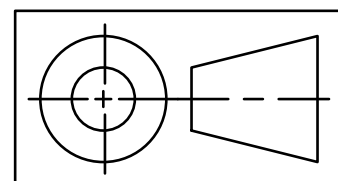
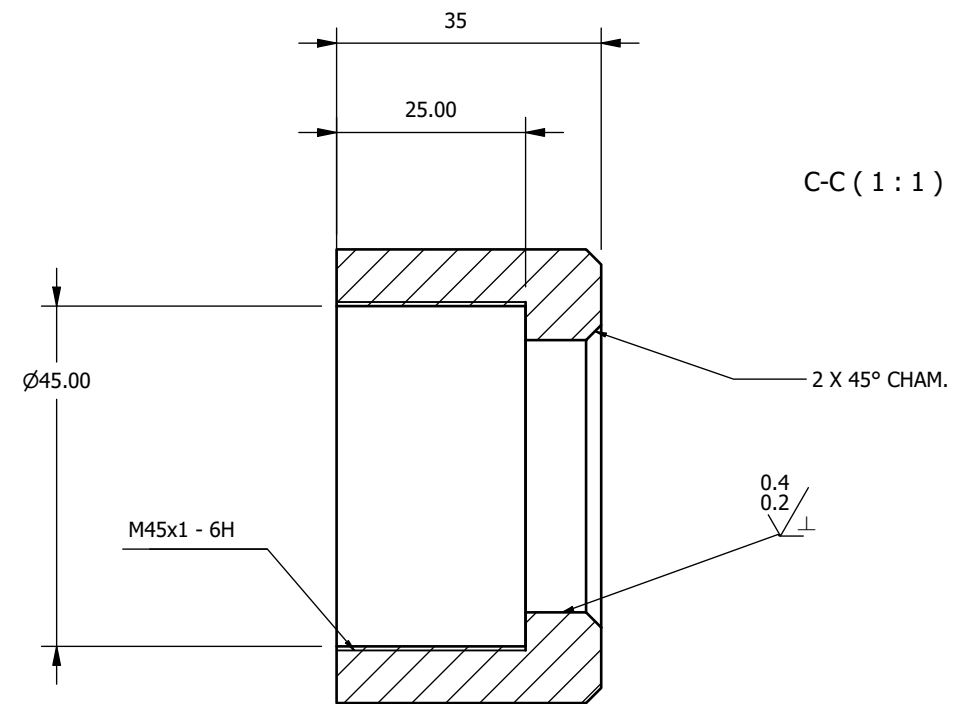
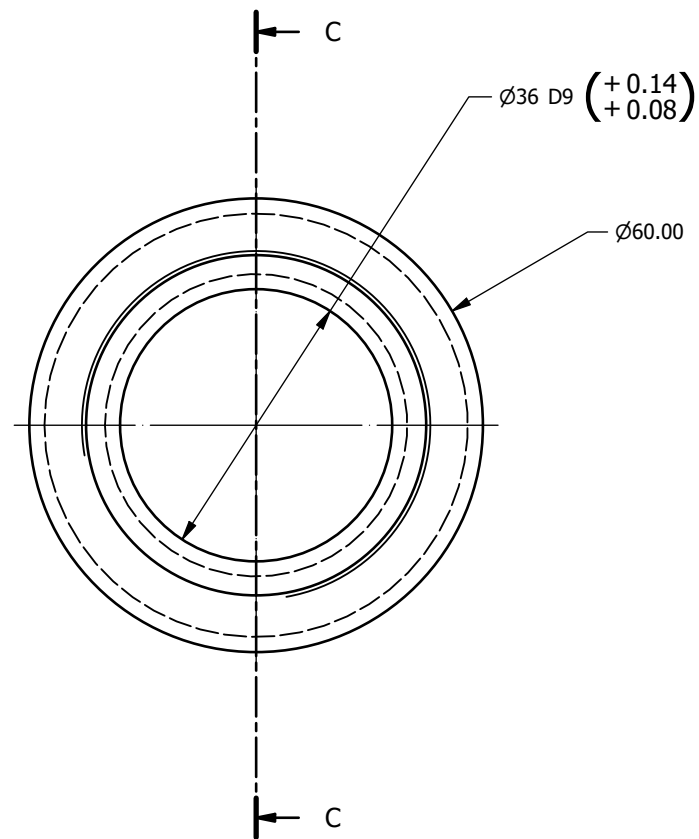


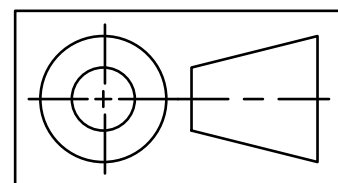
DO NOT SCALE ALL DIMENSIONS IN MM



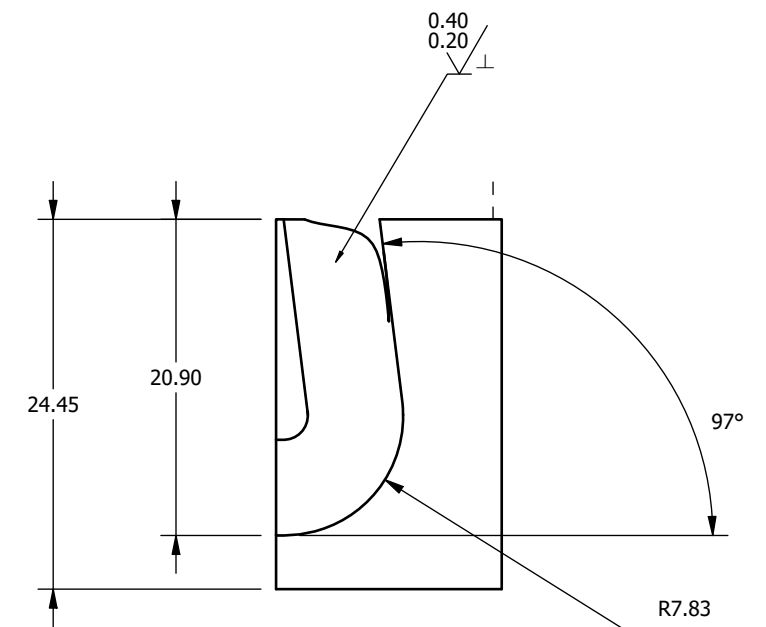
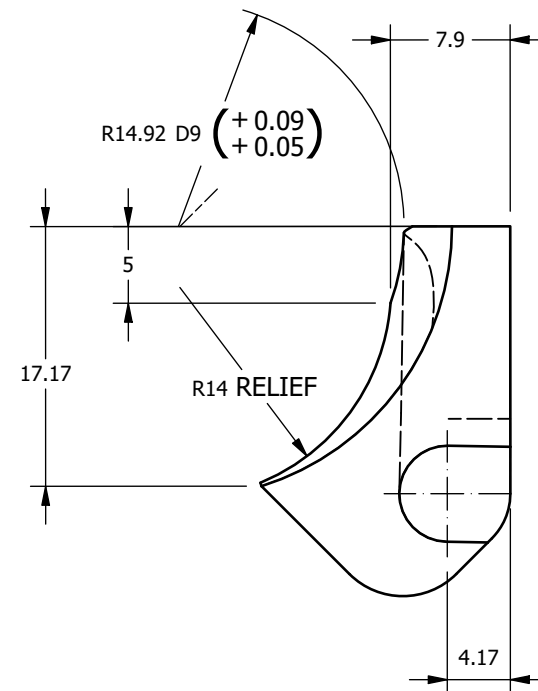
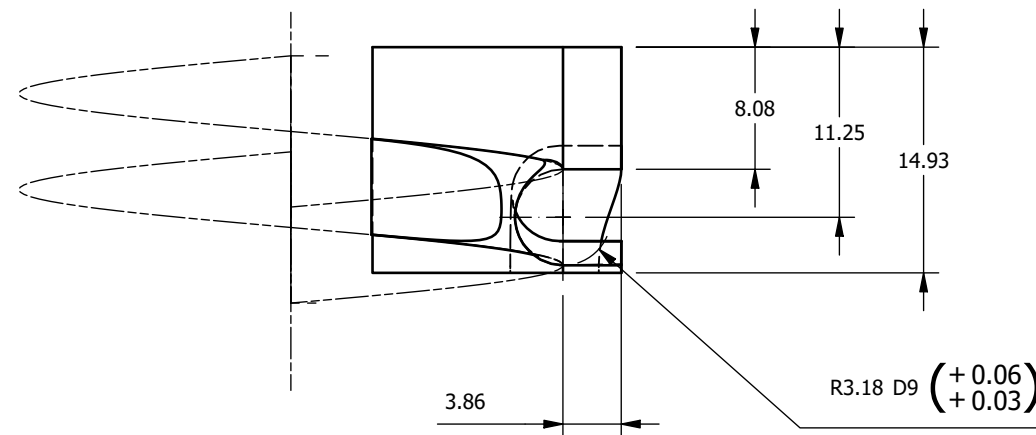
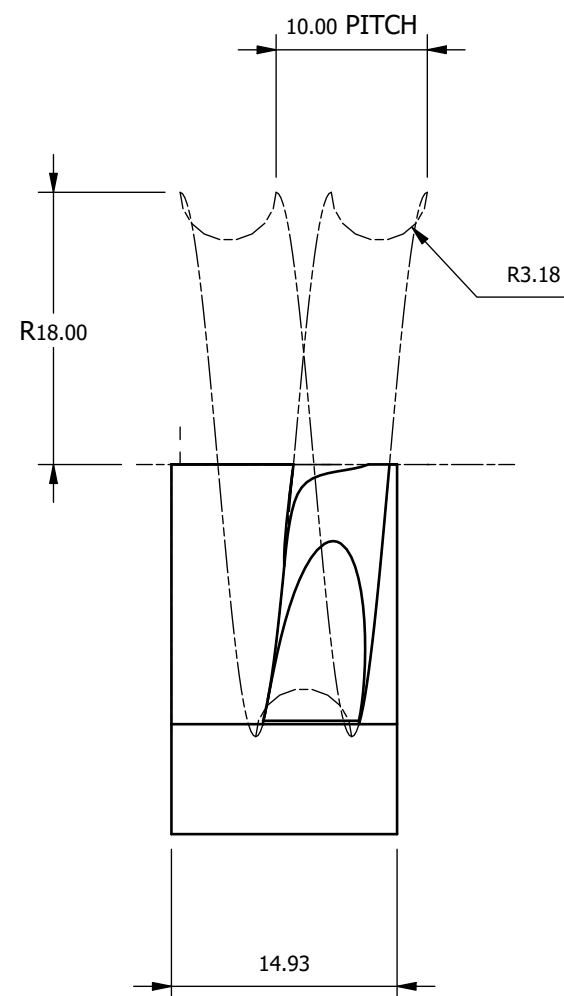
<u>UNLESS OTHERWISE SPECIFIED</u> X ± 0.5            ANGLES ± 0.5 DEG  X.X ± 0.3  X.XX ± 0.1  X.XXX ± 0.05   SURFACE ROUGHNESS Ra1.6µm  SHARP EDGES AND CORNERS R0.3 mm OR 0.3 mm x 45 DEG	DRAWN BY:  TANG KANG NING	CURTIN UNIVERSITY, MALAYSIA		
	DATE:  16/10/2020	REMARKS:		1/13
	CHECKED BY:			
	APPROVED BY:	PART NUMBER:  MCEN4000:B2	DESCRIPTION:  NUT BODY OF THE BALL SCREW	A3
		SCALE:  1 : 2	MATERIAL:  STAINLESS STEEL, AISI 302	



