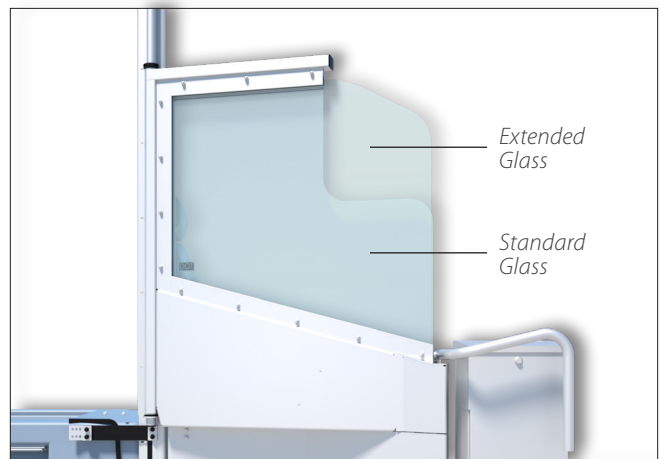


AROWGUARD FIXED GLASS DRIVER PROTECTION SYSTEM (DPS): PRODUCT SPECIFICATION

The ArowGuard Fixed System is designed to be in use 100% of the time. This is ideal for applications where mandatory full time use of the protection system is desired.

Features:

- Designed to attach securely to the vehicle chassis or carlines.
- In compliance with AS-2 regulations and ADA requirements.
- Pyrolytic anti-glare coating compatible, which reduces interior and exterior light reflectance to less than 2%.
- Glass geometry allows for unobstructed view of surroundings, including rearward facing and curbside mirrors.
- Tailored to work around existing bus equipment such as fare boxes, cameras, and stanchions.
- Contoured door provides maximum elbow room while maintaining ADA compliance.



FIXED GLASS PRODUCT SPECIFICATION

General

- Manufacturer/model reference: AROW Global AROWGUARD Fixed Glass Driver Protection System
- Driver Protection System (DPS) shall be easily operated.
- DPS shall prevent sudden intrusion into the bus operator's area.
- DPS assembly shall not cause objectionable noise or vibration during normal road operation.
- DPS components shall not prevent access to fare box payment interface or vault door.
- DPS shall allow for a reasonable amount of verbal communication between the bus operator and passengers.
- DPS shall not obstruct the rearward view of operator to the standee line.
- All DPS parts shall be powder coated or anodized to complement the interior color of the bus.
- The DPS shall be designed with an upper glazing section and a non-transparent lower section.
- For maintenance purposes, the DPS shall take less than 30 minutes to remove and replace.
- All DPS parts shall be new and unused.

Operation

- Forward most DPS glass shall be fixed in place by an inoperable clamping frame mechanism.
- The DPS shall not affect vehicle adherence to ADA or other international accessibility standards as pertaining to aisle clearance and conformance to the standardized "Box Test."
- The DPS shall be designed to promote mandatory full time use by the bus operator.
- The DPS shall include a stop mechanism to prevent the door from opening more than ninety-five (95) degrees or past the passenger standee line.
- The primary DPS latch mechanism release shall be inconspicuous to untrained personnel, and be operated by means of a push out knob that actuates with a force of less than 5 lbf.
- The DPS shall be designed to minimize glare and reflection from outside light sources during hours of darkness.
- No portion of the DPS latching mechanism or strike plate shall present a hazard during ingress or egress from the bus operator's area.
- The DPS door swing shall be accommodated by a rotary post hinge mechanism, free of pinch points.
- The DPS shall close by use of an ergonomically positioned pull handle, and latch with a force of less than 20 lbf.

Materials

Glazing

- Glazing shall permit unobstructed view of the curb-side mirrors and to the bottom of the entrance door for operators included in the 95th percentile of the operator population in accordance with SAE J941.
- Glazing material shall be a minimum of 5/16" (8mm) thickness and be of a tempered / laminated construction with pyrolytic application of anti-glare coating on surfaces #1 and #4.
- Glazing material shall comply with American National Institute, Standard ANSI/SAE Z26.1-1996 S5.2, FMVSS 571.205 49CFR, and SAE J673 #1 edge standards for automotive glazing.
- Glazing material shall be properly marked indicating approved for automotive use in accordance with ANSI/SAE Z26.1-1996 S7 and FMVSS 205 S6.2 standards.
- All DPS glazing shall be easily serviceable and allow replacement in less than 5 minutes by a qualified technician.

