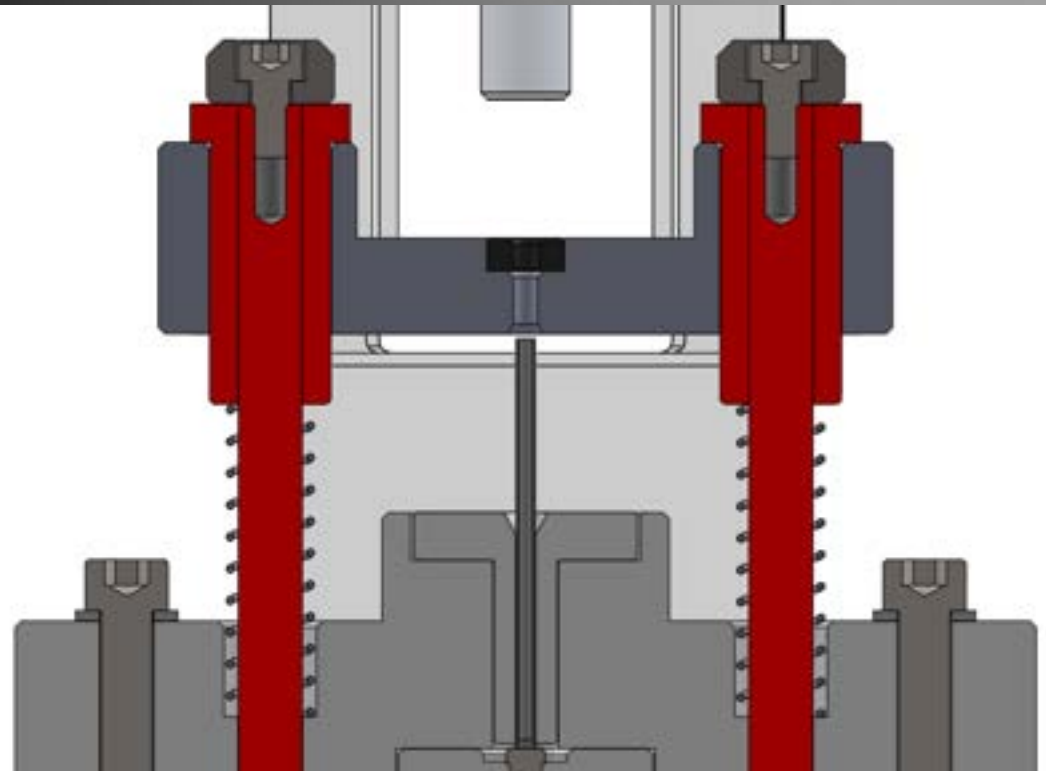
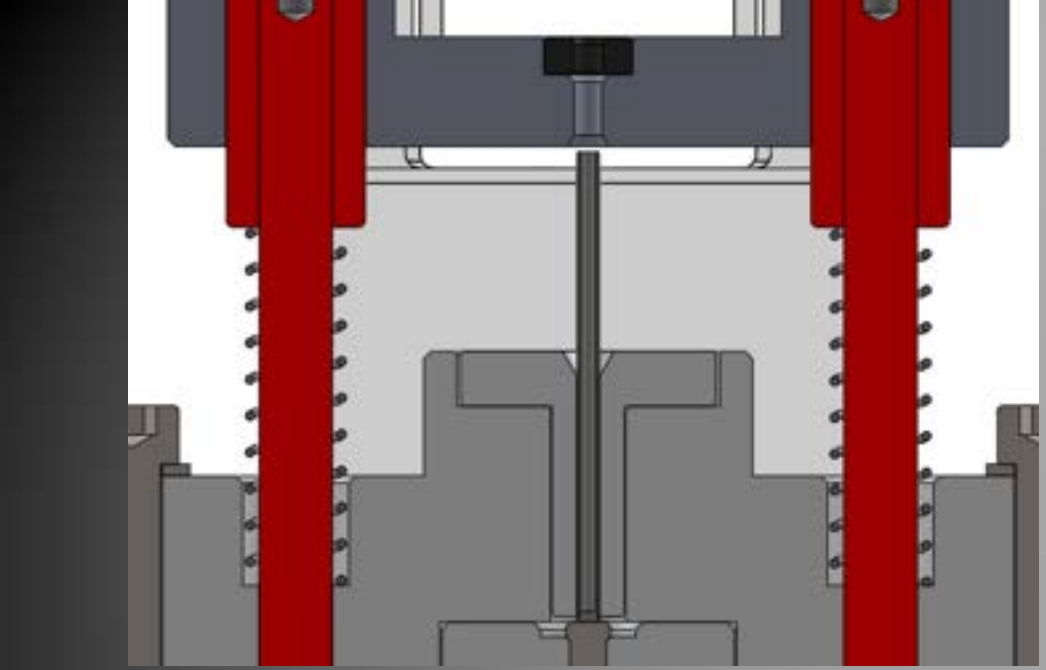




