

Dual Belt Conveyor Rollback Hazards

There are several forces that can cause a vehicle to roll back when approaching the end of the belt conveyor. Understanding and evaluating these forces will ensure the smoothest transitions out of the car wash.

Reasons a vehicle can rollback near the wash exit:

1. Customer error: foot on brake / car in park.
2. Blowers with aggressive angle pushing on the front / windshield area.
3. Tire Gloss which is falling out hard or being aired out with too much pressure pushing back on the vehicle.
4. Excessive rise of the conveyor frame in the blower room.
5. The Escalator Effect, in which an abrupt stop creates a sharp decrease in inertia.
6. Vehicle wheel base positions, the rear wheel resting on top of a flight and creating a slingshot.
7. Bad concrete slopes, flat or uphill.
8. Bad elevations causing a slingshot
9. Conveyor speed not in balance with slopes.

If you are struggling with common rollbacks it's important to use cameras or spend time in the blower room to evaluate the factors influencing each rollback. Every site is different, so document and identify the root causes of your rollback instances and resolve them.

Customer Errors

Customers may brake or place their vehicles in park rather than neutral. Ensure your pre-wash signage, entrance module TV, and voice cues offer a clear explanation of the process, e.g. "Place car in Neutral and Take Your Foot Off the Brake".

Next comes blower room signage, which can be used as a tool to point at if you notice brake lights moving through the tunnel. We recommend: "Prepare to Unload, Foot Off Brake, Car in Neutral". These elements, used together, will help to reduce customer error situations.

Aggressive Blower Angles

If a vehicle mysteriously rolls back BEFORE reaching the end of the conveyor it's a telltale sign that your blowers are over-aggressive in angle and horsepower, placing excessive backwards force on vehicles. Adjust blower placement downwards or towards the backend, and evaluate your results.

Tire Shine Pressure

The tire shine system is typically set up to "fall out," meaning no air pressure is needed to release it. If the tire shine doesn't fall all the way out (maybe due to the slopes) a small amount of air assistance may be needed. If this air assistance is too much, however, it can put excessive pressure on the vehicle and force it backward.

This can be resolved by lowering the air pressure. In addition, make sure your timing is precise so that the brush falls out to meet the side of the wheel against the UHMW guide before the brush. Ideally it comes out late enough that the pusher bar never really needs to make contact in front of the wheel therefore reducing the resistance push back.

Conveyor Rise / Escalator Effect

The conveyor rides uphill through the tunnel. However, depending on the floor elevations that uphill motion can sometimes be more than it should be and cause the vehicle to pull back. This can be compounded by the Escalator Effect, so named for the abrupt transition between moving and non-moving surfaces. This reduction in energy as the vehicle moves from the belt to the transfer plate, combined with uphill elevation, can trigger a rollback.

This is addressed with shims placed under the deck plate at the rear tire of the vehicle when the front tire is unloading, creating a flat or downhill transition.

Vehicle Wheel Base Positions

When a vehicle lands on the conveyor such that the front wheel is pushed forward while the rear wheel is positioned *on top* of a flight it is called a 'rollback hazard'. This is generally a guaranteed rollback scenario that cannot be prevented or eliminated. The best resolution is to have a team member notice the hazard and to space out the following vehicle.

Poor Concrete Sloping

A slight lip, even 1/8", between the concrete and the transfer plate can cause a vehicle to stop and roll back if the concrete is sloped uphill. The correct slopes, per our drawings, are very specific and require a slight downhill gradual fall to avoid this issue. If you're dealing with an uphill out you should expect ongoing rollback frustration. Your best resolution is to re-pour the pad.

Transfer Plate Dropoff

The drop off from the deck / sprockets to the transfer plate should step down slightly from one to the other. However, more drop is not always better. The key is to balance this fall and slopes with the conveyor speed for a smooth exit. A severe drop at low speed can cause too much forward motion, causing the vehicle to hit the flight in front of the tire, slingshot backward, and jump over—particularly in combination with other factors.

Often, increasing conveyor speed can overcome this issue. Otherwise it may be necessary to raise the transfer plate to eliminate forward slingshot.

Flight Height

The optimum Flight Height for customer experience and vehicle impact is 1". This size also catches or cradles the tire, keeping timing very precise and allowing operators to space vehicles tightly.

2" Flights are a worst-case solution for unresolvable slopes or other variables that have not been correctly dialed-in. They will provide a rougher experience for the customer with inconsistencies in vehicle wash quality as the car is able to roll slightly. Wider vehicle spacing will be required.

1.5" flights are also available.