

Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM

XX.X (1 PLS)  $\pm 0.1$  MM

X.XX (2 PLS)  $\pm 0.03$  MM


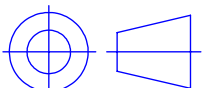
.XXX (3 PLS)  $\pm 0.007$  MM

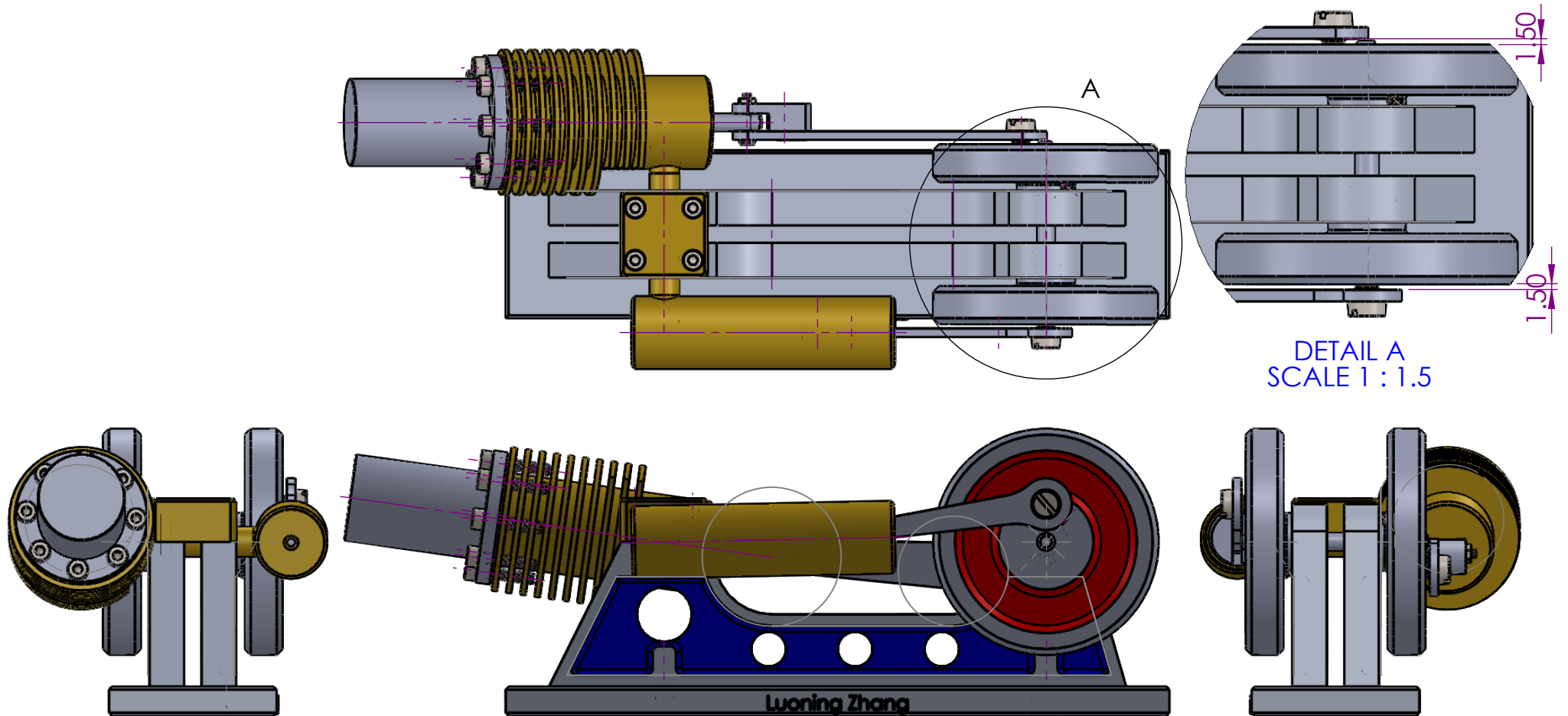
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

Sheet Name:

1

Name	Date	SIZE	 <b>UNIVERSITY of LIMERICK</b> <small>QUINCY LUMINER</small>
Drawn Luoning Zhang	27/03/2018	A4	
Checked		Title:	
DO NOT SCALE DRAWING		STIRING ENGINE PROJECT	
THIRD ANGLE PROJECTION			
		DWG. NO.	Weight: g
		REV.	Scale: 1:2
		Sheet 1 of	



DETAIL A  
SCALE 1 : 1.5

Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM

XX.X (1 PLS)  $\pm 0.1$  MM

X.XX (2 PLS)  $\pm 0.03$  MM

.XXX (3 PLS)  $\pm 0.007$  MM

UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

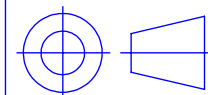
Sheet Name:

2

Name	Date
Drawn Luoning Zhang	27/03/2018
Checked	

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



SIZE  
A4



UNIVERSITY of LIMERICK  
QUINCY LIMERICK

Title:

STIRLING ENGINE PROJECT

DWG. NO.

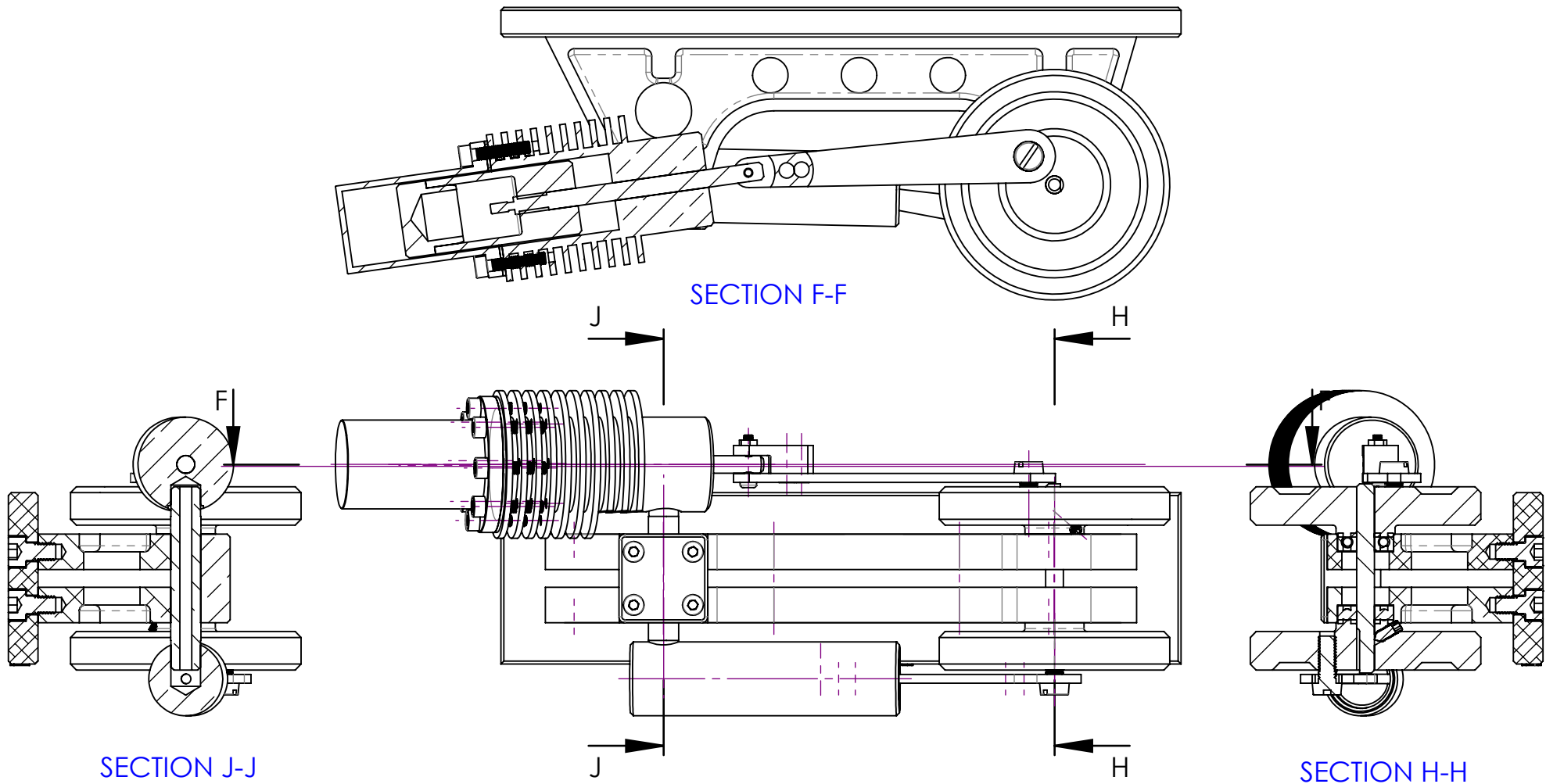
Material:

Weight: g

REV.

Scale: 1:2

Sheet 2 of



Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM  
XX.X (1 PLS)  $\pm 0.1$  MM  
X.XX (2 PLS)  $\pm 0.03$  MM  
.XXX (3 PLS)  $\pm 0.007$  MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

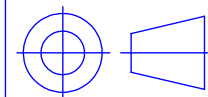
Sheet Name:

3

Name	Date
Drawn Luoning Zhang	27/03/2018
Checked	

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



SIZE  
A4



UNIVERSITY of LIMERICK  
QUINCOLE LUMINER

Title:

STIRLING ENGINE PROJECT

DWG. NO.