Lateral Force Mechanism
for Ergonomic Therapy
Chair

3D Printer Nozzle Press
For Assembly

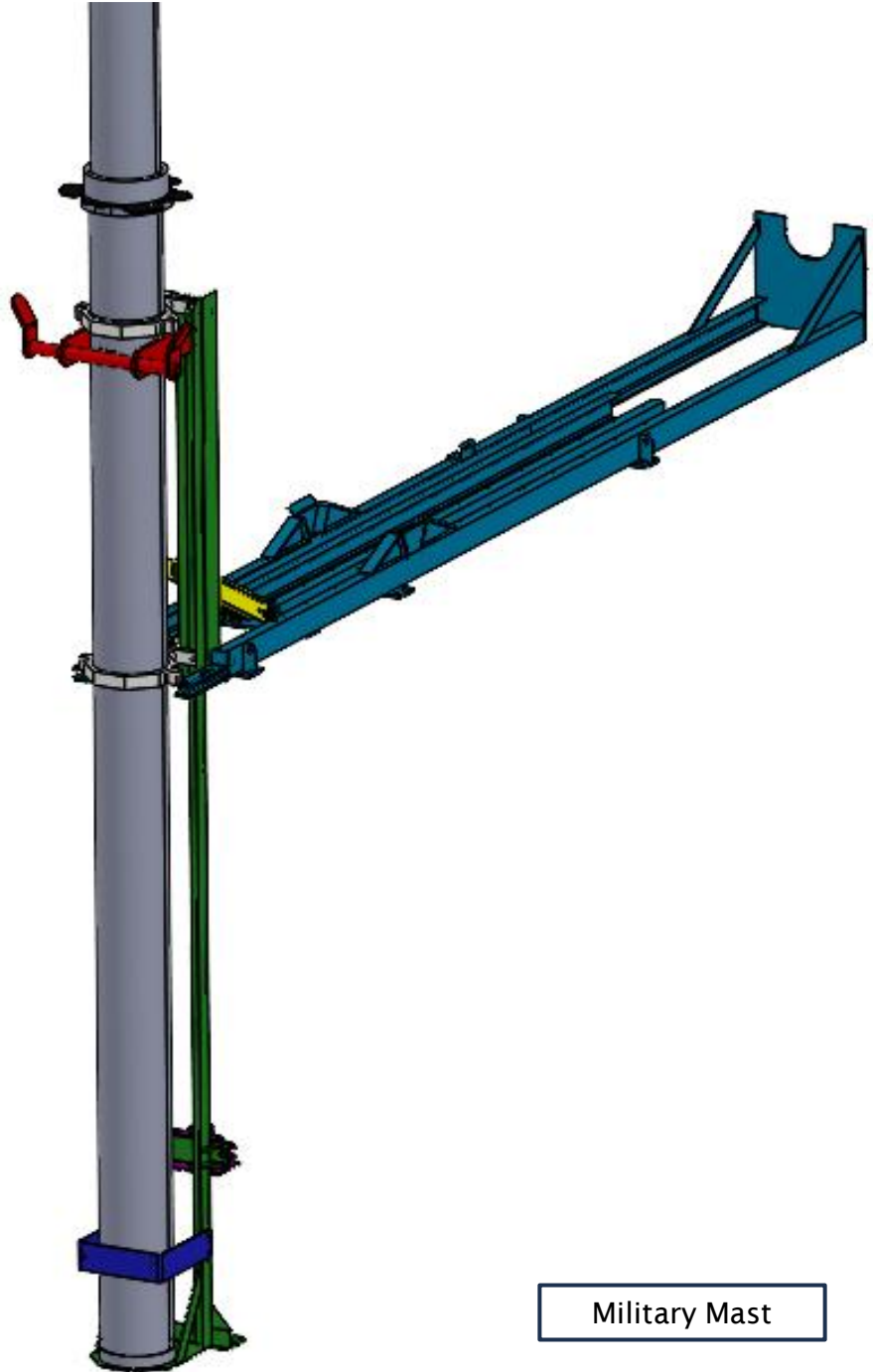
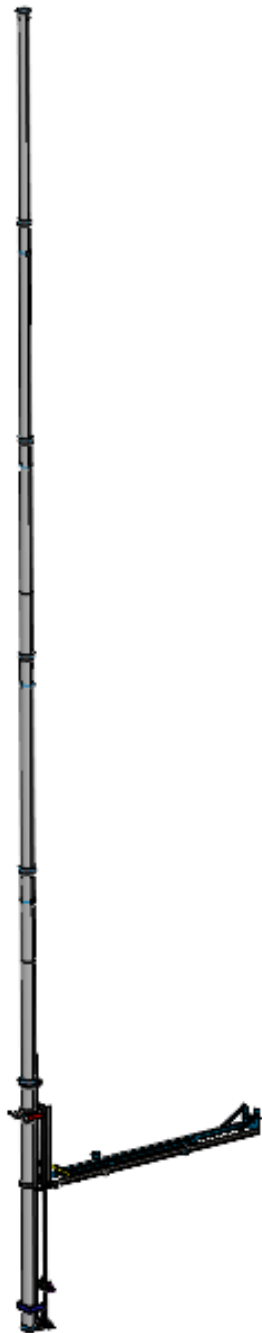






Mast 360 degrees
rotation top collar





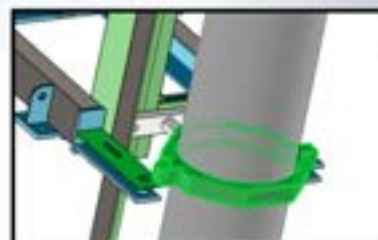
Military Mast

12. Load Scenario 2 (Side Load)- Model Set Up.

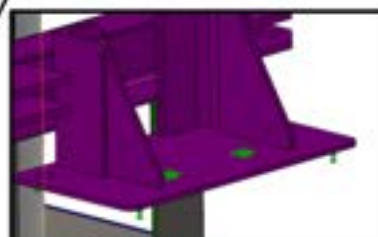
477N (48.7kg) Force
Vertical Load on Top of
Mast

Mast Wind Loading			
Wind Speed m/s	38.50		
Drag cd	1.2		
Partial Safety Factor	0.90		
Height m	Wind Speed Taper	Safety Factored	Force N/m²
3	31.76	30.49	683.88
5	33.69	32.34	769.29
10	38.50	36.96	1004.78
15	41.16	39.52	1148.63
20	43.16	41.44	1263.02
25	44.78	42.99	1359.54
30	46.15	44.30	1443.85

Wind Load Applied As Pressure In Height
Segments As Per SMC Calculation,
Perpendicular Force



