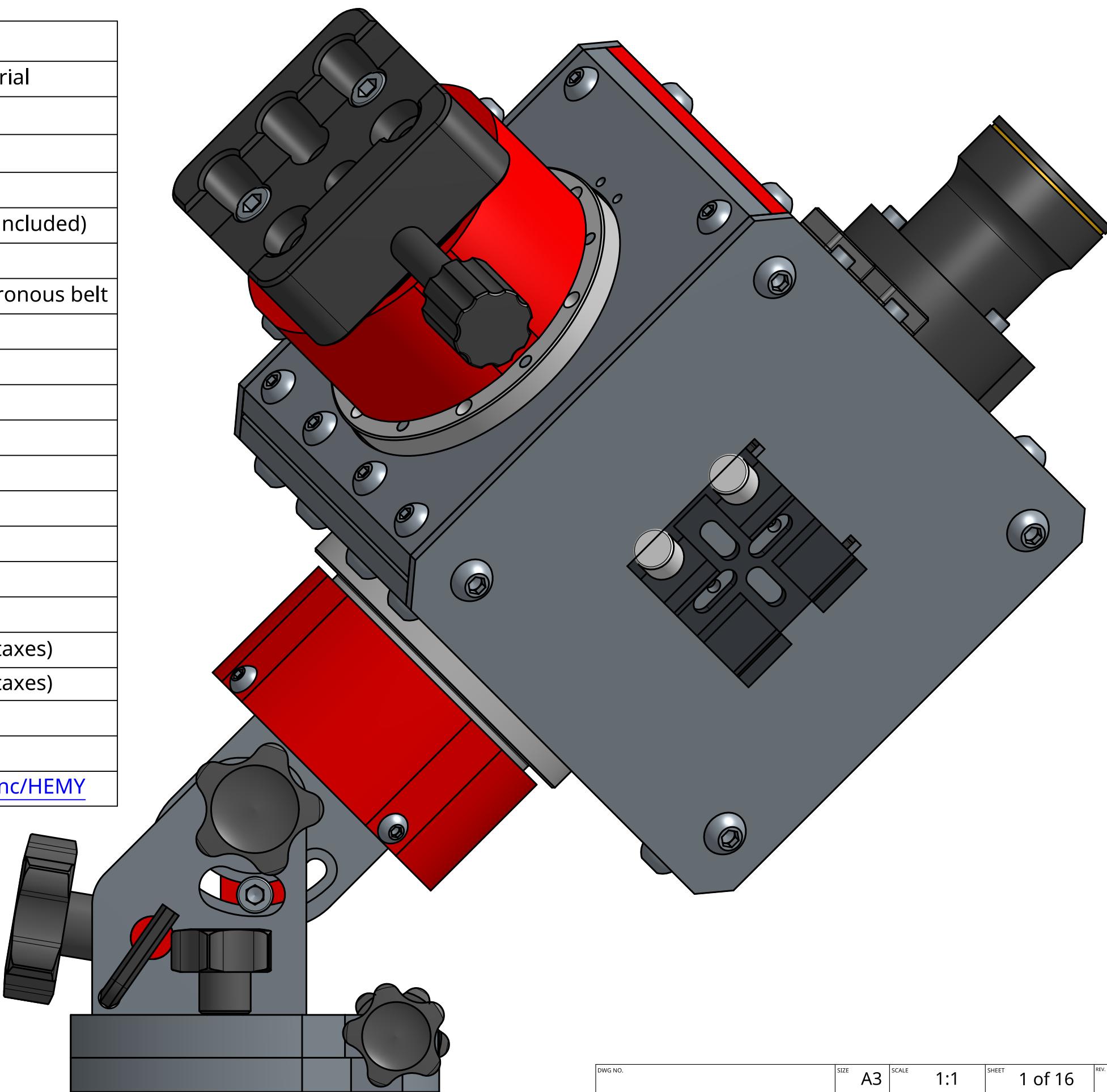


6 5 4 3 2 1

HEMY Harmonic Equatorial Mount Yourself

D

Specifications	
Mount Type	Dual Alt-Az/Equatorial
Mount Series	HEMY
License	GPL-3.0 license
Weight Capacity	15 kg / 20 kg
Type of Mount Electronics	AstrAlim / OnStepX (not included)
Mount Slew Speeds	5°/s
Motor Type	Harmonic Drive and Synchronous belt
Reduction Ratio RA	500:1
Reduction Ratio DEC	300:1
Resolution RA	0.10"
Resolution DEC	0.17"
Mount Latitude Range (°)	0° - 90°
Azimuth Angle Range	±5°
Periodic Error Duration	440s
Polar Scope Included?	No
Mount Weight	5 kg
CNC for the mount	JLC3DP = 200\$ (excl. taxes)
CNC for the base	JLC3DP = 160\$ (excl. taxes)
Price for CNC building	< 400\$
Total price	< 800\$
Sources	https://github.com/polvinc/HEMY



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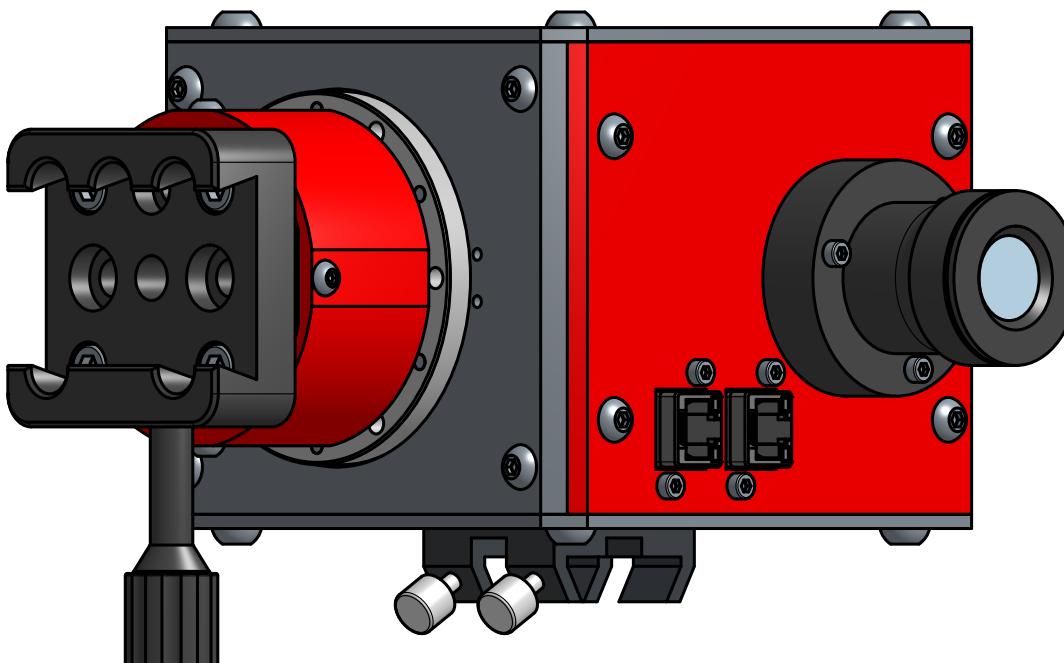
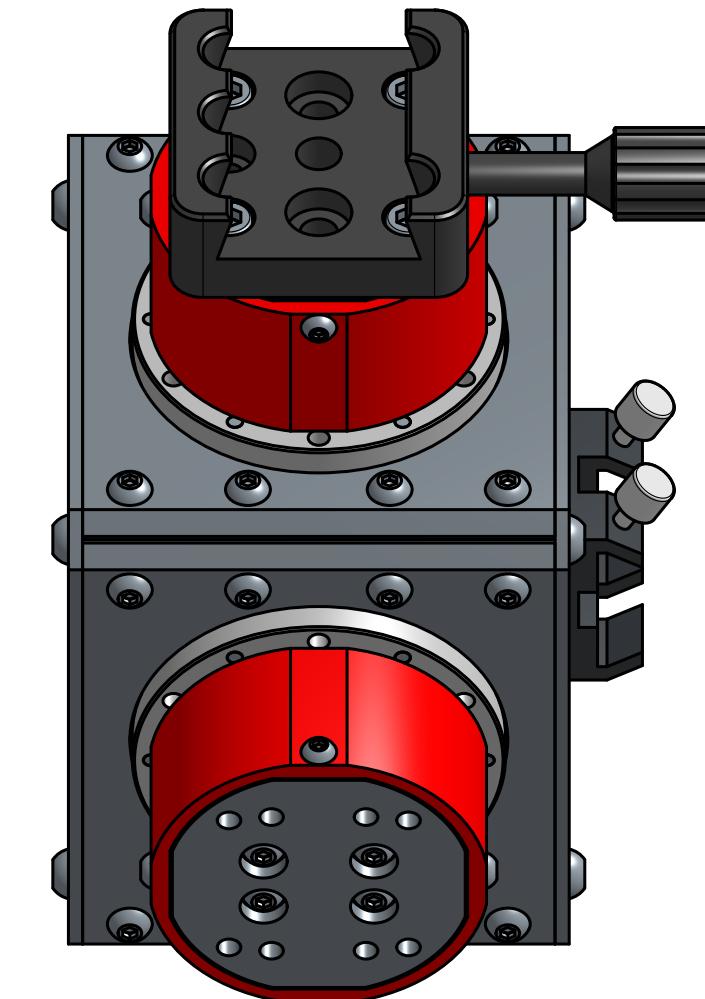
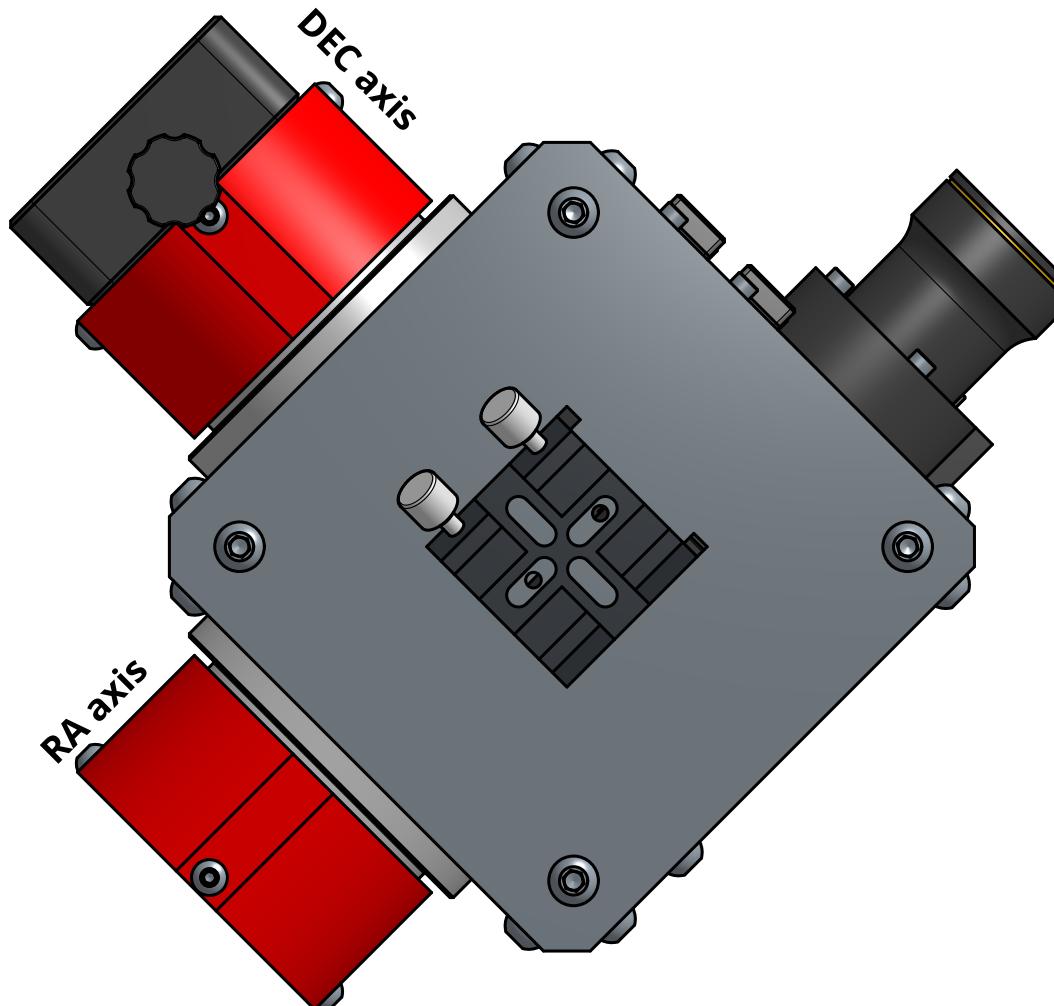
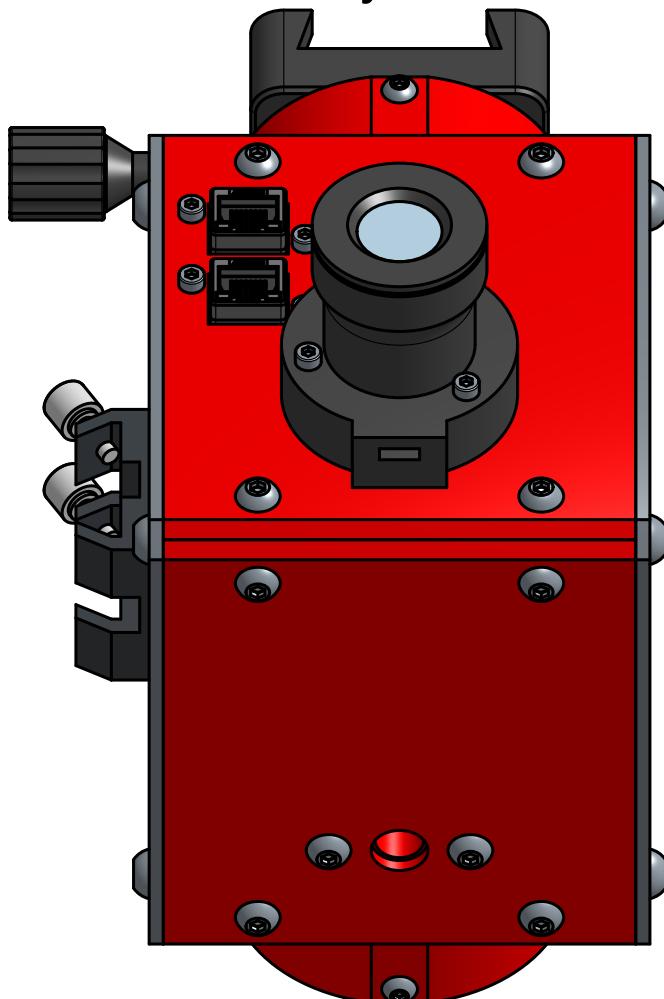
6 5 4 3 2 1

