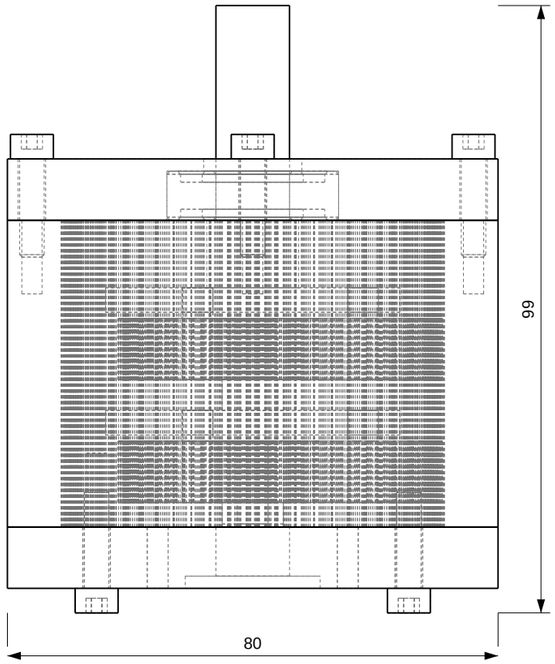
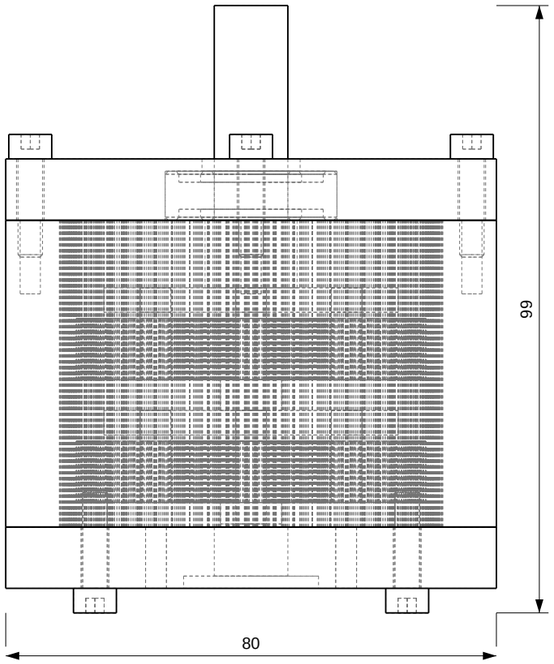
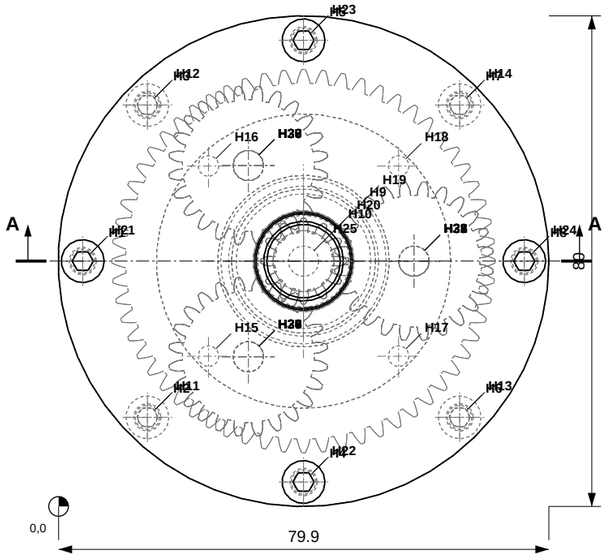
FRONT VIEW