Free contact condition
override for numerical
difficulty



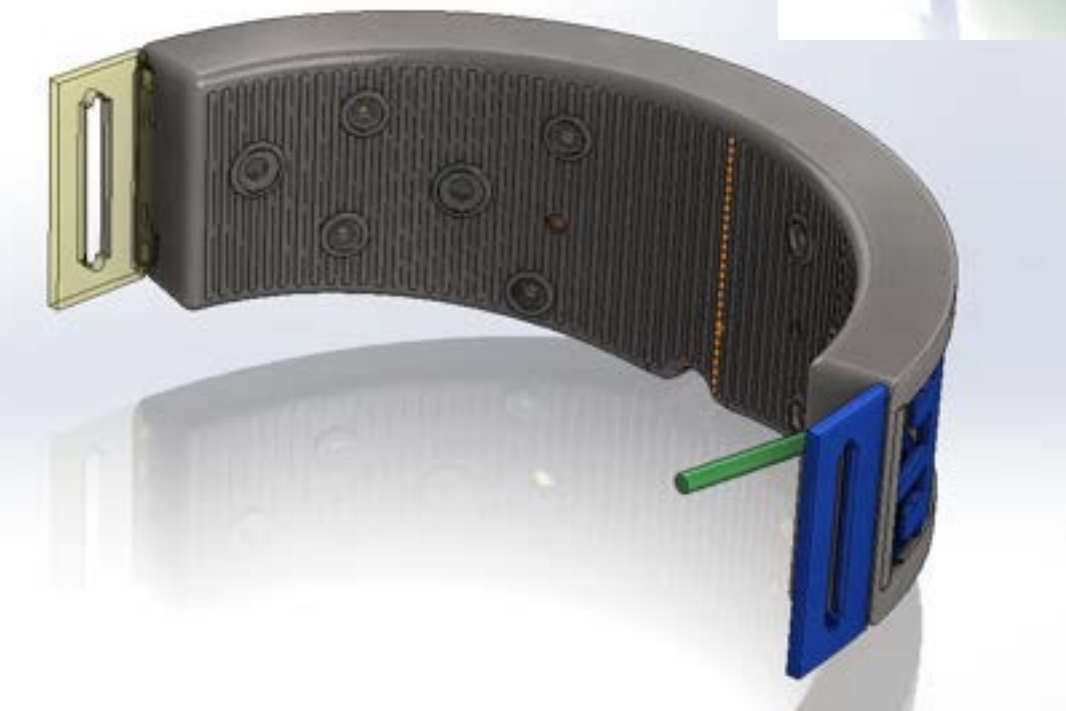
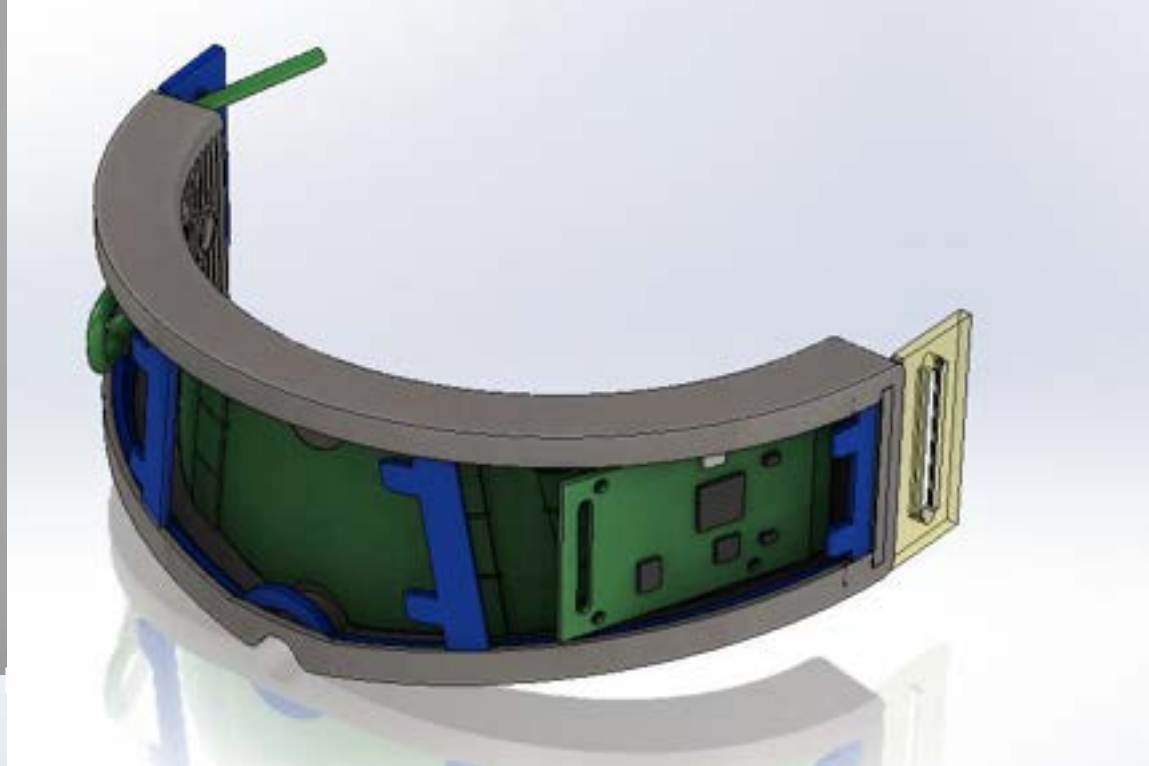
Fixed Restraints

MODEL SET UP:

Large Displacement
Turned On' Non Linear
Stiffness

Relevant Assemblies
Bonded Contact &
Between Each Assembly
No Penetration Set
(No Friction)

No Gravity in FEA Set Up



ECG Mind Assessment
Therapeutic Headset



Industrial Design Wall-
Mounted Storage
Solution

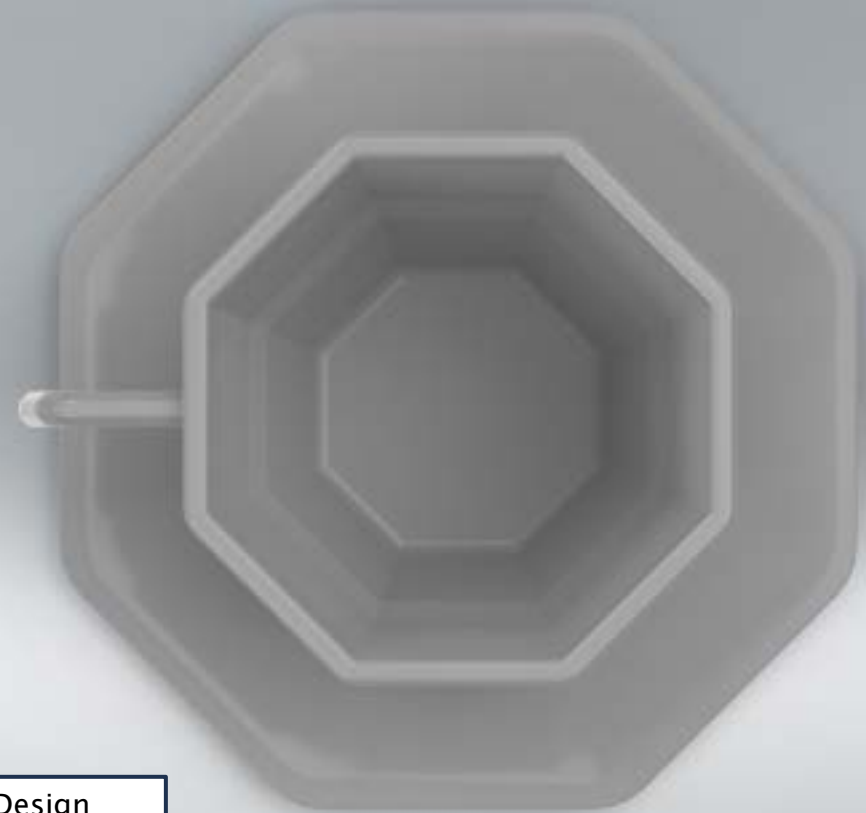
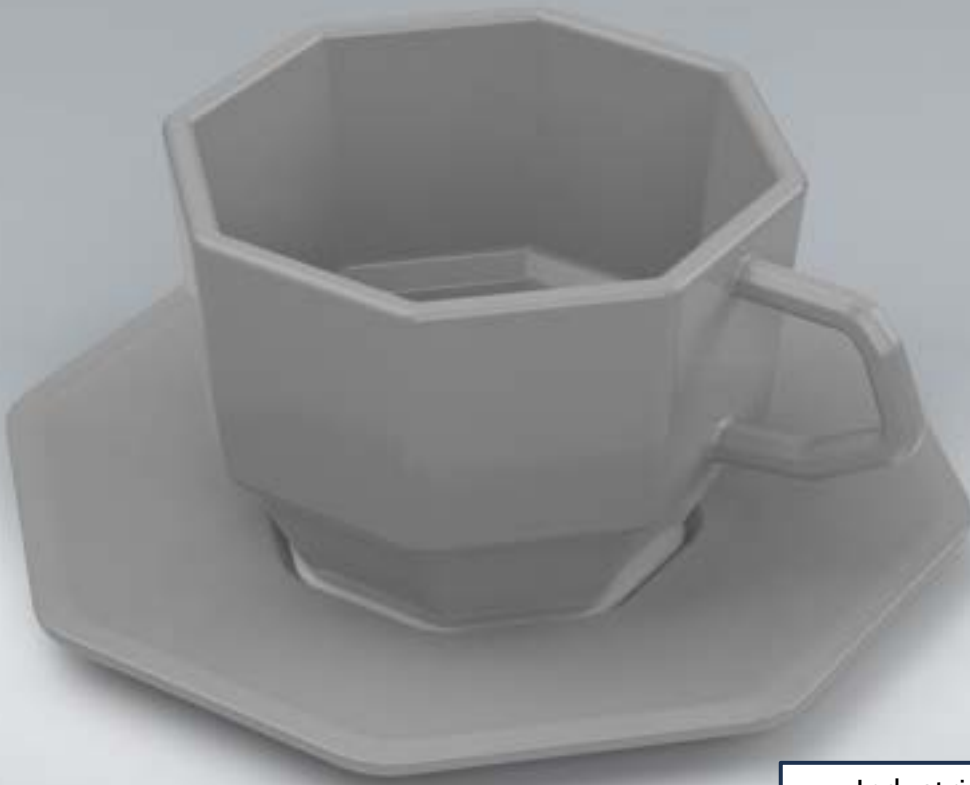


