CAD Document

Created By:
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EP, Maritz – 20772750
MA, Blackwell – 21587612
MS, De Lange – 21584575

Group 13

This report details the full design procedure with appropriate references to the added respective appendices. The methods with design choices and assumptions are contained within this report.

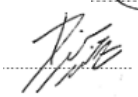
Work Completed:	Description:	Member(s) Responsible:	Checked by:
Input Shaft	A detailed manufacturing drawing of a single shaft. All relevant manufacturing details such as dimensions, tolerances, geometric tolerances, surface finish, heat treatment and hardness requirements, etc.	*Matthew	*Group
Gear One	A detailed manufacturing drawing of a single gear. Gear manufacturing drawings standards are used in this drawing to enable the manufacturing of the specified gear. All relevant details are provided on the drawing.	*Michael	*Group
General Assembly	The GA includes the assembly drawing of the complete gearbox with section and/or detail views as required. A detailed top-level item list with component description, material, part numbers, mass, etc. The total gearbox mass is included.	*Emeale	*Group
Welded Assembly	The casing weld assembly with welding symbols and dimensioned machined interfaces.	*Will-Mari	*Group

Signatures

MA Blackwell: 

W Bezuidenhoudt 

MS De Lange: 

EP Maritz 

Plagiarism declaration

I have read and understand the Stellenbosch University Policy on Plagiarism and the definitions of plagiarism and self-plagiarism contained in the Policy [Plagiarism: The use of the ideas or material of others without acknowledgement, or the re-use of one's own previously evaluated or published material without acknowledgement or indication thereof (self-plagiarism or text-recycling)].

I also understand that direct translations are plagiarism, unless accompanied by an appropriate acknowledgement of the source. I also know that verbatim copy that has not been explicitly indicated as such, is plagiarism.

I know that plagiarism is a punishable offence and may be referred to the University's Central Disciplinary Committee (CDC) who has the authority to expel me for such an offence.

I know that plagiarism is harmful for the academic environment and that it has a negative impact on any profession.

Accordingly, all quotations and contributions from any source whatsoever (including the internet) have been cited fully (acknowledged); further, all verbatim copies have been expressly indicated as such (e.g. through quotation marks) and the sources are cited fully.

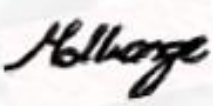
I declare that, except where a source has been cited, the work contained in this assignment is my own work and that I have not previously (in its entirety or in part) submitted it for grading in this module/assignment or another module/assignment.

I declare that have not allowed, and will not allow, anyone to use my work (in paper, graphics, electronic, verbal or any other format) with the intention of passing it off as his/her own work.

I know that a mark of zero may be awarded to assignments with plagiarism and also that no opportunity be given to submit an improved assignment.

MA Blackwell: 

W Bezuidenhoudt: 