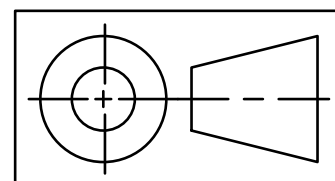
DO NOT SCALE ALL DIMENSIONS IN MM



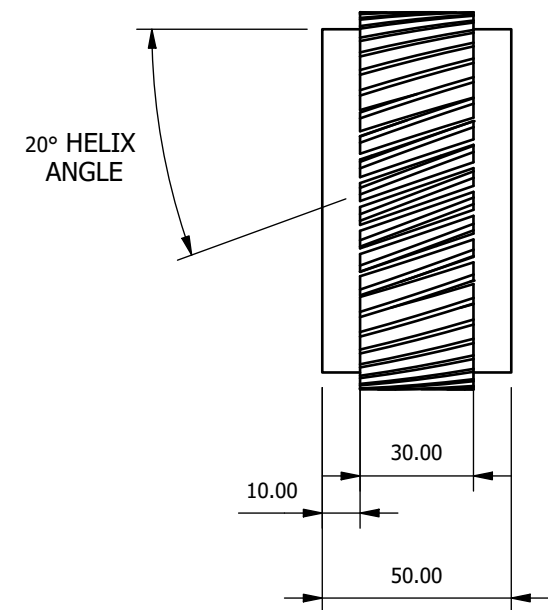
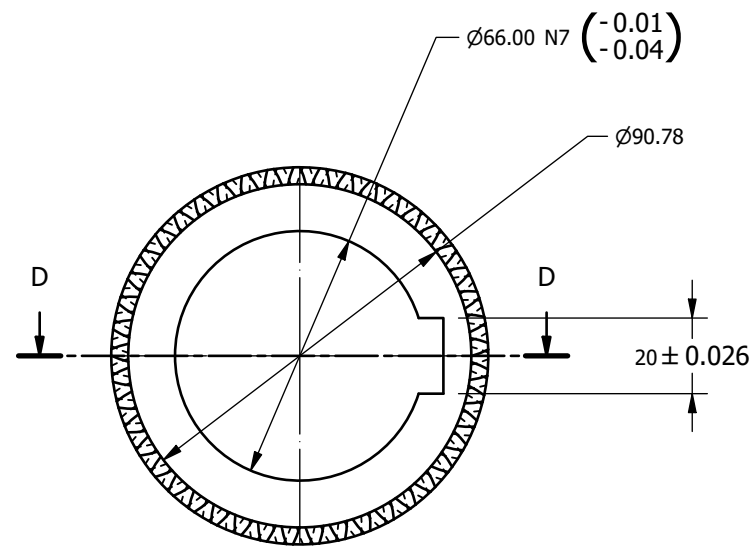
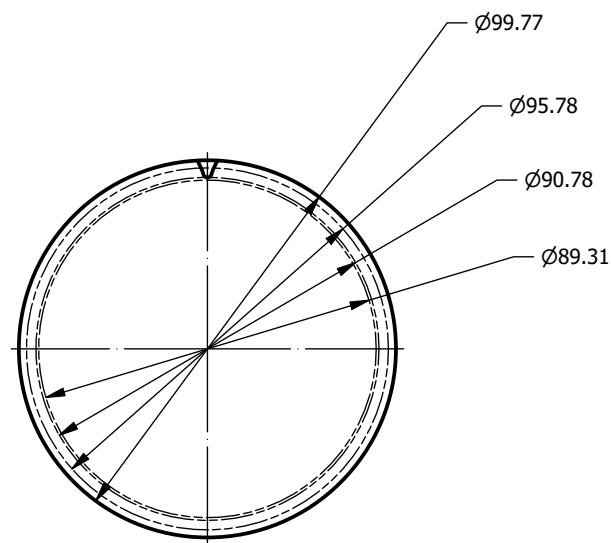
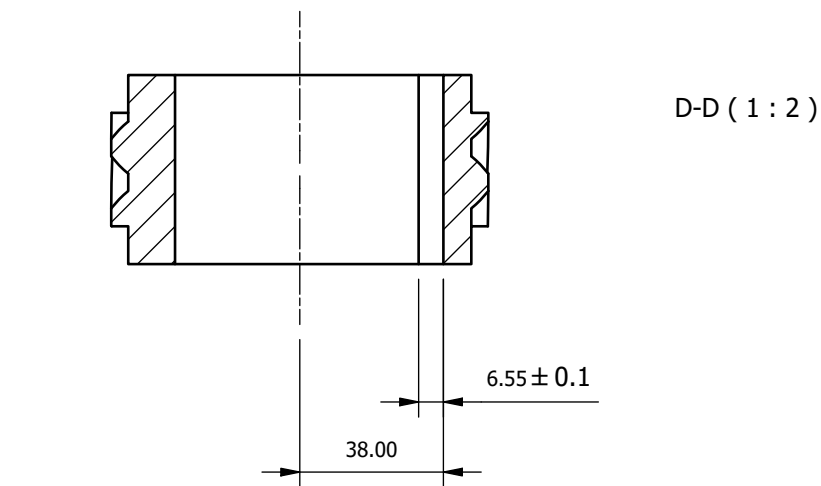
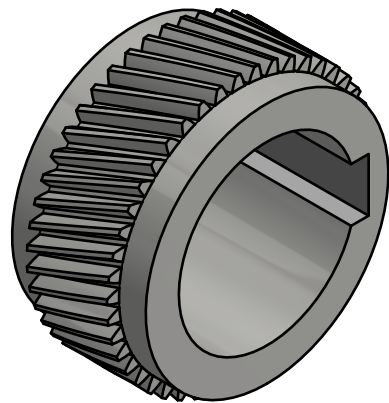
<div>UNLESS OTHERWISE SPECIFIED</div> <div>X ± 0.5      ANGLES ± 0.5 DEG</div> <div>X.X ± 0.3</div> <div>X.XX ± 0.1</div> <div>X.XXX ± 0.05</div> <div>SURFACE ROUGHNESS Ra1.6µm</div> <div>SHARP EDGES AND CORNERS R0.3 mm OR 0.3 mm x 45 DEG</div>	DRAWN BY:	CURTIN UNIVERSITY, MALAYSIA		
	TANG KANG NING			
	DATE:	REMARKS:		
	16/10/2020			
	CHECKED BY:			
APPROVED BY:		PART NUMBER:	DESCRIPTION:	A3
		MCEN4000:B4	RETURN INSERT FASTENER	
		SCALE:	MATERIAL:	
		1 : 1	STAINLESS STEEL, AISI 302	



