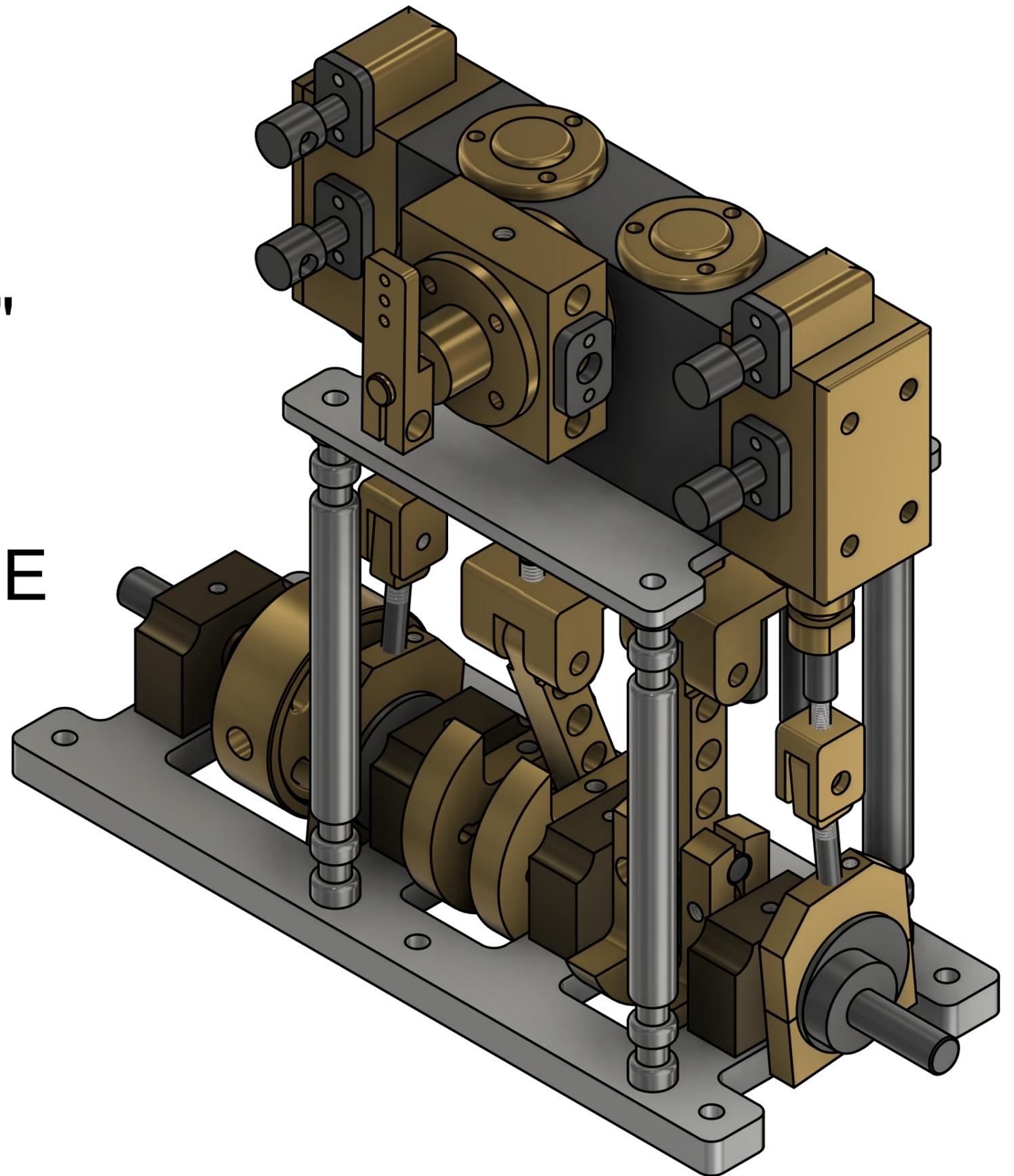


THE "BOGSTANDARD"
X 2

MARINE STEAM ENGINE



The "Bogstandard" x 2 Marine Steam Engine

This steam engine was originally designed and built by the late Mr John Moore, who was known in the live steam community as John "Bogstandard" Moore, and was an avid participant in many of the steam enthusiast forums found on the internet.

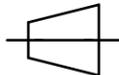
The drawings on the following pages were taken from Bogstandards hand drawn sketches that I found on the internet. Using Bogstandards sketches, I re-modelled the engine in Fusion 360, increasing the scale of the engine to twice its original size. These drawings are free to distribute amongst the model engineering community, provided that they are not re-sold for profit.

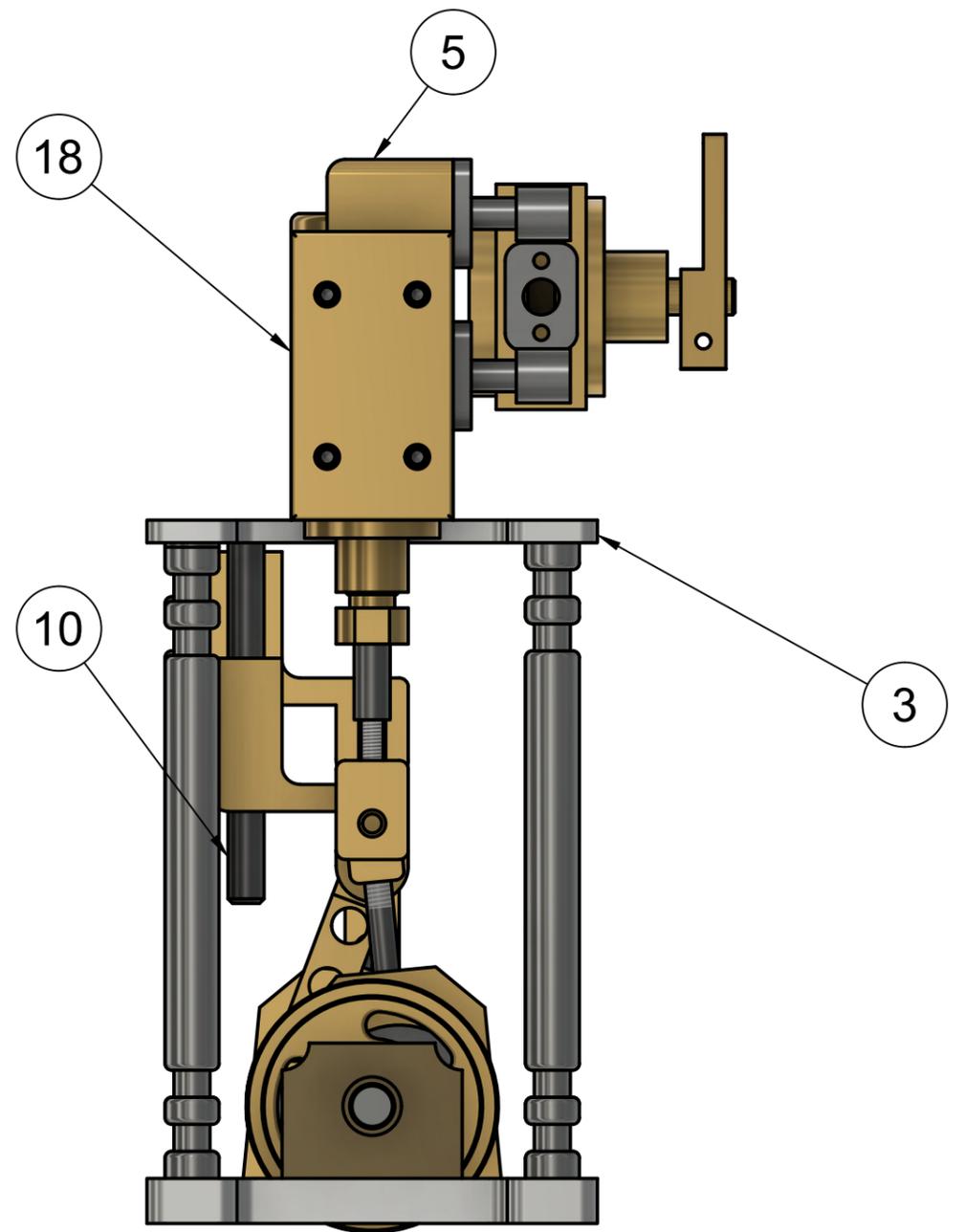
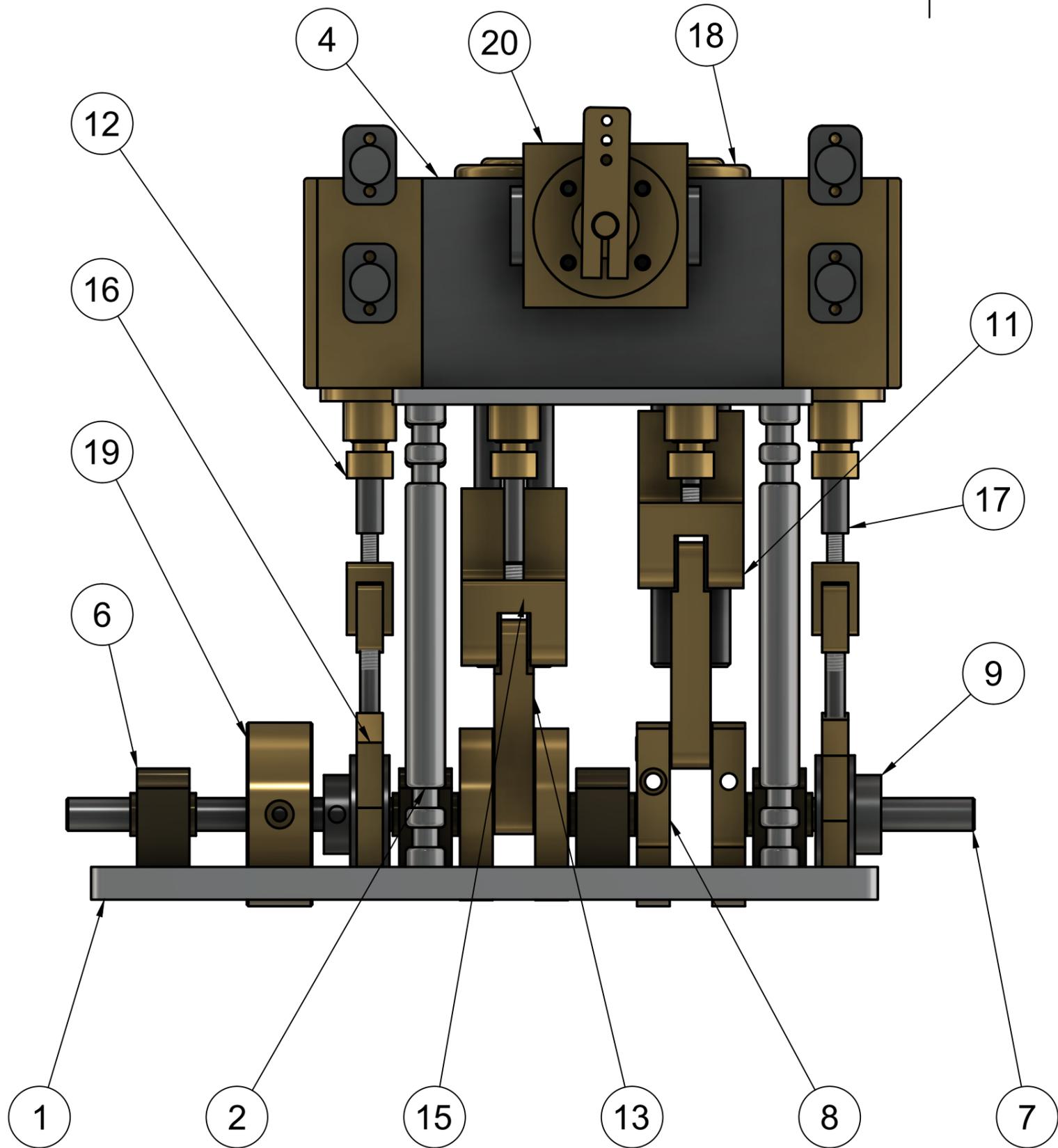
If anyone has any feedback, suggestions for improvements for these drawings, please contact me at the following email address : dcmachining@outlook.com

I'd like to thank the following people for their advice and guidance during this project:

- Mr Jon Count, of Youtube Channel "Jons Workshop", for his assistance and guidance on machining and workshop practices and also a brief introduction to drafting.
- Mr John Hackney, of "Beyond the Drafting Board" who has given me hours of his valuable time, helping me enhance my Fusion360 skills, followed by hours of tutition in the drafting of this model.

Martin Currie
56 Northwest Machining
January 2022

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		----
UNSPECIFIED TOLERANCES X.X ± 0.1 X.XX ± 0.05 ANGLE X ± 0.5°	BREAK ALL SHARP EDGES CHAMFERS 0.50 X 45° TAPPED HOLES METRIC COURSE	DESIGNED BY: Martin Currie
		CHECKED BY: John Hackney
		DATE: 01/01/2022
		  PAGE SIZE A3
		SCALE 1:1.15 SHEET 2/27

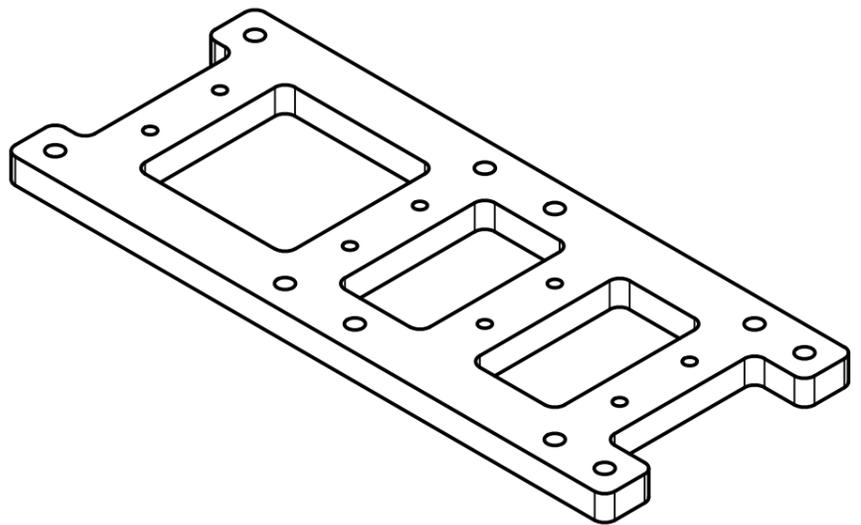
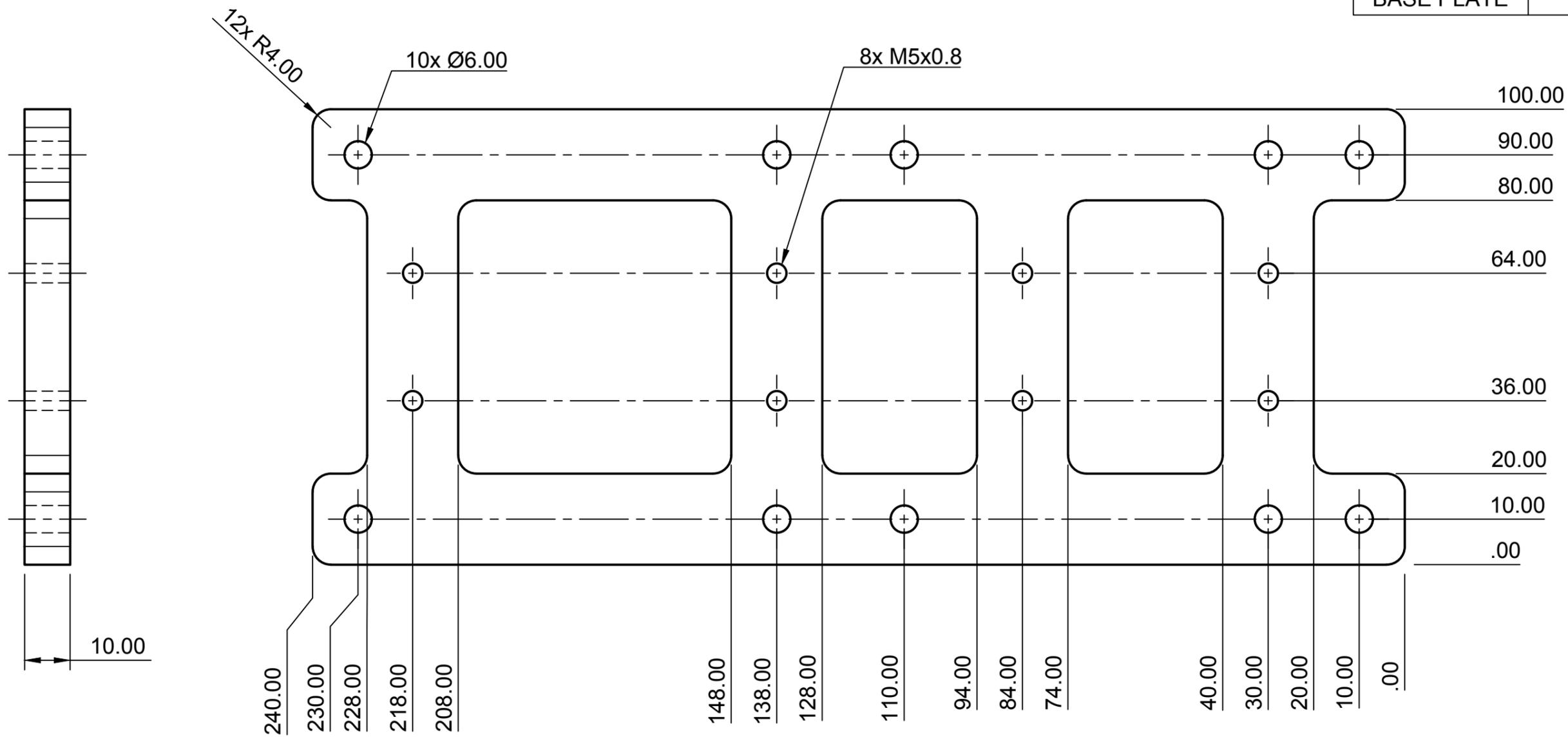


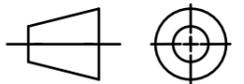
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
 56 NORTHWEST MACHINING		PAGE SIZE A3
		SCALE 1:1.5 SHEET 3/27

