GRIFFON

GENERAL MOTORS GRIFFON ELECTRIC VAN

Crisp, Contemporary Appearance

From any angle, GM's Griffon van exhibits a combination of utility and good looks

Easy to load and unload. Wide doors, low platform. Unobstructed and generous loadspace (208 cu ft)

GM

LOW OPERATING COST...

ALL NEW, ALL ELECTRIC

The GM Griffon Electric Van represents a new generation in electrically powered vehicles, and establishes a standard in utility and technology. It is a forerunner in the transportation world of the future.

The Griffon is all new, from the ground up, designed and built specifically as an electrically-powered cargo carrier. It is whisper-quiet, smoothly powerful, easy to drive, fume-free, economical in usage and maintenance, generous in payload and loadspace, and easily serviced.

The Griffon does not take a back seat in performance and utility. It carries a 2000 pound payload at a conservatively rated top speed of 50 miles per hour, with a 50 mile range, before recharging. Fully loaded, it accelerates 0-30 miles per hour in 11 seconds and is capable of a restart on a 16 percent hill.

ADVANCED TECHNOLOGY

Dramatic advances in the drive system and battery technology permit the introduction of this electric van for commercial application.

Storage batteries represent the lifeline of an electric vehicle. The Griffon utilizes thirty six, 6-volt lead acid tubular plate units, connected in series which represent a 216-volt, 184 ampere-hour performance pack. The batteries are mounted in a plastic coated steel tray; the tray is mounted under the cargo floor and is attached by three quick release pins.

Driving the Griffon is an exercise in pleasure. There are no transmissions or clutch pedals, just the brake, accelerator, and a simple selector for forward or reverse. Low noise levels cut driver fatigue, and there is no noise at all when stationary.

GM Griffon Electric Van's battery pack is mounted on the outside, under the floor, for easy removal and unobstructed cargo area.

COST OF OWNERSHIP: ELECTRIC VS. GASOLINE

As the GM van is made in England, its price is currently established and specified in British pounds sterling. As a result, the price paid by U.S. customer is influenced by the exchange rate. Table I shows the projected price for the van delivered in the U.S., based on an exchange rate of 1.0 pound = $1.35 and an import duty of 2.6% for a passenger-carrying vehicle.

Table I: Electric Van Acquisition Costs

	1986-87 (Estimate)
Vehicle	$ 9,775
Battery	$ 4,100
Charger	$ 975
SUB-TOTAL	$14,850
Shipping England — U.S.	$ 1,190
Intra U.S.	$ 500
Import Duty	$ 390
TOTAL COST	$16,930

Using this vehicle price information, it is possible to estimate and compare the total life cycle cost for the electric van to the cost of an equivalent gasoline powered van. Table II summarizes the results of this analysis.

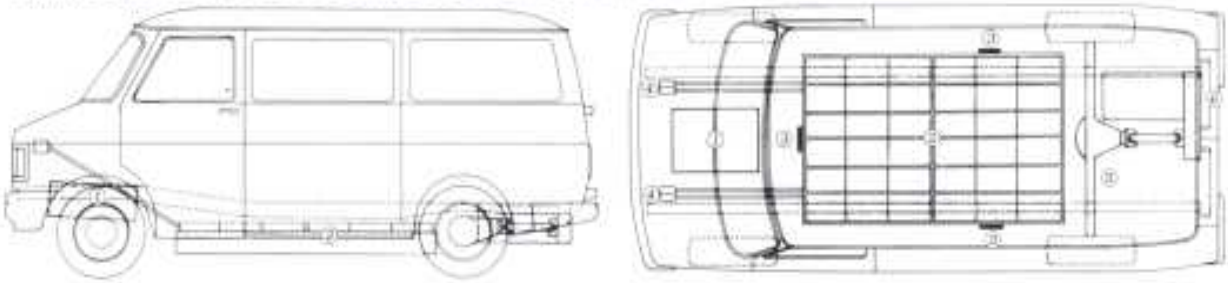
Table II: Life Cycle Cost Comparison

Cost Results (Cents/mi)	Conventional Gasoline Van	Electric Van '86/87
Depreciation — Vehicle	9.7	11.5
— Battery	—	9.3
Fuel/Electricity	12.5	5.0
Maintenance	14.0	7.0
Cost of Capital — Vehicle	3.0	3.8
— Battery	—	1.2
TOTAL LIFE-CYCLE COST	39.2	37.8
Premium Over Conventional Van	—	- 3 %

For vehicles acquired in 1986 and 1987, the electric van's life cycle cost is projected to be slightly less than conventional gasoline-powered vans. For 1988 and beyond, provided that anticipated technology advances and vehicle production increases are achieved, it should be possible to produce fleet electric vans which will favorably compete in the commercial van market.

