

## *LexTran*

# **STANDARD BUILD SPECS LOW FLOOR KNEELING BUS 2010**

### **Chassis Assembly:**

The bus shall be is offered on the Ford E-450 chassis. The engine offering is the 6.8 L Triton V-10 minimum. The chassis is rated to have a GVWR of 14,500 lbs.

The vehicle is equipped with the Intellisync air-ride conversion system, or equal. the conversion consist of a 4-point synchronized Air-Ride Suspension System. The system has an electronic air control system with diagnostics. The package also includes an electronic user control panel.

The air supply system consist of dual air compressors with dryer filtration system, the entire system is a closed loop air supply system with built-in recovery tanks. The vehicle is also equipped with a magnetic height control system.

### **STEEL FLOOR FRONT SECTION:**

The front steel sub floor assembly is welded together in a welding fixture. It is constructed from the following materials.

¼” steel isolator mounting brackets are secured to the outside of the OEM chassis rail by way of two (2) ½” dia. Grade 5 hex bolts. These brackets provide the mounting surface for the OEM Ford rubber isolator mounts.

10-gauge formed hat section cross members are then bolted to the isolator mounts to securely fasten the vehicle floor to the chassis.

10-gauge longitudinal formed hat sections are use at the area where the wheelchair ramp angle intersects the floor.

12-guage high tensile steel floor side rails attach the sidewall to the steel floor assembly. These steel side rails are welded to each of the vehicle cross members.

14-guage steel floor support tubes ¾” x 1 ½” are welded between the cross members to floor grid that ties the steel sub floor together.

### **STEEL FLOOR REAR SECTION:**

The steel sub frame parts are welded together in a welding fixture. It is constructed from the following material.

12-gauge cross members are welded to two 3/16” STL long sills which are 4 1/2” wide x 1 1/8” high. These cross members are a modified “C” 1 ½” wide x 3” high.

14-gauge steel floor support tubes ¾” x 1 ½” are welded between the cross members to form a grid that ties the steel sub frame together.

12-gauge high tensile steel floor side rails attach the sidewalls to the steel floor structure.

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12-gauge seat track 1 5/8" wide x 7/8" high are welded every 6" to a 14-gauge steel strip that is 3 1/2" wide and welded to the cross members.

Rear wheel wells are constructed of 12-gauge steel and designed with flanges that are welded under the lip of the cross members to create a watertight seal and fastened at the wall side.

The steel sub frame is painted after assembly to assure protection from rust and corrosion.

The completed steel front sub frame assemblies are then welded to the rear steel sub frame assembly and painted to assure protection from rust and corrosion.

#### **UNISTRUT CHANNEL SEAT TRACK**

All seating is secured in a 1 5/8" wide Unistrut channel seat track. A 3 1/2" wide 14-gauge steel plate is welded to the steel sub frame. The Unistrut channel is then welded to this plate.

#### **FLOOR DECK**

The finished sub floor is 3/4" thick Fiberglass reinforced plywood. This material is described as follows: The inner core of the FRP panel is made of Northern Fir Launch B/C plywood that has been plugged and filled. The maximum number of filler plugs per 4' x 8' sheet to be no more than twenty (20). This material is sandwiched between 17 oz woven rope fiberglass matt that is impregnated with fiberglass resin, the face side of the material to have 20 mil. Gel coat with the back side covered with co-extruded melinex film.

The FRP panels are then installed on the top of the steel sub frame with grade five (5) floor bolts. Construction adhesive is utilized as well along the top of all floor members that intersect the floor decking material as an additional securement method. A minimum of six (6) bolts per crossmember is standard.

#### **SIDEWALLS**

The sidewall structure consists of a steel cage and fiberglass laminated together to form a one piece seamless wall. It is constructed in the following manner.

3/4" x 3/4" 16-gauge top (11-gauge bottom) and 3/4" x 1 1/2" 14-gauge steel tubing is designed to create a steel grid work that is a part of the total steel structure that surrounds the passenger compartment. The exterior is a gel coated surface at a 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mil. The fiberglass content of this layer will be 31 %.

A layer of 2.7mm Luan is then applied.

A second layer of resin and fiberglass is applied.

At the top and bottom of the window line and at track seating location a glass mat is laid in the wet resin. This gives additional strength at key stress points.

The steel cage is then laid in the wet resin and a 3/4" (1.85 lb. density) polyisocyanurate foam is added between the steel cage supports and rolled down flush.

