Maximus.4x4.Camper Specifications

V1.2, 10MAR23

Truck, 2004, F350, 4x4, Crew Cab, Long Bed (172” wheelbase)

	OEM	Current
Weight, Gross	7,200lbs curb (dry), 9990lbs GVWR (a politically expedient number to prevent it from being declared a ‘commercial vehicle’ in some states)	13,500lbs (wet): ~7,200lbs chassis/4,200lbs camper/ 800lbs diesel & water/450lbs passengers/~850lbs clothing, food & gear. Deleted cargo box (420lbs), rear seats/front center seat (112lbs)
Wt. Rear	2,800 lbs. (+payload 2,800lbs)	7,760 lbs.
Wt. Front	4,400 lbs.	5,740 lbs.
Engine	6.0l Diesel w/ 110A/12V Alternator, Plastic/Aluminum radiator & charge air cooler, plastic charge air piping	Bulletproof EGR cooler, aux. transmission cooler, bypass coolant filter, all aluminum radiator, aluminum charge air cooler, steel charge air piping, 135A/12V primary alternator, 220A/24V secondary alternator (external, variable regulator)
Gauges	Analog Trans Temp/Oil Pressure/Coolant Temp	Engine monitoring w/OBD + Torque Pro+10” Samsung tablet, Primary alternator volts/amps/temp, Secondary alternator volts/amps/temp/thermostat/ cutout/voltage adjust, Primary fuel pressure gauge, Air tank pressure, Tow brake pressure temperature, EGT
Options	6,000lb/2” tow receiver	Electric on-board air compressor w/2gal tank & side air connections, air horn, LED headlights, battery distribution bus w/exterior jump connector, 250W off road light (forward) + 2-50W lights (front oblique)
Tires	Michelin AT, 265/75R16 (31.4” dia x 8.5”w), LI-123 (3,417lbs), LR-E (80psi)	Amp AT 295/65/R20 (35”x9.8”w), LI-129 (4,080lbs), LR-E (80psi)
Wheels	Ford Alloy - 3,350lbs, 16” dia x 8”w	Ford Alloy (2018 F350), 3700lbs, 20” dia x 8”w
R-Axle	Sterling 10.5, 3.73LS, 68.875”w, 9750llbs GAWR*	Same
F-Axle	Dana 60, 3.73, 69.25”w, 6500lbs GAWR*	Same
R-Spring	6 Leaf OEM Main + 1 OEM Overload	7 Leaf Main (6 OEM +‘Super Spring’ leaf) + 1 Overload
Sway Bar	Rear: 7/8” Front: 1”	Same Same
F-Spring	2 Leaf	3 Leaf (+’Super Spring’ add-a-leaf)
Shocks	Rancho RS5000 (single on all coners)	2-Bilstein 5100 (front) + 6-Rough Country (dual on all corners)
Bumper(F)	43lbs Chromed steel	DIY winch bumper (mainly 4” x 6” x 5/16 steel angle), 1/8” & 1/16” thick steel side boxes (~12” cubed less angled front)
Bumper (R)	~50lbs chromed steel	None
Winch	None	Warn 18k, 24V electric w/ 143’ of 14mm synthetic line

