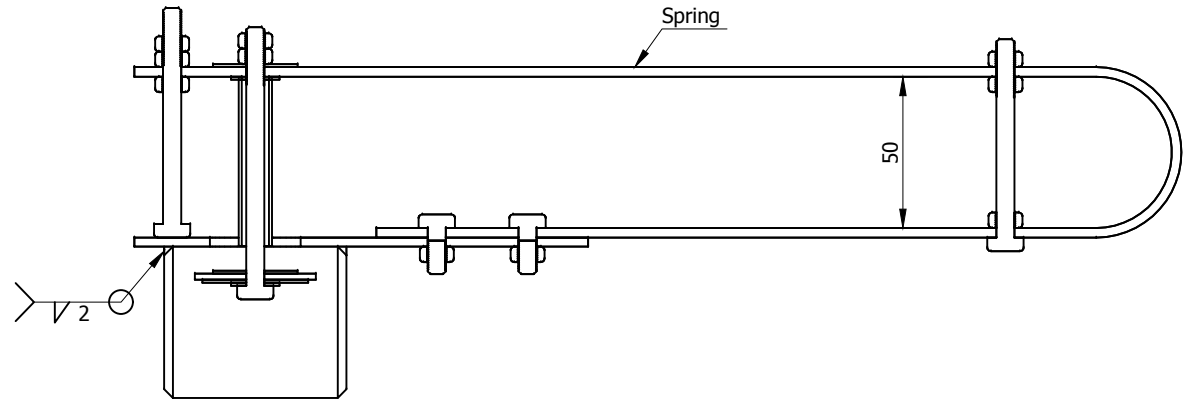
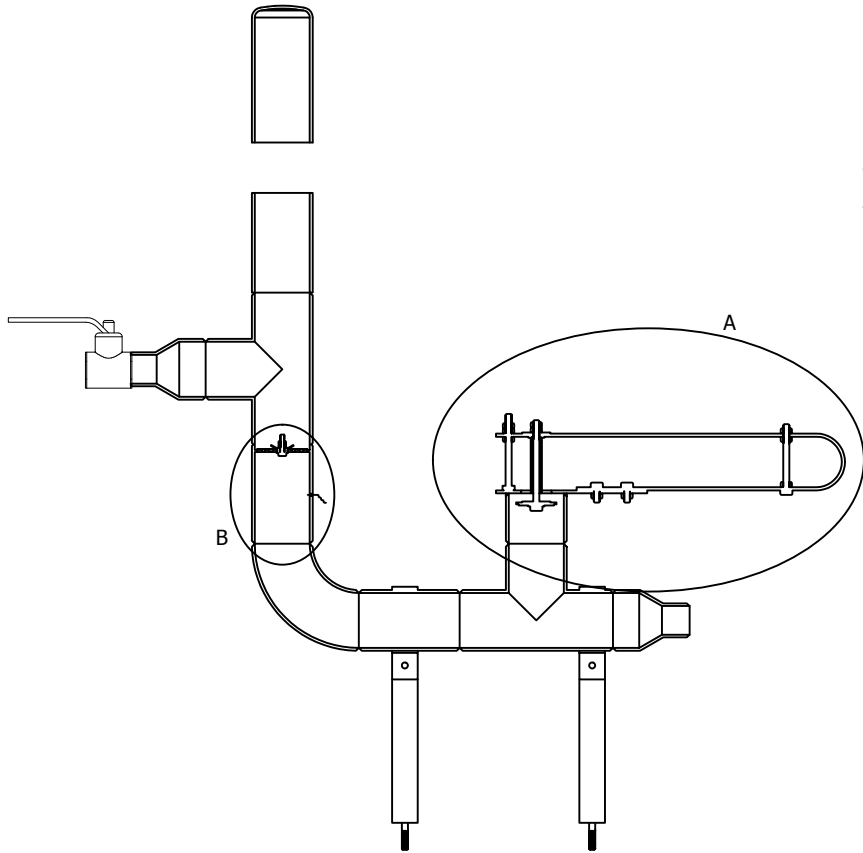
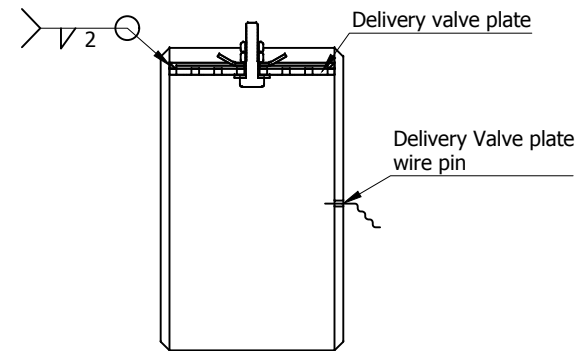


Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
3d views	pac_hrw_hydraulic-ram-for-pumping-water.dwg			A1
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	OHO e.V.	Assembly		1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:10	1/16