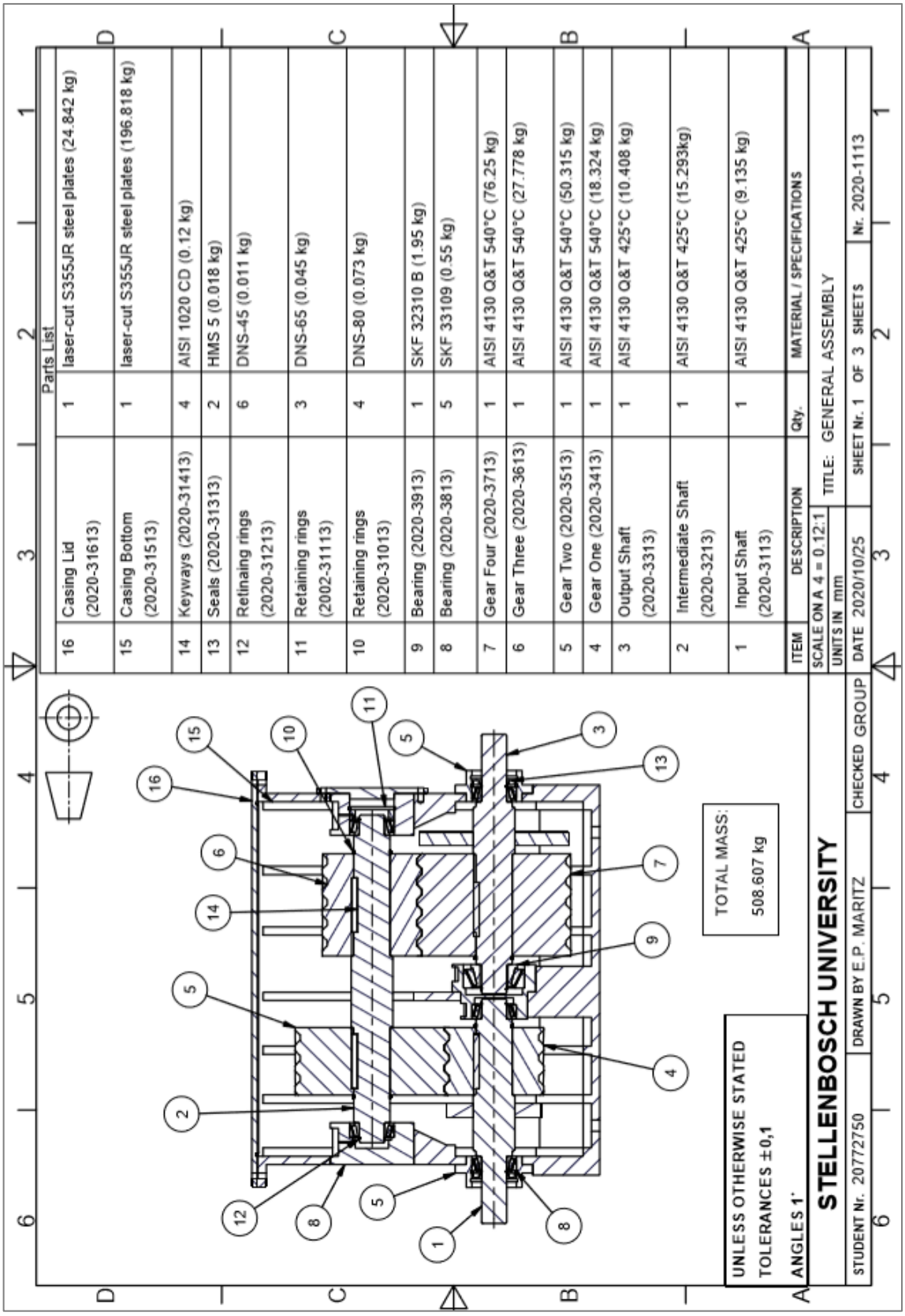
MS De Lange: 

EP Maritz: 