HEMY Harmonic Equatorial Mount Yourself

"Making your own Harmonic Equatorial Mount out of aluminium?

Only a moron would do that, even if it's opensource"

"Moron Yourself!"

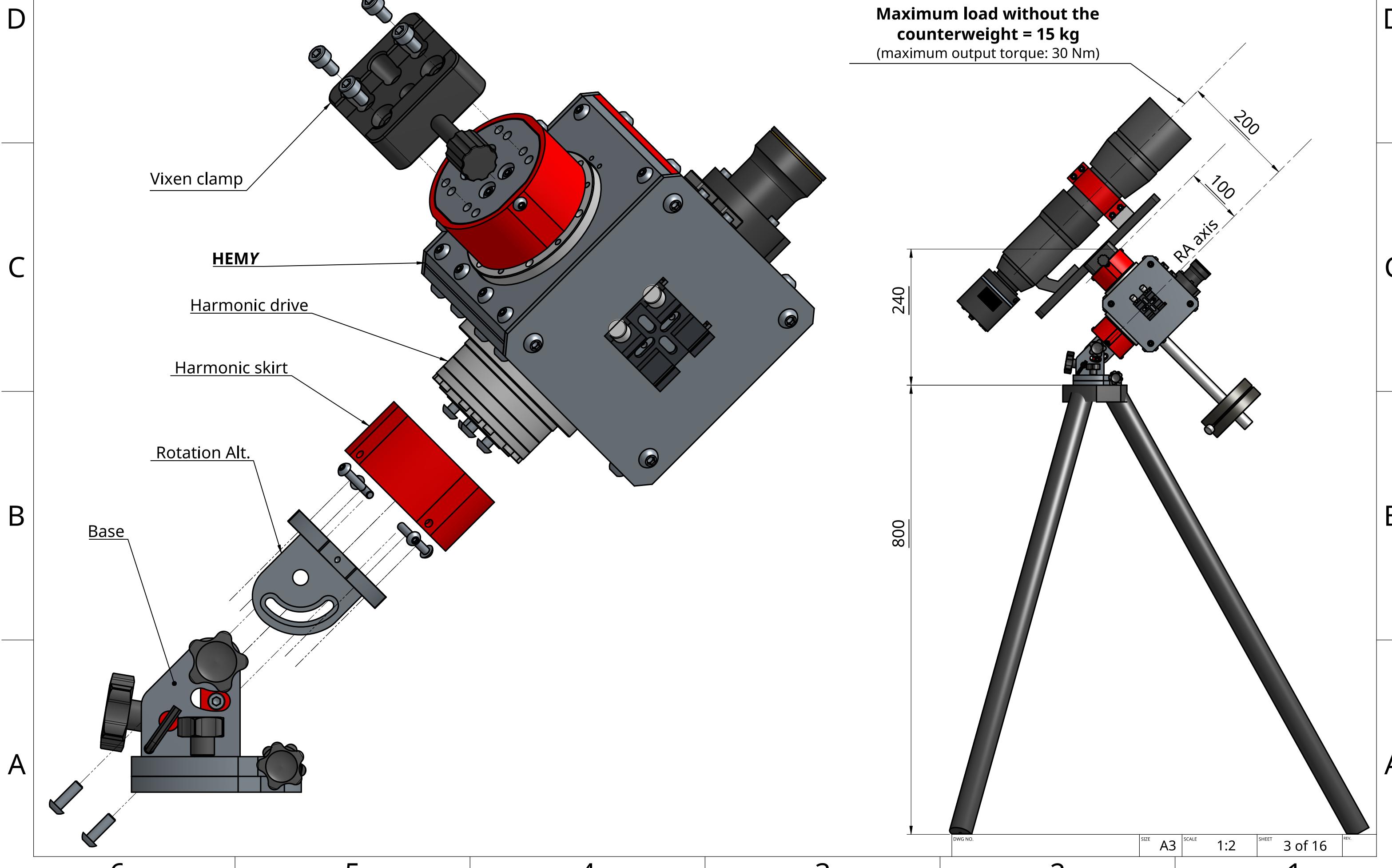


UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS		DRAWN	NAME	SIGNATURE	DATE		
ANGULAR = \pm °		CHECKED			2024-07-02		
SURFACE FINISH \sqrt{Ra} 3.2		APPROVED				TITLE	
DO NOT SCALE DRAWING						HEMY	
BREAK ALL SHARP EDGES AND REMOVE BURRS						Harmonic Equatorial Mount Yourself	
FIRST ANGLE PROJECTION		MATERIAL	AI 6061	FINISH	Bead blasting Anodizing	DWG NO.	REV.
SCALE		1:2	WEIGHT	4.2 kg		2 of 16	