PARTS LIST

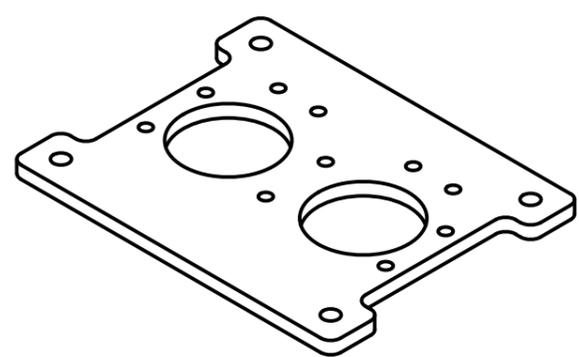
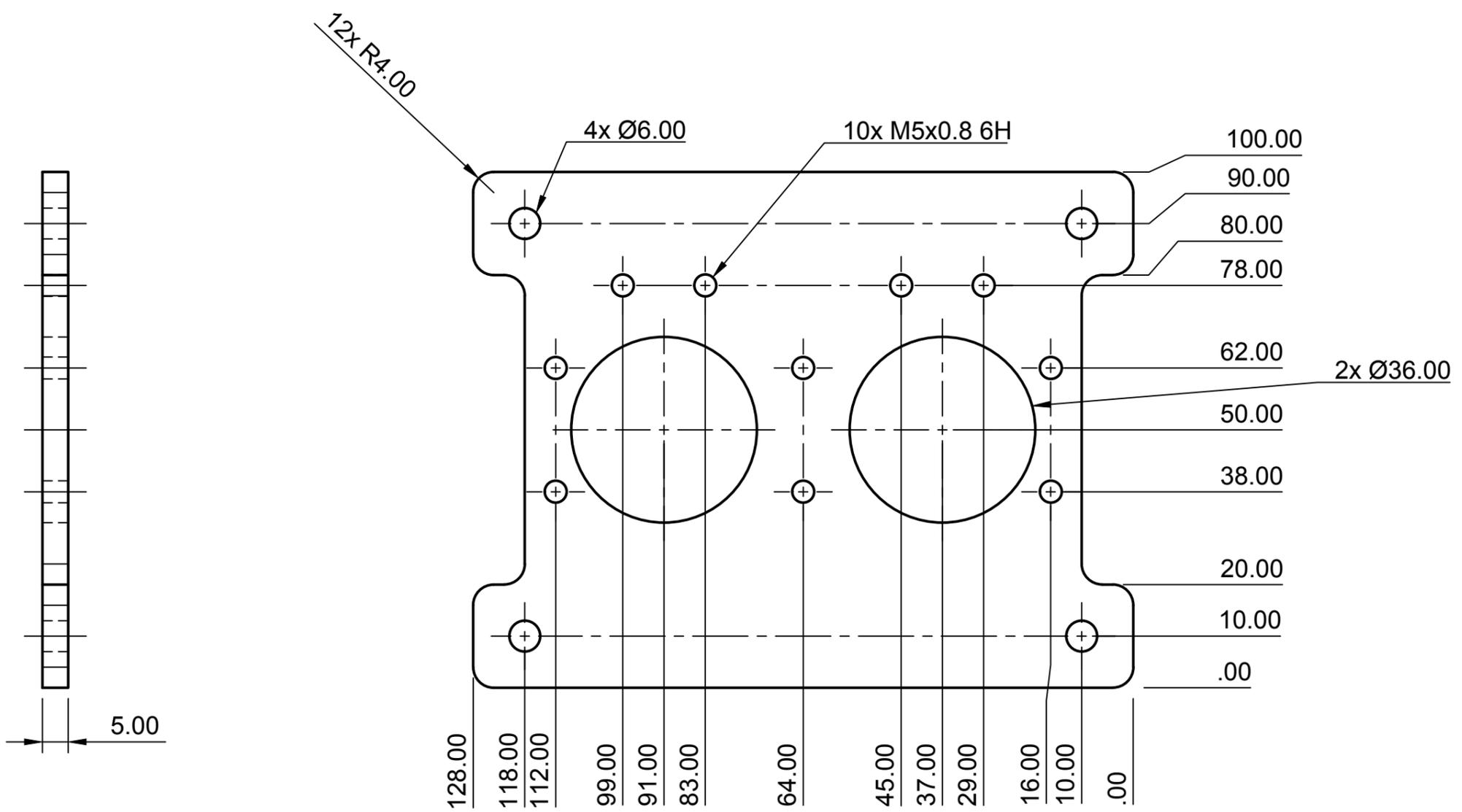
ITEM	Qty	Part No	Material	Size
1	1	Base Plate	Aluminium	240 x 100 x 10
2	4	Support Columns	Stainless Steel	Ø12 x 141
3	1	Cylinder Base Plate	Aluminium	128 x 100 x 4.0
4	1	Cylinder Block	Mild Steel	110 x 36 x 64
5	2	Steam Chest	Brass	32 x 36 x 80
6	4	Bearing Block	Bronze	20 x 40 x 30
7	3	None Drive End Shaft Middle Shaft Drive End Shaft Big End Pin	Stainless or Silver Steel	Ø10 x 130 Ø10 x 80 Ø10 x 41 Ø10 x 30
8	4	Crank Webs	Brass or Mild Steel	Ø56 x 10
9	2	Eccentric Cams	Mild Steel	Ø36 x 20
10	4	Cross Head Guides	Mild Steel	Ø8.0 x 80
11	2	Cross Heads	Brass	54 x 44 x 32
12	4	2x Cylinder Packing Glands 2x Cylinder Gland Nuts 2x Steam Chest Packing Glands 2x Steam Chest Gland Nuts	Brass	Ø34 x 18 Ø16 x 20 Ø34 x 18 Ø16 x 20
13	2	Conrods	Brass	69 x 12 x 12
14	2	Piston	Mild Steel	Ø20 x 10
15	2	Piston Rods	Stainless Steel	Ø6.00 x 100
16	2	2x Eccentric Straps 2x Eccentric Strap Rods 2x Block Ends	Brass Mild Steel Brass	50 x 42 x 8.0 Ø6.0 x 36 20 x 12 x 8.0
17	2	2x Spool Valves 2x Connecting Rods 2x Fork Ends	Stainless Steel Mild Steel Brass	Ø12 x 90 Ø5.00 x 25 22 x 16 x 14
18	4	2x Steam Chest Cover 2x Cylinder Head Cover	Brass	64 x 36 x 4.00 Ø36 x 7.50
19	1	Flywheel	Brass	20 x 56
20	1	1x Steam Control Block 1x Steam Control Valve 1x Steam Cntr'l Bk Front Flange 1x Steam Cntr'l Bk Back Plate 1x Steam Cntr'l Block Lever	Brass Brass Brass Brass Brass	50 x 50 x 20 Ø20 x 51 Ø44 x 20 Ø44 x 8.0 52 x 14 x 10

BASE PLATE	1 REQ'D
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°			
		PAGE SIZE	A3
		SCALE 1:2	SHEET 5/27

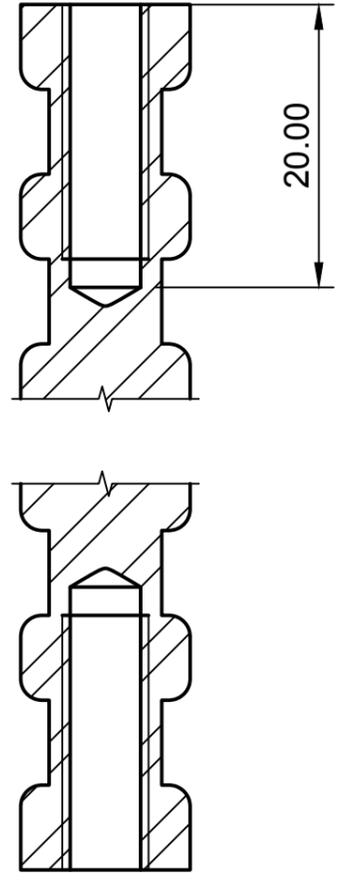
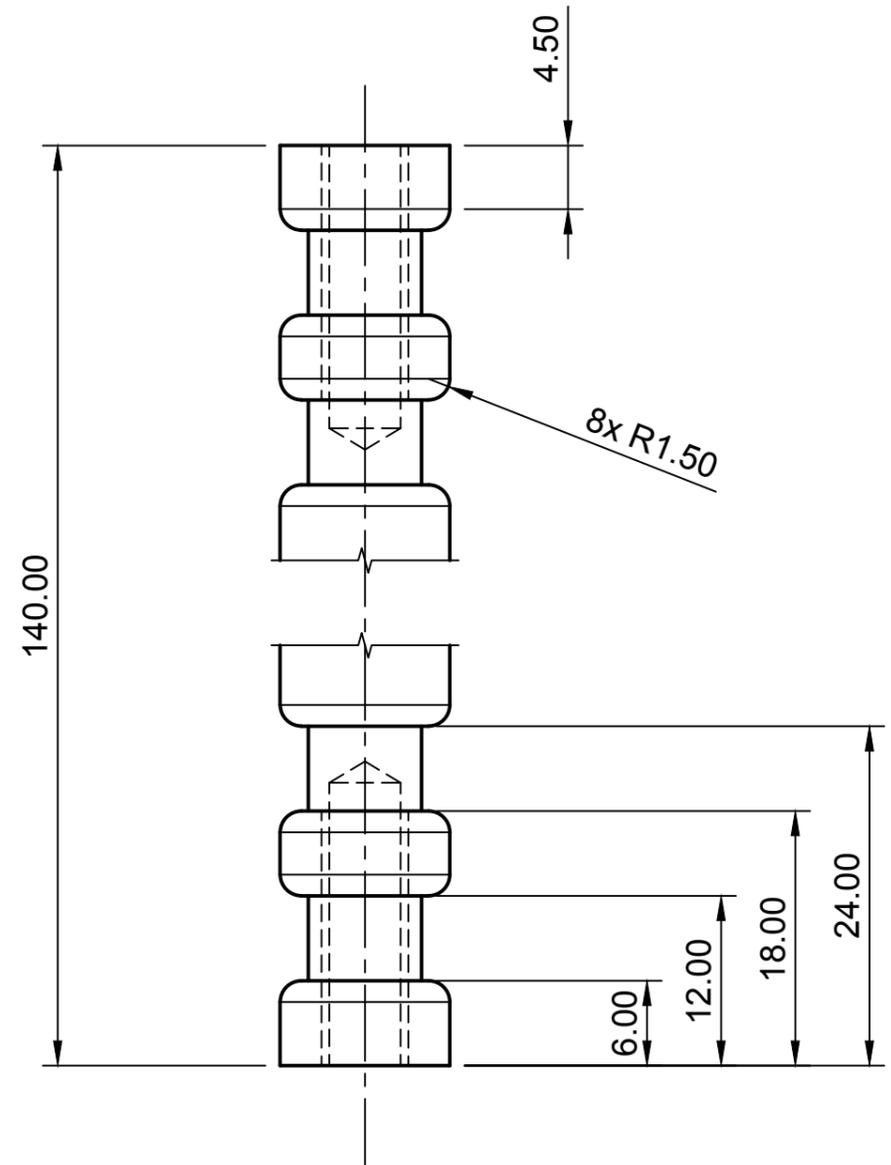
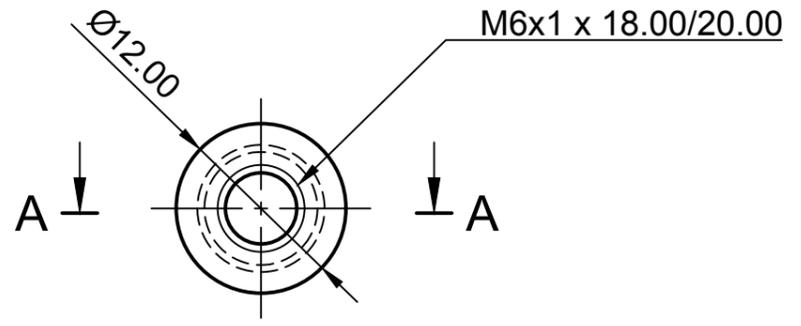
Cylinder Base Plate 1 REQ'D

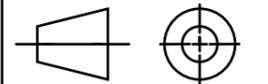


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
		PAGE SIZE A3
		SCALE 1:1
		SHEET 6/27

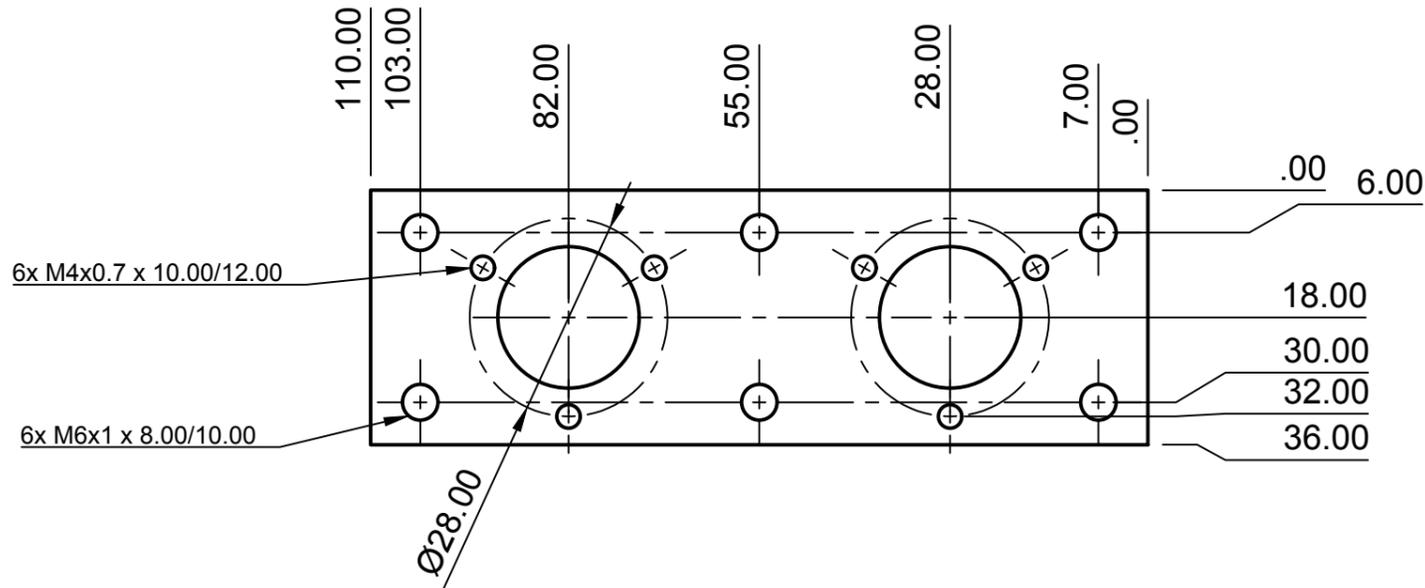
SUPPORT COLUMN	4 REQ'D
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A-A (2:1)

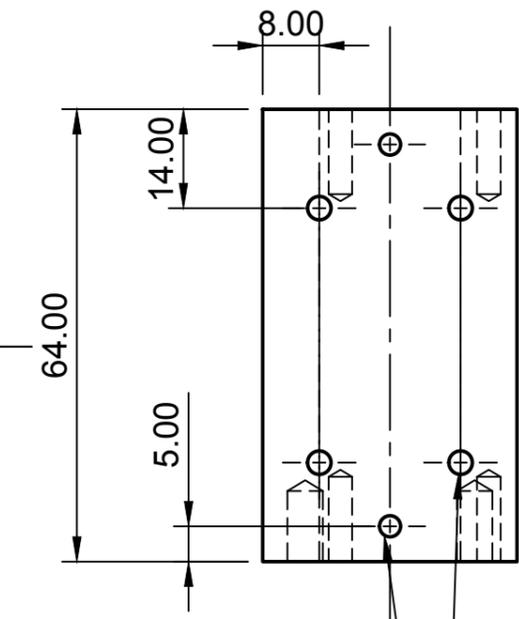


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°		 PAGE SIZE A3	
		SCALE 2:1	
		SHEET 7/27	

CYLINDER BLOCK	1 REQ'D
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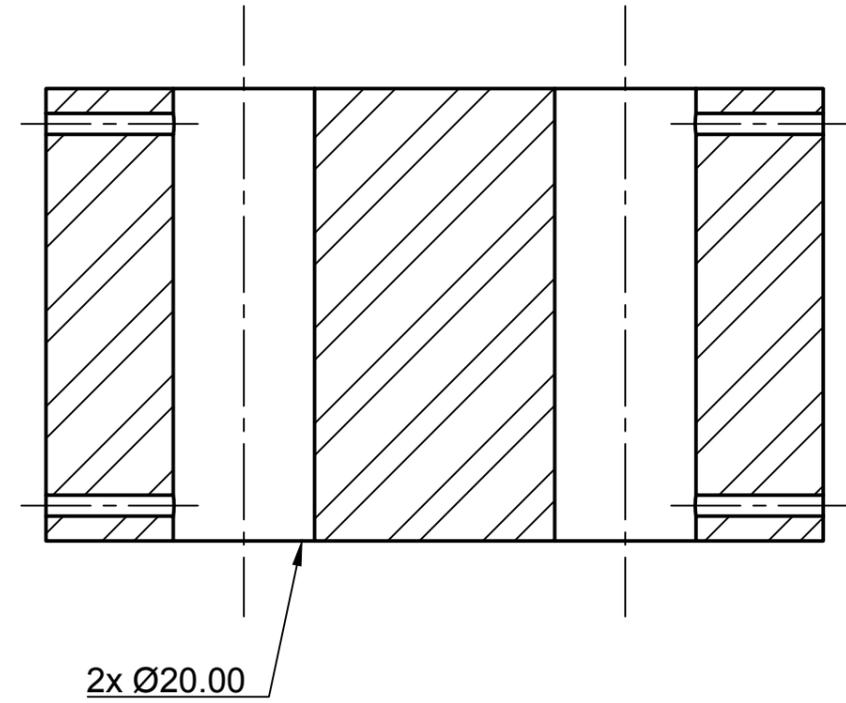
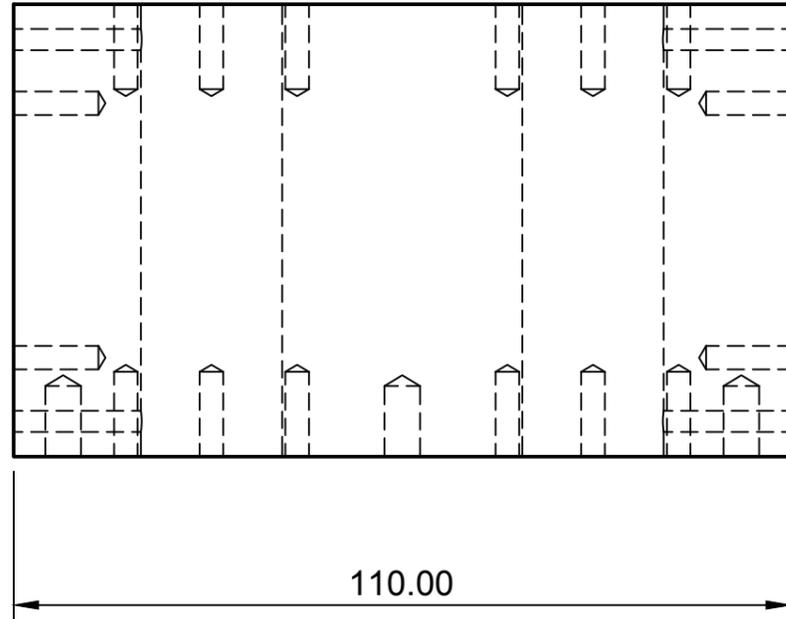


B-B (1:1)

