



# Haldex Brake Adjusters



# Safety is our No.1 priority. What's yours?



Haldex, the world's leading supplier of brake adjusters for heavy commercial vehicles, shows its commitment to safety by supplying high quality products you can trust. This assurance of safety is what distinguishes Haldex original parts from poor-quality imitations.

The Haldex range – from the new generation of S-ABA self-setting automatic brake adjusters to the well-established AA1 automatic brake adjuster and TSS variant for trailers – sets the highest standards for performance, reliability and safety.

Components from Haldex Brake Systems are rigorously tested for quality and endurance. A Haldex brake adjuster is designed to withstand a minimum of 2.5 million applications. Comparison testing has revealed the short and unpredictable service lives of imitation parts – life expectancies ranged from 1% to 50% of the Haldex originals.

## Don't put lives in danger

Fit non-original spare parts on Haldex brake adjusters and you compromise the safety of the vehicle. Copies are invariably poor-quality products that perform inefficiently, wear out sooner and may malfunction or disintegrate at any time, endangering the lives of road users.

## The risk to your business

Cost-cutting by choosing cheap, inferior copies is a short cut to problems. The impact of poor-quality imitations is not only felt on the road – it adversely affects your profitability and damages your company's credibility. Frequent failure of components, higher turnover of spare parts and shorter service intervals lead to increased running costs and maintenance bills. Breakdowns due to defective parts mean schedules cannot be kept, and your company's reputation for reliability evaporates.

Buying Haldex original brake parts is an investment in quality that assures safety and cost-effective performance.



### Buyer beware!

In Haldex tests, no copy has reached more than 50% of the life expectancy of a Haldex original.



### Part of the problem!

This imitation thrust washer disintegrated after only 1,000 test applications.

# Haldex S-ABA

## – revolutionises installation

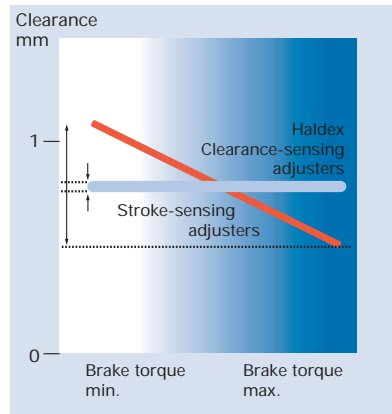


As the first and only automatic brake adjuster that is self-setting, the Haldex S-ABA has transformed the installation procedure on heavy commercial vehicles, making it faster and easier than ever before.

The innovative self-setting design of the Haldex S-ABA enables unrivalled ease of installation. Conventional brake adjusters have a predesignated position for the control arm, but the S-ABA operates perfectly whatever the angle of its control arm. This flexibility means installation is faster – there are no time-consuming adjustments of the control arm to achieve correct clearance. And, because you can choose the angle of the control arm, the problem of faulty installation can be eliminated – it is virtually impossible to install the S-ABA incorrectly.

### Hi-tech lining wear monitoring

The Haldex S-ABA is also designed for advanced wear monitoring. It is the first automatic brake adjuster on the market that integrates with an electronic lining wear sensor. In combination with the Haldex Electronic Lining Wear Sensor, the Haldex S-ABA can provide continuous information on brake lining status for the lifetime of the linings, increasing safety and enabling efficient planning of service intervals.



### The clearance principle

An automatic brake adjuster maintains clearance between the brake lining and brake drum by either clearance-sensing or stroke-sensing.

All Haldex brake adjusters, including the Haldex S-ABA, operate according to the clearance principle – a concept pioneered by Haldex – which has proved to be the most efficient solution for ensuring continual optimum clearance (see diagram above).