6 5 4 3 2 1

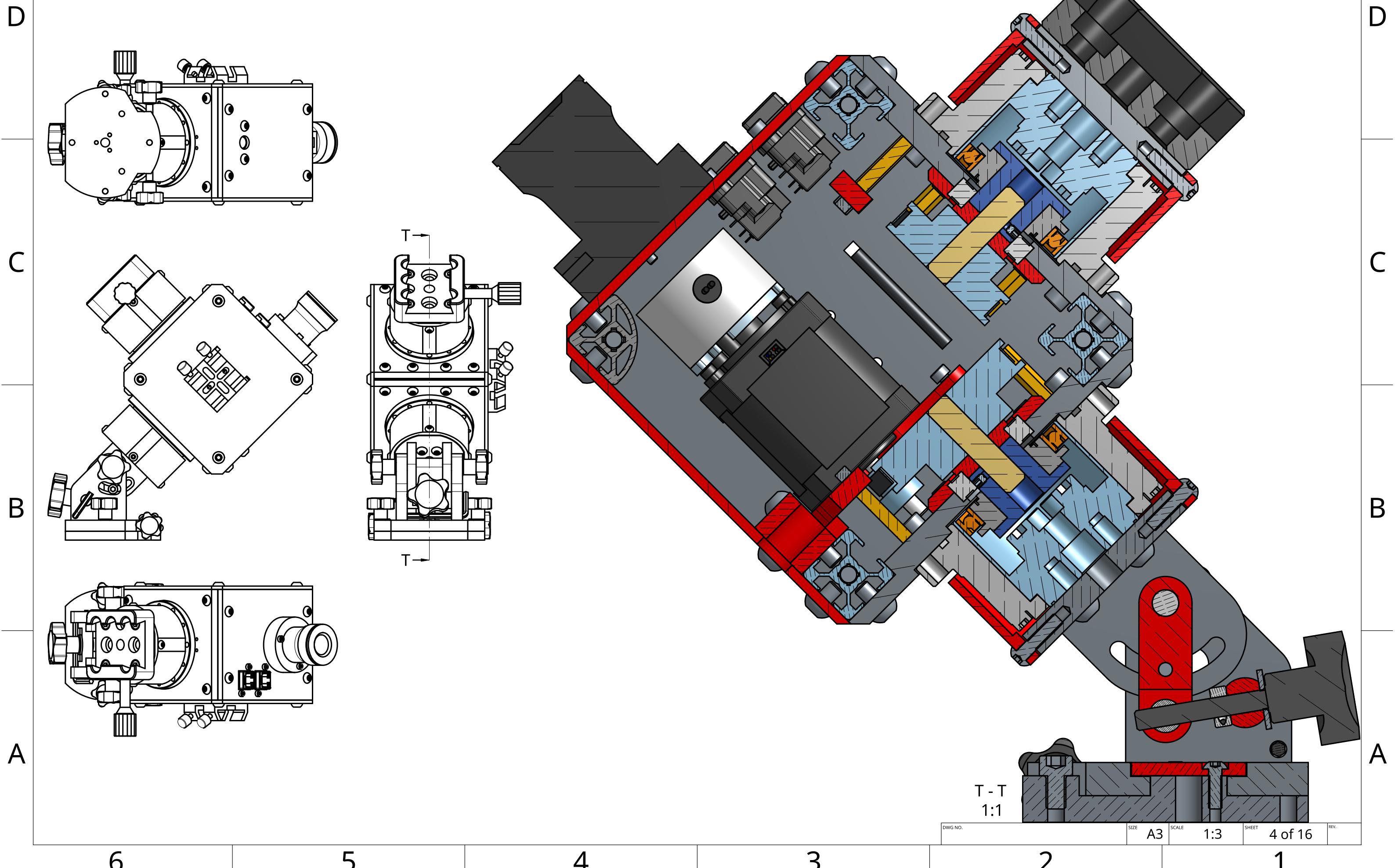
6 5 4 3 2 1

HEMY Harmonic Equatorial Mount Yourself



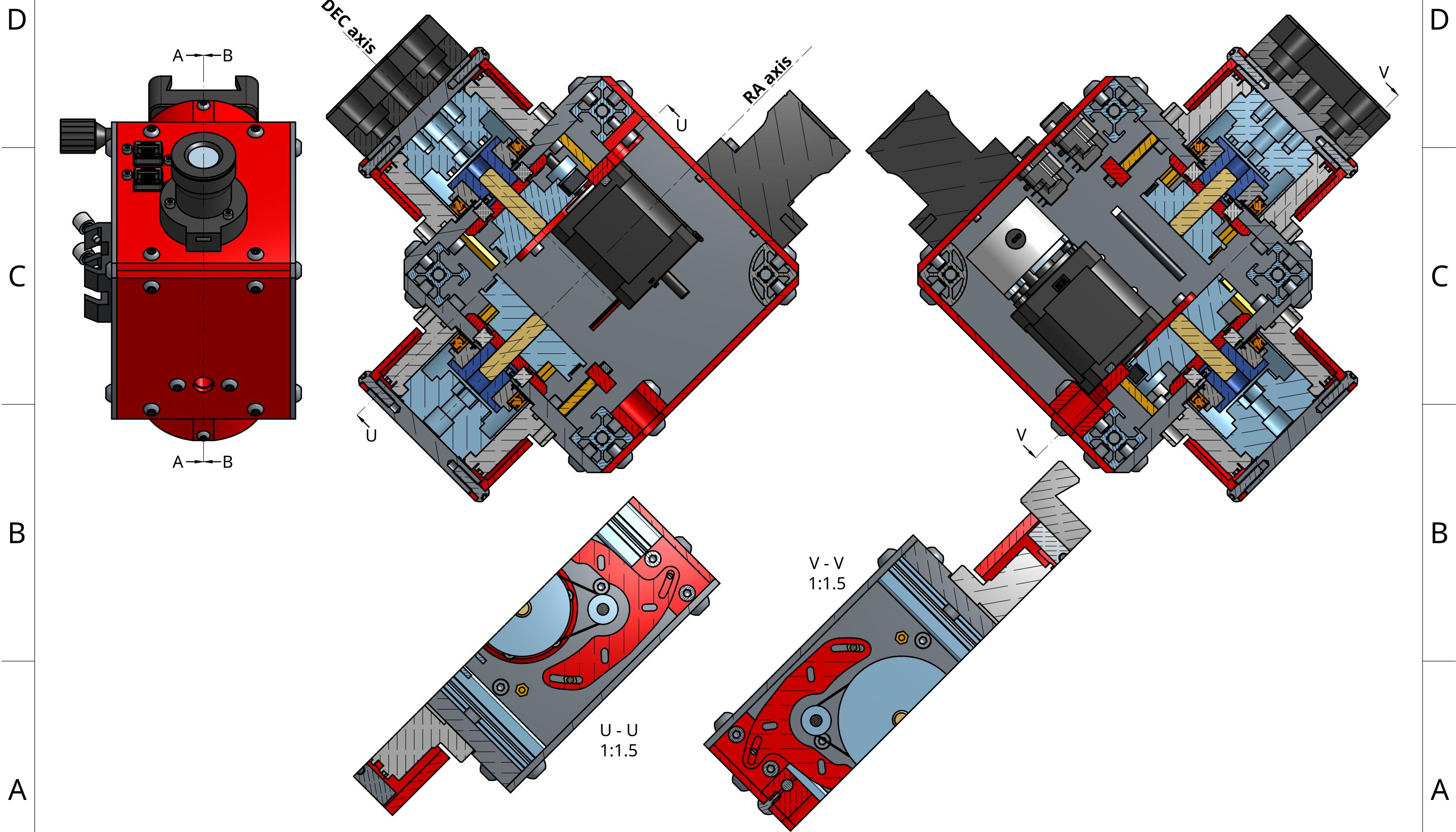
6 5 4 3 2 1

HEMY Harmonic Equatorial Mount Yourself



6 5 4 3 2 1

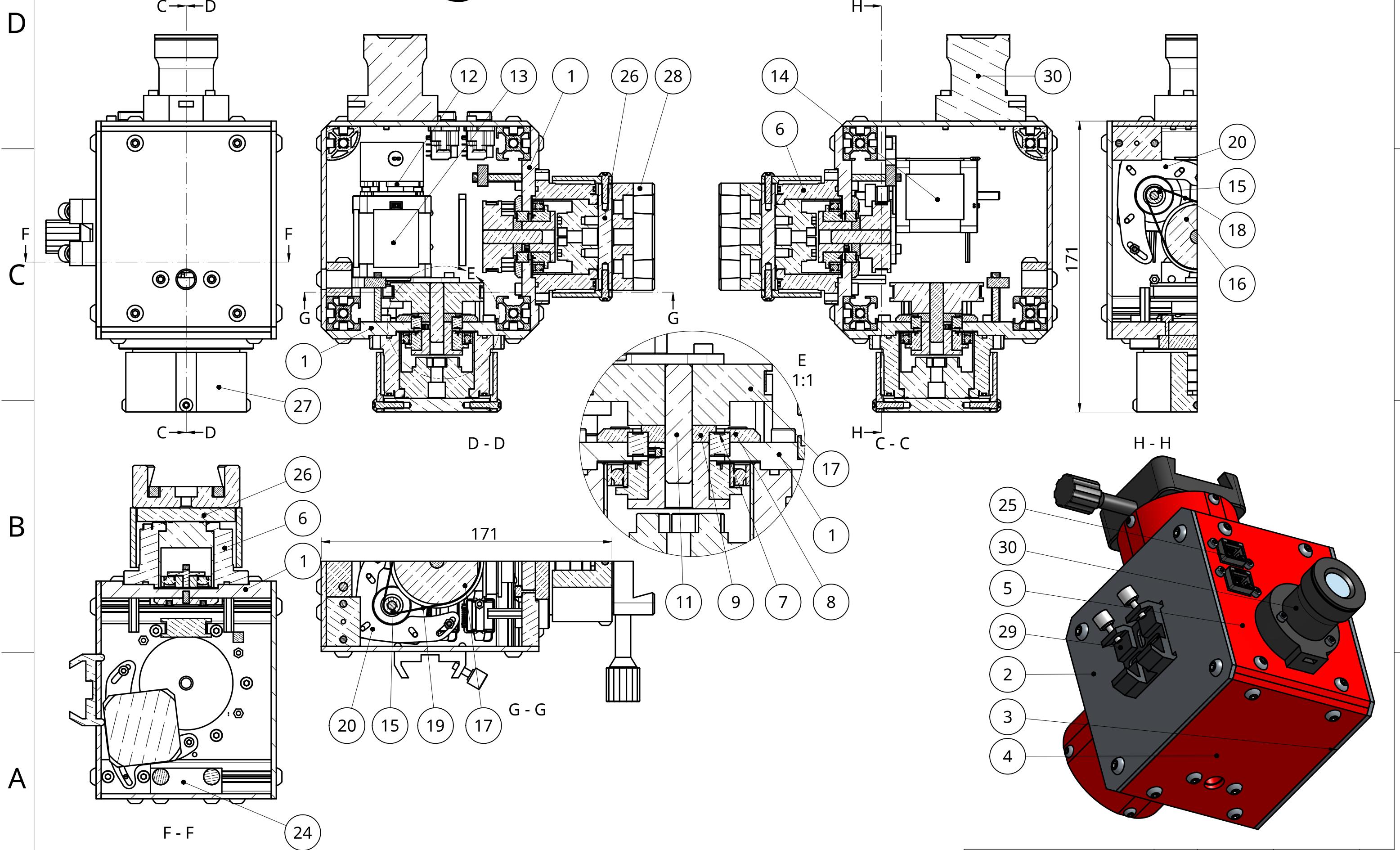
HEMY Harmonic Equatorial Mount Yourself



6 5 4 3 2 1

6 5 4 3 2 1

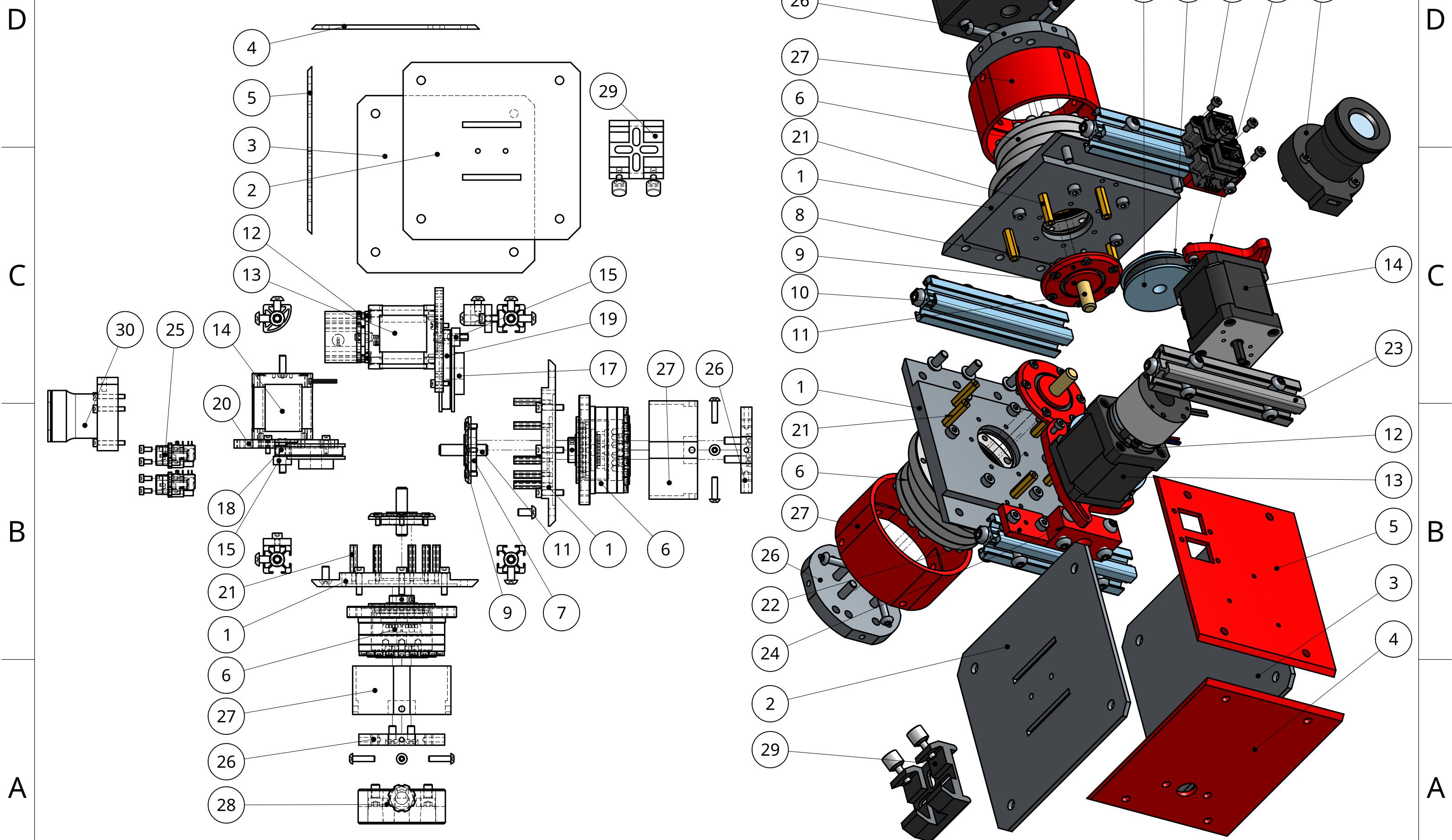
Global drawing - HEMY



6 5 4 3 2 1

6 5 4 3 2 1

Explode view - HEMY

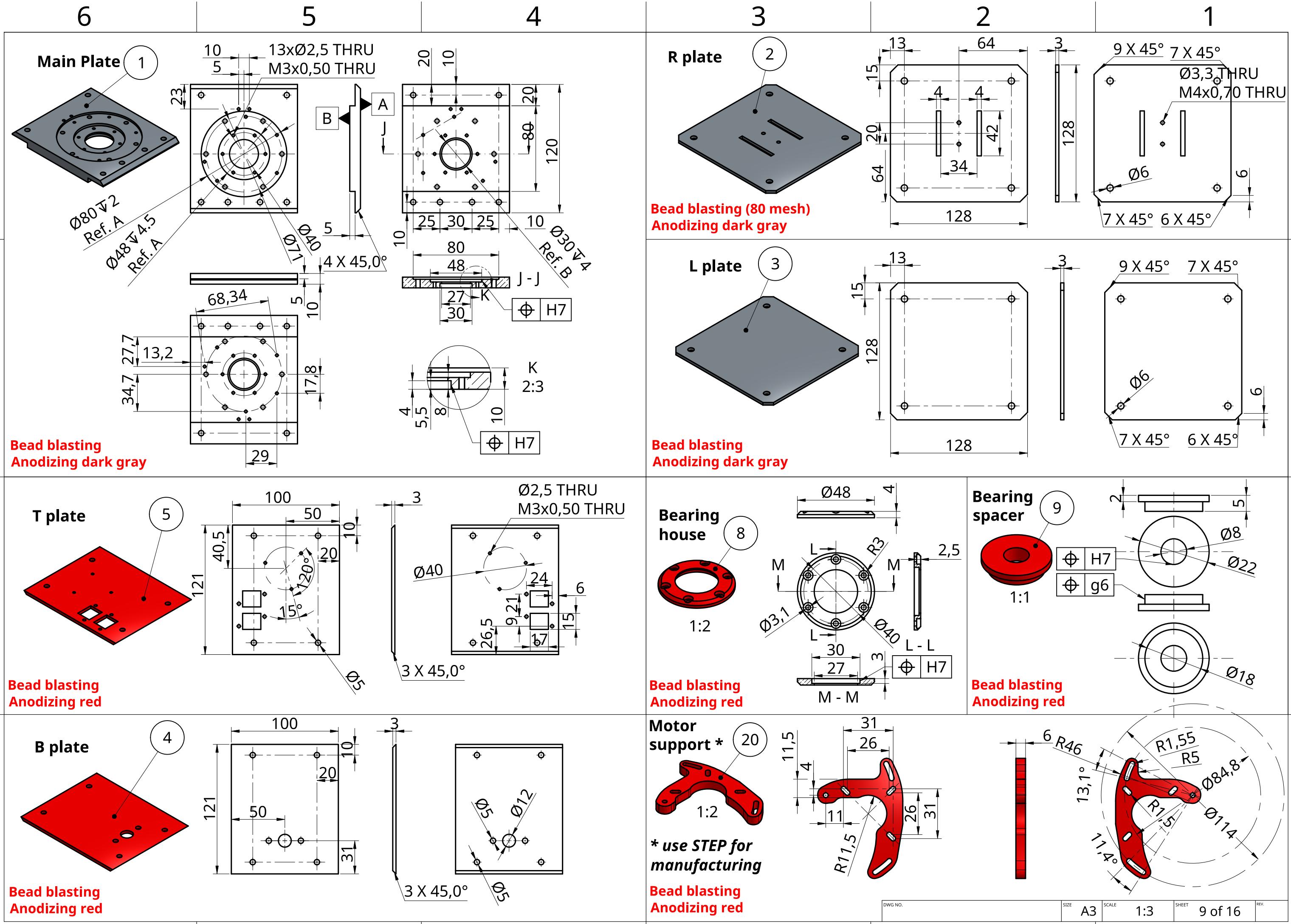


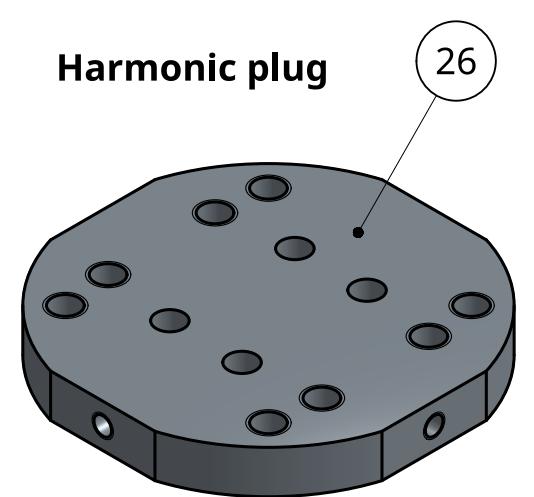
6 5 4 3 2 1

Bill of Materials - HEMY

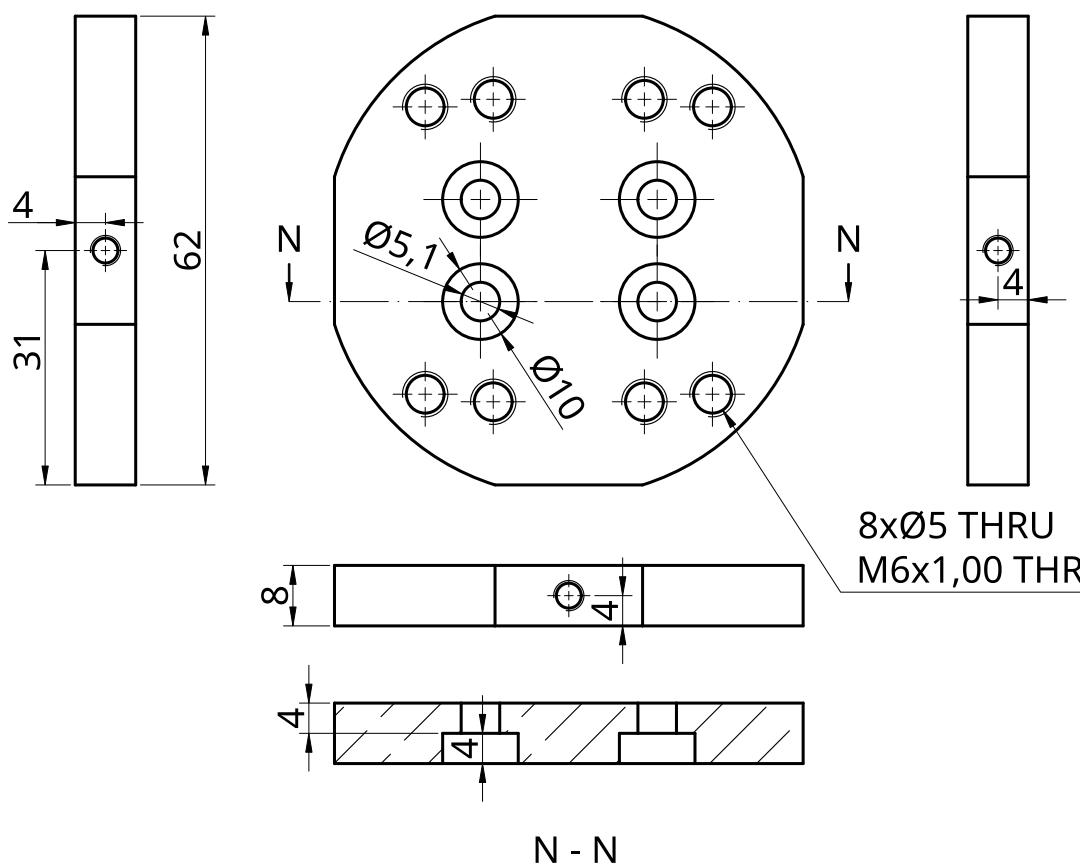
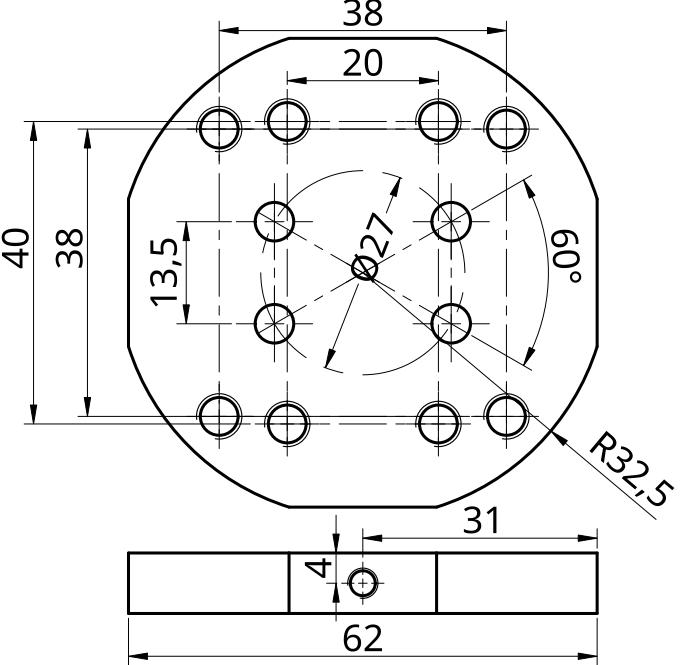
Item	Quantity	Description	Mass
1	2	01 - Main plate	0.213 kg
2	1	02 - R plate	0.129 kg
3	1	03 - L plate	0.132 kg
4	1	04 - B plate	0.094 kg
5	1	05 - T plate	0.091 kg
6	2	06 - Harmonic drive (CSF-17-100-2UH or HBS/HBG-17-100)	0.539 kg
7	2	07 - Bearing 18307-RS	0.008 kg
8	2	08 - Bearing housing	0.01 kg
9	2	09 - Pulley spacer	0.003 kg
10	3	10 - Rexroth 20x20x100mm	0.041 kg
11	2	11 - Diameter 8 shaft	0.014 kg
12	1	12 - Nema 17 brake (SWB-01)	0.018 kg
13	1	13 - Nema 17 double shaft 0.9° (17HM19-1684D)	0.412 kg
14	1	14 - Nema 17 simple or double shaft 0.9° (17HM19-1684D)	0.32 kg
15	2	15 - Pulley 16T	0.003 kg
16	1	16 - Pulley 60T	0.043 kg
17	1	17 - Pulley 80T	0.075 kg
18	1	18 - Belt 150mm	0.001 kg
19	1	19 - Belt 200mm	0.001 kg
20	2	20 - Motor support	0.02 kg
21	10	21 - Spacer M3x20mm	0.003 kg
22	2	22 - Spacer pivot motor	0.007 kg
