

QUALITY FOR LIFE

AL-KO



AL-KO ATC

THE CONFIDENCE TO DEAL WITH WHAT YOU CAN SEE,
THE TECHNOLOGY TO CONTROL WHAT YOU CAN'T.



TOWING RESPONSIBLY

ATC is engineered for careful drivers, but no matter how well you prepare for your journey, another driver, or a combination of these critical driving conditions can make your towing outfit unsafe & unstable.

Caravanning is safer than ever before, but incidents can still occur due to the increased volume of traffic on the road and general road and weather conditions. It's a fact that this means more chance of 'critical driving situations' occurring, underlining why fitting products such as ATC Trailer Control can provide the confidence to deal with what you can see, and the technology to control what you can't.



THE ANTI-SNAKE SYSTEM FOR CARAVANS

“ATC monitors for instability, making every journey you take safer and more controlled. When a critical situation occurs, ATC sensitively acts to bring your caravan under control”



INTRODUCTION

AL-KO Kober, the world leaders in caravan chassis manufacture, developed ATC Trailer Control to sensitively take control of dangerous and frightening driving scenarios that can occur when towing vehicles. ATC monitors for the initial signs of instability and efficiently controls the outfit, making every journey you take safer and more pleasurable.

ATC Trailer Control supports responsible driving and towing ensuring that in any critical or dangerous situation you may encounter, you have the maximum chance of a safe recovery. Even in less extreme situations, such as inclement weather or being caught in the air stream around HGV's, vans and coaches, ATC gives you the confidence to drive past the oncoming danger.

Since the launch of ATC Trailer Control in 2007, the product has been reviewed by renowned automotive testing organisations, received glowing recommendations from caravan industry commentators and awarded the Which Caravan Accessory of the Year Award in 2008.

The majority of caravan manufacturers in Great Britain offer ATC Trailer Control as standard or as an option on their vehicle ranges. ATC can easily be retrofitted to many older caravans that are built on an AL-KO Chassis. Fitment couldn't be easier with a number of Fitment Centres and mobile fitment available across the UK.

It may sound dramatic, but it's no understatement to say that ATC could save your life – **even if it's only called upon once in your ownership of a caravan. Who could possibly pick fault with that?**

**Phil Stephens,
WHICH CARAVAN
MAGAZINE.**



“It’s so re-assuring to have ATC working for you in the background. You don’t know it’s there until you need it the most”



CRITICAL DRIVING SITUATIONS

AL-KO ATC Trailer Control monitors for lateral movements that occur at any time during a journey. Critical driving situations can happen without warning and create a problem for the driver. ATC is there to take control of the outfit in such situations, ensuring that the danger does not develop. Most of the time the tow vehicle occupants never notice that ATC has done its job in maintaining the outfit’s position on the road.

EASY TO FIT

- UK Service Centres all over the country.
- Mobile fitment service to fit on your driveway.

DISCOUNTS ON CARAVAN INSURANCE

In third party and industry tests, ATC is proven to be so stable, that most insurance companies offer a discount for caravans with ATC fitted.

A SMALL INVESTMENT

ATC is not expensive for such a sophisticated braking system, and increases the residual value of your caravan.

CONFIDENCE AND CONTROL

You may think that ATC is only needed in the most critical of driving conditions, however the system, like ESP on some cars, is always there waiting, monitoring for the slightest discovery of a problem. ATC automatically operates to correct the minor oscillations that occur that could develop into more serious situations.

On most journeys you’ll never know when you need ATC, but having the system fitted to your caravan will give you the confidence that when you need ATC to operate, it will apply the brakes and take control before the situation becomes dangerous.

THE CAUSES OF THE SNAKING EFFECT

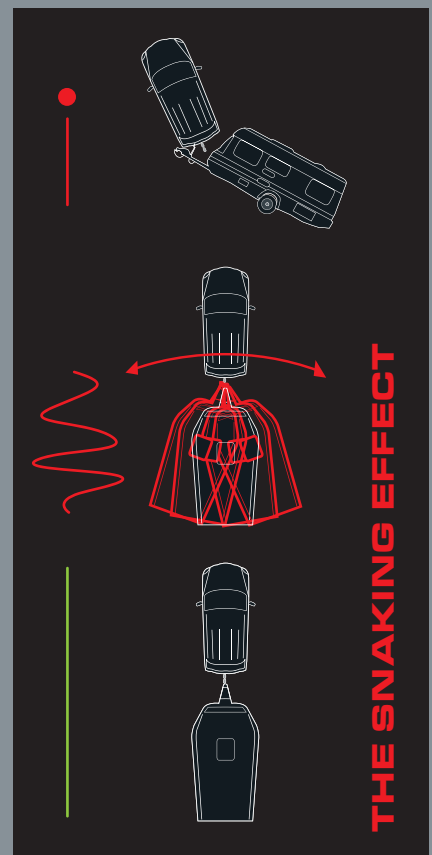


THE SNAKING EFFECT

Caravans and trailers can be subject to lateral movements due to a range of different circumstances, such as high winds and difficult weather conditions, buffeting from other vehicles using the roads or even having to take evasive manoeuvres to miss an animal that has suddenly appeared in the road ahead.

