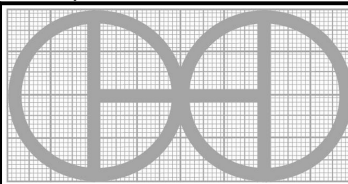
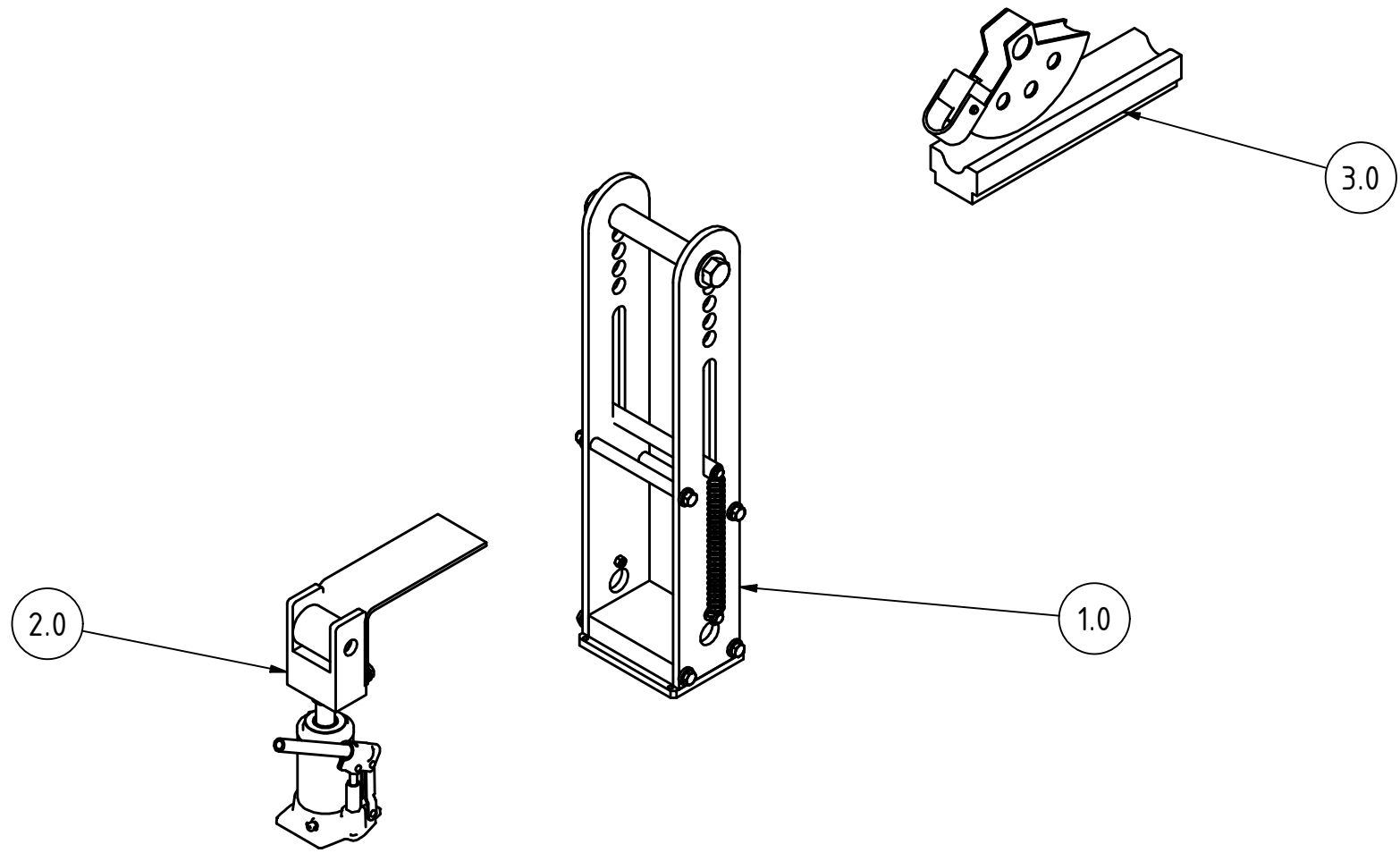


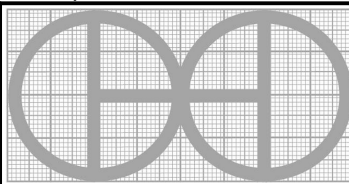
Based on drawings of ProTools

Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
3d views	tube bender with 20 ton jack.iam			A1
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		Assembly		1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:10	1 / 14