23	1	23 - Round Rexroth 20x20x100mm	0.044 kg
24	1	24 - Counterweight Support	0.028 kg
25	2	25 - Ethernet connectors (MRJ538401)	0.008 kg
26	2	26 - Harmonic/Vixen plug	0.061 kg
27	2	27 - Harmonic skirt (3D printed)	0.024 kg

Item	Quantity	Description	Mass
28	1	27 - Vixen clamp (Neewer QR011)	0.177 kg
29	1	28 - (Optional) Polar viewfinder support (Neewer LS-15)	0.031 kg
30	1	30 - (Optional) QHY Polemaster	0.065 kg
31	4	Hex socket head cap screw M3x0.50 x 10 Stainless Steel	0.001 kg
32	3	Hex socket head cap screw M3x0.50 x 20 Stainless Steel	0.002 kg
33	16	Hex socket head cap screw M3x0.50 x 6 Stainless Steel	0.001 kg
34	4	Hex socket head cap screw M4x0.70 x 10 Stainless Steel	0.002 kg
35	12	Hex socket head cap screw M4x0.70 x 16 Stainless Steel	0.003 kg
36	4	Hex socket head cap screw M6x1.00 x 10 Stainless Steel	0.005 kg
37	8	Socket button head screw M4x0.7 x 16 Stainless Steel	0.002 kg
38	16	Socket button head screw M5x0.8 x 10 Stainless Steel	0.002 kg
39	4	Socket button head screw M5x0.8 x 16 Stainless Steel	0.003 kg
40	2	Socket button head screw M5x0.8 x 25 Stainless Steel	0.005 kg
41	10	Socket button head screw M5x0.8 x 8 Stainless Steel	0.002 kg
42	8	Socket button head screw M6x1 x 16 Stainless Steel	0.005 kg

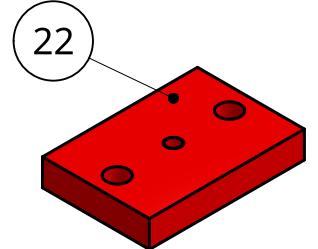




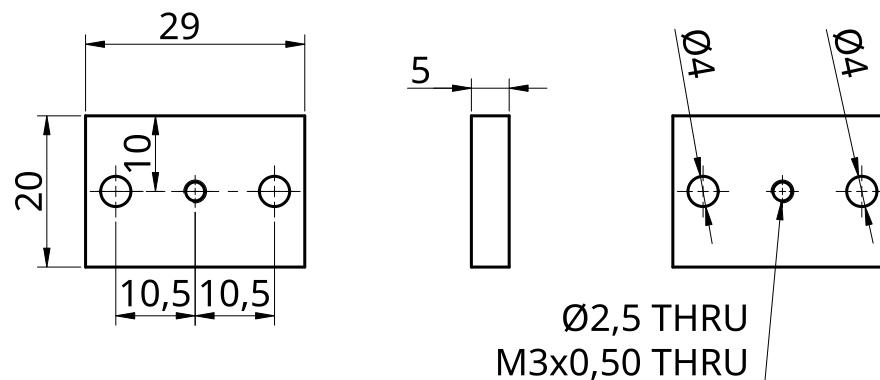
Bead blasting Anodizing dark gray



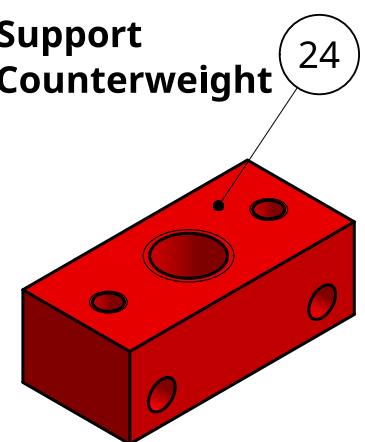
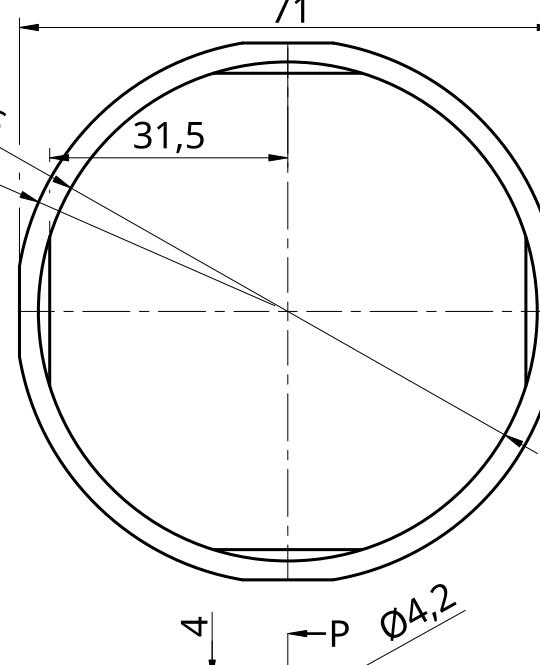
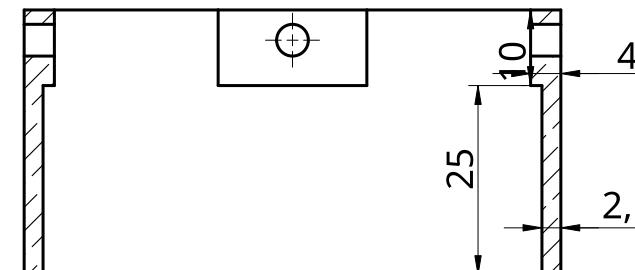
Spacer support



