

witol[®]

WHITEPAPER

LIGHT & VISION

CONTENT

witol[®]

LIGHT & VISION
INTRODUCTION

3

HELIX

4

CONNECT

6

CONNECT PreX

8

ADJUST

10

BASIC WITH ADDITIONAL FEATURE

12

LIGHTWEIGHT

14

CONCLUSION

16

LIGHT & VISION

The Light & Vision area shapes the overall aesthetic appearance of every vehicle, as the design concept of the headlamps and rear lights not only influences the appearance, but also the impression of the entire vehicle concept. The integration of headlamps and rear lights is therefore a demanding challenge, as precision is the decisive factor here.

The size, weight and increasing complexity of the functionalities of the light & vision components also have an impact on assembly and the joint pattern. In this context, tolerance compensation elements from WITOL play a decisive role by reliably compensating for all component tolerances during the fastening process. In addition to position correction by means of a fastening screw, freezing of the headlamp position is also possible thanks to the fixable tolerance position adjustment. With WITOL tolerance compensation elements, unclean edges on the components are systematically avoided.

The result is not only a stress-free connection, but also a flush surface that meets the highest aesthetic standards. The use of WITOL tolerance compensation elements ensures both overall functionality and precise positioning for perfect integration of the headlamps and rear lights into the vehicle design.

WITOL **HELIX**

The WITOL Helix is characterized by an innovative operating principle that enables effective tolerance compensation without generating frictional forces between the screw and the WITOL. A significant advantage is that no additional axial forces are generated. It is particularly worth mentioning that the WITOL Helix does not generate any lifting forces as a result. This makes assembly considerably easier. Another advantage of the WITOL Helix is its low space requirement on the nut side due to its short and constant screw length, which can often be a critical factor when fastening components. These properties make the system flexible and adaptable.

The WITOL Helix is used in front and rear lights, among other applications. In the case of headlamps, it acts as an additional fastening point, with the tolerance compensation offering advantages in both screw directions. The WITOL Helix shows its strengths in rear lights, as it enables compensation in all three dimensions. Installation is straightforward, as the system can be installed quickly and easily using a bayonet adapter.

ADVANTAGES OF WITOL HELIX:

Mainly made of plastic and therefore extremely light

Metallic force flow due to assembly with screw or stud bolt

No lifting force

Installation space and assembly advantages

Flexible design of the screw dimension in a component possible



CONCLUSION **HELIX**

The WITOL Helix is an ideal fastening solution that has been specifically developed to meet the challenges associated with installation spaces and to avoid lifting forces. This makes WITOL Helix ideal for fastening headlamps and rear lights. Thanks to its active principle, WITOL Helix enables effective tolerance compensation without generating frictional forces between the screw and the WITOL Helix.

WITOL **CONNECT**

The WITOL Connect is a tolerance compensation element that is ideal for applications in confined installation spaces thanks to its particularly slim design. Unlike other WITOLs, the WITOL Connect is driven by tightening a nut, which automatically compensates for distances between components.

The WITOL Connect proves to be particularly advantageous in rear lights, as it enables effective wet/dry area separation and has a sealing function. It is fitted using a nut, which ensures uncomplicated and reliable fastening. The small installation space required by the WITOL Connect enables space-saving integration into a wide variety of constructions.

The flexibility of the WITOL Connect is also demonstrated by the fact that it can also be mounted using a stud bolt, which opens up additional mounting options. There is also the option of a plastic version, which can be particularly advantageous in terms of contact corrosion. These versatile properties make the WITOL Connect an efficient solution for applications where small installation spaces and precise tolerance compensation are required.

ADVANTAGES OF WITOL CONNECT:

Wet/dry area separation

Installation possible via a nut

Low installation space requirement

Can be mounted via a stud bolt

Plastic version possible



CONCLUSION **CONNECT**

With its extremely space-saving design, the WITOL Connect is perfect for mounting headlamps and rear lights. The option of fastening using a stud bolt instead of a stud bolt results in considerable advantages for a simplified installation process. The WITOL Connect is also suitable for pre-assembly and fixing the position of add-on parts, which can shorten the overall assembly time. The sealing function is also particularly effective in rear lights. Overall, the WITOL Connect offers a reliable and adaptable solution for precise connections in demanding environments.

WITOL **CONNECT PreX**

The WITOL Connect PreX is used in the pre-positioning of larger modules, especially rear lights. Specially developed for this purpose, the WITOL compensates for any tolerances without the need for a screw connection and offers an innovative fastening solution using snap-in inserts.

By pre-fixing the rear light, the WITOL PreX enables precise positioning, whereby the light can be pre-fixed in the desired position and firmly adjusted in the next assembly step. The position is not frozen so that subsequent adjustments to the rear light are possible, as it can be moved out of position without any problems.

In addition, the WITOL Connect PreX enables effective wet/dry area separation, which is particularly relevant when used with rear lights. The option of manufacturing the bolt from steel or plastic offers a flexible choice of material depending on the specific requirements of the application.