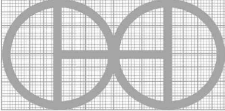


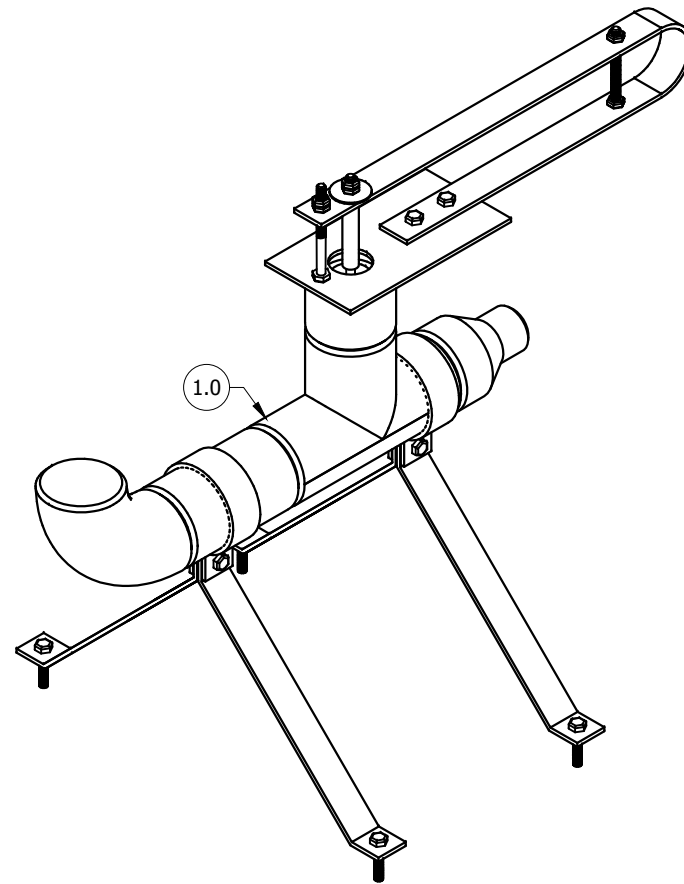
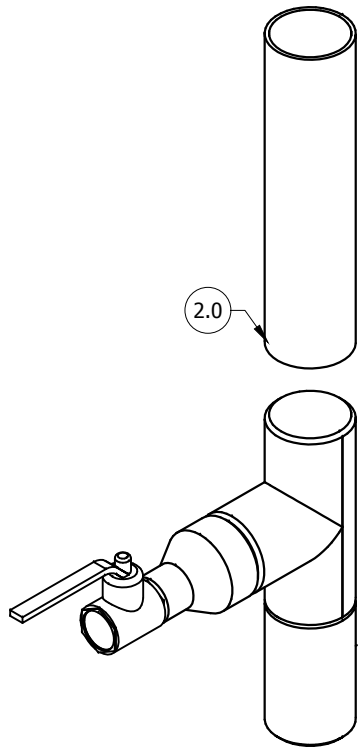
Detail B
Esc.: 1:2.5

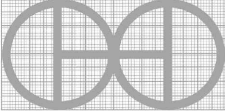


Detail A
Esc.: 1:2.5

Note: All units in mm.

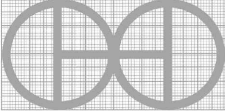
PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
3d views	pac_hrw_hydraulic-ram-for-pumping-water.dwg			A1
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
		Assembly		1
		LICENCE	SCALE	SHEET
Practical Action	OHO e.V.	CC-BY-SA 4.0	1:7.5	2/16



PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Exploded 3d View	pac_hrw_hydraulic-ram-for-pumping-water.dwg			A2
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Assembly		1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:5	3/16

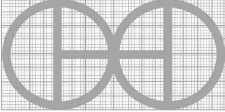
Parts list

POS	QTY	PART NAME	FILE NAME	PART TYPE	SPECIFICATIONS	SHEET
A1		3d views	Hydraulic_Ram.dwg			1
A1		3d views	Hydraulic_Ram.dwg			2
A2		Exploded 3d view	Hydraulic_Ram.dwg			3
B1		Parts list	ET_DW_A1_P1_Hydraulic Ram.xlsx			4
B2		Parts list	ET_DW_A1_P1_Hydraulic Ram.xlsx			5
C1		Technical notes	pac_hrw_hydraulic-ram-for-pumping.dwg			6
1.0		Impulse valve assembly	pac_hrw_hydraulic-ram-for-pumping.dwg			7
1.1	1	Spring	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	Steel A36 30 x 3mm Flat Bar	8
1.2	1	Spring tension bolt		Standard	M6 DIN 933	
1.3	1	Stroke adjustment bolt		Standard	M6 DIN 933	
1.4	5	Spring nuts		Standard	M6 DIN 934	
1.5	1	Valve plate	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	Steel A36, thickness 3mm	9
1.6	2	Valve plate bolt		Standard	M6 DIN 933	
1.7	2	Valve plate nut		Standard	M6 DIN 934	
1.8	2	Pipe connection 1		Buy	Steel A53 Threaded 50mm	
1.9	1	Reducing connection 1		Buy	Steel A53 Threaded 50mm – 25 mm	
1.10	1	T junction 1		Buy	Steel A53 Threaded 50mm	
1.11	1	Bend 90°		Buy	Steel A53 Threaded 50mm	
1.12	4	Legs straps	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	Steel A36 Flat Bar 30 x 3mm	10
1.13	6	Leg bolt		Standard	M6 DIN 933	
1.14	2	Leg nut		Standard	M6 DIN 934	
1.15	1	Impulse valve stem		Standard	M6 DIN 931	
1.16	2	Stem nut		Standard	M6 DIN 934	
1.17	1	Stem washer – metal 1		Standard	DIN 125	
1.18	2	Stem washer – metal 2		Standard	DIN 125	
1.19	2	Stem washer - rubber	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	M6 x 28, thickness 2mm	11
1.20	1	Stem washer - rubber	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	M6 x 40, thickness 2mm	12
1.21	1	Stem washer – metal 3		Standard	DIN 125	
1.22	1	Thin walled metal tube		Standard	Steel A53 90mm Bore	

