# AMX I15 / AMX I15p / AMX I15x / AMX I15e / AMX I15ep

03.14 -

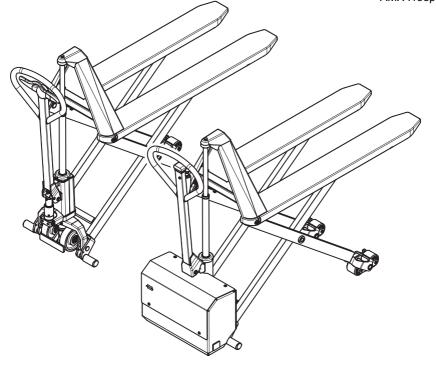
Operating instructions

(GB)

51375189 05.14

> AMX I15p AMX I15x AMX I15e AMX I15ep

AMX I15





## **Declaration of Conformity**



Jungheinrich AG, Am Stadtrand 35, D-22047 Hamburg Manufacturer or agent acting in the European Union

Model	Option	Serial no.	Year of manufacture
AMX I15			
AMX I15p			
AMX I15x			
AMX I15e			
AMX I15ep			

#### Additional information

On behalf of

**Date** 

## (GB) EU Conformity Declaration

The undersigned hereby declare that the powered industrial truck described below in detail complies with the European Directives 2006/42/EC (Machinery Directive) and 2004/108/EEC (Electromagnetic Compatibility - EMC) including amendments as well as the legislative decree to incorporate the directives in national law. The signatories are in each case individually authorised to compile the technical documents.

#### Copyright

Copyright of these operating instructions remains with JUNGHEINRICH AG.

#### Jungheinrich Aktiengesellschaft

Am Stadtrand 35 22047 Hamburg - Germany

Tel: +49 (0) 40/6948-0

www.jungheinrich.com

## **Foreword**

#### Notes on the operating instructions

The present ORIGINAL OPERATING INSTRUCTIONS are designed to provide sufficient instruction for the safe operation of the industrial truck. The information is provided clearly and concisely. The chapters are arranged by letter and the pages are numbered continuously.

The operator manual details different industrial truck models. When operating and servicing the industrial truck, make sure that the particular section applies to your truck model.

Our trucks are subject to ongoing development. We reserve the right to alter the design, equipment and technical features of the system. No guarantee of particular features of the truck should therefore be assumed from the present operating instructions

#### Safety notices and text mark-ups

Safety instructions and important explanations are indicated by the following graphics:

## **↑** DANGER!

Indicates an extremely hazardous situation. Failure to comply with this instruction will result in severe irreparable injury and even death.

## **↑** WARNING!

Indicates an extremely hazardous situation. Failure to comply with this instruction may result in severe irreparable injury and even death.

## **↑** CAUTION!

Indicates a hazardous situation. Failure to comply with this instruction may result in slight to medium injury.

#### NOTE

Indicates a material hazard. Failure to comply with this instruction may result in material damage.

- Used before notices and explanations.
  - Indicates standard equipment
  - Indicates optional equipment

## Contents

Α	Correct Use and Application	11
1 2 3 4 5	General  Correct application	11 11 12 13 13
В	Truck Description	15
1 2 3 3.1 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12	Application	15 15 16 16 17 17 18 19 20 20 21 21 22 23 24 24
С	Transport and Commissioning	25
1 2 3	Lifting by crane Transport Using the Truck for the First Time	25 26 27
D	Battery Maintenance, Charging and Replacement (only for AMX I15e and AMX I15ep).	29
1 2 3 4 4.1	Safety Regulations Governing the Handling of Lead-Acid Batteries  Battery types	29 31 31 32 33