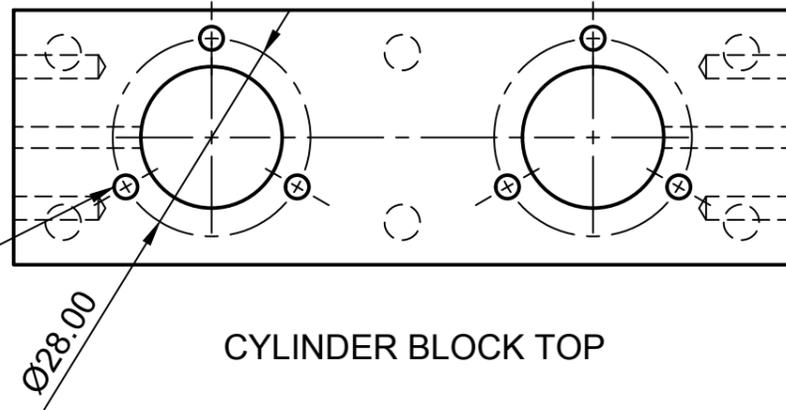


4x Ø3.00 x 22.00
STEAM PORTS INTO CYLINDER

4x M4x0.7 x 10.00/12.00

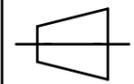


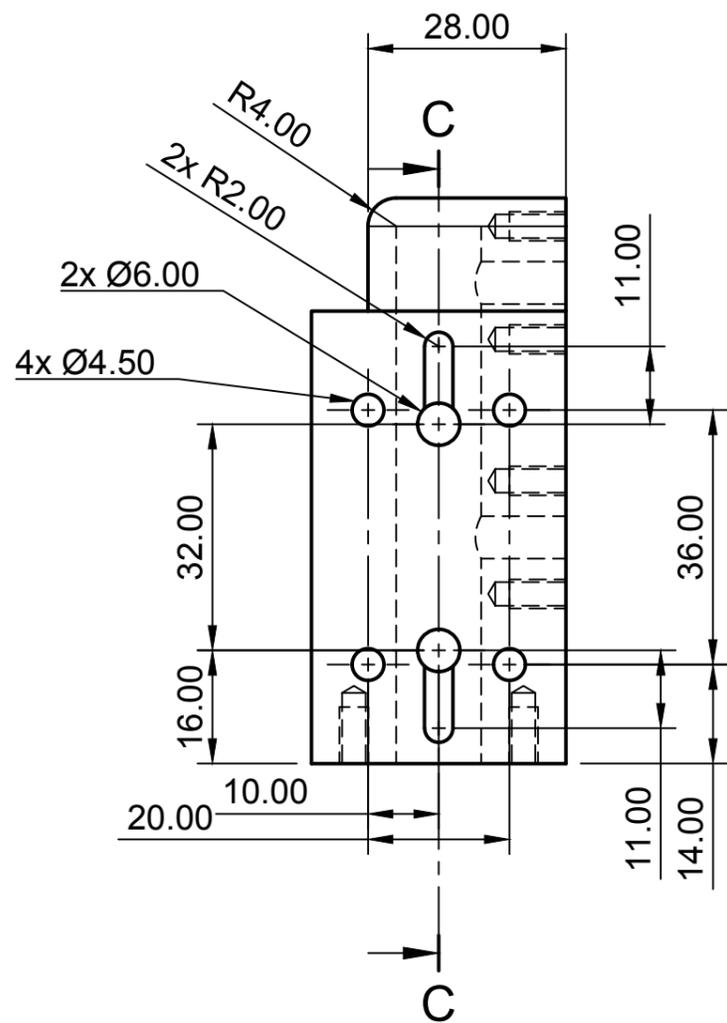
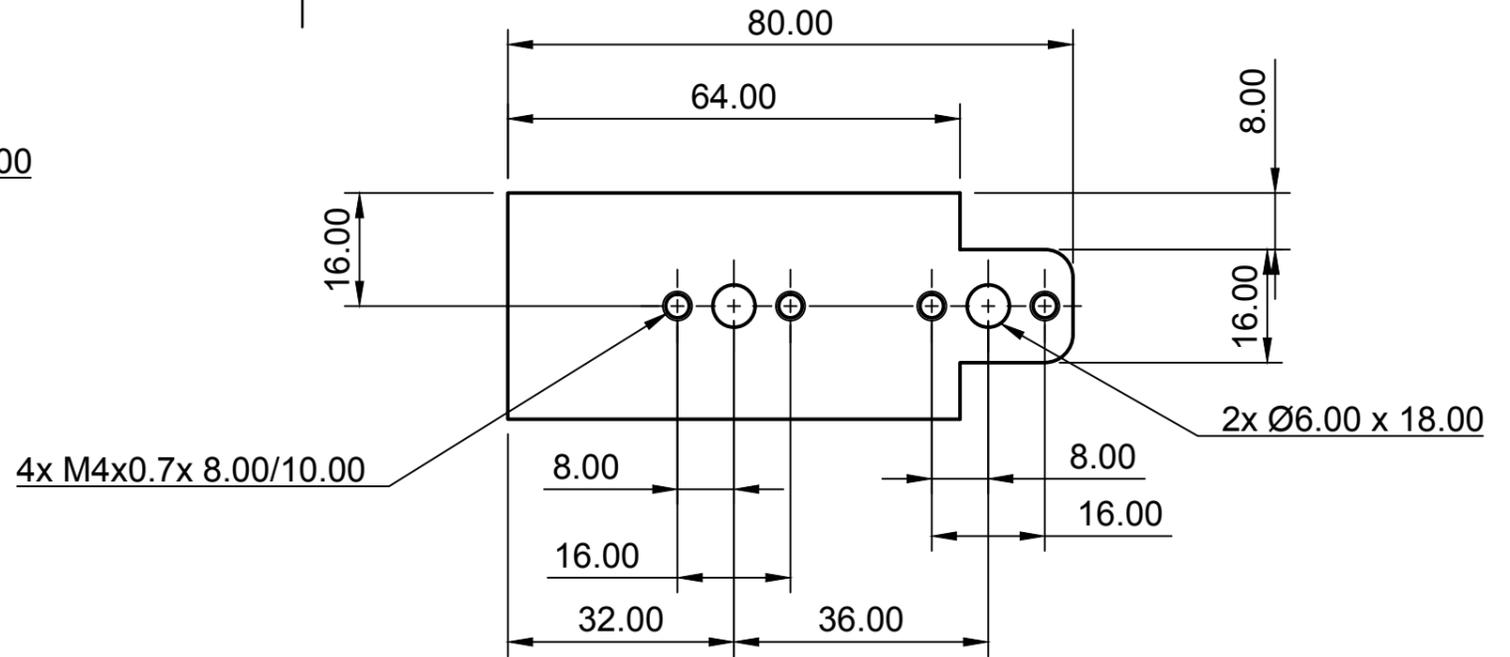
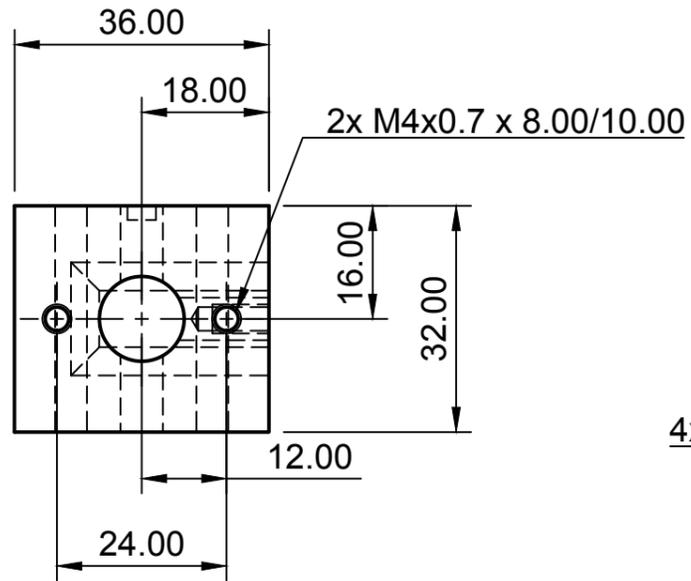
B ↑



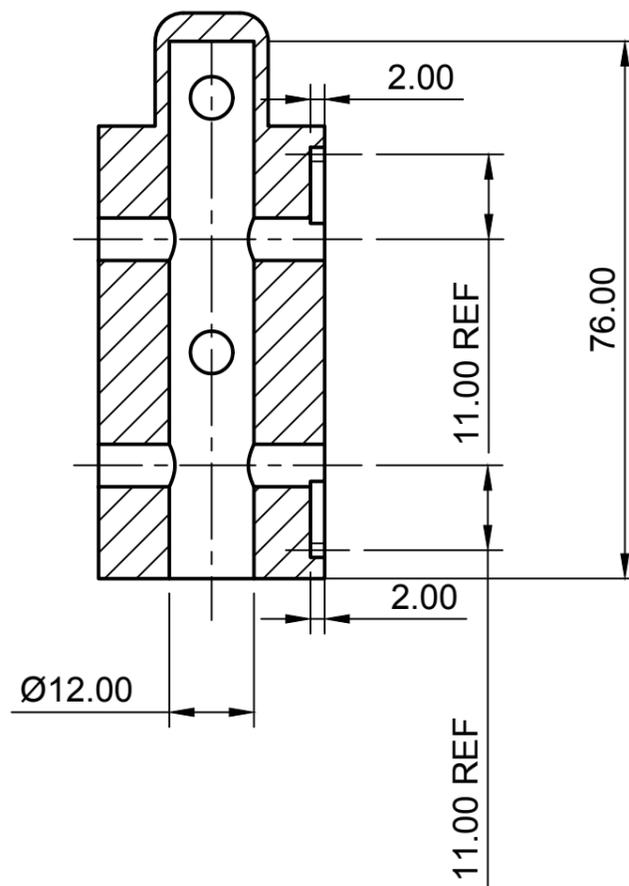
CYLINDER BLOCK TOP

B ↑

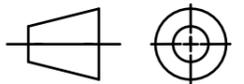
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Cylinder Block	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
		 	PAGE SIZE A3
		SCALE 1:1	
		SHEET 8/27	

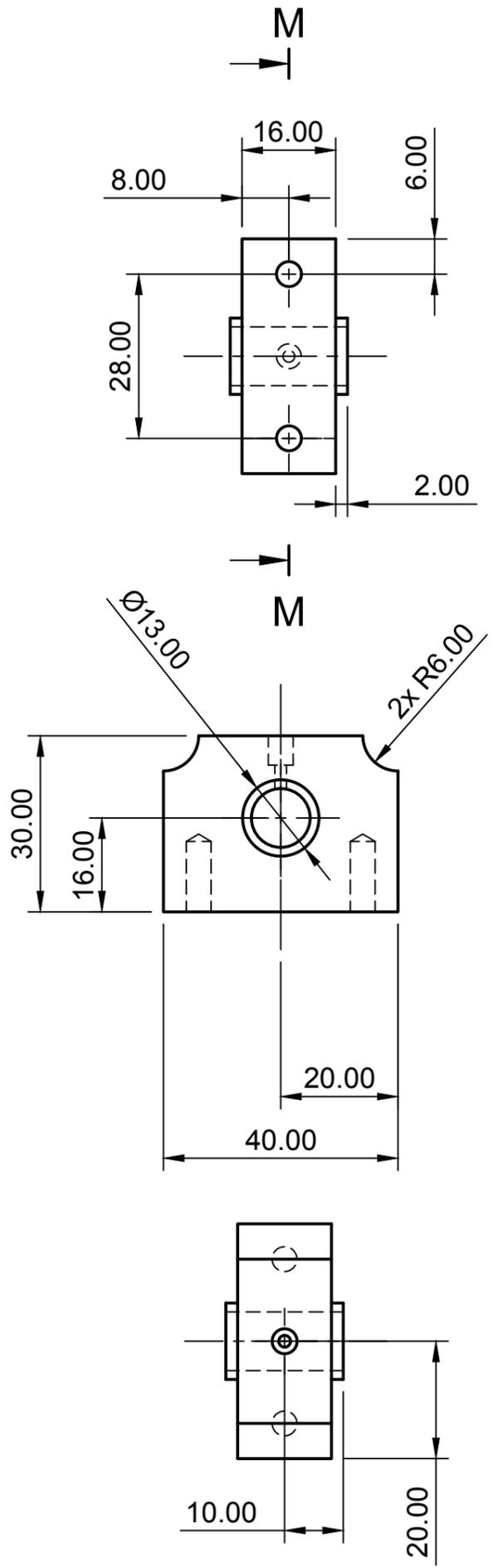


C-C (1:1)



STEAM CHEST 2 REQ'D

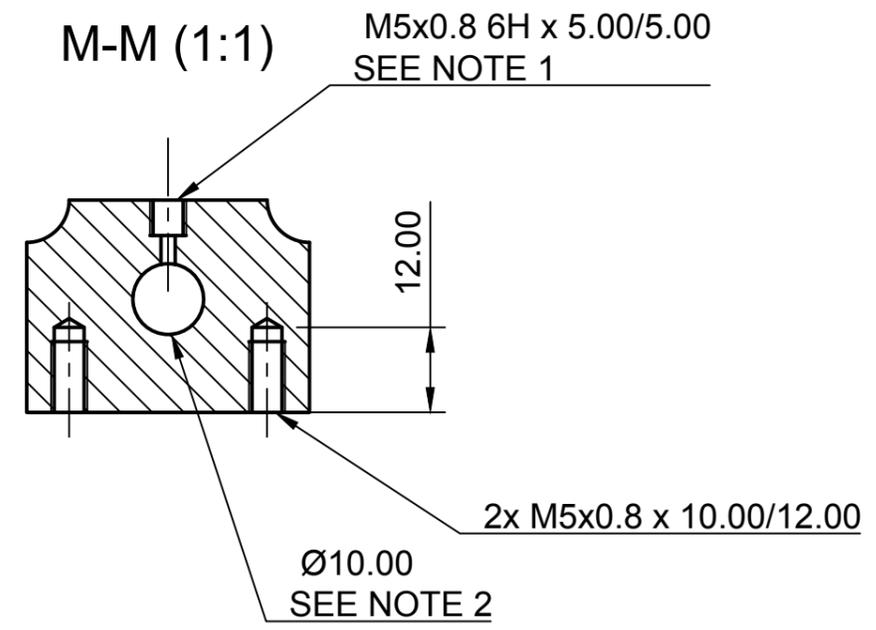
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Aft Steam Chest	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°			
		PAGE SIZE A3	
		SCALE 1:1 SHEET 9/27	



BEARING BLOCK	4 REQ'D
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NOTE

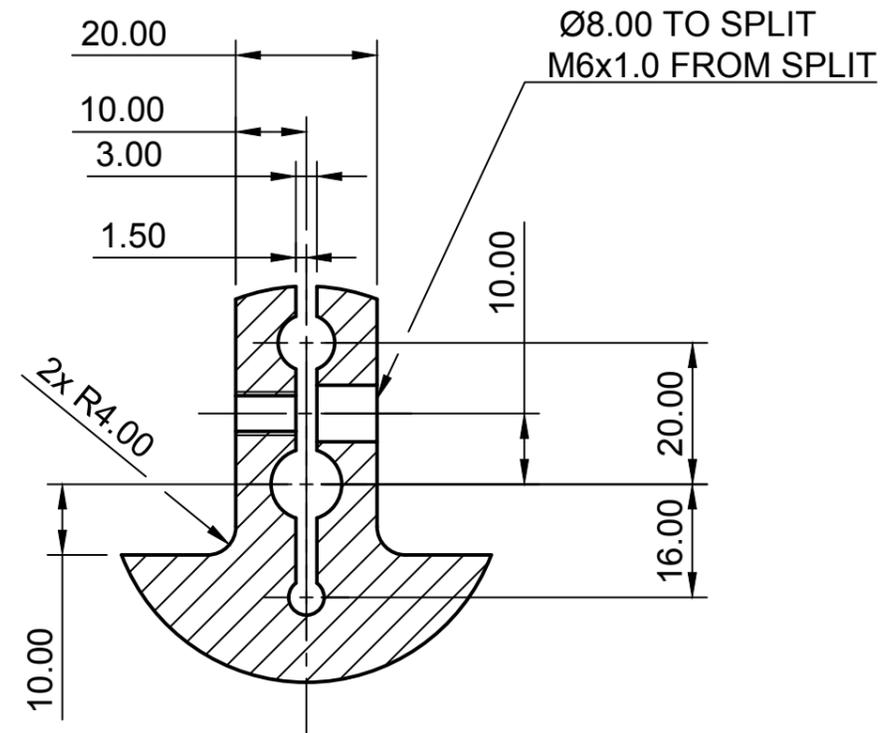
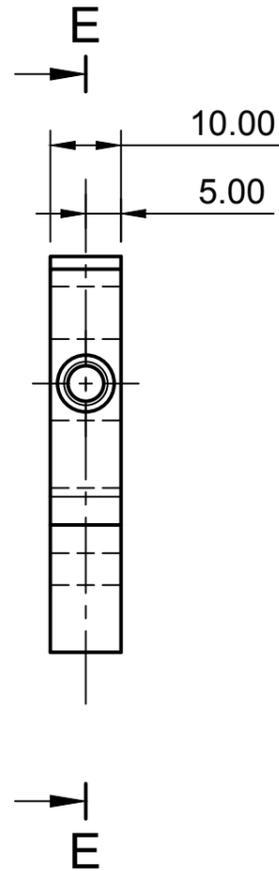
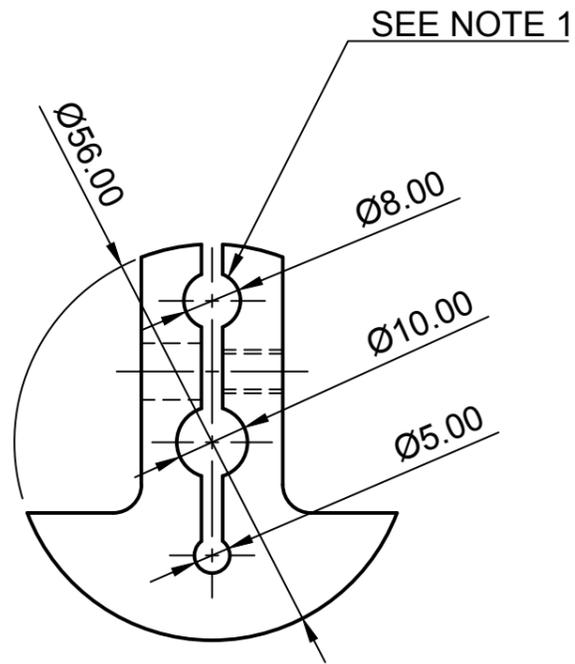
1. TAPPED M5 FOR OIL CUP. 2.00 OILWAY DRILLED TO BORE FOR SHAFT LUBRICATION.
2. THROUGH HOLE REAMED 10.0



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
ANGLE X ± 0.5°		
		PAGE SIZE A3
		SCALE 1:1.5
		SHEET 10/27

CRANK WEBS 4 REQ'D

E-E (1:1)