* Axle mechanical capacity, not vehicle specified capacity

Camper Body (90”w x 230”l x 93.5”h)	
Combined	25’ long (less spare tire) x 7’6” wide x 11’2” high
Habitat	Body (outside): 19’2” (12’ body & 7’2” bunk) long x 7’6” wide Floor (inside): 7’1” wide x 9’1-1/2” (flat) long + 2’5-1/2” (sloped @ 30 degrees) Bunk (inside): 7’1” wide x 7’2” long
Mounting	3-point, 2-28mm steel shafts in rubber mounts behind the cab, pivoting +/-10 degrees on 1” steel shaft at the frame tail.
Flatbed/Floor/ Integral Sub-frame 90”w x 112”l	2.7” thick, 3/8 Baltic birch plywood top, 1/4” Baltic birch plywood bottom, 13/16 poplar lumber ribs/perimeter, 4pcs 2 x 2 x 1/4” aluminum square tube cross frame, 2pcs 3” x 3” x 1/4" aluminum angle longitudinal frame, 2” poly-isocyanurate insulation, 4” grid torsion box matrix of 5mm plywood, 1708 Biaxial fiberglass mat top and bottom
Angled Floor 90”w x 29”l	2.5” thick, 1/4”Baltic birch top, 5mm poplar plywood bottom, 13/16 poplar lumber perimeter, 2” poly-isocyanurate insulation, 6” grid torsion box matrix of 5mm plywood, 6 oz fiberglass cloth top and bottom
Bunk Floor	2.5” thick, 1/4” Baltic Birch plywood top, 5mm poplar plywood bottom, 13/16 poplar lumber ribs/perimeter, 2pcs 2” X 1-1/2” X 1/8” aluminum square tube cross frame, 2” poly-isocyanurate insulation, 6” grid torsion box matrix of 5mm plywood, 6 oz fiberglass cloth top/bottom
Side (& front walls	2.4” thick, 5mm poplar plywood inside/outside, 13/16 poplar lumber ribs/perimeter, 2” poly-isocyanurate insulation, 6” grid torsion box matrix of 5mm plywood, 6 oz fiberglass cloth inside/outside
Ceiling	2.4” thick, 5mm poplar plywood inside/outside, 13/16 poplar lumber ribs/perimeter, 2pcs 2” X 1-1/2” X 1/8” aluminum square tube, 2” poly-isocyanurate insulation, 6” grid torsion box matrix of 5mm plywood, 6 oz fiberglass cloth top, 1708 biaxial fiberglass mat bottom.
Back wall	2.4” thick, 5mm poplar plywood inside/outside, 13/16 poplar lumber ribs/perimeter, 2pcs 2” X 2” X 3/16” aluminum square tube (door lintel and tire mount reinforcement), 2pcs 2” x 2” x 1/8” angle (fuel can reinforcement), 2” poly-isocyanurate insulation, 6” grid torsion box matrix of 5mm plywood, 6 oz fiberglass cloth inside/outside
Interior Walls (4)	1” thick, 2.6mm (.102”) Luan plywood, 13/16” poplar lumber perimeter, 6”grid of 2.6mm luan plywood torsion box, 3/4” poly-isocyanurate insulation.
Windows (7)	Aluminum frame, glass double pane, dark tint, non-opening (Motion Windows)
Doors	Same as walls
Electrical	
Battery	35 Nissan Leaf battery packs total; 30 @ 7.5V/.5kWh, LiMnNiO2 (LMO), each 4 pouch cells in 2S2P + 5 modified packs @3.75V/.5kWh, each 4 pouch cells in 4P = 26.25V/17kWh/7S20P. Equivalent to ~1,460Ah @ 12V. Operating voltage range: 21.7V – 28.7V (3.1VPC-4.1VPC, BMS limited). Temperature monitoring by both the BMS (charge disable below 32F) and STC-3008 temperature controllers in 2 locations, to activate 36W of 12V heating blanket or direct heat via coolant loop from diesel coolant heater.
BMS	Electrodacus SBMS0 controls 4-SSR/DPDT relays (for ‘OK to charge’, ‘OK to discharge’ to enable/disable charging/power conversion) + 8S/5A active balancer
Inverter(s)	1 - Samlex EVO 4024: 24V/4kw, pure sine, low frequency inverter with 3X starting surge (12kW), 120% (4800W) for 5 minutes + EVO-RC-PLUS remote control 1 – Reliable Electric 24V/800W, pure sine, high frequency. Always on (7W idle) for refrigerator & 4 120V/USB strips.
Charger	(Integrated into EVO 4024) 29.4V@105A, 3-stage lithium
Transfer Relay	(Integrated into EVO 4024) 120V@70A for Line/Generator/Inverter
Alternator	DB Electrical 220A rated, Ford 4G (second alternator) + Transpo Voyager V2400 external regulator (26.5-29.5V) with precision 10-turn voltage adjustment in console. Enable/disable by ignition, thermostat (set to 120C), BMS and manual switch. Direct battery connection with 2AWG welding cable (187A rated), Maximum charge rate: 180A (cold), typical continuous output; 90-100A @ 29.4V (~3kW)
PV Array	5 – 190W Solarland SLP-190S-24 (24V/950W/31.4”w x 61.2”l) in fixed flat mount, wired in parallel
Solar Charger	EPever 4215BN; MPPT, 24V/40A + MT50 remote control
24VDC Main Breakers	25A to 12V/30A DC-DC converter, 25A to 40A DC-DC converter, 25A to 13.8V/40A DC-DC converter, 50A to 120V/800W inverter, 250A to alternator, 300A to 4kW inverter
Branch Line Distribution Panel	5 bays of 6 breakers (DIN); 1 - @120VAC, 1 @ 12VDC/120VAC (freeze protection), 2 @12V/24V (house loads) , 1 (timers, relay & solar shutoff)
DC-DC converters	1@24V to 12V/40A for house load, 1@24V to 12V/30A for freeze protection heaters, 1@12V to 19.2V/5A for TV
Shore cable	120V/30A, L5-30 twistlock receptacle, 50ft/10AWG cord, TT-30P plug