The snaking effect, where the caravan or trailer is swinging from side to side behind the tow vehicle, can occur in these situations. Sometimes the movement of the trailer is so slight that it can recover itself, however when the movement becomes greater, it is more difficult to overcome and can be a very frightening experience for the occupants of the tow vehicle.

Other factors that can cause varying levels of snaking to occur are issues such as overloaded vehicles, incorrect nose load, too much speed, incorrect tyre pressures and erratic driving.

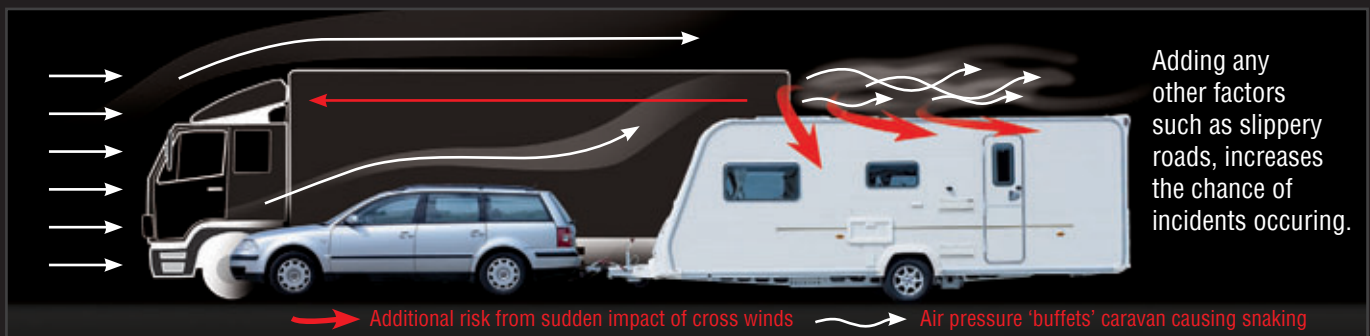


Cause of Lateral Movement	Critical Driving Situation	All Increased by
Sudden, Unexpected Movement	<ul style="list-style-type: none"> ⚠ Sharp Bend in Road ⚠ Unexpected Obstacles ⚠ Lane Change 	<p>One, or a combination of</p>
Environmental Factors	<ul style="list-style-type: none"> ⚠ High Winds ⚠ Rain & Adverse Weather 	
Traffic & Other Road Users	<ul style="list-style-type: none"> ⚠ Buffeting & Being Overtaken by Other Vehicles ⚠ Sudden Braking on Motorway ⚠ Deceleration on Steep Decline ⚠ Sudden Avoidance of Road User ⚠ Emergency Stop ⚠ Avoidance of Pedestrian/Animal /Road Debris 	
		<ul style="list-style-type: none"> Overloading of Caravan Incorrect Nose Weight Incorrect Car to Caravan Weight Ratio Low/Incorrect Tyre Pressures Speed of Towing Outfit

Any of the above factors can create the initial occurrences of snaking, leading to increased instability of the outfit. Intervention by ATC will arrest the lateral movement and allow the driver to retain control of the vehicle.

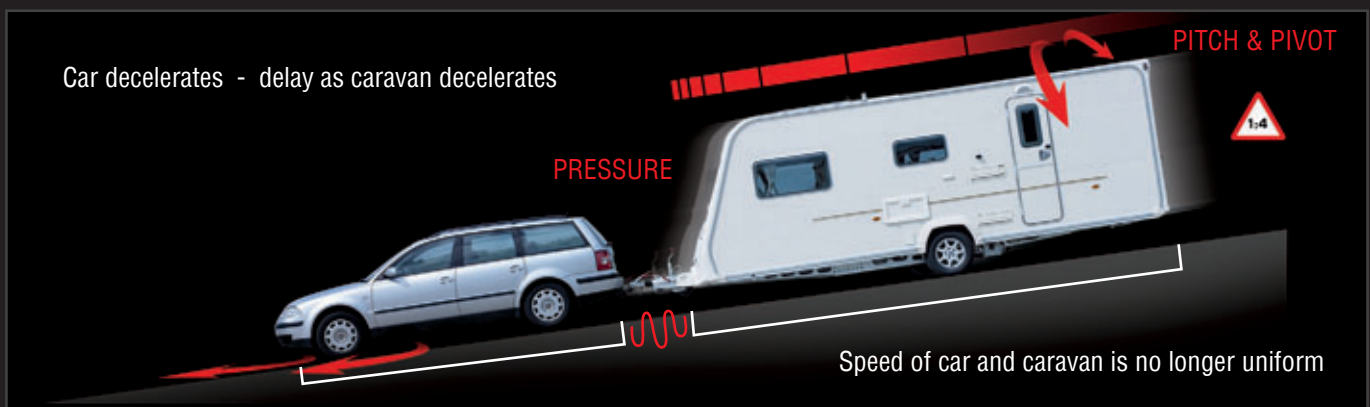
Winds & Buffeting = Increased Chance of Lateral Movement

High side winds or the displacement of air around HGV's and other large road vehicles can cause severe buffeting and increase lateral movement of the car and caravan.



