NoPileups User Manual

VERSION 3.2, REVISED 2/2021

Contents

How NoPileups Works

NoPileups combines information gathered from cameras and the tunnel controller to determine where a vehicle should be in the tunnel. The vehicle's expected position is represented by a red box on the video image. NoPileups tracks the objects inside the red box by looking for movement. When the software detects movement indicating a vehicle has stopped, is moving backwards, or cannot be found, it triggers the car wash's Emergency Stop (e-stop).

Any moving object, including a person, within the red box can be tracked by NoPileups and cause the conveyor to stop. Movement can cause the conveyor to start on an exit camera when Smart Exit enabled.

A video replay of the camera that caused NoPileups to stop the wash is shown on a screen installed in the load-on area at the entrance of the tunnel (referred to as the "Load-On Display"). The load-on operator can view the replay and take action to ensure the tunnel environment is safe.

Video of every stop that occurs is reviewed and categorized by NoPileups support, who adjust settings to ensure NoPileups is performing well.

Contacting NoPileups Support

For assistance using and troubleshooting NoPileups, contact NoPileups support by phone at (833) 667-4538 or (208) 789-0405; or by email at support@nopileups.com.

Support is available 7 days a week. Monday – Friday, 7 AM – 9 PM Eastern Standard Time. Saturday – Sunday, 9 AM – 6 PM Eastern Standard Time.

Using NoPileups

While the tunnel is operating normally, the load-on operator can refer to the NoPileups Live View on the NoPileups Load-On Display to view vehicles and conveyor speed. When the conveyor stops, the load-on operator should look at the NoPileups Live View on the NoPileups Load-On Display. One of three situations will occur:

1. **The background is black, and all cameras are shown.** An e-stop has been manually triggered, or the conveyor has been turned off. NoPileups <u>did not</u> stop the wash. Follow existing wash procedures.
2. **The background is flashing red and only one or two camera feeds are shown.** NoPileups stopped the wash and the conveyor **will not** automatically restart. Follow the steps listed in NoPileups Conveyor Stop (page 2).
3. **The background is flashing yellow and only one or two camera feeds are shown.** NoPileups Smart Exit has stopped the wash and the conveyor **will automatically restart** when the vehicle at the end of the conveyor drives forward. Follow the steps listed in NoPileups Smart Exit Pause (page 3).

NoPileups Conveyor Stop

When NoPileups stops the conveyor, the background of the Live View will flash red.
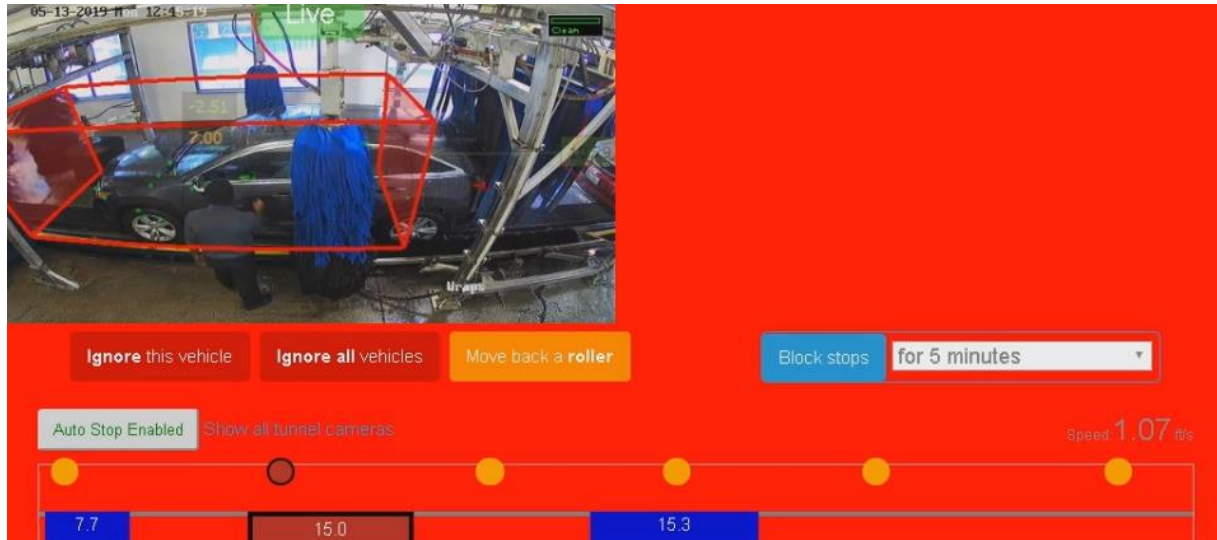
1. Look at the vehicle in the live view on the left side. If the rear of the vehicle is behind the rear of the red tracking box, the vehicle has hopped a roller or jumped a flight. If it is not clear what happened, watch the replay video that appears on the right side of the screen.

2. **If a hopped roller or jumped flight is suspected, or it is unclear what caused NoPileups to stop the conveyor, examine the vehicle in person. Before entering the tunnel, engage a physical e-stop button to ensure the tunnel remains off.**

3. If the vehicle that caused NoPileups to stop the conveyor is not on its original roller or flight, get the vehicle back onto its original roller. Verify the vehicle is in neutral and the customer is not using the brakes or steering wheel.

   a. If it is not possible to get the vehicle back onto its original roller, press "Roller" on the NoPileups Remote before restarting the conveyor. This will move the red tracking box backwards to align it with the vehicle.

   b. If the same vehicle has stopped the tunnel multiple times and appears to be on the correct roller, press "Ignore" on the NoPileups Remote.

   c. If the red tracking box is empty, verify there are no vehicles stuck in the tunnel and press "Ignore" on the NoPileups Remote.

   d. If all vehicles have driven from the tunnel, press "Ignore All" on the NoPileups Remote.

4. Verify the tunnel environment is safe.

5. Restart the conveyor. This can be done by engaging and disengaging a physical e-stop button or by using a conveyor start button.
   If the conveyor does not restart, verify that no physical e-stop buttons are engaged and contact NoPileups support for assistance.

NoPileups Smart Exit Pause

When NoPileups triggers a Smart Exit conveyor pause, the Live View background will flash yellow. The conveyor will automatically restart when the vehicle at the exit drives forward.
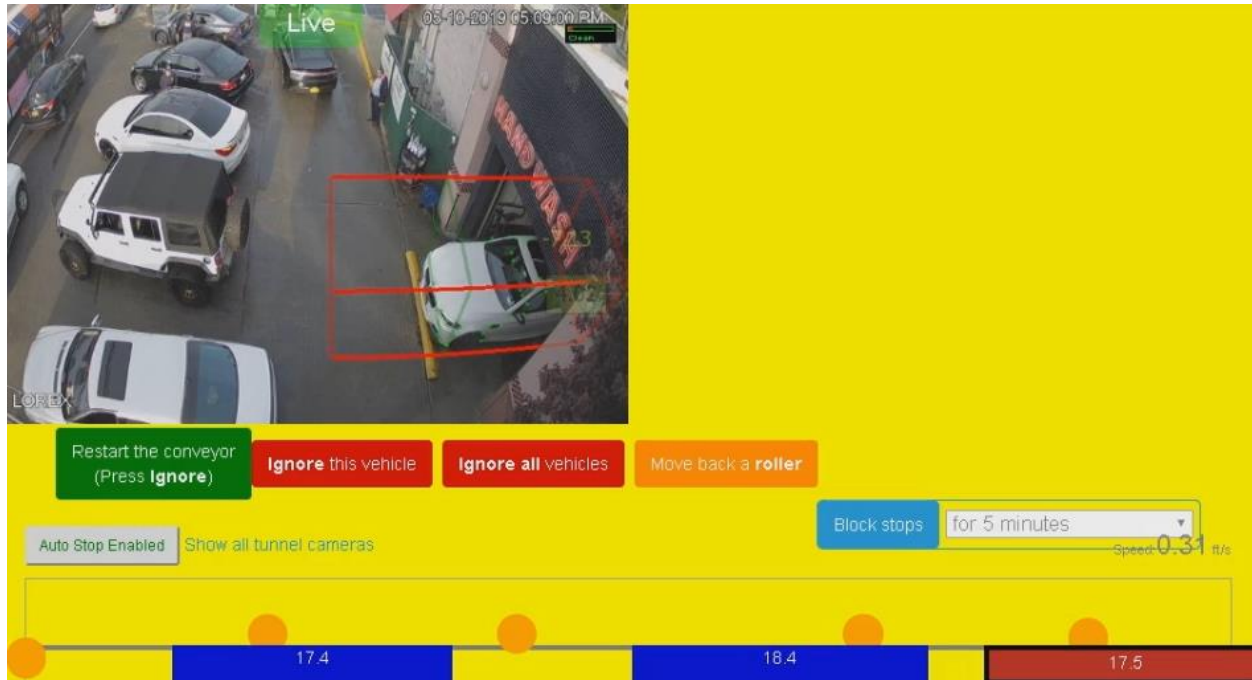
Look at the vehicle in the Live View. If the rear of the vehicle is behind the rear of the red tracking box, is has most likely stalled at the end of the conveyor, hopped a roller, or jumped its flight.