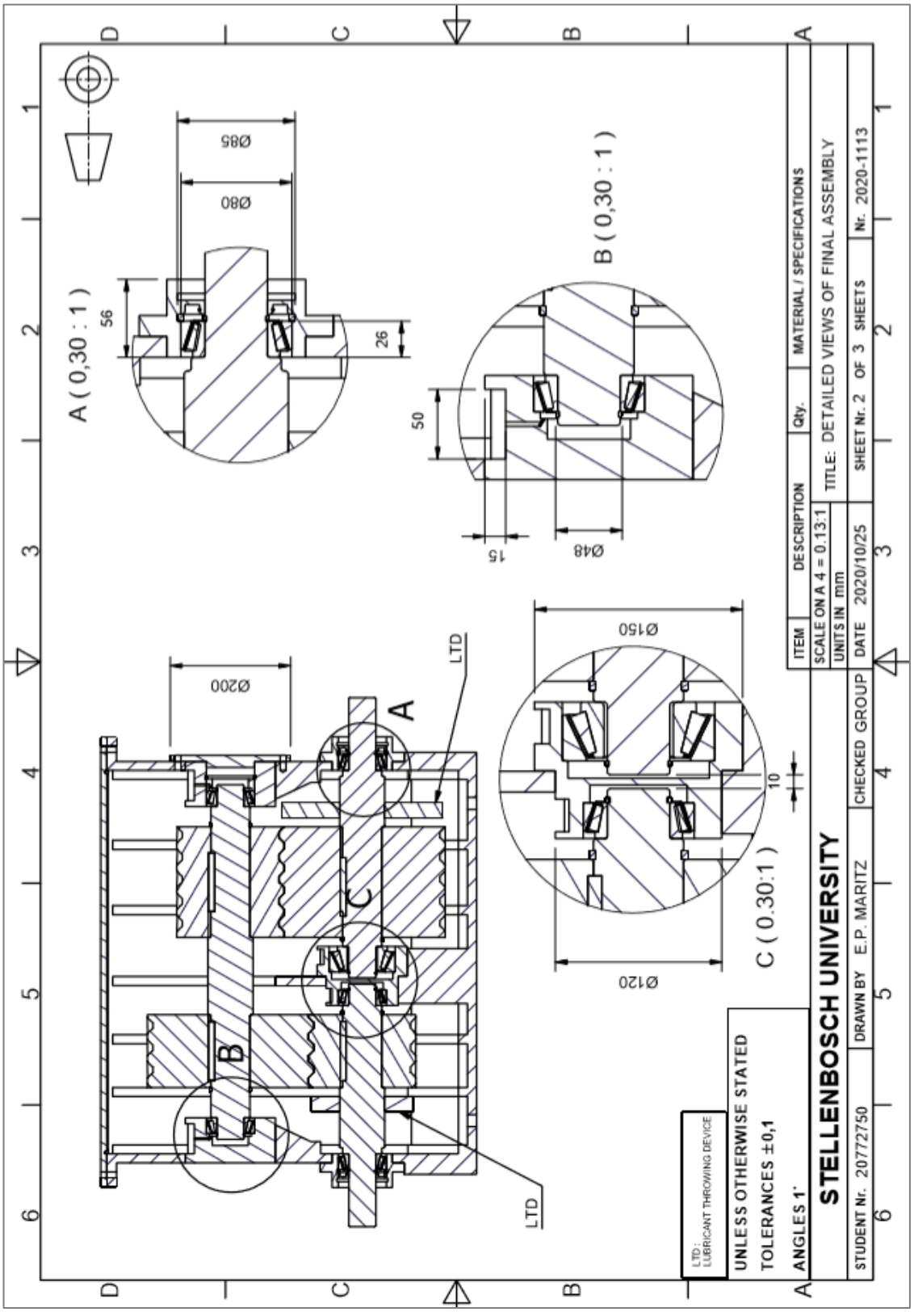
Drawing Tree

General Casing Arrangment (2020-1113)	Gear Shaft Assembly	1. Input Shaft	(2020-3113)	(AISI 4130 Q&T 425^{0}C)
		2. Intermediate Shaf	(2020-3213)	(AISI 4130 Q&T 425^{0}C)
		3. Output Shaft	(2020-3313)	(AISI 4130 Q&T 425^{0}C)
		3. Gear One	(2020-3413)	(AISI 4130 Q&T 540^{0}C)
		4. Gear Two	(2020-3513)	(AISI 4130 Q&T 540^{0}C)
		5. Gear Three	(2020-3613)	(AISI 4130 Q&T 540^{0}C)
		6. Gear Four	(2020-3713)	(AISI 4130 Q&T 540^{0}C)
		6. Bearing	(2020-3813)	(SKF 32310B)
		7. Bearing	(2020-3913)	(SKF 33109)
		8. Retaining rings	(2020-31013)	(DNS-80)
		9. Retaining rings	(2002-31113)	(DNS-65)
		10. Retinaing rings	(2020-31213)	(DNS-45)
		11. Seals	(2020-31313)	(HMS5)
		12. Keyways	(2020-31413)	(AISI 1020 CD)
	Casing Weld Assembly (2020-2213)	13. Casing Bottom	(2020-31513)	(laser-cut S355JR steel plates)
		14. Casing Lid	(2020-31613)	(laser-cut S355JR steel plates)

