



**REGENSBURGER
ZUGGABEL**



www.jost-world.com

Assembly and Operating Instructions

09/2009

JOST-Werke
Siemensstraße 2
D-63263 Neu-Isenburg

Tel.: +49 (0) 61 02 / 2 95-0
Fax: +49 (0) 61 02 / 2 95-4 35
E-Mail: jost-sales@jost-werke.de

Assembly and Operating Instructions / Directions and Guidelines

0. General Information

Drawbars are parts that are subject to type approval and that connect vehicles. Therefore, the highest safety requirements have to be met. They may only be operated with the complying trailer coupling and towing eyes that have been approved respectively.

Changes of any kind (except for the ones allowed under 2.2) exclude guarantee claims and design-type approval is forfeited and thus the vehicle operating licence as well.

RZ drawbars are manufactured according to the Directives 94/20 EC Class E, even if they have an individual model licence (TP number). The assembly may only be done by authorized specialist companies and according to the EC Directives and national approval regulations. For Germany, §§ 19, 20 and 21 of the StVZO (German Road Traffic Licensing Regulations) apply. In addition, the claims in § 27 StVZO apply with regard to the data in the car documents according to the allowable load.

1. Characteristics and range of application

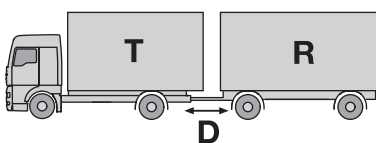
The permissible load conditions for drawbars can be seen on the inscription on the factory name plate or the product overview table or the respective RZ catalogue pages. They apply for the intended use in compliance with the Directive 94/20 EC.

REGENSBURGER ZUGGABELN have been developed for normal applications (road transport). In the case of additional dynamic stress, **(e.g. for operation on rough surfaces, construction sites, forestry)** you should not make use of the full capacity of the D value or use a stronger drawbar or ask REGENSBURGER ZUGGABEL.

Decisive for the selection of a drawbar is the D value as well as the permissible front axle load of the turning steering frame onto which it is to be attached. Specifications for the permissible maximum weight of the trailer can be used as orientation guide and serve only as a recommendation.

The suitability of a drawbar for the combination of vehicles can be checked using the specified D value.

Truck and steerable drawbar trailer: The D value



- Theoretical drawbar force between truck and trailer, calculated reference value of forces between the moving masses
- The D value can only be calculated by the permissible total weight of both measures (truck and steerable drawbar trailer)

- Calculating the D value (kN):

$$D \text{ (kN)} = g \cdot \frac{T \cdot R}{T + R}$$

T : Total weight of the truck in t

R : Total weight of the steerable drawbar trailer in t

g : acceleration due to gravity, 9.81 m/s²

The calculated D value may be the less than or equal to the D value of the drawbar.

According to Technical Inspection Authority (TÜV) automobile data sheet 712, it must be ensured when combining vehicles that the angle (up or down) of the towing eye on the horizontal axis is not greater than 3°.

Greater deviations may lead to premature wear or even breakage of the drawbar.

2. Assembly instructions

2.1. Assembling pivots

We primarily recommend the use of Silentbloc bushes for the bearing of RZ drawbars.

Silentbloc bushes reduce wear and maintenance work and increase comfort.

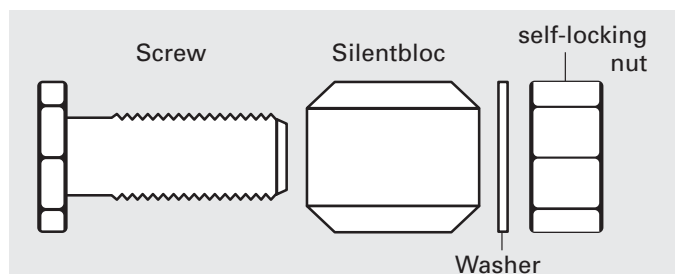
Drawbars with Silentbloc bushes (1):

Screws (M 30-8.8) should primarily be used to fasten the drawbar. **The torque of the self-locking nut should be around 400 Nm.** This effectuates the clamping action of the Silentbloc, which ensures the functionality of the radial motion using the rubber element.

When first assembling the screw, it must be inserted with standard lubricating grease or assembly paste, to facilitate disassembly at a later point in time.