Material:

Weight: g

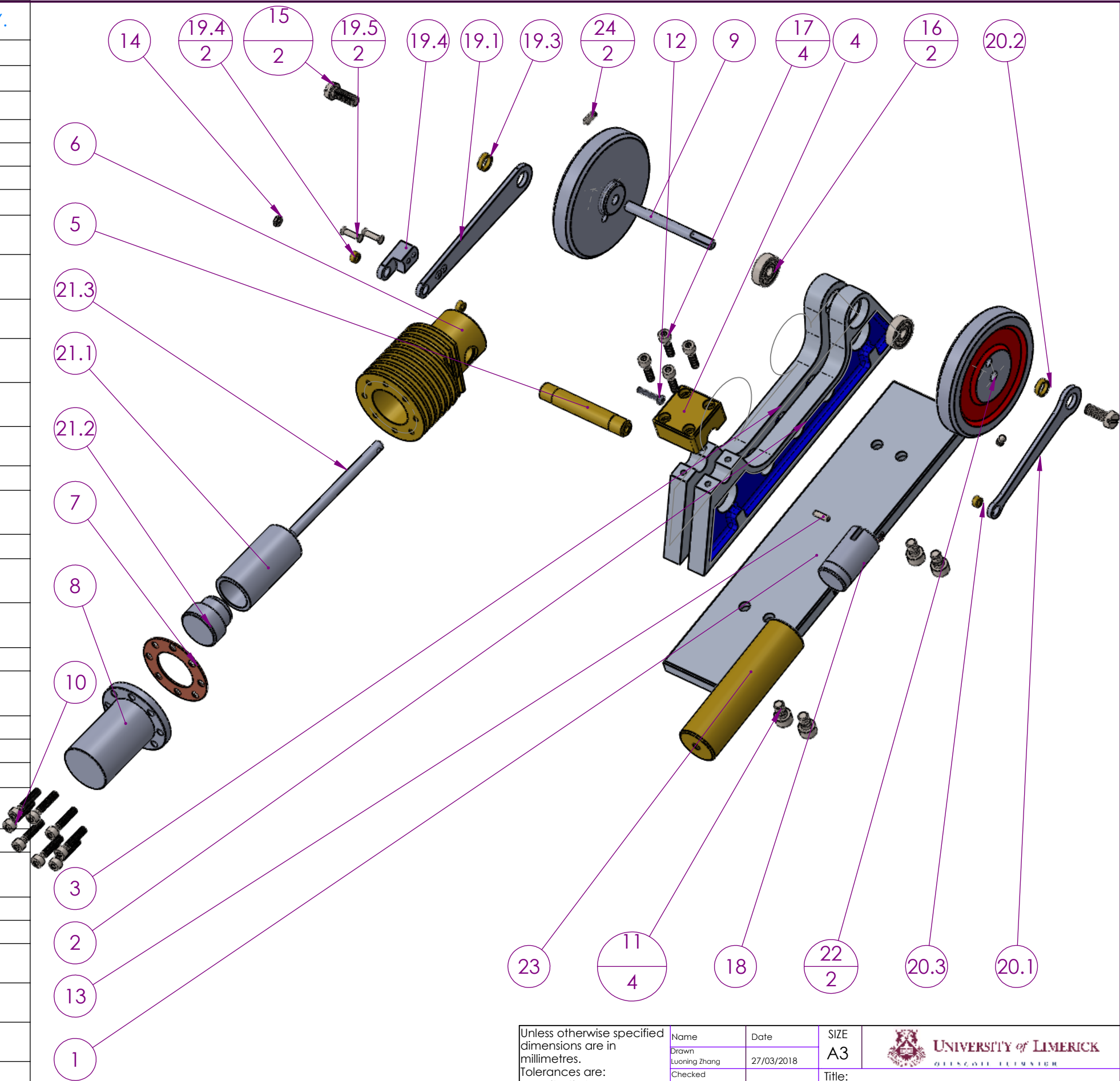
REV.


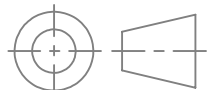
Scale: 1:2

Sheet 3 of

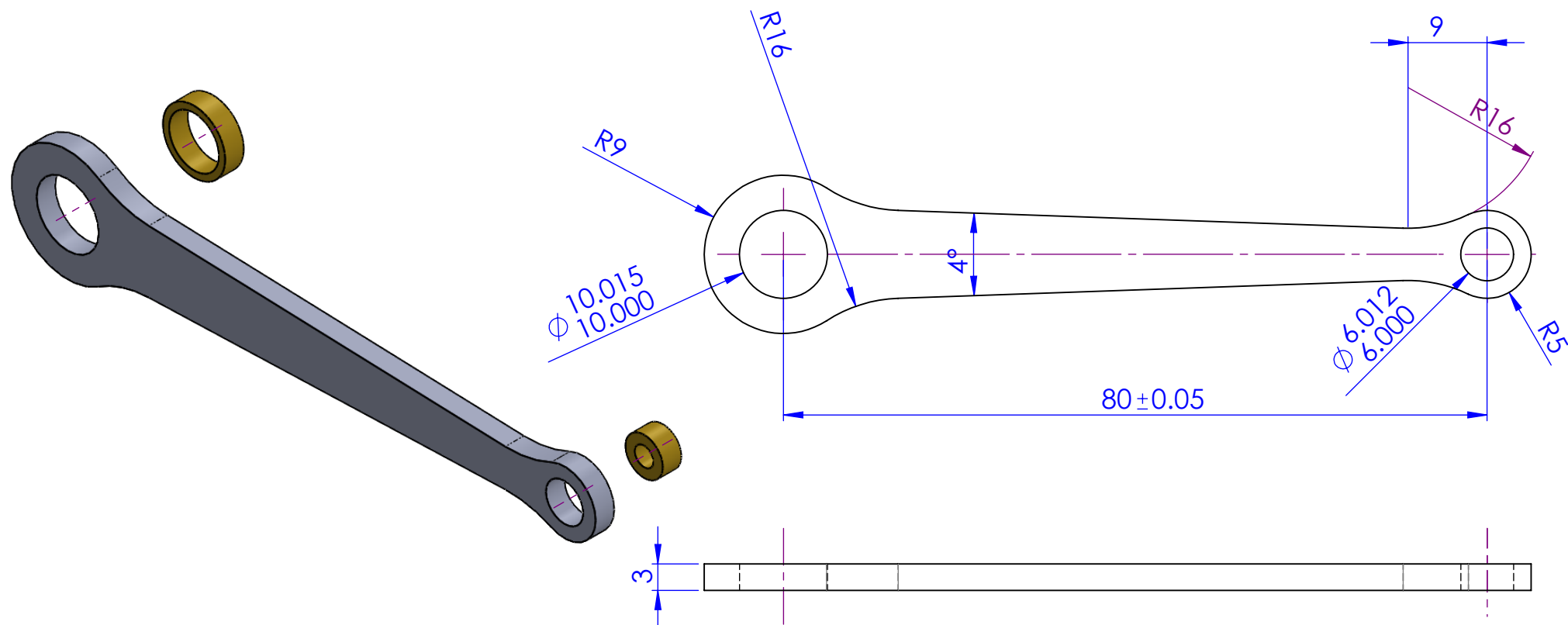
18

ITEM NO.	PART NUMBER	MATERIAL	QTY.
1	BASE PLATE	1060 Alloy	1
2	LEFT SIDE FRAME	1060 Alloy	1
19.4	RIGHT SIDE FRAME	1060 Alloy	1
19.2	CROSS CYLINDER SUPPORT	Brass	1
5	CROSS CYLINDER SUPPORT PIPE	Brass	1
6	COLD CYLINDER	Brass	1
7	GASKET	Copper	1
8	HOT CYLINDER	Plain Carbon Steel	1
9	FLYWHEEL SHAFT	Plain Carbon Steel	1
10	BS EN ISO 4762 M4 x 20 - 20S		8
11	M6 x 10 SOCKET HEAD CAP SCREW		4
12	M3 x 16 SLOTTED CHEESE HEAD SCREW		1
13	M3x 10 PARALLEL PIN		1
14	M3 HEX THIN NUT		1
15	M6 x 16 SLOTTED CHEESE HEAD SCREW		2
16	PRECISION BALL BEARING 20619		2
17	M4 x 16 SOCKET HEAD CAP SCREW		4
18	POWER PISTON	Plain Carbon Steel	1
19	DISPLACER CON-ROD ASSEMBLY		1
19.1	DISPLACER CONROD	Plain Carbon Steel	1
19.2	CON-ROD CLAMP	Brass	1
19.3	BIG END BUSH	Brass	1
19.4	SMALL END BUSH	Brass	2
19.5	3 x 16 DIN 661 COUNTERSUNK RIVET - TYPE B		2
20	POWER CON-ROD ASSEMBLY		1
20.1	POWER CON-ROD	Plain Carbon Steel	1
20.2	BIG END BUSH	Brass	1
20.3	SMALL END BUSH	Brass	1
21	DISPLACER PISTON ASSEMBLY	Plain Carbon Steel	1
21.1	DISPLACEMENT PISTON BODY	Plain Carbon Steel	1
21.2	DISPLACEMENT PISTON CAP	Plain Carbon Steel	1
21.3	DISPLACEMENT PISTON SHAFT	Plain Carbon Steel	1
22	FLYWHEEL	Plain Carbon Steel	2
23	CON-ROD CLAMP	Brass	1
24	BIG END BUSH	Brass	2

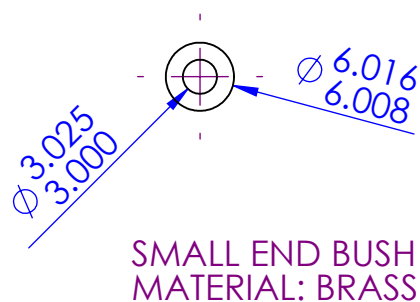
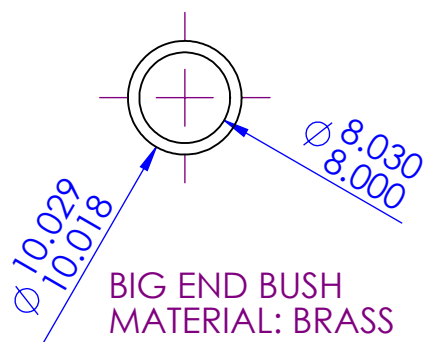


Unless otherwise specified dimensions are in millimetres. Tolerances are: XXX (0 PLS) ±0.5 MM XX.X (1 PLS) ±0.1 MM X.XX (2 PLS) ±0.03 MM .XXX (3 PLS) ±0.007 MM UNLESS OTHERWISE NOTED  ANGLE TOLERANCE ±0°30', UNLESS NOTED	Name		Date	SIZE	 <b>UNIVERSITY of LIMERICK</b> <small>QUINCY LIMERICK</small>	
	Drawn Luoning Zhang		27/03/2018	A3		
	Checked			Title:		
	DO NOT SCALE DRAWING			STIRLING ENGINE PROJECT		
	THIRD ANGLE PROJECTION					
Sheet Name: Exploded View				DWG. NO.	Material:	Weight: g
				REV.	Scale: 1:2.5	Sheet 4 of





POWER CON-ROD - MATERIAL: PLAIN CARBON STEEL



Unless otherwise specified  
dimensions are in  
millimetres.