Support Infrastructure and Overall Construction

- DPS stanchion framing shall be constructed of a minimum 11 gauge (0.120" wall) 304 stainless steel material.
- DPS stanchion mounts shall be structurally affixed to the vehicle undercarriage, chassis, or body framing.
- DPS shall be constructed with a sturdy metal frame supporting both upper and lower sections. No portion of the framing shall extend around the front edge of the glazing material.
- All DPS glazing shall be retained by 6063-T6 extruded aluminum framing and include mechanisms to provide vibration-dampening properties.
- All DPS glazing shall be retained without the use of holes, notches, or slots within 5" of the edge of the material.
- Non-transparent lower sections shall be constructed of a minimum 5/32" thickness aluminum sheet and include reinforcement members with welded construction.
- The primary DPS latching mechanism shall include a two stage rotary slam close type latch and utilize a 9/16" diameter striker bar with fully captured engagement. The latch must be able to withstand a load of no less than 350 lbf. applied at the locking point, both inward (toward the driver seat) or outward (away from the driver seat).

Hardware

- DPS latch shall be serviceable and fully replaceable in less than 10 minutes by a qualified technician.
- All fasteners used on the DPS shall be of a safe design to prevent injury to the bus operator or passengers.
- DPS hinge shall be of a maintenance free rotary post design and incorporate UHMW bushing and bronze thrust washers.

AROWGUARD DRIVER PROTECTION SYSTEMS FACT SHEET

(Adapted from an actual Transit Property program)

Myths / Concerns	Driver Protection System Facts
Not able to communicate with customers	Even with DPS fully closed, operator can hear clearly, what the customer is saying.
Space is too small, not enough elbow room	With the driver seat in a “full back” position, the product is designed to provide sufficient elbowroom using the 95th percentile of the operator population, in accordance with Standard SAE J941. This is accomplished by providing minimum of 15 inches from the center of the seat to the interior surface of the rear glass. The DPS has been tested in many cities, and consistently meets operator needs in this regard.
Decreases vision – glare, blocking mirrors	<ul style="list-style-type: none"> • The DPS uses 8mm laminated tempered glass with “OptiView” anti-glare coating limiting glare to the highest level possible. Glazing material complies with American National Institute, Standard ANSI/SAE Z26.1-1996 S5.2, FMVSS 571.205 49CFR, and SAE J673 #1 edge standards for automotive glazing. • The DPS is designed to have an unobstructed view of the curb-side mirrors and to the bottom of the entrance door for operators included in the 95th percentile of the operator population in accordance with Standard SAE J941.
Reduces airflow – too hot in the summer Reduces airflow – may result in foggy windows	<ul style="list-style-type: none"> • The DPS will be primarily installed on air-conditioned coaches. Test pilot on 6 coaches did not show any adverse effects of DPS with regards to airflow or temperature. • Our testing did not show significant increase of temperature in driver’s compartment compared to identical coach without a DPS.
Door can jam and trap operator in the event of collision	<ul style="list-style-type: none"> • Based on information from Engineering and Incident Analysis there is very low likelihood of incident that will cause damage significant enough to prevent opening of the DPS door. • Emergency personnel attending accident are also able to free passengers trapped in vehicles using specific equipment (jaws of life).
It is not tall and wide enough, customers can still throw items at operator	The DPS is designed to prevent the most severe types of assault: sucker punches and unexpected attacks from the side/back. Dimensions of the DPS are designed both the driver and passenger, they take into account visibility, ability to communicate, airflow, etc.
It can get dirty or damaged (scratches) and difficult to see through	Laminated tempered glass is scratch resistant. Operations are working on a procedure for dealing with situations where glass gets dirty during service. The DPS will be checked during pre-trip inspection and removed from service if necessary as any other defective equipment on the bus.
Passengers can trap operator behind the DPS	In the event of an aggressive passenger standing behind the DPS or holding the door, call dispatch immediately. Having the door closed can actually provide a physical barrier so that the aggravated passenger cannot hit or harm the operator.