LEFT SIDE VIEW

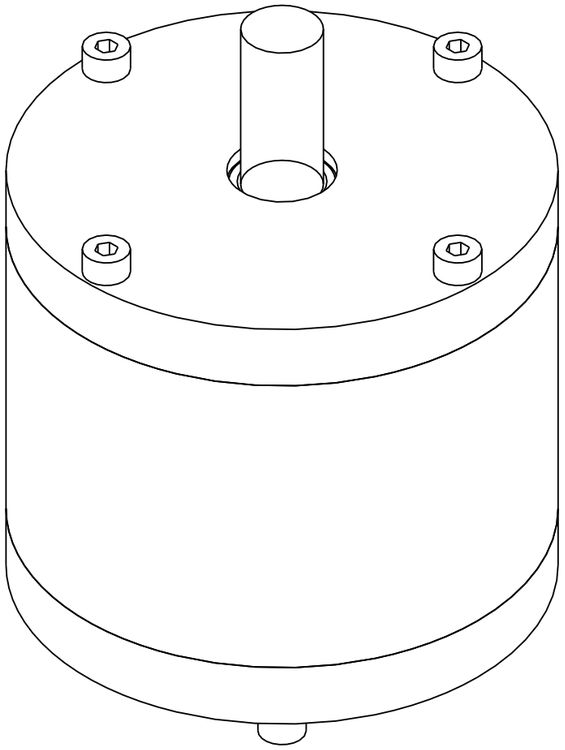


TOP VIEW



Dimensions in mm · unspecified tolerances ISO 2768-m · surface Ra 3.2 unless noted · break sharp edges 0.5 × 45° · machining

ISOMETRIC



Hidden lines omitted · not to scale

DRIVING DIMENSIONS

Parameter	Value	Unit
Module	1	mm
Sun teeth	12	teeth
Planet teeth	24	teeth
Ring teeth	60	teeth
Planets per stage	3	
Alpha	20	mm
Face width	10	mm
Backlash	0.05	mm
Pin diameter	5	mm
Housing OD	80	mm
Housing length	50	mm
Gap	1	mm
Carrier t	4	mm
Carrier d	48	mm
Stage1 z	4	mm
Flange t	10	mm
Pilot d	22	mm
Pilot depth	2	mm

PARTS LIST

Pos	Part	Qty	Standard / mass
1	housing	1	850.9 g
2	input_flange	1	373.7 g
3	end_cover	1	347.8 g
4	sun_1	1	8.4 g
5	carrier_1_sun_2	1	66.4 g
6	carrier_2_output	1	101.3 g
7	planet_1_0	1	33.0 g
8	pin_1_0	1	2.3 g
9	planet_1_1	1	33.0 g
10	pin_1_1	1	2.3 g
11	planet_1_2	1	33.0 g
12	pin_1_2	1	2.3 g
13	planet_2_0	1	33.0 g
14	pin_2_0	1	2.3 g

NOTES

1. Gear sun 1: 12 teeth undercut at 20° - use ≥ 17 teeth or a profile shift
2. Gear sun 2: contact stress 589 MPa above ~470 MPa - wider face, larger gears or hardened steel (e.g. 42CrMo4 induction hardened)
3. Gear sun 2: 12 teeth undercut at 20° - use ≥ 17 teeth or a profile shift
4. M4 tapped holes on Ø72 leave only about 2.3 mm of wall to the Ø80 outside. Consider a Ø84 housing or M3 threads.
5. No bearings support the carriers, so the stage-1 carrier/sun 2 floats on the gear mesh. Add bushes for long life.
6. Planets running directly on Ø5 pins need lubrication or sintered bushes.
7. S235 is soft for gears carrying 13 Nm output. Use 42CrMo4 or case-hardened 16MnCr5.
8. Input torque 0.4 Nm (typical NEMA 17) at 600 rpm; output about 13 Nm at 16.7 rpm with 90 % efficiency

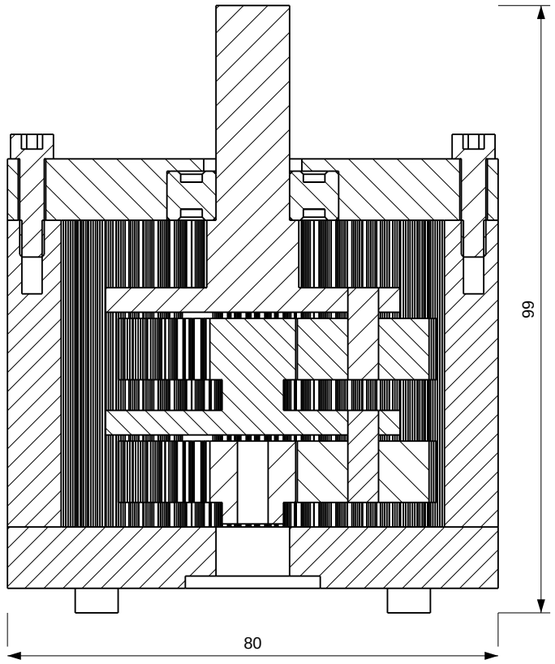
TITLE

Two-Stage Planetary Gearbox 36:1

LUXXO

DRAWN BY Luxxo AI design engineer	DATE 2026-11-14	PROJECTION ISO first angle [|O] -O
MATERIAL Steel (S235)	GENERAL TOLERANCE ISO 2768-m ± 0.1 mm	MASS (calc.) 2.01 kg
SCALE 1 : 1	SHEET 1 / 2 A3	DRAWING No. LX-38FE2B-v1

