Simplicity. Serviceability. Durability.

EVOLUTION
FRAMED WINDOW SERIES

Upper Opening Transom, Fixed Lower + Optional Window Guards

40' Bus Length: A minimum of 11,000 square inches of window area, including operator and door windows shall be required on each side of the standard configuration bus.
35' Bus Length: A minimum of 10,000 square inches of window area, including operator and door windows shall be required on each side of the standard configuration bus.

OPERATOR'S SIDE WINDOW

The operator's side window shall be a full-height sliding type that opens sufficiently to permit the seated operator to easily adjust the street side outside side view mirror. This window section shall slide rearward in tracks or channels designed to last the service life of the bus. When in an open position, the window shall not rattle or close during braking or acceleration. The operator's side window shall not be bonded in place and shall be easily replaceable using the "Rapid Replacement Glazing System". The window assembly shall be designed to permit the removal and installation of each piece of glass in three minutes or less. The glazing material shall be manufactured using one-quarter inch or 6mm laminated glass, laminated in strict accordance to meet ANSI Z26.1, Test Grouping 2 and the Recommended Practices defined in SAE J673.

SIDE WINDOWS

Design

All side windows shall be fixed in position using an internal clamp ring, except as necessary to meet the emergency escape requirements. All side windows except windows in passenger doors and those smaller than 500 square inches, shall be transom type, tip-in, flat glazed with the sash glazing comprising between 25% and 35% of the total window area. The destination sign window shall be a fixed over fixed design. The transom window panels shall open inward and shall be equipped with latches and gas cylinders to ensure smooth long term operation with replaceable mounting blocks that secure the window in a fully open and fully closed position. The transom shall use a positive engagement mechanism that holds the transom in place when closed and minimizes sash rattle and air and water leakage. The bottom window shall not open except for emergency escape. Side windows shall be mounted in the bus structure so that flexing or vibration from engine operation or normal road excitation is minimized.

All side window glazing shall be replaceable in less than three (3) minutes by a 3M mechanic using "Rapid Replacement Glazing System" without disturbing adjacent windows. Emergency escape windows shall be ¾ egress design and open for emergency escape by means of a durable, heavy-duty cast aluminum handle assembly located on one side of the window and below the window centerline, a metal plate with operating instructions clearly marked and imprinted is to be securely installed adjacent to or on each emergency egress window assembly. The window primary interior glazing spline shall be designed as a one-piece rubber extrusion and installed to prevent passengers from readily removing the rubber or glazing. The window construction shall be designed using a "Water

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Management" system that incorporates a visible indirect water drainage system to the exterior of the window and will prevent the entrance or backup of water into the bus interior or sidewall. Drains of sufficient size shall be used at the bottom of each sash that allows drainage of interior condensation to the exterior of the bus. The window manufacturer shall perform a water test that assures the "Water Management System" is functioning properly and is equal to or greater than the following parameters: **12 gallons of water/minute @ 40 psi with multiple strategically placed nozzles for duration of 10 minutes.**

Materials

Seals: The window seal rubber and/or sash frame mounting rubber must be designed using UV stable material made from EPDM closed cell foam to prevent shrinkage and deterioration as well as water leakage. The window primary glazing spline shall be designed as a one-piece rubber extrusion and installed to prevent passengers from readily removing the rubber or glazing. The rubber spline shall be designed as a multi function, one-piece extrusion that retains the glazing in place with or without the use of window guards. The window bus structure exterior seal shall be an EPDM closed cell foam to ensure maximum seal capacity.

Frames: Window assemblies shall be constructed using 6063-T4 and 6063-T6 aluminum as required for high strength components or suitable composite materials; all materials must be chemically compatible with the window frame and the bus body. Unless otherwise specified aluminum materials used to construct window frames shall be hard anodized per Aluminum Association AA-C22-A21 with hard coat additive. All fasteners and brackets required in the assembly of the window frame shall be stainless steel. Whenever possible, window elements not designed for disassembly shall be bonded together to reduce the potential for vandalism and enhance durability. Such bonding must be stronger than the fasteners it replaces.

Glazing: Glazing materials shall be one quarter-inch or 6mm nominal thickness laminated safety glass, strictly conforming to applicable sections of FMVSS 205 and ANSI Z26. 1 – 1997. Glazing color shall be neutral, complementary to the bus exterior and consistent from window to window. Maximum solar energy transmittance shall be 51% as measured by ASTM-424, except for the upper destination glazing, which shall be clear. Glazing shall be removable from the window assembly without removing the window from its installed position on the bus.

Window Guards/Graffiti Protection: All side window assemblies shall be designed to accommodate all available graffiti protection options. Window assemblies shall be provided with "G3 Rapid Replacement Window Guard" system or approved equal and shall not require the use of fasteners or retaining rings to secure the window guards to the window assembly. The window guard material shall conform to the requirements of FMVSS 205 (ANSI/SAE Z26.1) AS-5, 0.125 (1/8") clear acrylic or polycarbonate to meet the requirements of specification Sections 2.4.1, 2.4.2, 2.4.3, and 2.4.4. Window guards shall be installed with a visible air space between the main glazing and glazing shield to permit moisture and condensation to dissipate. Window guards shall be removable using nothing more than standard, ammonia-free window cleaner and two standard suction cups. Window guard removal shall not disturb the integrity of the primary glazing.

Warranty: All Window assemblies including frames, rubber seals, and glass shall be warranted covering the integrity and deterioration or delamantion of the glazing for a period of two years, in normal city service. Warranties shall cover all material, labor and workmanship, excluding damage caused by vandalism, bus accidents, poor care and maintenance.

DOT and Manufacturer Identification: Each glazing component and or window guard shall have the manufactures Department of Transportation (DOT) registered identification "bug" permanently applied according to the DOT requirement, the "bug" shall include the date (month and year) of manufacture applied in the same location.

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