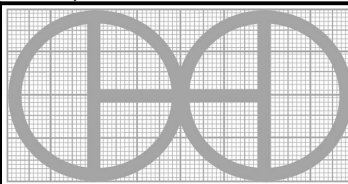


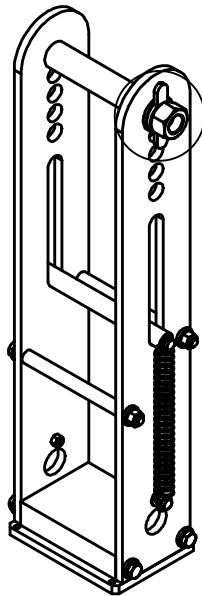
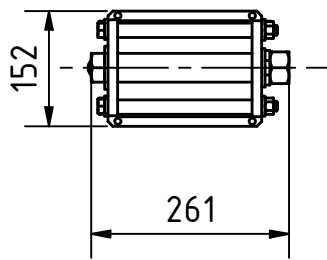
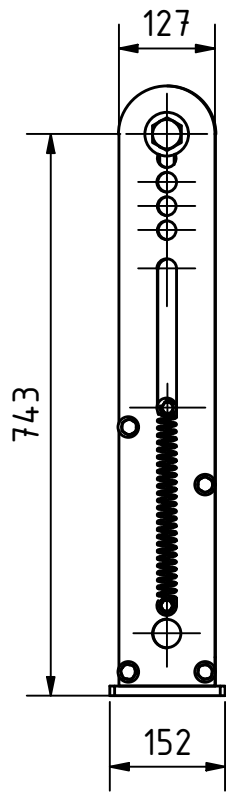
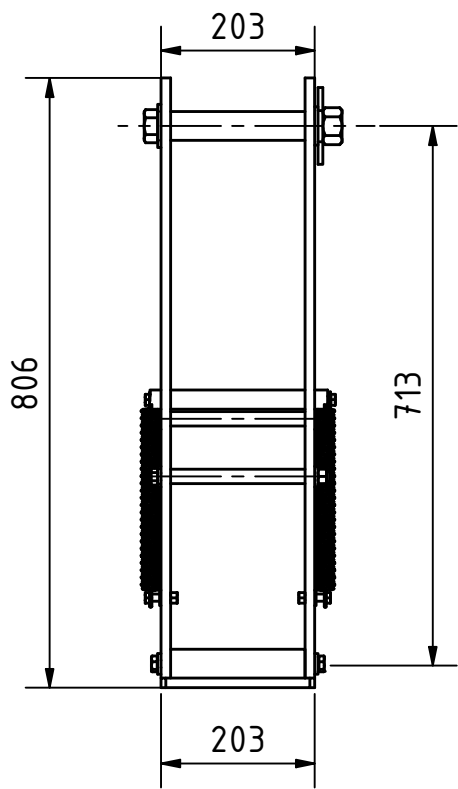
Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Exploded 3d views	tube bender with 20 jack.ipn			A2
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		Assembly		1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:10	2 /14

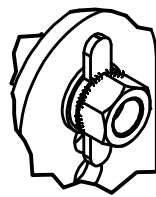
Parts list

POS	QTY	PART NAME	FILE NAME	PART TYPE	SPECIFICATIONS	SHEET
A1	1	3d views	tube bender with 20 ton jack.iam			1
A2	1	Exploded 3d view	tube bender with 20 ton jack.ipn			2
B1		Parts list	part list.csv			3
1.0	1	Support assembly	support assembly.aim			4
1.1	2	Stand plate	stand plate.ipt	Production	Steel C45	5
1.2	1	Base plate	base plate.ipt	Production	Steel C45	6
1.3	2	Side bracket	side bracket.ipt	Production	Aluminium T6 6061	7
1.4	1	Roller pin	roller pin.ipt	Production	Steel C45	8
1.5	1	Speed nut wing	speed nut wing.ipt	Production	Steel C45	9
1.6	2	Stabilizer tube	stabilizer tube.ipt	Buy	Steel A36, Tubular structural DIN 10220 s. (OD=0.75", ID=0.5", L=7")	
1.7	1	Die wrist pin sleeve	die wrist pin sleeve.ipt	Buy	Steel A36, Tubular structural DIN 10220 s. (OD=1.5", ID= 1", L=7")	
1.8	2	Spring D.Wire 3mm	spring.ipt	Buy	Spring Steel C45, (D.wire = 3mm, L=140mm, D1.=25 mm)	
1.9	1	Hex Bolt M24		Standard	M24-3.00x230mm Hex Bolt DIN 931	
1.10	2	Washer M24		Standard	M24 Flat washer DIN 125	
1.11	2	Bolt 2		Standard	M12-1.50 x230mm Hex Bolt DIN 931	
1.12	4	Bolt 4		Standard	M10-1.5- 35mm SHCS Bolt DIN 933	
1.13	4	Washer 4		Standard	M10 Flat Washer DIN 125	
1.14	2	Nut 2		Standard	M12 - 1.50 Nylon Lock Nut DIN 934	
1.15	4	Nut 3		Standard	M10 - 1.50 Hex Nut DIN 934	
1.16	4	Bolt 3		Standard	M12- 1.50x 25mm Hex Bolt DIN 933	
1.17	8	Washer 3		Standard	M12 Flat Washer DIN125	
1.18	1	Hex Nut M24		Standard	M24 - 3.00 Hex Nut DIN 934	
2.0	1	Pressing system	pressing system.iam			10
2.1	1	HMP-Jack	hmp-jack.iam	Buy	20 Ton Bottle Jack	
2.2	1	Spacer Sleeve-Shipping	spacer sleeve-shipping.ipt	Production	Steel A36, Tubular structural DIN 10220 seamless 40x2mm	11
2.3	1	Roller block	roller block.ipt	Production	Aluminum 6061-T6	12
2.4	1	Roller	roller.ipt	Production	Steel C45	13
2.5	1	Support bracket	support bracket.ipt	Production	Steel C45	14
2.6	2	Washer 5		Standard	M10 Flat Washer DIN 125I	
2.7	2	Hex Bolt 5		Standard	M10 - 1.50 x 25 mm SHCS Bolt DIN 933	
3.0	1	Die set w/ Follow Bar			Buy (Round tube dir for pipe bender 2" O.D.) Pro-Tools, Inc.	