SECTION A-A



A-A (1 : 1) cutting plane y = 0 mm, viewed from the front

HOLE TABLE (X / Y from datum 0,0 of the view F / S / T on sheet 1)

Tag	Ø	X	Y	Depth	View	Thread / fit / note
H1	Ø3.3	3.9	40	12	T	M4-6H, tap drill Ø3.3
H2	Ø3.3	14.5	14.5	12	T	M4-6H, tap drill Ø3.3
H3	Ø3.3	14.5	65.4	12	T	M4-6H, tap drill Ø3.3
H4	Ø3.3	39.9	4	12	T	M4-6H, tap drill Ø3.3
H5	Ø3.3	39.9	76	12	T	M4-6H, tap drill Ø3.3
H6	Ø3.3	65.4	14.5	12	T	M4-6H, tap drill Ø3.3
H7	Ø3.3	65.4	65.4	12	T	M4-6H, tap drill Ø3.3
H8	Ø3.3	75.9	40	12	T	M4-6H, tap drill Ø3.3
H9	Ø22	39.9	40	THRU	T	Ø22 H13 for M20 (ISO 273 medium)
H10	Ø12	39.9	40	THRU	T	Drilled
H11	Ø4.5	14.5	14.5	THRU	T	Ø4.5 H13 for M4 (ISO 273 medium)
H12	Ø4.5	14.5	65.4	THRU	T	Ø4.5 H13 for M4 (ISO 273 medium)
H13	Ø4.5	65.4	14.5	THRU	T	Ø4.5 H13 for M4 (ISO 273 medium)
H14	Ø4.5	65.4	65.4	THRU	T	Ø4.5 H13 for M4 (ISO 273 medium)
H15	Ø3.4	24.4	24.5	THRU	T	M4-6H, tap drill Ø3.3
H16	Ø3.4	24.4	55.5	THRU	T	M4-6H, tap drill Ø3.3
H17	Ø3.4	55.4	24.5	THRU	T	M4-6H, tap drill Ø3.3
H18	Ø3.4	55.4	55.5	THRU	T	M4-6H, tap drill Ø3.3
H19	Ø28	39.9	40	THRU	T	Ø28 H7 (+0.021 / 0) 6001 outer ring
H20	Ø16	39.9	40	THRU	T	Drilled

+ 17 more holes - full list in the app

FITS & TOLERANCES (ISO 286)

Feature	Size	Max / min	Fit
6001 inner ring	Ø12 k6	12.012 / 12.001	H7/k6 transition
6001 outer ring	Ø28 H7	28.021 / 28.0	H7/k6 transition
pin in carrier	Ø5 H7	5.012 / 5.0	H7/p6 interference
planet on pin	Ø5 H7	5.012 / 5.0	H7/f7 clearance
motor shaft in sun	Ø5 H7	5.012 / 5.0	H7/k6 transition

ENGINEERING CHECKS (simplified hand calculations)

OK output: 6001: P = 300 N, C = 5.4 kN → L10 = 5832 mil. rev = 5,717,647 h at 17 rpm (need 10,000.0 h)

OK output shaft: Ø12: T = 13 N·m, M = 7.5 N·m → σv = 79.7 MPa, safety 2.95 vs. Re 235 MPa (need 2.5), min. Ø11.4

!! sun 1: m1 z12 b10: Ft = 22 N, tooth root σF = 9.4 MPa (allow ~120), contact σH = 256 MPa (limit ~470)

!! sun 2: m1 z12 b10: Ft = 120 N, tooth root σF = 49.5 MPa (allow ~120), contact σH = 589 MPa (limit ~470)

TITLE

Two-Stage Planetary Gearbox 36:1

LUXXO

DRAWN BY Luxxo AI design engineer	DATE 2026-11-14	PROJECTION ISO first angle [|O] -O
MATERIAL Steel (S235)	GENERAL TOLERANCE ISO 2768-m ± 0.1 mm	MASS (calc.) 2.01 kg
SCALE 1 : 1	SHEET 2 / 2 A3	DRAWING No. LX-38FE2B-v1

Section hatching per ISO 128-50 · hole coordinates from the datum symbol · fits ISO 286-2 · weld symbols ISO 2553 · weld preparation EN ISO 9692-1