CONCLUSION WITOL CONNECT PreX:

Pre-fixing

Readjustment

Wet/dry area separation

Bolts made of steel or plastic



CONCLUSION **CONNECT PreX**

The WITOL Connect PreX proves to be extremely useful for pre-positioning larger modules such as rear lights by compensating for tolerances without a screw connection. The innovative fastening solution using snap-in inserts enables precise and flexible positioning, whereby the rear light can be pre-fixed and precisely adjusted in the next step. With the option of wet/dry area separation and the material flexibility of the bolt made of steel or plastic, it offers a versatile solution for demanding installation requirements.

WITOL **ADJUST**

The WITOL Adjust elements offer maximum flexibility when installing individual components. The pre-set WITOL Adjust is pre-assembled using individual connection concepts and then enables precise alignment of the component at the installation location before it is screwed together as usual.

These adjustment elements not only enable radial compensation during the bolting process, but also offer the option of subsequent axial adjustment of the end position by manual adjustment. In contrast to conventional connections, readjustment can be carried out without loosening the screw connection. The use of screws or bolts for fastening offers additional flexibility. The constant screw lengths, regardless of the adjustment range, enable installation space optimization. In addition, a perfect joint pattern can be achieved thanks to the precise adjustment. The WITOL Adjust elements can also be installed with one-sided accessibility. By setting a pre-assembly position, readjustment at the customer's premises is reduced and optimized, which contributes to efficient and precise production.

ADVANTAGES OF WITOL ADJUST:

Readjustment WITHOUT loosening the screw connection

Screws or bolts for fastening

Optimization of installation space

Perfect joint pattern

Installation possible with one-sided accessibility

Readjustment can be reduced and optimized



CONCLUSION **ADJUST**

The WITOL Adjust offers flexibility in the assembly of individual components thanks to its pre-set and individually pre-assembled design. With the option of axial adjustment without loosening the screw connection, they enable precise adjustments as required. The use of screws or bolts, constant screw lengths and the option of a pre-assembly position contribute to the efficiency and accuracy of assembly.

WITOL **BASIC** WITH ADDITIONAL FEATURES

The WITOL Basic can also be equipped with additional features. The WITOL Basic with integrated compression limiter is a new development that can also be used in the light & vision sector. This WITOL eliminates the need for a compression limiter (metal insert) in plastic flaps and can therefore be integrated directly into the headlamp flaps.

The WITOL Basic with additional feature is characterized by a reduced overall height, which offers a generous compensation path compared to other tolerance compensation elements. The integration of the compression limiter ensures a particularly good and robust fit into the interface, which also increases safety during transportation. Intuitive installation is achieved by simply sliding and clipping into the interface. The haptic and acoustic feedback provides an additional safety check when correctly fitted. This user-friendly assembly method not only saves time, but also helps to avoid errors, which contributes to optimized production.

ADVANTAGES OF WITOL BASIC WITH ADDITIONAL FEATURE:

The compression limiter can be replaced for plastic flaps

Integration into the headlamp bracket

Robust fit into the interface and secured during transportation

Intuitive installation with haptic and acoustic feedback





CONCLUSION **BASIC** WITH ADDITIONAL FEATURE

The WITOL Basic presents itself as an efficient and space-saving solution for plastic flaps by taking on the function of a compression limiter. The integration into the strap not only enables a reduced overall height and a generous compensation path, but also ensures a particularly robust fit within the interface, which optimizes safety during transport.

WITOL **LIGHTWEIGHT**

The WITOL Lightweight is used in situations where weight is a particularly critical factor. These fasteners are particularly suitable for use with defined preload forces during assembly. The outstanding features of WITOL Lightweight include the ability to absorb high preload forces, the weight reduction principle through the use of plastic and the avoidance of contact corrosion. The plastic component creates further cost optimization potential. Depending on customer requirements, WITOL Lightweight can also be equipped with individual shaping and integration of special functions in order to be precisely tailored to the respective application, including use in the area of light & vision.

ADVANTAGES OF WITOL LIGHTWEIGHT:

High preload force can be absorbed

Solid plastic - therefore reduced weight

No contact corrosion

Further cost optimization





CONCLUSION **LIGHTWEIGHT**

WITOL Lightweight impresses with its weight reduction using solid plastic, high preload force absorption and cost optimization. The avoidance of contact corrosion makes it a flexible and efficient fastening option that can be individually adapted to customer requirements.

CONCLUSION

Precision plays a particularly important role in the installation of headlamps and rear lights. Smooth handling by the customer is essential. Tool-free pre-assembly, which is guaranteed by WITOL fastening solutions, enables efficient and time-saving process design, as no threads need to be formed.

Headlamps and rear lights represent the aesthetic appearance of a vehicle. Precise assembly and optimum gap dimensions are therefore not only technically relevant, but also have a decisive influence on the value and overall appearance of the vehicle. The use of specific WITOL tolerance compensation elements helps to successfully implement these aesthetic and functional requirements in the assembly of headlamps and rear lights.

witol[®]



witol.com/contact