A final layer of resin and fiberglass is then sprayed on top.

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While the final coat is still wet the interior surface is applied as a sub assembly consisting of an interior gel coat with a layer of resin and woven fiberglass mat (10 oz.).

The entire assembly is placed in a vacuum press until it is cured.

#### **ROOF**

The roof structure consists of a steel cage and fiberglass laminated together to form a one piece seamless roof. It is constructed in the following manner.

¾" x ¾" 16-gauge and ¾" x 1 ½" 14-gauge steel tubing creates a steel grid work which along with the sidewall cage completes the steel that surrounds the passenger compartment.

The exterior is a gel coated surface at 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mil. The fiberglass content of this layer will be 31 %.

A second layer is then applied.

The steel cage is then laid in the wet resin and a ¾" scored Nida-Core is added between the steel cage supports and rolled down flush.

A final layer of resin and fiberglass is then sprayed on top.

The entire assembly is placed in a vacuum press until it is cured.

#### **FRONT & REAR CAPS**

The front & rear fiberglass caps are of one piece design and constructed in the following manner.

The exterior is a gelcoated surface at 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mils. The fiberglass content of this layer will be 31 %.

Reinforcements are then installed and glassed in.

#### **WINDOWS**

##### **Driver's Window (meets FMVSS 205 & 217)**

At the driver's position, one window is provided by the OEM. This window rolls down manually.

##### **Curbside Transition Window (meets FMVSS 205 & 217)**

The curbside transition window is located in front of the entry door. The window's size is 40" high x 13 ½" at widest point (12" at the bottom). The top 1/3 is angled to fit the contour of the

cab. The total square inches of viewing area is 425. It has a tempered safety glass rating of AS-2 with a 31% tint.

##### **Passenger Side Windows – Non-Egress (meets FMVSS 205 & 217)**

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The number of windows depends on the model of the bus. The window's size is 36" high x 36" wide. It is a double "T-slider" ventilation type which is designed for the top 7" to open by sliding either the front or rear 6" sections toward the center. The window is maintained in the closed position by mechanical latches. The total square inches of viewing area is 816. It has a tempered safety glass rating of AS-3 with a 31% tint.

#### **Passenger Side Windows – Egress (meets FMVSS 205 & 217)**

The number of windows will depend on the model of the bus. They are identical to the non-egress in construction, but are designed to be opened in an emergency situation by releasing two clearly marked red release latches located on each side of the window. There will be operating instructions located at and on each egress window.

#### **Rear Egress Window (meets FMVSS 205 & 217)**

There is one rear egress window. The window is designed to be opened in an emergency situation by releasing two clearly marked red release latches located on each side of the window. There will be operating instructions located at and on each egress window. The window's size is 22" high x 58" wide. The total square inches of viewing area is 1,276. It has a tempered safety glass rating of AS-3 and 31% tint.

#### **Window Seals**

The windows are sealed between the body and window frame with ½" ribbed rectangle closed cell rubber seal.

### **ASSEMBLY**

The steel floor sub frame assembly is then mounted on the OEM chassis utilizing by bolting to the OEM frame with 12mm x 1.75 class 9.8 bolts and nuts supplied by the chassis manufacturer utilizing the OEM rubber mount suspension system. This allows the body to be mounted the same as the OEM cab which reduces any stress where the two are connected and helps isolate road vibrations from the body.

The floor deck is next. A closed-cell rubber seal is applied to the edge of the plywood floors, so when the sidewall is set this seal will close any gap between the floor and sidewall, creating a weather proof passenger compartment.

The front fiberglass cap is secured to the OEM chassis utilizing mechanical fasteners and a butyl rubber seal between the chassis and the flange on the front cap to create a weather proof seal.

The side walls are then installed, securing them to the steel sub frame and portal frame with mechanical fasteners.

The interior rear wall follows and is attached to the rear cross member and the sidewalls, utilizing mechanical fasteners.

The roof is then installed and attached to the front cap, sidewalls and rear interior wall, utilizing mechanical fasteners in conjunction with steel reinforcing attachment strips.

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After the body is assembled a liquid sealer is applied to the seams at the floor line and interior rear wall. This sealing is in addition to sealing the interior after the final trim pieces are applied. This completes the steel/fiberglass composite combination body structure, having a minimum of body seams, no exposed fasteners, resistant to impact, "body shock" (OEM rubber mounting system), oxidation finish, and non-corrosive.

