item

Drawbar D25-686, Self-Lifting
Drawbar D25-610
User guide

item

Contents

1. General safety information

The details and information in the user guide are provided solely for the purpose of describing the product and its assembly. This information does not discharge the user from the obligation to carry out his own assessments and checks. It is important to bear in mind that our products are subject to a natural process of wear and ageing.

These notes contain important information that will enable you to use the product safely and appropriately. When sold, rented out or otherwise passed on to another party, this product must be handed over with the user guide.

The term Drawbar when used below refers to the products Drawbar D25-686, Self-Lifting (0.0.664.12) and Drawbar D25-610 (0.0.674.29).

When installing, operating and maintaining the Drawbar, it is important to ensure that all moving elements are secured to prevent unintentional movement. Moving parts that could be under preload can cause serious injury!

You must therefore read and follow the safety instructions set out below.

- All work on and with the Drawbar must be performed with “safety first” in mind.
- All work on and with the Drawbar must be carried out wearing safety footwear.
- Ensure all hands are clear when the spring-loaded Drawbar is resetting. There is a risk of serious injuries and contusions caused by crushing and cuts.
- Uncontrolled uncoupling during travel, e.g. due to excessive vibrations or the breakage of a spring, poses a significant safety risk that can lead to serious personal injury.
- When coupling the tugger train trailer, ensure the Drawbar is securely and properly connected.
- Do not place your hand within the operating range of the Drawbar’s moving parts when it is still in operation.
- Observe the regulations pertaining to accident prevention and environmental protection that apply in the country and place of work where the product is being used.
- Use only item products that are in perfect working order.
- Check the product for obvious defects.
- Use the product only within the performance range described in the technical data.
- Ensure that all the safety equipment associated with the product is present, properly installed and in full working order.
- Do not alter the position of safety equipment, circumvent it or render it ineffective.

The Drawbar described here corresponds to the state of the art and takes into account the general principles of safety applicable at the time this user guide was published. Nevertheless, failure to observe the safety instructions and warning notices in this user guide may result in personal injury and damage to property. We will assume no liability for any resulting damage or injury.

We reserve the right to make technical changes that represent technical advances.

Keep these installation notes in a place where they can be easily accessed by all users. Observe the directions contained in the main user guide for a system. The general safety information applies to the entire lifecycle of the Drawbar.

1. During transportation
Observe the handling instructions on the packaging. Until it is installed, the product must be stored in its original packaging, protected from moisture and damage. Ensure that moving parts are secured when in transit and cannot cause any damage. Suspended loads can fall during transport if load-bearing equipment is not fit for purpose or is incorrectly secured, thus leading to serious injuries (including fatal injuries). Keep clear of suspended loads and use lifting gear with sufficient load-bearing capacity (see delivery paperwork for product weight). Carefully secure lifting tackle and connect it only to points that are sufficiently stable.

2. During operation
Ensure that only persons who have been authorised by the operator have access to the immediate operating area of the Drawbar. This also applies when the system is not in active use. It must not be possible to actuate moving parts unintentionally. The Drawbar is not designed for use on carriages or trailers carrying people.

3. During cleaning
Do not use aggressive cleaning substances. Do not use a high-pressure cleaner when cleaning the system.

4. During maintenance and servicing work
Carry out the prescribed maintenance work at the intervals stipulated in the user guide. Ensure that no fixings, connections or components can become detached or are loose. Secure moving parts during maintenance.

5. During disposal
Dispose of the product in accordance with the national and international regulations that apply in your country.

1.1 Correct use

The Drawbar must only be used in accordance with the technical data and safety requirements set out in this document. The Drawbar is a technical item of work equipment and is not intended for private use.

Significant modifications to the Drawbar shall result in an exclusion of liability on the part of item GmbH and must be added and factored into new documentation.

The Drawbar is intended for use only in applications involving powered tractor trains with trailers that do not have brake systems, as per VDI 3973.

The Drawbar is used to connect together tugger train trailers for the purpose of transporting materials.

It is not suitable for use in applications transporting people.

The maximum trailer load is to be determined as per DIN 15172 and/or VDI 3973.

The Drawbar must be used only on smooth, level and low-vibration surfaces (concrete floors, industrial surfaces).

The Drawbar is not approved for use on public roads.

Internal company requirements and the regulations that apply in the country where the product is being used must be observed. You must not make any design modifications to the Drawbar yourself. We will assume no liability for any resulting damage or injury.