After the customer at the exit drives forward, the conveyor will **automatically restart**.

- If the customer does not drive forward:
    1. Engage a physical e-stop button to ensure the tunnel remains off.
    2. Assist the customer in exiting the tunnel.
    3. Verify the tunnel environment is safe.
    4. Disengage the physical e-stop button.
    5. Restart the conveyor.
- If the customer drives forward and the tunnel does not automatically restart:
    1. Press "Ignore" on the NoPileups Remote. The conveyor will automatically restart.
    2. If the conveyor still does not restart:
        - Engage and disengage an e-stop button.
        - Attempt to start the conveyor.
        - Ensure all estop buttons are disengaged.
    3. If the conveyor remains off and cannot be turned on, contact NoPileups support.

NoPileups Live View

The NoPileups Live View shows activity in the tunnel on the Load-On Display mounted near the load-on area. It can also be viewed by clicking the **NoPileups** shortcut on the Manager's Workstation computer.

If the NoPileups shortcut cannot be found, contact NoPileups support.

Camera Views
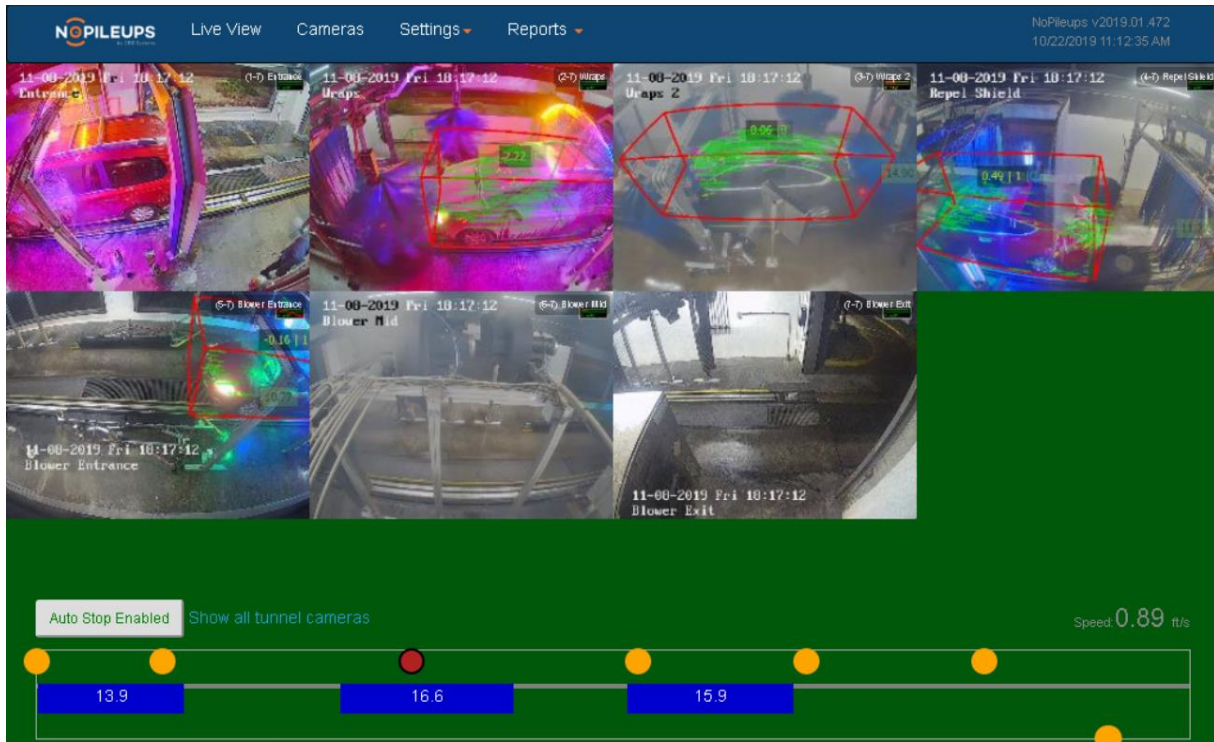
The Live View displays footage from each camera NoPileups uses to track vehicles. Additional cameras can be added to this view, even if they cannot be used to track vehicles. To add an additional camera, contact NoPileups support.

A red tracking box appears around each vehicle, showing its size and where it should be, based on the speed of the conveyor. Green streaks appear on the vehicle as NoPileups tracks movement within the red tracking box.

The camera closest to the tunnel entrance will appear in the upper-left corner of the Live View and the camera closest to the exit of the tunnel will appear in the lower-right corner. Cameras that have a colored border around the video feed have been blocked (image on next page).


When a yellow border appears, the camera has been manually blocked. It can be unblocked from the Manager's Workstation (See Unblock a Camera on page 9).

When a red border appears, the camera has been automatically blocked because it is too dirty. It will be unblocked automatically after the camera view improves.

When NoPileups detects the video feed from a camera is being degraded by water or light, "Wash Me" and "Protection Reduced" will appear over the camera feed. This means that **stops will not occur on the camera while the view is poor** to prevent unnecessary stops. When the camera is cleaned or the glare goes away, the message will disappear. For more information, see Camera Cleaning (page 21). If this message appears on a camera that has been cleaned and does not have obvious problems (glare, mist, obstructions), contact NoPileups support.
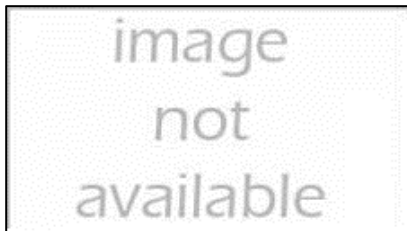
If "image not available" appears in place of one of the camera feeds, the camera is offline or otherwise unavailable. Contact NoPileups support for assistance.

Background Color

The background of the Live View will change based on the conveyor status:

- Green – Conveyor is running.
- Black – Conveyor not running. NoPileups did not cause the conveyor to stop.
- Flashing red – Conveyor is not running. NoPileups has stopped the conveyor.
- Flashing yellow – Conveyor is not running. NoPileups has stopped the conveyor. NoPileups will automatically restart the conveyor when the vehicle at the tunnel exit drives forward.