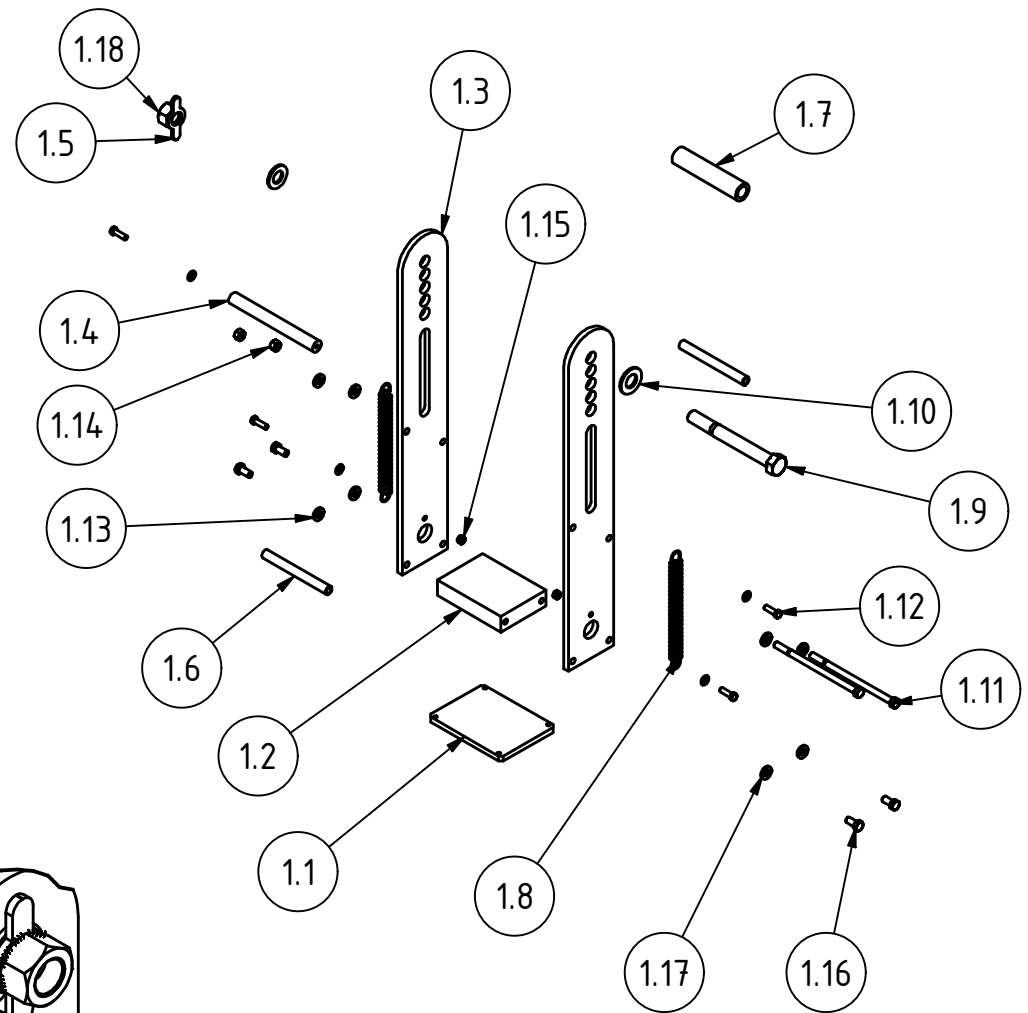
PROJECT		CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack		E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME		FILE NAME			POS
Parts list		part list.csv			B1
PUBLISHED BY			DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.			Parts list		
		LICENCE	SCALE	SHEET	
		CC-BY-SA 4.0			3 /14



A

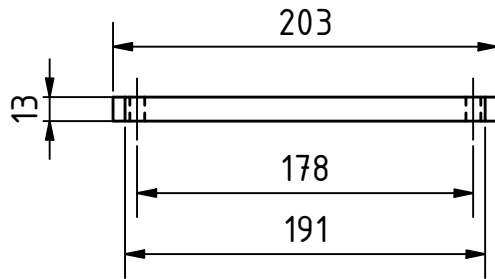
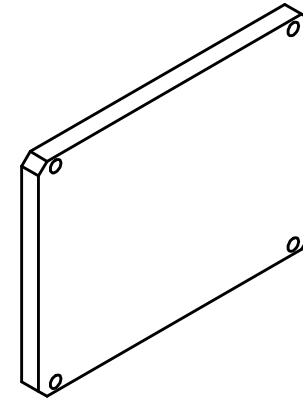
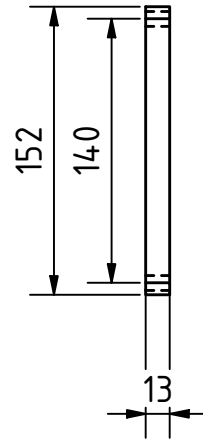
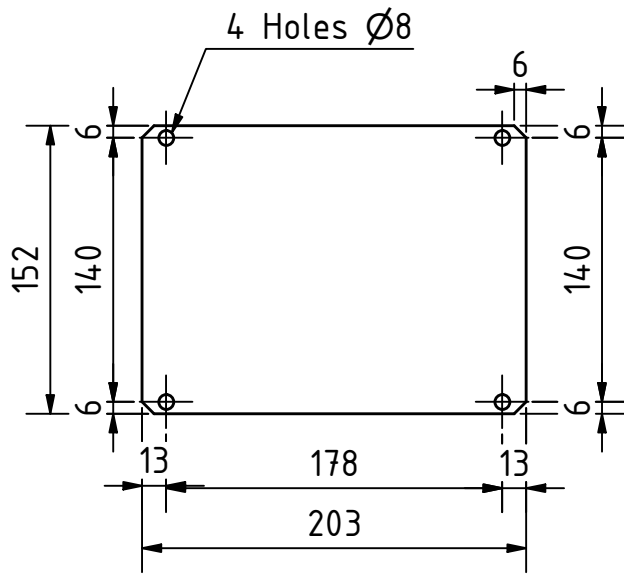


A (1 : 5)