You may only operate, use and maintain the Drawbar if:

- The Drawbar has been integrated properly and safely into the working environment.
- You, as the operator, take care to ensure proper and safe operation.
- You have carefully read and understood the guide.
- You are appropriately qualified.
- You are mentally and physically capable of doing so.
- You are authorised to do so by your company.
- You are using only original equipment from the manufacturer.

Unsafe or inappropriate use of the Drawbar runs a risk of serious injury through crushing and cuts.

1.2 Improper use

Improper use is defined as any use of the product for purposes other than those authorised in the user guide and under the definition of correct use. We will assume no liability for any resulting damage or injury.

1.3 Personnel qualifications

Assembly, commissioning, operation, disassembly and maintenance work (including servicing and care) require an adequate knowledge of mechanical engineering and an understanding of the relevant technical terminology. To ensure operational safety, these activities must therefore be carried out only by a qualified person or by personnel under the instruction and guidance of a qualified person

A qualified person is an individual who – by virtue of his or her specialist training, know-how, experience and knowledge of pertinent regulations – is able to assess the work that is assigned to him or her, identify potential hazards and put in place appropriate safety measures. A qualified person must comply with the applicable specialist regulations.

1.4 Warning symbols

Attention, Warning

Information

1.5 CE declaration

item Industrietechnik GmbH

item

item GmbH | Friedenstraße 107-109 | 42699 Solingen

EG-Konformitätserklärung nach der EG-Maschinenrichtlinie 2006/42/EG, Anhang II A
EC Declaration of Conformity pursuant to EC Machinery Directive 2006/42/EC, Annex II A

Hiermit erklären wir, dass die selbstaufstellenden Deichseln:
We hereby declare that the self-lifting Drawbar:

Typ:	Deichsel D25-686, selbstaufstellend *Drawbar D25-686, Self-Lifting*	0.0.664.12
	Deichsel D25-610 *Drawbar D25-610, Self-Lifting*	0.0.674.29

Produktbeschreibung: Die Deichsel D25 verbindet Transportwagen oder stellt die Verbindung zu einer Zugmaschine her. Ergonomisch selbstaufstellend und sicher in der Anbindung.

Product description: *Drawbar D25 links transport trolleys together or can form a connection with a tugger. Ergonomic self-lifting mechanism and secure linked.*

folgenden einschlägigen Bestimmungen entspricht:
satisfies the following pertinent regulations:

Maschinenrichtlinie	(2006/42/EG)
Machinery Directive	*(2006/42/EC)*

Angewandte grundlegende Anforderungen, deren Fundstellen im Amtsblatt der Europäischen Union veröffentlich worden sind:
Essential requirements that have been applied, the references of which have been published in the official Journal of the European Union:

ISO EN 12100:2010

Auslegung der Belastung nach / *Designed for the load situation described by*
DIN 15172:1988-12

Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen:
Authorised representative for compiling the relevant technical documentation:

Markus Allwicher

Solingen, 01.12.2017 — *Place/Date*
Documentation — *Signatory Information*
Signature

EG-Konformitätserklärung wurde ausgestellt:
EC-Declaration of Conformity was issued:

Stephan Buchmann

Solingen, 01.12.2017 — *Place/Date*
General Manager — *Signatory Information*
Signature

item Industrietechnik GmbH
Friedenstraße 107-109
42699 Solingen

info@item24.com
www.item24.com

Geschäftsführer
Stephan Buchmann
Waldemar Kurtz

Geschäftsführende Gesellsch.
Gerrit Pies
Wolfgang Rixen

Registergericht
Wuppertal HRB 14912

Umsatzsteuer-Ident.-Nr.
DE 120 959 471

2. Product description, use and accessories

2.1 Drawbar D25-686, Self-Lifting

Drawbar D25-686, Self-Lifting is an especially ergonomic and back-friendly solution for linking transport trolleys together or can form a connection with a tractor unit.

A stable spring continuously pushes the Drawbar up, which has two benefits: It ensures it is easy to couple and uncouple the Drawbar using your foot. There is no need to bend over awkwardly or carry out any complicated fastening sequence. When uncoupled, the Drawbar automatically folds up to clear the working area.

To ensure safe operation, the series-standard Impact Buffer stops the Drawbar from hitting the trolley and damaging transported goods when folding up. Two spring clips hold the raised Drawbar in place. When using Drawbar Locking Lever 38, the Drawbar locks in place so that it can't be released unintentionally and to prevent unintentional movement of the Drawbar.