Deceleration = Increased Chance of Snaking

When decelerating from higher speeds, the momentum of the trailer can cause a build up of lateral movement by pushing against the tow car and pivoting on the towball.



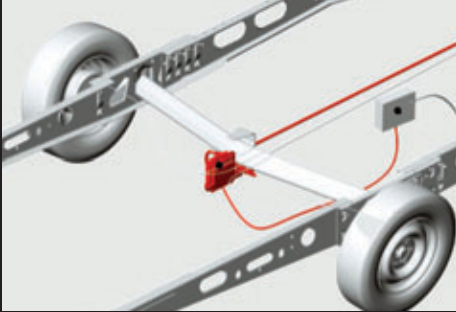
HOW ATC WORKS



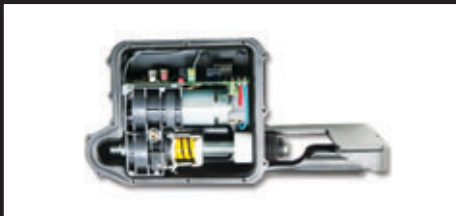
ATC IN ACTION

Even in normal everyday driving, the following situations can happen. Throughout all of these situations, ATC is constantly monitoring and corrects any instabilities as they occur, enabling you to continue a smooth and stress free journey.

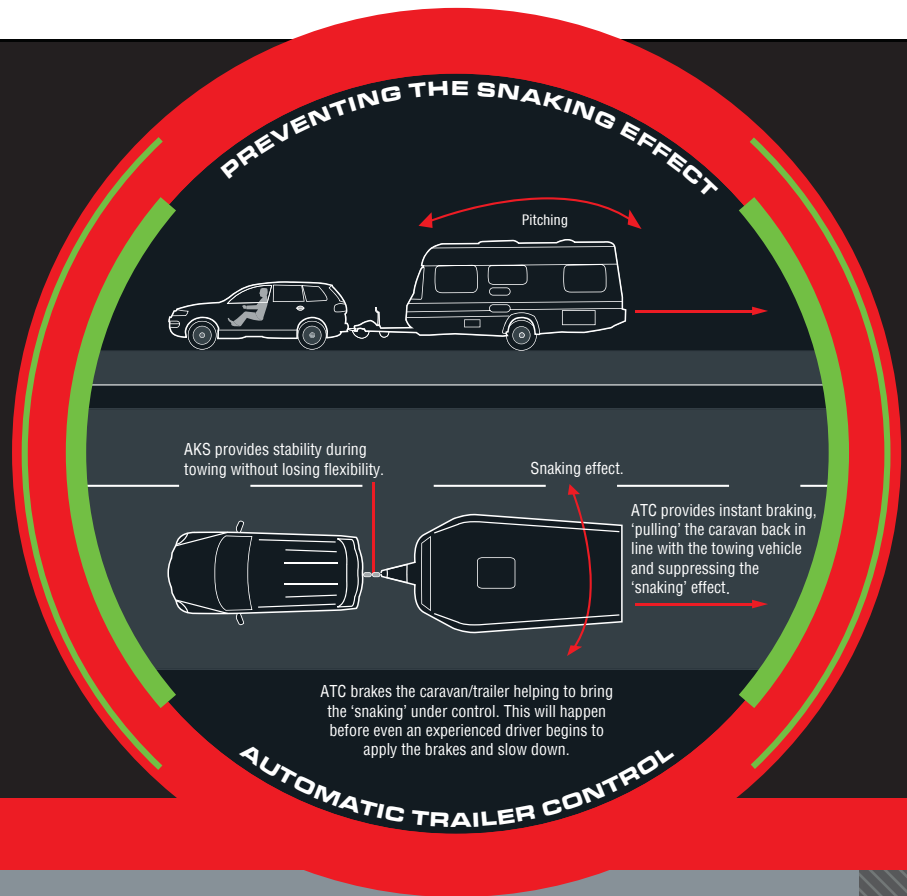
	Situation	Driver	Caravan	With ATC
1	Normal driving conditions	Under normal driving conditions, the driver will notice nothing of ATC's operation	Caravan is stable and safe, throughout any normal journey	ATC's intelligent system is ready – continually monitoring for any lateral caravan movements
2	Overtaking large vehicle	Driver feels buffeting caused by mass of large vehicle	Caravan starts to oscillate due to airflow movement	ATC reacts instantly, calculating the correct application of the brakes for the situation ATC applies exactly the right amount of pressure whilst also monitoring for any additional change in speed or instability
3	Emergency braking situation	The driver reacts trying to calculate distance, risk, speed of traffic etc	Caravan decelerates slower than car, creating lateral movements which can quickly develop into major instability	
4	Sudden lane change manoeuvre	Driver turns wheel sharply to avoid hazard	Caravan follows the direction of the car, creating rapid side to side swinging motions at the rear of the outfit that can continue to increase in severity	
5	Adverse weather conditions	Driver feels lateral movement in caravan, due to wind forces	Sudden forces on caravan start a dangerous side to side motion	