Industrial Design
Corner shelf



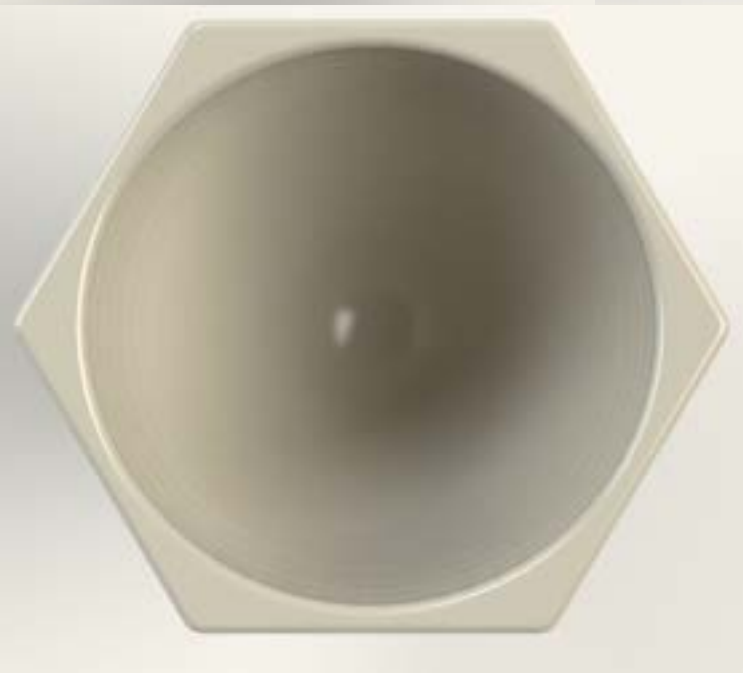
Industrial Design
Doorstop





Industrial Design
Octagon Coffee Cup Set





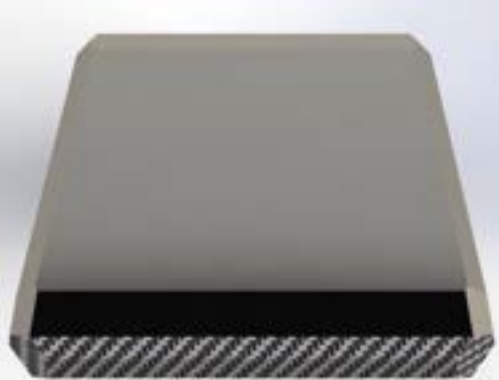
Faceted "Stealth"
Egg Cup



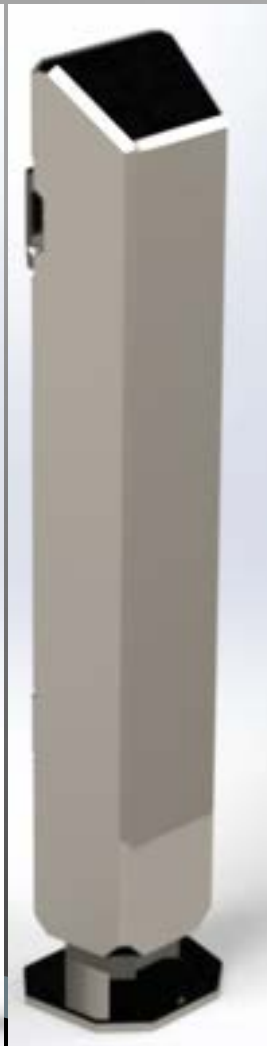
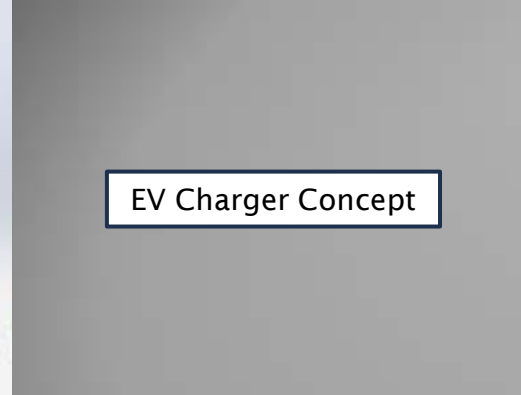