4.2	Description of the Display and Controls of the Stationary Battery Charger (AMX I15ep)	34
4.3	Charging the Battery with the Stationary Battery Charger (AMX I15ep).	36
4.4	Charging the Battery with the On-Board Battery Charger (AMX I15e)	37
5	Battery removal and installation	38
5.1	Battery Replacement	39
	,	
E	Operation	41
1	Safety Regulations for the Operation of the Forklift Truck	41
2	Additional Clause to the Safety Regulations for Operating the Explosion-Protected Truck Model (Ex)	43
3	Description of the Display and Controls AMX I15 / AMX I15p / AMX I15x	44
4	Description of the Display and Controls AMX 115e / AMX 115e p	45
5	Starting up the truck	46
5.1	Checks and Operations to Be Performed Before Starting Daily Work	46
5.2	Preparing the Truck for Operation AMX I15e / AMX I15ep	47
6	Industrial Truck Operation	48
6.1	Safety regulations for truck operation	48
6.2	Parking the truck securely	49
6.3	Pushing/Pulling, Steering, Braking	50
6.4	Pushing/Pulling	50
6.5	Steering	51
6.6	Brakes	51
6.7	Lifting, transporting and depositing loads	52
7	Troubleshooting	56
7.1 7.2	Load Cannot Be Lifted AMX I15 / AMX I15p / AMX I15x Load Cannot Be Lifted/Lowered AMX I15e / AMX I15ep	56
1.2	Load Carriot Be Litted/Lowered AMA 115e / AMA 115ep	56
F	Industrial Truck Maintenance	57
1	Operational Safety and Environmental Protection	57
2	Maintenance Safety Regulations	58
3	Lubricants and Lubrication Schedule	61 61
3.1 3.2	Handling consumables safelyLubrication Schedule	63
3.3	Consumables	63
3.3 4	Maintenance and repairs	64
4.1	Preparing the truck for maintenance and repairs	64
4.2	Removing the Cover AMX I15e / AMX I15ep	64
4.3	Checking the Electrical Fuses AMX I15e / AMX I15ep	65
4.4	Restoring the truck to service after maintenance and repairs	67
5	Decommissioning the Industrial Truck	68
5.1	Prior to decommissioning	68
5.2	Action to be Taken while Taking the Truck out of Service AMX I15e /	
5.3	AMX I15epRestoring the truck to service after decommissioning	68 69
J.J	restoring the truck to service after decollillissioning	US

6	Safety tests to be performed at intervals and after unusual incidents	70
7	Final de-commissioning, disposal	70
8	Human vibration measurement	
9	Servicing and Inspection	71
10	Maintenance checklist	72

## A Correct Use and Application

## 1 General

The truck must be used, operated and serviced in accordance with the present instructions. All other types of use are beyond its scope of application and may result in damage to personnel, the industrial truck or property.

## 2 Correct application

## NOTE

The maximum load and the maximum permissible load distance given on the data plate must be observed.

The load must be fully supported by the load handler and raised completely from the ground.

The following operations are in accordance with regulations and are permitted:

- Lifting and lowering loads.
- Transporting lowered loads.
- Can be used as a lifting table, a storage table and a workbench.

The following operations are prohibited:

- Carrying and lifting passengers.
- Pushing or pulling loads.
- Transverse lifting of long loads.

## 3 Approved application conditions

- For use in industrial and commercial environments.
- Permissible temperature range see "Conditions of use" on page 21.
- Operation only on secure, level surfaces with sufficient capacity.
- Operation only on routes that are visible and approved by the operating company.
- Do not negotiate inclines.
- Operation in partially public traffic.

#### **↑** WARNING!

#### Operation under extreme conditions

Using the truck under extreme temperatures or conditions can result in malfunctions and accidents.

- ► Special equipment and authorisation are required if the truck is to be constantly used in extreme conditions, especially in dusty or corrosive atmospheres.
- ▶ Only explosion-protected trucks may be used in areas at risk of explosion.
- ▶ In adverse weather conditions (thunder, lightning) the industrial truck must not be operated outside or in endangered areas.

## 4 Proprietor responsibilities

For the purposes of the present operating instructions the "operating company" is defined as any natural or legal person who either uses the industrial truck himself, or on whose behalf it is used. In special cases (e.g. leasing or renting) the proprietor is considered the person who, in accordance with existing contractual agreements between the owner and user of the industrial truck, is charged with operational duties. The proprietor must ensure that the industrial truck is used only for the purpose it is intended for and that danger to life and limb of the user and third parties are excluded. Furthermore, accident prevention regulations, safety regulations and operating, servicing and repair guidelines must be followed. The operating company must ensure that all users have read and understood these operating instructions.

#### NOTE

Failure to comply with the operating instructions invalidates the warranty. The same applies if improper work is carried out on the truck by the customer or third parties without the permission of the manufacturer.

## 5 Adding attachments and/or optional equipment

The mounting or installation of additional equipment which affects or enhances the performance of the industrial truck requires the written permission of the manufacturer. Local authority approval may also need to be obtained. Local authority approval however does not constitute the manufacturer's approval.