When lowering the Drawbar, the optional Drawbar Stop 32 ensures it does not drop to the floor and stops users pressing it too far down with their foot. This mechanical lock also offers added protection for the operator's feet.

When the spring pulls the Drawbar upright, the elastic Impact Buffer M8 D30x30 brings the Drawbar to a stop before it hits the fastening plate.

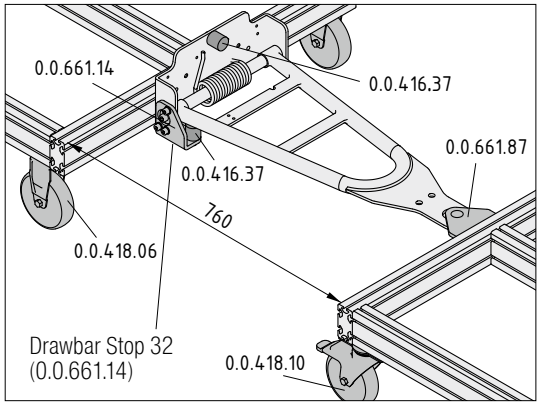
Due to the high tensile loading generated during transport, Profile 8 80x40 is best suited for building the framework of a trolley.

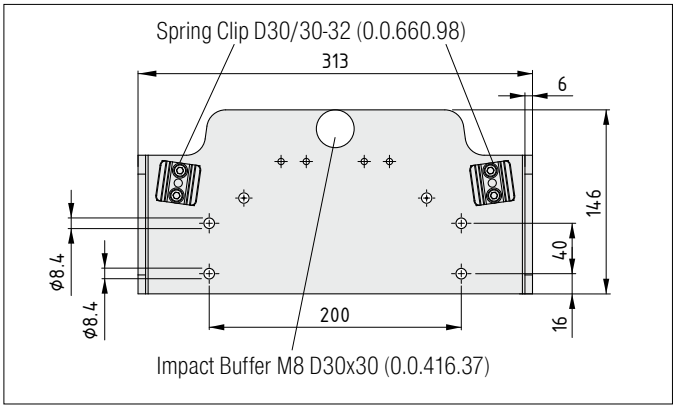
When using Drawbar D25-686, Self-Lifting, the pin of the Coupling (0.0.661.87) should point down. The resetting force of the spring maintains the connection.

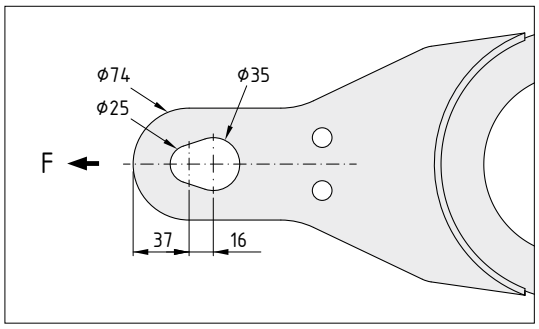
Drawbar Locking Lever 38 (0.0.660.96) keeps coupling elements neat and safe. It holds the Drawbar securely in a vertical position, which is particularly advisable when using the version without a self-lifting mechanism. The foot-operated catch ensures the locking lever can be released without having to stoop down.

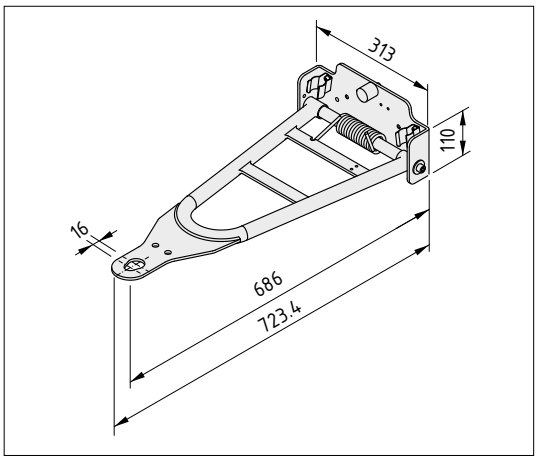
To couple and uncouple Drawbar D25-686, Self-Lifting, the operator uses his foot to press down on the Drawbar, which is kinder on his back. A spring lifts the Drawbar up, ensuring it is securely held against Drawbar Coupling D25-74 (0.0.661.87), which should be installed with the pin pointing down.