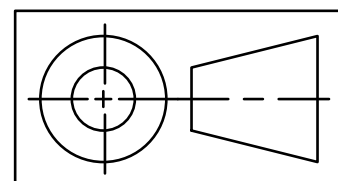
DO NOT SCALE ALL DIMENSIONS IN MM



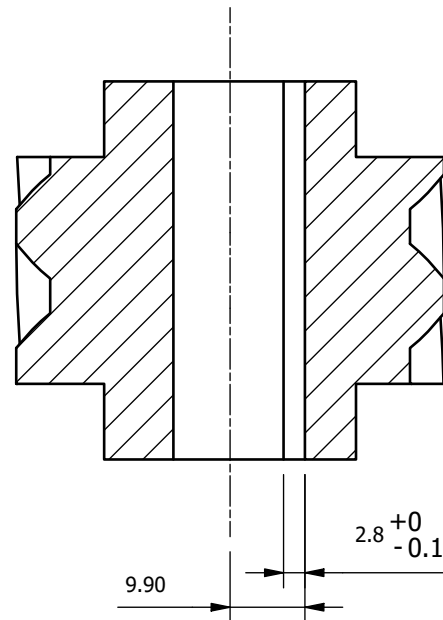
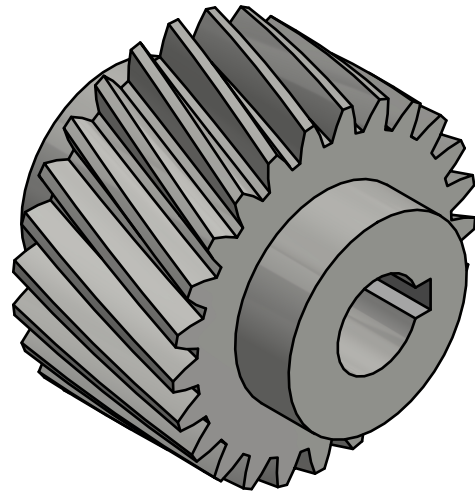
<u>UNLESS OTHERWISE SPECIFIED</u> X ± 0.5            ANGLES ± 0.5 DEG  X.X ± 0.3  X.XX ± 0.1  X.XXX ± 0.05   SURFACE ROUGHNESS Ra1.6µm  SHARP EDGES AND CORNERS R0.3 mm OR 0.3 mm x 45 DEG	DRAWN BY:  TANG KANG NING	CURTIN UNIVERSITY, MALAYSIA		
	DATE:  14/10/2020	REMARKS:		3/13
	CHECKED BY:			
	APPROVED BY:	PART NUMBER:  MCEN4000:B3	DESCRIPTION:  BALL SCREW DEFLECTOR	A3
		SCALE:  2 : 1	MATERIAL:  STAINLESS STEEL, AISI 302	



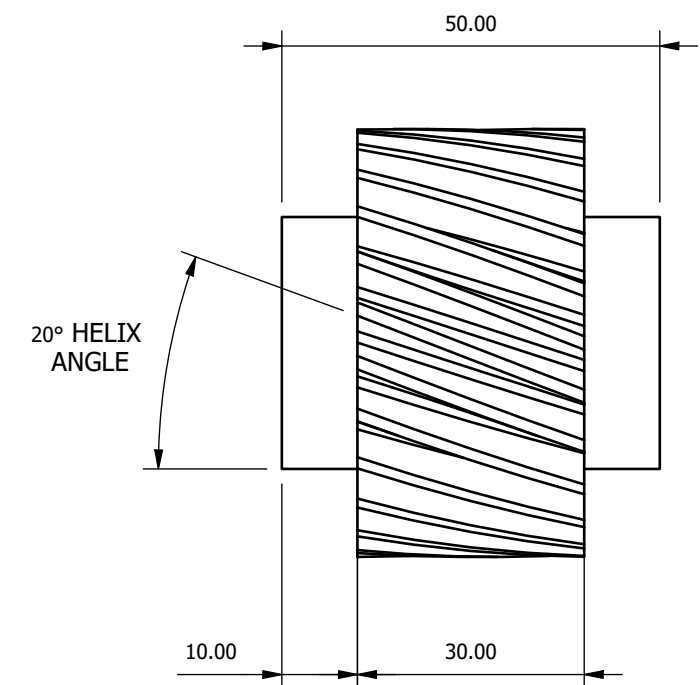
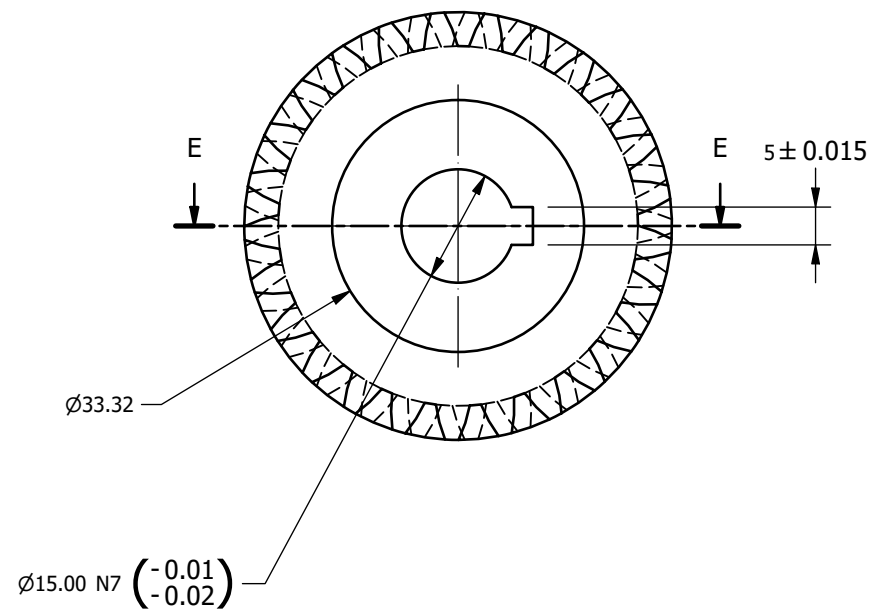
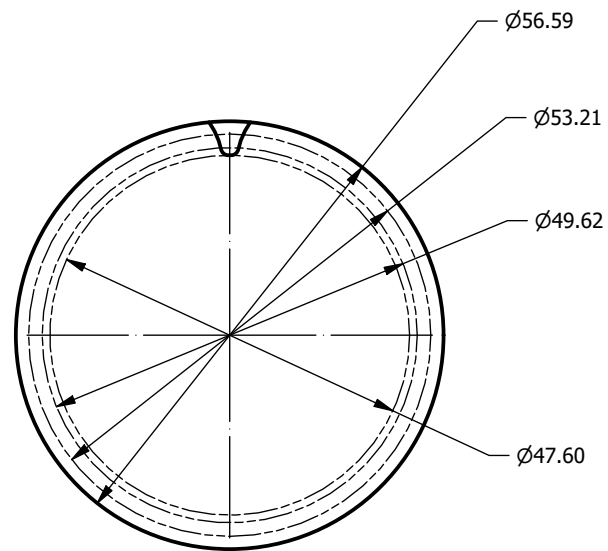
DO NOT SCALE ALL DIMENSIONS IN MM