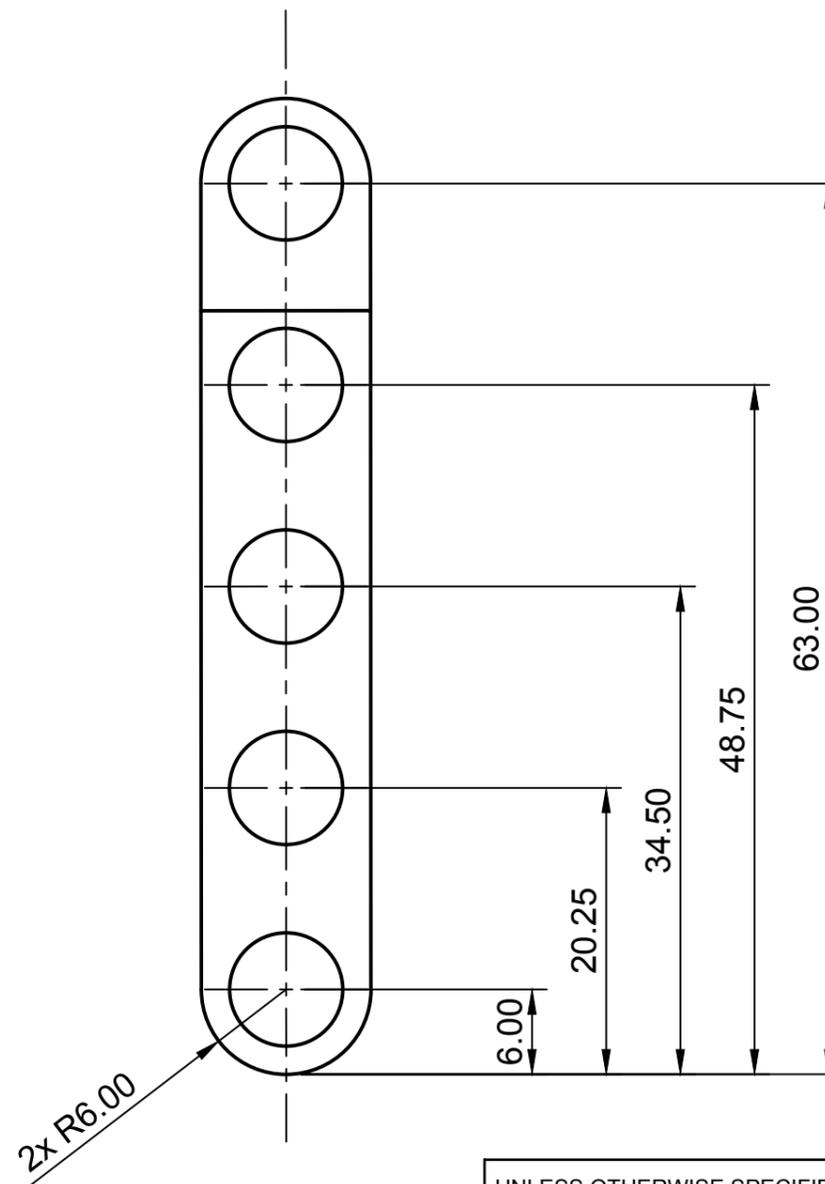
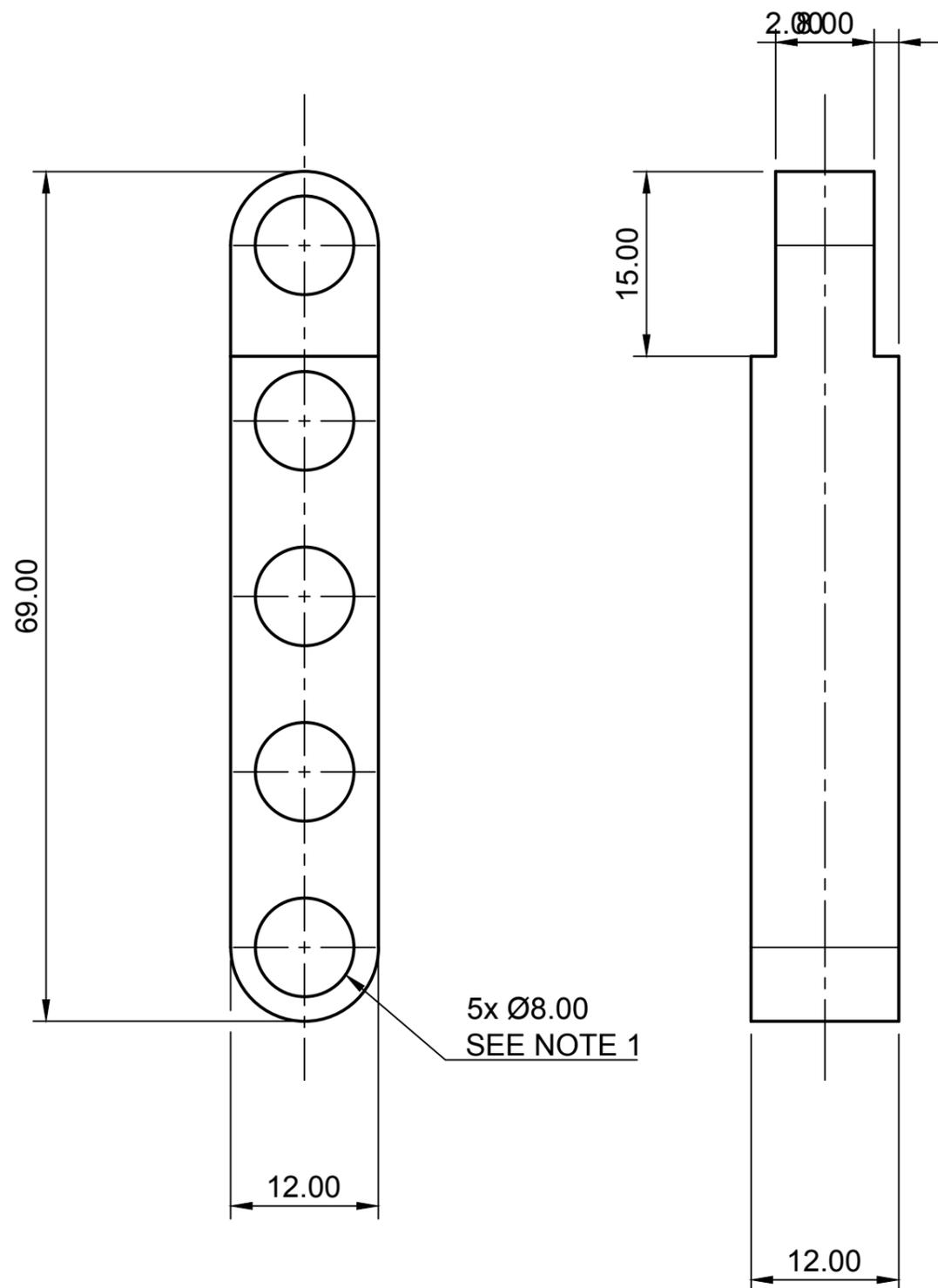


NOTE

- HOLE IN CRANK WEB REAMED 8.00 & 10.00

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Crank Web
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
ANGLE X ± 0.5°		
		PAGE SIZE A3
		SCALE 1:1.5 SHEET 11/27

CONROD	2 REQ'D
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NOTES

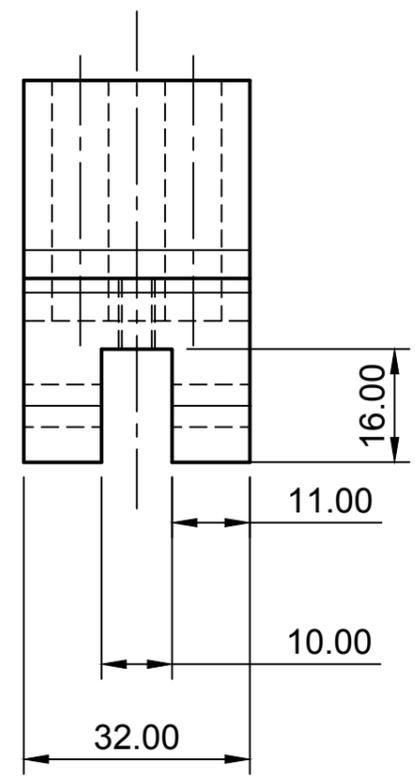
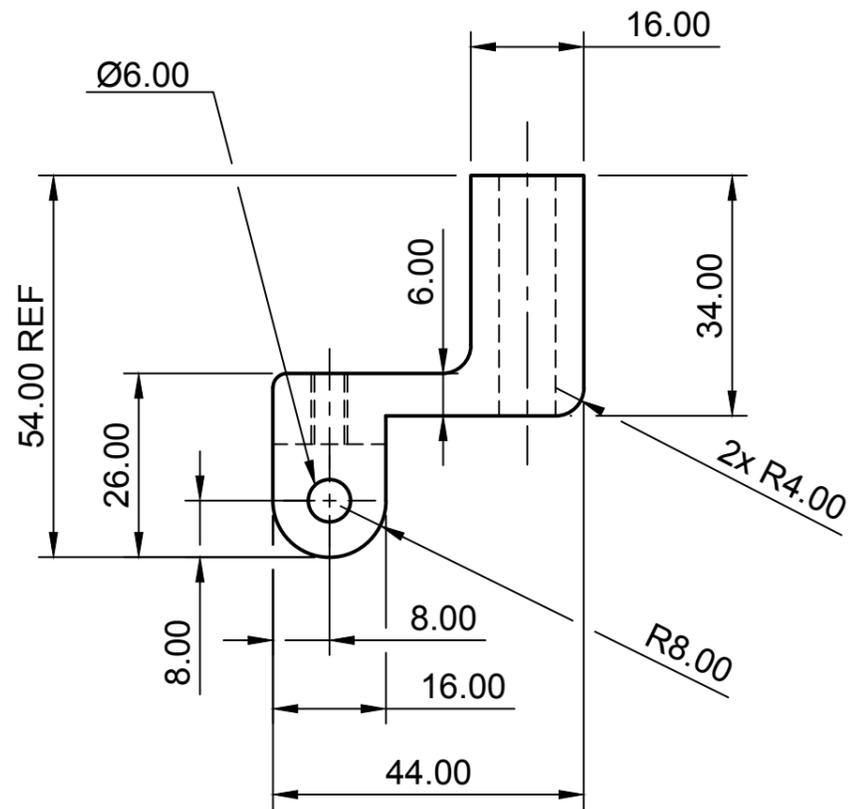
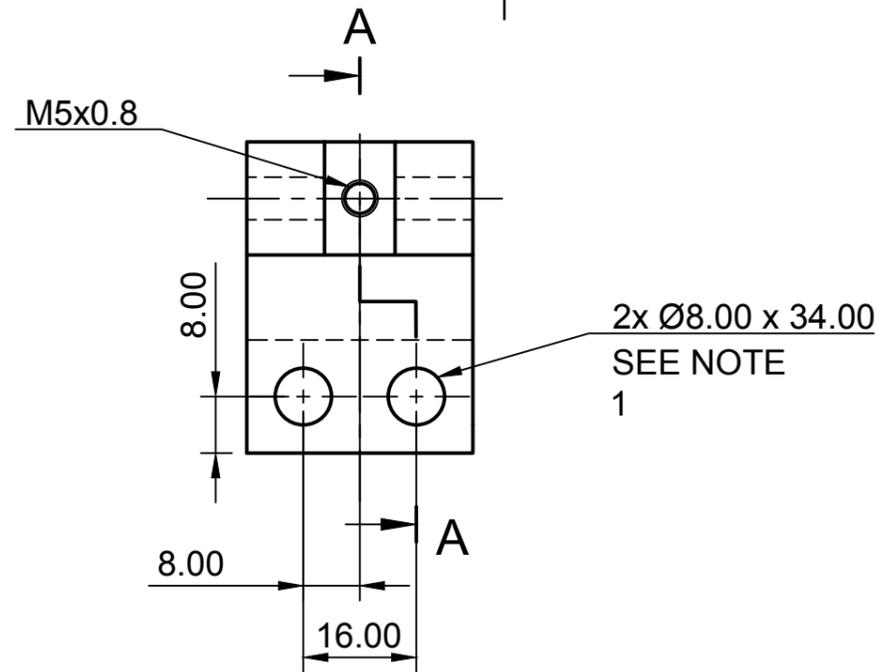
1. TOP AND BOTTOM HOLE OF CONROD
REAMED 8.00

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Conrod
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
<p>56 NORTHWEST MACHINING</p>		
		PAGE SIZE A3
		SCALE 2:1 SHEET 12/27

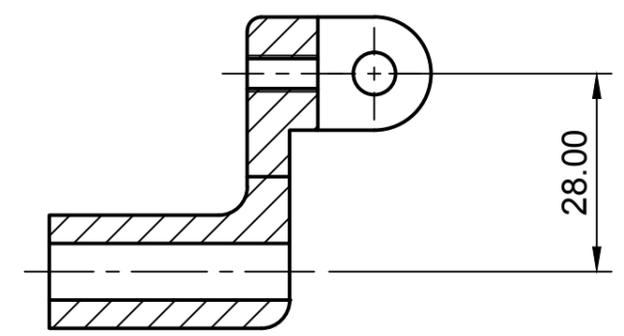
CROSS HEAD 2 REQ'D

NOTE

1. REAM 8.00 FOR CROSSHEAD GUIDE RODS.

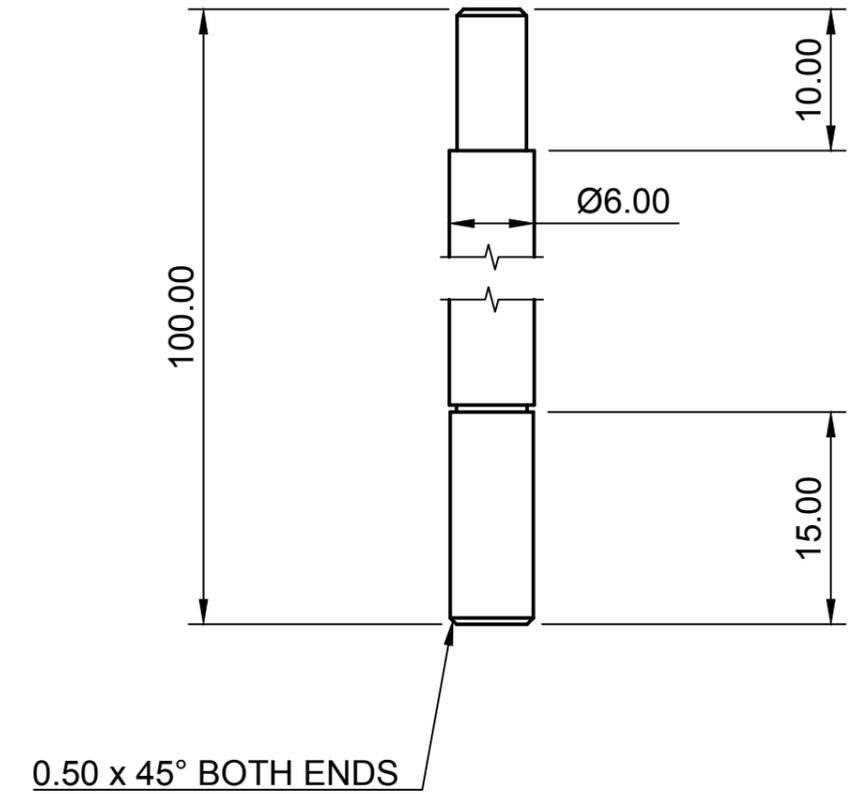
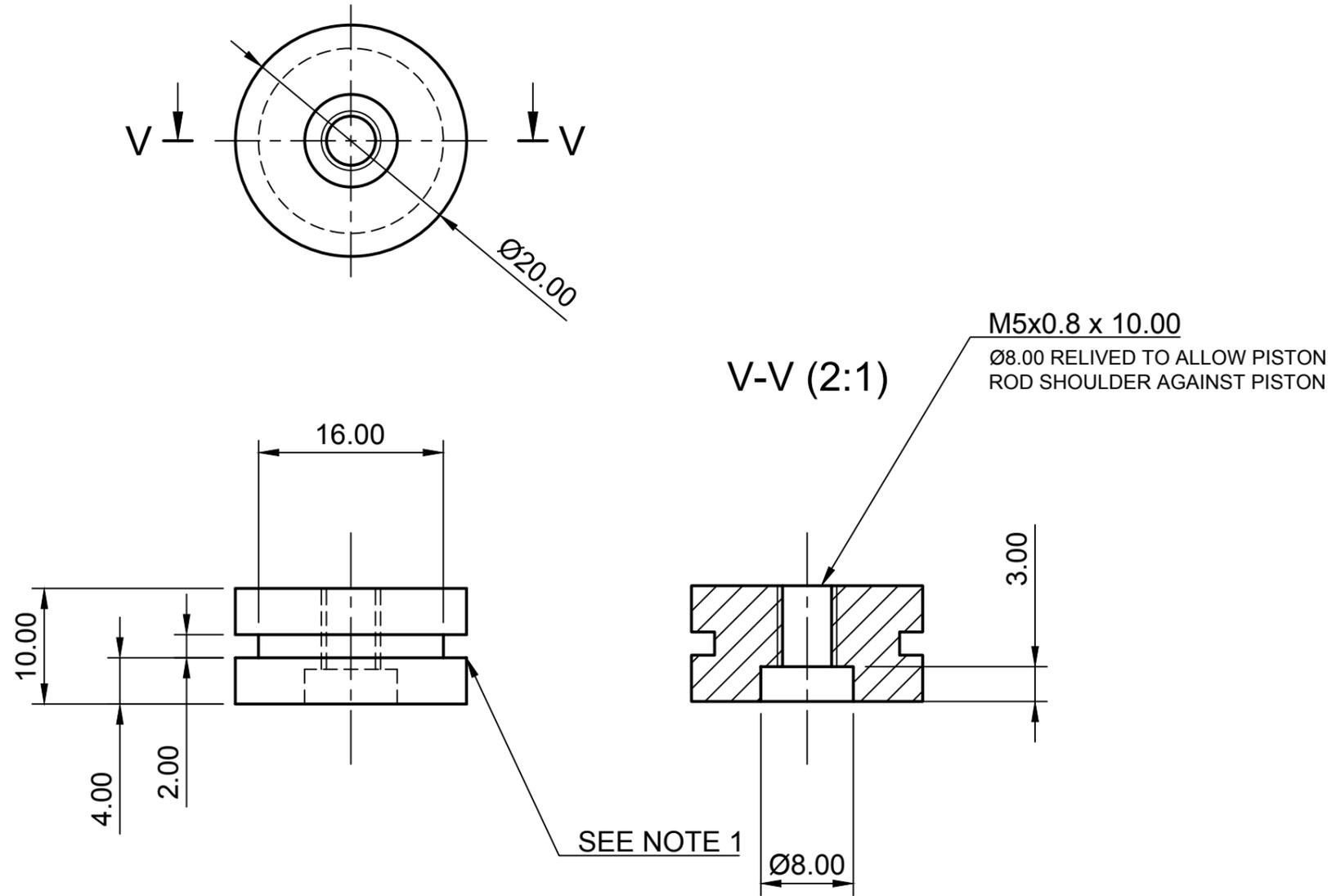


A-A (1:1)



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
ANGLE X ± 0.5°		
		PAGE SIZE A3
		SCALE 1.1.5
		SHEET 13/27