## **B** Truck Description

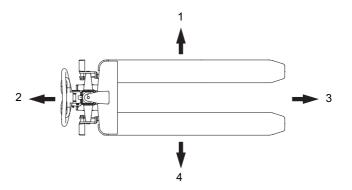
## 1 Application

The industrial truck is a three-wheel pallet truck. It is designed for transporting goods on level surfaces. Open-bottom pallets or roll cages can be lifted.

The rated capacity is indicated on the data plate or the capacity plate Qmax.

## 2 Travel direction definition

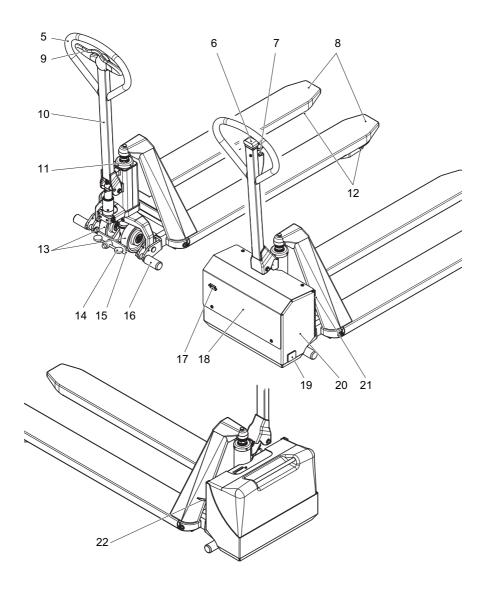
The following determinations have been made for travel direction specification:



Item	Travel direction
1	Left
2	Tiller direction
3	Load direction
4	Right

## 3 Assemblies and Functional Description

## 3.1 Assembly Overview



Item		Description	Item		Description
5	•	Handle	14	0	Foot-operated parking brake
6	•	"Load handler lift/lower" rocker switch	15	•	Foot protection
7	•	Emergency disconnect switch	16	•	Support legs
8	•	Load handler	17	•	Battery discharge indicator
9	•	"Lift/lower fork" handle	18	•	Cover
10	•	Tiller	19	•	Mains connection socket, on- board charger (only AMX I15e)
11	•	Lift cylinder	20	•	Hydraulic unit
12	•	Load wheels	21	•	Connection socket, stationary charger (only AMX I15ep)
13	•	Steer wheels	22	0	Foot-operated parking brake (only AMX I15e)
	•	Standard equipment		0	Optional equipment

## 4 Technical Specifications

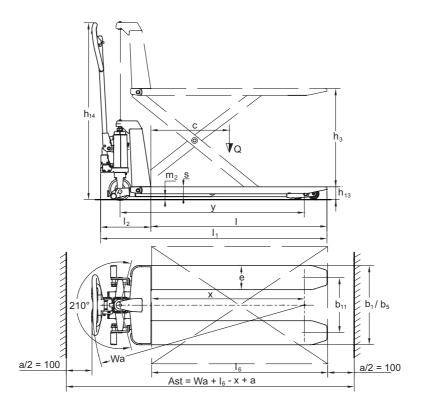
The technical specifications comply with the German "Industrial Truck Data Sheet" Guidelines.

Technical modifications and additions reserved.

## 4.1 Performance data

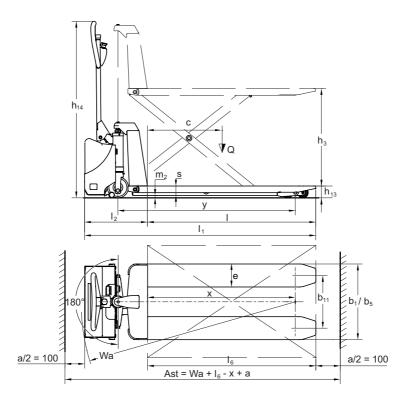
		AMX I15 AMX I15p AMX I15x	AMX I15e AMX I15ep	
Q	Rated capacity to lift height 470 mm	1500	1500	kg
Q	Rated capacity above lift height 470 mm	1000	1000	kg
С	Load centre distance	600	600	mm
х	Load distance	1050	1050	mm
	Lift speed with / without load		50 / 80	mm/s
	Lift normal/rapid (per tiller stroke)	10 / 35		mm
	Lowering speed with / without load	150 / 90	70 / 50	mm/s
	Lift motor, output at S3 15%		1.2	kW
	Battery voltage / nominal capacity K5 (maintenance-free)		12/70	V/Ah