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Parts list	ET_DW_A1_P1_Hydraulic_Ram.xlsx			B1
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
		Parts list		
Practical Action	OHO e.V.	LICENCE	SCALE	SHEET
		CC-BY-SA 4.0		4/16

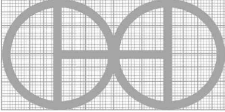
Parts list

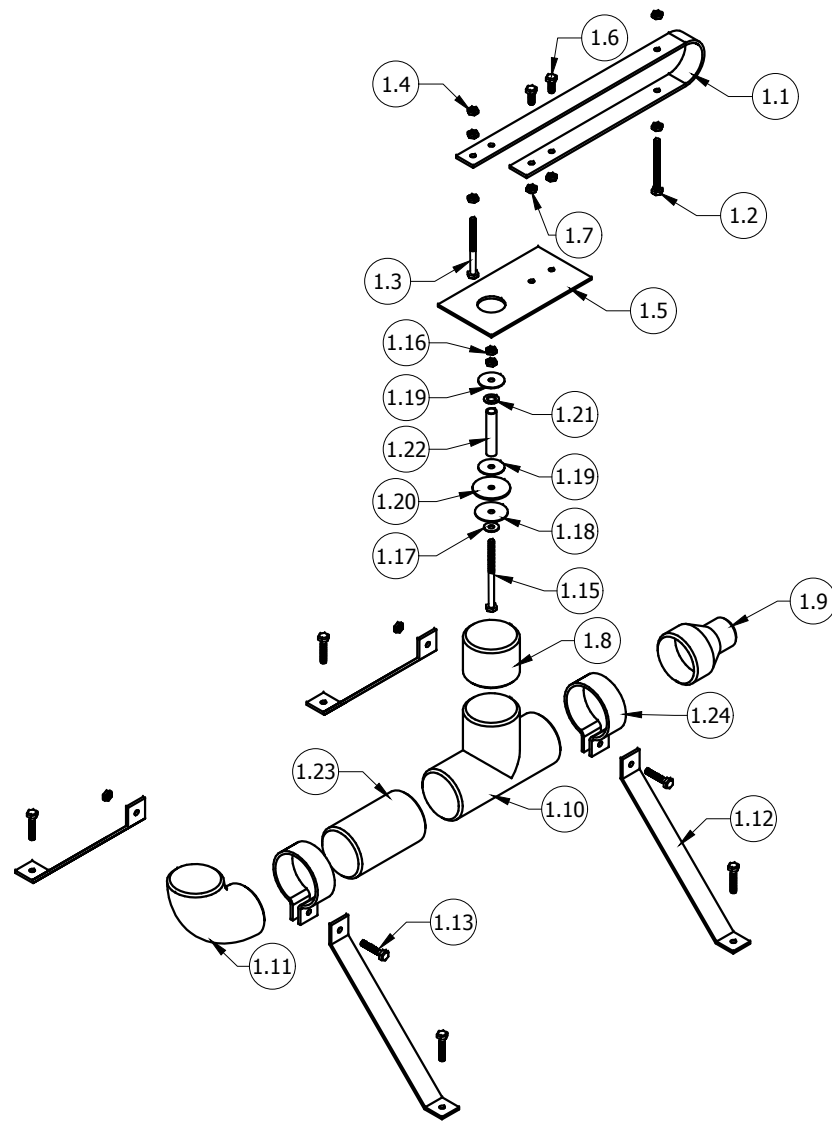
POS	QTY	PART NAME	FILE NAME	PART TYPE	SPECIFICATIONS	SHEET
1.23	1	Pipe connection 1		Buy	Steel A53, Threaded 50mm	
1.24	2	Clamps	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	Steel A36 Flat Bar 60mm	13
2.0	1	Delivery valve assembly	pac_hrw_hydraulic-ram-for-pumping.dwg			14
2.1	1	Pipe connection 2		Buy	Thin copper wire, less than 1 mm	
2.2	1	T junction 2		Buy	Steel A53 Threaded 50mm	
2.3	1	Reducing connection 2		Buy	Steel A53 Threaded 50mm – 25 mm	
2.4	1	Tap valve		Buy	Steel A53 25mm	
2.5	1	Air chamber pipe		Standard	Steel A53 Threaded 50mm	
2.6	1	Air chamber cap		Buy	Steel A53 Threaded 50mm	
2.7	1	Delivery valve plate	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	Steel A36, thickness 3mm	15
2.8	1	Delivery valve bolt		Standard	DIN 931	
2.9	2	Delivery valve nuts		Standard	DIN 125	
2.10	1	Ruber Washer	pac_hrw_hydraulic-ram-for-pumping.dwg	Production	Rubber 4.5 mm	16
2.11	1	Bent Metal Washer		Standard	Bent washer 6mm	
2.12	1	Stem washer – metal 1		Standard	M6 DIN 934	
2.13	1	Wire pin		Buy	Copper wire D=0.8 mm	