Tunnel Diagram and NoPileups Status

At the bottom of the Live View is a diagram that shows a top down view of the tunnel, including vehicles and cameras.
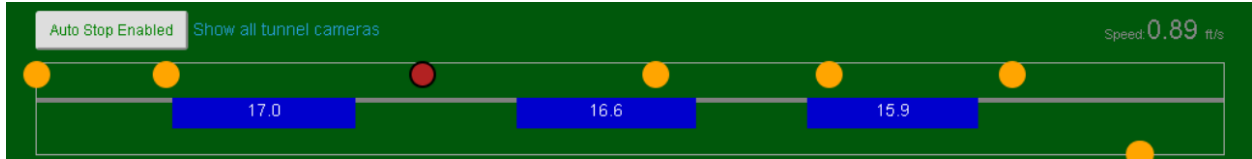
- The blue rectangles are vehicles, whose size in the diagram reflects their actual length. The number on the rectangles can be configured to display either the vehicle's length (in feet) or its distance from the entrance eye (in feet).
- The yellow dots represent cameras in the tunnel.
- The grey line in the center of the diagram is the conveyor. Items shown above the line are on the driver's side of the tunnel and those below the line are on the passenger side.
- The last vehicle and camera that caused NoPileups to stop the conveyor will turn red for easy identification. The icons will stay red until another stop occurs.

Above the tunnel diagram is the Auto Stop button that indicates if NoPileups is enabled.

- If the button's text is green and reads "Auto Stop Enabled", NoPileups is enabled and will stop the conveyor when it detects a potentially dangerous situation.
- If the button's text is red and reads "Auto Stop Disabled" NoPileups is disabled and will not stop the conveyor until it is re-enabled. If Auto Stop was changed using the "Pause" button (page 7) on the NoPileups Remote, the time remaining until NoPileups is re-enabled will also appear.

When Auto Stop is disabled, NoPileups support will be notified and may call the location to verify NoPileups is working properly and help resolve any problems.

When using TunnelWatch version 4 or higher, NoPileups will display a message when the conveyor pulse is running in "Simulated" mode. NoPileups is automatically disabled while the pulse is in this mode and will automatically re-enable itself when "Simulated" pulse is disabled. This occurs to prevent no value stops from occurring due to the difference between the simulated pulse and actual conveyor movement. If the red tracking boxes appear to line up with vehicles when simulated pulse is enabled, this feature can be turned off. To ensure NoPileups remains enabled while simulated pulse is on, contact NoPileups support.

Above the tunnel diagram on the right is the conveyor's current speed in feet per second.

When using VideoQueue, the main NoPileups screen will show vehicles that are currently in queue rather than the tunnel cameras. Clicking the "Show all tunnel cameras" link above the tunnel diagram will display the in-tunnel cameras.

NoPileups Remote

The NoPileups Remote is used to interact with NoPileups from the load-on area.

Ignore

Do not track the red tracking box that caused the wash to stop.
Press before restarting conveyor when:

- One vehicle causes the wash to stop multiple times. Wash staff have confirmed the vehicle is on its original roller and not in drive.
- A vehicle at the exit that triggered Smart Exit drives forward, but the conveyor does not automatically restart.
- An empty red tracking box causes multiple stops, and the tunnel has been physically checked for stranded vehicles.
- "Roller" is pressed too many times and the red tracking box is behind the vehicle.

After a vehicle has been ignored, its red tracking box and the blue rectangle in the tunnel diagram will turn purple.
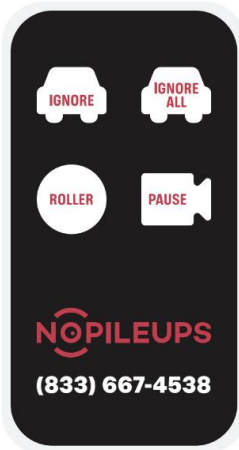
Ignore All

Do not track all red tracking boxes currently in the tunnel.
Only use when all vehicles must be manually driven from the tunnel, leaving empty red tracking boxes (chain/belt break).
All red tracking boxes and their blue rectangles in the tunnel diagram will turn purple. The next vehicle to enter the tunnel will be tracked normally.

Roller

Move the red tracking box back one roller.
Press after a vehicle has hopped a roller/flight **if it cannot be returned to its original roller/flight.**

Pause

Disable NoPileups for five minutes. Press again to enable NoPileups. The time remaining until NoPileups is auto enabled is shown in the lower left corner of the NoPileups Live View.
Use when:

- Running "ghost" test cars.
- NoPileups is stopping too frequently.

⚠️ **NoPileups will not track or stop for an ignored vehicle. It is recommended that an employee escort the ignored vehicle through the wash to ensure it behaves safely.**

NoPileups Manager's Workstation

In addition to being shown on the Load-On Display, the NoPileups Live View can be accessed from computer at the location using a web browser. When NoPileups is being installed, a desktop shortcut named "NoPileups" will be added to one computer at the location, referred to by NoPileups as the "Manager's Workstation". This can be any computer that is connected to the same network as the NoPileups Server. If the Manager's Workstation cannot be found, contact NoPileups support.

> ⚠️ The Manager's Workstation cannot be connected to the Point-of-Sale network due to PCI compliance.

Viewing NoPileups

When the "NoPileups" shortcut is clicked, it will open the NoPileups Live view that appears on the Load-On Display. **If a stop occurs, do not act on the stop from the Manager's Workstation.**

Blocking a Camera

If multiple stops occur on the same camera, in a short time and they appear to be of no value, the camera can be blocked using the Manager's Workstation.

1. Open the "NoPileups" shortcut on the Manager's Workstation.
   If there is no Manager's Workstation shortcut at the location, contact NoPileups support.
2. Click the video feed of the camera to be blocked.
3. Select an amount of time for the camera to be blocked from the drop-down menu.
4. Click "Block Stops".
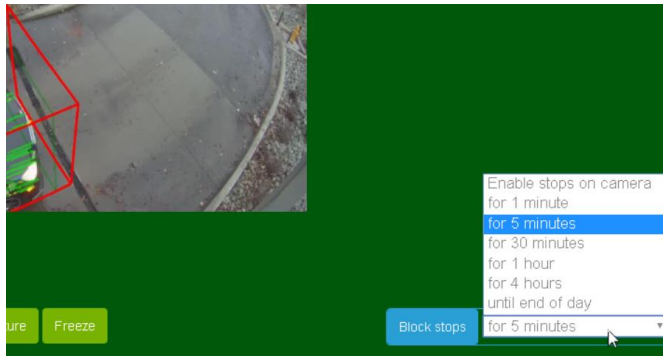
A timer will appear displaying how much time remains until the camera is unblocked. If the same camera needs to be blocked frequently, contact NoPileups support for assistance.

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Unblock a Camera

If an obstruction or other issue has been fixed, cameras can be unblocked.

1. Open the "NoPileups" shortcut on the Manager's Workstation.
   If there is no Manager's Workstation at the location, contact NoPileups support.
2. Click the video feed of the camera to be unblocked. The video feed will have a yellow border around it.
3. Select "Enable stops on camera" from the drop-down menu.
4. Click "Block Stops".
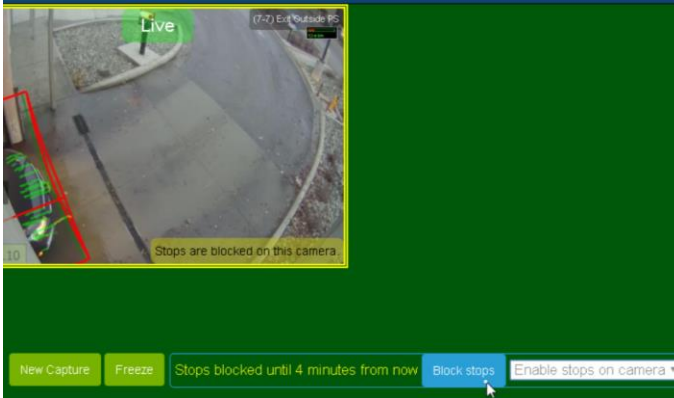
After a camera is unblocked, the yellow border around it will disappear.
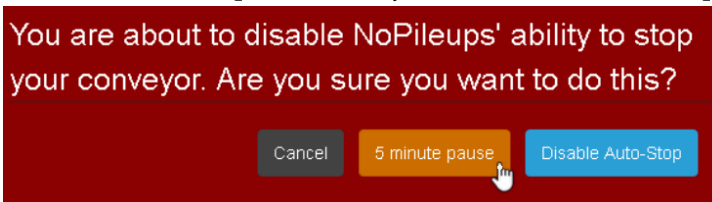
Disable NoPileups

NoPileups should only be disabled if there is a mechanical issue with the conveyor, entrance eye, or the pulse. If NoPileups stops the wash too frequently, contact NoPileups support.