PISTON	2 REQ'D
PISTON ROD	2 REQ'D

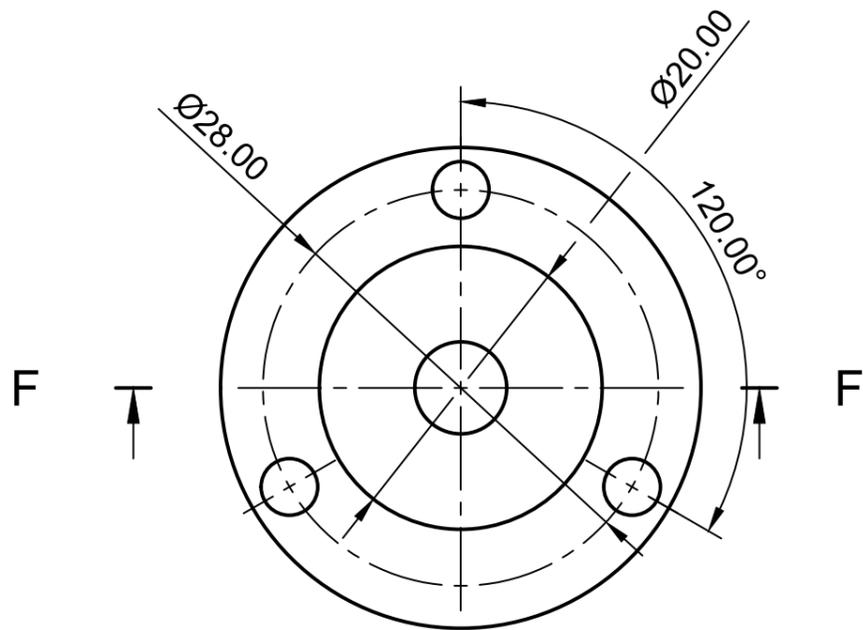
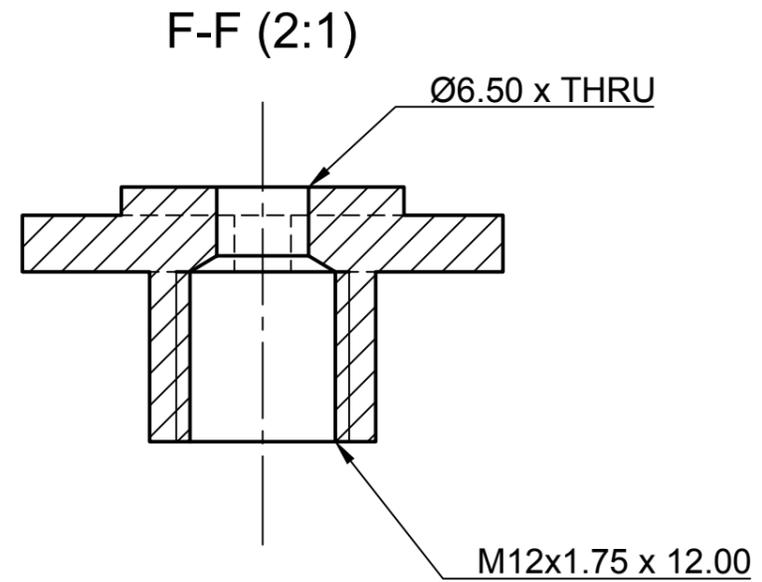
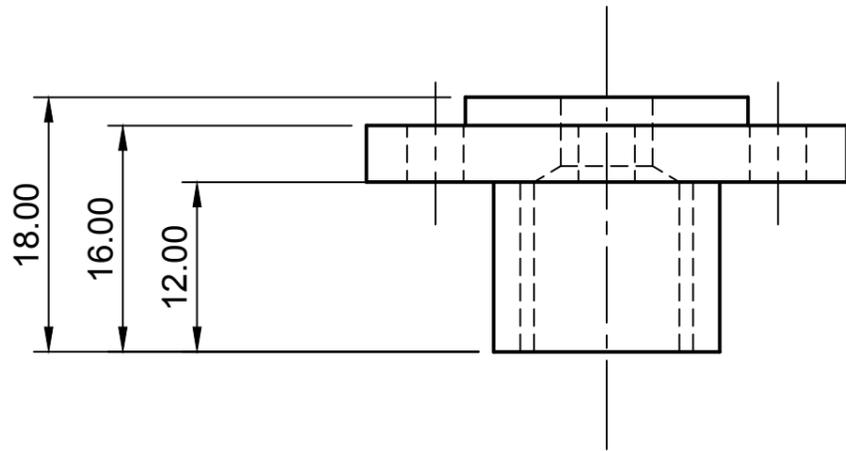
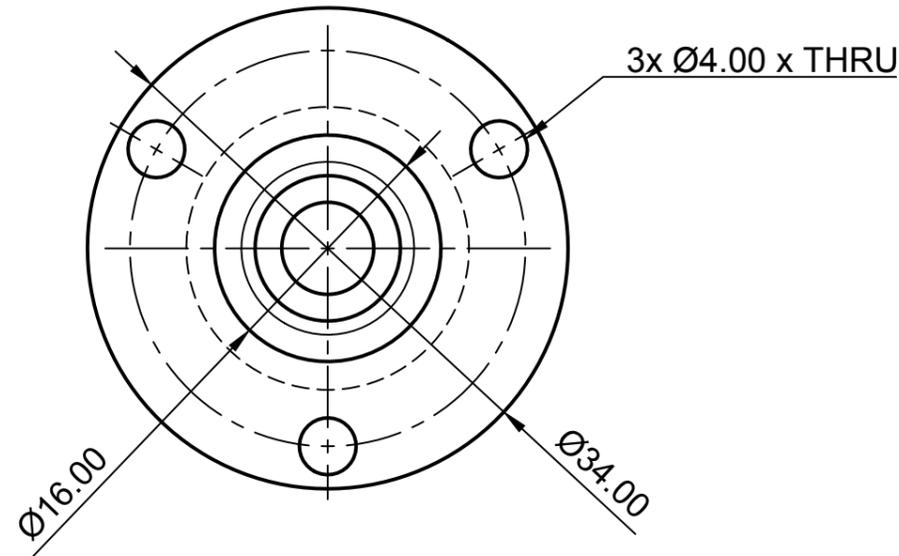


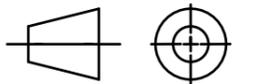
NOTE

1. PISTON GROVE REF 2.00. GROVE MACHINED TO SUIT O-RING OF CHOICE,

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°			
			PAGE SIZE A3
		SCALE 2:1	SHEET 14/27

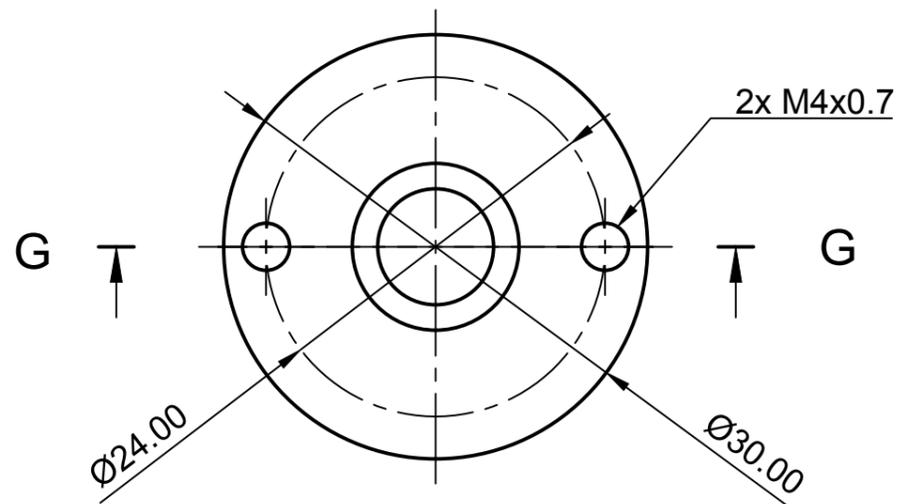
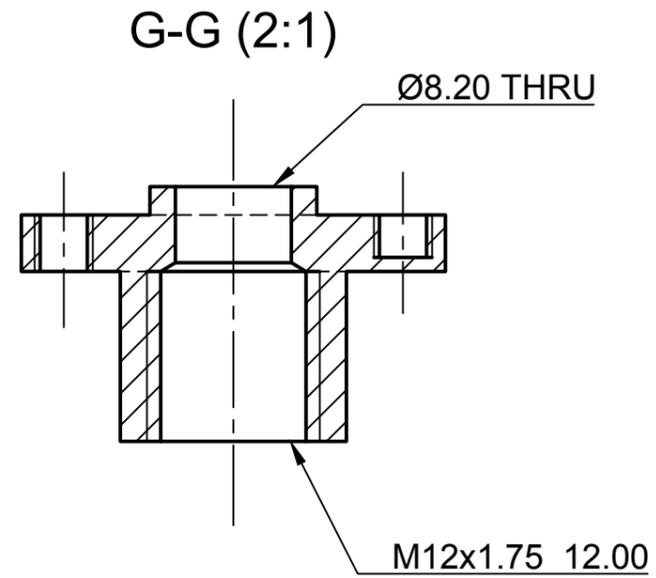
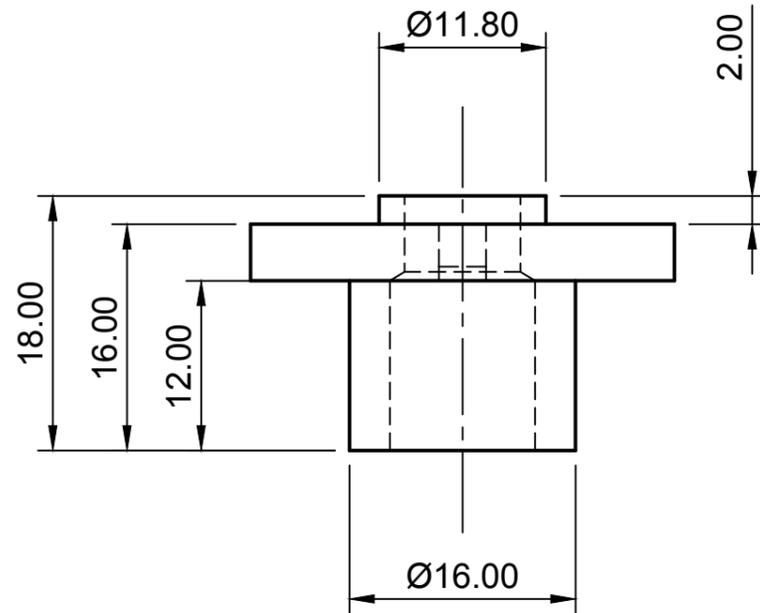
CYLINDER PACKING GLAND 2 REQ'D



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Piston Packing Glands	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°		 PAGE SIZE A3	
		SCALE 2:1	
		SHEET 15/27	

STEAM CHEST PACKING GLAND

2 REQ'D



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS

UNSPECIFIED
TOLERANCES

X.X \pm 0.1
X.XX \pm 0.05

ANGLE X \pm 0.5°

BREAK ALL SHARP
EDGES

CHAMFERS 0.50 X 45°

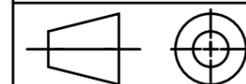
TAPPED HOLES
METRIC COURSE

Steam Chest Packing Glands

DESIGNED BY: Martin Currie

CHECKED BY: John Hackney

DATE: 01/01/2022



PAGE
SIZE **A3**

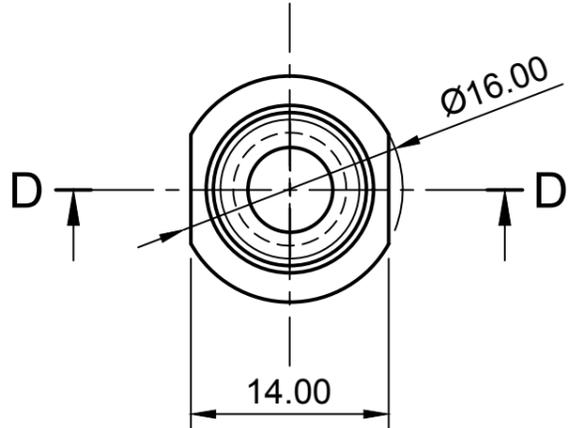
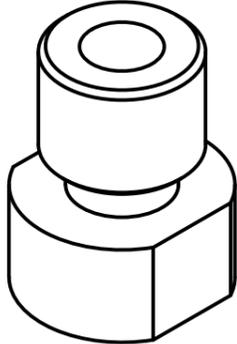
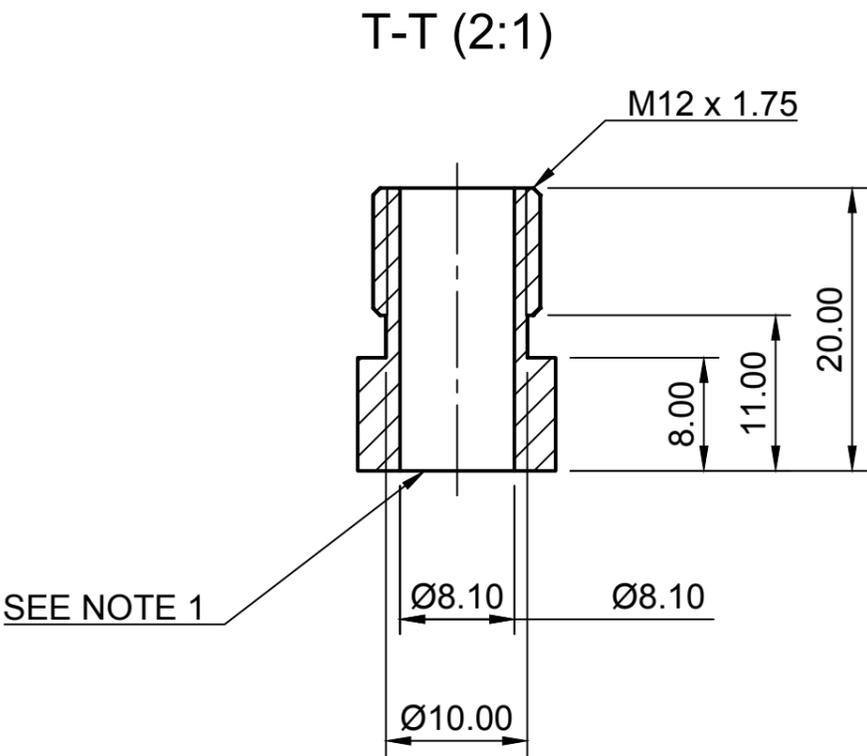
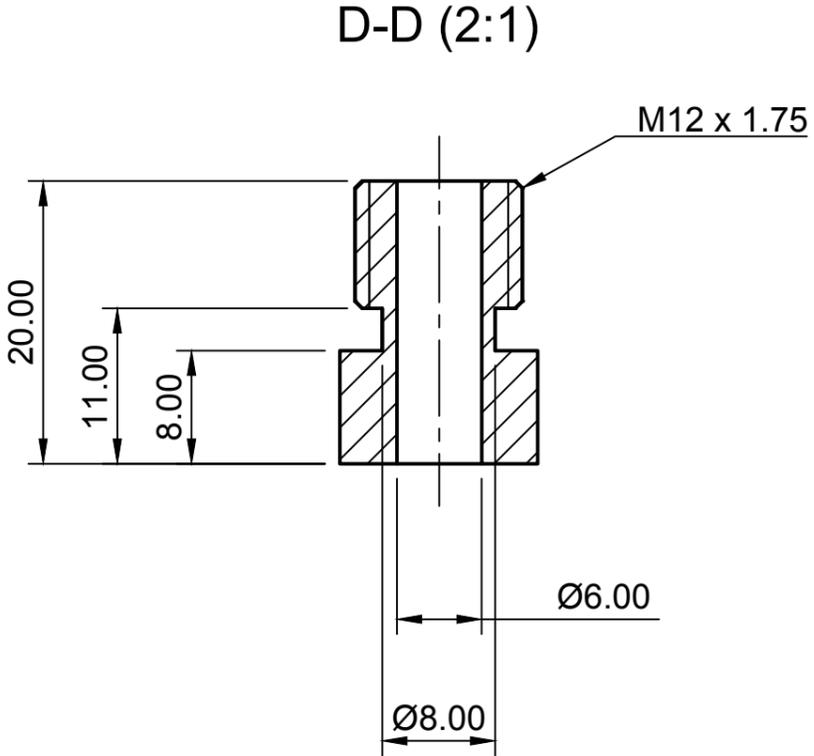
SCALE **2:1**

SHEET **16/27**

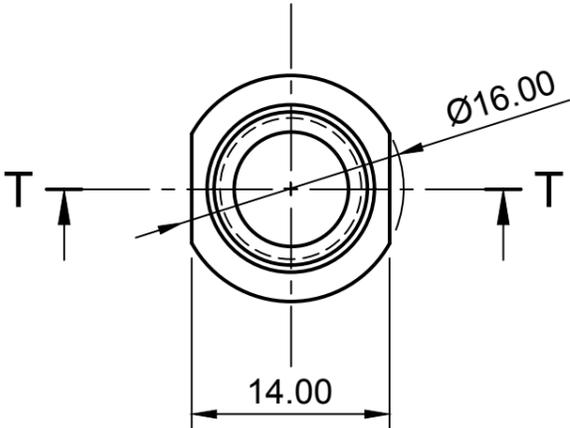
PISTON GLAND NUT	2 REQ'D
STEAM CHEST GLAND NUT	2 REQ'D

NOTE

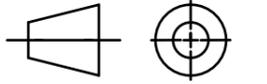
1. THROUGH HOLE IN PISTON AND STEAM CHEST GLAND NUTS SIZED TO SUIT PISTON RODS AND SPOOL VALVE SHAFTS AS REQUIRED