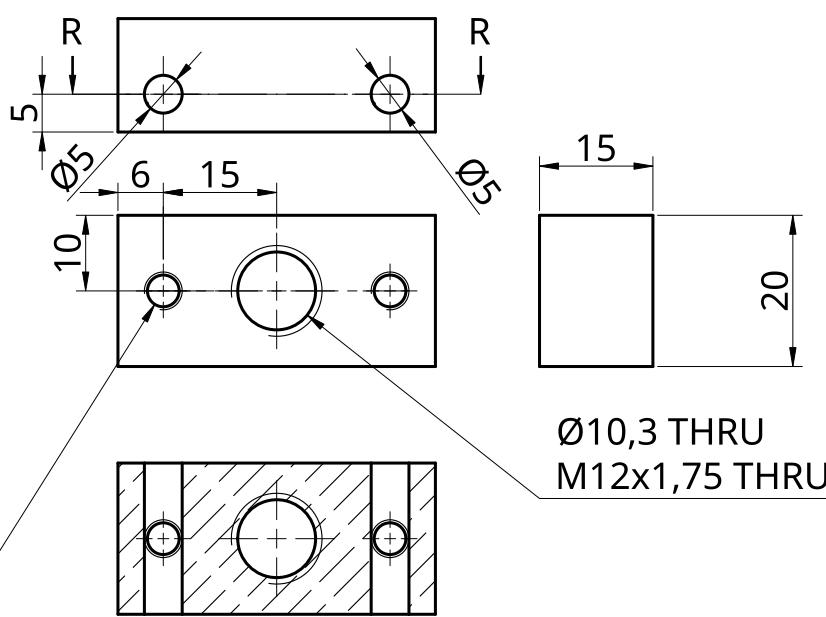
Bead blasting Anodizing red



A diagram of a harmonic skirt, which is a 3D-printed cylindrical component. It features a red outer ring and a white inner cavity. Four small circular holes are evenly spaced around the inner circumference. A central circular hole is located at the top of the inner cavity. A callout bubble containing the number '27' points to the left side of the skirt.