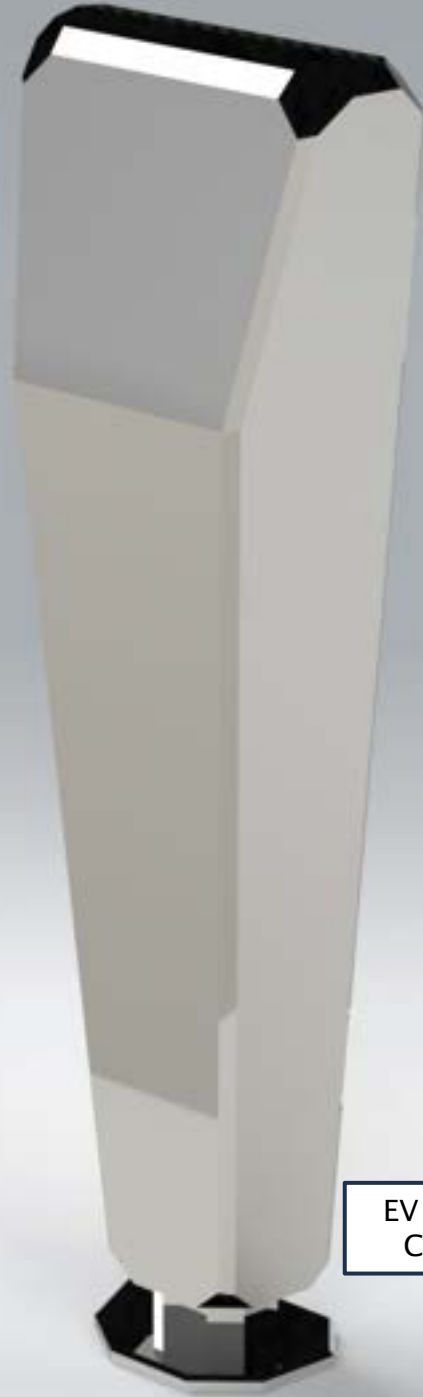
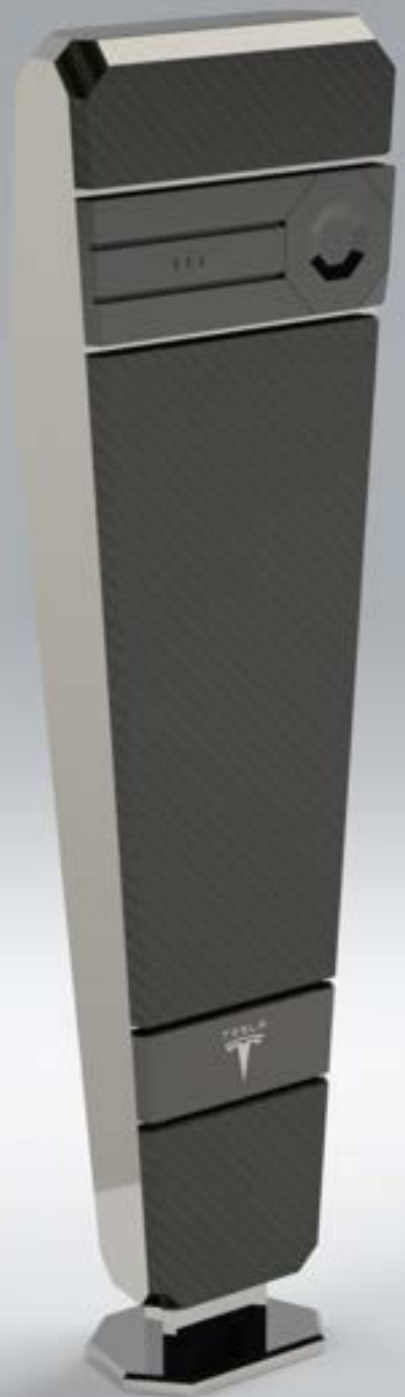
Industrial Design
Vase