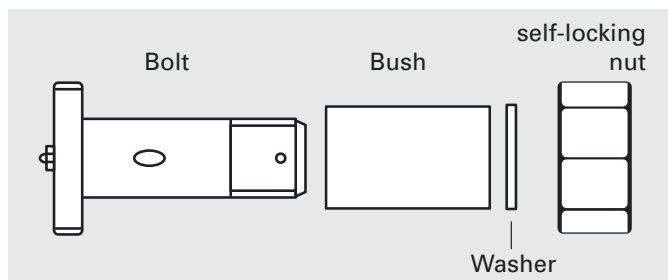
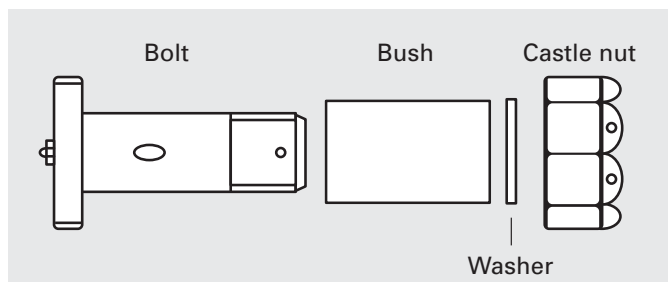
Constant lubrication e.g. by a centralised lubricating system is not necessary.

To prevent damage to the Silentbloc bushes, the vertical pivoting angle of the drawbar should not exceed ±20°. Using Silentbloc bushes for drawbars fitted with a drawbar lowerator is therefore not recommended.



Spring bolts can also be used instead of screws to fasten Silentbloc bushes, but the clamping action is not optimal (screws provide ideal clamping action). The assembly instructions (2) are also to be observed.

Drawbars with brass / bronze wear bushes (2)



During assembly, it must be ensured that the drawbar remains vertically movable; in the bearing, however, it must be free from play. For fastening, spring bolts may be used in combination with "washer / castle nut / split-pin" or "washer / self-locking hex-nut". **The torque of the self-locking nut should be around 180 Nm.** The spring bolt must be lubricated with standard lubricating grease or assembly paste prior to assembly. During operation, the spring bolt must be regularly greased (according to the trailer's specified maintenance intervals), or be connected to a centralised lubricating system.

2.2. Assembly of mounting parts / repair welding

There are boreholes and eyeholes on the cross struts for attaching fastening fixtures for the mounting of height adjustment systems, dummy couplings and the like. If these are not sufficient, hooks or eyeholes may be welded on to the longitudinal struts. When doing so, ensure that they are circumferentially fillet welded ($a = 3 \text{ mm}$) to the profile centre-line. As long as the receptacles intended for this purpose are not used, appropriate clamping fixtures (e.g. spring shackles for GHE) can also be used. **Modifications to or repair welds of drawbars are not allowed.**

2.3. Assembly of the height adjustment system

The height adjustment system is to be assembled such that the mounted drawbar fulfils requirements for ground clearance and height adjustment of the drawbar eye.

The drawbar must clear the ground. Ground clearance must be at least 200 mm, even when dropping the drawbar from the horizontal position.

The height adjustment system must be constructed such that the drawbar can be adjusted to the height of the trailer coupling funnel on the tractor by one person without the use of tools or other aids. The drawbar eye must be free to move horizontally at least 300 mm above the road surface with the height adjustment system. In this area, the drawbar must be infinitely adjustable or in steps no greater than 50 mm, measured at the drawbar eye. The height adjustment system may not impair the light manoeuvrability of the drawbar after successful coupling.

2.4. Assembly of extendable towbars or interchangeable drawbar eyes

RZ drawbars can also be delivered with extendable towbars or interchangeable drawbar eyes. Extendable towbar fittings are to be tightened with a torque of **300 Nm**, interchangeable drawbar eyes with a torque of **500 Nm**.

2.5. Assembly of extendable towbars with pneumatic locking for GZLV drawbars

Each GZLV drawbar is shipped with an operating manual. This can also be requested from us at any time. Pneumatic operation vents for locking / unlocking are not included. To operate the spring-loaded cylinder, either two pneumatic lines or a pneumatic line and a sinter filter are used.