### Haldex S-ABA

- Self-setting for faster, easier installation
- Functions correctly, regardless of control arm position
- Replaces fixed control arm adjusters enabling lower stock levels
- Installs on any heavy truck, bus or trailer with S-cam brakes
- Allows axles to be delivered with adjusters already installed
- Lightens the load: it's the lightest brake adjuster in its class
- Works with other Haldex brake adjusters on the same vehicle axle
- Adjusts gradually to reduce the risk of over-adjustment during extreme braking
- Integrates with the Haldex Electronic Lining Wear Sensor

# Haldex AA1

## – from original idea to original equipment

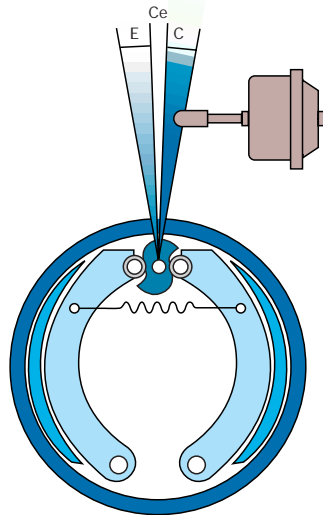


The Haldex AA1 Automatic Brake Adjuster established the superiority of the clearance principle and is nowadays fitted as original equipment by the world's leading manufacturers of heavy commercial vehicles.

As the first clearance-sensing brake adjuster, the Haldex AA1 offers customers a higher level of technical efficiency, safety and reliability. It is designed to adjust exactly and gradually when it matters, maintaining a constant clearance between lining and drum, whatever the conditions or driver's braking style. The adjustment mechanism is integrated into a robust, high-quality housing that protects it from knocks, dirt and moisture and assures a long service life even in hostile driving environments.

### Bestseller

The Haldex AA1 is a proven high-performer with an impressive track record – millions have been sold worldwide over the years. On the road, the clearance principle gives customers efficiency and performance benefits that translate into increased profitability. The long-term success of the AA1 has propelled Haldex to its position as world No 1. supplier of brake adjusters to the heavy commercial vehicle sector.



### The clearance principle theory

What happens when braking occurs with excessive clearance between the brake linings and the brake drum? In this situation, the angular travel of the brake adjuster can be divided into:

- Clearance angle (C), the normal optimum clearance.
- Excessive clearance angle (Ce), due to worn brake linings, etc
- Elasticity angle (E), from the elasticity of brake components.

The clearance principle means that adjustment is not affected by the variable elasticity of brake components (E) as is the case with stroke-sensing brake adjusters. Haldex automatic brake adjusters respond only to excessive clearance (Ce) and this ensures a constant optimum clearance between brake lining and drum.

### Haldex AA1

- Eliminates downtime for manual brake adjustment, which increases service intervals and improves profitability
- Offers simple and reliable installation via a control arm and anchor bracket arrangement
- Functions gradually to prevent over-adjustment and overheated drums
- Features manual override for simple readjustments after brake lining replacement



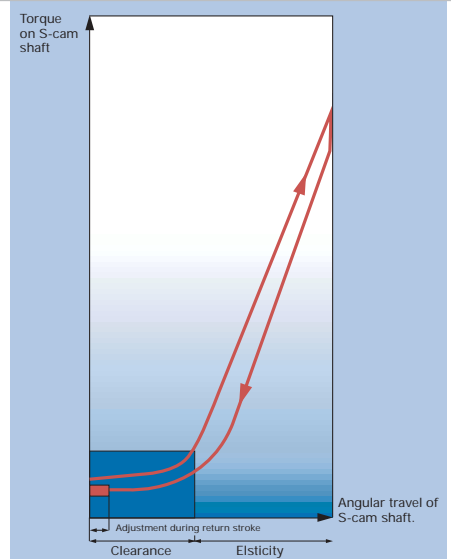


# Haldex TSS

## – tailor-made for trailers



There is a variant of the Haldex AA1 that is specially designed for trailers – the Haldex TSS. A truck and trailer combination requires a special combination of automatic brake adjusters to achieve the best possible braking balance. Haldex developed the Haldex TSS specifically for trailers to get that balance right.



The Haldex TSS has all the features of the AA1 Automatic Brake Adjuster, in a range of configurations to suit almost all types of trailer axle.

### Enhances combination safety

The Haldex TSS incorporates a saddle type control arm and anchor bracket with a range of variations for specific trailer axles to facilitate easy fitting. Installing the TSS on trailers ensures superior automatic brake adjusting on all axles of a combination and optimises overall safety and performance.