EV Charger Concept





EV Charger
Concept

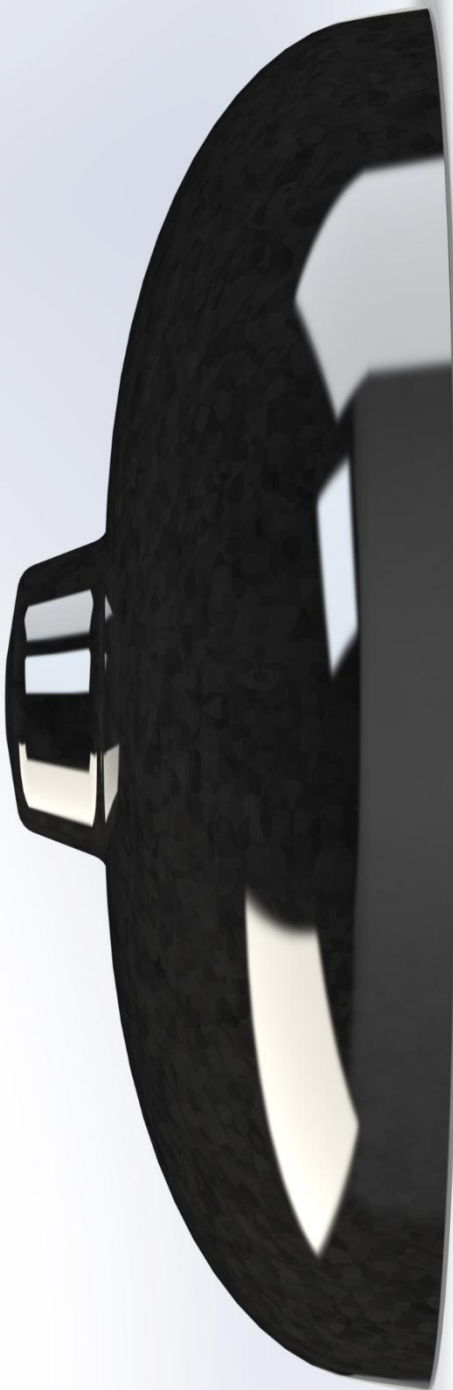




New York charger



Stealth Transformer
Cigarette Bin



Industrial
Design
Parabolic
Light Shade





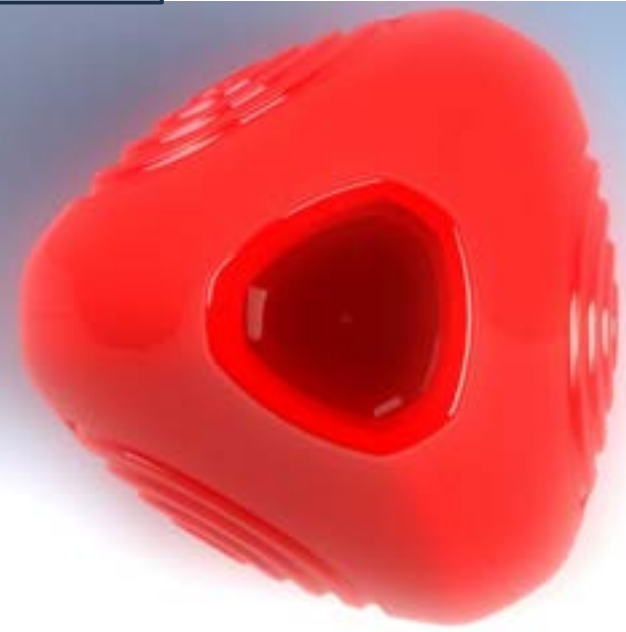
Industrial Design
Vase

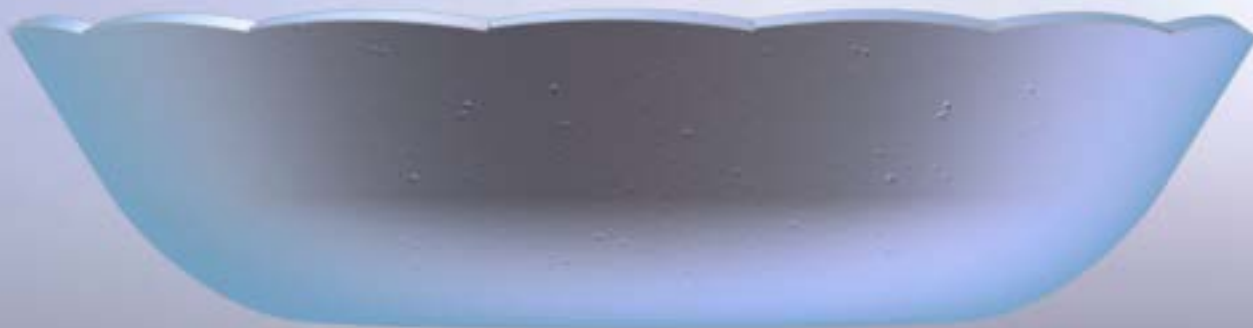
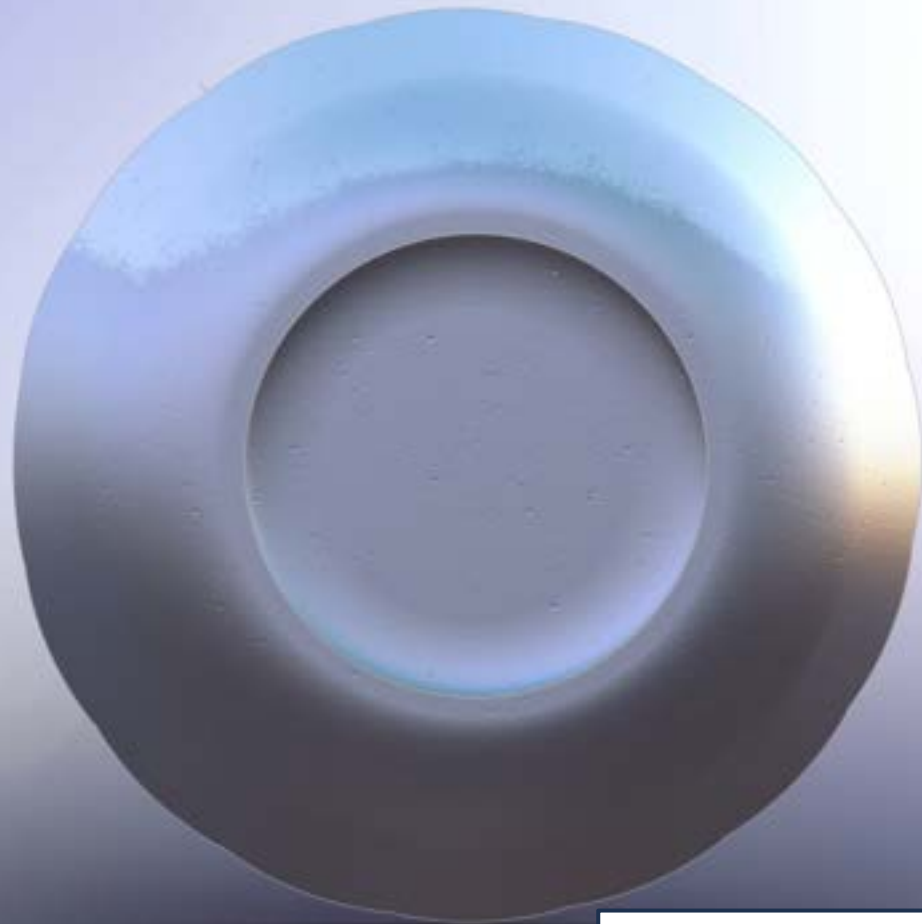
Industrial Design
Vase





Industrial Design
Vase





Industrial Design
Andromeda Bowl

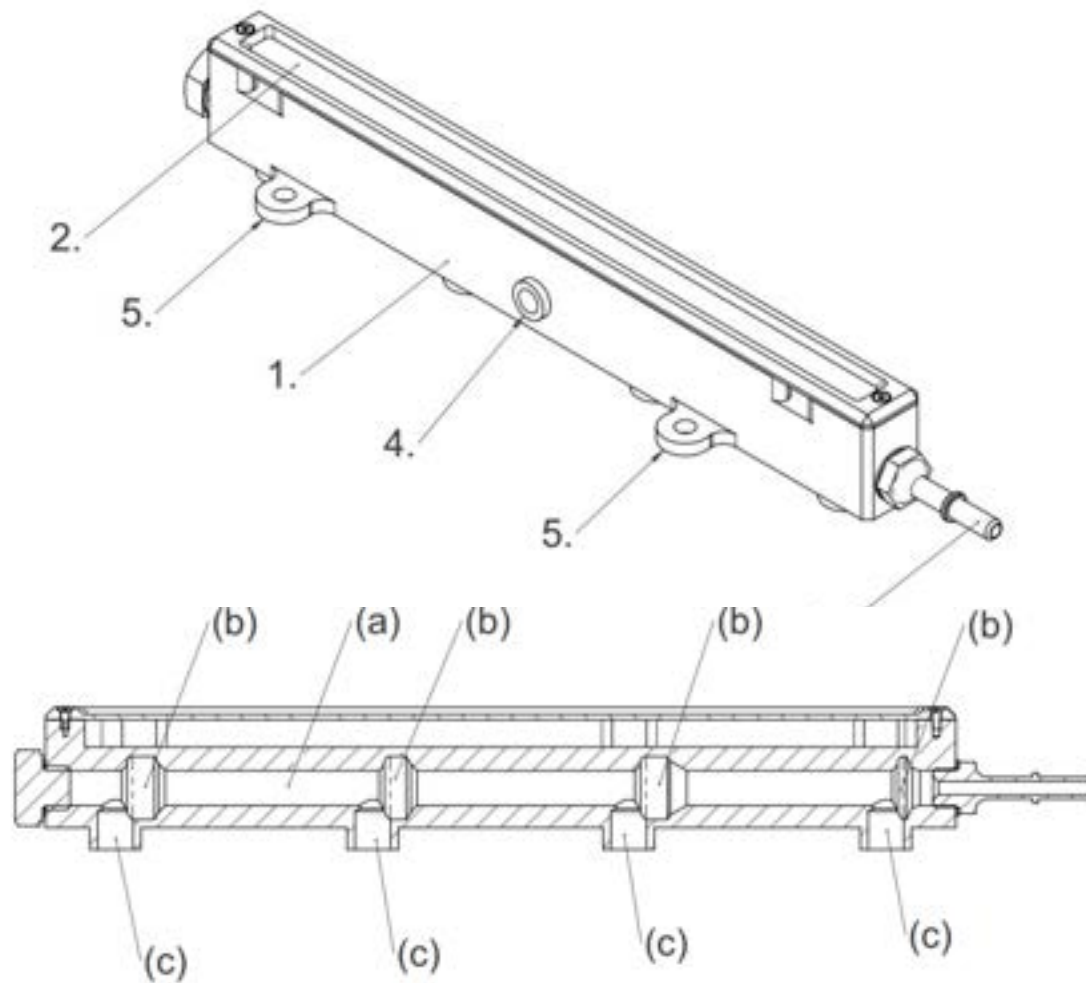
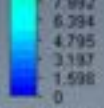