To disable NoPileups:

1. Open the "NoPileups" shortcut on the Manager's Workstation.
   If there is no shortcut at the location, press "Pause" on the NoPileups Remote and contact NoPileups support.
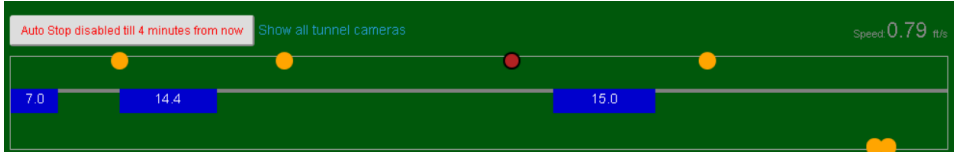2. Click "Auto Stop Enabled" in the lower left corner of the page.
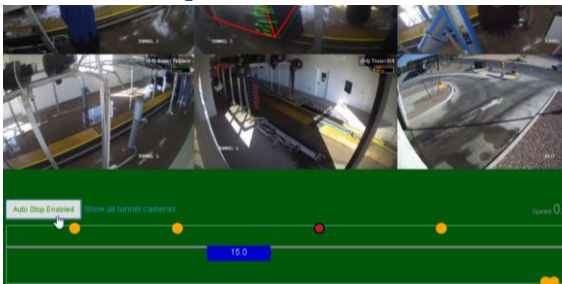
3. To turn off NoPileups indefinitely, select "Disable Auto Stop".

To disable NoPileups for five minutes, click "5 minute pause" or press "Pause" on the NoPileups Remote.

The button in the lower-left corner will read "Auto Stop Disabled". If a five-minute pause was selected, a timer will show when NoPileups will be enabled.
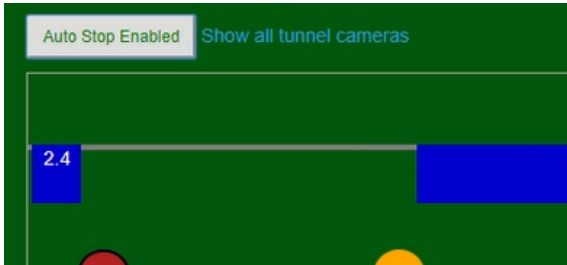

Enable NoPileups

1. Open the "NoPileups" shortcut on the Manager's Workstation.
   If there is no shortcut at the location, contact NoPileups support.
2. Click "Auto Stop Disabled" in the lower left corner of the page.
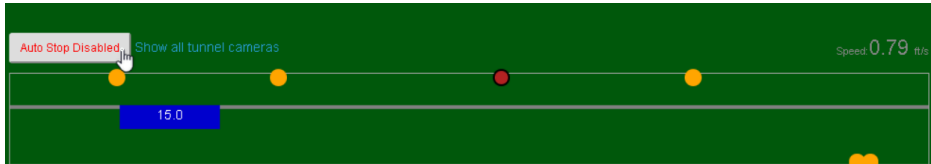
If successful, the button will read "Auto Stop Enabled".

NoPileups Reports

NoPileups reports display information about NoPileups stops. To view them, open the "NoPileups" shortcut on the Manager's Workstation, then click "Reports" in the header and select "Overview".

If there are no shortcuts on any computers at the location, contact NoPileups support.

Overview Report

The "Overview" report shows the number of stops that have occurred each day in the last 10 days.

Column Name	Description
Date	Date within the last 10 days.
NoPileups Stops	Number of stops that NoPileups initiated on the date listed.
Auto Stop Disabled	Number of stops that did not occur because NoPileups was disabled (a stop will count towards this number **and** "useful" or "false" after being categorized by NoPileups support).
Useful	Number of NoPileups stops that prevented a collision or otherwise added value to car wash operations.
False	Number of NoPileups stops that allowed NoPileups support to adjust settings to ensure that maximum value is being provided.
Smart Exit	Number of Smart Exit pauses from vehicles stalled at the exit.
Uncategorized	Number of NoPileups stops that NoPileups support has not categorized. Smart Exit pauses appear here **and** in the Smart Exit column.
Unnecessary Minutes	Total time (in minutes) the wash was stopped due to "false" stops multiplied by the number of vehicles in the tunnel.
Other Stops	Number of non-NoPileups wash stops (e-stops, conveyor power offs) that happened when one or more vehicles were in the tunnel.
Other Minutes	Total time (in minutes) the wash was stopped due to non-NoPileups stops multiplied by the number of vehicles in the tunnel.

Video clips and exact time information is not available for "Other" stops. To view all stops that occurred on a specific date, click the date. To view all stops of a specific type that occurred on a specific date, click the number of those stops.

Stops Report

When a date or type is clicked, a list of stops will be shown along with information about the stop. To view a video and additional information about a stop, click the stop's row in the table.

Column Name	Description
Label & Culprit	The reason NoPileups stopped the conveyor, applied by NoPileups support.
Stop Type	If "Stop", NoPileups stopped the wash. If "Request", NoPileups was disabled, the camera in question was blocked, or the conveyor did not stop.
Date/Time	Date and time when the stop occurred. If the timestamp is incorrect, contact NoPileups support.
Duration	Amount of time the conveyor was stopped for.
Origin	"NoPileups" means that NoPileups caused the stop.
Camera	Name of the camera that called for the stop. The order of the camera is listed at the beginning of the name, out of the total number of cameras used by NoPileups to track vehicles.
Length	Length (in feet) of the vehicle that caused NoPileups to stop.
Location	The distance (in feet) the vehicle that caused the stop was from the entrance eye at the tunnel entrance.
Cars in Tunnel	The number of **other** vehicles in the wash when the stop occurred.
False	Checked when a stop is considered "False".
Useful	Checked when a stop is considered "Good".
Reviewed	Checked when a stop has been reviewed and categorized by NoPileups support.
Reason	Technical description of the type of stop that occurred, used by NoPileups support.

Stop Details Report

When a stop is clicked, a replay of the stop and additional data is shown.

Data Name	Description
Reason	Technical description of the type of stop that occurred, used by NoPileups support.
Label	Additional notes about the cause of the stop, blank in most cases. When adding **short** notes about a stop, use this field.
Culprit	The reason NoPileups stopped the conveyor, applied by NoPileups support. **DO NOT EDIT THIS FIELD.**
Stop Type	If "Stop", NoPileups stopped the wash. If "Request", NoPileups was disabled, the camera in question was blocked, or the conveyor did not stop.
Time Stopped	Amount of time that the conveyor was stopped.
From NoPileups	"True" indicates that NoPileups caused the stop.
Camera	The camera that triggered the stop.
Vehicle Length	Length (in feet) of the vehicle that caused NoPileups to stop the wash.
Location in Tunnel	The distance (in feet) the vehicle that caused the stop was from the entrance eye at the tunnel entrance.
Cars in Tunnel	The number of **other** vehicles in the wash when the stop occurred.
False Stop	Checked when a stop is considered "False".
Good	Checked when a stop is considered "Good".
Reviewed	Checked when a stop has been reviewed by NoPileups support.