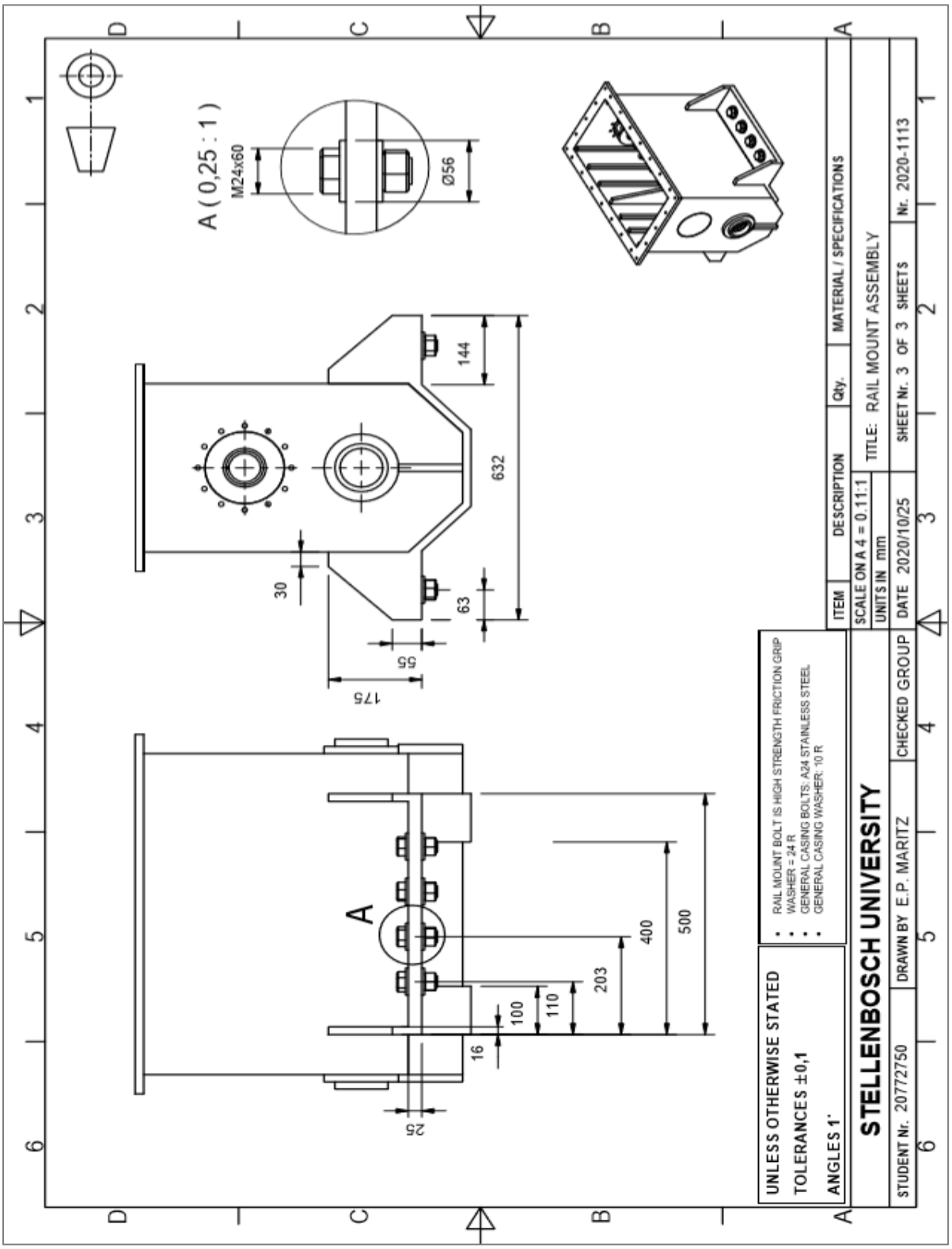
General Assembly (1)