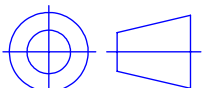
Tolerances are:

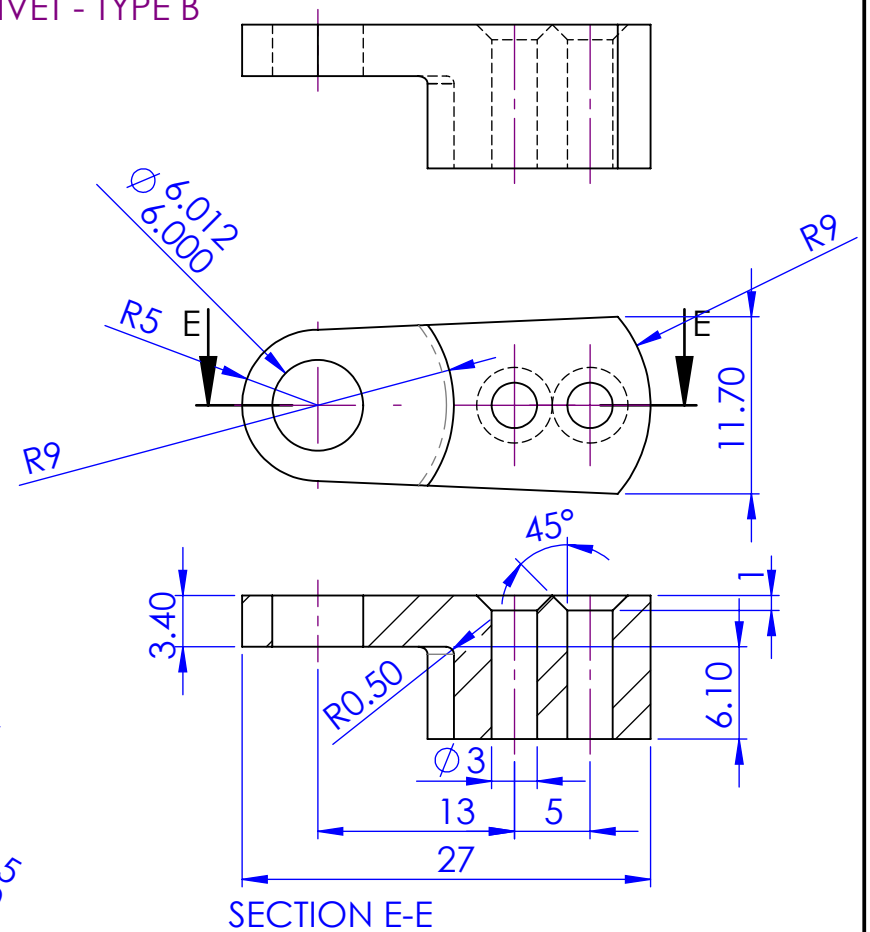
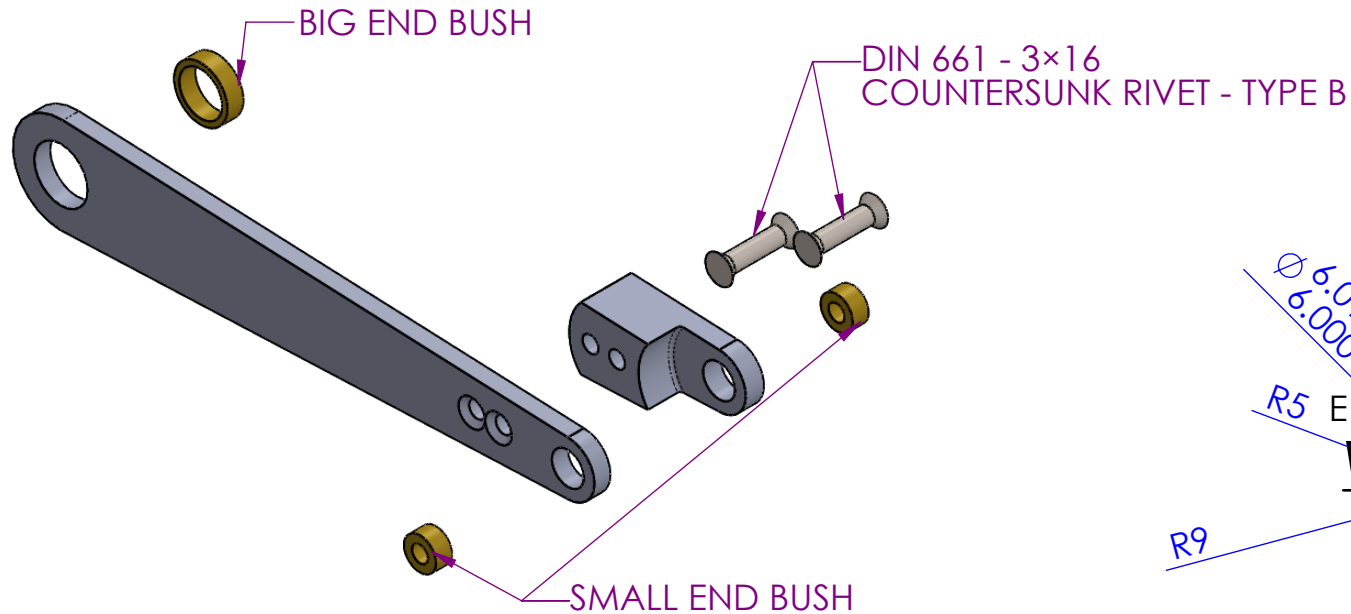
XXX (0 PLS) ±0.5 MM  
XX.X (1 PLS) ±0.1 MM  
X.XX (2 PLS) ±0.03 MM  
.XXX (3 PLS) ±0.007 MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE ±0°30',  
UNLESS NOTED

Sheet Name:

5

Name		Date	SIZE A4		UNIVERSITY of LIMERICK QUINSCOLE LIMERICK
Drawn Luoning Zhang		27/03/2018			
Checked			Title:		
DO NOT SCALE DRAWING		STIRING ENGINE PROJECT 1			
THIRD ANGLE PROJECTION					
					
DWG. NO.		Material:		Weight: g	
REV.		Scale: 1.5:1		Sheet 5 of	



Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM  
XX.X (1 PLS)  $\pm 0.1$  MM  
X.XX (2 PLS)  $\pm 0.03$  MM  
.XXX (3 PLS)  $\pm 0.007$  MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

Sheet Name:

6

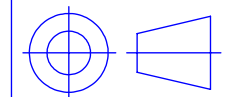
Name  
Luoning Zhang

Date  
27/03/2018

Checked

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



SIZE  
A4



UNIVERSITY of LIMERICK  
QUINCY LIMERICK

Title:

DISPLACER CON-ROD ASSEMBLY

DWG. NO.

Material:

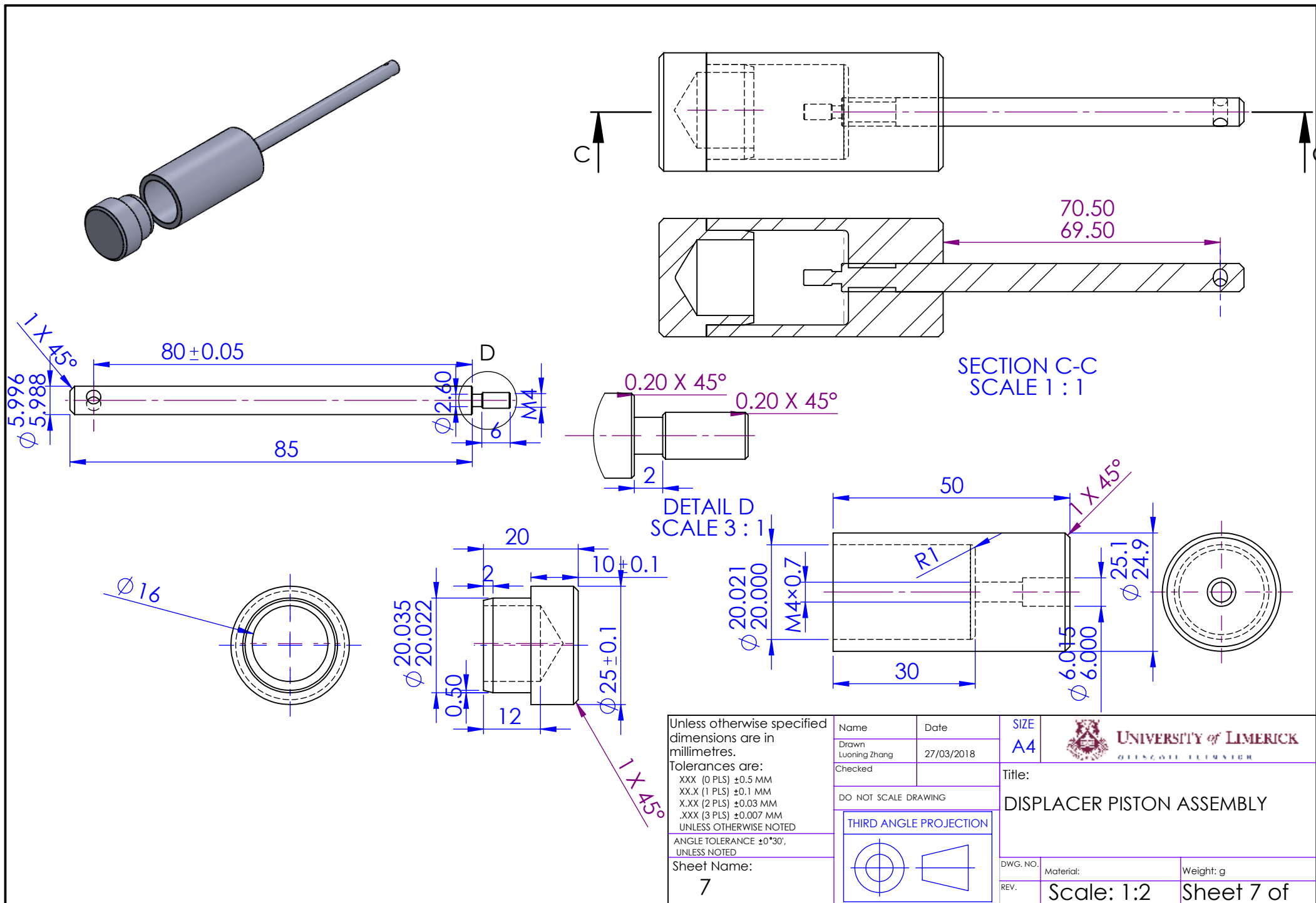
Weight: g

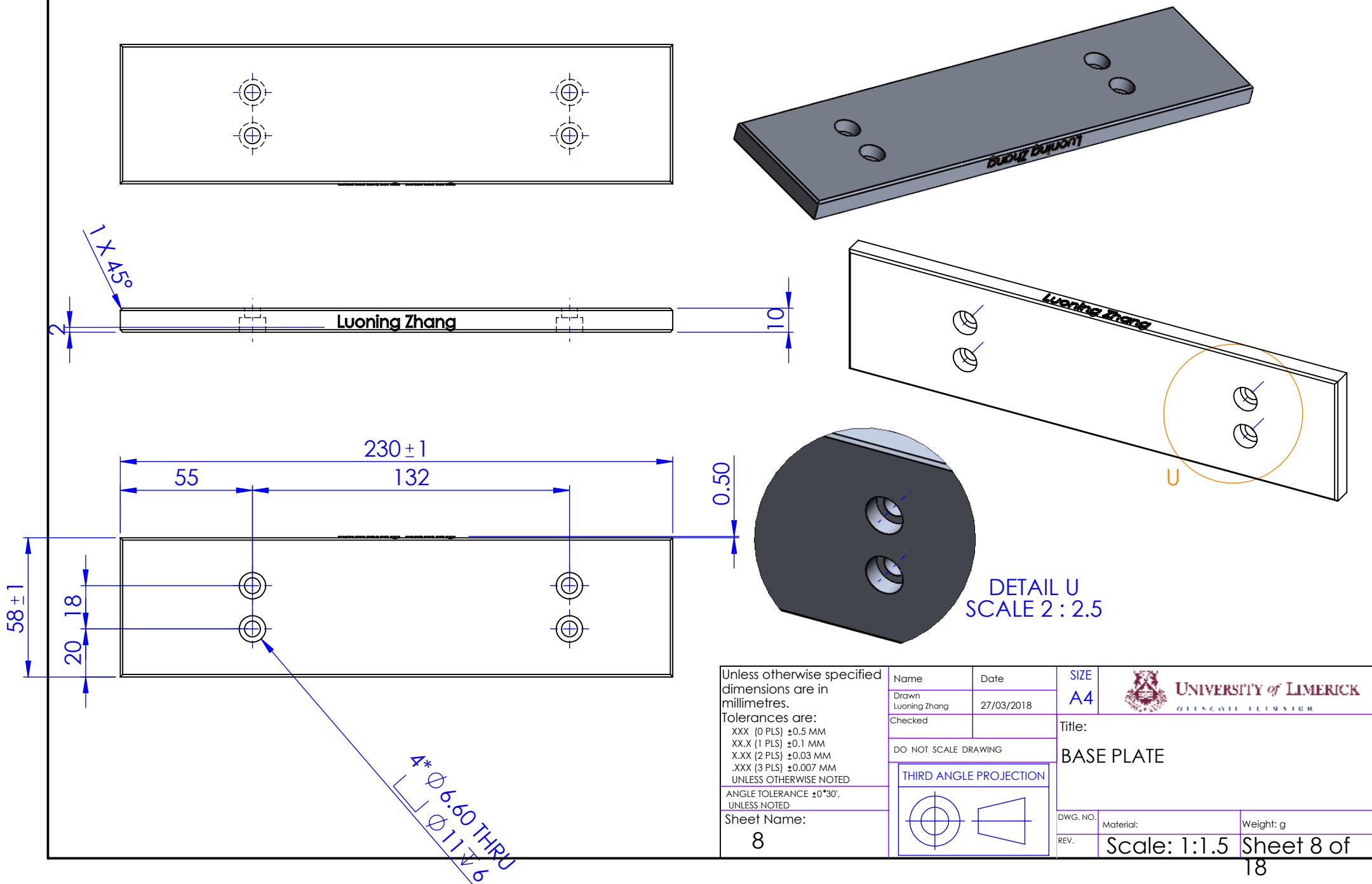
REV.

Scale: 2:1

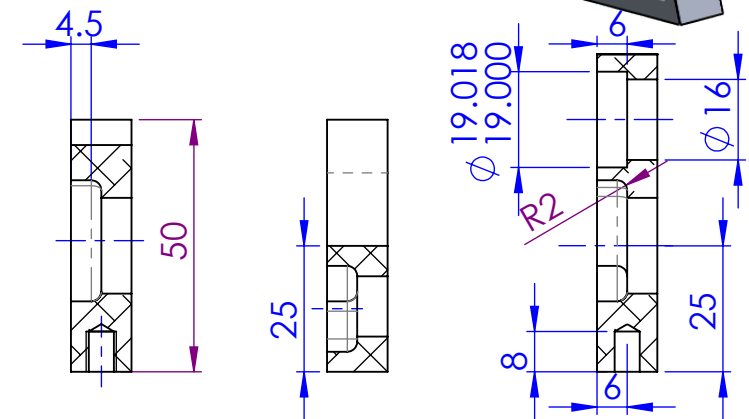
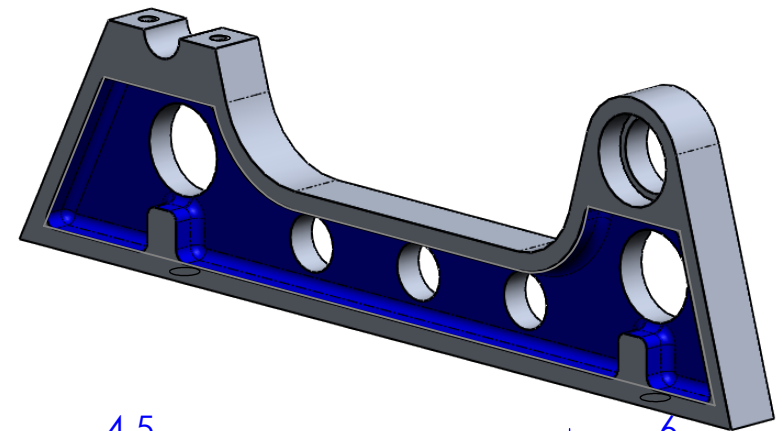
Sheet 6 of

