

GB

# Assembly and Operating Instructions / Directions and Guidelines

## 0. General information

Drawbars are the connection between the tractor and the steerable drawbar trailer. They are designed to be mounted on a pivot support.

Drawbars are parts that are subject to type approval and that connect vehicles, and are therefore subject to the highest safety requirements. They may only be operated with the compliant towing hitches and towing eyes that have been approved. Changes of any kind (except for the ones allowed under 2.2) exclude guarantee claims and type approval is forfeited and thus the vehicle operating licence as well.

REGENSBURGER ZUGGABEL drawbars are produced in accordance with the Directives 94/20 EC and ECE – R55 Class E. The assembly may only be completed by authorised specialist companies and according to the applicable Directives and national approval regulations. For Germany, §§ 19, 20 and 21 of the StVZO (German Road Traffic Licensing Regulations) apply. In addition, the conditions of §13 FZV relating to the duty of notification for alteration of vehicle data are to be adhered to.

## 1. Characteristics and range of application

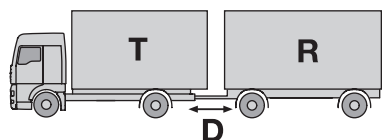
The permissible load conditions for drawbars can be seen on the inscription on the factory name plate or the product overview table or the respective REGENSBURGER ZUGGABEL catalogue pages. They apply to the intended use in compliance with the Directive 94 / 20 EC or ECE-R55.

In the case of additional dynamic stress, e.g. operation on uneven road surfaces, construction sites and forestry, the D value should not be fully exploited or a stronger drawbar should be used i.e. enquiries should be made at 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 an 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/s<sup>2</sup>

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

When combining vehicles, it must be ensured that the angle (up or down) of the towing eye is not greater than 3° to the horizontal axis.

Greater deviations may lead to premature wear or even damage to 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.

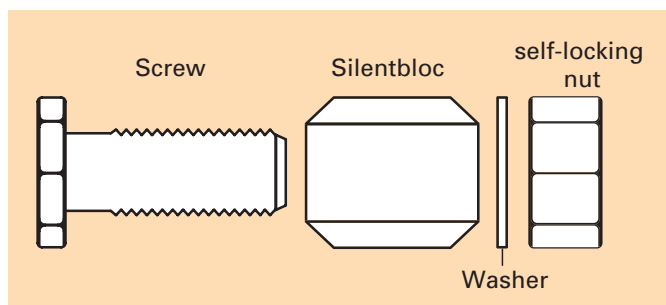
#### Drawbars with Silentbloc bushes (1):

Screws (M 30-8.8) should primarily be used to fasten the drawbar. **The torque of the self-locking nut should be 400Nm for this.** 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 should be inserted with standard lubricating grease or assembly paste, to facilitate disassembly at a later point in time.

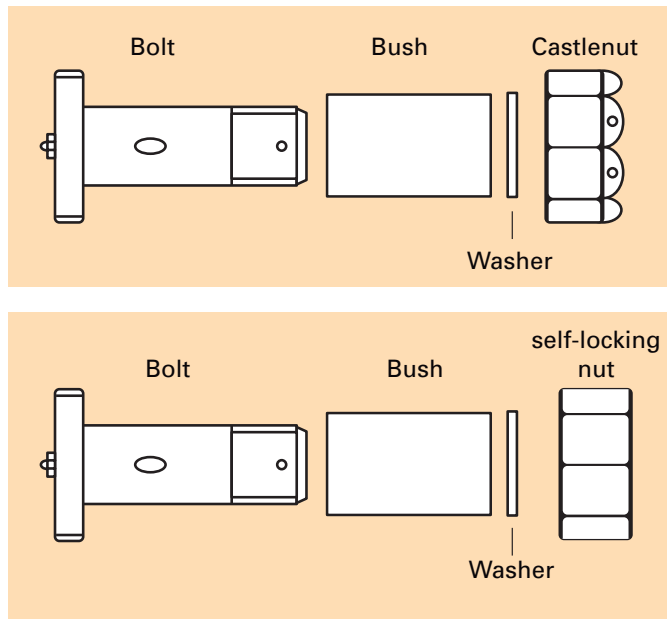
The bearing does not need to be lubricated.