Note: Ensure the correct combination of Drawbar and Coupling are used. The larger Drawbar D25-686 must be used in combination with Drawbar Coupling D25-74.









Drawbar D25-686, Self-Lifting
Rated tensile force in continuous operation: F= 6000 N
Rated trailer load in continuous operation: 6 t

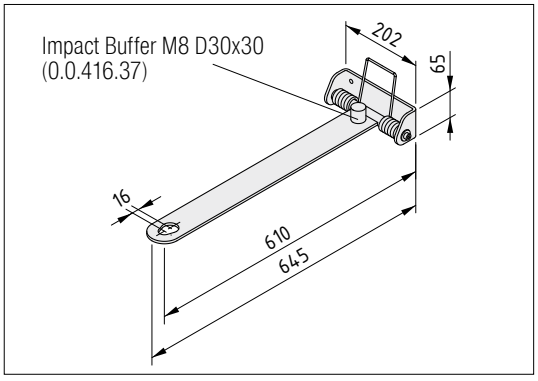
2.2 Drawbar D25-610

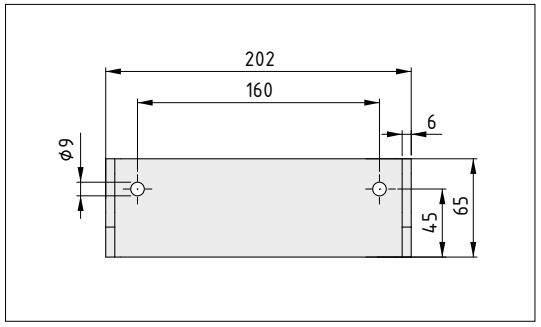
Thanks to its low dead weight, Drawbar D25-610 is ideal for transport trolleys and tugger trains that are also light in weight. Even when uncoupled, the trolley will not tip.

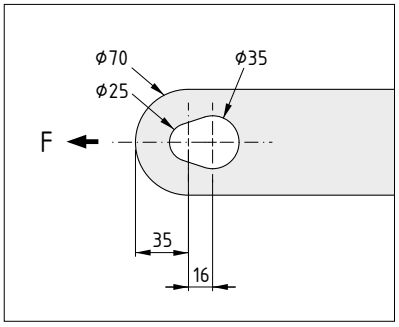
The ergonomic self-lifting mechanism on Drawbar D25-610 is easy on the back. Its integrated spring pushes the Drawbar up, which means users can couple and uncouple trolleys using their feet and without having to bend over. If the Drawbar is not needed, it folds up automatically so that it doesn't present a trip hazard.

The compatible Drawbar Coupling D25-30 (0.0.674.28) completes the system so that several transport trolleys can be securely interconnected.

Note: Ensure the correct combination of Drawbar and Coupling are used. The larger Drawbar D25-610 must be used in combination with Drawbar Coupling D25-30.







Drawbar D25-610
Rated tensile force in continuous operation: 3000 N
Rated trailer load in continuous operation: 3 t

3. Operating data

Drawbar D25-686, Self-Lifting
Rated tensile force in continuous operation: 6000 N
Rated trailer load in continuous operation: 6 t

Drawbar D25-610
Rated tensile force in continuous operation: 3000 N
Rated trailer load in continuous operation: 3 t

General:
Maximum speed: 20 km/h

The Drawbar is intended for mobile use in an area that is protected from the weather.

- The area should be free from mould and fungus and show no traces of rodents or other pests
- Do not install or use in close proximity to industrial plants that produce chemical emissions.
- Resistant to many of the substances usually encountered in the production area, such as water, mineral oil, grease and detergents. In case of doubt regarding resistance to certain chemicals such as test oil, alloyed oils, aggressive cleaning substances, solvents or brake fluid, we advise that you consult your specialist item representative.
- Avoid long periods of contact with highly acidic or alkaline substances.
- Consult the manufacturer if using in very salty air.
- The Drawbars are fundamentally suitable for use in dry, vibration-free environments where temperatures range from -20 °C to +70 °C.

If they are to be used for applications outside these limits, item GmbH must be consulted.