Data Name	Description
Note	Lists the time it took for NoPileups to stop the conveyor. Additional notes can be added to this field and saved when "Save" is clicked.
Log	List of changes that have been made to the stop and related notes.

To return to the list of stops, click the "Back to List" link beneath the video or use the back button in the web browser.

Recent Stops Report

The "Recent Stops" report lists the 100 most recent NoPileups stops. It can be accessed by clicking on "Reports" in the header and selecting "Stops". The data types shown in this report are identical to the "Stops Report" listed above.

This report is useful for finding stop trends to identify larger problems with wash efficiency.

Download a Stop Video

These steps may be different depending on the web browser being used.

1. Open the "NoPileups" shortcut on the Manager's Workstation.
2. Click "Reports", then "Overview".
3. Click the date that the stop occurred. If the date is not shown, click "Show all history".
4. Click the date and time the stop occurred. If the stop is not listed, contact NoPileups support.
5. Right click the video feed and select "Save video as". If a video feed does not appear, there is no video available. Stop replays are saved for 365 days after the stop occurs.
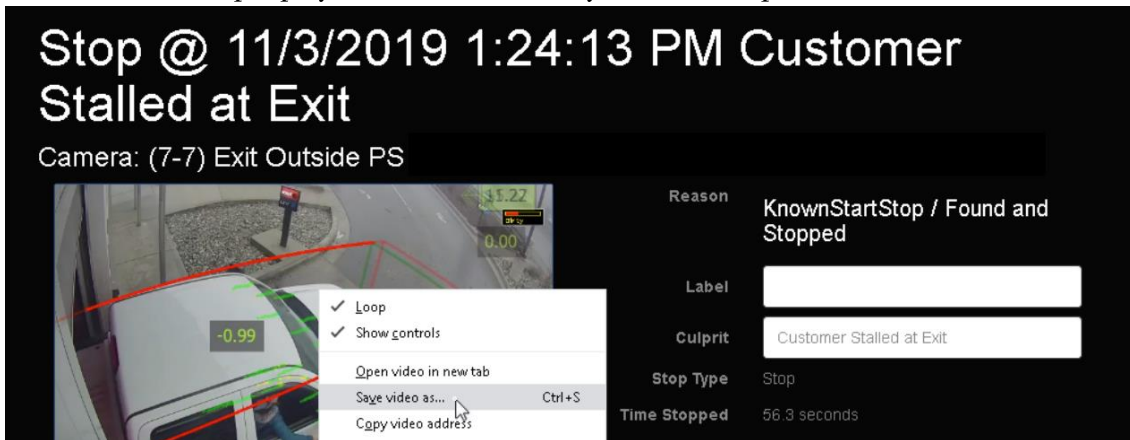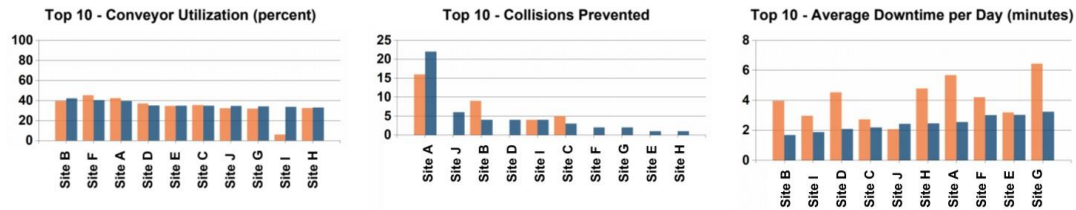

6. Select a location to save the video and click "Save".

NoPileups Email Reporting

NoPileups provides weekly reports by email which show a variety of performance metrics at no additional cost.

The organization view compares the performance of all sites (up to top/bottom 10) included in the report during the report week and the previous week. The site view gives a detailed look at single location, and its performance during the report week compared to the previous week.

Understanding the Charts

Chart Name	Description	Why it is Important
Conveyor Utilization	Percentage of vehicles washed compared to the maximum possible. Calculated by averaging the conveyor speed during the day and calculating how many vehicles could have been washed. This assumes each vehicle (including gap) used 21 feet of conveyor and the location was open for 13 hours. This number is compared to the actual number washed during the day. 100% utilization is rare.	Its not always possible to keep the tunnel full, but conveyor utilization will give a good indication of how busy the tunnel was on a given day. It also points to how many more vehicles could have been washed if there were more customers or if vehicles were loaded closer together.
Conveyor Idle	Percentage of time the conveyor was off when there were no vehicles in the tunnel.	This helps identify locations that have lower volumes, or days where average volume is lower.
E-Stop Time	Minutes the conveyor was off due to a manually triggered e-stop or non-NoPileups anti-collision device when there were at least two vehicles in the tunnel.	If the time used by e-stops is high, there is an opportunity for productivity improvement. Manual e-stops are often caused by either load-on issues or tunnel exit anti-collision pads.
NoPileups Stop Time	Minutes the conveyor was off due to a NoPileups stop when there were at least two vehicles in the tunnel (does not include Smart Exit pauses).	If the tunnel is off due to NoPileups stops for too long, employees may be taking too long to resolve NoPileups stops.
Average Gap at Peak Traffic	The average gap between vehicles during periods of high volume at the wash. Each day is broken into 30-minute periods where vehicle counts are calculated, and the highest volume period is found. Other 30 minutes windows that are 80% or more of	The closer cars are loaded during peak times, the faster lines of customers will clear. Use this indicator to determine how successful load on operators are at managing the line.

	the peak window are included in the daily gap average.	
Total NoPileups Stops by Camera	The number of stops that occurred on each camera.	Cameras that have higher stops counts may have an issue within their field of view that needs to be addressed.
NoPileups Stops by Type	The number of stops that occurred by type.	See Common Problems and Stop Trends (page 18).
Total Smart Exit Pauses by Hour	The number of times Smart Exit pauses the conveyor per hour, cumulatively, during the week.	This graph will help determine when customers tend to stall at the exit. If specific time periods are problematic, build solutions around those time periods.
Percent of time by category	The average amount of time the wash is spent washing cars, idle or is down during the week.	- Washing cars – conveyor is on. - Idle – conveyor is off, and no vehicles are in the tunnel - Down – conveyor is off, and more than 2 vehicles are in the tunnel.
Collisions Prevented	NoPileups stops where the vehicle causing the stop was within 6 feet of another vehicle. This does not include Smart Exit pauses.	NoPileups stops do not always involve vehicles that are close together. This statistic will help understand how many close calls occur.

Sign Up for Reports

To sign up for reports, email support@nopileups.com with the following information about **each recipient (including yourself):**

- First Name
- Last Name
- Organization
- Email
- Phone Number
- Job Role
- Locations **(specific location(s) or all locations)**
- Organization Report (compare all, up to top/bottom 10, locations included in the report) (**Yes/No**)

Feedback

If you have questions or comments about emailed reports, contact NoPileups support.

Analyzing NoPileups Reports

When reviewing NoPileups stops, there are a few columns of data which reveal information about larger problems when looked at together. The best report to use for this is the "Recent Stops" report listed above.

When reviewing stops, look in the following areas:

- **Stop Duration** – After a stop occurs, it is the load-on operator's job to determine the cause of the stop, verify the tunnel environment is safe, and restart the wash. If many listed items with the stop-type of "Stop" have a duration of less than 20 seconds, it is unlikely that the load-on operator is thoroughly ensuring the tunnel is safe before restarting the conveyor. **Wash staff restarting the tunnel without verifying tunnel safety is the second most common cause of collisions at car washes that have NoPileups installed.** It is crucial that load-on operators be trained to verify the tunnel is safe before restarting the conveyor.
- **Camera** – If a specific type of stop is occurring repeatedly in the same area of the tunnel (on the same camera), there may be a problem with the equipment in that area that can be addressed to improve wash efficiency.
- **Label & Culprit** – Repeated occurrences of the same type of stop can indicate equipment inefficiency or some other underlying issue. NoPileups support can help identify possible causes.