In order to avoid 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 height adjustment device is therefore not recommended.



Spring bolts can also be used to fasten Silentbloc bushes. 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 washers/castle nuts/split-pins or washers/self-locking hex-nuts. **The torque of the self-locking nut should be at least 180 Nm.** The spring bolt should 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. Furthermore, additional mounting points can be mounted on the longitudinal struts using suitable clamping fixtures (e.g. spring shackles for GHE).

If the aforementioned options are not sufficient, hooks or eyeholes can be welded onto the longitudinal struts. When doing so, it must be ensured that they are circumferentially fillet welded ( $a = 3\text{mm}$ ) to the profile centreline.

**Modification or repair welding and straightening work on drawbars is strictly prohibited.**

### 2.3. Assembling a 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 towing hitch 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 up and down horizontal to 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. Note on GZU, GZL, GZHL, GZLG, GZV

Extendable towing pipe: The fixing and clamping screws are to be tightened in accordance with the information on the associated catalogue page. The towing pipe may not be greased.

### 2.5 Note on GZN 12 and 26

GZN 12 & 26: The tightening torque of the castle nut (SW70) is min. **500Nm.**

**Caution: If the splint cannot be inserted, you must continue to screw in up to the next splint hole cover. Never turn the castle nut backwards!**

### 2.6. Note on GZLV (pneumatically lockable)

Pneumatic operation vents for locking/unlocking are not included.

The spring loaded cylinder can be connected for single-action with a sinter filter or for double-action. Please note the separate instruction manual for GZLV.

### 2.7. Note: GSG and GSZ (pivoting towing eyes)

Operation: Release the spring cotter, unscrew the locking bolt by hand, remove the pin bolt, swivel the drawbar by 180°, and refasten and secure 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 road-worthy.

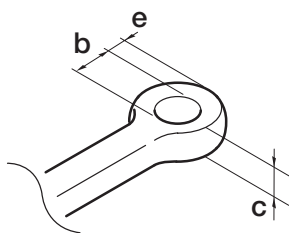
They may neither be straightened nor repaired in any other way but must be replaced by new drawbars.

### 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 <sup>1</sup> max. (mm)	c min. (mm)	e <sup>2</sup> min. (mm)
74054	41,5	28,0	22,0
74053	52,5	41,5	23,5
Drawbar eye CH	41,5	36,5	29,5
11026	41,5	38,0	22,0
Skand. 57 mm	59,5	19,0	-

<sup>1</sup> Measuring with bush

<sup>2</sup> 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.

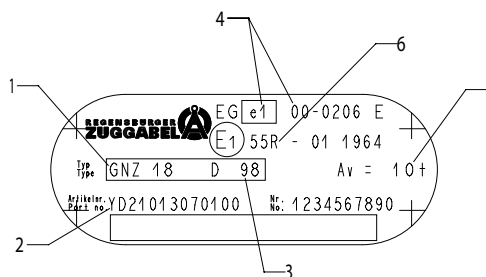
## 4. Height adjustment system (HAS)

Optimum protection against corrosion up to a length of 2 600mm thanks to cathodic e-coating with zinc phosphate (EPD Zn). A subsequent top coat is not necessary in normal circumstances.

Drawbars longer than 2 600mm are blasted and grounded with Aynthal-KH. Lasting protection against corrosion is ensured without the customer needing to add a final coat.

## 5. Identification instructions

Drawbars are components which must be identified. The permissible load conditions can be seen on the inscription on the factory name plate.



1. Type
2. Item No.
3. Permissible D value in kN
4. EC Authorisation
5. Permissible front axle load
6. ECE – R55 authorisation

## 6. Annotation

Special models with a certificate for the issuance of individual authorisation in accordance with §13 FzTV in connection with § 22a StVZO are given individual approval (TP No.). The associated certificate is sent separately and is to be provided with the vehicle papers.

REGENSBURGER ZUGGABEL has appropriate EC and ECE type approved drawbars for almost all vehicle combinations. In order to meet the requirements of the market, further type approvals are planned, and existing ones are being extended and added to. For this reason, all drawbars are subject to changes that are conducive to technical progress.

We would be happy to answer any further questions.