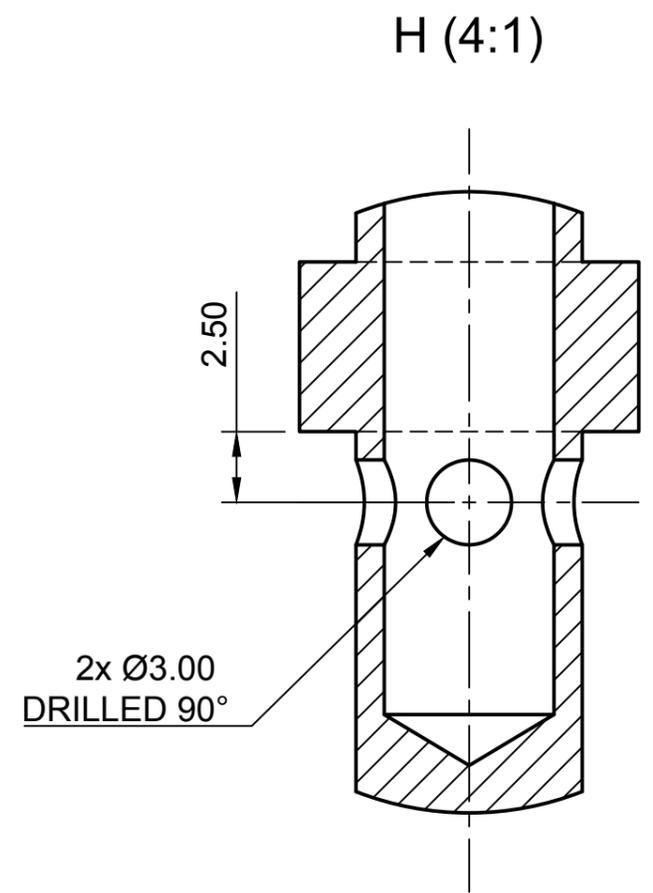
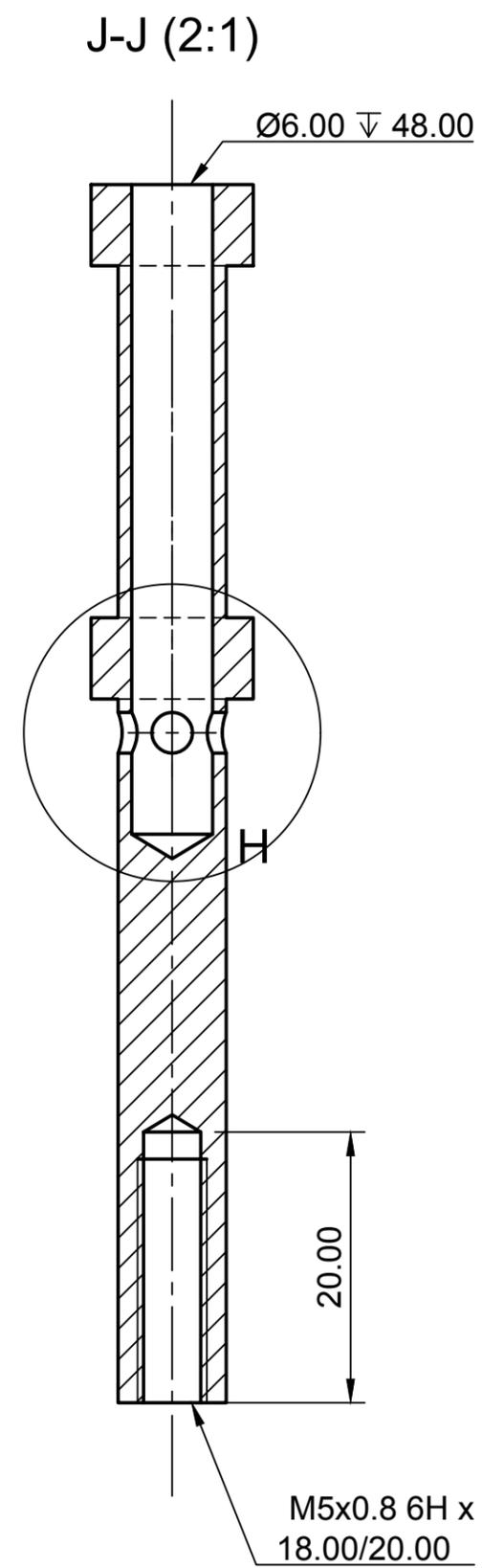
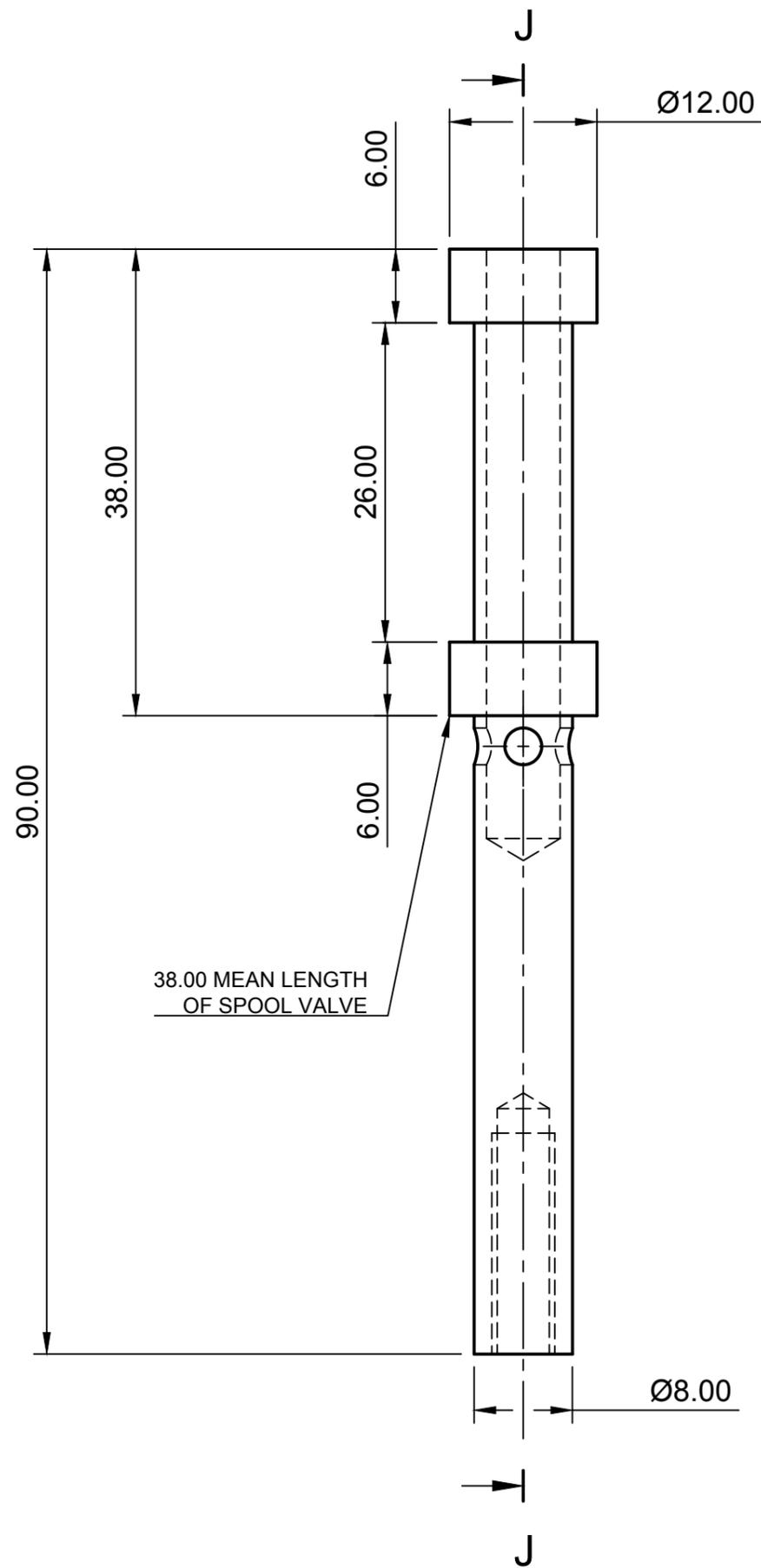


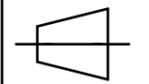
PISTON GLAND NUT

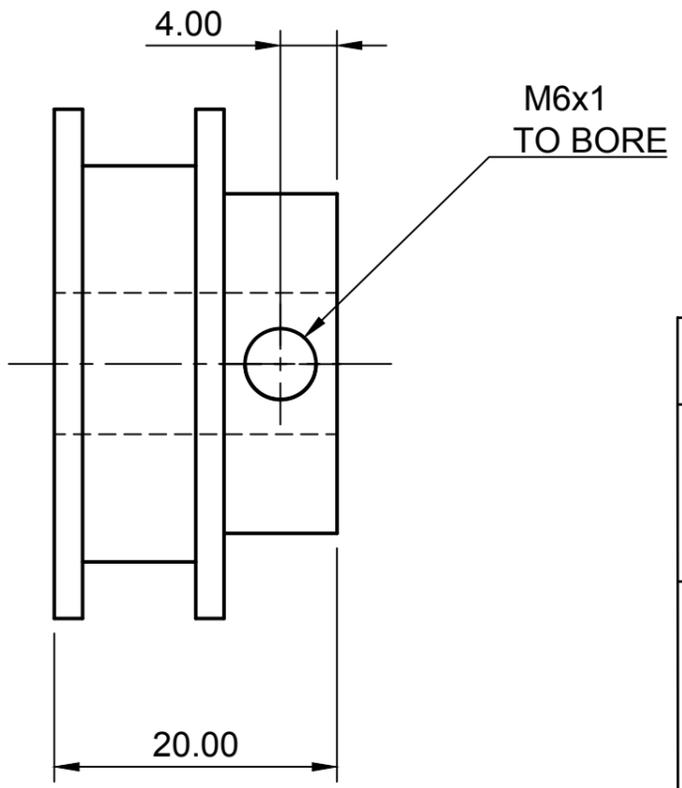
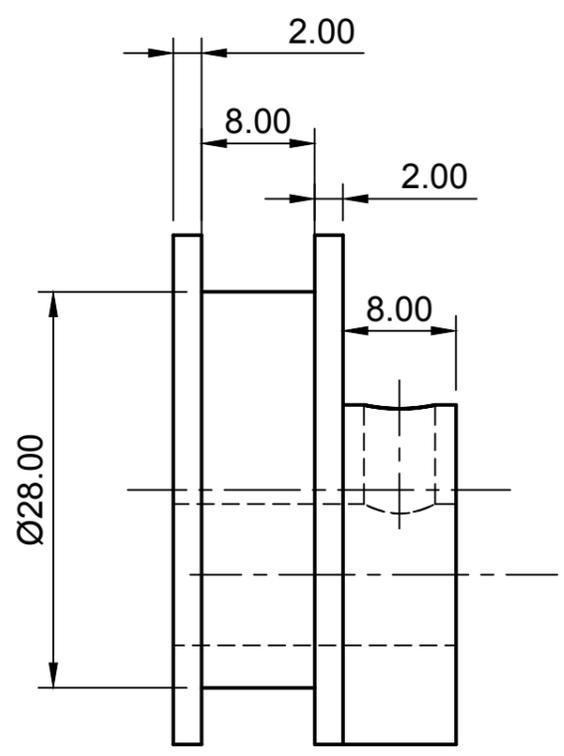
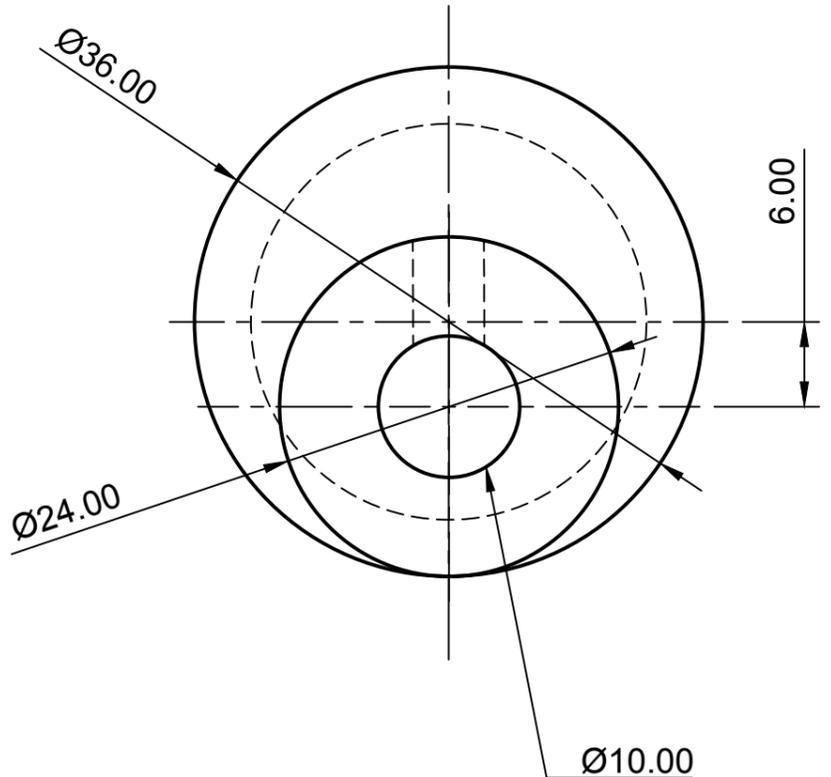


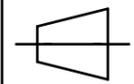
STEAM CHEST GLAND NUT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°			
		PAGE SIZE A3	
		SCALE 2:1 SHEET 17/27	



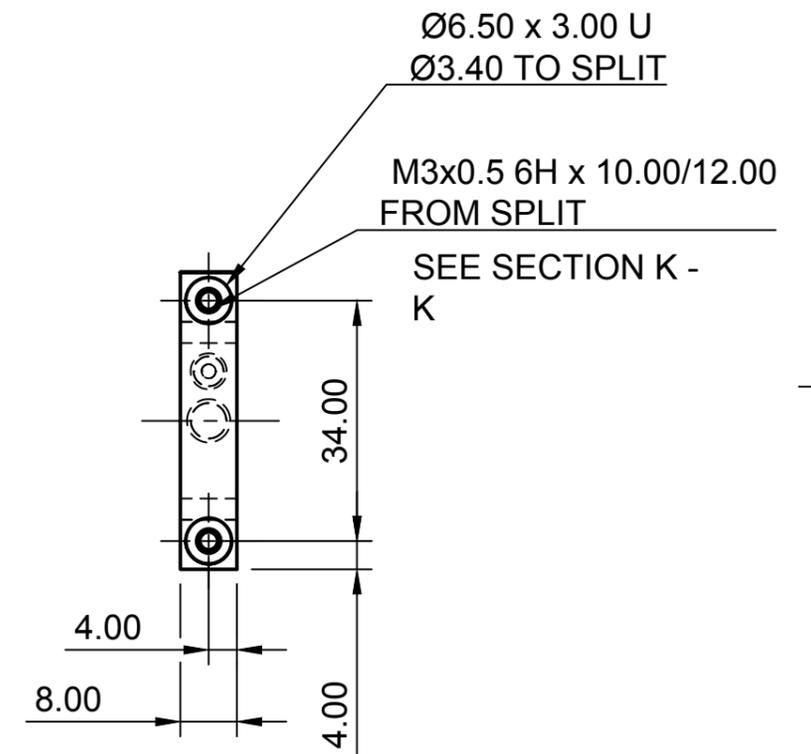
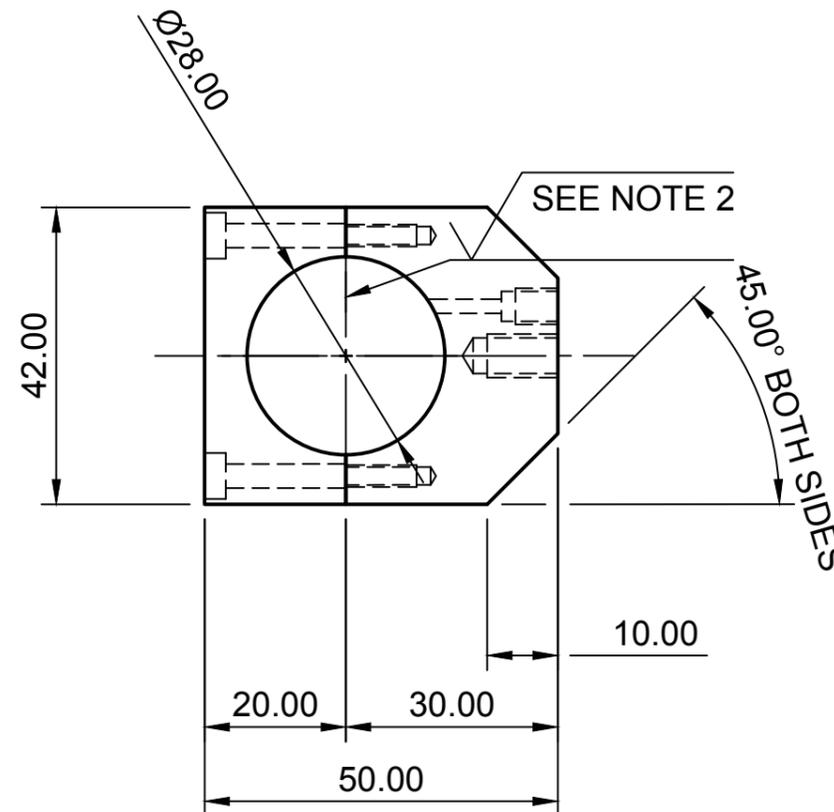
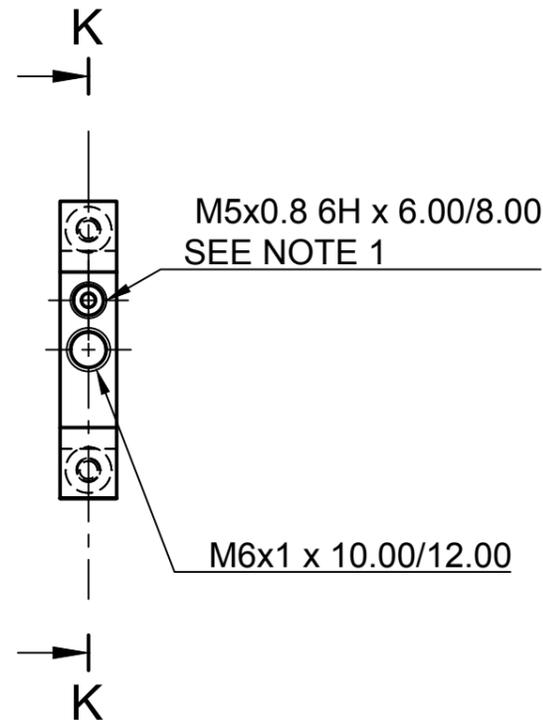
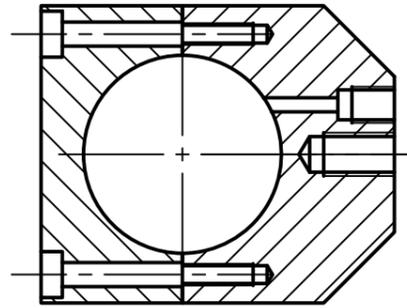
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Spool Valves	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°		  PAGE SIZE A3	
		SCALE 2:1	
		SHEET 18/27	



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Eccentric Cam	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°		 	
		PAGE SIZE	A3
		SCALE 2:1	SHEET 19/27

ECCENTRIC STRAPS 2 REQ'D

K-K (1:1)



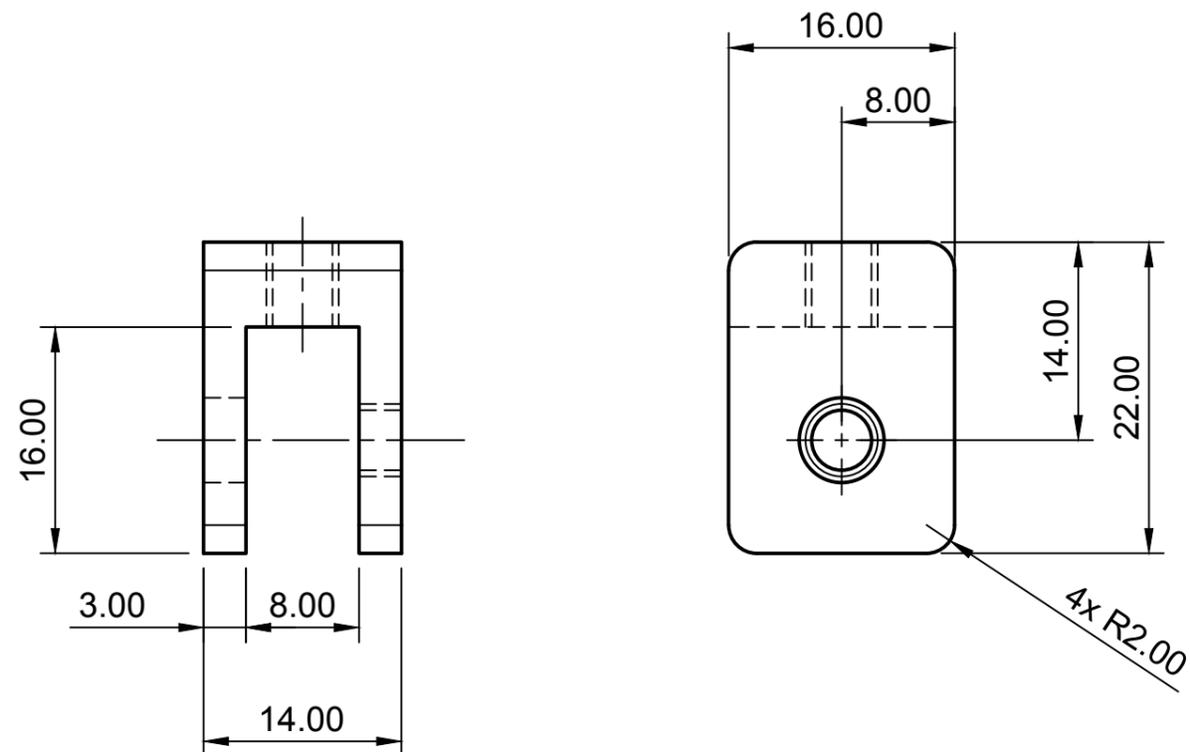
NOTE:

1. TAPPED M5 FOR OIL CUP. 2.00 OILWAY DRILLED TO BORE
2. MACHINE BOTH FACE BEFORE DRILLING AND TAPPING, LOWER STRAP COUNTER SUNK & CLEARANCE M5