To search by "Camera" or "Label and Culprit":

1. Press CTRL + F on the keyboard to open the "find" menu.
2. Type the label and culprit name ("Hopped Roller"), camera number ("1-6") or the name of the camera ("Hot Shine").
3. All instances of the search will be highlighted on the page and in the scroll bar. Use the up and down arrows in the "find" menu or press CTRL + SHIFT + G or CTRL + G to navigate up and down through the search results.

Common Problems and Stop Trends

Below is a list of some (but not all) stop trend indicators that point to larger problems. Multiple stops will occur each day in the same area of the tunnel when there is a problem.

V3.2.20210218

NoPileups Stop Trend	Location	Potential Causes
Bounce	Mid-Tunnel	• Wraps push vehicles forward, ensure proper rotation direction and pressure. Bounce can also be caused by a tunnel with a steep grade.
Bounce at Load On	Entrance	• Vehicles are bouncing forward after their roller pushes them initially. Adjust load-on procedures to allow for a smoother transition. Vehicles that bounce through the entrance eye can result in an inaccurate vehicle length. This could lead to a poorer quality wash.
Bounce/Stall After Restart	Mid-Tunnel	• Vehicles bounce forward off of their roller after the conveyor restarts, triggering a NoPileups stop.
Camera Alignment Issues	Entrance Mid-Tunnel Exit	• Camera is getting re-oriented, most likely during cleaning. Check to see if camera has a "lock" to prevent camera rotation and re-orientation or adjust cleaning process to be gentler.
Camera Issues	Entrance Mid-Tunnel Exit	• Low framerate, incorrect local camera settings or visual distortion/stuttering. • Verify camera footage in any attached recorders do not show distortion, If distortion is present, the camera likely needs to be replaced. *Contact NoPileups support for additional assistance.*
Car Derailed	Entrance Mid-Tunnel	• Conveyor track is bent, broken, or obstructed.
Cleaning Camera	Entrance Mid-Tunnel Exit	• Follow all recommended procedures (page 21) when cleaning cameras. Wait until the tunnel is empty or block stops on the camera (page 8) while cleaning.
Collision	Entrance Mid Tunnel Exit	• A collision occurred where the root cause may not have been determined. *Contact NoPileups support for additional assistance.*
Collision – Dirty Camera	Entrance Mid Tunnel Exit	• A collision that NoPileups would have stopped for, but a dirty camera was either automatically blocked because it was unusable, or the compromised view prevented NoPileups from tracking the vehicle accurately. *Contact NoPileups support for additional assistance.*
Collision – Driver Error	Entrance Mid-Tunnel Exit	• The customer drove forwards. Load-on operators may not be clearly communicating that vehicles must be in neutral.

NoPileups Stop Trend	Location	Potential Causes
Collision – Ignored vehicle caused collision	Entrance Mid-Tunnel Exit	• NoPileups did not prevent a collision because the vehicle that caused the incident was ignored in NoPileups. *Contact NoPileups support for additional assistance.*
Collision – NoPileups Disabled at Time of Incident	Entrance Mid-Tunnel Exit	• NoPileups did not prevent a collision because is was disabled at the time the collision occurred. *Contact NoPileups support for additional assistance.*
Collision – NoPileups stopped in time, but the vehicles momentum caused a collision	Entrance Mid-Tunnel Exit	• NoPileups stopped the tunnel before a collision occurred, but the momentum of moving vehicles after the conveyor stopped led to a collision.
Collision – Offline Camera	Entrance Mid-Tunnel Exit	• NoPileups did not prevent a collision because the camera that could best track the vehicle was not accessible on the network at the time of the incident. • Ensure that the camera feed appears in the NoPileups live view and in any attached recorders. If it does not, it may be broken or the IP address may have changed. *Contact NoPileups support for additional assistance.*
Collision – Vehicles loaded too close	Entrance Mid-Tunnel Exit	• Vehicle hopped a roller but collided with the vehicle behind it before the lead vehicle's tire reached the safety roller. • Ensure standard vehicle spacing allows all vehicles to use their safety roller without a collision occurring.
Collision – Wash staff did not fix hopped roller or jumped flight before restarting	Entrance Mid-Tunnel Exit	• Load-on operator restarted the conveyor without correcting a vehicle involved in a previous stop. • Emphasize recommended NoPileups Load-On Operator workflows (page 2) when a stop occurs. *Contact NoPileups support for additional assistance.*
Conveyor Stopped, Box Did Not	Entrance Mid-Tunnel Exit	• If the conveyor moves more than 1.5 feet for each pulse of the pulse signal, NoPileups is not receiving enough conveyor status updates Consider reducing the pulse length. • NoPileups may not be properly reading the conveyor running status. • Conveyor "Pause", "Crawl", or "Temporary Stop" mode slows the conveyor, but does not change the pulse signal. The pulse signal must change for NoPileups to read the change in conveyor speed. *Contact NoPileups support for additional assistance.*

NoPileups Stop Trend	Location	Potential Causes
Customer requested stops when camera is dirty	Entrance Mid-Tunnel Exit	• NoPileups support is not taking action to prevent stops on dirty or unusable cameras because a manager at the location requested NoPileups stop regardless of camera cleanliness. *Contact NoPileups support for additional assistance.*
Customer Stalled at Exit	Exit	• Drive ahead indicators (lights, signs) are turning on too late or are not being noticed by customers. • Exit driveway is not sloped away from the conveyor enough.
Customer Stalled in Enter-Eye/HD HD	Entrance	• Vehicles are driving forward and stopping in the entrance eye due to inefficient loading. • Vehicles are bouncing forward after their roller pushes them initially. Adjust load-on procedures to allow for a smoother transition.
Dirty Camera	Entrance Mid-Tunnel Exit	• The camera was obscured by water or debris on the lens. • Ensure all tunnel cameras are being cleaned at least once a day following recommended cleaning procedures (page 21). • If the camera feed does not appear clean after cleaning, water may be inside the camera. Contact camera vendor or clean the inside of the camera while the wash is off.
Drove Ahead	Entrance Mid-Tunnel	• Load-on operators may not be clearly communicating that vehicles must be in neutral.
Drove Out Early	Mid Tunnel	• Customer drove out of the tunnel from before the blowers.
Enter Eye Issue	Entrance	• The vehicle detector remains on after a vehicle has cleared the detector. This can be caused by dirty photo eyes, glare from the sun, or interference with pad or loop detectors.
Hopped Roller (Chain conveyor)	Mid-Tunnel	• Tire Brush may be pushing too hard against vehicles, holding them in place, or its timing may be off. • Conveyor track is bent, broken or obstructed.
Jumped Flight (Belt conveyor)	Mid-Tunnel	• Equipment may be pushing too hard against vehicles, obstructing, or holding them.
Jumped Flights (Belt conveyor)	Blowers	• Blowers are blowing vehicles backwards or vehicles are jumping flights as they get on or off the conveyor.