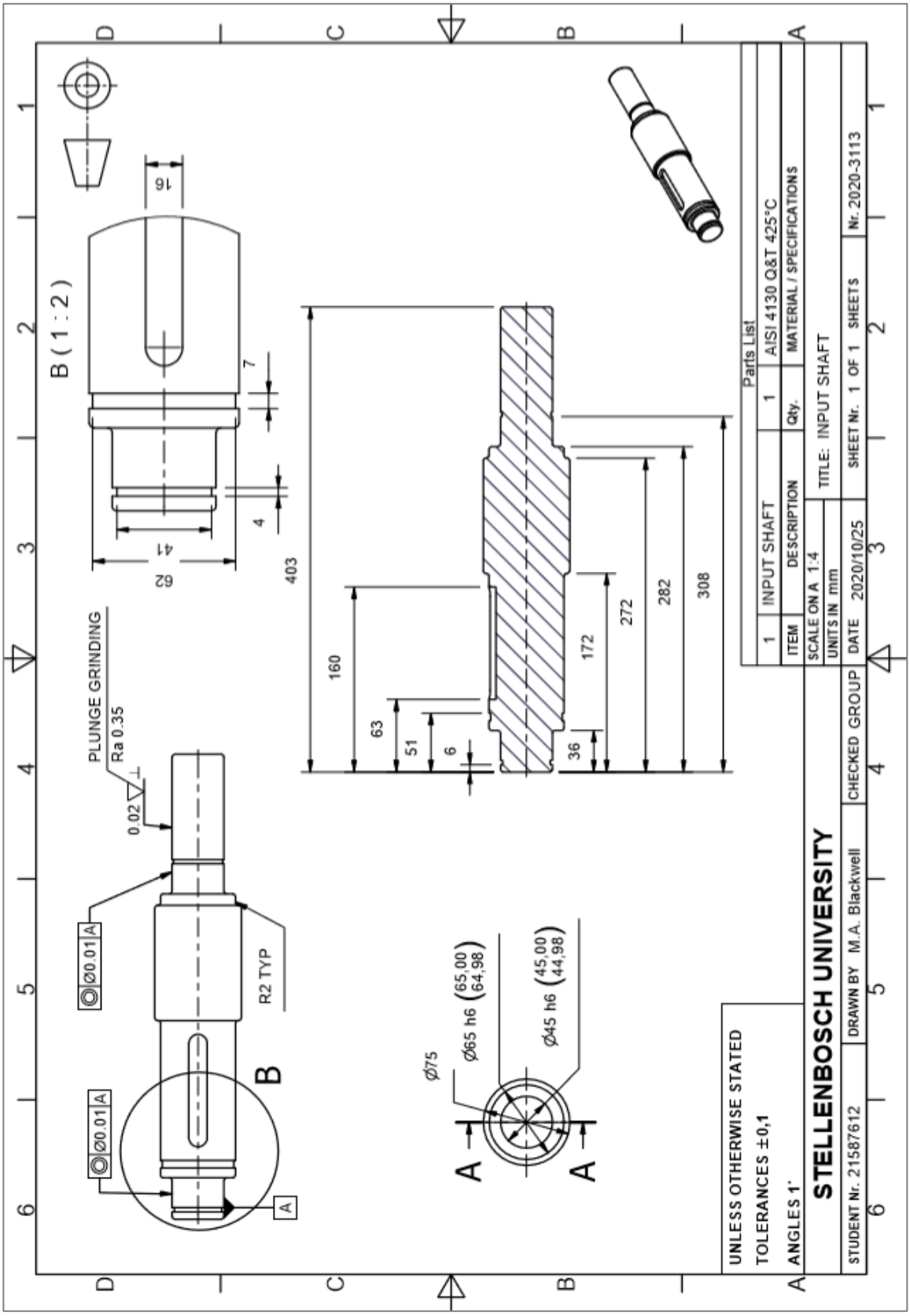
General Assembly (2)