18







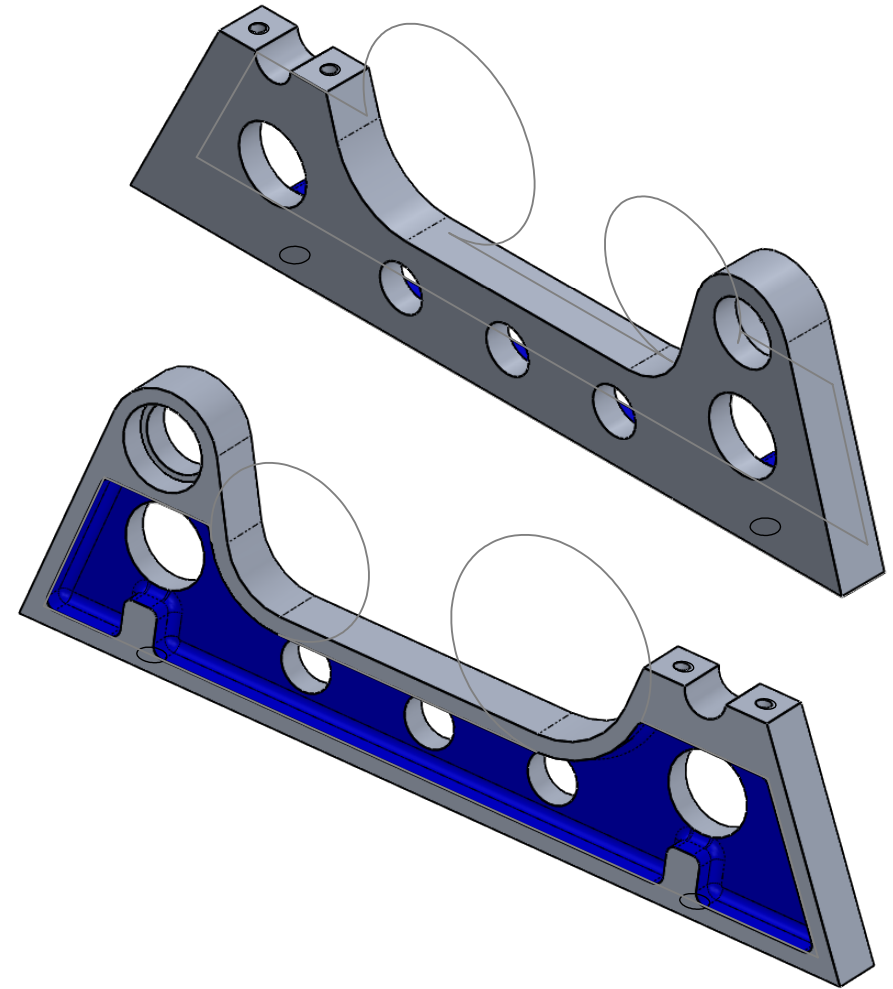
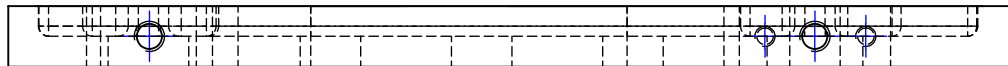
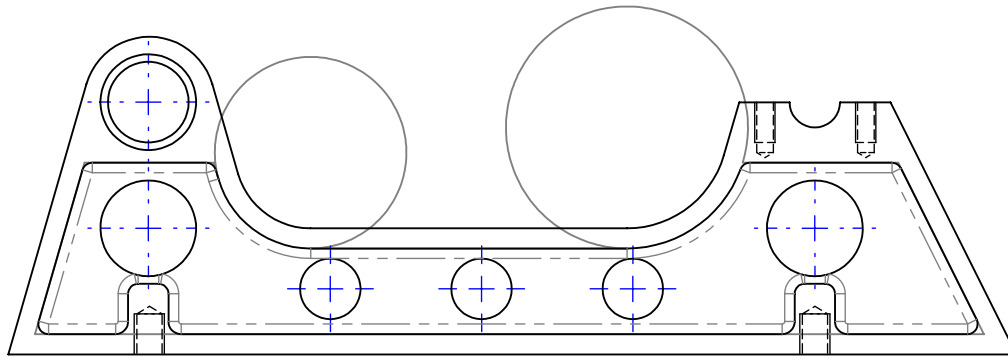
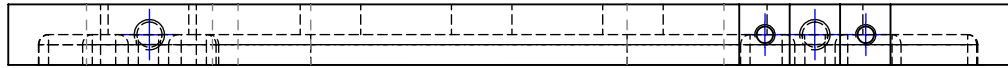


SECTION P-P

ALL UNSPECIFIED FILLETS TO BE R2

9

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Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM  
XX.X (1 PLS)  $\pm 0.1$  MM  
X.XX (2 PLS)  $\pm 0.03$  MM  
.XXX (3 PLS)  $\pm 0.007$  MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

Sheet Name:

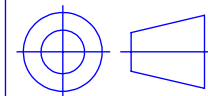
10

Name  
Drawn  
Luoning Zhang  
Checked

Date  
27/03/2018

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



SIZE  
A4



UNIVERSITY of LIMERICK  
QUINSCOLE TOWN VILLAGE

Title:

RIGHT DISE FRAME

DWG. NO.

Material:

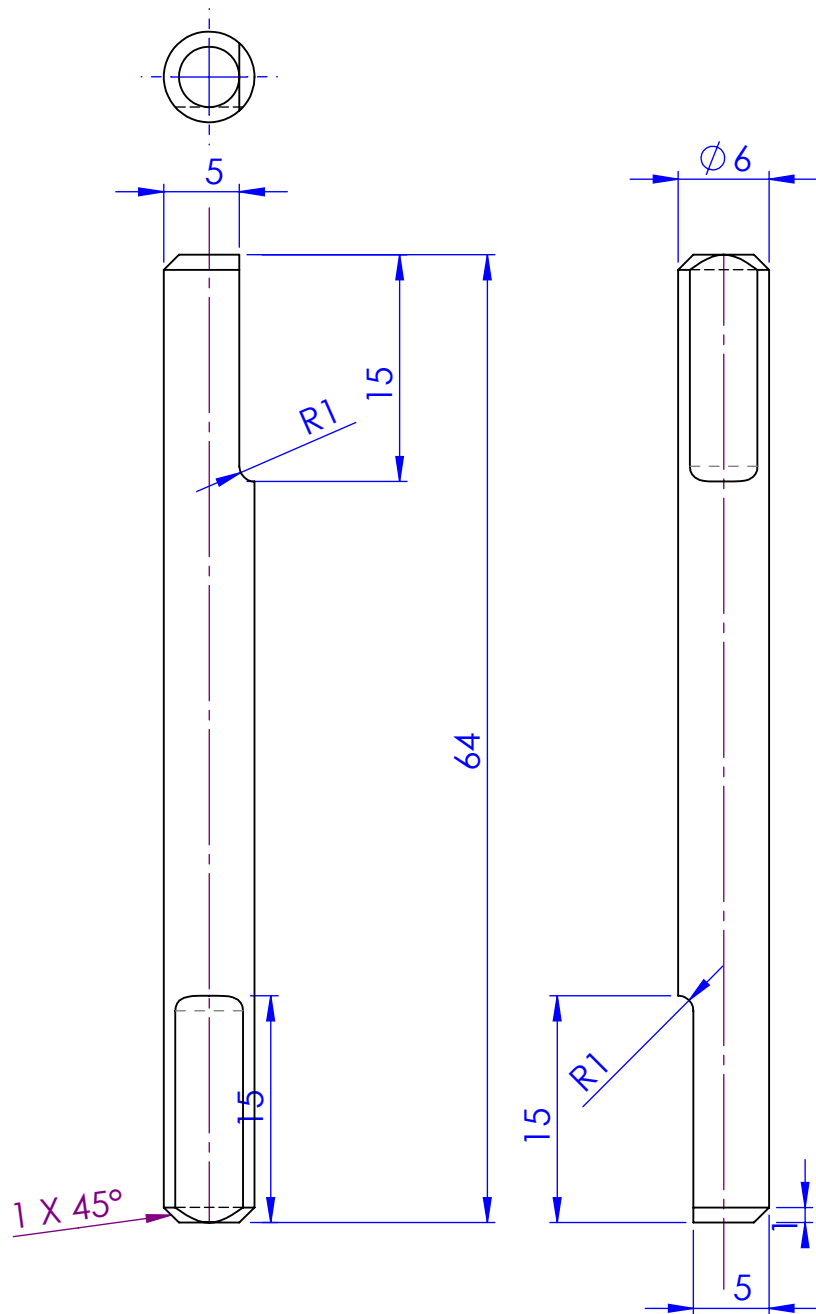
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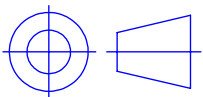
REV.