NoPileups Stop Trend	Location	Potential Causes
Pulse Issue	Entrance Mid-Tunnel Exit	• Pulse signal received from tunnel controller temporarily does not follow a constantly repeating pattern. • Verify pulse switch is functioning normally. • Verify simulated pulse is not enabled. • Verify no pulse related errors appear in the tunnel controller. • Verify wash timing appears to be correct. *Contact NoPileups support for additional assistance.*
Staff did not reset box after previously hopped roller (Chain Conveyor) Staff did not reset box after jumped flights (Belt Conveyor)	Entrance Mid-Tunnel	• Load-on operator did not get vehicle back on its original roller/flight OR press the "Roller" button on the NoPileups Remote before restarting the conveyor.
Test Car	Entrance Mid-Tunnel Exit	• Staff pressed "Pause" on NoPileups remote, no stop occurred. No additional action is required.
Test Car - Wash staff did not use "Pause" button on NoPileups remote	Entrance Mid-Tunnel Exit	• Wash employees should press the "Pause" button on the NoPileups Remote before running a test/ghost vehicle to prevent unnecessary stops. If the Pause button is being pressed, contact NoPileups support to verify the NoPileups remote is functional or run the tests in this document on page 29.
Tracking Person	Entrance Mid-Tunnel Exit	• Block stops on a camera before performing maintenance on equipment within its field of view. *Contact NoPileups support for additional assistance.*
Wash staff did not use "Ignore" button on NoPileups remote	Mid-Tunnel	• When the same empty red tracking box or vehicle stops the wash more than twice, the load-on operator should press "Ignore" on the NoPileups Remote before restarting.

For assistance, contact NoPileups support.

Camera Cleaning

NoPileups provides maximum protection when the cameras it uses in the tunnel are cleaned as part of daily maintenance routines. This can be done by any employee.

1. Before cleaning while open, stops should be blocked on the camera being cleaned (page 8).
2. Using a microfiber cloth on a pole, or paper towel and glass cleaner, wipe the glass lens of the camera.
3. If buildup begins to appear on the camera's housing, clean with a paper towel.
4. If the feed appears dirty after the camera has been cleaned, water may be inside the camera lens. Removal of the camera cover may be required to clean the inside. **Only do this when the wash is not operating.**

⚠️ Do not use sharp objects (steel wool, razors) to remove buildup. This can scratch the lens or damage the camera.

⚠️ Do not directly power wash the cameras or connected junction boxes and conduit. Spraying will cause water ingress, leading to device failure.

Ensure the cameras are adjusted to prevent movement or reorientation. If a is bumped during cleaning, block the camera for 1 hour and contact NoPileups support.

"Wash Me" Notification

NoPileups continuously monitors camera cleanliness. When video quality is low, "Wash Me" and "Protection Reduced" will appear in addition to a red border around the feed in the NoPileups Live View.

These warnings inform the load on operator that the video quality is poor enough that it is no longer usable by NoPileups. The camera should be cleaned at the next available opportunity. If the warnings are being trigged by excessive glare from the sun or lights, cleaning the camera will not help. When the camera's visibility improves, all warnings will disappear.
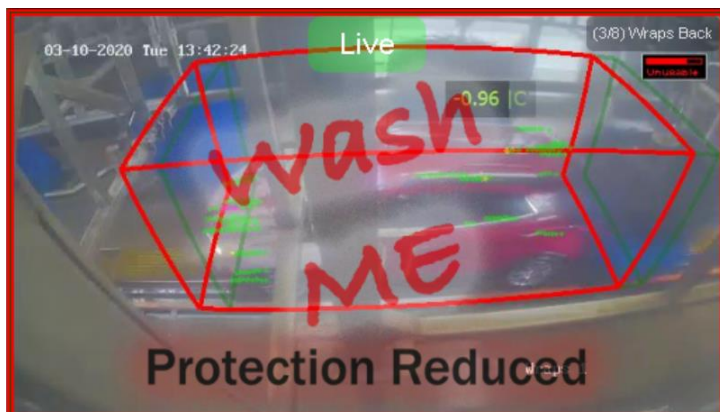
Troubleshooting and Testing

NoPileups Hardware Identification

Part Name	Image (not to scale)	Description and Function
NoPileups Server (Provided by NoPileups)		Gathers information from cameras and tunnel controller, runs the Nopileups software.
NoPileups Load-On Display (Provided by Customer)		Television normally mounted in the load-on area for easy viewing of the NoPileups software.
NoPileups Display Interface (Provided by NoPileups)		Micro computer that plugs into the Load-On Display Television via HDMI. Accesses the NoPileups Server to display NoPileups on the Load-On Display. 4-Button USB remote also plugs in here.

| Part Name	Image (not to scale)	Description and Function
NoPileups Remote (Provided by NoPileups)		Connected to the NoPileups Display Interface, the 4-button remote allows load-on operators to interact with NoPileups.
USB-to-Ethernet Adapter (Provided by NoPileups)		Increases available ethernet ports on the NoPileups server.
ADAM (Provided by NoPileups)		Connects NoPileups to non-TunnelWatch tunnel controllers. This allows NoPileups to read the conveyor status, conveyor pulse signal and entrance eye status. It is also used by NoPileups to send e-stop, conveyor pause and conveyor start signals.

Troubleshooting Common Problems

Below are some common problems and solutions related to NoPileups. For assistance, contact NoPileups support.

There was an incident in the tunnel that NoPileups did not prevent.
1. Note the exact date and time of the incident.
2. If there is an NVR or DVR that is connected to the NoPileups cameras, download footage of the incident.
3. Contact NoPileups support, providing the exact date and time. A link to upload the footage will be provided.

NoPileups Load-On Display does not show camera feeds.
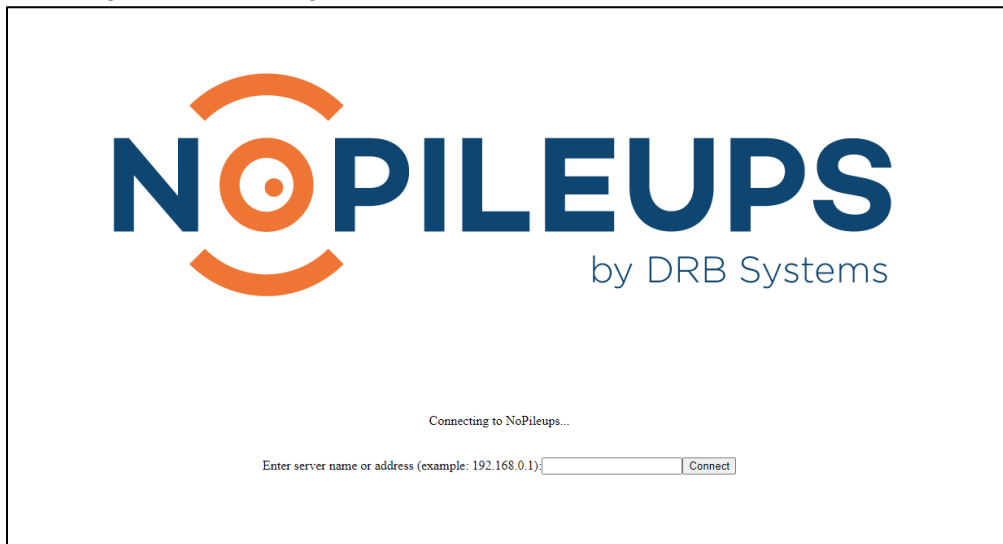
1. If the display shows a black screen, verify that the display is powered on and configured to display the correct HDMI input.
2. Unplug the power cable from the NoPileups Display Interface. Reconnect power after 5 seconds and wait 30 seconds for the device to reboot.
3. If problems continue, contact NoPileups support.

NoPileups stops the conveyor repeatedly for the same vehicle.
1. Verify the vehicle is on its proper roller, is in neutral and is not derailed.
2. Press the "ignore" button on the NoPileups Remote.
3. An employee should walk the vehicle through the rest of the tunnel.
4. Restart the conveyor.

A video feed has visual distortion or stutters.

1. If there is an NVR where all camera feeds can be viewed, check it to see if the problem appears there as well.
2. Unplug camera from PoE switch or NVR to power cycle the camera.
3. If problem persists, Block stops on the camera in NoPileups (page 8) and contact NoPileups support.