## 4.2 Dimensions AMX I15 / AMX I15p / AMX I15x



	Description	AMX I15 / AMX I15p / AMX I15x	
h <sub>3</sub>	Lift	710	mm
h <sub>13</sub>	Lowered height	85	mm
h <sub>14</sub>	Height of tiller handle	1230	mm
У	Wheelbase	1255	mm
s/e/l	Fork dimensions	50 / 163 / 1200	mm
I <sub>1</sub>	Overall length	1580	mm
l <sub>2</sub>	Length to fork face	340	mm
b <sub>1</sub>	Truck width	540	mm
b <sub>5</sub>	Outer fork distance	540	mm
b <sub>10</sub>	Track width, front	145	mm
b <sub>11</sub>	Track width, rear	440	mm
Ast	Aisle width for pallets 1000 x 1200 crossways	1630	mm
Ast	Aisle width for pallets 800 x 1200 lengthways	1830	mm

## 4.3 Dimensions AMX I15e / AMX I15ep



	Description	AMX I15e / AMX I15ep	
h <sub>3</sub>	Lift	710	mm
h <sub>13</sub>	Lowered height	85	mm
h <sub>14</sub>	Height of tiller handle	1270	mm
у	Wheelbase	1255	mm
s/e/l	Fork dimensions	50 / 163 / 1200	mm
I <sub>1</sub>	Overall length	1645	mm
l <sub>2</sub>	Length to fork face	445	mm
b <sub>1</sub>	Truck width	540	mm
b <sub>5</sub>	Outer fork distance	540	mm
b <sub>10</sub>	Track width, front	145	mm
b <sub>11</sub>	Track width, rear	440	mm
Ast	Aisle width for pallets 1000 x 1200 crossways	1690	mm
Ast	Aisle width for pallets 800 x 1200 lengthways	1890	mm

### 4.4 Weights

	AMX I15	AMX I15p AMX I15x	AMX I15e	AMX I15ep	
Truck weight	125	125	132	132	kg
Axle load, w.o. load front/rear	38 / 70	38 / 70	40 / 100	40 / 100	kg
Axle load, w. load front/ rear	720 / 358	750 / 358	753 / 357	753 / 387	kg
Battery weight			21	21	kg

## 4.5 Tyre type

	AMX I15 AMX I15p AMX I15x	AMX I15e AMX I15ep	
Tyre size, front	Ø 150 x 45	Ø 150 x 45	mm
Tyre size, rear (tandem)	Ø 75 x 68	Ø 75 x 68	mm

#### 4.6 EN norms

#### Continuous sound pressure level

- AMX I15e / AMX I15ep: 66 dB(A)

in accordance with EN 12053 as harmonised with ISO 4871.

The continuous sound pressure level is calculated according to standard procedures and takes into account the sound pressure level when driving, lifting and idling. The sound pressure level is measured at the driver's ear.

#### Electromagnetic compatibility (EMC)

The manufacturer confirms that the truck adheres to the limits for electromagnetic emissions and resistance as well as the static electricity discharge test in accordance with EN 12895 as well as the standardised instructions contained therein.

No changes to electric or electronic components or their arrangement may be made without the written agreement of the manufacturer.

#### ↑ WARNING!

#### Medical equipment can be damaged by non-ionised radiation

Electrical equipment on the truck emitting non-ionised radiation (e.g. wireless data transmission) can affect operators' medical equipment (pacemakers, hearing aids etc.) and result in malfunctions. Consult a doctor or the manufacturer of the medical equipment to clarify whether it can be used near the industrial truck.

#### 4.7 Conditions of use

#### Ambient temperature

AMX I15 / AMX I15p

- during operation -35°C to 40°C

AMX I15e / AMX I15ep

- during operation 5°C to 40°C

AMX I15x

- during operation -20°C to 40°C

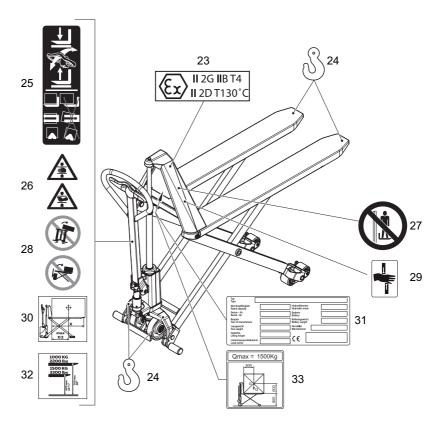


Special equipment and authorisation are required if the truck is to be used continually in conditions of extreme temperature fluctuations or humidity.