The remaining components are not an integral part of the body structure, but are designed for weather protection and/or cosmetic components. The rear cap is then set over the rear interior wall and along with the fiberglass side skirts, fender flares, transition pieces and the bumper anti ride, installed with mechanical fasteners and sealed with a butyl rubber seal (interior) or an automotive caulk (exterior). In addition, the skirts and fender flares are fastened to the horizontal steel tubes in the sidewalls and the anti ride into the steel sub frame.

After all the above components are installed, an aluminum trim, secured by mechanical fasteners, is placed over the body seams. This trim is covered with a vinyl insert and sealed with an automotive caulk to assure the body is completely weather proof.

#### **DOORS**

##### **DRIVER'S DOOR**

The driver's door is OEM and has a keyed lock and manual window.

##### **PASSEGER IN-BODY ENTRY DOOR**

###### **Double-Out Entry Doors**

The standard entry door is a electrically operated double door design with a clear opening of 39" wide x 75" high. Actuator built on rugged 11 gauge steel base plate and powder coated for superior corrosion protection. Precision machined gear set for smooth operation. Proprietary 12 VDC drive motor. All bearing surfaces fitted with oil-impregnated bronze bushings. The interconnect push-pull rods are turnbuckle-style for ease of adjusting although almost never needed after proper installation. The motor control PC board is made using solid state, micro chip technology for long in-service potential. Motor control PC board uses current sensing to turn off motor when the door reaches the closed position; the use of a closed limit switch is not used. Additionally, the system will also shut down in the event of an object inhibiting the doors from opening thus eliminating undue motor wear. The motor control PC board has an adjustment for changing the set point limit to accommodate different load requirements depending on

installation requirements. The auto-reverse model "feels" an object in the pathway of the door during closing and will automatically re-open the doors preventing damage and injury. System shall be low maintenance once installed and properly adjusted giving hundreds of thousands of cycle potential. Key components are easily accessible for ease of maintenance. A

Full clear span, full view glass

Glass panel is 1/8", AS-2 green tint;

Fully anodized 6063-T6 aluminum extruded door frame

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Extrusion has a minimum wall thickness of .090"

All frame assembly joints use Key-Lok™ design for added joint rigidity

All attaching hardware is zinc plated or stainless steel for corrosion control

Lower pivot point is glass-filled injection molded design

Upper Torque Arm drive is zinc plated and easily replaced if required

Both door panels are identical and can be used in either forward or aft position

Door panels are light weight, typically less than 35 lbs. each.

#### **RA300 COMMERCIAL WHEELCHAIR RAMP SPECIFICATIONS IN COMPLIANCE WITH**

United States Department of Transportation Rules and Regulations 49CFR, Part 38.  
**FROM THE AMERICANS WITH DISABILITIES ACT OF 1990**

The wheelchair ramp system shall be of modular steel frame construction requiring no pre-assembly or complex vehicle interface. The frame design shall provide rigidity for ramp alignment and ramp operation. The ramp shall have been tested to a minimum static load of 1980#. The ramp shall have 660# rated capacity. The housing shall be of a welded box design to provide flexural rigidity to minimize ramp deflection when placed under load.

The power supply shall be a self-contained 12 volt electric hydraulic system operating two bi-directional cylinders requiring no dependence on vehicle hydraulic systems. The hydraulic power pack system shall be of modular design allowing for easy removal and field replacement, if needed. The operation of the unit shall provide a smooth deployment and stowage cycle. The power operation of the hydraulic cylinders shall be of a push-pull design for smooth operation and improved synchronous arm movement.

The ramp shall have a gravity-down feature to prevent vehicle jacking upon deployment, and ramp pinching upon stowage. The ramp system shall employ a pressure relief system to limit its ability to raise more than 50 pounds. Internal cylinder-mounted pressure compensator valves are not permitted. Holding a control button in the operating position, after that operation is complete, shall not cause damage to the ramp.

A manual back-up system shall be provided to ensure operation of the ramp in case of electrical failure. The back-up system shall provide a reliable means of manually stowing and deploying the ramp. In back-up mode, the ramp shall be stowed and deployed with minimal physical effort requiring no special switching to accomplish the intended ramp motion.

The ramp shall permit easy access to all operating components without using special tools.

The ramp shall be of aluminum construction with stainless steel housing, and shall provide a continuous slip-resistant surface for safer use in inclement weather. The ramp shall have a minimum usable wheelchair passageway width of 32" and accommodate both four-wheel and three-wheel mobility aids.