Equipment	
Refrigerator	Blomberg BRFB1045SS, 11.43cuft residential (120VAC) refrigerator, (8cuft refrigerator/3.4cuft freezer), 141lbs, 780W/day, 2 speed compressor
HVAC	LG LS090HXV2 120VAC mini-split, Cooling: 9kBTU(avg)/10.3kBTU(max)/SEER 20/732W(avg). Heating: 10.9kBTU(avg) /12.5kBTU(max)/HSPF 10/875W(avg), 78lbs.
Furnace #1	Diesel air heater, 5kw (17kBTU) @ 24V
Furnace #2	HCalory diesel coolant heater, 5kw (17kBTU) @ 12V (DHW heat, cabin heat, engine heat)
Water Heater	20l/5.28 gallon SureCal 'Calorifier' hot water storage tank, w/120V/1000W immersion element & coolant heat exchanger for engine and diesel coolant heater.
Oven	Galanz, Convection/microwave/toaster/air fryer
Cooktop	DUXtop Induction, single @ 1500W
Toilet	Nature's Head composting w/drain to gray tank
Water Pump	Surflo 12V/5GPM w/ Seaflo pressurized accumulator
Com Network	RSRF MIMO 2x2 directional cellular antenna & MOFI–4500 cellular router
Plumbing	
Gray tank	32 gal, insulated (3/4" poly-iso) fiberglass with Seaflo macerator pump
Fresh tank(s)	25 gal + 18 gal, (selectively interconnected), external bladder connection fitting
Filtration	30 gpd reverse osmosis drinking water purification w/ permeate pump, 1.2 gal reservoir, sink spigot
Water Heating	5.28 gal 'Calorifier' tank w/1000W electric heater, coolant heat exchanger by 5kBTU diesel coolant heater & vehicle engine
Water pump	5gpm Shur-flow triple diaphragm pressure demand pump @ 45psi
Temperature control	Thermostatic mixing valve on water heater outlet @125F, Thermostatic mixing valve on shower head (manually adjustable)
Water Return	Momentary foot valves at kitchen and lavatory sinks and rotary diverter at shower, purge cooled water from the hot supply line back into the fresh tank.
Freeze Protection	1) Equipment outside the cabin is insulated; -Tanks have ¾" thick poly-isocyanurate -Piping has ½" thick polyethylene -Storage compartments have ¾" poly-isocyanurate 2) Primary system uses heat from the diesel coolant heater; -Water circulation moves water from the water heater through all the external domestic piping, back to the fresh tanks on a timer (flows for 30 seconds every 30 minutes) -Hot coolant directly heats battery and gray tank, thermostatically controlled by STC-3008 -Water pipes (in 3 areas) have 120V heat tapes run by the 800W inverter 3) A backup system uses electricity; -Fresh tanks (each) have a 12V/30W silicone heat strips controlled by STC-3008 -Pump compartment has 12V/40W CPU heater controlled by STC-3008 -Gray tank has 2x 12V/18W silicone heat strips controlled by STC-3008 -Battery box has 2x 35W/12V heaters controlled by STC-3008 -Macerator pump has a 30W silicone heat strip controlled by STC-3008 -Wet bay has 2x 12V/80W CPU heaters controlled by STC-3008