<div>UNLESS OTHERWISE SPECIFIED</div> <div>X ± 0.5      ANGLES ± 0.5 DEG</div> <div>X.X ± 0.3</div> <div>X.XX ± 0.1</div> <div>X.XXX ± 0.05</div> <div>SURFACE ROUGHNESS Ra1.6µm</div> <div>SHARP EDGES AND CORNERS R0.3 mm OR 0.3 mm x 45 DEG</div>	DRAWN BY:	CURTIN UNIVERSITY, MALAYSIA		
	TANG KANG NING			
	DATE:	REMARKS:		4/13
	20/10/2020			
	CHECKED BY:	PART NUMBER:	DESCRIPTION:	A3
		MCEN4000:G1	GEAR (ATTACHED AT THE NUT)	
APPROVED BY:	SCALE:	MATERIAL:		
	1 : 2	Generic		

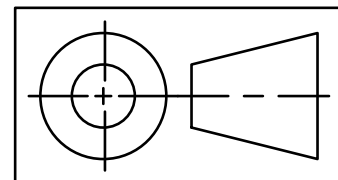


E-E ( 1 : 1 )



DO NOT SCALE

ALL DIMENSIONS IN MM



UNLESS OTHERWISE SPECIFIED

X ± 0.5 ANGLES ± 0.5 DEG

X.X ± 0.3

X.XX ± 0.1

X.XXX ± 0.05

SURFACE ROUGHNESS Ra1.6µm

SHARP EDGES AND CORNERS R0.3 mm OR  
0.3 mm x 45 DEG

DRAWN BY:

TANG KANG NING

DATE:

20/10/2020

CHECKED BY:

APPROVED BY:

CURTIN UNIVERSITY, MALAYSIA

REMARKS:

PART NUMBER:

MCEN4000:G2

DESCRIPTION:

INTERMEDIATE GEAR

SCALE:

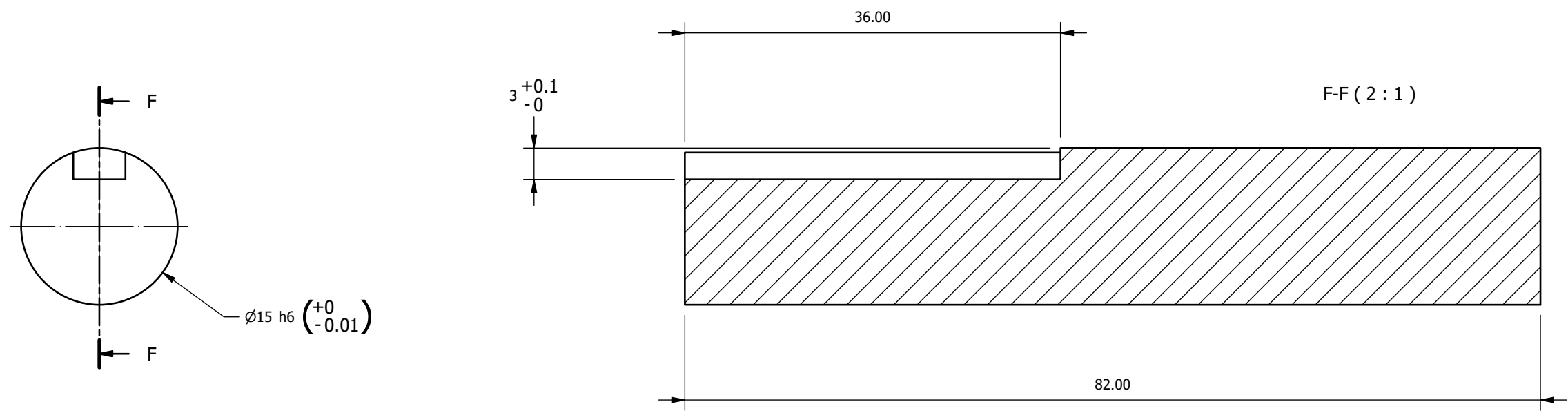
1 : 1

MATERIAL:

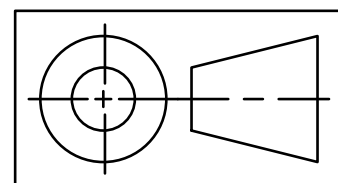
Generic

5/13

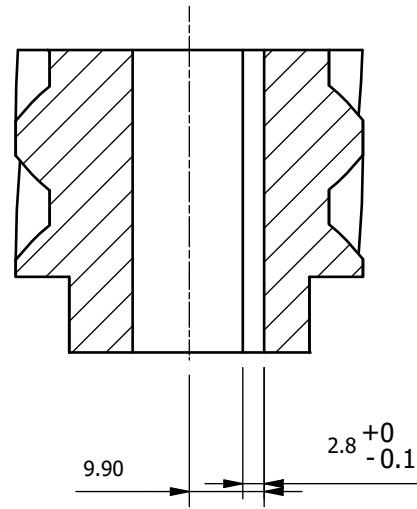
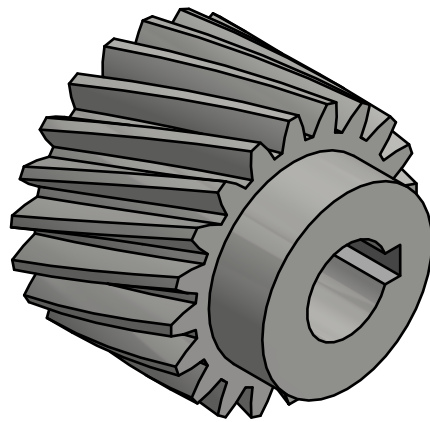
A3



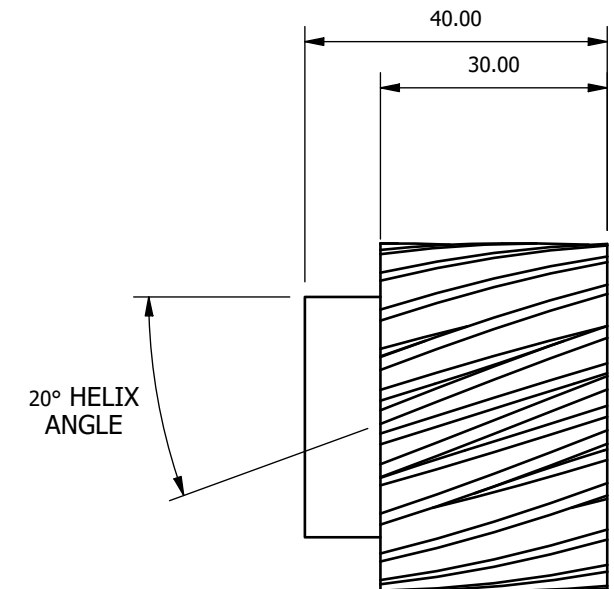
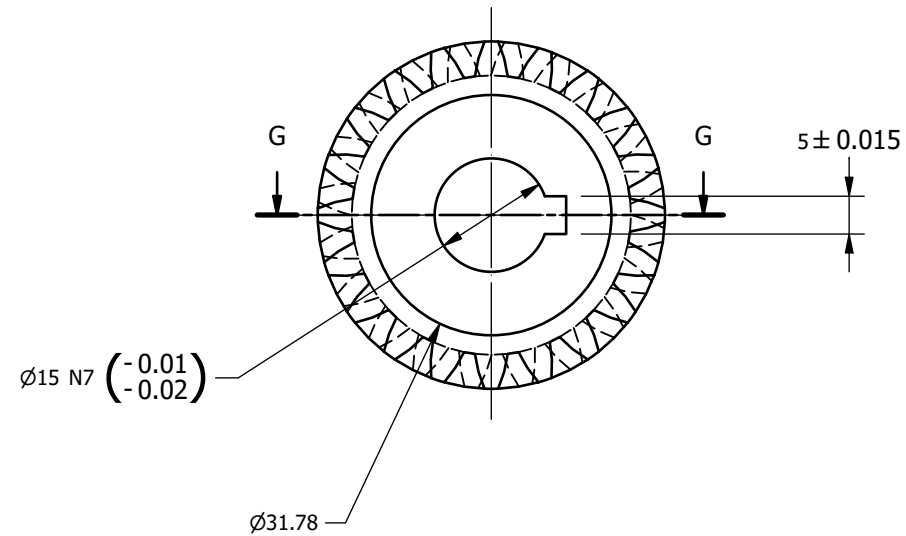
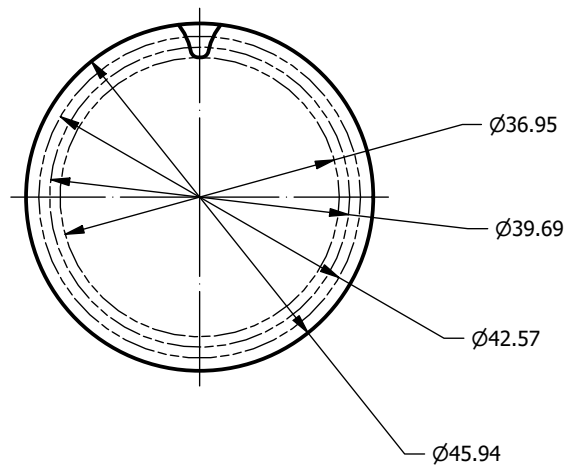
DO NOT SCALE ALL DIMENSIONS IN MM