### Clearance principle in action

How do Haldex Automatic Brake Adjusters operate? As shown above, the adjustment mechanism is not engaged in response to the elasticity of brake components. It is excessive clearance that triggers adjustment. The diagram also shows another Haldex principle at work: automatic adjustment occurs at the end of the return stroke when torque is minimal, which maximises operational reliability and service life.

- Adjusts on the release stroke, minimising wear and extending service life
- Optimises brake cylinder stroke, reducing air consumption and increasing the service life of compressed air system components
- Installs on virtually any truck, bus or trailer with S-cam brakes



### Haldex TSS

- Offers all the advantages of the Haldex AA1 Automatic Brake Adjuster
- Is available in various configurations to fit virtually all trailer axle types
- Enhances overall combination performance and minimises maintenance costs
- Works with lining wear indicator to simplify brake lining status inspections
- Comes complete with installation indicator, to facilitate correct positioning

# Haldex

## – a name you can trust



The Haldex range of automatic brake adjusters meets the industry's highest requirements for safety, performance and reliability. That's why most leading manufacturers engage Haldex to supply original equipment for heavy commercial vehicles.

### Experience & expertise

Haldex has supplied more than 25 million brake adjusters over the past 30 years. The success of Haldex brake adjusters is based on developing original technical ideas, such as the clearance principle, into high-quality, safety-enhancing products. The Haldex name has become synonymous with unrivalled safety and performance. This fact is recognised by many leading heavy commercial vehicle manufacturers and axle producers, which include Haldex brake adjusters as original equipment. Major manufacturers also offer Haldex parts in their branded spare parts kits.

### Compatibility & flexibility

We are not only experts on brake adjusters. Haldex is also a leading producer of brake systems for the commercial vehicle sector. No company knows more about brake adjusters and how they integrate with brake systems. This means Haldex develops parts that work smoothly and efficiently with other brake components. All our brake adjusters are designed for cross-range compatibility and the easiest possible installation. Haldex brake adjusters can be produced in a wide range of variants to provide exactly the right solution for a specific vehicle axle.



### Look for the Haldex name

- Haldex S-ABA
- Haldex AA1
- Haldex TSS

All the brake adjusters in our range, and even small spare parts for them, are marked with the Haldex name. Fitting original Haldex parts is your guarantee of the superior product quality that underpins both cost-effective performance and safety on the road.



# Haldex

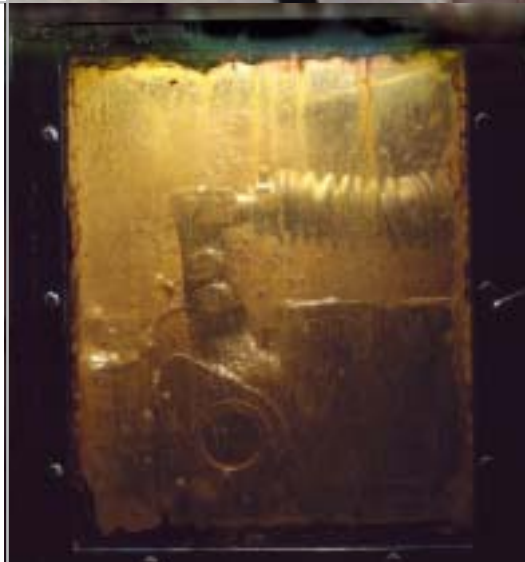
## – testing and quality

Haldex brake adjusters undergo stringent testing to ensure high quality. All variants of our brake adjusters are put to the test during development, and random samples from production are also tested to ensure standards are maintained. We have clocked up over 30 year's experience of testing.

Brake adjusters are subjected to up to six months of simulated road conditions – equivalent to many years of actual driving. This dedication to exhaustive testing and quality means that we know how long our brake adjusters will last in the real world. We are confident that our brake adjusters will perform safely and efficiently for at least 2.5 million brake applications, and we back this up with the longest guarantees available for this type of product.



Endurance tests performed in salt water with Arizona dust. ▶



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**Haldex**

Group

Haldex is an innovator in vehicle technology and supplies proprietary products for trucks, cars and industrial vehicles on a global basis. Haldex is listed on the Stockholm Stock Exchange and has annual sales exceeding 6 billion SEK with 4,250 employees worldwide.



**Haldex**

Brake Systems

Innovative Vehicle Technology