#### 4.8 Electrical Requirements

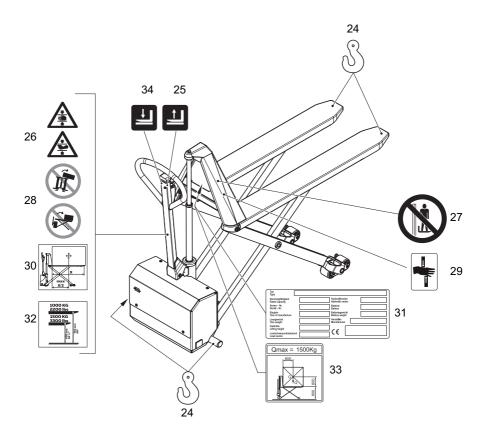
The manufacturer certifies compliance with the requirements for the design and manufacture of electrical equipment, according to EN 1175 "Industrial Truck Safety - Electrical Requirements", provided the truck is used according to its purpose.

## 4.9 Identification Points and Data Plates AMX I15 / AMX I15p / AMX I15x



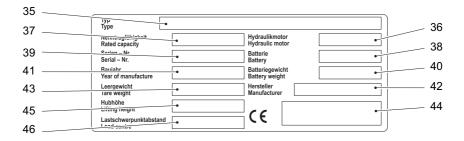
Item	Description
23	Explosion-protection label (only for AMX I15x)
24	Strap point for crane lifting
25	Label – Correct operation
26	Trapping risk for hands and feet
27	Do not stand on the load handler
28	Risk of tip-over due to single-sided loading
29	Trapping hazard
30	Maximum permissible load centre distance from load handler face
31	Truck data plate
32	Capacity relative to the lift height
33	Capacity plate

## 4.10 Identification Points and Data Plates AMX I15e / AMX I15ep



Item	Description
24	Strap point for crane lifting
25	Raises the load handler
26	Trapping risk for hands and feet
27	Do not stand on the load handler
28	Risk of tip-over due to single-sided loading
29	Trapping hazard
30	Maximum permissible load centre distance from load handler face
31	Truck data plate
32	Capacity relative to the lift height
33	Capacity plate
34	Lowers the load handler

## 4.11 Data plate



Item	Description	Item	Description
35	Model	41	Year of manufacture
36	Hydraulic motor	42	Manufacturer
37	Rated capacity (kg)	43	Net weight in kg
38	Battery	44	Manufacturer's logo
39	Serial number	45	Lift height
40	Battery weight	46	Load centre distance

For queries regarding the truck or ordering spare parts always quote the truck serial number (39).

#### 4.12 Wind loads

Wind forces can affect the stability of a truck when lifting, lowering and transporting loads with large surface areas.

Light loads must be especially secured when they are subjected to wind forces. This will prevent the load from sliding or falling.

Stop the truck in both cases.

## C Transport and Commissioning

## 1 Lifting by crane

#### **↑** WARNING!

#### Incorrect lifting by crane can result in accidents

Improper use or use of unsuitable lifting gear and can cause the truck to fall when being lifted by crane.

Prevent the truck from hitting other objects during lifting, and avoid uncontrolled movements. If necessary, secure the truck with guide ropes.

- ► The truck should only be loaded by personnel trained in the use of lifting slings and tools.
- ► Wear personal protective equipment (e. g. safety shoes, safety helmet, hi-vis jacket, protective gloves, etc.) when loading by crane.
- ▶ Do not stand under suspended loads.
- ▶ Do not enter or stand in a hazardous area.
- ► Always use lifting gear with sufficient capacity (for truck weight see truck rating plate).
- Always attach the crane lifting gear to the prescribed strap points and prevent them from slipping.
- ▶ Use the lifting slings only in the prescribed loading direction.
- ► Crane slings should be fastened in such a way that they do not come into contact with any attachments when lifting.

## Lifting the truck by crane

#### Requirements

 Park the truck securely, see "Parking the truck securely" on page 49.