PROJECT		CREATED BY		APPROVED BY		DATE		VERSION	
Hydraulic Ram for Pumping W.		E. Araujo		A. Morillo		13/07/2021		1.0	
PART NAME			FILE NAME					POS	
Parts list			ET_DW_A1_P1_Hydraulic_Ram.xlsx					B2	
DEVELOPED BY			REDESIGNED BY		DOC. TYPE		MATERIAL		QUANTITY
Practical Action			 OHO e.V.		Parts list				
					LICENCE		SCALE		SHEET
					CC-BY-SA 4.0				5/16

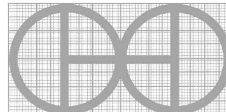
TECHNICAL NOTES

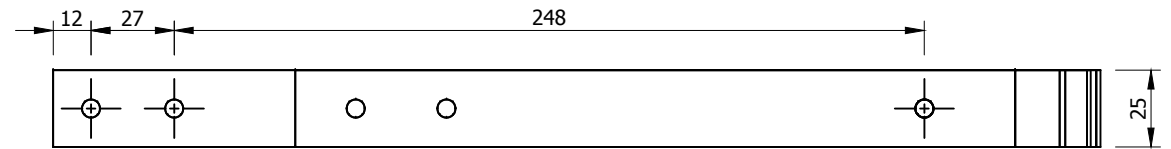
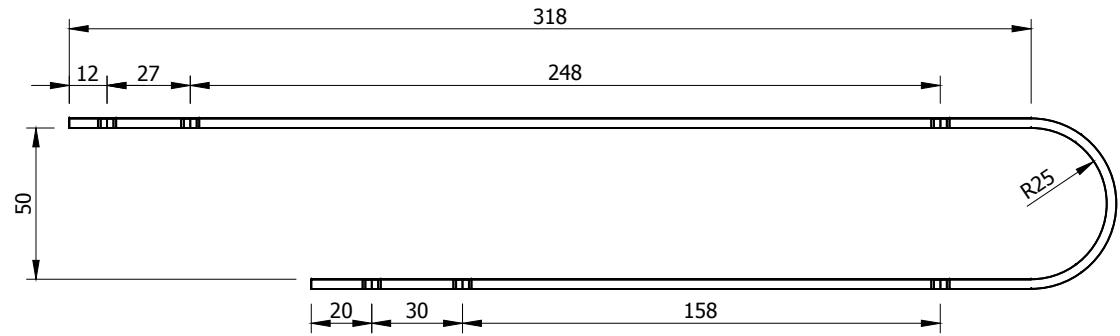
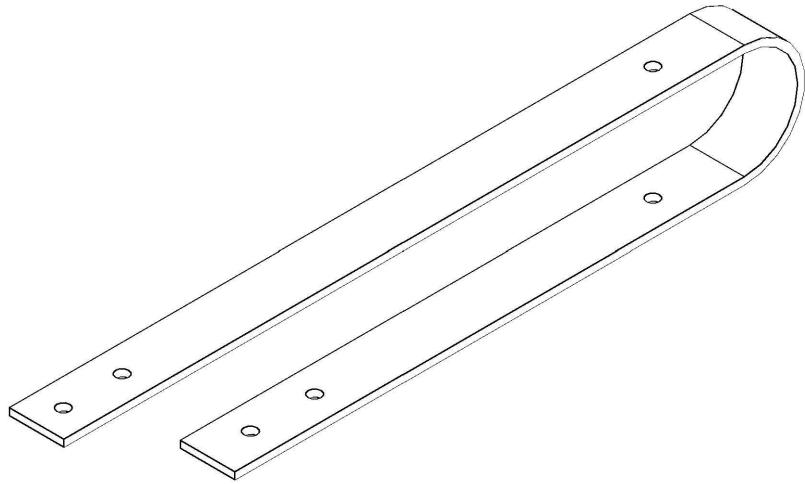
NOTES	CONTENT
GENERAL NOTES	
Metal structure treatment	Iron structures should be painted to prevent rust and improve equipment life. - Remove loose rust with a wire brush, sandpaper or chemical rust remover. - If applicable, sand areas where paint is chipping until surface is smooth. - Remove dust or oil with a degreaser or denatured alcohol. - Prime surface to protect against rust and corrosion
Foundations fixing	- The ground must be stable and have a low water table. - The structure must be fixed on firm oncrete soil or on poured footings with steel reinforcement. - The anchorage can be bolted with expansive ramplugs or welded.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Technical notes	pac_hrw_hydraulic-ram-for-pumping-water.dwg			C1
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	T. notes		
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0		6/16