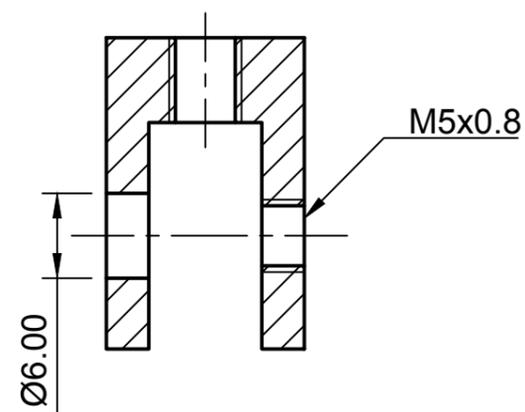
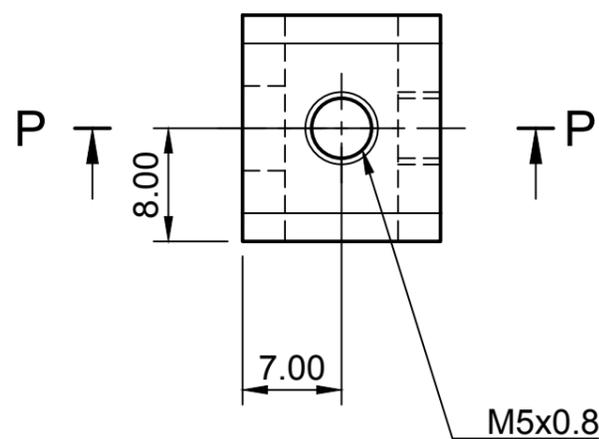
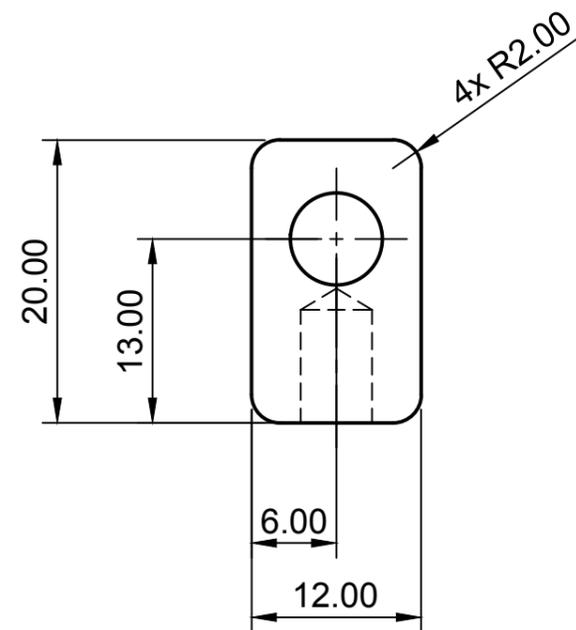
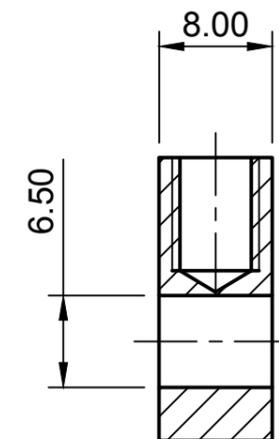
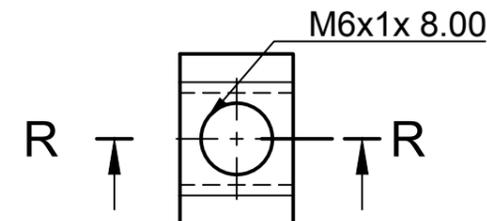
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Aft Eccentric Strap
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
ANGLE X ± 0.5°		
		PAGE SIZE A3
		SCALE 1:2
		SHEET 20/27

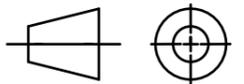
BLOCK END	2 REQ'D
FORK END	2 REQ'D

R-R (2:1)

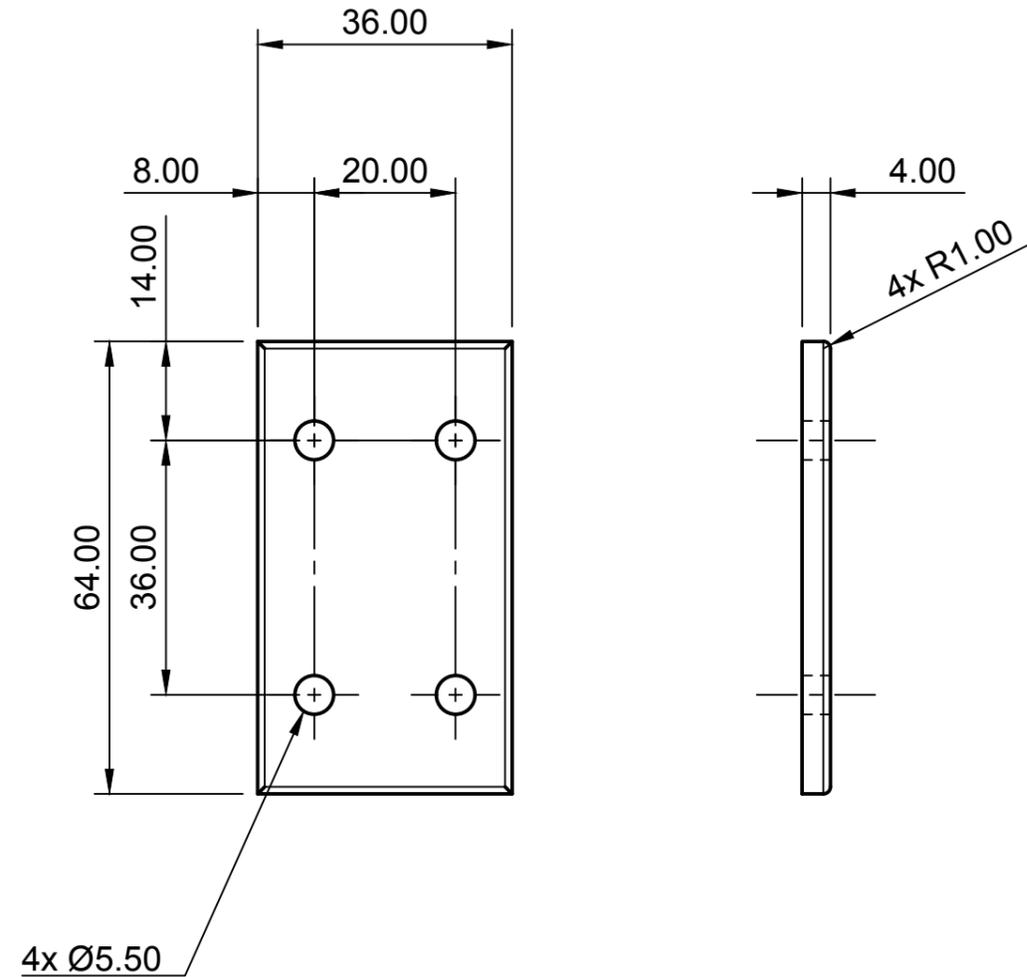
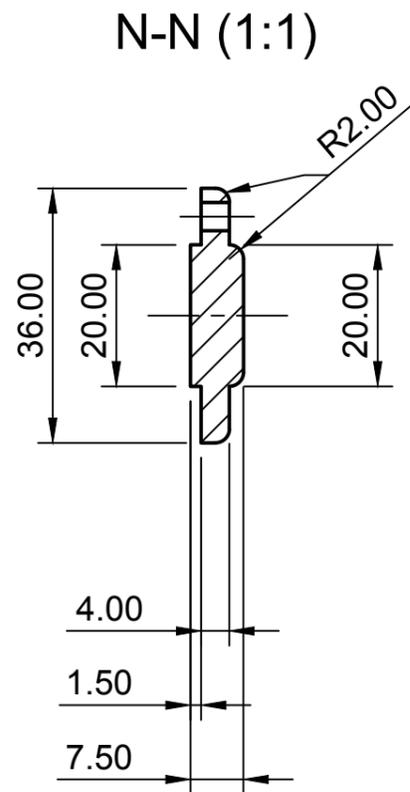
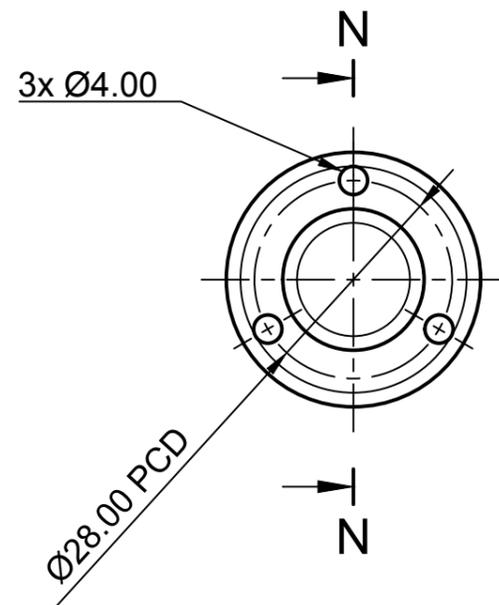


P-P (2:1)



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°		 PAGE SIZE A3	
		SCALE 2:1.5	
		SHEET 21/27	

CYLINDER HEAD COVERS	2 REQ'D
STEAM CHEST COVER	2 REQ'D



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS

UNSPECIFIED
TOLERANCES

X.X ± 0.1
X.XX ± 0.05

ANGLE X ± 0.5°

BREAK ALL SHARP
EDGES

CHAMFERS 0.50 X 45°

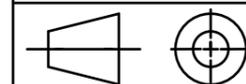
TAPPED HOLES
METRIC COURSE

Two Cylinder Marine Engine

DESIGNED BY: Martin Currie

CHECKED BY: John Hackney

DATE: 01/01/2022

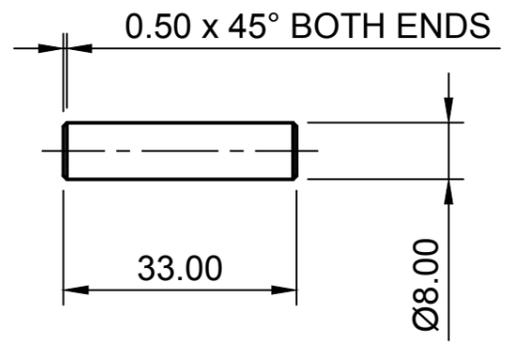
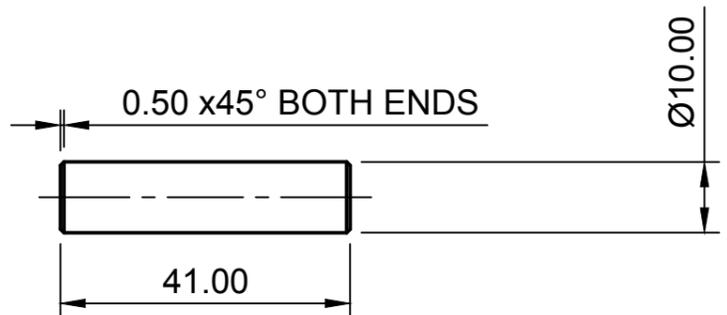
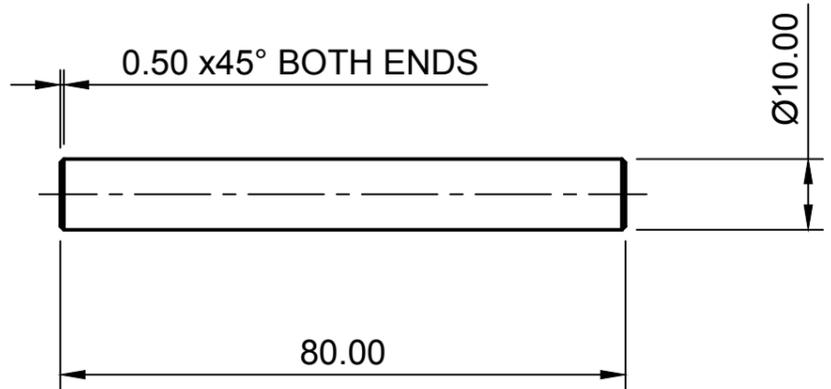
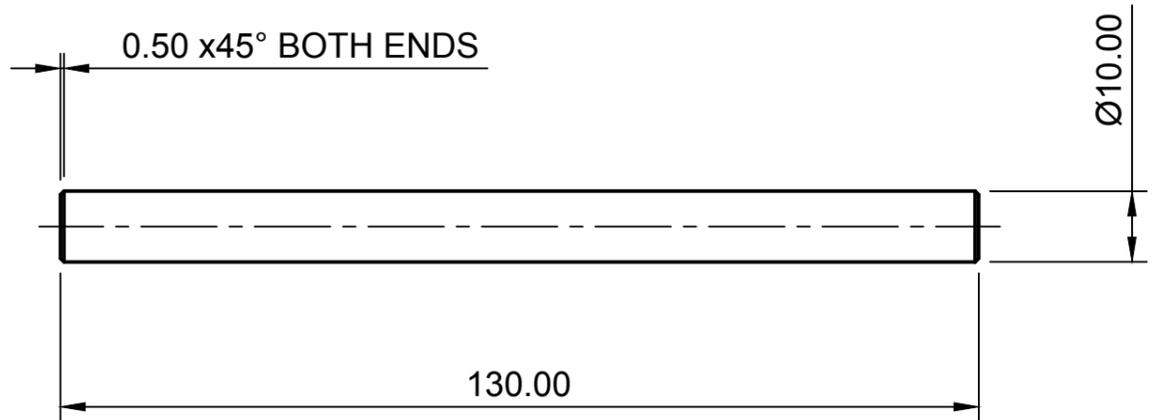


PAGE
SIZE **A3**

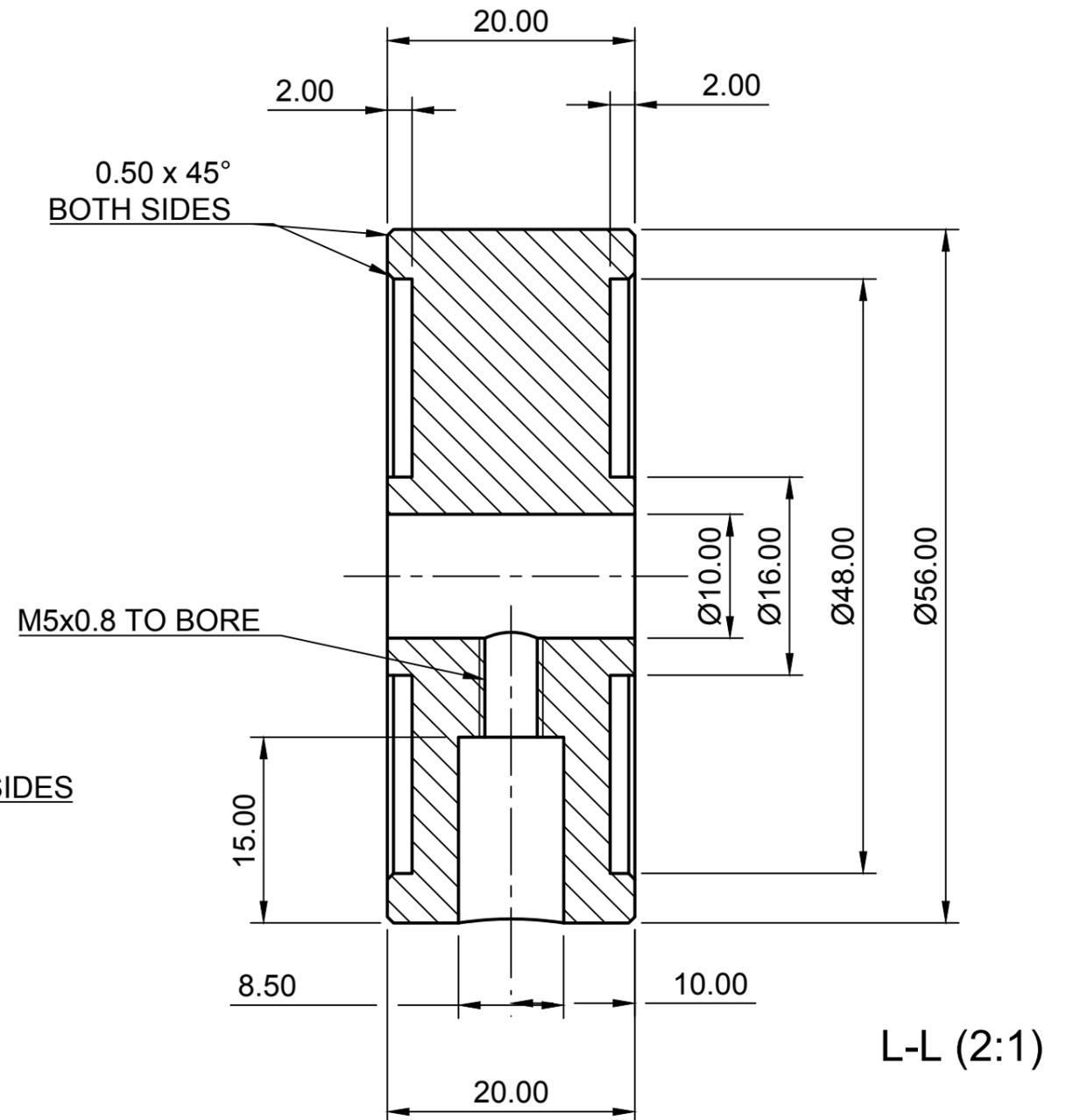
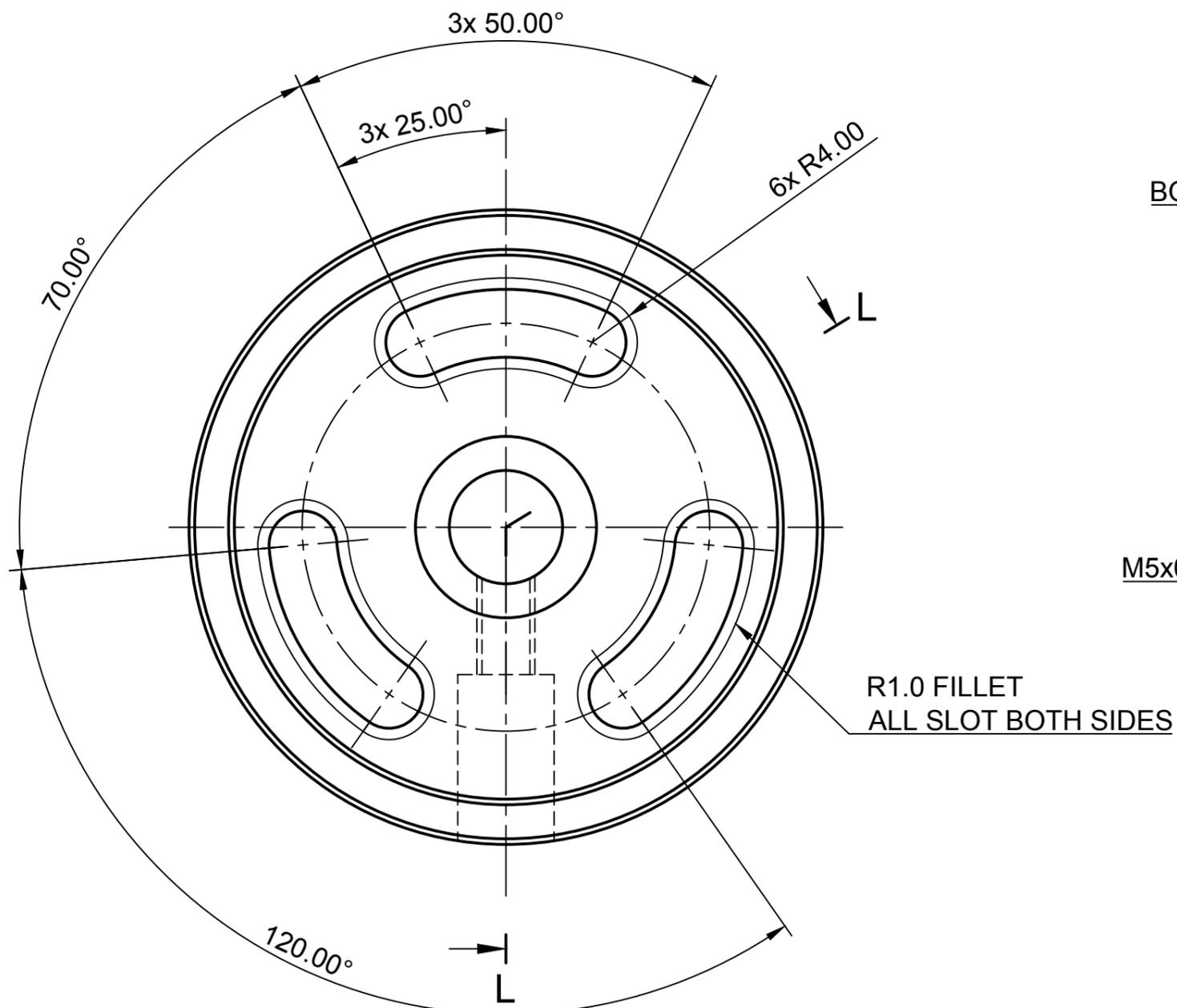
SCALE **1:1**