The ramp shall be automatically folded and unfolded and fully automatic in operation. The ramp shall allow both inboard and outboard facing of wheelchair and mobility aid users.

The ramp shall be capable of operating for 15,600 cycles in a temperature range of -10 F to 115 F.

The ramp should operate on vehicle grades up to 7 percent or 4 degrees.

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When installed, the ramp shall have the least slope practicable and shall not exceed 1:4 when deployed to ground level. If the height of the vehicle floor from which the ramp is deployed is 3 inches or less above a 6-inch curb, a maximum slope of 1:4 is permitted. If the height of the vehicle floor from which the ramp is deployed is 6 inches or less, but greater than 3 inches above a 6-inch curb, a maximum slope of 1:6 is permitted. If the height of the vehicle floor from which the ramp is deployed is 9 inches or less, but greater than 6 inches above a 6-inch curb, a maximum slope of 1:8 is permitted. If the height of the vehicle floor from which the ramp is deployed is greater than 9 inches above a 6-inch curb, a slope of 1:12 shall be achieved.

The transition from roadway or sidewalk and the transition from vehicle floor to the ramp may be vertical without edge treatment up to ¼ inch. Changes in level between ¼ inch and ½ inch shall be beveled with a slope no greater than 1:2.

The sides of the ramp shall be a minimum of 2" high and be clearly marked for proper placement of the wheelchair.

All lift components shall be finished with a baked-on powder coating, which will meet a salt spray test of 1000 hours, to provide corrosion resistance and a long service life.

#### **EXTERIOR FEATURES**

##### **FRONT BUMPER**

The chassis manufacturer provides the standard front bumper.

##### **REAR BUMPER**

The rear bumper is a wrap-around style constructed of 10-gauge steel. It is powder coated black. The bumper is supported by two formed 3/16" x 6 1/4" x 11" bumper brackets that are welded to steel "C" channel and bolted to the chassis frame.

##### **EXTERIOR MIRRORS**

There are two Rosco brand exterior mirrors. The mounting brackets include a driver's side wing mount and a passenger side fender mount quad design. The mirrors and mounting brackets will have a black finish with a 2-in-1 mirror head. The upper flat glass measures 6 ¾" wide x 9 ¾" high with the lower convex measuring 6" wide x 3 ½" high.

##### **MUD FLAPS**

There are four mud flaps, two front and two rear. The rear mud flaps are constructed of ¼" black thermoset plastic and are fastened to a steel support that is a part of the steel sub frame. The front mud flaps are constructed from 1/8" smooth rubber.

##### **FUEL FILL**

An aluminum fuel fill with a locking door is recessed into the body on the driver's side.

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### **DRIVE SHAFT GUARDS**

A drive shaft guard is installed on each section of the drive shaft. These guards are ¼” steel and 2” wide. They are welded to the chassis steel sub frame.

### **HEAT SHIELD**

A heat shield is installed over the exhaust pipe and muffler. This shield is constructed from .040 aluminum and fastened to the bottom of the sub frame cross members with mechanical fasteners.

### **UNDERCOATING**

The entire underside of the bus is undercoated with Z-Tech (ZPG20060B) except the areas directly above the chassis exhaust pipe, muffler and tailpipe. (12” from exhaust pipe and 2” from fuel tank) The undercoating meets all MIL specs C-62218A.

### **SKIRTING & FENDER FLARES**

The lower skirting is fiberglass, mechanically fastened, and matches the bus exterior. The wheel well moldings are fiberglass.

### **FIBERGLASS TRANSITION PIECES & ANTI RIDE**

The fiberglass parts are constructed in the following manner.

The exterior is a gelcoated surface at 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mils. The fiberglass content of this layer will be 31 %.

### **INTERIOR FEATURES**

#### **REAR WALL FINISH**

The interior rear wall is constructed in the following manner, starting with the interior surface and working to the outside.

The interior surface is gelcoated at a thickness of 15 to 22 mil.

A layer of resin and 10 oz. woven fiberglass mat is then applied to the gelcoat surface.

A ¾” x 2” substrate frame is stapled and glued to form a grid work to support and outline the perimeter of the rear wall. Between the horizontal and vertical pieces of the substrate grid work, pieces of ¾” 1 lb. density polystyrene foam are installed to create a solid core wall.

A 1/8” sheet of substrate provides the rear layer.