Source: EVDC, Cupertino, Calif.

ELECTRIC DRIVE SYSTEM FOR GM GRIFFON ELECTRIC VAN



(1) Speed controller and auxiliary equipment mounting frame

(2) Detachable underfloor plastic coated battery pack tray

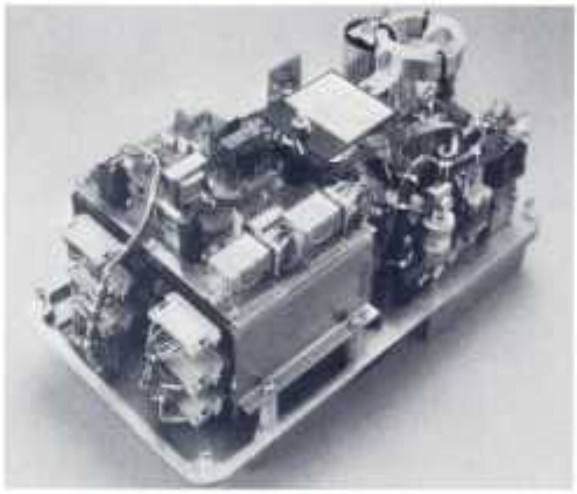
(3) Quick release attachments for battery pack

(4) Automatic battery watering and venting access locations

(5) Conventional rear axle, turned on the springs to face backwards

(6) Motor and chain and sprocket drive

PAYLOAD OF 2000 LBS.



ELECTRIC CONTROLLER

The electric controller provides smooth, progressive acceleration, without any transmission or gear steps. There are no starting, warm-up, or cooling concerns.

The controller regulates the current flowing to the drive motor from the storage batteries, and also permits regenerative braking which cuts energy consumption and brake wear. It effectively converts the electric motor into a generator and, on overrun, the energy is directed back into the batteries while the resistance provides a moderate amount of braking to the rear wheels. The speed controller is located under the vehicle hood, in the air flow pattern.

HIGH-CAPACITY CHARGER

This high-capacity unit has been specifically designed for use with lead-acid battery packs such as used in the GM Griffon Electric Van. It requires an input of 240 volts, alternating current, with a rating of 45 amperes. Its output is 30 amperes and it is capable of completely recharging the Griffon batteries in about 8 hours.

The charger continuously monitors the conditions during the charge cycle, and shuts itself off when the batteries have received sufficient charge. The charger weighs about 365 lb, so it is basically a stationary system.

ELECTRIC DRIVE MOTOR

The electric motor is mounted under the rear of the vehicle. It is specifically designed for high performance electric commercial vehicles to provide reliable operation with very low maintenance requirements. The motor has a maximum output of about 50 horsepower and about 185 lb/ft of torque. The maximum rated speed is 6000 RPM and weighs 302 lbs.

SIMPLE SERVICE ROUTINE

The electric drive system requires almost no maintenance. There is no coolant, no oil to change, no transmission oil levels to check, no clutch to adjust. Routine maintenance is mainly confined to topping the battery water levels at intervals of every three weeks, in normal use.

A centralized watering system makes this quick and easy, and the portable "Autofil" unit plugs into the system and does it automatically.

There is also the nightly battery charge procedure.