<div>UNLESS OTHERWISE SPECIFIED</div> <div>X ± 0.5      ANGLES ± 0.5 DEG</div> <div>X.X ± 0.3</div> <div>X.XX ± 0.1</div> <div>X.XXX ± 0.05</div> <div>SURFACE ROUGHNESS Ra1.6µm</div> <div>SHARP EDGES AND CORNERS R0.3 mm OR 0.3 mm x 45 DEG</div>	DRAWN BY:	CURTIN UNIVERSITY, MALAYSIA		
	TANG KANG NING			
	DATE:	REMARKS:		6/13
	18/10/2020			
	CHECKED BY:	PART NUMBER:	DESCRIPTION:	A3
		MCEN4000:G2P	INTERMEDIATE GEAR MOUNTING PIN	
APPROVED BY:	SCALE:	MATERIAL:		
	2 : 1	Generic		

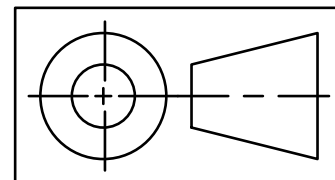


G-G ( 1 : 1 )



DO NOT SCALE

ALL DIMENSIONS IN MM



UNLESS OTHERWISE SPECIFIED

X ± 0.5 ANGLES ± 0.5 DEG

X.X ± 0.3

X.XX ± 0.1

X.XXX ± 0.05

SURFACE ROUGHNESS Ra1.6µm

SHARP EDGES AND CORNERS R0.3 mm OR  
0.3 mm x 45 DEG

DRAWN BY:

TANG KANG NING

DATE:

20/10/2020

CHECKED BY:

APPROVED BY:

CURTIN UNIVERSITY, MALAYSIA

REMARKS:

PART NUMBER:

MCEN4000:G3

DESCRIPTION:

PINION (ATTACHED AT THE MOTOR SHAFT)

SCALE:

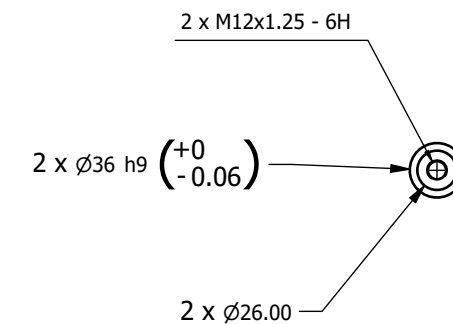
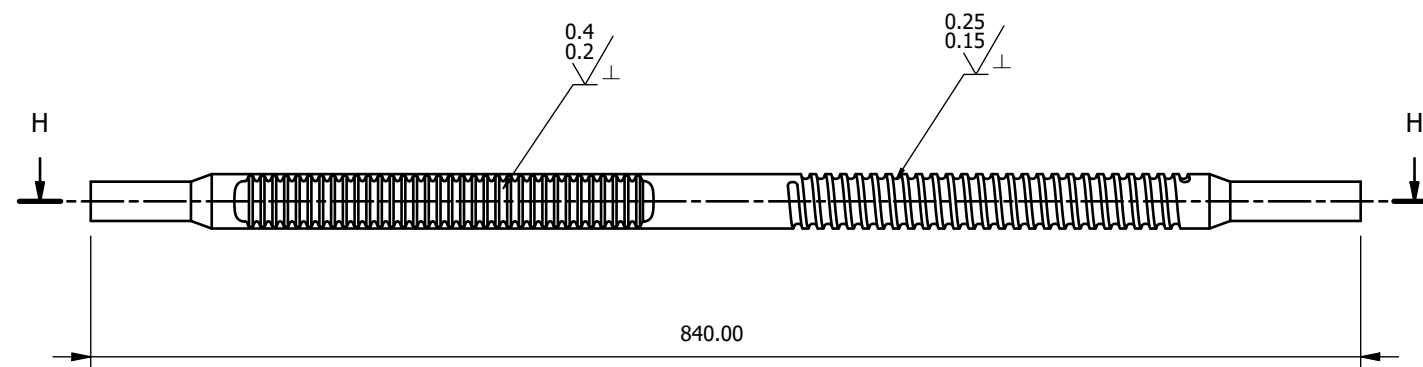
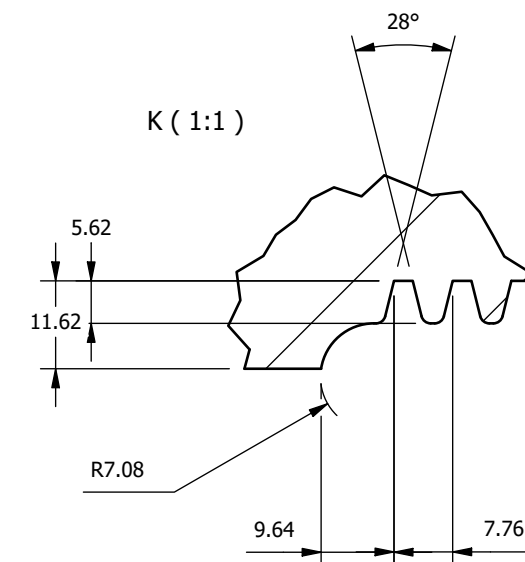
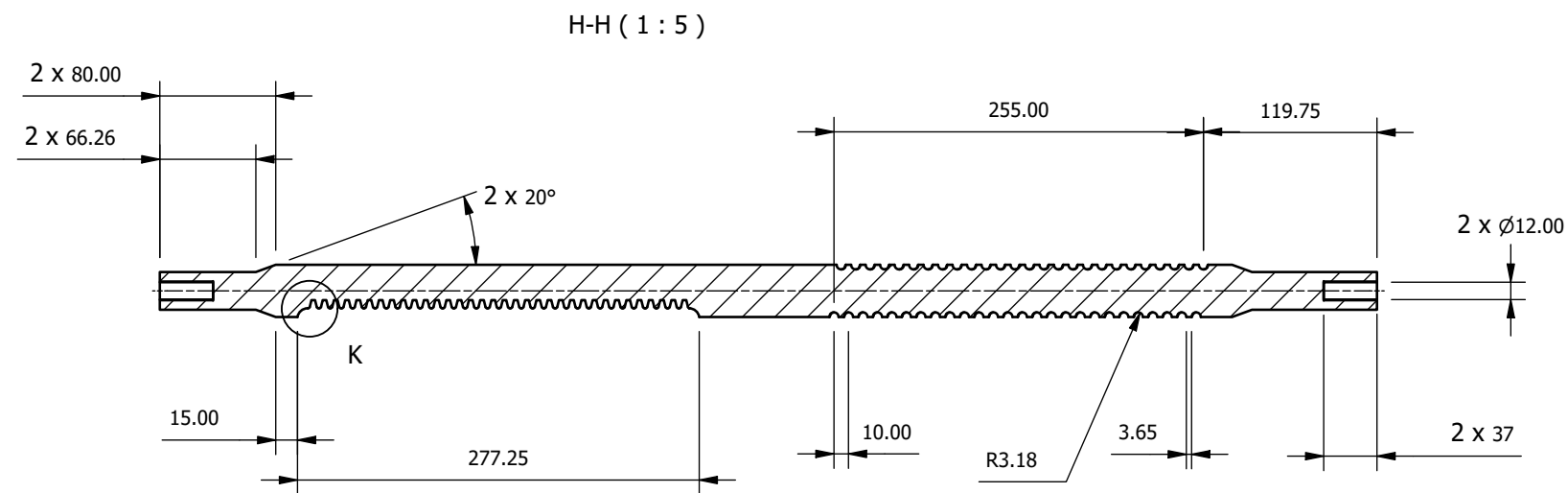
1 : 1