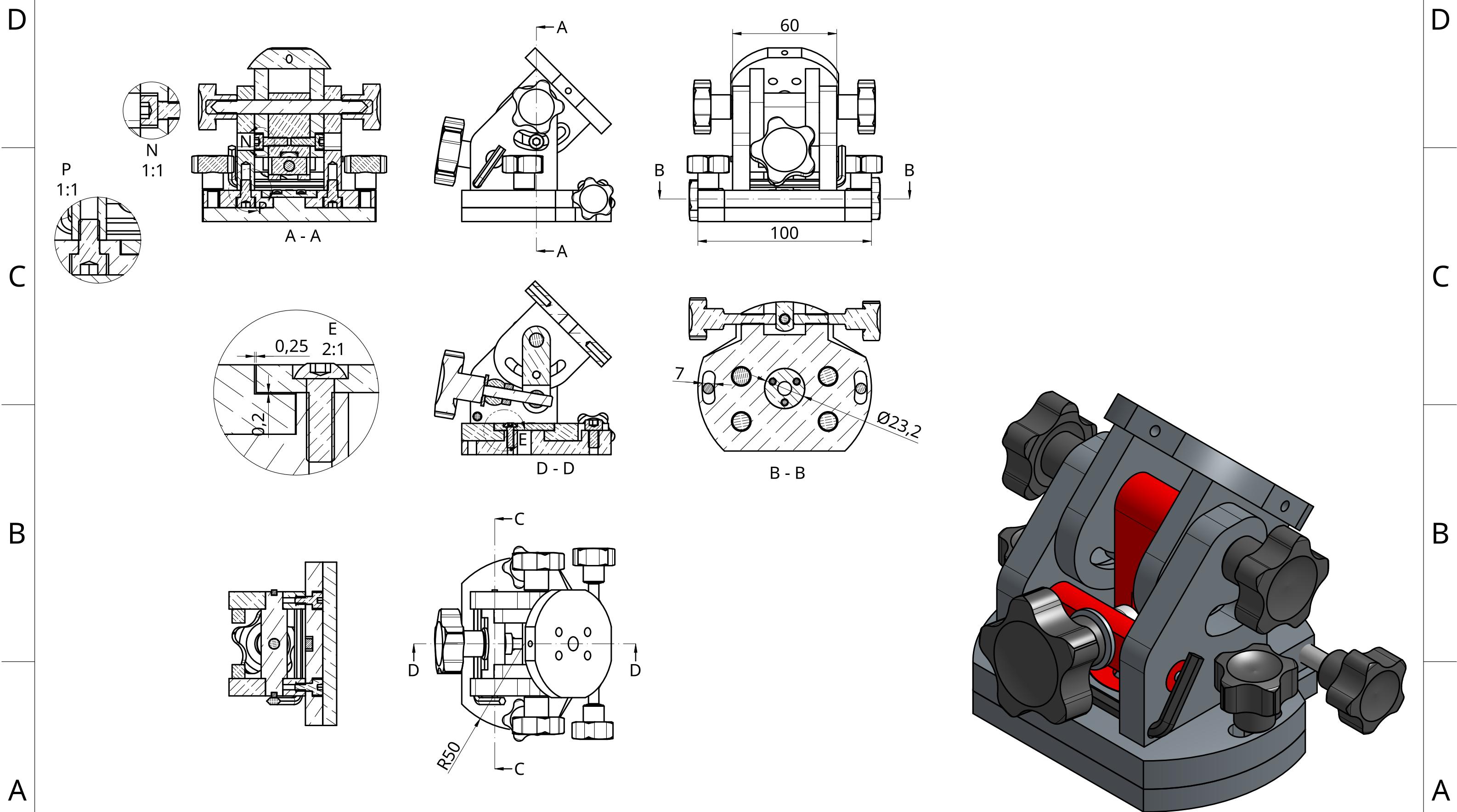
Ø4,2 THRU
M5x0,80 THRU



Bead blasting Anodizing red

6 5 4 3 2 1

HEMY Alt/Az Base

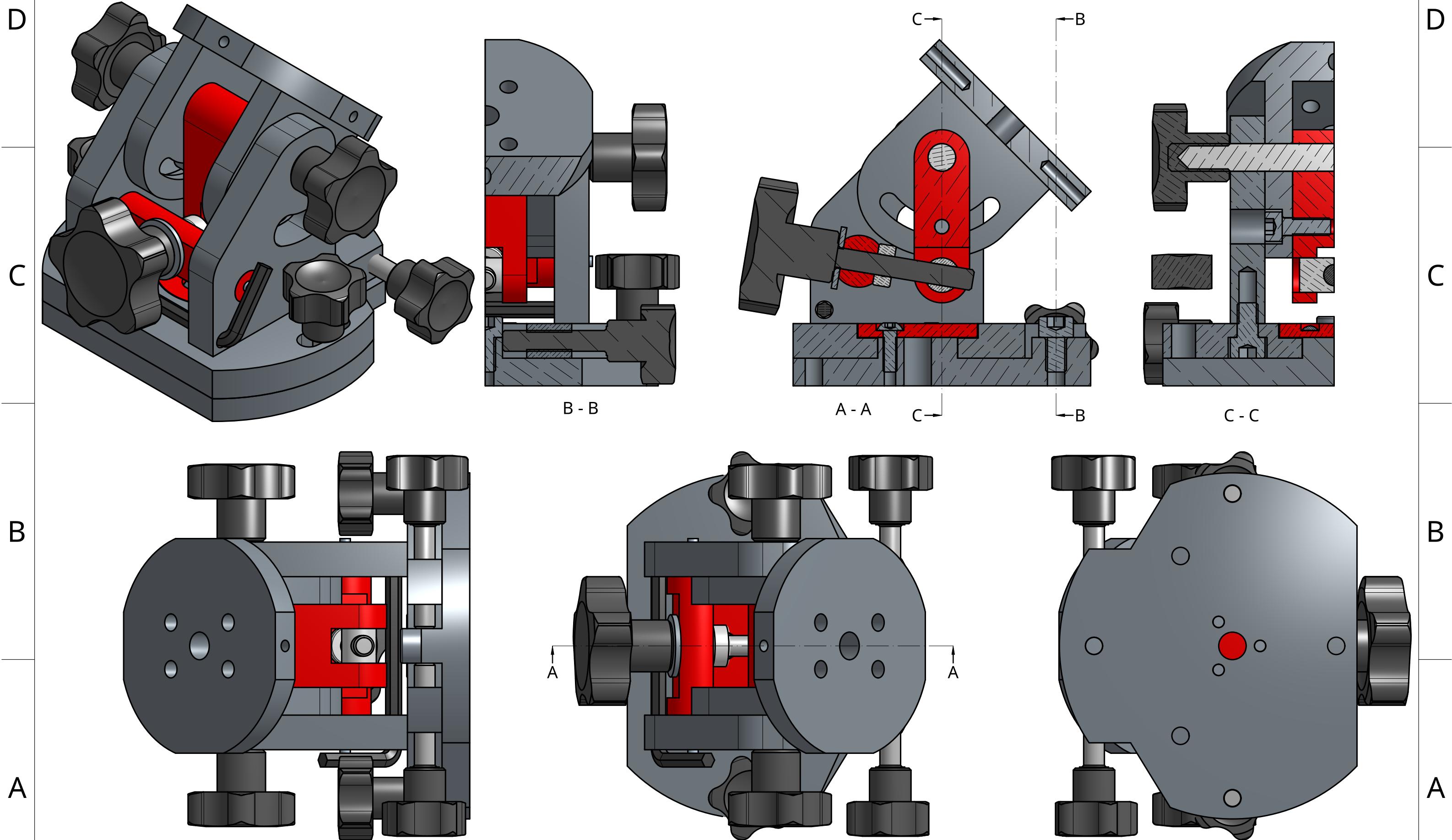


1:1

6 5 4 3 2 1

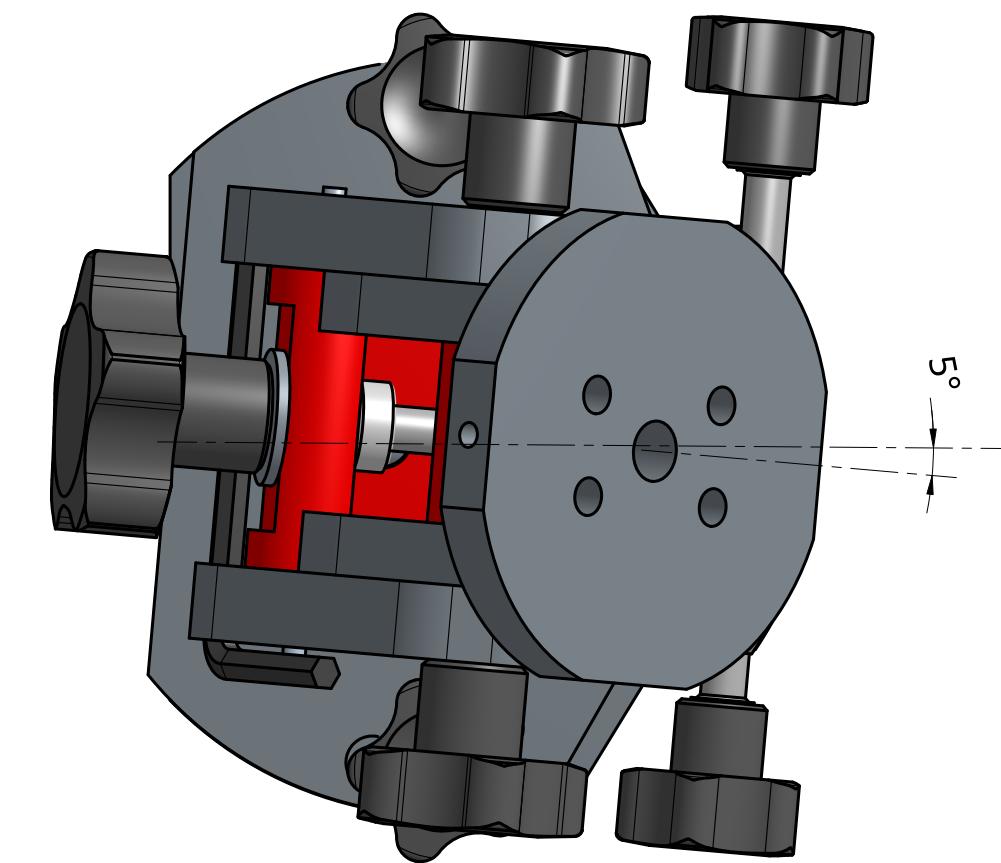
