

Ergonomic Design: Patient Compartment

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GENERAL

Accommodates at least one paramedic, one other passenger, and one patient located on the primary stretcher

SEATING

General

At least two primary seating positions available

Each seat

Permits upright seated posture with a torso-to-thigh angle not less than 90°

Accommodates a 5th percentile female and a 95th percentile male

Permanently affixed side-facing seats comply with SAE J3026

Occupant head clearance complies with AMD 025

Primary Attendant Seat

Seat pan width accommodates a 95th percentile male hip breadth

Seat pan depth is greater than 384 mm but less than a 5th percentile female buttock to popliteal length

Backrest and lumbar support provided

Airway Attendant Seat

If swivel seat is installed, it has a locking system only in the 0° and 180° positions with a tolerance of ±5°

If non-swivel seat is installed, it has a locking system only in the 180° position with a tolerance of ±5°

Seat pan width accommodates a 95th percentile male hip breadth

Seat pan depth is greater than 384 mm but less than a 5th percentile female buttock to popliteal length

Backrest and lumbar support provided

Capable of sliding forward and rearward to adjust the distance between the seat and the stretcher to at least 200 mm from the front edge of the seat pan to the stretcher mattress while the stretcher is in the supine position

STORAGE UNITS

General

All interior enclosed stowage devices comply with BNQ 1013-110, Clause 8.2.4.3

Maximum weight to be secured within a storage unit is clearly labelled

Attachments and safety nets are quick-release

Easily opened but do not come open due to vibration, ambulance motion, or collision

Pressure Vessels

Fire extinguisher weighs at least 4.5 kg

Space provided for the fire extinguisher is large enough to allow the fastening system to open

Fire extinguisher is accessible without entering the ambulance

Pressure vessel mounts comply with SAE J3043 and AMD 028

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Stretcher Retention

Stretcher retention system complies with SAE J3027

Ambulance floor and substructure comply with SAE J3102

Provides user with immediate visual or auditory feedback to indicate that the stretcher has been safely secured

IV Holders

At least one IV holder is installed in the patient compartment

IV holders are able to fold and recess; are non-sway; provide hooks; and are able to hold a minimum of two 1000 cc IV infusion solution bags

Do not have rigid support arms

Sharps Containers

Puncture-resistant construction, leak-proof on sides and bottom, and consistent with the current legislative colour requirements

Remains upright

Stair Chair

Storage space for stair chair is no higher than a 5th percentile female standing waist height (measured from the bottom of stair chair); and permits users to retrieve or replace stair chair without exceeding a horizontal reach distance equivalent to a 5th percentile female elbow to fingertip distance



Spare Tire

When carried internally, a storage area is provided of sufficient size to accommodate the winter tread model of the certified tire for the ambulance

INGRESS AND EGRESS

Door handles, handholds, and steps permit safe entry and exit to/ from the patient compartment in various weather conditions (in dry, wet, wintry, and reduced visibility weather conditions) while wearing gloves and boots

Door handles, handholds, and steps accommodate the standing reach and size of a 5th percentile female or a 95th percentile male

DOORS

General

Includes a minimum of two openings: one at the rear and one at the primary attendant side of the patient compartment

Rear door permits ready loading of a stretcher

Primary attendant side door permits ready loading of an ambulatory patient

All doors have effective seals for sounds, fluids, and gases

Doors have door stops

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Height of rear doorsill does not exceed a 5th percentile female waist height

Door Latches, Hinges, and Hardware

Hinges, latches, and door-checks do not protrude into the access area when doors are opened

Hardware for the type and size of doors prevents inadvertent closing

Vertical hinges of rear doors open to a minimum door angle of 150°

Weather-resistant hardware used

Door handles accommodate the hand length, circumference, and breadth of a 5th percentile female and a 95th percentile male; and provide hand clearance of at least 63.5 mm (measured between the mounting surface and the handle)

