

REF MX01, converted

An alloy-framed 30-speed mountain bike with hydraulic discs. The kit goes in the front wheel here, so the ten-speed cassette, the whole rear drivetrain and both brakes stay as built.

250
W

rated motor

522
WH

removable battery

32
KM/H

assisted speed

50-100
KM

real-world range



REF MX01, donor condition. Space grey with orange.

The bicycle

REF is an Indian bicycle brand. Below is the seller's published listing.

Frame	Alloy. Sizes 15" (rider 150-168 cm) and 17" (rider 168-183 cm)
Fork	Hydraulic suspension with remote lockout
Drivetrain	Shimano Deore, 3 x 10, thirty speeds
Cassette	11-36T, 10-speed
Chain	Yaban
Brakes	Shimano MT200 hydraulic disc, front and rear
Tyres	CST All Terrain
Cockpit	Alloy bar 31.8 x 680 mm, stem 31.8 x 80 mm, seatpost 350 mm
Rims	DECAF alloy, 20"

Fitting the kit

The MX01 runs a ten-speed cassette, which a screw-on freewheel hub cannot take. The kit is specified for front or rear hub mounting, so on this bicycle it goes in the front wheel. Nothing is lost.

Motor position	Front wheel. Rear mounting is the standard fit on other platforms; this one is built front.
Replaced	Front wheel only, rebuilt around the hub motor on stainless steel 13G spokes to the bicycle's own rim
Kept	Frame, fork, rear wheel, the full 3 x 10 Shimano Deore drivetrain, cockpit and cranks
Gearing after fitting	Unchanged. All thirty speeds are retained, because nothing is taken out of the rear hub.
Braking	Unaffected, front and rear. The motor carries a disc mount, so the front rotor transfers to it, and the rear brake is never touched.



The Karaa kit: hub-motor wheel and removable 522 Wh battery.

The Karaa kit

Fitted to the front wheel, which is rebuilt around the hub motor on stainless steel 13G spokes. The bicycle keeps its frame, rear wheel, drivetrain and cockpit.

Motor	250 W brushless DC geared hub, 36 V. Freewheels when off. The kit is specified for front or rear hub mounting, and carries a disc mount either way.
Power delivery	20 A continuous, 720 W at 36 V. 40 A over-current cut-off.
Battery	36 V 14.5 Ah (522 Wh) lithium-ion NMC, removable and lockable, IP54. 50 to 100 km per charge.
Controls	Pedal assist through the Karaa app over Bluetooth: climbing, eco, manual, cargo. Handlebar display shows speed, charge and assist.
Wiring and build	Waterproof 9-pin connector, battery to motor. Wheel laced on stainless steel 13G spokes.
Charger	42 V DC, 2 A. Input 110-240 V AC, 50/60 Hz. About six to seven hours.
Warranty	Motor 10,000 km or one year. Battery 500 cycles or one year. Charger: replaced only if a fault is reported within seven days of delivery.