2.6. Operating instructions for pivoting drawbar eyes

Release the safety pin, unscrew the locking bolt by hand, remove the pin, swivel the drawbar eye by 180°, and refasten in reverse order.

3. Inspection and maintenance notes

Drawbars are subject to normal wear due to stress occurring during normal operation. Therefore, they must be checked with respect to the following criteria at regular intervals and, if necessary, repaired.

3.1. Mounting and securing elements

Mounting and securing elements may not be loose or damaged. Loose mounting elements are to be tightened according to the specified torques, damaged mounting or securing elements must be replaced.

3.2. Pivot play

Longitudinal play max. 2 mm, latitudinal play max. 4 mm for bronze or plastic bearings. No play is allowed for Silent bearings.

Separation of bearing material is not permissible. (Technical Inspection Authority data sheet 712)

3.3. Drawbar struts, drawbar eye shaft, welding seams

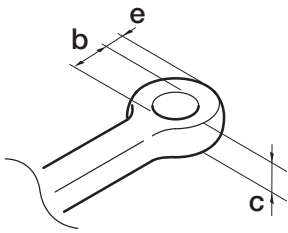
Drawbar struts (longitudinal or latitudinal), drawbar eye shafts and welding seams may not exhibit any mechanical damage or be overly corroded. Drawbars with deformations, cracks or breakages as a result of improper use are no longer roadworthy. They may neither be straightened nor repaired in any other way but must be replaced by new drawbars.

3.4 Towing eyes / Maintenance / Inspection

In order to achieve a long tool life of the towing eye, one has to grease the towing eye before initial operation or after longer operation with viscous, if possible water-proof, grease (EP3).

Towing eyes may not be damaged or worn. Knocked out or loose wear bushes must be replaced in time. Distorted or twisted towing eyes may not be straightened under any circumstances ➔ **Risk of accident.**

Wear mass:



DIN/CH	b ¹ max. (mm)	c min. (mm)	e ² min. (mm)
74054	41,5	28	22
74053	52,5	41,5	23,5
Drawbar eye CH	41,5	36,5	29,5
11026	41,5	38	22
Skand. 57 mm	59,5	19	–

¹ Measuring with bush

² Measuring without bush

3.5. Height adjustment system (HAS)

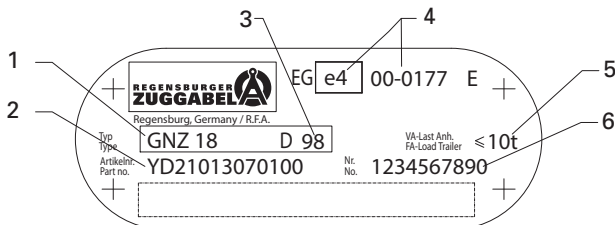
HASs may not be loose, damaged or corroded. Damaged or overly corroded parts of the HAS must be replaced. The functionality of the HAS must fulfil the requirements specified in section 2.3.

3.6. Surface treatment

RZ drawbars are sandblasted and dip primed with Synthal-KH. A final coat is necessary, as priming does not offer long-term protection against corrosion.

4. Identification instructions

Drawbars must be labelled with identification data according to German national and EC law. The permissible load conditions can be seen on the inscription on the factory name plate.



1. Type
2. Order No.
3. Permissible D value in kN
4. EC Authorised
5. Permissible front axle load
6. Fabrication No.

5. Annotation

Operators of drawbars or height adjustment systems with EC or general design approval numbers do not receive copies of the design approval. The approval attests to the fact that this drawbar design is approved. Inspection authorities (TÜV, DEKRA) may verify this with the KBA (German Federal Automobile Authority). Drawbars with individual licences are given an individual approval (TP Number), a certificate is generated by the inspection authority (TÜV/DEKRA) and delivered to the operator. If the drawbar needs to be replaced, the new one will receive a different approval, even if it is identical in construction with the original.

It is recommended to use design approved drawbars as far as possible, because they only need to be entered once into the motor vehicle registration certificate.

“REGENSBURGER ZUGGABEL GmbH” has a suitable design approval drawbar type for almost every vehicle combination. To keep up with market demands, further design approvals are planned, and existing approvals are constantly amended and extended. For this reason, all drawbars are subject to changes that are conducive to technical progress.

We would be happy to answer any further questions.