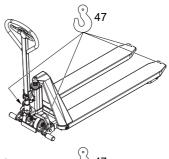
#### Tools and Material Required

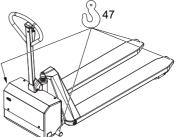
- Lifting gear
- Crane lifting gear

#### Procedure

 Secure the crane lifting gear to the strap points (47).

The truck can now be lifted by crane.





## 2 Transport

### ↑ WARNING!

#### Accidental movement during transport

Improper fastening of the truck and mast during transport can result in serious accidents.

- ▶ Loading must only be performed by specialist personnel trained for this purpose. The specialist personnel must be instructed in securing loads on road vehicles and handling load securing devices. In each case correct measurements must be taken and appropriate safety measures applied.
- ▶ The truck must be securely fastened when transported on a lorry or a trailer.
- ▶ The lorry or trailer must have fastening rings.
- ▶ Use wedges to prevent the truck from moving.
- ► Use only fastening belts with sufficient strength.
- ► Use non-slip materials to securing the load aids (pallet, wedges, ...) e. g. non-slip mats.

## Securing the industrial truck for transport

#### Requirements

- Load the truck.
- Park the truck securely, see "Parking the truck securely" on page 49.

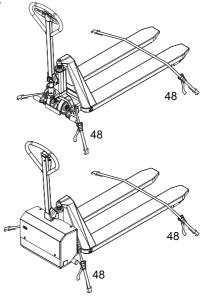
#### Tools and Material Required

- Lashing straps

#### Procedure

 Attach the lashing straps (48) to the industrial truck and the transport vehicle and tension sufficiently.

The truck can now be transported.



## 3 Using the Truck for the First Time

## MARNING!

Hazard when using unsuitable energy sources (only AMX I15e and AMX I15ep)

Rectified AC current damages the assemblies (controllers, sensors, motors, etc.) of the electronic system.

Unsuitable cable connections (too long, wire cross-section too small) with the battery (jump leads) can overheat, setting the battery on fire.

- Operate the truck with battery current only.
- Cable connections to the battery (jump leads) must be less than 6 m long and have a minimum cross-section of 50 mm².

#### NOTE

Do not lift loads if the truck is operated via a tow lead with an external battery.

#### Procedure

- · Check the equipment is complete.
- Install the battery if necessary, see "Battery removal and installation" on page 38; do not damage the battery cable (only for AMX I15e and AMX I15ep).
- Charge the battery, see "Charging the battery" on page 32 (only for AMX I15e and AMX I15ep).
- The truck settings must match the battery model (if the customer is charging the battery) (only for AMX I15e and AMX I15ep).
  - Check the hydraulic oil level and top up if necessary (see "Lubrication Schedule" on page 63).
  - Start up the truck (see "Preparing the Truck for Operation AMX I15e / AMX I15ep" on page 47).

Truck is operational.

When the vehicle is parked, the surface of the tyres will flatten. The flattening will disappear after a short period of operation.

## D Battery Maintenance, Charging and Replacement (only for AMX I15e and AMX I15ep).

## 1 Safety Regulations Governing the Handling of Lead-Acid Batteries

#### Maintenance personnel

Batteries may only be charged, serviced or replaced by trained personnel. These operating instructions and the manufacturer's instructions concerning batteries and charging stations must be observed when carrying out the work.

#### **Fire Protection**

Do not smoke and avoid naked flames when handling batteries. Wherever an industrial truck is parked for charging there must be no inflammable material or consumables capable of creating sparks within a minimum distance of 2 m from the truck. The room must be ventilated. Fire protection equipment must be available.

#### **↑** CAUTION!

#### The use of unsuitable fire protection equipment can result in scalding

Extinguishing fires with water can cause a reaction with the battery acid. This can result in scalding from the acid.

- ► Use powder extinguishers.
- Never extinguish a burning battery with water.

#### **Battery maintenance**

The battery cell covers must be kept dry and clean. The terminals and cable shoes must be clean, secure and have a light coating of dielectric grease.

## **↑** CAUTION!

#### Short circuits can cause fires

Damaged cables can cause a short circuit, setting the truck and the battery on fire.

Before closing the battery cover make sure that the battery cables cannot be damaged.