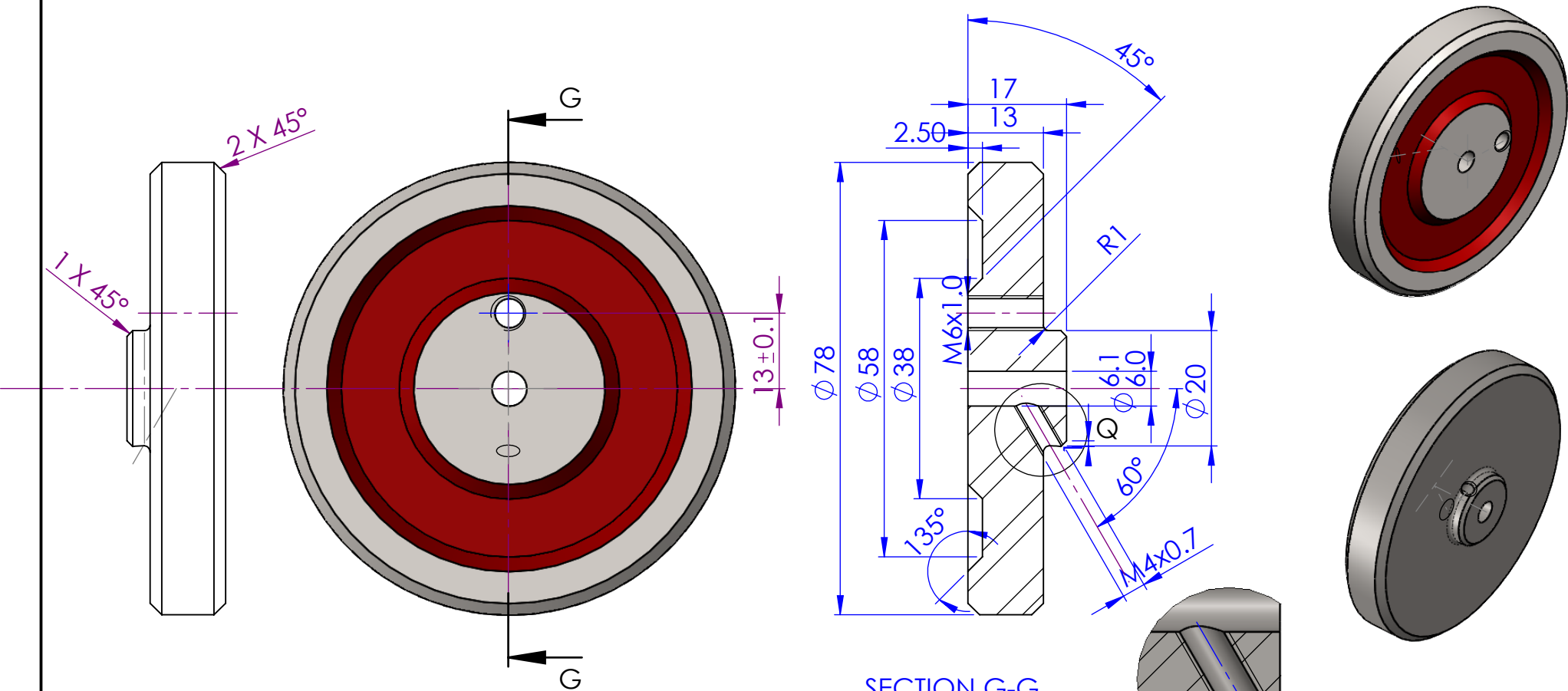
Scale: 1:1.5

Sheet 10 of

18


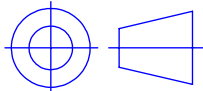


Unless otherwise specified dimensions are in millimetres. Tolerances are: XXX (0 PLS) ±0.5 MM XX.X (1 PLS) ±0.1 MM X.XX (2 PLS) ±0.03 MM .XXX (3 PLS) ±0.007 MM UNLESS OTHERWISE NOTED ANGLE TOLERANCE ±0°30', UNLESS NOTED Sheet Name: 11	Name	Date	SIZE A4	 UNIVERSITY of LIMERICK QUINCY LIMERICK
	Drawn Luoning Zhang	27/03/2018		
	Checked		Title:	
	DO NOT SCALE DRAWING		FLYING SHAFT	
	THIRD ANGLE PROJECTION			
				
	DWG. NO.	Material:	Weight: g	
	REV.	Scale: 2:1	Sheet 11 of 18	



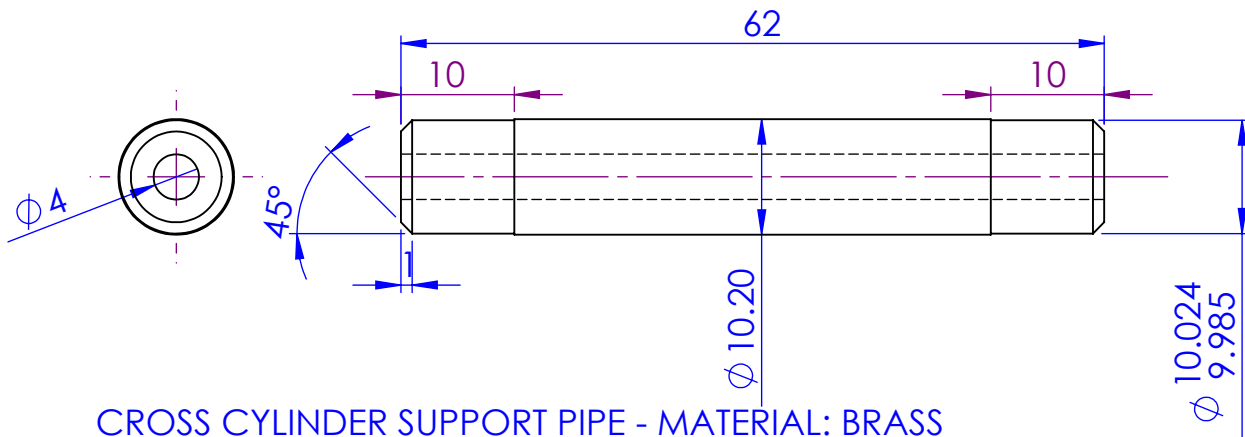
SECTION G-G

DETAIL Q  
SCALE 2:1

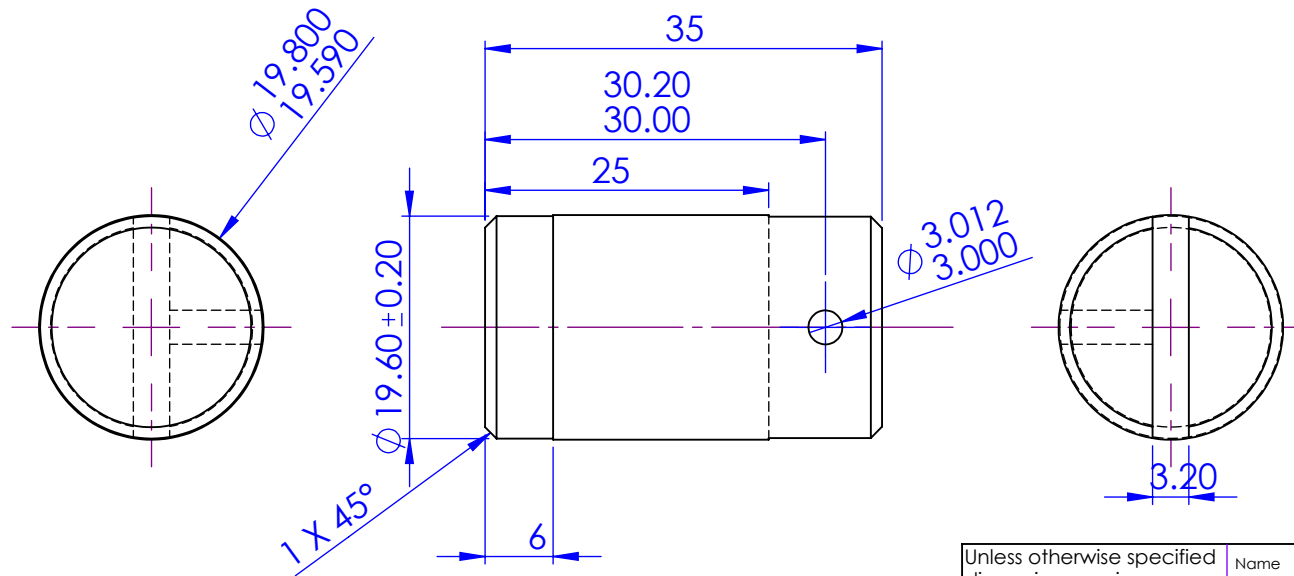
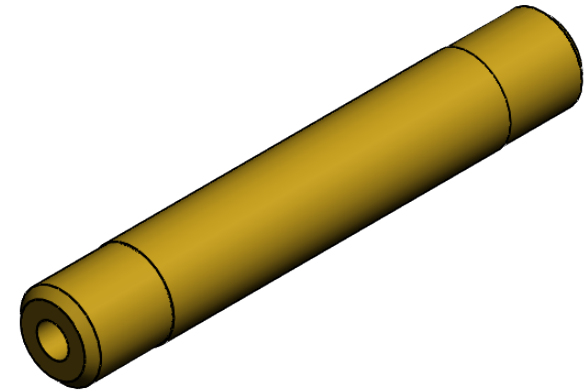
Unless otherwise specified dimensions are in millimetres. Tolerances are: XXX (0 PLS) ±0.5 MM XX.X (1 PLS) ±0.1 MM X.XX (2 PLS) ±0.03 MM .XXX (3 PLS) ±0.007 MM UNLESS OTHERWISE NOTED ANGLE TOLERANCE ±0°30', UNLESS NOTED Sheet Name: 12	Name	Date	SIZE A4	 <b>UNIVERSITY of LIMERICK</b> <small>QUINCY LIMERICK</small>	
	Drawn Luoning Zhang	27/03/2018			
	Checked		Title:  FLYING WHEEL		
	DO NOT SCALE DRAWING				
	THIRD ANGLE PROJECTION				
		DWG. NO.	Material:	Weight: g	
		REV.	Scale: 1:1	Sheet 12 of 18	



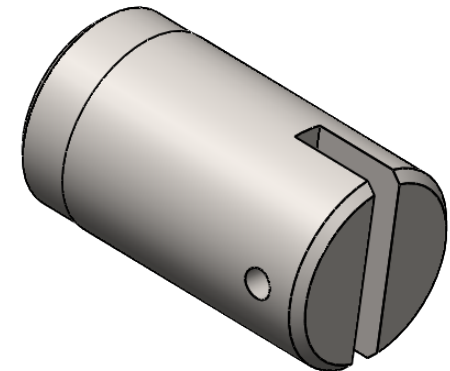




CROSS CYLINDER SUPPORT PIPE - MATERIAL: BRASS



POWER PISTON - MATERIAL: PLAIN CARBON STEEL



Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM  
XX.X (1 PLS)  $\pm 0.1$  MM  
X.XX (2 PLS)  $\pm 0.03$  MM  
.XXX (3 PLS)  $\pm 0.007$  MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

Sheet Name:

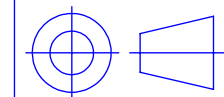
14

Name  
Luoning Zhang  
Checked

Date  
27/03/2018

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



SIZE  
A4



UNIVERSITY of LIMERICK  
QUINCOLE LUMINER

Title:

CROSS CYLINDER SUPPORT PIPE &  
POWER PISTON

DWG. NO.