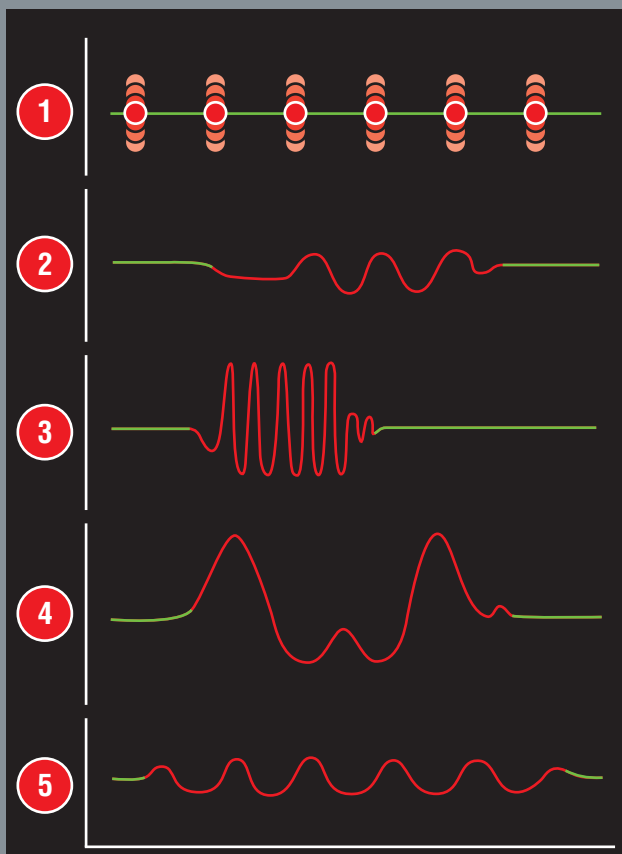
ATC positioning



Inside ATC



HOW ATC WORKS



The ATC system is engineered to operate when it identifies critical driving situations - such as a buildup of four small swings, or two large, sudden lateral movements.

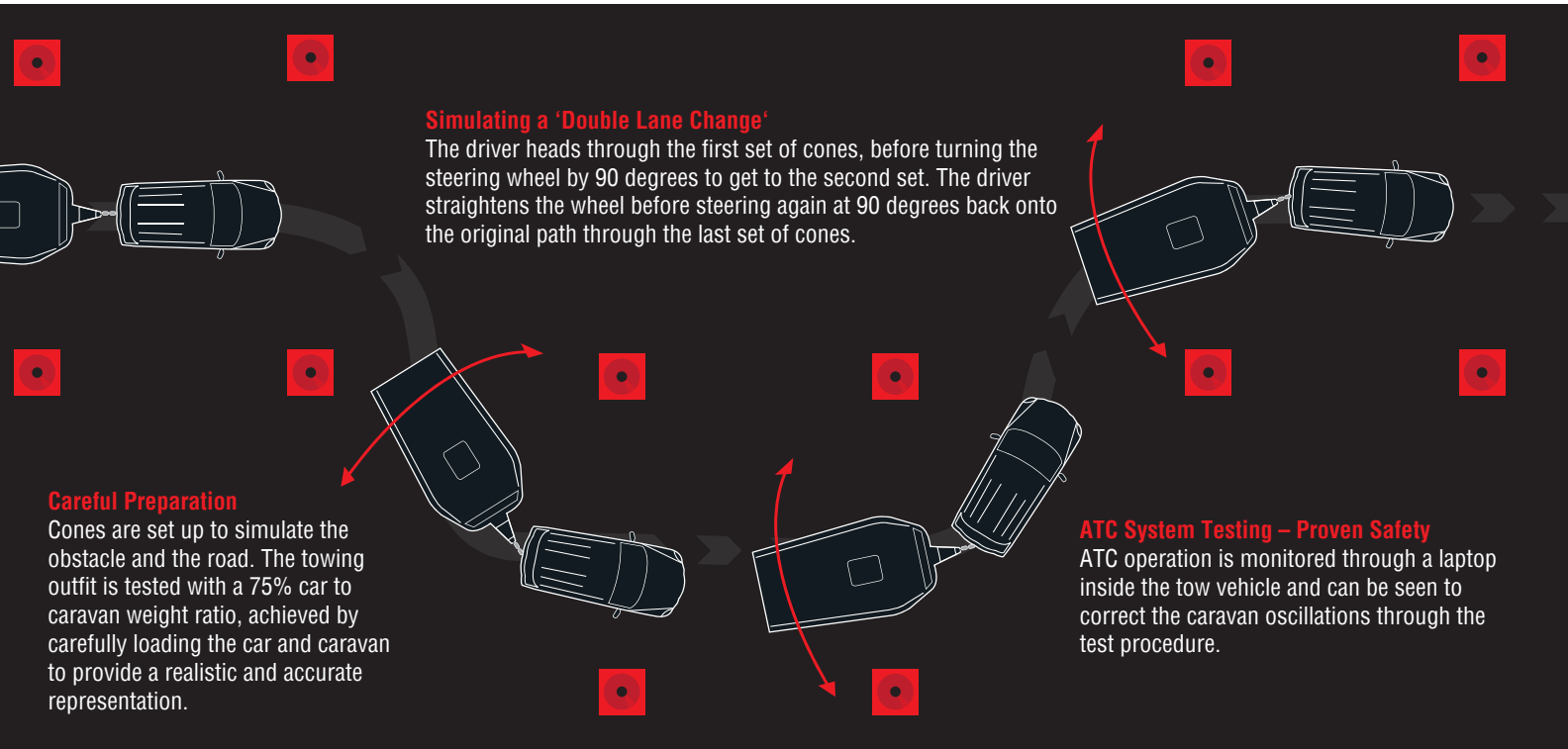
The side to side motion of the caravan or trailer is monitored by the electronic sensor inside AL-KO ATC. ATC is positioned behind the axle on the caravan or trailer at the point where any rolling motions, or side to side swings may develop.