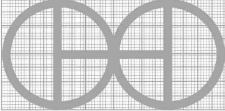


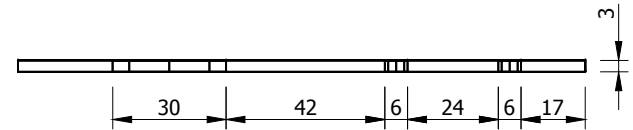
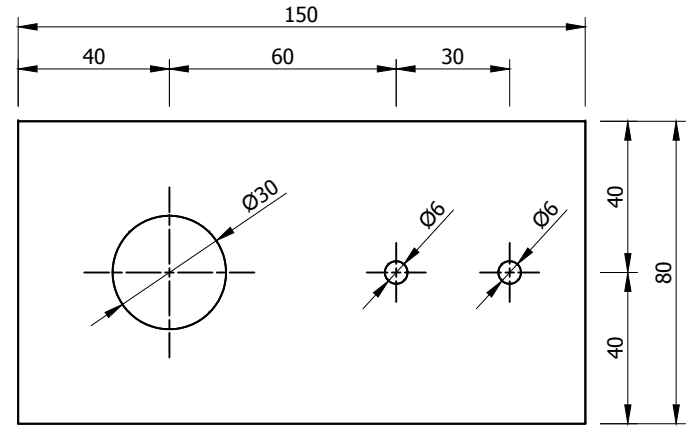
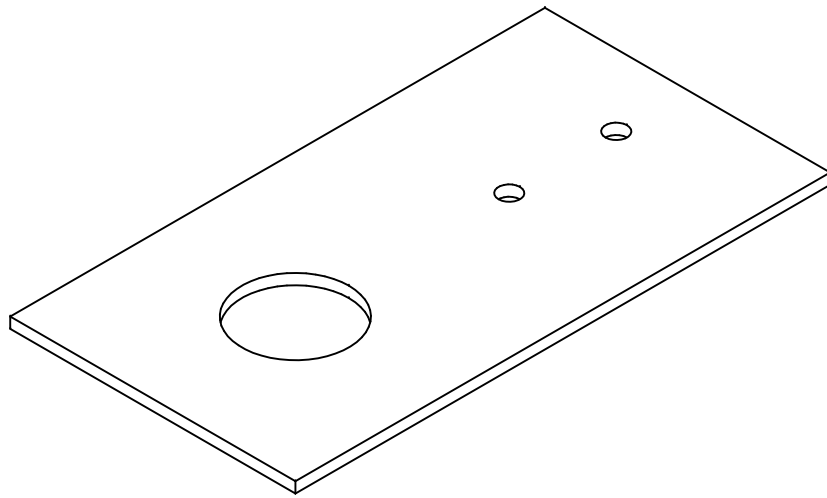
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	D. Name	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Impulse valve assembly	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.0
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
		Assembly		1
Practical Action	OHO e.V.	LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:8	7/16

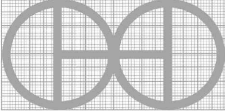


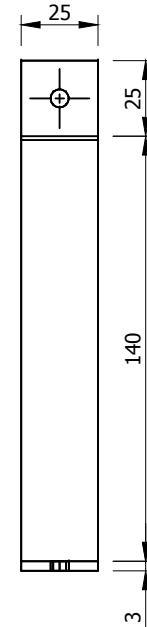
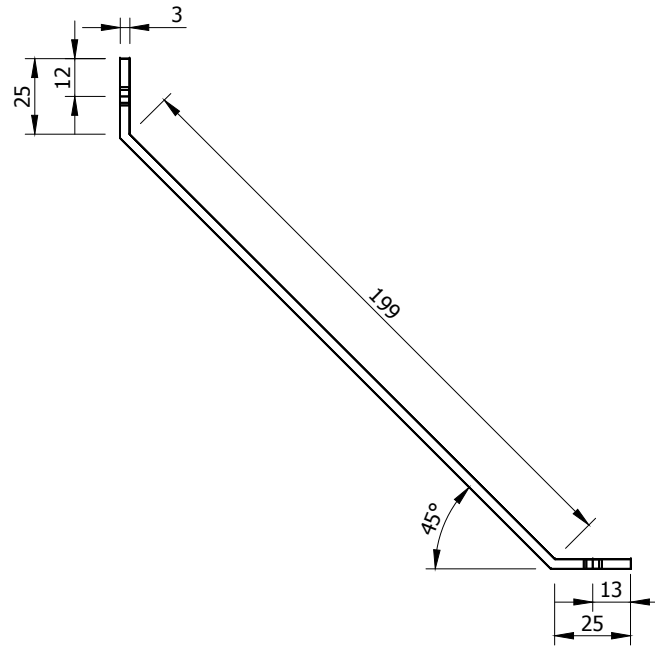
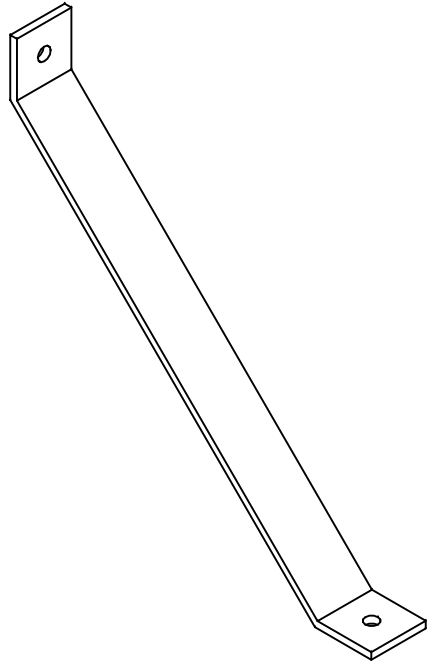
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Spring	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.1
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Part	Steel A36	1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:2.5	8/16