#### **Battery disposal**

Batteries may only be disposed of in accordance with national environmental protection regulations or disposal laws. The manufacturer's disposal instructions must be observed.

## **↑** WARNING!

#### Batteries can be hazardous

Batteries contain an acid solution which is poisonous and corrosive. Avoid contact with battery acid at all times.

- ▶ Dispose of used battery acid in accordance with regulations.
- ► Always wear protective clothing and goggles when working with batteries.
- ▶ Do not let battery acid come into contact with skin, clothing or eyes. If necessary, rinse with plenty of clean water.
- ►In the event of physical damage (e.g. skin or eye contact with battery acid) call for a doctor immediately.
- ▶ Spilled battery acid should be neutralised immediately with plenty of water.
- ▶ Only batteries with a sealed battery container may be used.
- ▶ Follow national guidelines and legislation.

#### ★ WARNING!

## Unsuitable batteries that have not been approved for the truck by the manufacturer can be hazardous

The design, weight and dimensions of the battery have a considerable effect on the operational safety of the truck, in particular its stability and capacity. The use of unsuitable batteries that have not been approved for the truck by the manufacturer can lead to a deterioration of the braking characteristics of the truck during energy recovery, causing considerable damage to the electric controller and resulting in serious danger to the health and safety of individuals!

- ► Only manufacturer-approved batteries may be used on the truck.
- ▶ Battery equipment must only be replaced with the agreement of the manufacturer.
- ▶ When replacing/installing the battery make sure the battery is securely located in the battery compartment of the truck.
- ▶ Do not use batteries that have not been approved by the manufacturer.

Park the truck securely before carrying out any work on the batteries (see "Parking the truck securely" on page 49).

## 2 Battery types

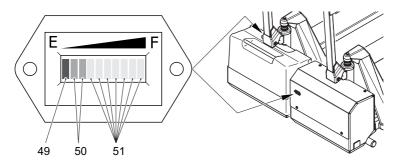
Depending on the model, the truck will be supplied with different battery types. The following table shows which combinations are included as standard:

The battery weights can be taken from the battery data plate. Batteries with non insulated terminals must be covered with a non slip insulating mat.

AMX I15e / AMX I15ep		
12 V	70 AhC5 maintenance-free AGM (Vlies) technology	

## 3 Battery Discharge LEDs (Charge/Discharge Indicator)

The battery discharge status is shown by 10 LEDs in 10% steps.



LED	Colour	Charge status
49	red, 1 bar	Battery charge: 10%
50	yellow, 2 bars	Battery charge: 20% and 30%
51	green, 7 bars	Battery charge: 40% / 50% / 60% / 70% / 80% / 90% / 100%

## NOTE

#### Lifting when the red LED (49) is lit damages the battery.

Deep discharge occurs, causing the voltage to drop below the minimum allowable level.

- ► Charge the battery when the red LED (49) lights up.
- ► For light-duty applications (loads below 300 kg) charge the battery when a yellow LED (50) lights up.
- When the battery charge is below 20%, the lift function is interrupted.

## 4 Charging the battery

## **↑** WARNING!

#### The gases produced during charging can cause explosions

The battery gives off a mixture of oxygen and hydrogen (electrolytic gas) during charging. Gassing is a chemical process. This gas mixture is highly explosive and must not be ignited.

- ▶ Switch the charging station and truck off first before connecting/disconnecting the charging cable of the battery charging station to/from the battery connector.
- ▶The charger must match the battery in terms of voltage, charge capacity and battery type.
- ▶The mains plug of the on-board charger should only be connected to or disconnected from a suitable mains socket (90–250 V ~, 50/60 Hz ±4%) when the truck is switched off.
- ▶ Before charging, check all cables and connectors for visible signs of damage.
- ▶ Ventilate the room in which the truck is being charged.
- ▶ Do not smoke and avoid naked flames when handling batteries.
- ► Wherever an industrial truck is parked for charging, there must be no inflammable material or consumables capable of creating sparks within a minimum distance of 2 m from the truck.
- ► Fire-control equipment must be available.
- ▶ Do not place any metallic objects on the battery.
- ► Always follow the safety regulations of the battery and charger station manufacturers.

## **↑** DANGER!

#### Risk of electric shock and burning

Damaged and unsuitable cables can cause electric shocks and can overheat, resulting in fires.