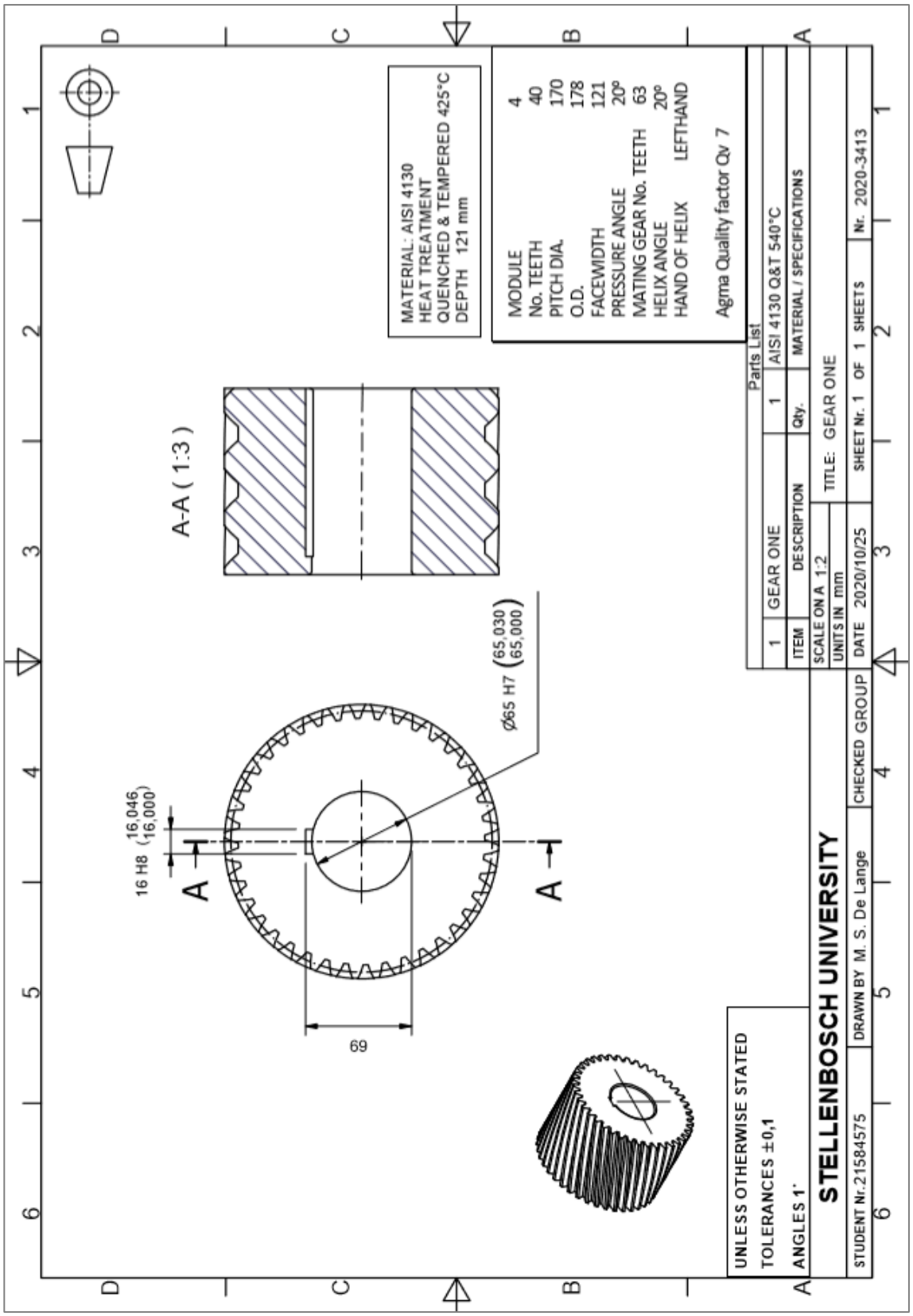


General Assembly (3)