Door Locks

Lock and unlock from inside without key

Lock and unlock from outside with key

All patient compartment door locks are identically keyed

Door Dimensions

Minimum rear door opening: W: 1120 mm × H: 1270 mm

Minimum side door opening: W: 660 mm × H: 1600 mm

Door-Activated Switches

Side door(s) fitted with switch(es) that operate primary attendant interior patient compartment lights and primary attendant scene lights when opened

Rear entrance door(s) fitted with switches that operate primary attendant interior patient compartment lights and the rear scene lights when door(s) is (are) open

Audible and/or visual warning signal when any external door is not completely closed when ambulance ignition is on

Handholds

Mounted on the inside of entrance doors and immediately inside each entrance to the patient compartment

Grab handles and grab rails are installed in a position to assist persons moving around in the ambulance, seated in the ambulance, or entering and leaving the ambulance

Grab rails or grab handles comply with Ontario Provincial Land Ambulance and Emergency Response Vehicle Standard

Finished with a high-visibility material

One overhead grab rail, with a minimum length of 1500 mm, and between 22 mm and 32 mm in diameter, is located on the ceiling centrally over the primary stretcher, with padded or curved-up ends and rounded corners

Grab rails do not interfere with the stretcher or incubator

Emergency Egress

Emergency opening system is provided for rear access door and side access door

Emergency opening system has at least two separate locks per door, independent from the usual door-leaf opening mechanism, and is able to operate at all times (not applicable to Type 2 ambulances)

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STEPS

General

Minimum depth of 254 mm

Illuminated when the door is opened in accordance with CSA D409

Free of sharp edges

Surfaced with ridged anti-skid open grating material

Comply with AMD 018

Reflective stripe on the leading edge

Rear Step Design

Step(s) installed for ambulance that exceed 425 mm (measured from the ground to the finished floor)

Leading edge of the step is lower than the top edge of the ambulance floor when folded

Height of each step does not exceed 425 mm

If the step(s) does not cover the full width of the rear opening, the portion that does not have the step(s) has a clear, highly visible indication on the floor stating "NO STEP"

Side Step Design

If the distance from the ground to the finished floor of the ambulance at the side entry location exceeds 300 mm, a step or steps are installed

Height of each step does not exceed 425 mm

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WINDOWS

Fixed tinted windows are mounted in the rear and primary attendant doors

Designed to ensure patient privacy

Permit between 3% and 7% light transmission

Window material is transparent polycarbonate and bears a permanent identifying mark that certifies compliance with local regulations for motor vehicle glazing

Each rear access door has a fixed window

Primary attendant door has a fixed window (might or might not be capable of opening)

LABELLING AND IDENTIFICATION

Signage in both official languages is installed to convey operating or occupational health and safety instructions pertaining to chassis design, conversion design, or equipment installations

Gauge function of voltmeter is clearly labelled

Illuminated voltmeter is provided to monitor the condition of both the OEM and conversion batteries

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Fixed decals are provided for incubator plugs, accessory receptacles, and other electrical outlets

Clearly visible (either illuminated or etched on back lit panels) and permanent signage is provided for all switches, indicators, and control devices supplied by the manufacturer

LIGHTING

Two independently controlled lighting zones on the left and right sides of the patient compartment are provided

Lighting zones are capable of high and low settings or are dimmable

Off switch for patient compartment lights is provided in the driver cabin

Lights do not protrude more than 30 mm from the ceiling

When the side or rear access doors are opened, the dome lighting automatically activates at an intensity of 75 to 250 lx and automatically switches off $15\text{ s} \pm 2\text{ s}$ after the access doors are closed

Lighting is provided to illuminate the side and rear entry doors and steps to a value of 100 to 150 lx when the doors are open, in accordance with The Lighting Handbook of the Illuminating Engineers Society

Each interior storage cabinet has a minimum of one cabinet light

One independently operated light is located in the approximate centre mass of the patient and stretcher with a value of at least 1000 lx; light switch for this light is readily accessible from both the primary attendant seat and airway attendant seat

All interior lighting is of a uniform colour range of 2700 to 3500 K (with the exception of blue cabinet lighting)



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