ATC continuously evaluates the data and when critical lateral movements are recognised, ATC activates and applies the brakes immediately to bring the vehicle back into line in a smooth and controlled manner.

The push rod presses against the balance bar and applies the required braking force necessary to slow the caravan and return the outfit to the correct road position.

The brakes are applied for as long as necessary, until no further lateral movement of the trailer or caravan is picked up. ATC returns to normal.

ATC – PROVEN SAFETY



The Elk Test is an automotive testing procedure used to determine the stability of a vehicle when carrying out a double lane change manoeuvre at high speed. AL-KO uses the test to monitor and compare how quickly ATC operates to bring a vehicle back under control and stop the lateral movements created from the lane change test.

Graph 1 - ATC Not Fitted

The graph shows data captured from the unit as it travels through the test procedure without ATC fitted. The caravan yaw and lateral acceleration continues to increase and the caravan swings rapidly from side to side.

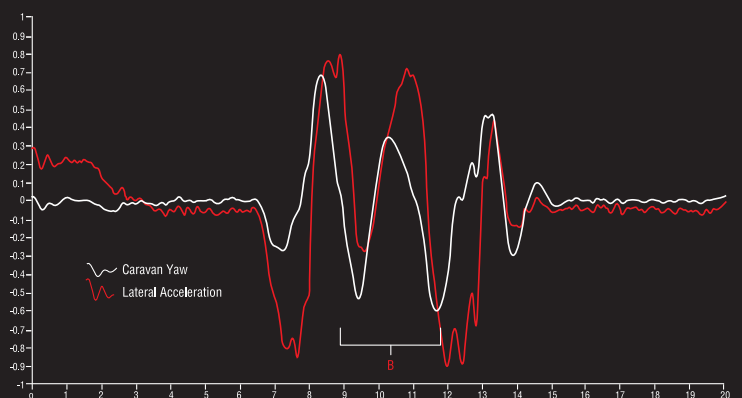
Graph 2 – ATC operational throughout the ELK Test

- A** Large, initial swing as outfit steers through the first 'lane change'.
- B** ATC applying brakes & caravan being brought under control within seconds.
- C** Second large swing as outfit swerves through the second lane change.
- D** Again here, ATC applies the brakes, bringing caravan under control very quickly.

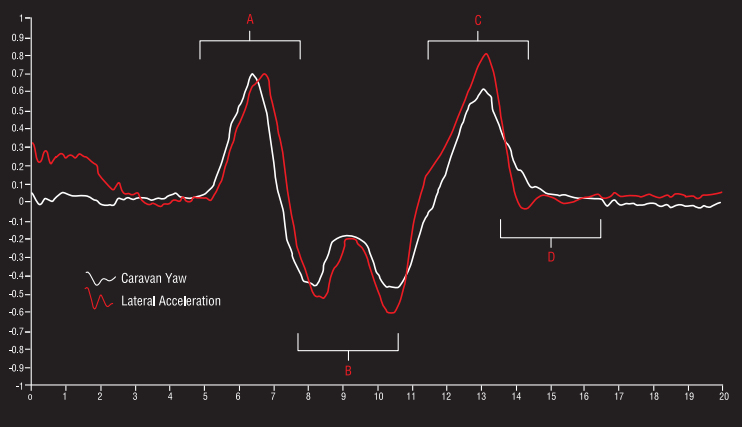
Test Comparison

In Graph 1, at point B, the lateral movement of the caravan is excessive, with large side to side swings - compared to Graph 2, where ATC has applied the brakes, significantly controlling the caravan and minimising the lateral movements.