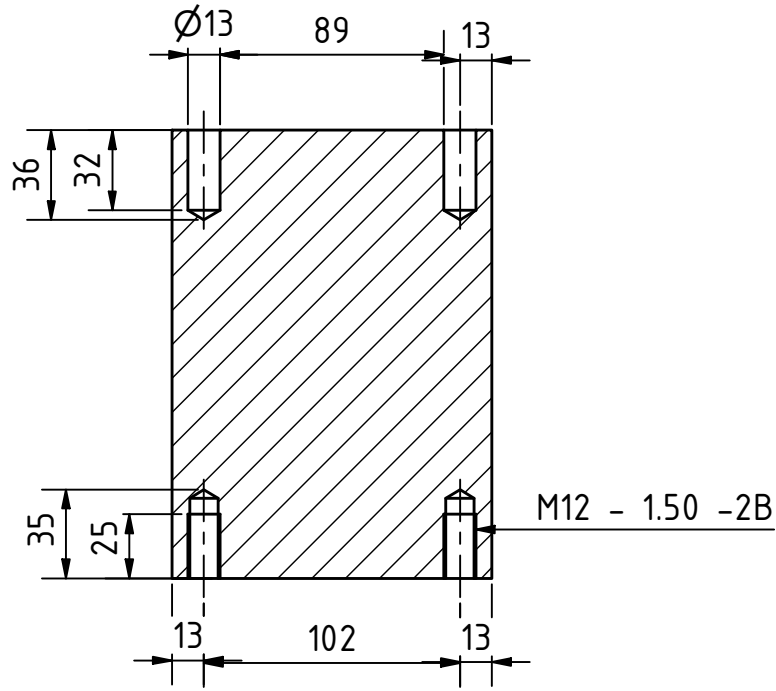
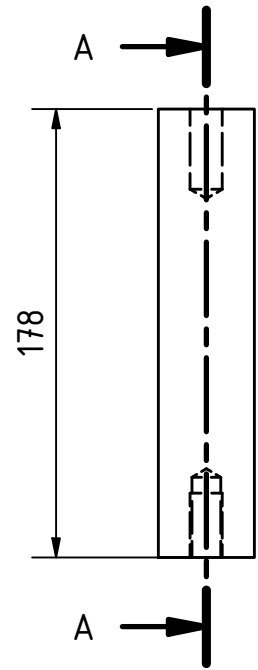
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Lower frame assembly pipe 1/2"	lower frame pipe 1/2".iam			1.0
PUBLISHED BY	DOC. TYPE	MATERIAL	QUANTITY	
OHO e.V.	Assembly		1	
		LICENCE	SCALE	SHEET
	CC-BY-SA 4.0	1:20	4 /14	

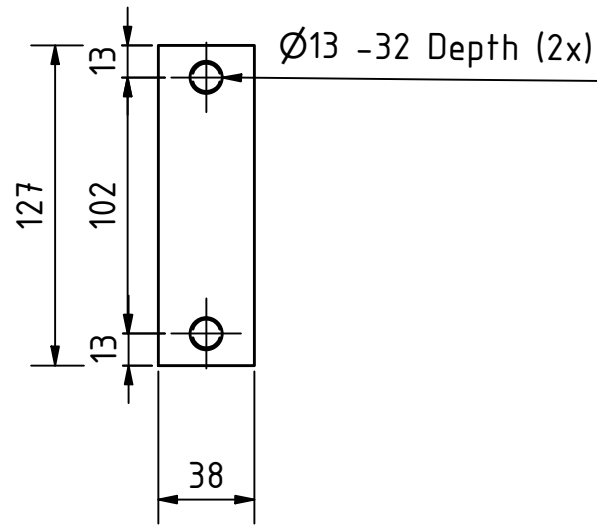
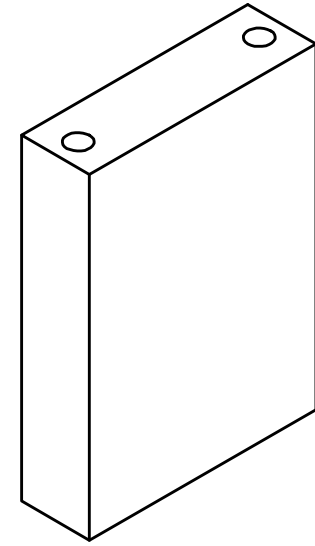


Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Stand plate	stand plate.ipt			1.1
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		Part	Steel C45	2
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:4	5 /14

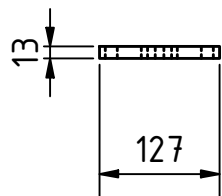
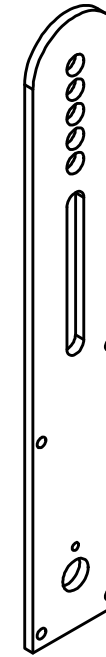
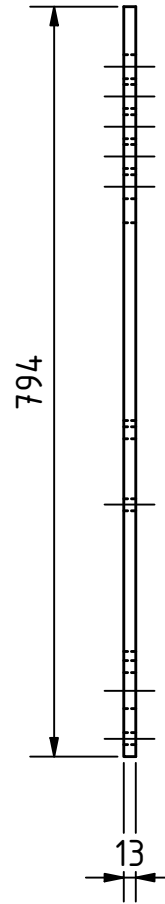
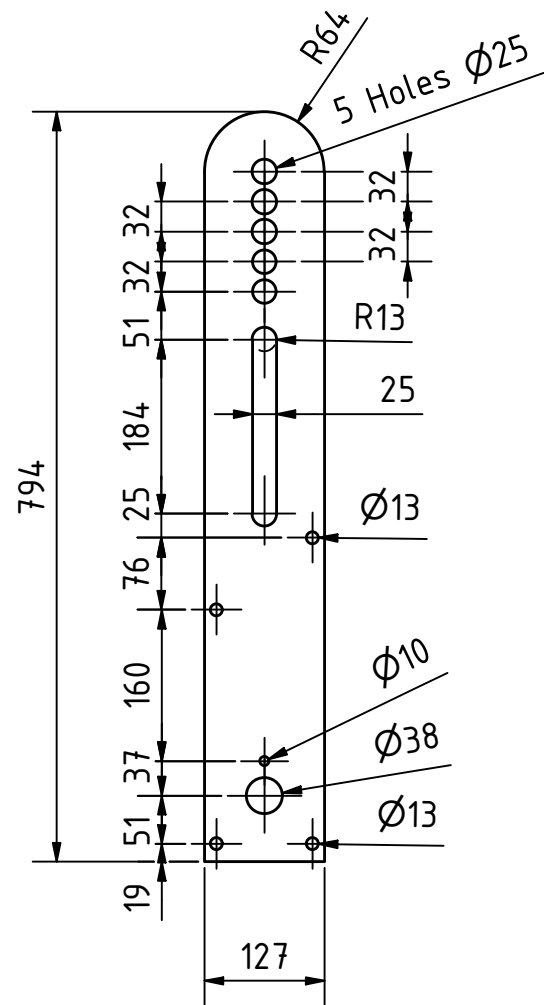