The three layers of the rear wall are then assembled using a hot-melt glue/press-roller process.

Two 10-gauge steel plates (12” x 31”) are secured to the rear wall (paratransit model) as tapping plates for the shoulder harness for the rear wheelchair positions.

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### **CAB LINER**

The cab liner is a one-piece fiberglass design.

The exterior is a gelcoated surface at 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mils. The fiberglass content of this layer will be 31 %.

Prior to installing, a 1 ½" thick fiberglass insulation is inserted between the exterior front cap and the cab liner.

The cab liner is then fastened to ¾" thick x 4" wide substrate strips that have been secured to the underside of the exterior front cap.

### **HEADLINER**

The standard headliner is a one-piece fiberglass design.

The exterior is a gelcoated surface at 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mils. The fiberglass content of this layer will be 31 %.

The headliner is then fastened to ¾" thick x 4" wide substrate that has been secured to the underside of the roof.

### **HOSE COVERS**

The rear hose covers are a one-piece fiberglass design.

The exterior is a gelcoated surface at 15 to 22 mil thickness.

A layer of resin and fiberglass will be skin coated at a thickness of 110 to 120 mils. The fiberglass content of this layer will be 31 %.

### **BODY SEAM TRIM**

After all the above fiberglass components are installed, an aluminum trim, secured by mechanical fasteners, is placed over the body seams. This trim is covered with a vinyl insert.

### **FINISHED FLOOR**

The standard floor covering is black, 1/8" thick, transit type smooth rubber with 3/16" ribbed rubber in the entry way and the aisle. The entry steps have a white step nosing covering the leading edge of the step riser.

### **ROTOCAST TRIM PANELS**

A rotocast trim panel is installed at the floor to sidewall seam. Over the wheel wells, there is a molded piece of the same material, which follows the wheel well contour.

The "B" pillar, driver's door header, windshield header, and curbside transition window also utilize a rotocast panel to cover the unfinished areas of the OEM chassis.

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### **ENTRY DOOR TRIM**

The areas surrounding the entry door frame are trimmed with padded vinyl which matches the interior color scheme.

### **STANCHIONS, MODESTY PANELS, & ASSIST HANDRAILS**

Behind the entry door, a vertical 1 ¼" OD stainless steel stanchion will run from floor to ceiling connecting with a horizontal stanchion secured to the wall. In addition, a modesty panel is attached to this assembly. All fittings and fasteners will be stainless steel. The fasteners are clad type with no exposed threads. The modesty panel is constructed from a ¾" substrate and covered with a white laminate finish. It is rectangular in shape and covered with a color-coordinated plastic edge around the entire perimeter.

An entry assist hand rail, constructed from the same materials, is attached to the entry door vertical stanchion for safety and to assist entering and exiting the bus.

### **INTERIOR MIRROR**

A 6" x 9" convex mirror with a full range adjustment is located above the driver's area, on the interior front cab liner for viewing the passenger area.

### **WALL TRACK**

The Unistrut channel is monobolted every 6" to a 1 ½" x ¾" 14-gauge steel tube that is part of the interior side wall structure.

The seat frames are bolted to the seat channel with two 7/16" grade 8 bolts, threaded into two 1 ¼" x 7/16" hardened channel nuts.

This installation meets FMVSS 207 & 210 requirements.

### **DRIVER'S SEAT**

The driver seat pedestal is mounted in the holes provided by the OEM. The seat is a high back recliner with a right hand arm rest. This seat meets FMVSS 207 & 210 requirements.

### **ELECTRICAL**

#### **WIRING**

All wiring added by the final stage manufacturer meets one of the following standards.

SAE Specification J1128-SXL high temperature wire (8 to 14-gauge)

SAE Specification J1128-GXL high temperature wire (8 to 14-gauge)

SAE Specification J1128-SGX high temperature wire (Battery cable)

In addition to the above specifications, all wiring is color-coded, number and function designated every 12" to enable identification and circuit trace ability.

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### **INSTALLATION & SECUREMENT**

All wiring under the body or hood is protected with high temperature (minimum 125 degree) nylon convoluted tubing and is secured by one of the following methods.

High temperature heavy gauge wire ties

Insulated rubber coated P clamps.

In addition to the above requirements, all wiring is routed no closer than ¾" from any sharp edge or a minimum of 4" away from any heat source.

No wiring will be routed through the wheel well unless protected by a metal shield and convoluted tubing.