Figure 2

Advanced High
Performance Low
Emissions Fuel Rail

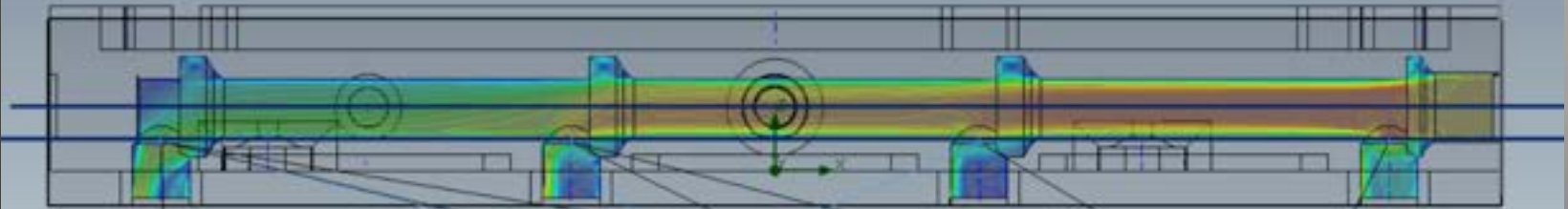


Velocity (m/s)

Cut Plot 1: contours

Cut Plot 1: contours

Pressure (Pa)



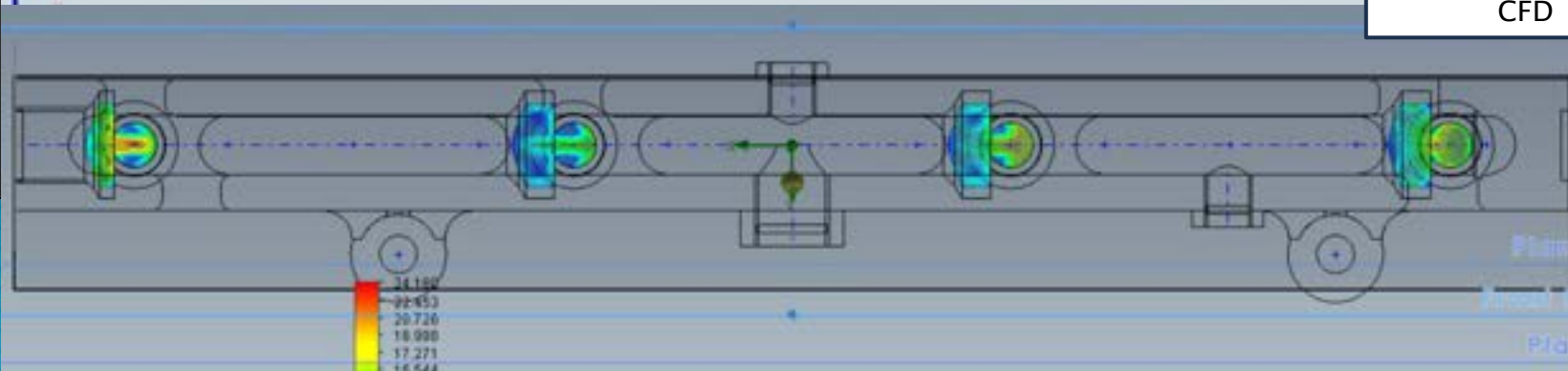
Surface Parameters 1	
Pressure Bulk Average	134230.92 Pa
Velocity Bulk Average	14.166 m/s
Mass Flow Rate	-0.6290 kg/s

Surface Parameters 2	
Pressure Bulk Average	128623.30 Pa
Velocity Bulk Average	13.567 m/s
Mass Flow Rate	-1.1880 kg/s

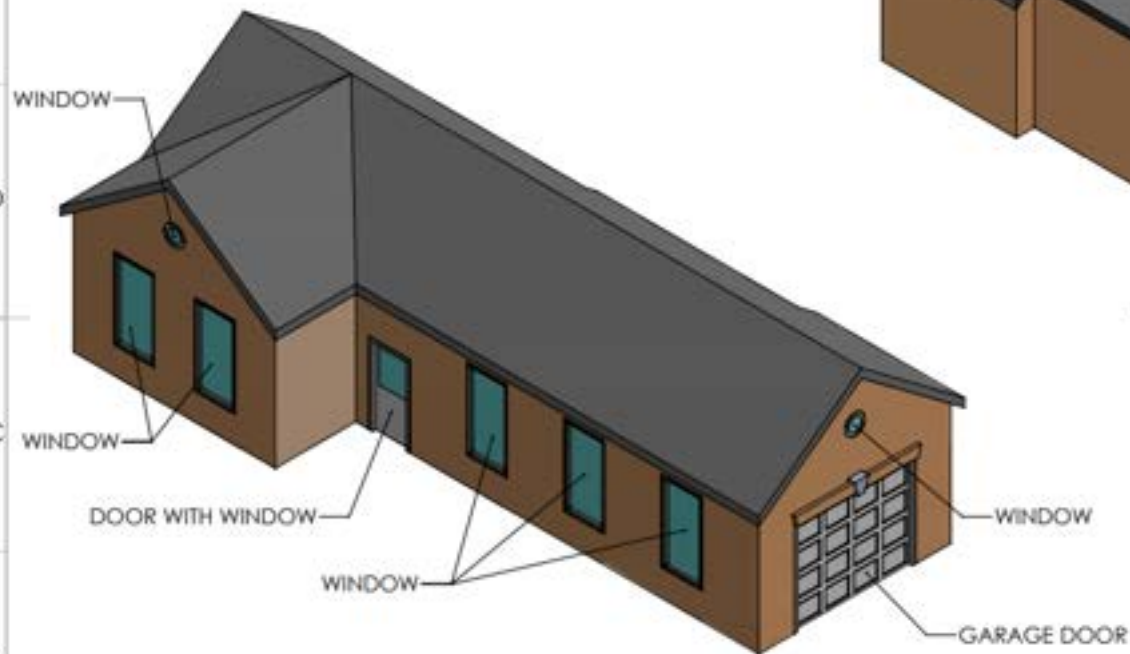
Surface Parameters 3	
Pressure Bulk Average	131917.12 Pa
Velocity Bulk Average	14.204 m/s
Mass Flow Rate	-1.0163 kg/s

Surface Parameters 4	
Pressure Bulk Average	125904.35 Pa
Velocity Bulk Average	14.204 m/s
Mass Flow Rate	-1.0163 kg/s