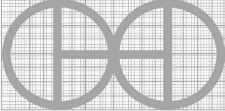


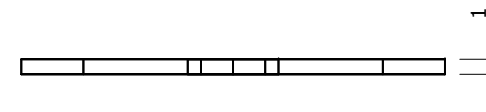
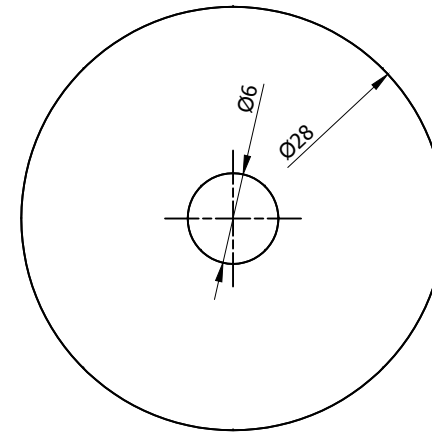
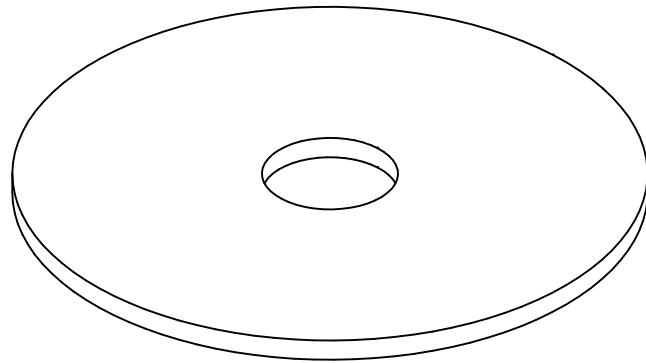
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Valve plate	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.5
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
		Part	Steel A36	1
Practical Action	OHO e.V.	LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:2	9/16

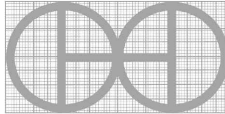


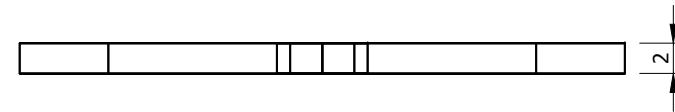
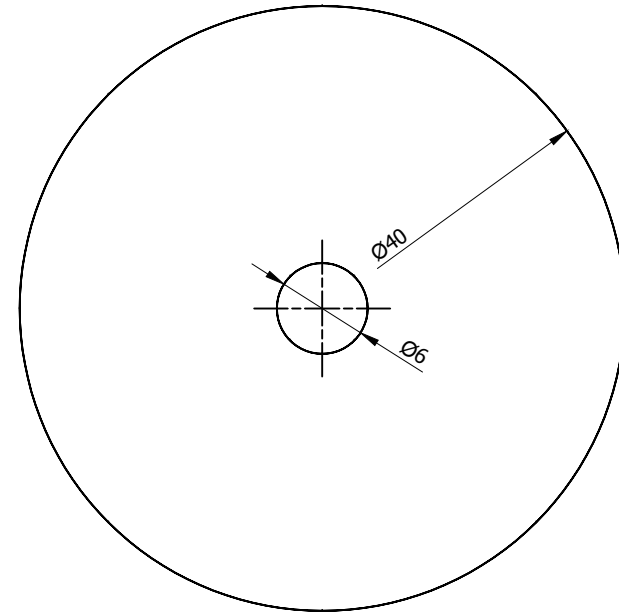
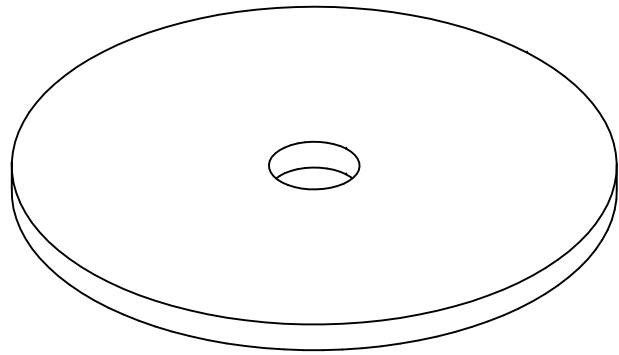
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Legs straps	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.12
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
		Part	Steel A36	4
Practical Action	OHO e.V.	LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:2.5	10/16