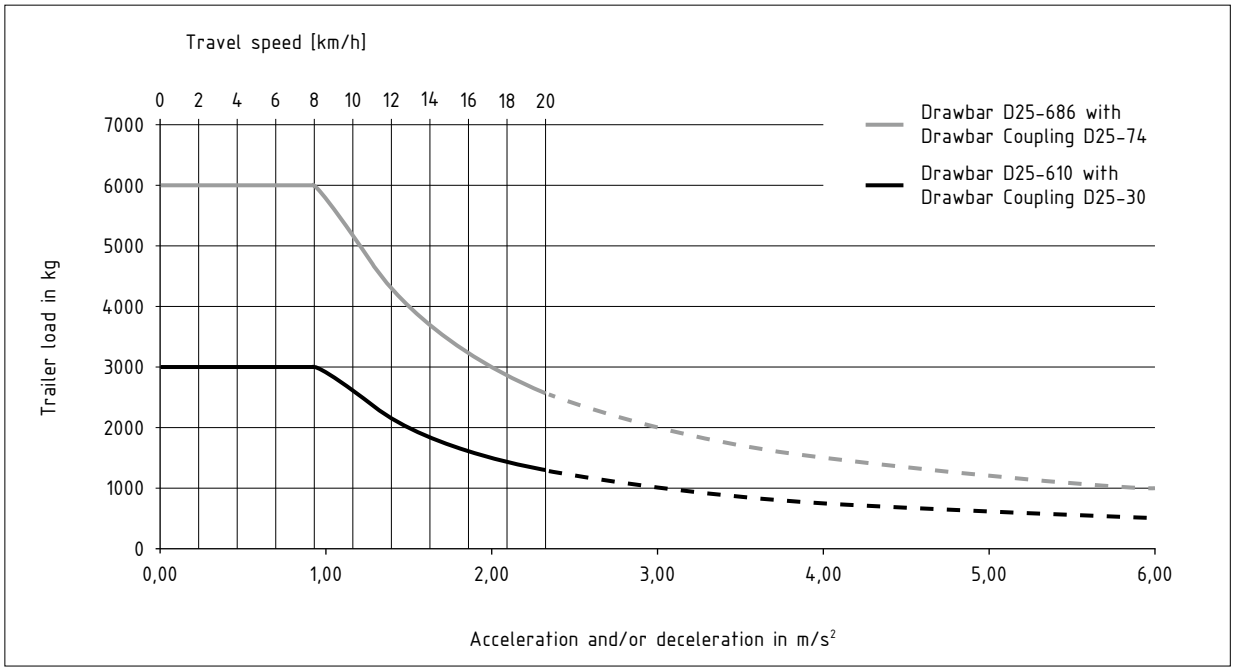


Diagram for determining the maximum trailer load on the first Drawbar Coupling of the tugger train in relation to the acceleration/braking deceleration and maximum travel speed. The ratio of travel speed to acceleration/braking deceleration is determined to DIN 15172, under the condition that the numeric value of braking distance s [m] corresponds to a third of speed v [km/h] of the tractor train.

3.1 Explanation of operating data and example configuration

Refer to DIN 15172 when calculating the trailer load of industrial truck tugger trains. VDI 3973 builds on this DIN standard to offer practical calculations for maximum trailer load under operating conditions and set out parameters that need to be factored in when determining the maximum length of tugger trains. If there are any uncertainties regarding the conditions of the routes to be used or likely peak loads, test runs should be carried out and documented in line with VDI 3973 and DIN 15172.

⚠ During these tests, the company must identify the permissible trailer loads and tractor unit/trailer combinations for the relevant deployment site and scenario and make drivers aware of these in appropriate user manuals.

Before setting off, the driver must ensure the trailers are properly coupled. The manufacturer's safety precautions and user guide must be observed.

A distinction is made between the maximum trailer load during traction and during braking as appropriate to the characteristics of the tractor unit and local conditions.

The trailer load for traction and braking operations that is calculated in this way is equal to the sum total of all the loads in the train and also acts on the first Drawbar.

⚠ Besides calculating the potential trailer load for the tractor unit, users must also analyse the Drawbar Coupling solution.

Example:
$m = F / a = 3000\ N / 2.5\ m/s^2 = 1200\ kg = 1.2\ t$

m: Maximum trailer load of the Drawbar / Drawbar Coupling combination
F: Maximum tensile load of the Drawbar D25-610 (0.0.674.29) and Drawbar Coupling D25-30 (0.0.674.28) combination
a: Actual, genuine braking deceleration / acceleration (determined through experimentation or as per DIN 15172/VDI 3973)

This tugger train is permitted to pull a maximum of 1.2 t regardless of the tractor unit's maximum tensile load!