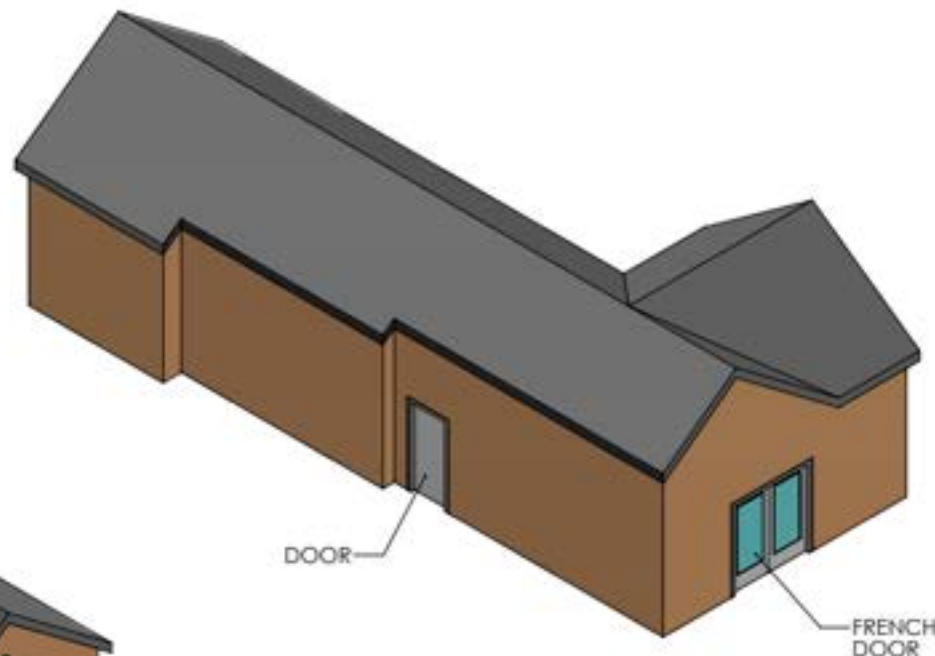
Advanced High
Performance Low
Emissions Fuel Rail
CFD



Design of outbuilding / garage, look to comply with local authority planning guidelines

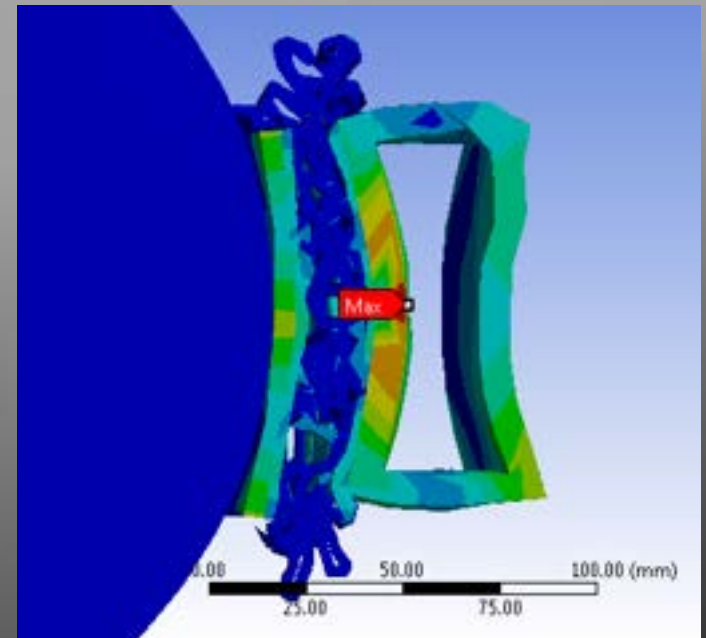
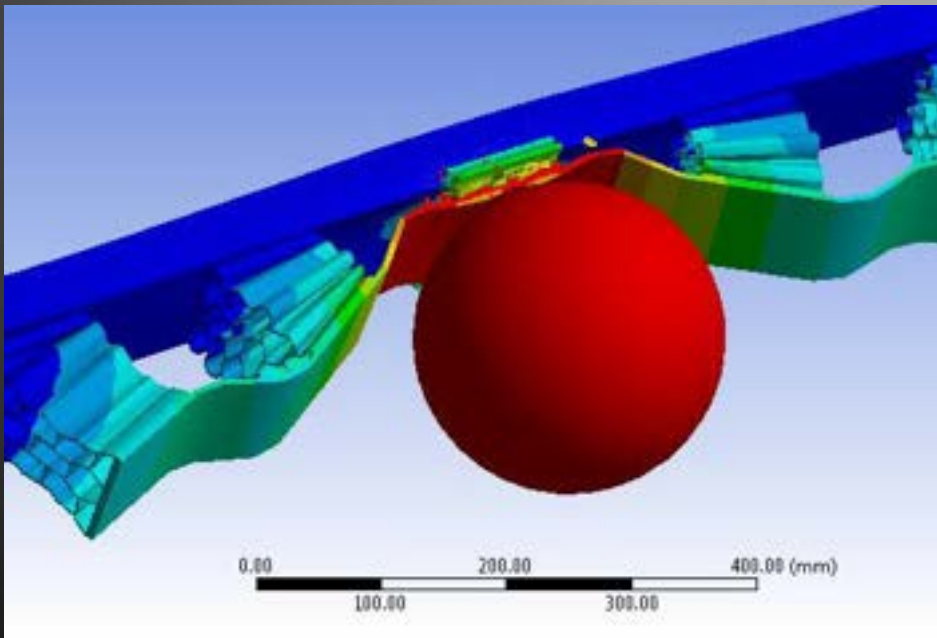


ISOMETRIC VIEW 1



ISOMETRIC VIEW 2

UNITS (DIMENSIONS SPECIFIED)		FEET	N/A		NUMBER AND SERIAL NUMBER	REVISION: 01
DIMENSIONS ARE IN FEET						
SURFACE FINISH						
TOLERANCES						
UNITS						
MATERIALS						
NAME	SIGNATURE	DATE	WITH PROPOSED CONCRETE FOUNDATION FOUNDATION IS BY DESIGN AND SHALL BE THE RESPONSIBILITY OF THE DESIGNER. NO OTHER DIMENSIONS OR SPECIFICATIONS SHALL BE REQUIRED UNLESS OTHERWISE SPECIFIED OR AGREED BY THE DESIGNER. THE DESIGNER IS NOT RESPONSIBLE FOR THE FOUNDATION OF THE BUILDING.		RAY DESIGN LIMITED NAIM PATEL HOUSE CONCEPT 1	
DRG						
CHKD						
APPRD						
APPD						
DATE			N/A		naimhouse1	
					A3	
					SHEET 4 OF 4	



Concept design of side impact automotive safety device to reduce occupancy injury by increasing impulse of crash, design optimised on explicit dynamics FEA for crumple affect



Starfighter Drone
Jet Concept





B 2 Bomber Jet 3D Model

Sonic Passenger Jet
Concept



F22 Super 3D Model
Concept