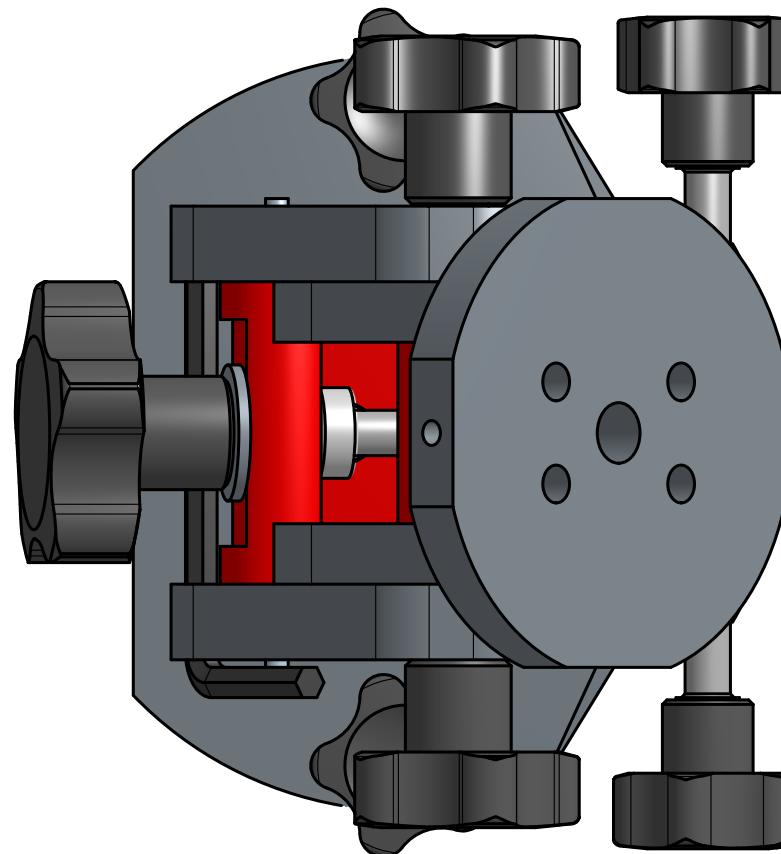
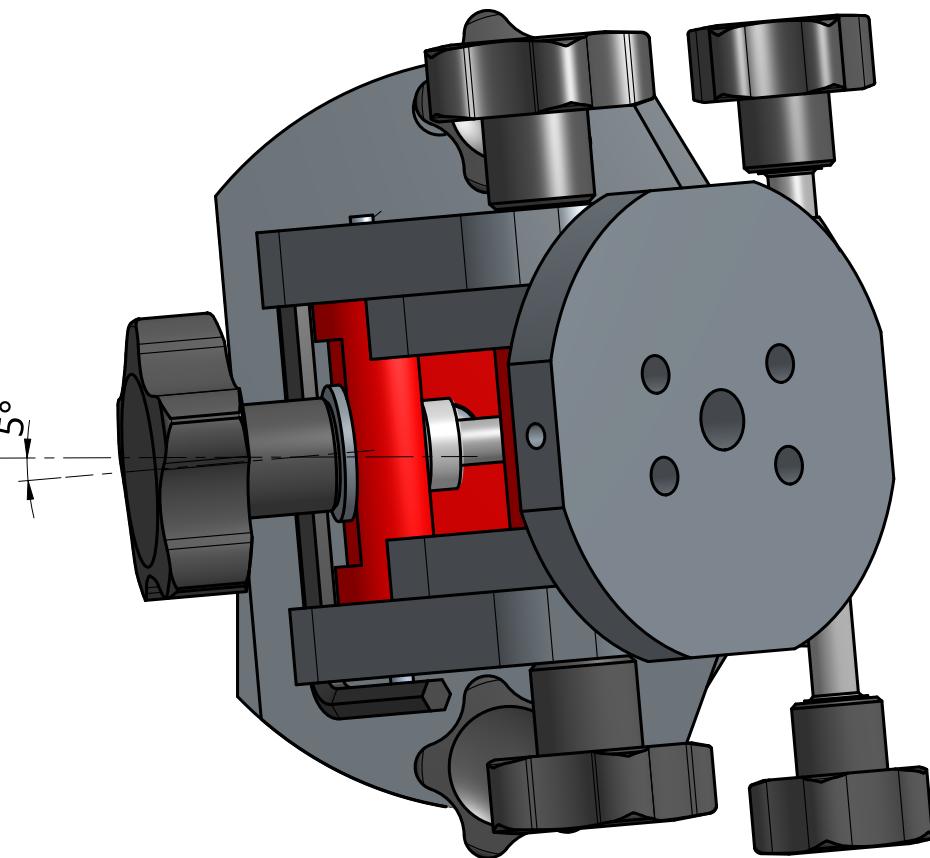
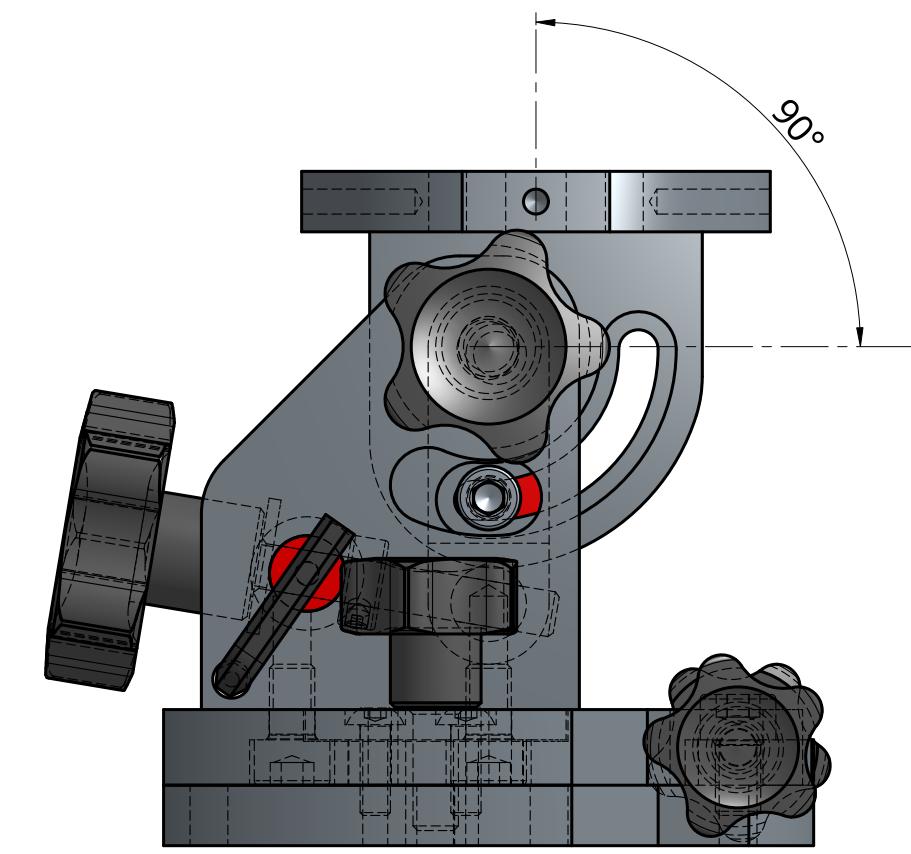
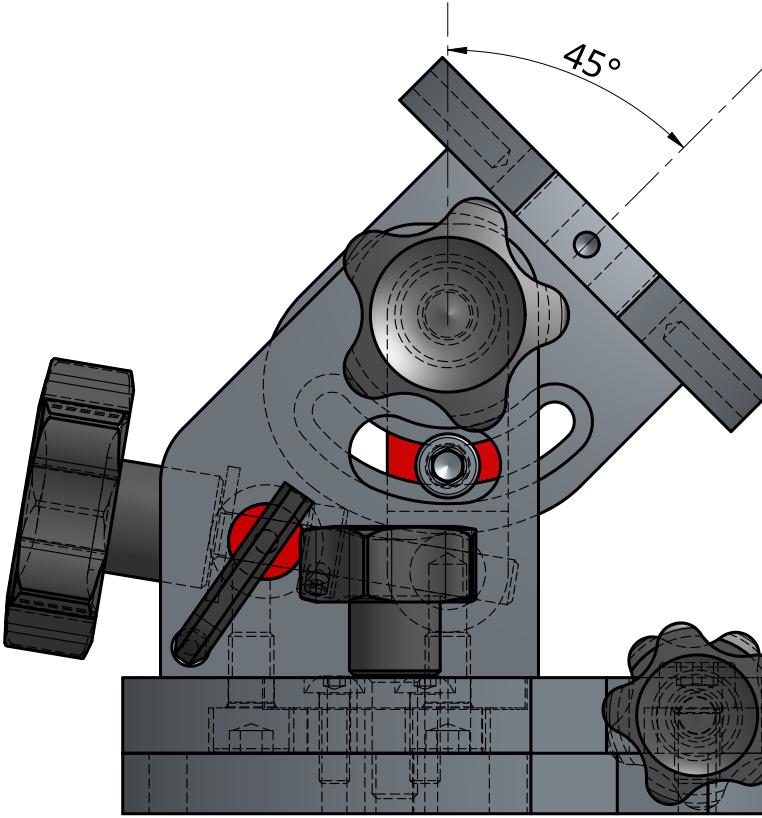
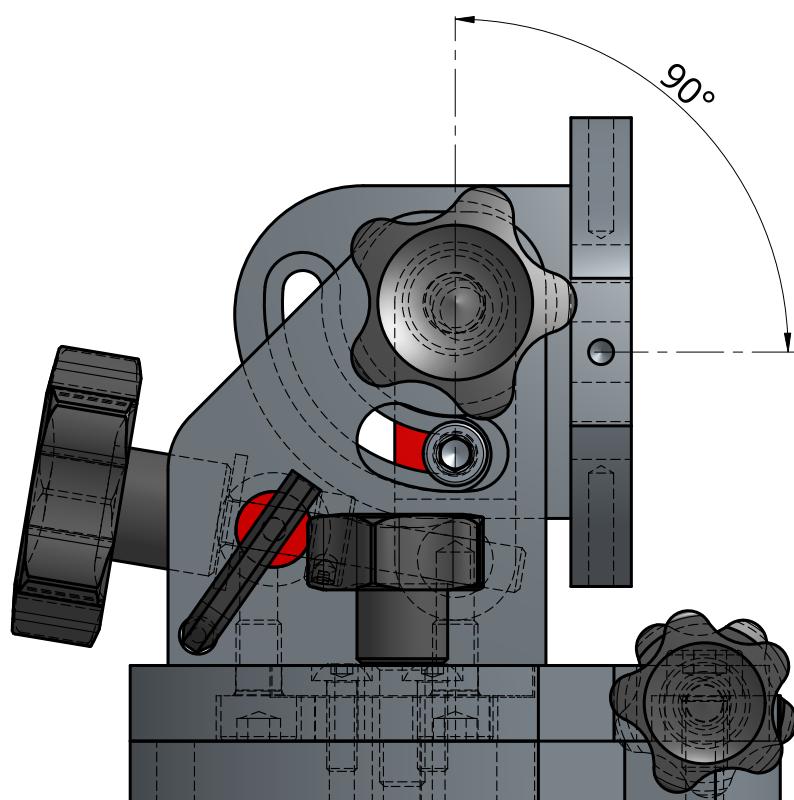
6 5 4 3 2 1