A minimum of 1 ½" clearance is maintained between any wiring and the engine to compensate for engine roll.

No wiring will be secured to brake or fuel lines.

### **CONNECTORS**

All wiring is connected in the under-body or under-hood areas by one of the following connectors or methods.

Heat shrink eyelet

Sealable insulated butt connector.

Sealable insulated ring connector.

Where it is not possible to install a sealable insulated electrical connector in these locations, the insulated connector is protected by heat shrink tubing with sealable glue inside.

The remaining wiring located inside the bus is connected by one of the following connectors.

Standard insulated eyelet.

Heat shrink butt connector

Standard insulated quick disconnect.

Standard insulated ring connector.

### **GAUGE OF WIRE**

All wiring is sized to carry the electrical load required for length of bus.

### **LIGHTING**

#### **EXTERIOR LIGHTING**

The following lights are installed and meet FMVSS 108 requirements. (Lamps, reflective devices and/or associated equipment)

##### **Identification lamps**

Three amber rectangular lights centered and recessed in the front cap

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Three red rectangular lights centered and recessed in the rear cap

#### **Clearance lamps**

Two amber rectangular lights located and recessed at each outer edge of the front cap

Two red rectangular lights located and recessed at each outer edge of the rear cap

#### **Side Marker Lights/Turn signal lamps**

Two red rectangular lights located one on each side of the side wall just in front of the rear cap in line with the rear clearance lights

Two amber combination marker/turn signal lights located mid-body one on each side wall

#### **Stop/Tail lamps, Turn signal lamps, and Backup lamps**

Three 4" round light assemblies located and recessed in each side of the rear cap

#### **License Plate Light**

One chrome plated license plate light recessed in the rear cap on the driver's side

(In addition to the light, there will be space provided for the license plate in the recess.)

The chassis manufacturer supplies the headlights, chassis front turn lights, and the hazard flashers. The chassis system is then tied into the bus system by the final stage manufacturer

### **INTERIOR LIGHTING**

#### **Driver's Courtesy Lights**

A driver's courtesy light is installed just above the driver's left shoulder. Opening the driver's door or turning the headlight switch counter-clockwise activates the light.

#### **Step Well Entry Lights**

Two 2" flush mount step well lights are provided, one on each side of the entry step well. These lights activate when the double-out entry doors are opened.

#### **Overhead Courtesy Lights**

Overhead courtesy lights (6 standard) are installed in the ceiling of the bus to provide lighting for safe passenger movement. Turning on the switch in the driver's console or opening the double-out entry door activates the lighting.

#### **Dash Instrumentation Lighting**

Dash instrumentation lighting is provided by the chassis manufacturer and activated by the headlight switch.

### **DRIVER'S CONTROL PANEL**

### **MASTER DISTRIBUTION PANEL**

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The electrical center is installed in the front compartment above the driver. The input and output modules receive and control signals and circuitry on the body conversion. These modules are powered by a 2/0 cable that is connected to a standoff terminal in the electrical compartment. The module circuits are protected by blade type automotive fuses. All OEM circuits are provided by the chassis manufacturer.

In addition to the power supplied by the ignition hot solenoid circuit, there are two circuits in the panel that are battery hot and protected by in-line fuses. These circuits are for the radio and electric door operator options.

#### **PMC ELECTRICAL CONTROL SYSTEM**

A modular system that will be configured with 10 input/output channels to as many as 320 channels to control a body options and some chassis related items provide a safe environment for drivers and passengers. The system is programmed using a Windows™ based system that allows interlocking between any inputs and outputs. The system has 160 timers for delays (on or off) or flashers sequences to be programmed if needed in the operation.

#### **ELECTRONIC SWITCH PANEL CONTROL**

A switch panel is located within easy access of the driver to control all the functions necessary to operate the bus except the OEM chassis functions. Any electrical devices requiring a switch will be provided as needed.

#### **MISCELLANEOUS**

##### **EXTERIOR FINISH**

The standard exterior finish is a bright white gelcoat to match the OEM chassis white. Optional paint packages are painted with Dupont paint.

##### **WARRANTY**

The finished product has a general warranty of 12 months/12,000 miles and a structural body warranty of 5 year/75,000 miles.