A-A (1 : 3)



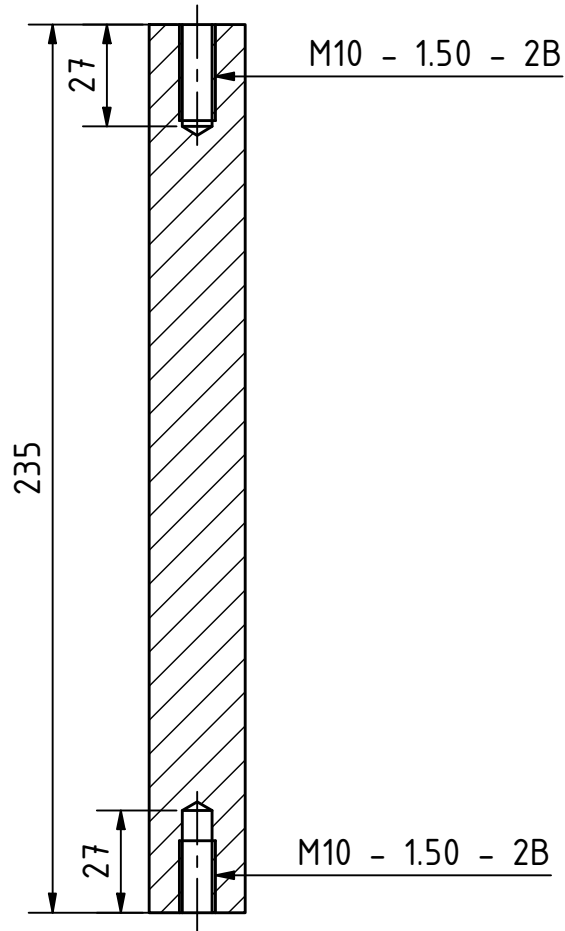
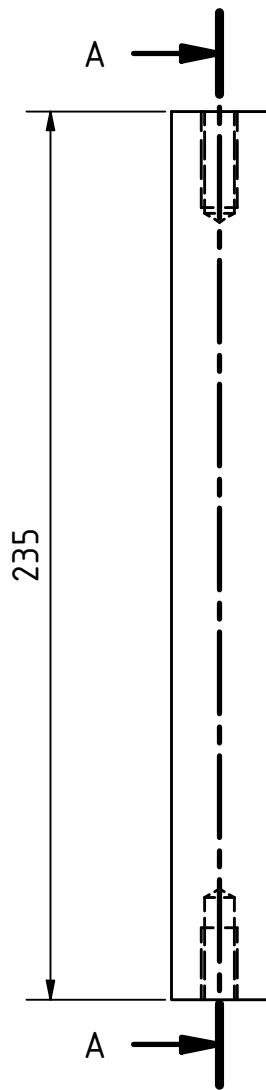
Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Base plate	base plate.ipt			1.2
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
		PART LICENCE	Steel C45	1
OHO e.V.		CC-BY-SA 4.0	SCALE	SHEET
			1:3	6 / 14

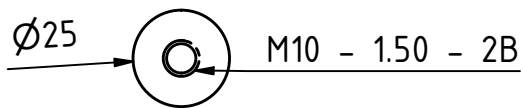


Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Side bracket	side bracket.ipt			1.3
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
		Part	Aluminun T6 6061	2
		LICENCE	SCALE	SHEET
OHO e.V.		CC-BY-SA 4.0	1:8	7 /14

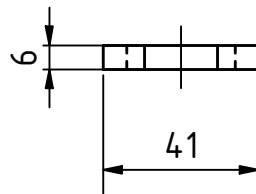
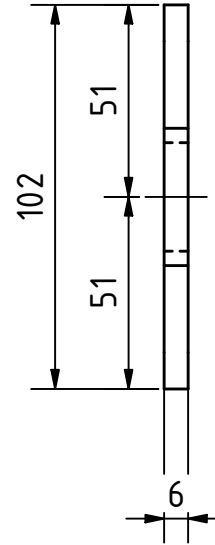
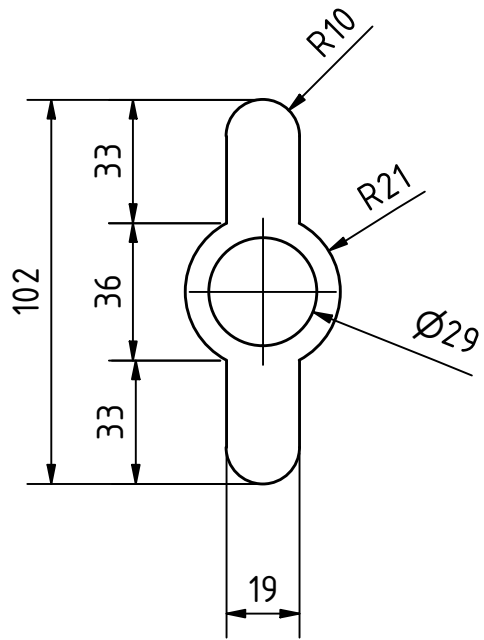


A-A (1 : 2)