Graph 1 - ATC not fitted



Graph 2 - ATC operational throughout the ELK Test



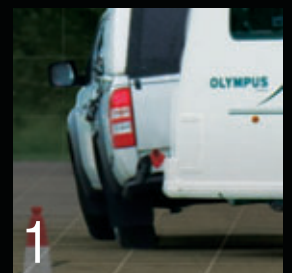


Notice the extreme forces at work on this test vehicle, being driven at high speed and navigating the double lane change course. It is easy to see the body roll and instability of the towing vehicle and compare this to the stability and position of the caravan with ATC fitted and activating.

--- These red lines illustrate the severe banking of the towing vehicle, and therefore the implied extreme forces that are being applied to the caravan.

1) Also notice the large pressure on the offside tyre of the towing vehicle.

--- Despite the large forces at work in this critical driving situation, the caravan is entirely level, and is in a controlled position as it completes the lane change. This is a testament to ATC's performance, clearly showing how it keeps the caravan straight even under significant manoeuvring.



'Brought back into line'

This phrase accurately describes a feeling unique to ATC. When the system activates and brings the caravan back under control and the lateral movements are corrected, the driver may notice a subtle feeling of the caravan pulling the car as the caravan is brought back into line.



TESTING



Millbrook is one of the world's leading automotive testing facilities used by a diverse range of land vehicle manufacturers for proving the quality and performance of new vehicles from passenger cars to military and off road vehicles.

Millbrook Engineers put ATC to the test, assessing how the system performed through the double lane change manoeuvres at varying speeds with ATC switched off and then on and comparing the results.



Bath University have carried out stability testing for a number of vehicle manufacturers and have tested the performance of AL-KO ATC and its ability to react and control snaking situations in trailers. The system was confirmed 'to make improvements to the vehicle handling response during a 'snake'.



THE 1079 MILE **WHICH CARAVAN** TEST

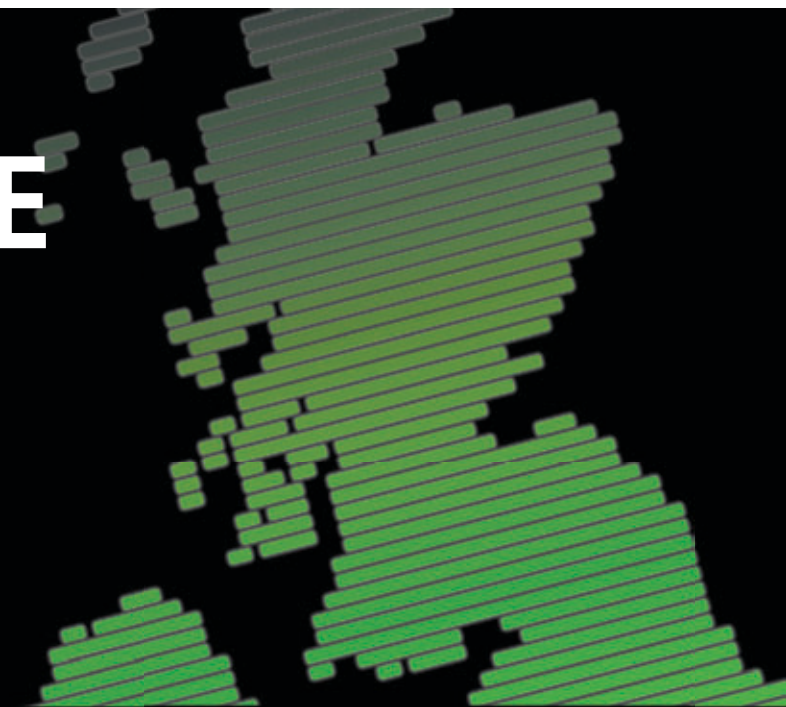
Which Caravan's Phil Stevens performed a thorough test of ATC over 1079 miles of Scottish mountain roads 'in December gales, at speed, on ice'. Below is the verdict.

THE VERDICT

In an industry known for conservatism and traditional views, petty suspicion sometimes pervades and ATC hasn't been immune. I usually strive to present as balanced a view as possible when testing a product – whether it be a new caravan or a tin opener. So let's imagine the sceptics are right, and that ATC actually delivered, in terms of safety, a third of what AL-KO tells us it does and costs double the asking price. We'd still hail it as the most significant product to hit the caravan industry in recent years.

When gusty winds batter you, or you're caught in bow waves of air from a truck, ATC is there monitoring and activating when needed. There's no 'thwack', kissing the windscreen with each activation; it's just a measured retardation that settles everything back down.

A large swing only usually occurs after a build up of several smaller ones which increase in intensity. Nip those blighters in



the bud and the big one that topples you should never arrive. We could use AL-KO's blurb to describe critical speeds and the science behind ATC, but most people just want to know that, like the airbag you ignore from one trip to the next, can you be sure it will work the one time you need it? The emphatic answer is yes.