4. Commissioning and operation

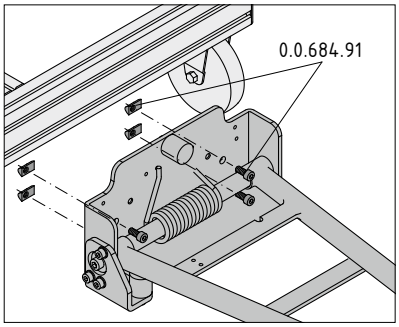
- Check the Drawbar for visible damage prior to installation.

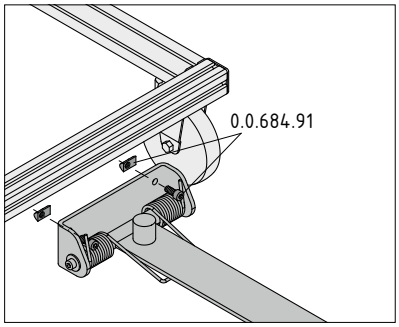
⚠
- Drawbar D25-686, Self-Lifting should preferably be fitted to standard Profiles 8 80x40 that have been installed in an upright orientation. It should be fastened with 4 DIN 912 M8, 10.9 screws and 4 T-Slot Nuts 8 M8 (Fastening Set 8 6-8, 0.0.684.91, see picture).
  Tightening torque: 25 Nm
  Factor the groove load-bearing capacity of the profiles into your calculations for total load (item24.de/en).

⚠
- If fastening Drawbar D25-610 to a Profile 8 40x40, use 2 M8, 10.9 screws and 2 T-Slot Nuts 8 M8 (Fastening Set 8 6-8, 0.0.684.91, see picture).
  Tightening torque: 25 Nm
  When calculating maximum load, factor in the maximum load-carrying capacity of the fasteners and profiles (item24.de/en).

⚠
- Please note that an eccentric fixing will increase load (torque is generated because the point where traction takes effect and the fixing are not on one level).

⚠
- To avoid creating a weakness that could result in breakage during an emergency braking manoeuvre, do not subject the Drawbar to excessive bending loads during start-up and operation, e.g. by standing on it.





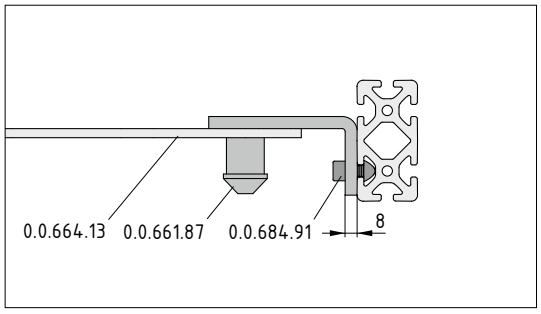
- When using the self-lifting Drawbar variant, the pin of the Coupling must point downwards.
- During the assembly of the Drawbar-Coupling system, we recommend to apply a thin layer of lubrication grease on the mandrel of the coupling. We recommend to use a lubrication grease with optimum running properties under emergency conditions, e.g. grease supported by PTFE, Graphite or molybdenum sulphide. We recommend to repeat that procedure every maintenance.
- After installing the Drawbar, carry out a test run somewhere that is free from hazards but outside the area where the product will be used.
- The Drawbar should be installed so that the tensile load is transmitted parallel to the roadway. Where operating conditions mean it is not possible to ensure parallel load transmission, the maximum trailer load calculated earlier must be reduced as per DIN 15172.
- Use the correct combination of Drawbar and Drawbar Coupling.
  – Drawbar D25-686, Self-Lifting and Drawbar Coupling D25-74 (0.0.661.87)
  – Drawbar D25-610 and Drawbar Coupling D25-30 (0.0.674.28)

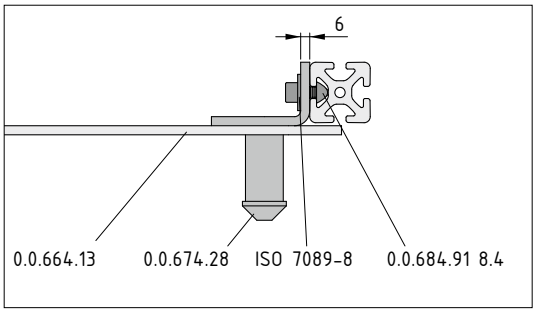
In addition to using the recommended Coupling, ensure fixings are secure and appropriate for the anticipated loads. We recommend the use of Fastening Set 8 6-8 (0.0.684.91). When using Coupling D25-610, 2 steel Washers ISO 7089 - 8 - 200 HV should be added to the Fastening Set.