MATERIAL:

Generic

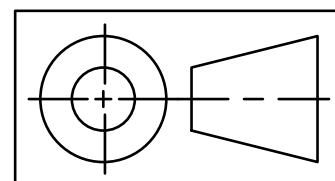
7/13

A3



DO NOT SCALE

ALL DIMENSIONS IN MM



UNLESS OTHERWISE SPECIFIED

X ± 0.5 ANGLES ± 0.5 DEG

X.X ± 0.3

X.XX ± 0.1

X.XXX ± 0.05

SURFACE ROUGHNESS Ra1.6µm

SHARP EDGES AND CORNERS R0.3 mm OR  
0.3 mm x 45 DEG

DRAWN BY:

TANG KANG NING

DATE:

18/10/2020

CHECKED BY:

APPROVED BY:

CURTIN UNIVERSITY, MALAYSIA

REMARKS:

PART NUMBER:

MCEN4000:B5

DESCRIPTION:

STEERING RACK/ BALL SCREW'S SCREW

SCALE:

1 : 5

MATERIAL:

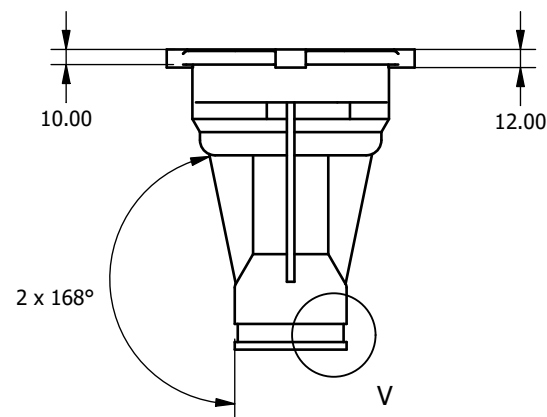
ALLOY, AMS 5844

8/13

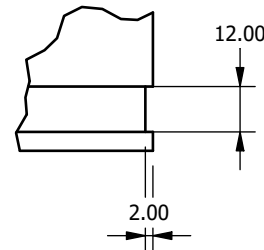
A3



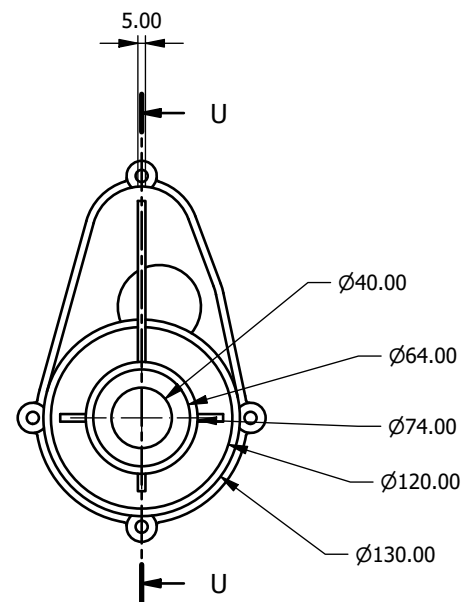
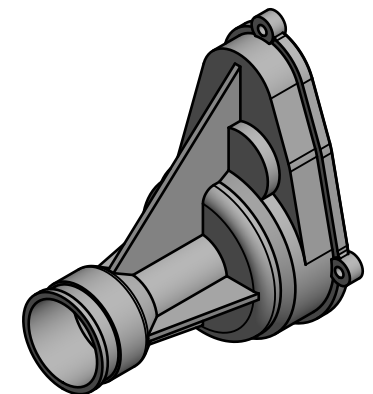
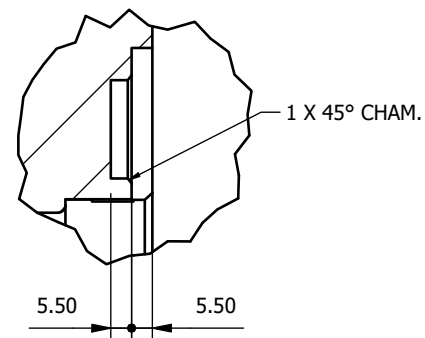




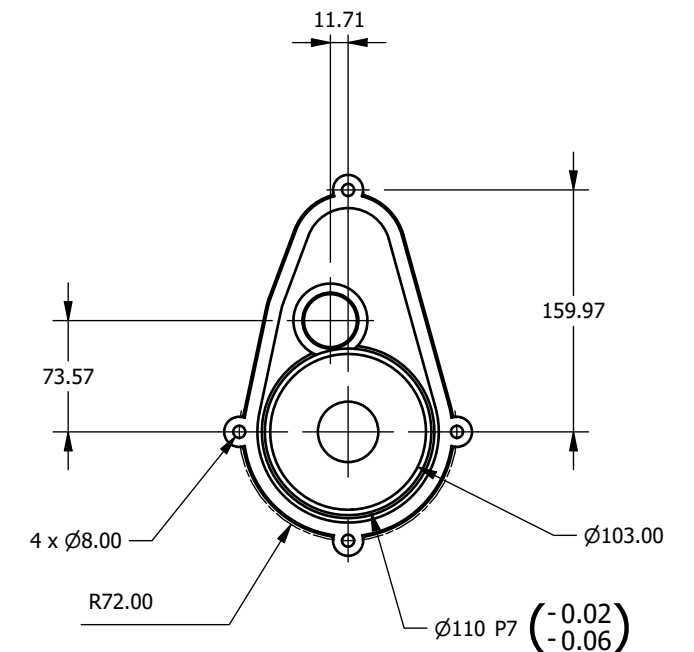
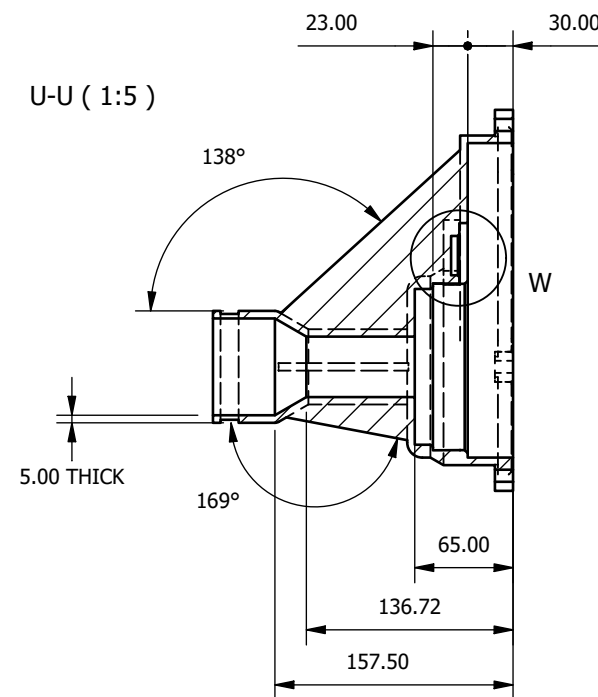
V ( 1 : 2 )



W ( 1 : 2 )

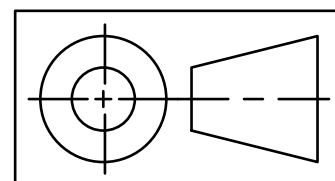


U-U ( 1:5 )



DO NOT SCALE

ALL DIMENSIONS IN MM



UNLESS OTHERWISE SPECIFIED

X ± 0.5 ANGLES ± 0.5 DEG

X.X ± 0.3

X.XX ± 0.1

X.XXX ± 0.05

SURFACE ROUGHNESS Ra1.6µm

SHARP EDGES AND CORNERS R0.3 mm OR  
0.3 mm x 45 DEG

DRAWN BY:

TANG KANG NING

DATE:

18/10/2020

CHECKED BY:

APPROVED BY:

CURTIN UNIVERSITY, MALAYSIA

REMARKS:

PART NUMBER:

MCEN4000:S2

DESCRIPTION:

PROTECTIVE SHELL (CAP)

SCALE:

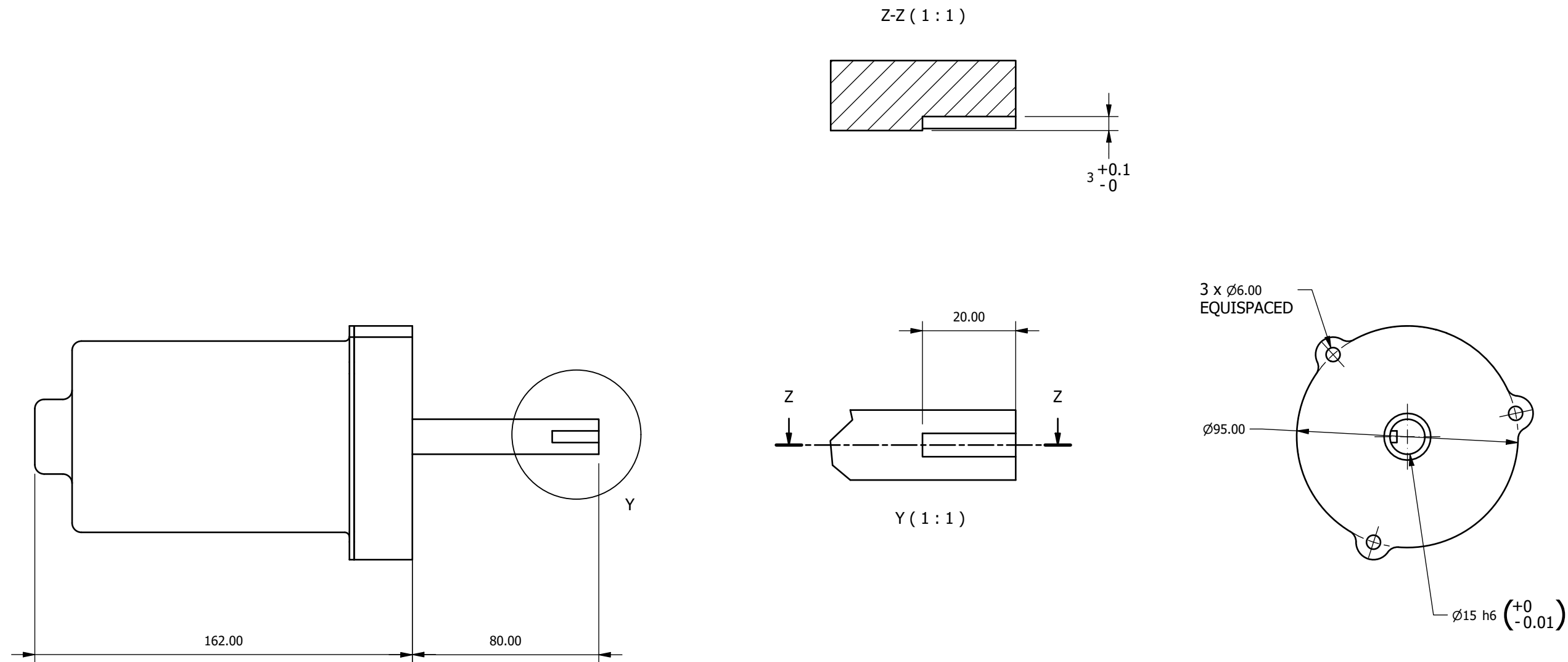
1:5

MATERIAL:

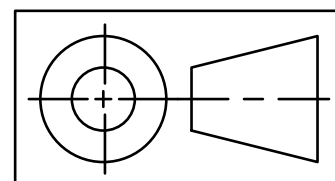
Generic

10/13

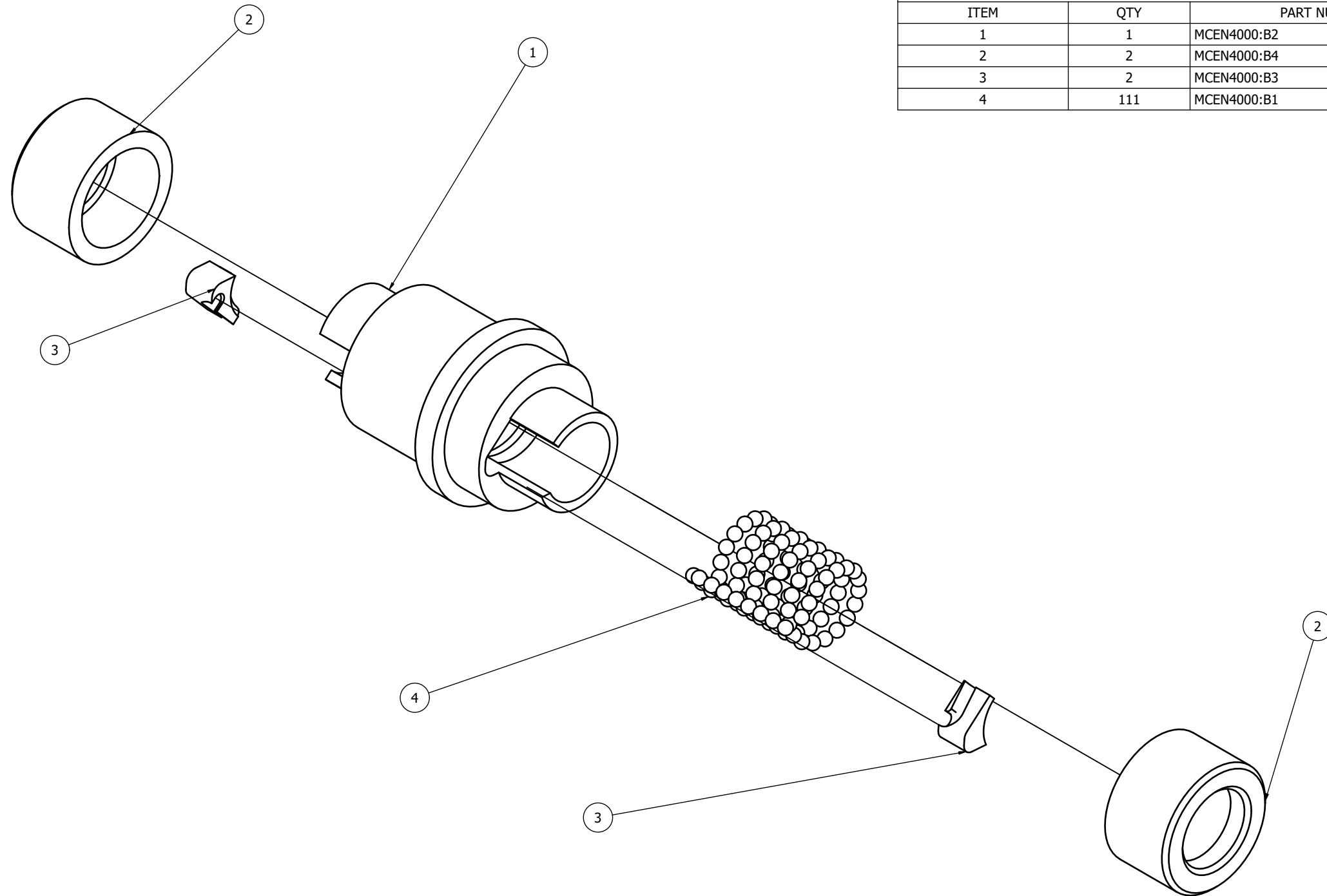
A3



DO NOT SCALE ALL DIMENSIONS IN MM

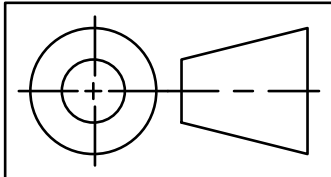


<u>UNLESS OTHERWISE SPECIFIED</u> X ± 0.5      ANGLES ± 0.5 DEG X.X ± 0.3 X.XX ± 0.1 X.XXX ± 0.05  SURFACE ROUGHNESS Ra1.6µm  SHARP EDGES AND CORNERS R0.3 mm OR 0.3 mm x 45 DEG	DRAWN BY: TANG KANG NING	CURTIN UNIVERSITY, MALAYSIA	
	DATE: 18/10/2020		
	CHECKED BY:	REMARKS:	11/13
	APPROVED BY:	PART NUMBER: MCEN4000:M0 SCALE: 1 : 2	DESCRIPTION: MOTOR ASSEMBLY (REFERENCE SIZING) MATERIAL: A3