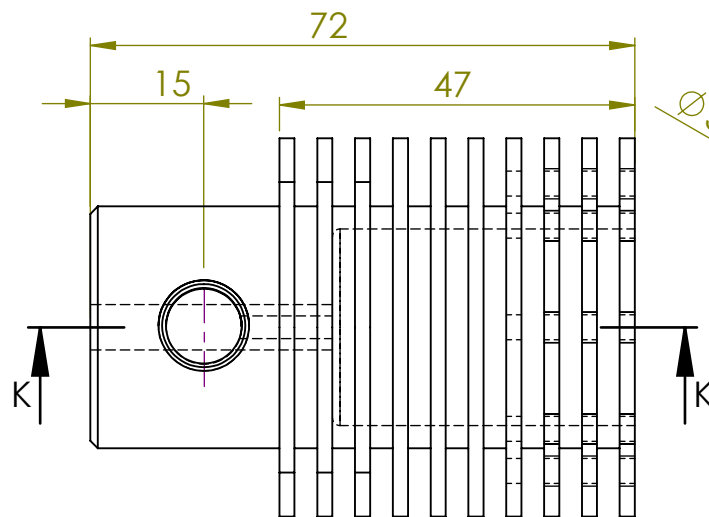
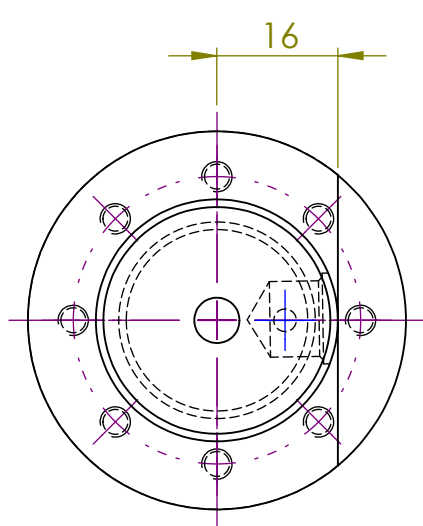
Material:

Weight: g

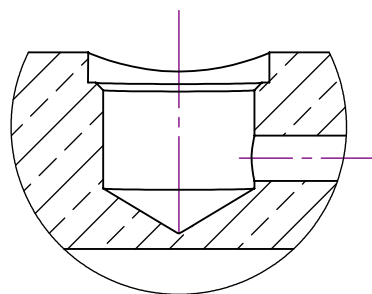
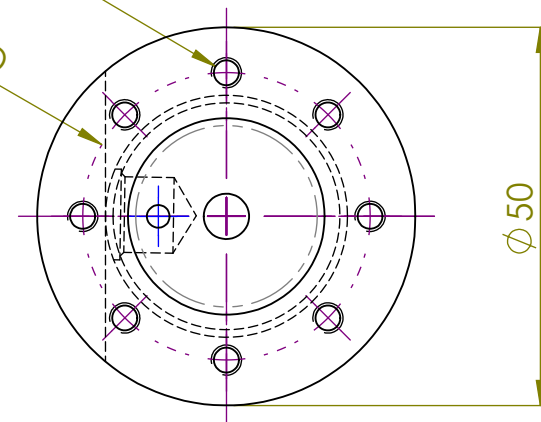
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Scale: 1.5:1

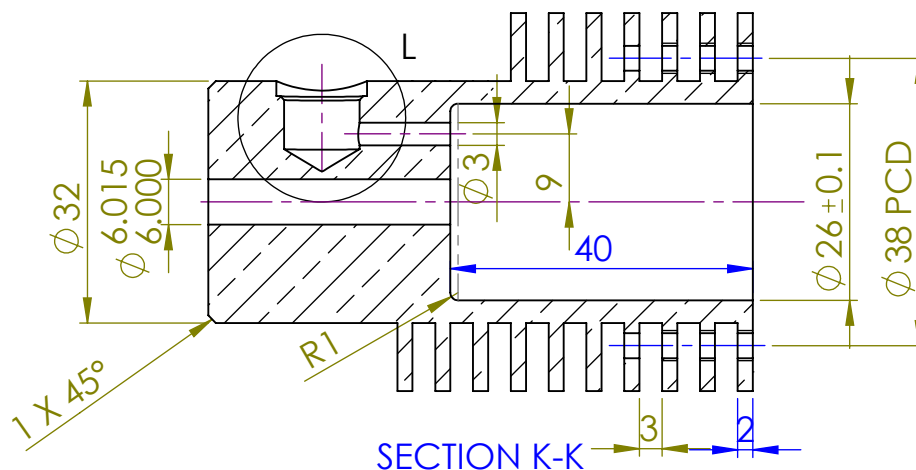
Sheet 14 of



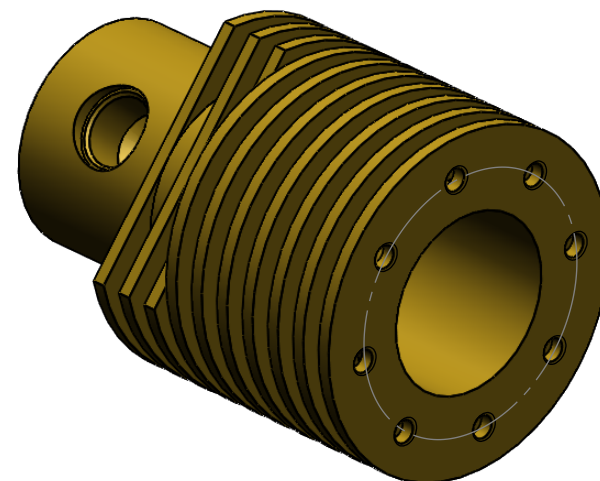
M4x0.7 - 6H  $\nabla$  15  
EQUALLY SPACED ON 38 PCD



DETAIL L  
SCALE 2 : 1



SECTION K-K



Unless otherwise specified  
dimensions are in  
millimetres.

Tolerances are:

XXX (0 PLS)  $\pm 0.5$  MM  
XX.X (1 PLS)  $\pm 0.1$  MM  
X.XX (2 PLS)  $\pm 0.03$  MM  
.XXX (3 PLS)  $\pm 0.007$  MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE  $\pm 0^{\circ}30'$ ,  
UNLESS NOTED

Sheet Name:

15

Name  
Luoning Zhang  
Checked

Date  
27/03/2018

SIZE  
A4



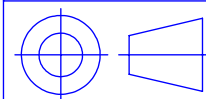
UNIVERSITY of LIMERICK  
QUINCOLE LIMERICK

Title:

COLD CYLINDER

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



DWG. NO.

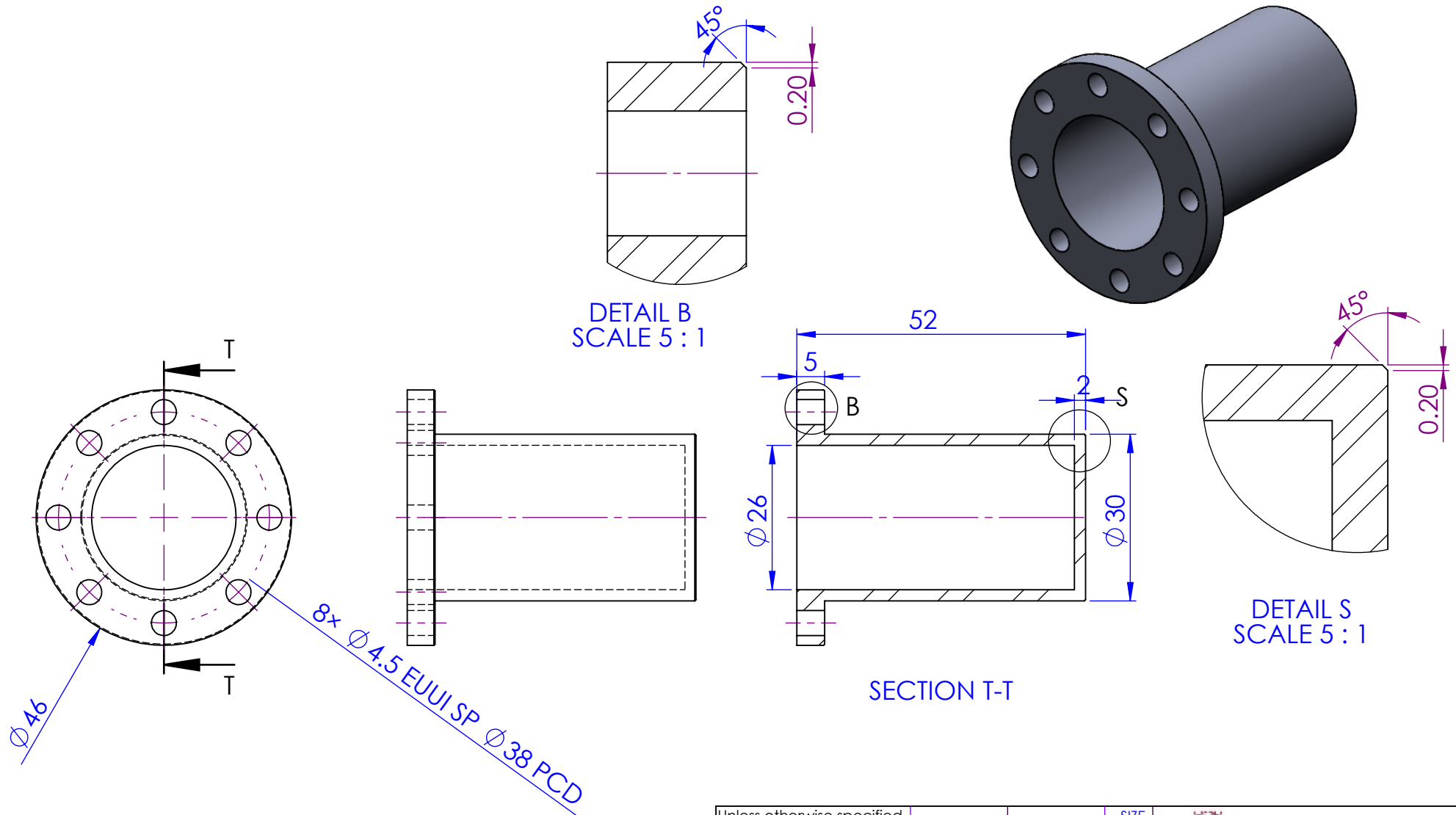
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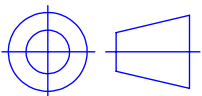
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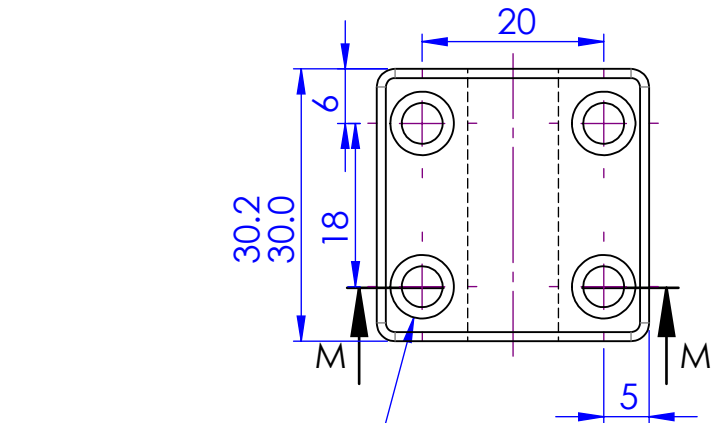
REV.

