V1.3

First Fully Enclosed Assembly

PURPOSE

— Improved housing with cover plate for shaft retention

— Filleted edges for improved print quality

— Rotor retention solution

— First fully enclosed assembly

HOUSING

Print Quality: 8/10

Overall Width: 64mm

Overall Height: 48.7mm

Generating Radius R: 28mm

Eccentricity e: 4mm

K Ratio: 7

Issues: M6 bolts on cover plate warped housing slightly — PLA recovered when loosened. Eccentric shaft rubbing against cover plate — clearance relief required.

Rating: 8/10

ROTOR

Print Quality: 8/10

Apex Radius: 28mm

Apex-to-Apex Chord: 48.5mm

Apex Spacing: 120 degrees

Issues: Minor friction against housing wall — reduced with metal grease

Rating: 8/10

GEARS

Mesh Quality: Good — consistent with V1.26

Backlash: Minimal

Binding: None

Rating: 6/10

MOTION TEST

Rotor Rotates: Yes

Full Orbit: Yes

Smoothness: 8/10

Notes: Grease applied mid-test, noticeable improvement

LESSONS LEARNED

— Filleted edges significantly improve print quality

— Bolt length and strength matters — M6 bolts too strong for PLA

— Modular design proven — cover reprinted without touching other parts

— Metal grease in rotor chamber reduces PLA friction meaningfully

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CHANGES FOR NEXT VERSION

— Motorised drive — brushed RC motor with L298N driver and Arduino

— Cover plate clearance relief for eccentric shaft

— Bolt spec review — reduce torque load on PLA parts

LOCKED PARAMETERS — CARRIED FORWARD

Generating Radius (R)	28mm
Eccentricity (e)	4mm
K Ratio	7 — RX-7 Proportion
Housing Width	64mm
Housing Height	48.7mm
Gear Module	0.80
Fixed Gear Teeth	20
Rotor Gear Teeth	30
Gear Ratio	3:2
Eccentric Shaft Offset	4mm