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MCEN4000:B2	NUT BODY OF THE BALL SCREW
2	2	MCEN4000:B4	RETURN INSERT FASTENER
3	2	MCEN4000:B3	BALL SCREW DEFLECTOR
4	111	MCEN4000:B1	BALLS USED IN THE BALL SCREW

DO NOT SCALE ALL DIMENSIONS IN MM



UNLESS OTHERWISE SPECIFIED

X ± 0.5 ANGLES ± 0.5 DEG

X.X ± 0.3

X.XX ± 0.1

X.XXX ± 0.05

SURFACE ROUGHNESS Ra1.6µm

SHARP EDGES AND CORNERS R0.3 mm OR  
0.3 mm x 45 DEG

DRAWN BY:

TANG KANG NING

DATE:

21/10/2020

CHECKED BY:

APPROVED BY:

CURTIN UNIVERSITY, MALAYSIA

REMARKS:

12/13

PART NUMBER:

MCEN4000:B0

DESCRIPTION:

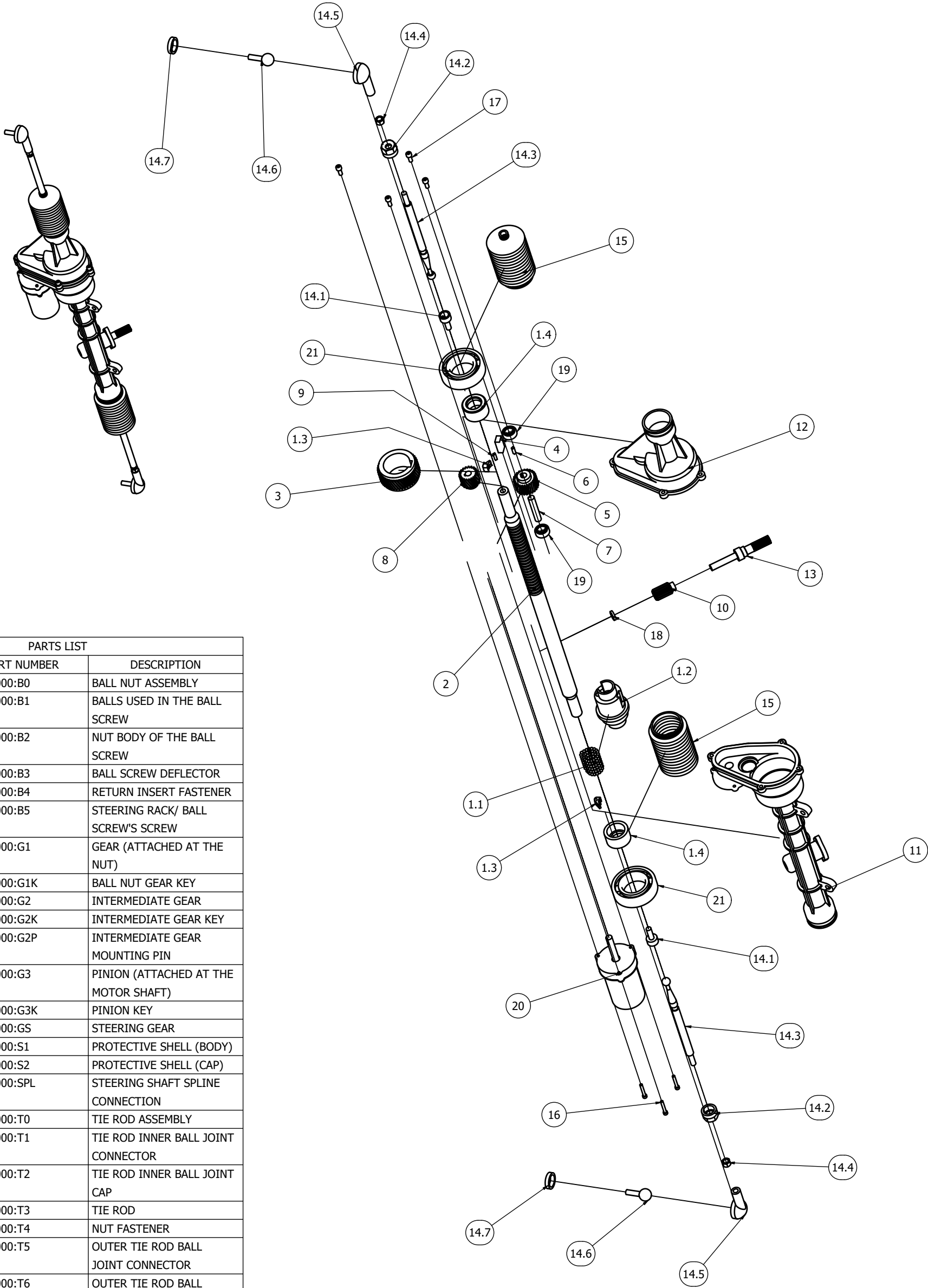
BALL NUT ASSEMBLY

SCALE:

1 : 2

MATERIAL:

A3



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MCEN4000:B0	BALL NUT ASSEMBLY
1.1	111	MCEN4000:B1	BALLS USED IN THE BALL SCREW
1.2	1	MCEN4000:B2	NUT BODY OF THE BALL SCREW
1.3	2	MCEN4000:B3	BALL SCREW DEFLECTOR
1.4	2	MCEN4000:B4	RETURN INSERT FASTENER
2	1	MCEN4000:B5	STEERING RACK/ BALL SCREW'S SCREW
3	1	MCEN4000:G1	GEAR (ATTACHED AT THE NUT)
4	1	MCEN4000:G1K	BALL NUT GEAR KEY
5	1	MCEN4000:G2	INTERMEDIATE GEAR
6	1	MCEN4000:G2K	INTERMEDIATE GEAR KEY
7	1	MCEN4000:G2P	INTERMEDIATE GEAR MOUNTING PIN
8	1	MCEN4000:G3	PINION (ATTACHED AT THE MOTOR SHAFT)
9	1	MCEN4000:G3K	PINION KEY
10	1	MCEN4000:GS	STEERING GEAR
11	1	MCEN4000:S1	PROTECTIVE SHELL (BODY)
12	1	MCEN4000:S2	PROTECTIVE SHELL (CAP)
13	1	MCEN4000:SPL	STEERING SHAFT SPLINE CONNECTION
14	2	MCEN4000:T0	TIE ROD ASSEMBLY
14.1	1	MCEN4000:T1	TIE ROD INNER BALL JOINT CONNECTOR
14.2	1	MCEN4000:T2	TIE ROD INNER BALL JOINT CAP
14.3	1	MCEN4000:T3	TIE ROD
14.4	1	MCEN4000:T4	NUT FASTENER
14.5	1	MCEN4000:T5	OUTER TIE ROD BALL JOINT CONNECTOR
14.6	1	MCEN4000:T6	OUTER TIE ROD BALL JOINT BALL
14.7	1	MCEN4000:T7	OUTER TIE ROD BALL JOINT CAP
15	2	MCEN4000:T8	BALL JOINT BOOT
16	3	ISO 4762 - M6 x 40	HEXAGON SOCKET HEAD CAP SCREW
17	4	ISO 4762 - M8 x 20	HEXAGON SOCKET HEAD CAP SCREW
18	1	JIS B 1521 - 6802 15x24x5	Deep Groove Ball Bearing
19	2	JIS B 1521 SKF - SKF 6202	Single row ball bearings SKF
20	1	MCEN4000:M0	MOTOR ASSEMBLY (REFERENCE SIZING)
21	2	SKF 2RS162212-2RS1	Deep groove ball bearings single row with two RS1 seals SKF

DO NOT SCALE ALL DIMENSIONS IN MM

DRAWN BY: TANG KANG NING	CURTIN UNIVERSITY, MALAYSIA		
DATE: 21/10/2020	REMARKS:		13/13
CHECKED BY:			
APPROVED BY:	PART NUMBER: Final Assembly	DESCRIPTION:	A3
	SCALE: 1:10	MATERIAL:	