Scale: 1:1

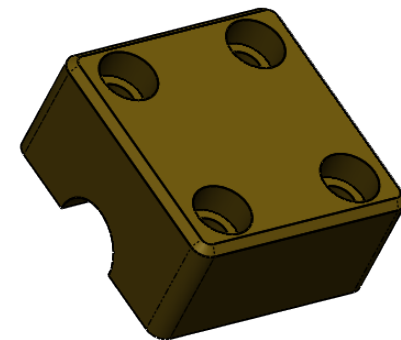
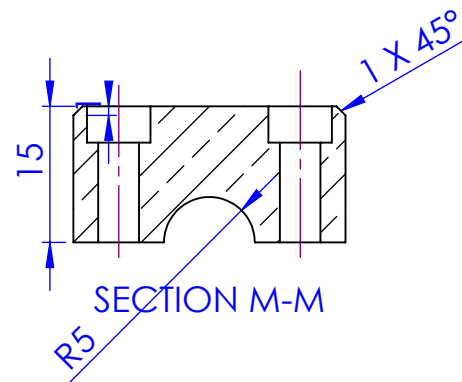
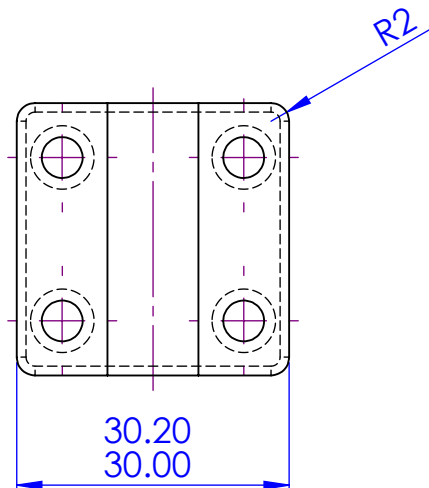
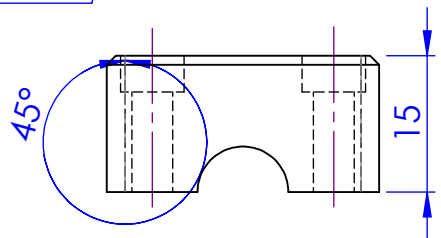
Sheet 15 of


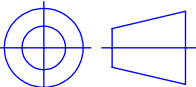


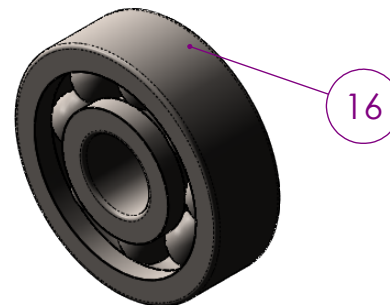
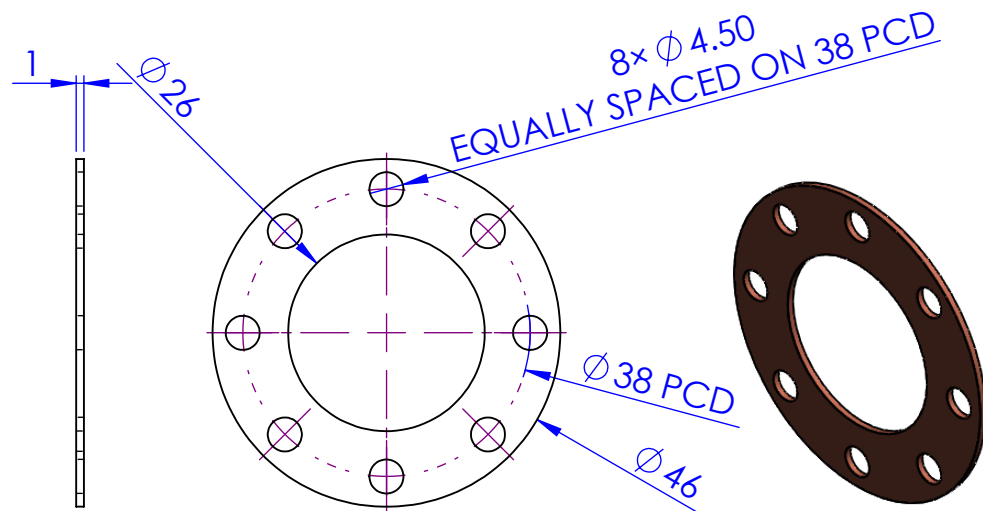
Unless otherwise specified dimensions are in millimetres. Tolerances are: XXX (0 PLS) ±0.5 MM XX.X (1 PLS) ±0.1 MM X.XX (2 PLS) ±0.03 MM .XXX (3 PLS) ±0.007 MM UNLESS OTHERWISE NOTED ANGLE TOLERANCE ±0°30', UNLESS NOTED Sheet Name: 16	Name	Date	SIZE A4	 UNIVERSITY of LIMERICK QUINSCOLE LIMERICK	
	Drawn Luoning Zhang	27/03/2018			
	Checked		Title:  HOT CYLINDER		
	DO NOT SCALE DRAWING				
	THIRD ANGLE PROJECTION 				
	DWG. NO.	Material:		Weight: g	
	REV.	Scale: 1:1		Sheet 16 of 18	



4 x  $\varnothing$  4.50 THRU ALL  
 $\square$   $\varnothing$  7  $\nabla$  4



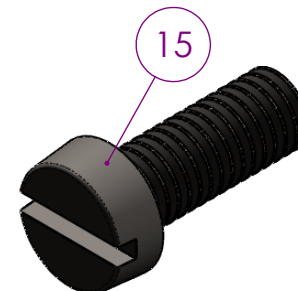
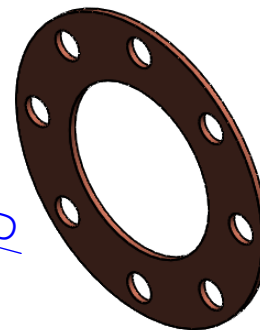
Unless otherwise specified dimensions are in millimetres. Tolerances are: XXX (0 PLS) ±0.5 MM XX.X (1 PLS) ±0.1 MM X.XX (2 PLS) ±0.03 MM .XXX (3 PLS) ±0.007 MM UNLESS OTHERWISE NOTED ANGLE TOLERANCE ±0°30', UNLESS NOTED Sheet Name: 17	Name	Date	SIZE A4	 <b>UNIVERSITY of LIMERICK</b> <small>QUINSCOLE LIMERICK</small>
	Drawn Luoning Zhang	27/03/2018		
	Checked		Title:  CROSS CYLINDER SUPPORT	
	DO NOT SCALE DRAWING			
	THIRD ANGLE PROJECTION			
				
		DWG. NO.	Material:	Weight: g
		REV.	Scale: 1.2:1	Sheet 17 of



INSTRUMENT PRECISION BALL BEARING 20619 2 OFF



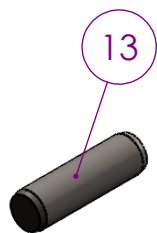
M4×10 SOCKET GRUB SCREW CONE POINT 2 OFF



M6×16 SLOTTED CHEESE HEAD SCREW 2 OFF



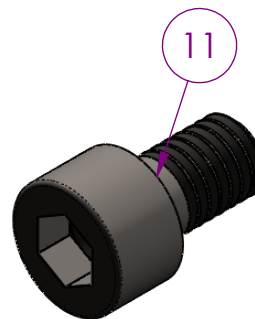
M3 HEXAGONAL THIN NUT



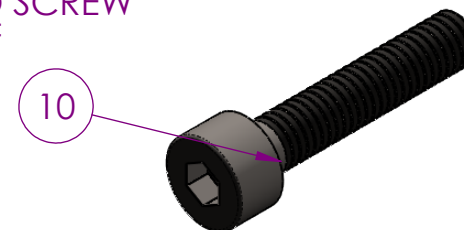
M3×10 PARALLEL PIN



M4×16 SOCKET HEAD CAP SCREW 4 OFF



M6×10 SOCKET HEAD CAP SCREW 4 OFF



M4×20 SOCKET HEAD CAP SCREW 8 OFF

Unless otherwise specified dimensions are in millimetres.



Tolerances are:

XXX (0 PLS) ±0.5 MM  
XX.X (1 PLS) ±0.1 MM  
X.XX (2 PLS) ±0.03 MM  
.XXX (3 PLS) ±0.007 MM  
UNLESS OTHERWISE NOTED

ANGLE TOLERANCE ±0°30',  
UNLESS NOTED

Sheet Name:

18

Name	Date	SIZE	 <b>UNIVERSITY of LIMERICK</b> <small>QUINCY LIMERICK</small>
Drawn Luoning Zhang	27/03/2018	A4	
Checked		Title:	
DO NOT SCALE DRAWING		STIRING ENGINE PROJECT 1 AND TOOLBOX PARTS	
THIRD ANGLE PROJECTION			
		DWG. NO.	Weight: g
		REV.	Scale: 2:1
		Sheet 18 of 18	