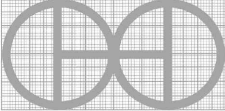


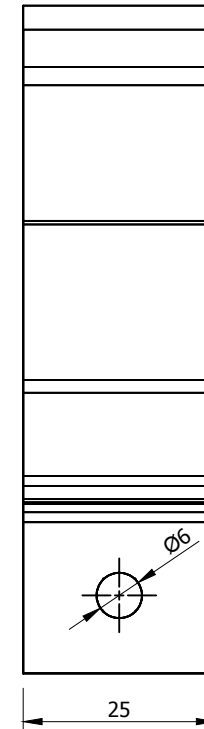
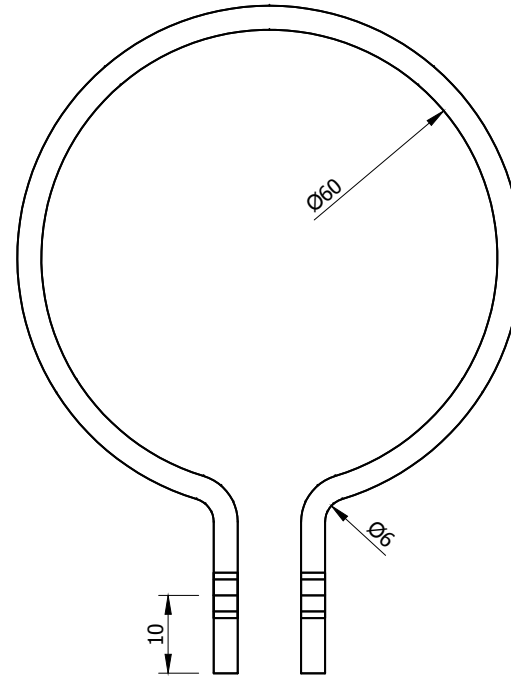
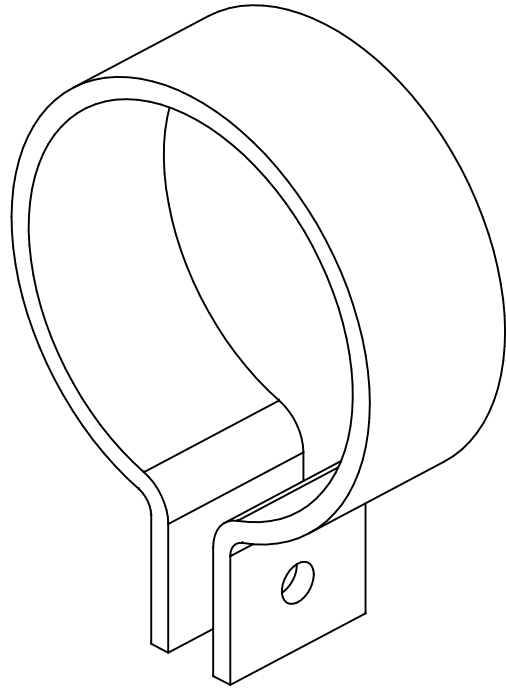
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Stem washer - rubber 1	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.19
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Part	Rubber	2
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	2:1	11/16

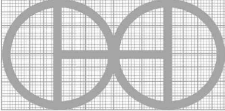


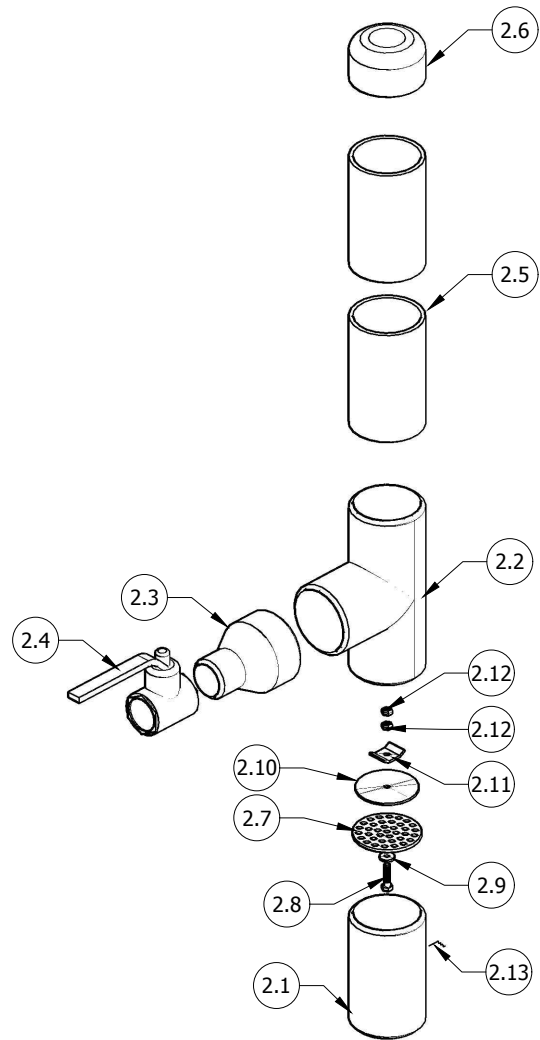
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Stem washer - rubber 2	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.20
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Part	Rubber	1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	2:1	12/16