NoPileups stops the conveyor repeatedly and there is an empty red tracking box.
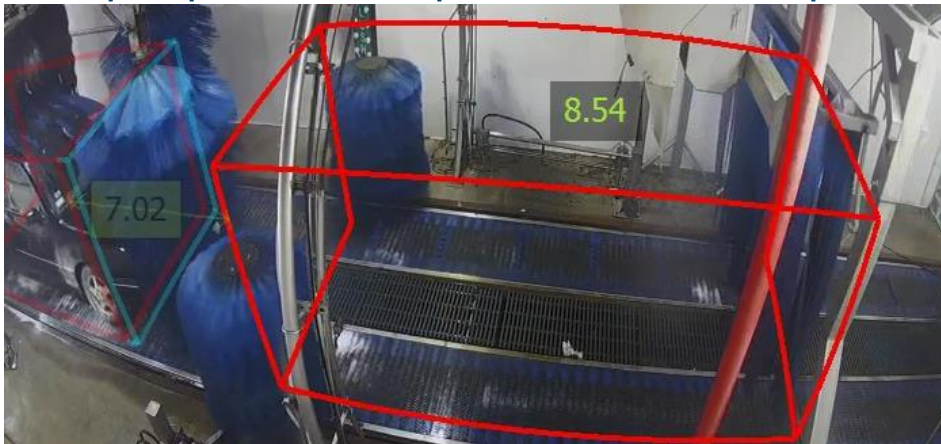
1. Verify that there are no vehicles stuck in the tunnel between the entrance and the empty red tracking box.
2. Press "ignore" on the NoPileups Remote.
3. Restart the conveyor.

NoPileups stops on a camera are often of no value.

1. Contact NoPileups support.

The red tracking box does not align with vehicles as they pass through a camera.

The camera has been bumped or moved.

1. Block stops on the camera (page 8) in NoPileups.
2. Contact NoPileups support so the camera alignment can be adjusted. NoPileups support may need a wash staff employee to physically adjust the camera.

Red tracking boxes on multiple vehicles extend past the rear of their vehicles.

This is most often caused by a problem with the entrance eye used detect vehicles.

1. Verify nothing is obstructing the vehicle detector.
2. Clean the entrance eye used to detect vehicles.
3. Check the tunnel controller to verify that vehicle lengths are being recorded accurately.
4. If problems continue, contact NoPileups support.

Red tracking boxes are stuttering or move faster or slower than their vehicles.

The pulse signal NoPileups is receiving is incorrect.

1. Verify that a simulated pulse is not being used. If it is being used, problems may occur.
2. Verify the pulse switch appears to be operating normally.
3. Contact NoPileups support.

Camera feed shows "image not available".
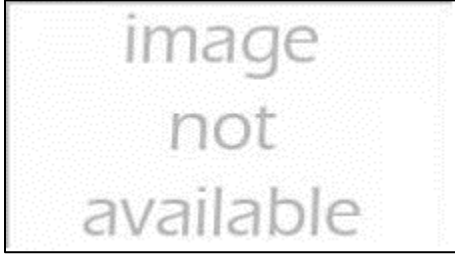
NoPileups cannot connect to the camera.

1. If there is an NVR where all camera feeds can be viewed, check it to see if the missing camera is visible. If it is, contact NoPileups support.
2. If the camera does not appear, it is likely broken. Contact the camera vendor or replace the camera.

Test NoPileups Functionality

NoPileups recommends testing to ensure the system is working properly every other month. To test the system, follow the steps below (the process normally takes about 20 minutes)

1. Confirm that Auto Stop is Enabled (See Enable NoPileups, page 10).
2. Send a vehicle through the wash. Have the driver apply the brake to hop a roller, or go in reverse to jump a flight, within the field of view of a NoPileups camera.
3. When NoPileups stops the wash, drive the vehicle forward onto its original roller/flight and restart the wash.

If the conveyor does not stop, continue applying the brake to hop an additional roller.

If NoPileups does not perform as desired or the wash stops momentarily before restarting automatically, ensure that there are no overrides active that apply to the conveyor running status. If not, make note of the incident and contact NoPileups support.

Repeat this process for all cameras in the tunnel **before the blowers.** When testing multiple cameras, make sure the vehicle moves at least 5 feet down tunnel between tests.

To test blower/exit cameras and verify Smart Exit functionality, two vehicles are required. An employee should always be near an e-stop button to manually stop the conveyor if needed.

1. Confirm that Auto Stop is Enabled.
2. Send two vehicles through the wash.
3. Have the driver of the lead vehicle apply the brake to hop a roller/jump a flight within the field of view of the first blower camera.
4. When the vehicles are within 6 feet of one another, NoPileups will stop the wash.

5. When NoPileups stops the wash, drive the lead vehicle forward onto its original roller/flight and restart the wash.
6. Restart the conveyor
7. The lead vehicle should not drive out when it reaches the end of the conveyor.
8. When the vehicles are within 6 feet of one another, NoPileups will stop the wash.
9. Drive the lead vehicle forward. If Smart Exit is enabled, the conveyor should restart automatically.

If NoPileups does not perform as desired contact NoPileups support for assistance.

NoPileups Remote Testing

1. Confirm that Auto Stop is Enabled.
2. Press the Pause button on the 4-Button Remote.
3. Confirm that Auto Stop is Disabled for 5 minutes.
4. Press the Pause button on the 4-Button Remote.
5. Confirm that Auto Stop is Enabled.

If the Auto Stop status does not change after pressing the Pause button, unplug the power from the display interface (not the monitor it is connected to), and then, after a few moments, re-connect power. For more information on using "Pause", see Pause on page 7.

If problems continue, contact NoPileups support.

Glossary

ADAM
The electrical control unit that converts electrical signals to digital signals and the reverse. The ADAM is a small blue box installed near the tunnel controller connected to the tunnel controller with electrical wire and the NoPileups server via a network cable.

Auto Stop
The on/off control for NoPileups. When Auto Stop is enabled, NoPileups can stop the conveyor. When it is off, NoPileups cannot. Auto Stop is enabled or disabled from the Manager's Workstation or using the "Pause" button on the NoPileups Remote.

Emergency Stop (e-stop)
A conveyor status that stops the wash conveyor and all equipment when triggered.

Entrance Eye (Enter Eye)
The eye (or other device) used to detect the length of vehicles mounted at the entrance of the tunnel.

Hopped Roller
The process of a vehicle's tire slipping over the top of the roller that is pushing the tire down the tunnel. Occurs on chain-style conveyors.

Jumped Flight
The process of a vehicle's tire slipping over the top of the flight that is holding the vehicle in place as it is carried down the tunnel. Occurs on belt-style conveyors.

Load-On Operator
The car wash employee currently assigned to loading vehicles onto the conveyor.

Network Video Recorder (NVR) or Digital Video Recorder (DVR)
Device that connects to cameras, displays their video feed and constantly records video footage. Not provided or supported by NoPileups.

NoPileups Display Interface
A small computer connected via HDMI cable to the NoPileups Load-on Display. Connected to the NoPileups server via a network cable.

NoPileups Load-on Display
The screen mounted at the entrance of the car wash that displays the NoPileups Live View to the load-on operator.

NoPileups Server
Computer installed at the location that processes information from the cameras and tunnel interface. Sends information to the Load-on Display and NoPileups support through the computer network.

PCI Compliance

NoPileups networking recommendations conform with PCI industry guidelines for safe handling of consumer information. For more information, visit https://www.pcisecuritystandards.org/merchants/.

Pulse

The electrical signal that provides information on how fast the conveyor is moving.

Pulse Length

The distance the conveyor moves (in feet) for each pulse signal that is sent.

Smart Exit

An optional NoPileups feature which stops the conveyor after a vehicle stalls at the exit with another vehicle close behind. Automatically restarts the conveyor when the stalled vehicle drives forward. Contact NoPileups support to have this feature enabled.

Tunnel Controller (PLC)

The computer and electrical system that controls the equipment in the car wash.