HEMY Alt/Az Base



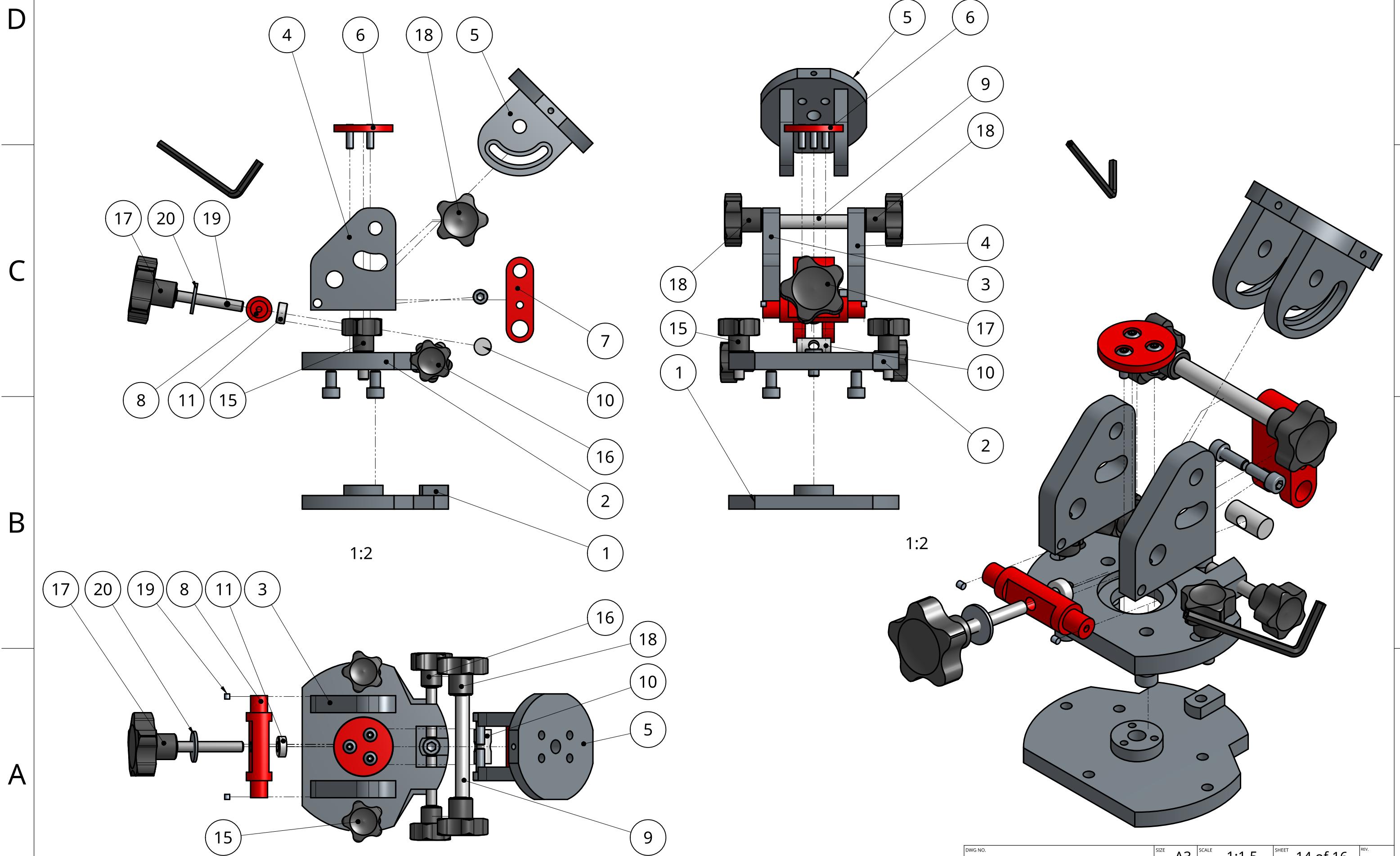
6 5 4 3 2 1

HEMY Alt/Az Base - 0° to 90° Alt / $\pm 5^\circ$ Az



6 5 4 3 2 1

Explode view - HEMY Alt/Az Base



Bill of Materials - HEMY Alt/Az Base

Item	Quantity	Description	Mass	Material	Title 1
1	1	01 - Base tripod	0.153 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing dark gray
2	1	02 - Base Az	0.137 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing dark gray
3	1	03 - Lateral R (same L)	0.058 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing dark gray
4	1	04 - Lateral L (same R)	0.058 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing dark gray
5	1	05 - Rotation Alt	0.125 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing dark gray
6	1	06 - Base Az Hold	0.009 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing red
7	1	07 - Setting Alt	0.035 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing red
8	1	08 - Barrel 60mm	0.019 kg	Aluminum - 6061	Bead blasting (80 mesh) -- Anodizing red
9	1	Axis M8	0.037 kg	Stainless Steel	To buy
10	1	Barrel nut M6x10x20mm	0.01 kg	Stainless Steel	To buy
11	1	Block M6	0.003 kg	Stainless Steel	To buy
12	1	BTR 4 (M5)	0.009 kg	Stainless Steel	To buy
13	2	Hex socket head cap screw M5x0.80 x 14 Stainless Steel	0.004 kg	Stainless Steel	To buy
14	5	Hex socket head cap screw M6x1.00 x 10 Stainless Steel	0.005 kg	Stainless Steel	To buy
15	2	Lobe knob M6x16	0.038 kg	Stainless Steel	To buy (ex: Elesa VC.692/25-SST-p-M6x16)
16	2	Lobe knob M6x30	0.04 kg	Stainless Steel	To buy (ex: Elesa VC.692/25-SST-p-M6x30)
17	1	Lobe knob M6x40	0.101 kg	Stainless Steel	To buy (ex: Elesa VC.692/40-SST-p-M6x40)
18	2	Lobe knob M8	0.052 kg	Stainless Steel	To buy (ex: Elesa VC.692/32 B-M8)
19	2	Magnet 3x3mm	0 kg	Neodymium	To buy
20	1	Plain washer large grade A M6 Brass	0.003 kg	Brass	To buy
21	3	Socket button head screw M4x0.7 x 12 Stainless Steel	0.002 kg	Stainless Steel	To buy