SHEET **22/27**

NON DRIVE END SHAFT	1 REQ'D
MIDDLE SHAFT	1REQ'D
DRIVE END SHAFT	1 REQ'D
BIG END PIN	2 REQ'D



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
<p>56 NORTHWEST MACHINING</p>			PAGE SIZE A3
		SCALE 1:1	SHEET 23/27

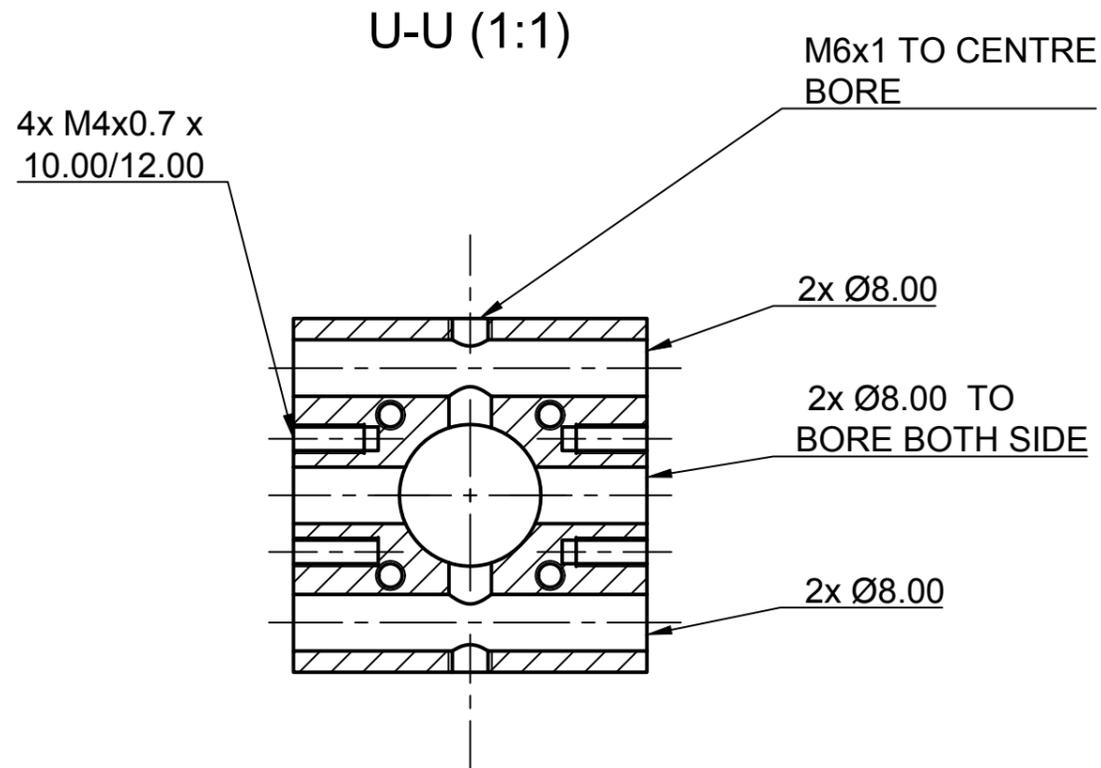
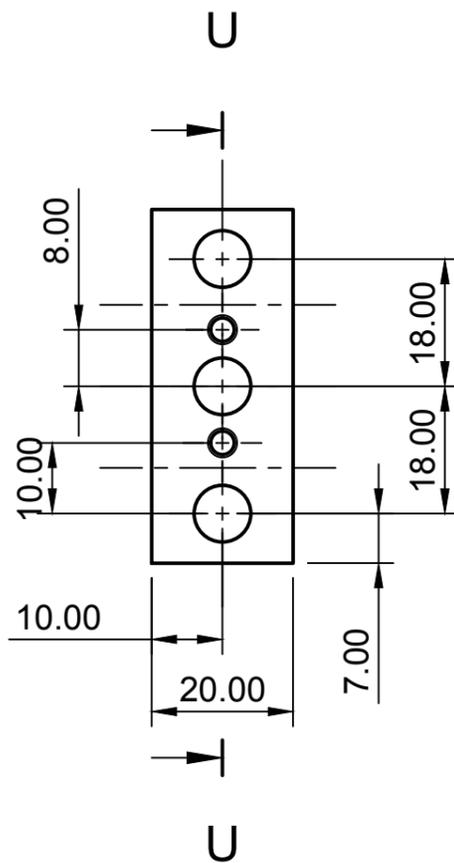
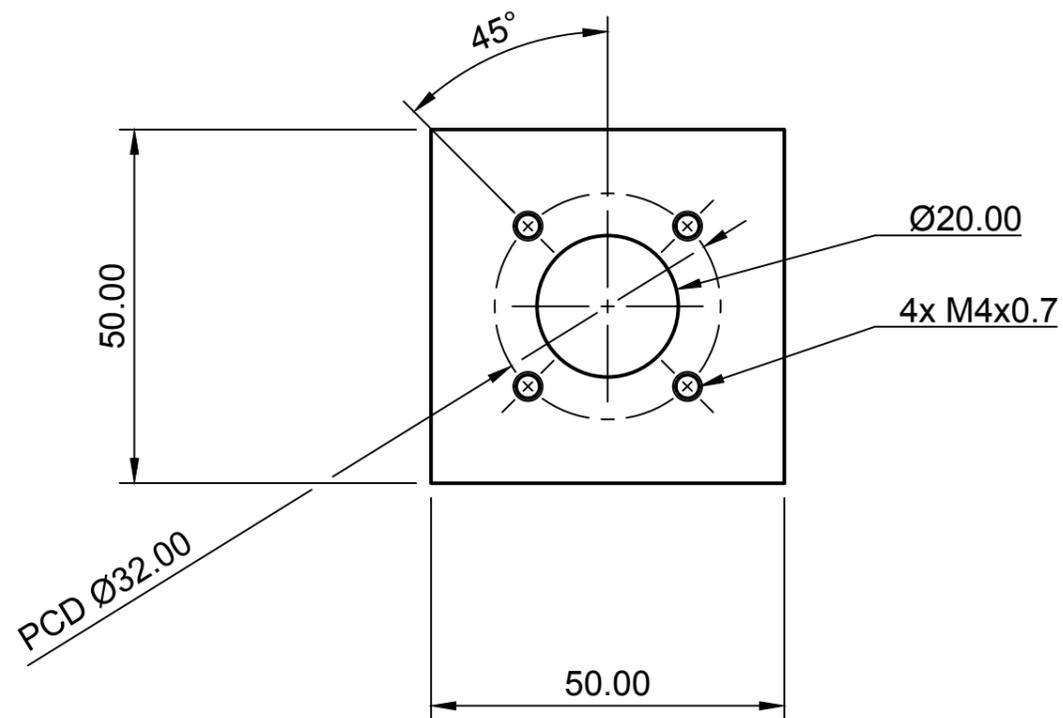


FLY WHEEL 1 REQ'D

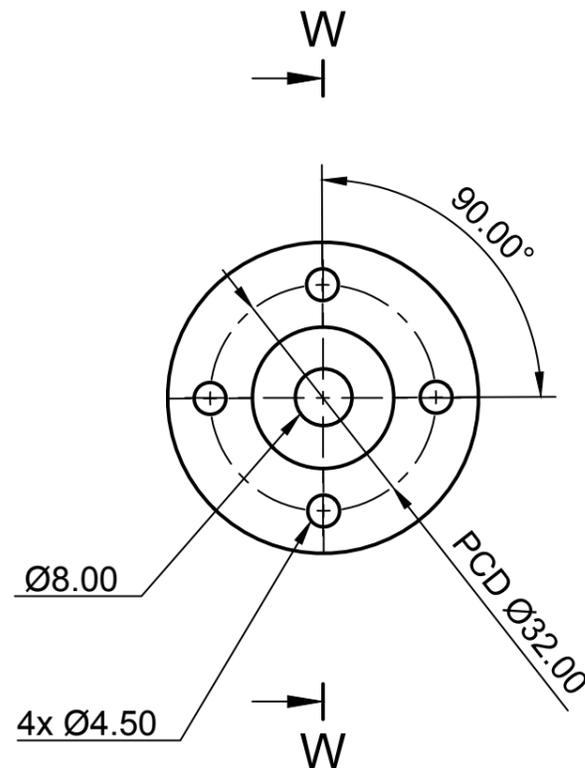
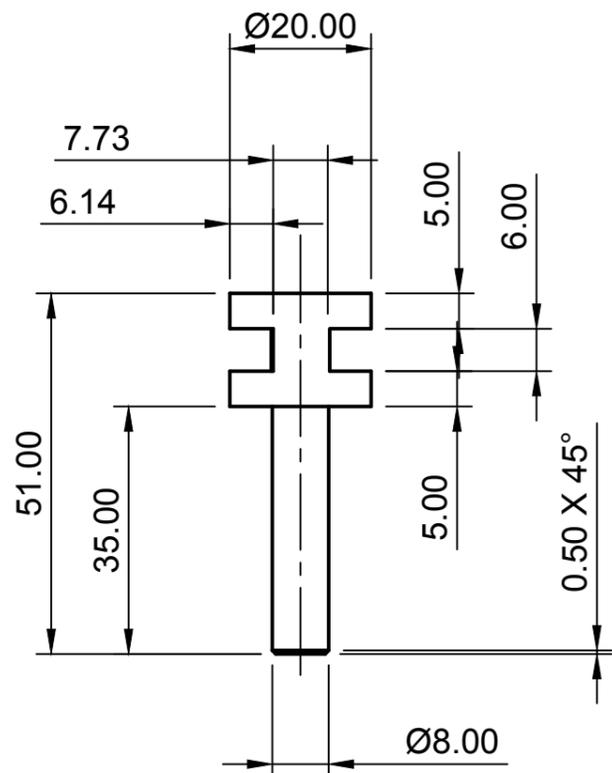
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Flywheel
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
		PAGE SIZE A3
		SCALE 2:1 SHEET 24/27

STEAM CONTROL BLOCK

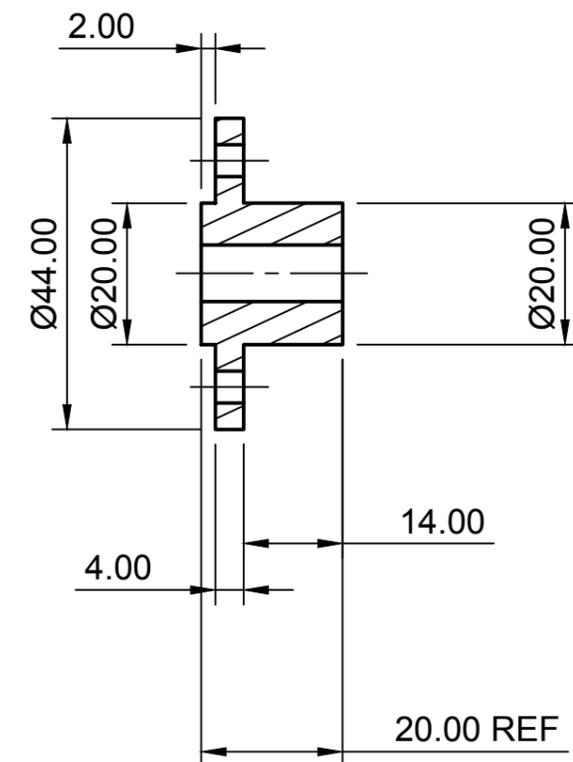
1 REQ'D



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Control Block	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°		PAGE SIZE A3	
		SCALE 1:1	
		SHEET 25/27	



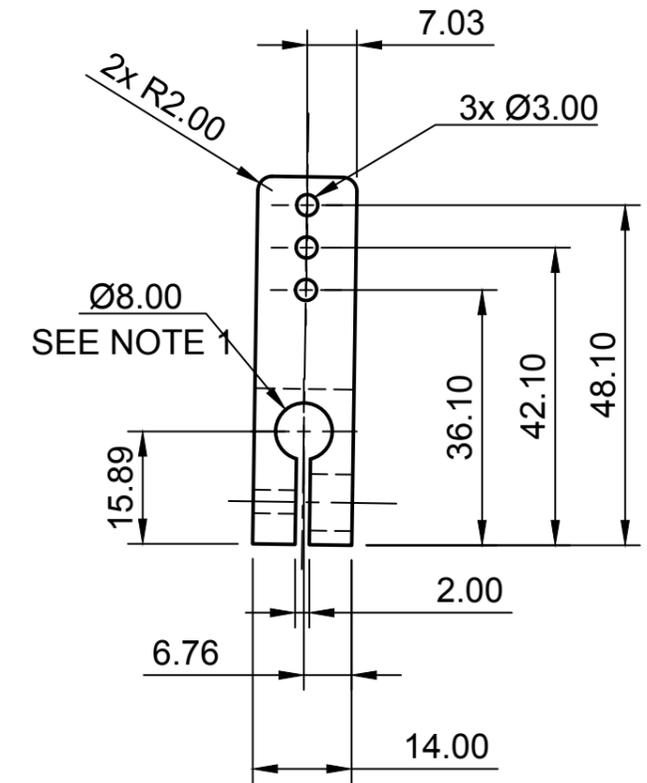
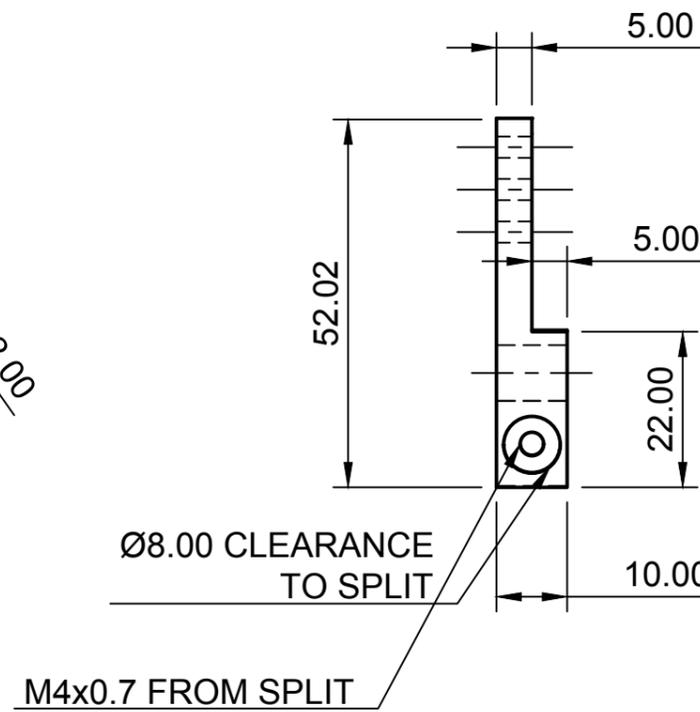
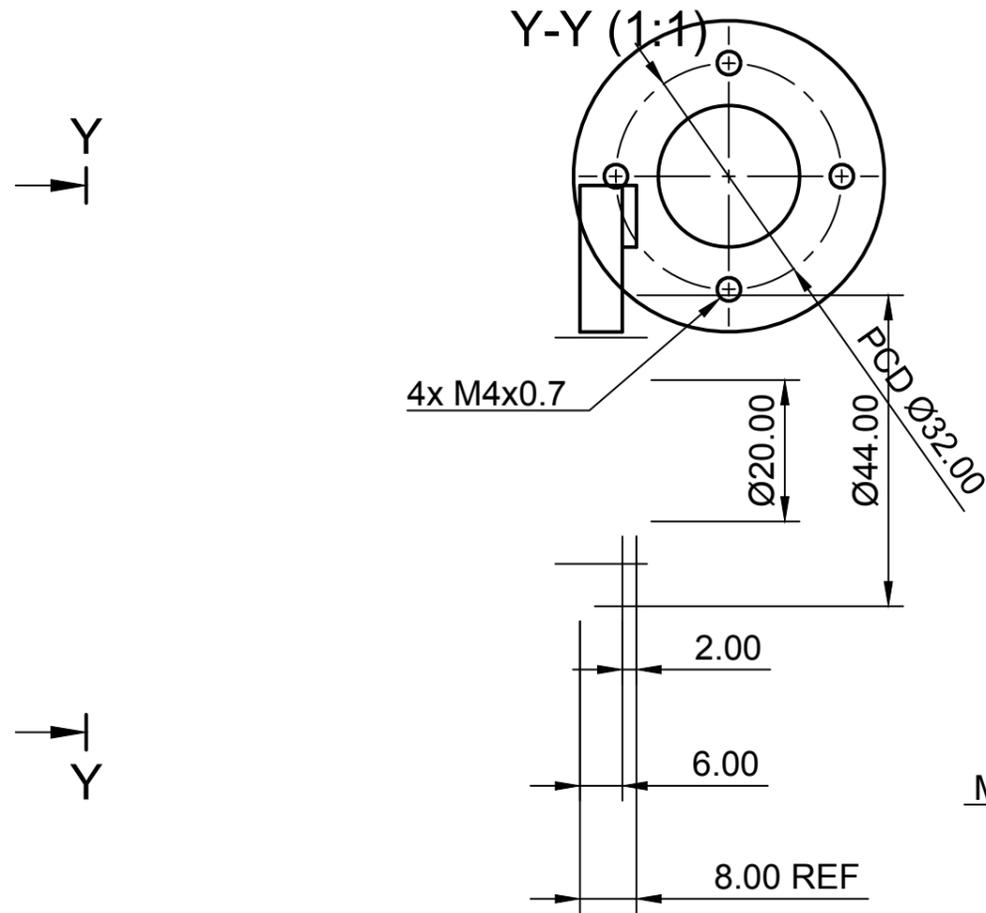
W-W (1:1)



STEAM CONTROL VALVE	1 REQ'D
STEAM CONTROL BLOCK FRONT FLANGE	1 REQ'D

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie
X.X ± 0.1 X.XX ± 0.05	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney
ANGLE X ± 0.5°	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022
		PAGE SIZE A3
		SCALE 1:1 SHEET 26/27

STEAM CONTROL BLOCK BACK PLATE	1 REQ'D
STEAM CONTROL BLOCK LEVER	1 REQ'D



NOTE

1. REAM 8.00 FOR SLIP FIT INTO STEAM CONTROL VALVE SPINDLE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS		Two Cylinder Marine Engine	
UNSPECIFIED TOLERANCES	BREAK ALL SHARP EDGES	DESIGNED BY: Martin Currie	
X.X ± 0.1	CHAMFERS 0.50 X 45°	CHECKED BY: John Hackney	
X.XX ± 0.05	TAPPED HOLES METRIC COURSE	DATE: 01/01/2022	
ANGLE X ± 0.5°			
			PAGE SIZE A3
		SCALE 1:1	SHEET 27/27