TECHNICAL DATA

SPECIFICATIONS

Area	Description
Chassis Frame	Integral Construction
Turning Dia (Curb)	36 ft
Turning Dia (Wall)	37 ft 9 in
Ft. Suspension	Independent, upper & lower control arms
Ft. Springs	Helical Coil, 1475-lb rating, each
Rear Suspension	Single tapered leaf spring (55 x 2.4 in) with rubber bushings, 2575-lb rating, each
Rear Axle	Salisbury, full floating, 4.81:1 ratio
Shock Absorbers	Piston-type, double acting, FT & RR.
Steering	Rack and Pinion, 19.8:1 ratio, manual, 4.33 turns lock-to-lock
Brakes	Vacuum-hydraulic, 10-in drum FT & RR. Dual system, single acting front, duo-servo rear. Parking brake on RR.
Wheels	5.50 J x 14 (5 stud)
Tires	205R 14C 8-ply tubeless
Drive motor	216V DC, 40KW (50 HP.)
Transmission	Chain & sprockets (1.92:1 ratio)
Batteries	36 x 6V, tubular plate, lead-acid
Auxiliary battery	12V, 55 ampere-hour
Heater	Diesel fuel

DIMENSIONS

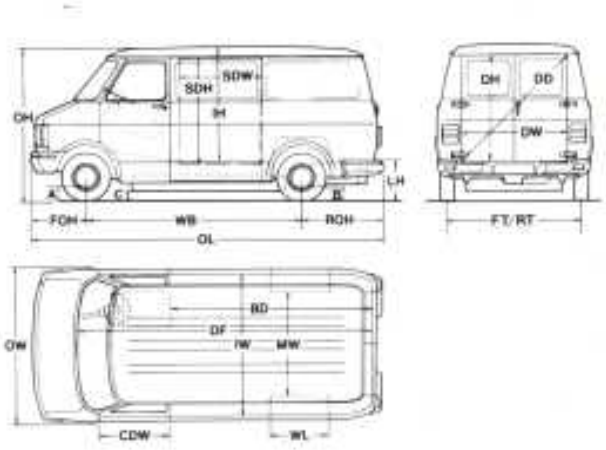
	Area	Inches
WB	Wheelbase	106.0
OL	Overall length	173.6
OH	Overall height	78.3
OW	Overall width (inc. mirrors)	89.0
	Overall width (exc. mirrors)	76.0
A	Ground clearance, front (loaded)	6.7
B	Ground clearance, rear (loaded)	6.3
C	Ground to batteries (loaded)	5.9
FOH	Front overhang	27.6
ROH	Rear overhang	40.2
FT	Front tread	65.0
RT	Rear tread	65.0
LH	Loading height (unloaded)	24.4
DH	Door height	48.8
DW	Door width	50.4
DD	Diagonal dimension	68.3
CDW	Cab door width	33.0
SDH	Side door height	48.4
SDW	Side door width	36.2
IH	Interior height	54.0
IW	Interior width (at floor)	66.5
DF	Doors to footwell	147.6
BD	Behind driver	100.0
WL	Wheelhouse length	31.5
MW	Width between wheelhouses	50.0

STANDARD EQUIPMENT

Speedometer, battery state of charge gage, heater fuel gage. Column-mounted stalks for horn, turn indicators, headlamps 'dip' and 'flash', and two-speed windshield wipers (with pulse wipe). Electric windshield washers. Switches for direction signal, lights, hazard flashers, regenerative braking override, warning lights for turn signals, upper beam, brake failure, heater on, controller-over temperature and 'ignition'. Diesel-fueled heater, mounted under-hood, controlled by levers on instrument panel. Luxury facia trim with parcel shelf and face level ventilation. Ashtray. Engine cowl cover. Driver's sun visor. Cab interior lamp. Driver's seat with fore/aft, back angle and front/rear cushion height adjustment in brown tweed. Driver's door pocket. Driver's inertia reel seat belt. Interior mirror. Two exterior mirrors. Laminated windshield. Hinged doors. Flat-topped wheelhouses. Double rear doors with check links permitting 90° or 167° opening.

WEIGHTS

GVWR	7500 lb
Payload	2000 lb
Curb wt. ft.	2550 lb
Curb wt. rear	2950 lb
Curb wt. total	5500 lb
Ft. axle rating	3175 lb
RR axle rating	5150 lb



GMC TRUCK

The right is reserved to make changes at any time, without notice, in prices, colors, materials, equipment, specifications, and models.

LET'S GET IT TOGETHER.
BUCKLE UP!

Litho in USA
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