On our test, over 1079 miles and three days ATC activations have numbered 53, whilst there were borderline interventions of over 0.2g on over a thousand occasions. That's a lot of work going on which you don't have to worry about.

It may sound dramatic, but it's no understatement to say that ATC could save your life – even if it's only called upon once in your ownership of a caravan. Who could possibly pick fault with that?

Phil Stephens, WHICH CARAVAN MAGAZINE.

INDEPENDENT TESTING

INDEPENDENT CONSUMER TESTING

After launch, ATC immediately won the coveted Which Caravan Accessory of the Year award. The system has since been reviewed and praised by publications throughout Europe, and by caravan manufacturers.

TOWCAR TESTING

There's no better confirmation of ATCs' ability - the system is used as an integral part of The Towcar Awards, monitoring the performance of the outfit, by assessing caravan stability in normal and critical driving conditions.



OPTIMUM SAFETY

AL-KO STABILISER SYSTEM

AL-KO AKS

Stabiliser

AL-KO ATC complements the use of the AL-KO AKS Stabiliser, providing both passive and active protection against the effects of instability. The AKS Stabiliser permanently suppresses small swinging and pitching movements and increases the critical driving speed by up to 20%.



COMPLEMENTARY PRODUCTS

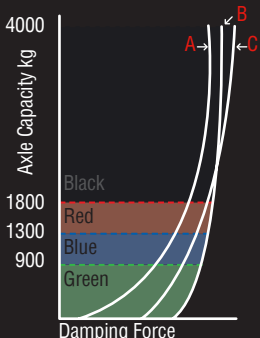
AL-KO OCTAGON SHOCK ABSORBERS

For unparalleled levels of comfort and assurance AL-KO has created the Octagon Shock Absorber range. A selection of four, colour coded devices provides the optimum level of support and damping for your trailer or caravan.

Shock absorber technology unique to Octagon suppresses the effects of uneven road surfaces providing a smoother,



more enjoyable ride. With an improved ride comes additional support for the caravan or trailer, vastly increasing stability and road holding ability.



The Hysteresis Diagram (left) demonstrates the improved damping performance provided by the AL-KO Octagon Shock Absorber on a single axle chassis.

- A - Damping curve AL-KO hexagonal rubber suspension axle
- B - Damping curve of previous dampers
- C - Optional curve of AL-KO Octagon damper

PART NO.	601204	601205	601206	601207
Colour code				
Single Axle Weight (GVW)	Up to 900kg	901-1300kg	1301-1800kg	1801-4000kg
Tandem Axle Weights (GVW)	Up to 1600kg	1601-2600kg	2601-3500kg	3501-7500kg



THE AL-KO FORMULA FOR OPTIMUM SAFETY.

The AL-KO formula for optimum safety is a combination of industry leading technology that ensures the safest possible driving conditions for caravan owners. The formula provides total confidence and control when towing a caravan.



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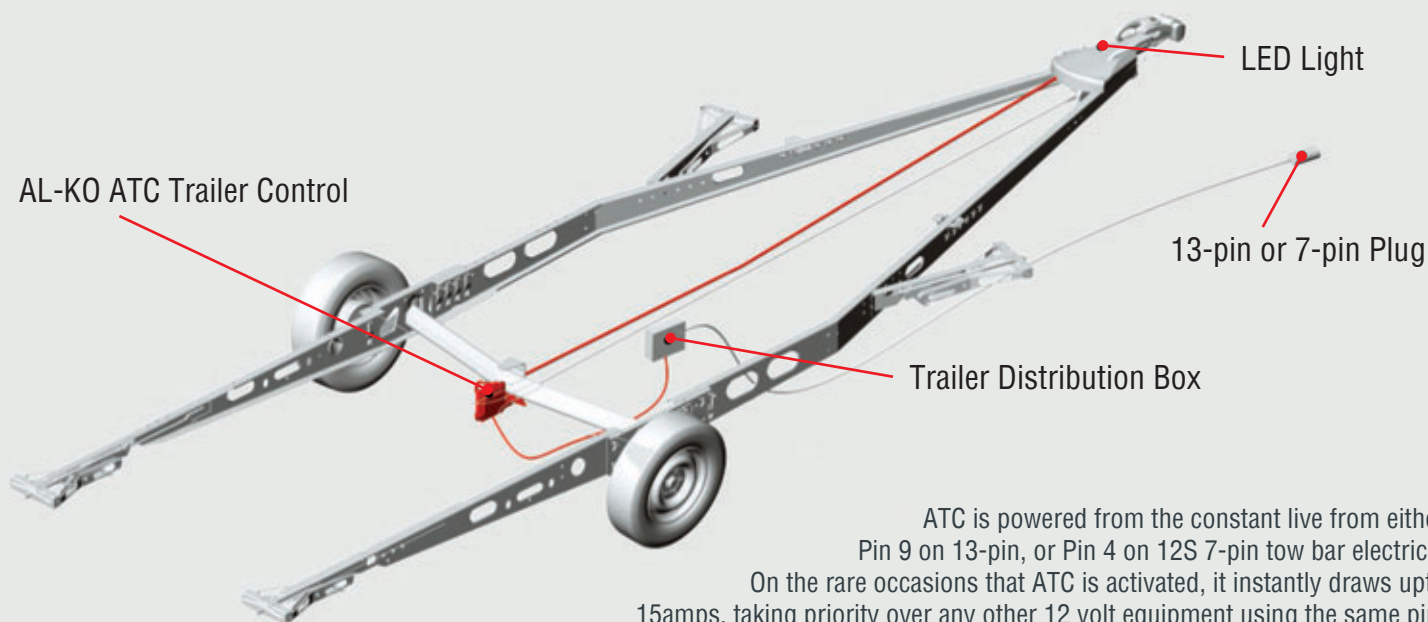