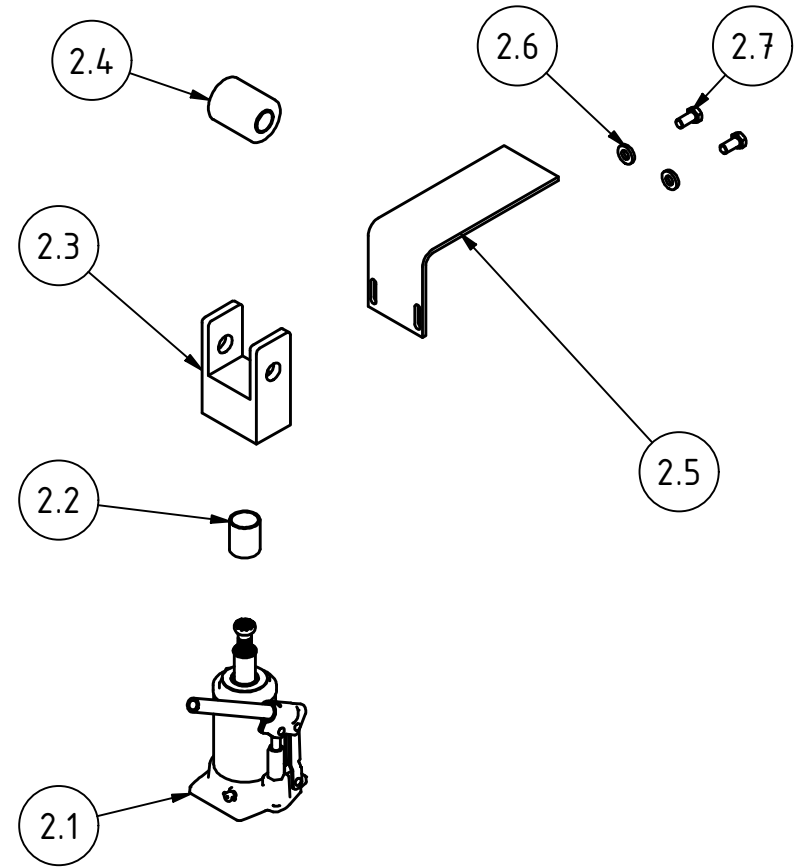
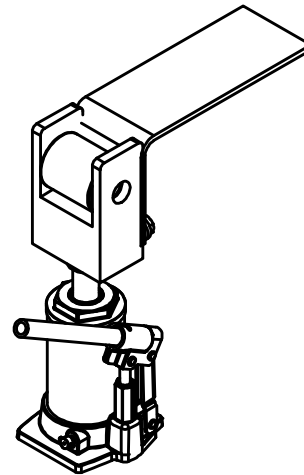
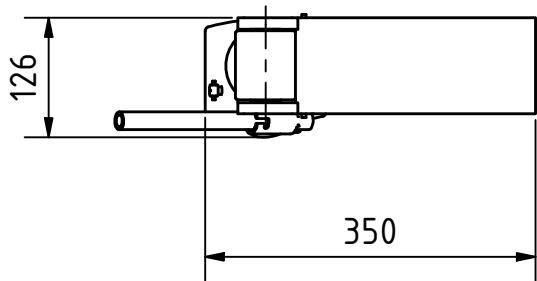
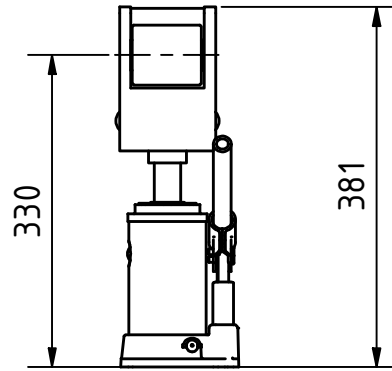
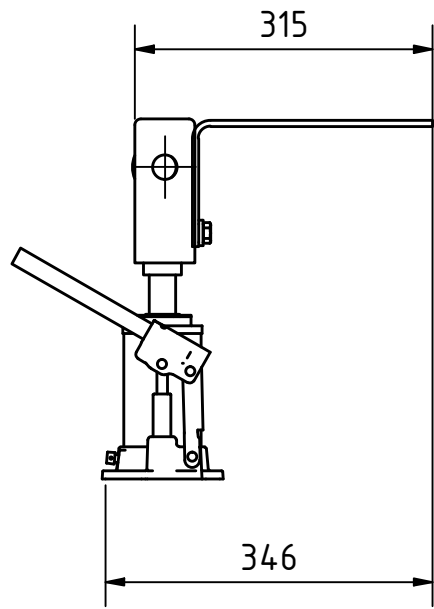
Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Roller pin	roller pin.ipt			1.4
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		PART LICENCE	Steel C45	1
		CC-BY-SA 4.0	SCALE	SHEET
			1:2	8 /14



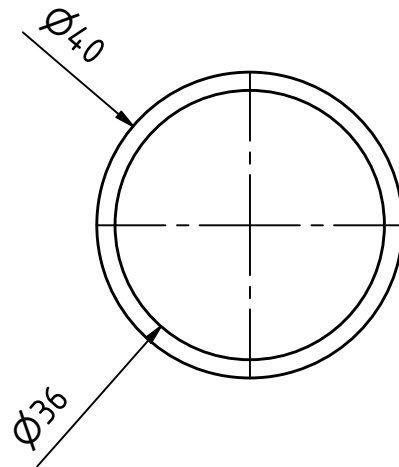
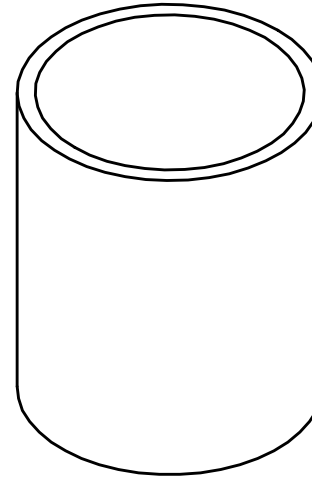
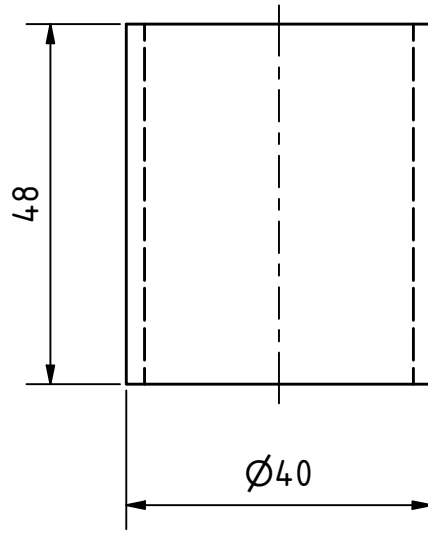
Note: all units. in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Speed nut wing	speed nut wing.ipt			1.5
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		PART LICENCE	Steel C45	1
		CC-BY-SA 4.0	SCALE	SHEET
			1:2	9 /14