Drawbar Coupling D25-74 (0.0.661.87)

Drawbar Coupling D25-30 (0.0.674.28)

Take note of the maximum load-carrying capacity of the fasteners and profiles (item24.de/en).
For example, consider a standard Line 8 profile combined with Fastening Set 8 6-8 (0.0.684.91):
Groove load-bearing capacity: 5000 N per fastening point





The maximum load-carrying capacity of the connection between the aluminium profile and Drawbar/Coupling can be increased by drilling through-holes and using M8 screws in an appropriate length along with suitable washers and nuts. This through screw arrangement makes the connection between the Drawbar Coupling and the frame of the transport trolley more rigid. This may result in damage being caused to the basic frame of the trolley in the event of a collision.

Incorrect commissioning and operation can result in malfunctions that can adversely affect service life and pose a risk to personnel.

If the Drawbar is returned to the upright position in an uncontrolled manner, it can pose an injury hazard as it rights itself by spring force. Before undertaking any journey, check all coupled trolleys to ensure the Drawbar and Coupling are correctly engaged.

Drawbar pressed down prior to coupling.

Always follow the instructions below:

- Before installing and using the Drawbar in a tugger train pulled by an industrial truck, the driver, fitter or user must satisfy themselves that the Drawbar is ready for use and free from any damage.
- Before commencing any journey, the operator must check whether connections are sound and the Drawbar is locked in place. This applies whether the train is being pulled by a tractor unit or pushed by hand.
- Load values must not be exceeded.
- Safety instructions must be followed under all circumstances.
- To prevent crushing and cuts, nearby objects should be kept at a minimum distance of 50 mm from the mechanism.
- Inappropriate use of the system can pose hazards to people and equipment.
- The product warranty is valid only when the product is used correctly.
- The Drawbar is spring-loaded. Take special care during coupling/uncoupling. If the Drawbar is carelessly released when under spring load, it could cause injuries.
- Interfering with the mechanics can cause injuries.
- Brakes must be applied when parking the tugger train.
- Tugger train operation is only permissible when using the original item Coupling and Drawbar.
- If an emergency braking manoeuvre is carried out or a collision occurs when pulling the trolleys, all the Couplings, Drawbars and fixings must be checked for damage. Any parts that are found to be damaged must be replaced immediately.

5. Maintenance and inspection

All products are subject to a natural process of wear and tear that varies according to the relevant conditions of use.

The connection points between the Drawbar and trolleys consist of different materials with different material properties. Due to the operating conditions, we recommend they are regularly checked and visually inspected for damage and wear.

The functionality of the components should be checked after the first 24 hours in operation. After that, it is advisable to carry out a functional check on a quarterly basis.

The following issues should be checked during every service and before/during use:

- Tightness of connection points (check the tightening torque of screws during maintenance work – target tightening torque 25 Nm)
- When using the self-lifting Drawbar, the resetting function should be checked
- Running noise
- Visible damage
- Abrasion
- Deformation on the frame, Drawbar and Coupling
- Smooth action and secure hold on catch
- Thin layer of lubrication grease on the mandrel of the Coupling

Any parts that are found to be damaged must be replaced immediately.

6. Disposal

The materials used are environmentally friendly.

The product can be recycled or re-used (if necessary after refurbishment and the replacement of parts). The use of appropriate materials and easy dismantling ensure the product can be recycled.

Improper disposal of the Drawbar can pollute the environment.

Dispose of the Drawbar in accordance with the national regulations that apply in your country.

7. Product development and documentation

A process of continuous product development ensures that products from item Industrietechnik GmbH always exhibit a high standard of innovation. Consequently, there could be inconsistencies between these operating instructions and the product you have acquired. item Industrietechnik GmbH can also not exclude the possibility of errors. We therefore ask for your understanding that the information, illustrations and descriptions provided here cannot constitute an entitlement to any claims. You can find the latest version of these operating instructions at item24.com.

item Industrietechnik GmbH
Friedenstrasse 107-109
42699 Solingen
Germany

Telephone +49 212 6580 0
Fax +49 212 6580 310

info@item24.com
item24.com

You can find the Notes on Use and Installation online, in the download section for this product.