As an emergency system, AL-KO ATC automatically safeguards against a number of critical driving conditions. When used in conjunction with AL-KO AKS, there is no safer package for towing a caravan.

The AL-KO AKS Stabiliser device permanently suppresses small swinging and pitching movements in the trailer and increases the critical driving speed by approx 20%.

A safe driving style and correct loading combine with AL-KO technology to ensure optimum safety and unparalleled towing stability.

FITTING ATC TO YOUR CARAVAN



TECHNICAL SPECIFICATIONS

AL-KO ATC Trailer Control can be fitted to all new caravans and retrofitted to most older caravans that have been built on the AL-KO chassis. ATC is fitted to the rear of the axle with a push rod that connects to the brake rod. No drilling, welding or clamping is required as ATC is bolted to the Bowden Cable Abutment which is standard on all AL-KO braked axles.

It is important to ensure that the towing electrics meet the operating requirements of ATC to ensure the system works correctly during travel. ATC requires power direct from the towing vehicle electrics and needs a constant 12 volt supply from either Pin 9 on 13-pin or Pin 4 on 12S 7-Pin electrics. Use a multimeter to confirm that the correct pin position is providing a constant 12V supply regardless of whether the engine is on or off.

ATC also needs a good earth connection and a 20 amp fuse is required for the constant 12V supply to Pin 4 on the 12S socket. If only a single fuse is fitted to supply both pins 4 and 6 on the 12S wiring, the power supply capability of the installation must be checked and a minimum fuse rating of 25 Amps must be used.



“This clever stability package for caravans looks set for almost universal adoption”

Which Caravan Awards Supplement, December 2007.

UK SERVICE CENTRES

- 1 Dyce Caravans Ltd. T: 01224 722227
- 2 Wallace Caravans Ltd. T: 01592 774265
- 3 United British Caravans Ltd. T: 01912 363156
- 4 Catterick Caravans Ltd. T: 01748 818391
- 5 Alfresco Caravans & Motorhomes T: 01253 799199
- 6 Glossop Caravans Ltd. T: 01457 863232
- 7 Couplands Caravans T: 01507 603496
- 8 Lowdham Leisure World T: 0115 966 3838
- 9 Salop Leisure Ltd. T: 01743 282400
- 10 Broad Lane Leisure T: 01926 858880
- 11 Broad Lane Leisure T: 01789 763432
- 12 Automaster (South Wales) Ltd. T: 01443 222234
- 13 North Coast Caravans Ltd. T: 01288 359365
- 14 Stowmarket Caravans Ltd. T: 01449 612677
- 15 Salisbury Caravans Ltd. T: 01722 326111
- 16 Taunton Caravan Services Ltd. T: 01823 443491



FITTING THE AWARD WINNING ATC ANTI SNAKE SYSTEM COULDN'T BE EASIER.

A choice of three UK wide fitment options now available;



Fit ATC close to your home at an AL-KO approved UK service centre
- See map for your nearest fitment centre.



Have ATC fitted at your convenience on your driveway by our Mobile Fitment Service
- Call CMI on 0800 389 4648



Visit AL-KO Head Office in Southam to fit ATC to your caravan - Call 01926 818500.

AL-KO



ATC TESTIMONIALS

“Let’s imagine... that ATC actually delivered, in terms of safety, a third of what AL-KO tells us it does and costs double the asking price. We’d still hail it as the most significant product to hit the caravan industry in recent years.”

Which Caravan road test, March 2008.



“There’s no doubt the ATC system represents a significant new approach to caravan safety.”

Bath University, one the UK’s foremost authorities on caravan stability.



AL-KO ATC is an integral part of the Camping & Caravanning Club Towcar Awards testing. ATC is used to monitor the stability of each car and caravan combination tested for the awards.



QUALITY FOR LIFE

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Due to a policy of continuous product improvement, AL-KO reserves the right to change technical specifications. Revision Date 10/10