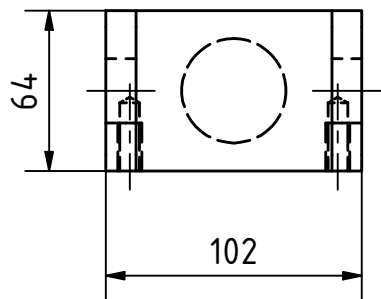
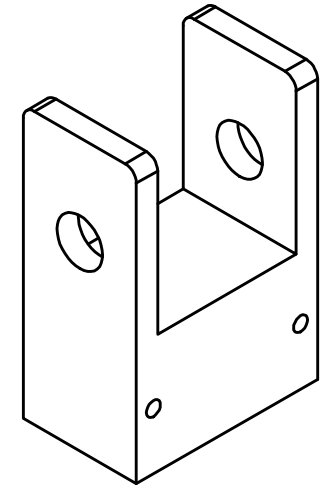
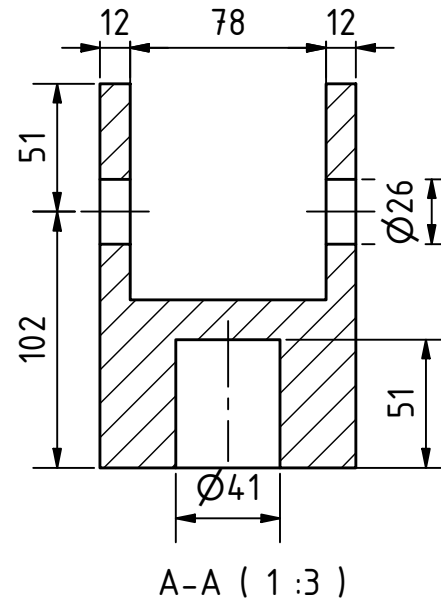
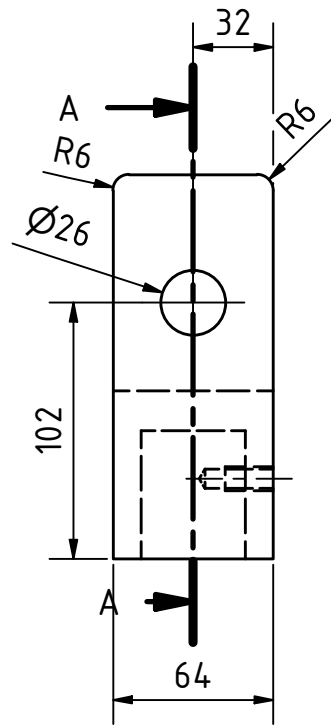
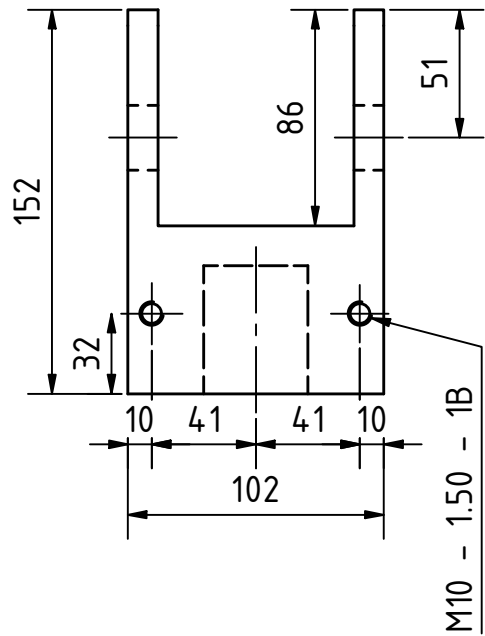
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Pressing system	pressing system.iam			2.0
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		Assembly		1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:8	10 /14

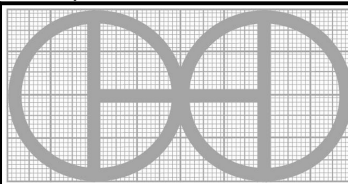


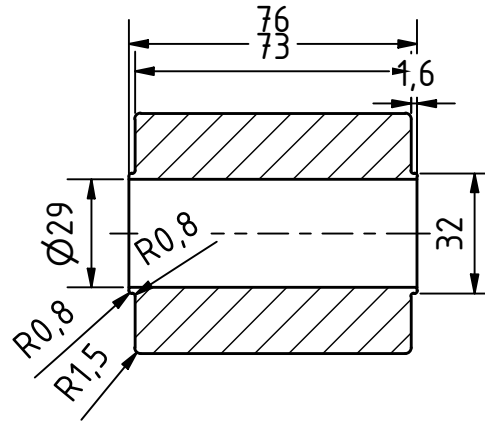
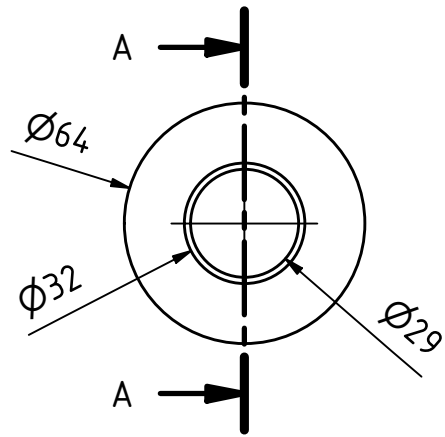
Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Spacer Sleeve-Shipping	spacer sleeve-shipping.ipt			2.2
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		Part	Steel A36	1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:1	11 /14