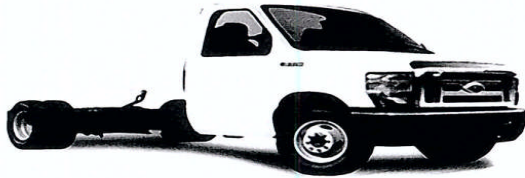
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## STANDARD BUILD SPECS LOW FLOOR KNEELING BUS 2010

**IntelliSYNC™**  
SYNCHRONIZED AIR-RIDE SUSPENSION SYSTEMS

**(765) 653-1715**

### Available Up-Fit Options: Shuttle Bus



2009 Ford E-450 Cutaway, 158" WB  
Fleet Ship-Thru Servicing - Avon Lake, OH

#### **IntelliSYNC™ E-4000 SERIES**

- 6.8L Triton V10
- 14500 GVWR DRW (8960 Max Payload)
- 4-Point Synchronized Air-Ride Suspension System
- Electronic Air Control System with IntelliSYNC™ Diagnostics
- User Control Panel - Electronic
- Dual Air Compressor with Dryer Filtration System
- Magnetic Height Control System
- Closed Loop Air System with Built-In Recovery Tanks
- System Safety Control - Interlock

#### **IntelliSYNC™ E-3000 SERIES**

- 6.8L Triton V10
- 14500 GVWR DRW (8960 Max Payload)
- 3-Point Synchronized Air-Ride Suspension System
- Pneumatic Air Control System
- User Controls - Manual (Toggle Switch)
- Single Air Compressor with Dryer Filtration System
- Pneumatic Height Control System
- System Safety Control - Interlock

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# **STANDARD BUILD SPECS LOW FLOOR KNEELING BUS 2010**

ThermoPlastic Olefin - Wikipedia, the free encyclopedia

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## **ThermoPlastic Olefin**

From Wikipedia, the free encyclopedia

**ThermoPlastic Olefin** (TPO) is a trade name that refers to polymer/filler blends usually consisting of some fraction of PP (polypropylene), PE (polyethylene), BCPP (block copolymer polypropylene), rubber, and a reinforcing filler. Common fillers include, though are not restricted to talc, fiberglass, carbon fiber, wollastonite, and MOS (Metal Oxy Sulfate). Common rubbers include EPR (ethylene-propylene rubber), EPDM (EP-diene rubber), EO (ethylene-octene), EB (ethylene-butadiene), SEBS (Styrene-ethylene-butadiene-styrene). Currently there is a great variety of commercially available rubbers and BCPP's. They are produced using regioselective and stereoselective catalysts known as metallocenes. The metallocene catalyst becomes embedded in the polymer and cannot be recovered.

The geometry of the metallocene catalyst will determine the sequence of chirality in the chain, as in, atactic, syndiotactic, isotactic, as well as average block length, molecular weight and distribution. These characteristics will in turn govern the microstructure of the blend.

The components are blended together at 210 - 270 °C under high shear. A twin screw extruder or a continuous mixer may be employed to achieve a continuous stream, or a Banbury compounder may be employed for batch production. A higher degree of mixing and dispersion is achieved in the batch process, but the superheat batch must immediately be processed through an extruder to be pelletized into a transportable intermediate. Thus batch production essentially adds an additional cost step.

As in metal alloys the properties of a TPO product depend greatly upon controlling the size and distribution of the microstructure. PP and PE form a vaguely crystalline structure known as a spherulite. Unlike metals, a spherulite cannot be described in terms of a lattice or unit cell, but rather as a set of polymer chains that pack down closely next to one another and form a dense core. The PP and PE components of a blend constitute the "crystalline phase", and the rubber gives the "amorphous phase".

If PP and PE are the dominant component of a TPO blend then the rubber fraction will be dispersed into a continuous matrix of "crystalline" polypropylene. If the fraction of rubber is greater than 40% phase inversion may be possible when the blend cools, resulting in an amorphous continuous phase, and a crystalline dispersed phase. This type of material is non-rigid, and is sometimes called TPR for ThermoPlastic Rubber.

To increase the rigidity of a TPO blend, fillers exploit a surface tension phenomena. By selecting a filler with a higher surface area per weight, we can achieve a higher flexural modulus.

TPO blends have densities 0.92 - 1.1

TPO is frequently found in outdoor applications such as roofing because it does not degrade under solar UV radiation, a common problem with nylons. TPO is used extensively in the automotive industry.

TPO is easily processed by injection molding, profile extrusion, and thermoforming. TPO cannot be blown, or sustain a film thickness less than 1/4 mil (about 6 micrometres), where 1 mil is equal to 0.001 inch.

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