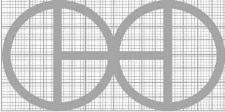


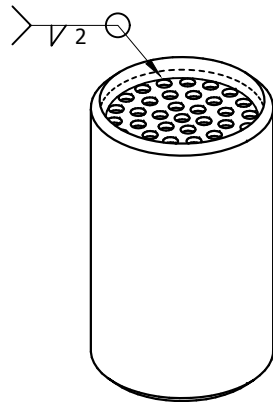
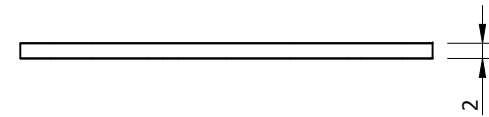
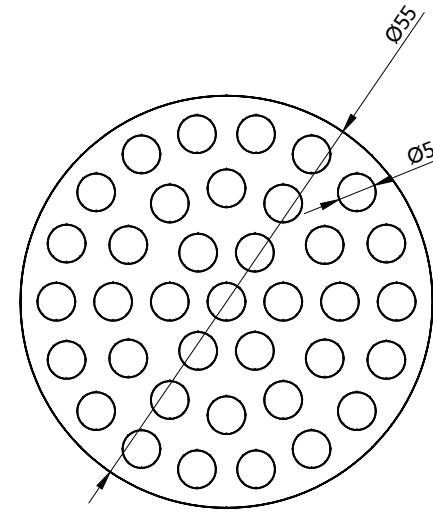
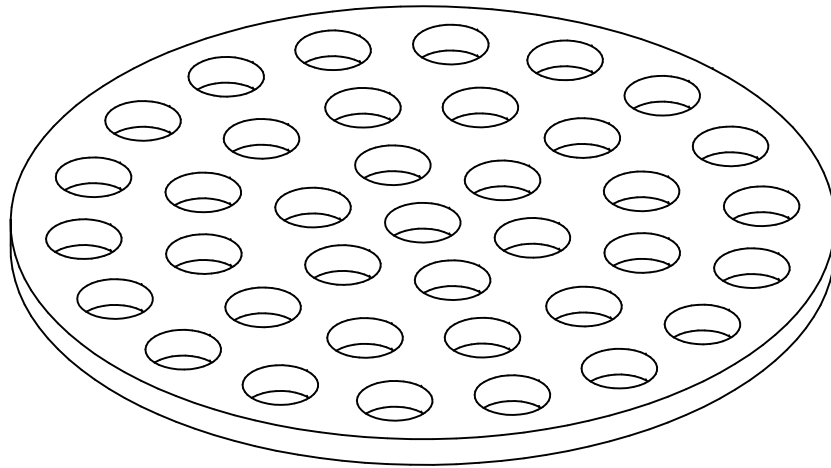
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Clamps	pac_hrw_hydraulic-ram-for-pumping-water.dwg			1.24
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
		Part	Steel A36	1
Practical Action	OHO e.V.	LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:1	13/16

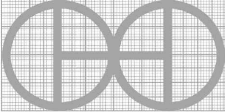


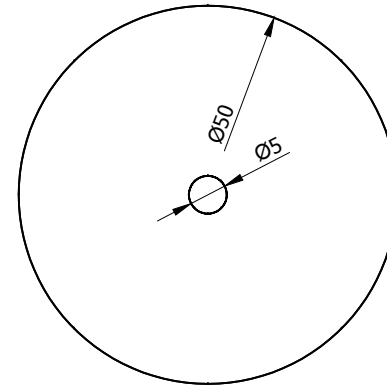
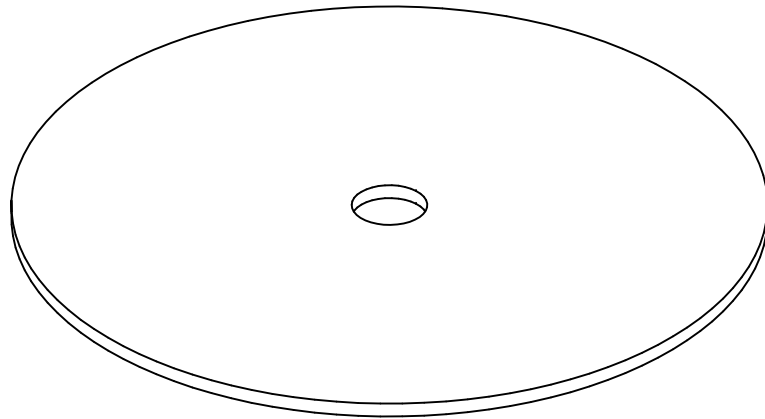
Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Delivery valve assembly	pac_hrw_hydraulic-ram-for-pumping-water.dwg			2.0
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Assembly		1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:1	14/16

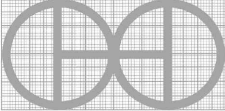


Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Delivery valve plate	pac_hrw_hydraulic-ram-for-pumping-water.dwg			2.7
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Part	Steel A36	1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:1	15/16



Note: All units in mm.

PROJECT	CREATED BY	APPROVED BY	DATE	VERSION
Hydraulic Ram for Pumping W.	E. Araujo	A. Morillo	13/07/2021	1.0
PART NAME	FILE NAME			POS
Ruber washer	pac_hrw_hydraulic-ram-for-pumping-water.dwg			2.10
DEVELOPED BY	REDESIGNED BY	DOC. TYPE	MATERIAL	QUANTITY
Practical Action	 OHO e.V.	Part	Ruber	1
		LICENCE	SCALE	SHEET
		CC-BY-SA 4.0	1:1	16/16