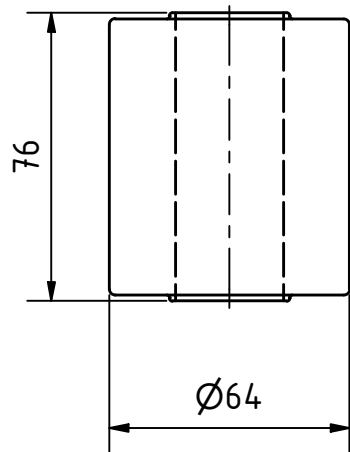
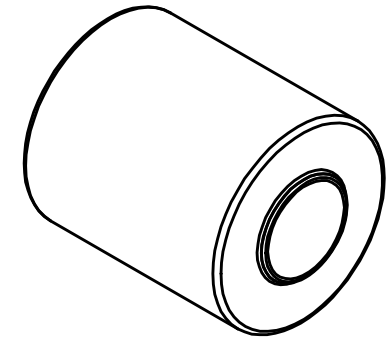


Note: Units. in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Roller block	roller block.ipt			2.3
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		PART LICENCE	Aluminum 6161-T6	1
		SCALE		SHEET
		CC-BY-SA 4.0	1:3	12 /14

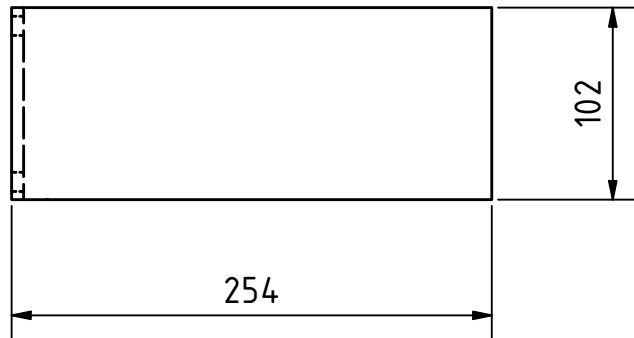
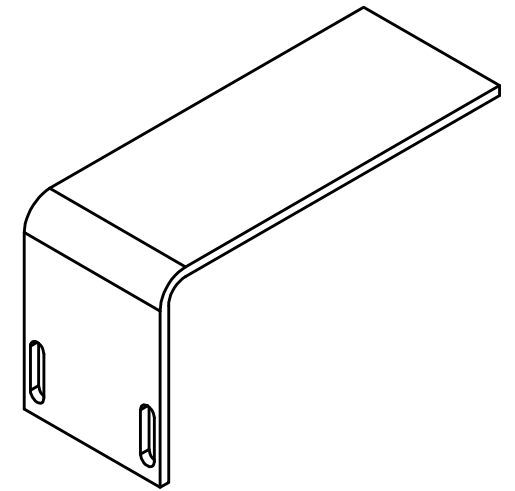
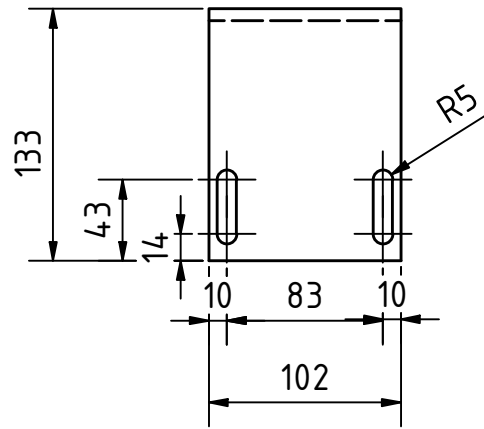
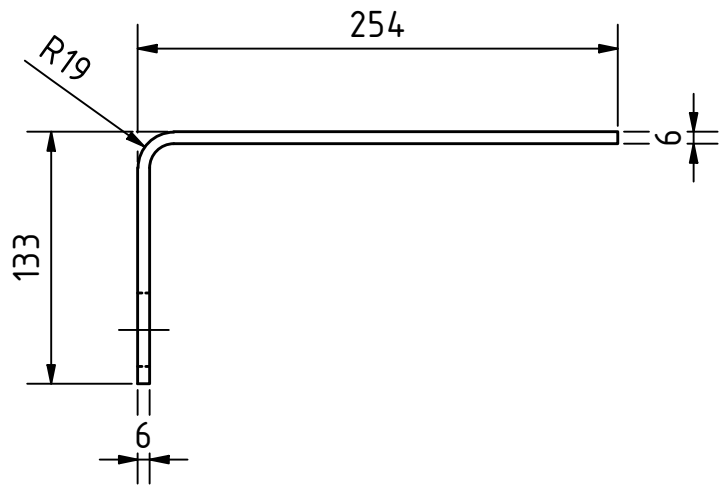


A-A (1 : 2)



Note: all units in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Roller	roller.ipt			2.4
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
OHO e.V.		PART LICENCE	Steel C45	1
		SCALE		SHEET
		CC-BY-SA 4.0	1:2	13 /14



Note: all units. in mm

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Tube bender with 20 ton jack	E. Ceballos	A. Morillo	01/10/2021	1.0
PART NAME	FILE NAME			POS
Support bracket	support bracket.ipt			2.5
PUBLISHED BY		DOC. TYPE	MATERIAL	QUANTITY
		PART LICENCE	Steel C45	1
OHO e.V.		CC-BY-SA 4.0	SCALE	SHEET
			1:4	14 /14