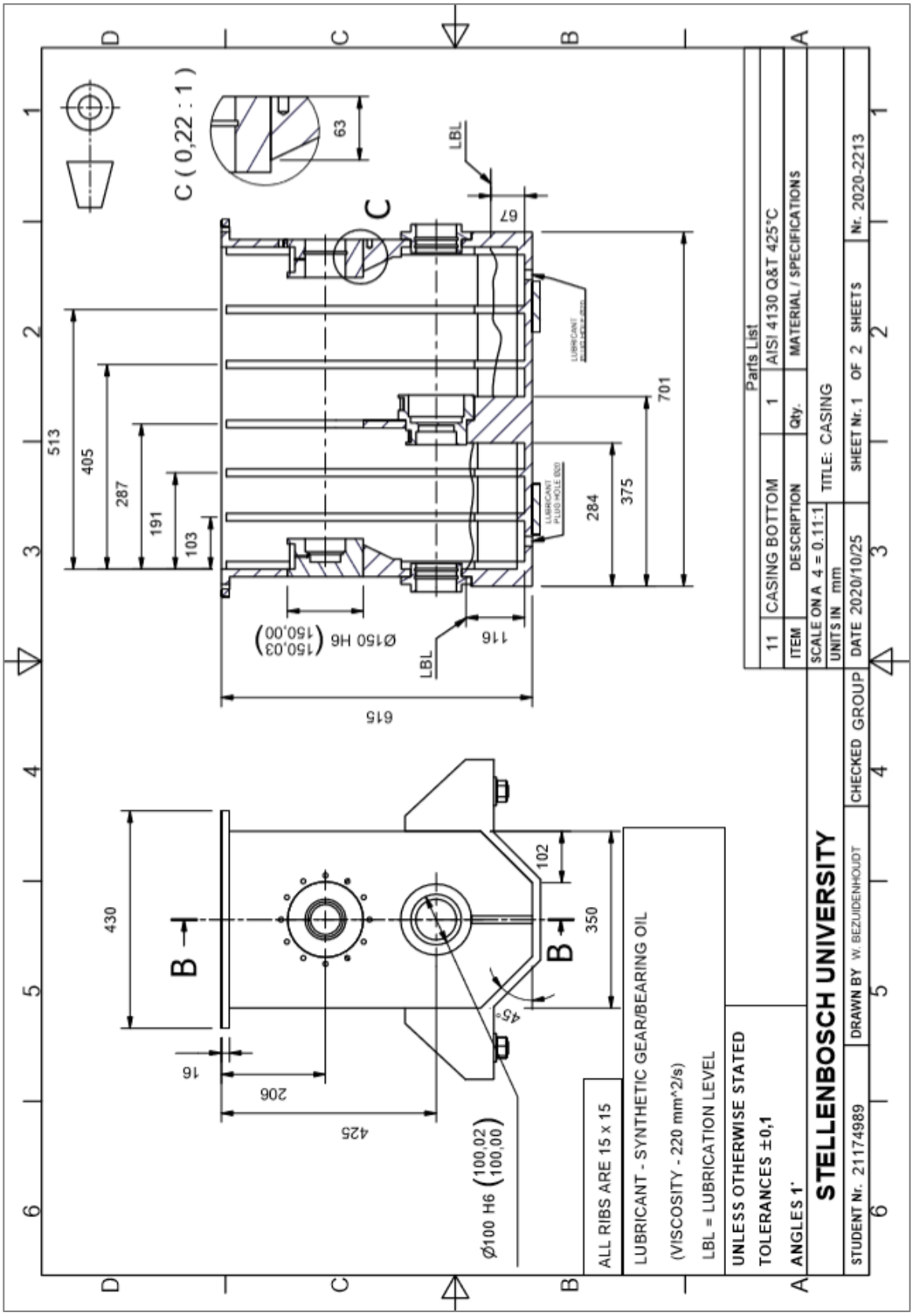


Shaft Design




MATERIAL: AISI 4130
HEAT TREATMENT
QUENCHED & TEMPERED 425°C
DEPTH 121 mm
MODULE 4
No. TEETH 40
PITCH DIA. 170
O.D. 178
FACEWIDTH 121
PRESSURE ANGLE 20°
MATING GEAR No. TEETH 63
HELIX ANGLE 20°
HAND OF HELIX LEFTHAND
Agma Quality factor Qv 7
A-A (1:3)
Ø65 H7 (65,030 65,000)
16 H8 (16,046 16,000)
69
Parts List
ITEM DESCRIPTION Qty. MATERIAL / SPECIFICATIONS
1 GEAR ONE 1 AISI 4130 Q&T 540°C
SCALE ON A 1:2
UNITS IN mm
TITLE: GEAR ONE
SHEET Nr. 1 OF 1 SHEETS
Nr. 2020-3413
DATE 2020/10/25
CHECKED GROUP
DRAWN BY M. S. De Lange
STUDENT Nr.21584575
STELLENBOSCH UNIVERSITY
UNLESS OTHERWISE STATED
TOLERANCES ±0,1
ANGLES 1°

Welding Assembly (1)



Welding Assembly (2)