- ► Always use mains cables with a maximum length of 30 m. Local regulations must be observed.
- ►Unwind the cable reel fully when using it.
- ► Always use original manufacturer's mains cables.
- ► Insulation safety, acid and caustic ratings must comply with the manufacturer's mains lead.
- ▶ The mains plug must be dry and clean when used.

#### NOTE

#### Improper use of the charger can cause material damage

The charger, which consists of a battery charger and battery controller, must not be opened. If faulty, contact the manufacturer's customer service department.

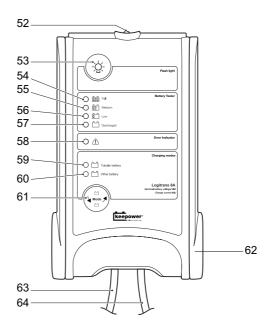
- ▶ The charger must only be used for batteries supplied by the manufacturer or other approved batteries provided it has been adapted by the manufacturer's customer service department.
- ▶ The charger must never be swapped between different truck models.
- ▶ Do not connect the battery to two chargers simultaneously.

## 4.1 Specification of Stationary Battery Charger Model 1201 (AMX I15ep)

#### 4.1.1 Performance data

Mains voltage	230 +/-10%	V ~
Mains frequency	50 - 60	Hz
Charge current	8	Α
Power consumption	150	W
Ambient temperature	-10- +40	°C
Fuse rating	T 3,15	Α
Protection rating	IP 65	

## 4.2 Description of the Display and Controls of the Stationary Battery Charger (AMX I15ep)



- Flashing LEDs show the charge status during the charging process.
- Constantly lit LEDs show the battery charge status when checking.

Item	Control /Display		Function
52	LED lamp	•	
53	On/off button "LED lamp"	•	<ul> <li>Switches LED lamp on and off</li> </ul>
54	Green LED	•	<ul> <li>LED flashes during the charging process:</li> <li>Battery almost fully charged.</li> </ul>
			LED lights up during the charging process: Battery is fully charged; subsequent trickle charging.
			<ul> <li>LED lights up when checking the battery:</li> <li>Battery is charged.</li> </ul>
55	Yellow LED	•	<ul> <li>LED flashes during the charging process:</li> <li>The battery is half-charged.</li> </ul>
			<ul> <li>LED lights up when checking the battery:</li> <li>The battery is half-charged.</li> </ul>
56	Yellow LED	•	<ul> <li>LED flashes during the charging process:</li> <li>The battery is still almost empty.</li> </ul>
			<ul> <li>LED lights up when checking the battery:</li> <li>The battery is almost empty.</li> </ul>

Item	Control /Display		Function
57	Red LED	•	LED flashes during the charging process:     The battery is still empty.      LED flashes when checking the battery:
			The battery is empty.
58	Red LED	•	<ul> <li>LED flashes due to malfunction. Connect the battery charger to the battery first and then to the mains. If necessary, restart the check or charging process.</li> </ul>
59	Yellow LED	•	LED lights up when selecting the charging program for tubular batteries.
60	Yellow LED	•	<ul> <li>LED lights up when selecting the charging program for other batteries.</li> </ul>
61	Selection button for the charging program	•	Changing charging programs.  Press the button in the charging program required for 3 seconds to start quick charging.
63	Battery charger cable	•	<ul> <li>Connects the charger to the battery.</li> </ul>
64	Mains cable	•	Connects the charger to the mains.
62	Swivel stand	•	Allows the battery charger to be located either suspended or upright for easy viewing.

## 4.3 Charging the Battery with the Stationary Battery Charger (AMX I15ep)

**→** 

The charger plug is accessible from the outside. Do not use the lift function during charging.

## MARNING!

Only connect and disconnect the battery and the charger when the charger is unplugged from the mains.

#### Checking/charging the battery

#### Requirements

 Park the truck securely, see "Parking the truck securely" on page 49.

#### Procedure

 Connect the battery charger to the socket "stationary battery charger" (21).

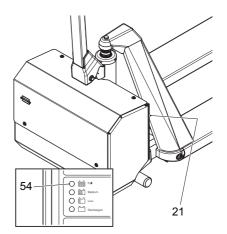


The battery charge status can be read on the battery charger (corresponding LED lights up).

 Connect the battery charger to a suitable mains socket (230 +/-10% V ~, 50–60 Hz).



The battery charge status can be read on the battery charger (corresponding LED flashes).



 Charge the battery until the 100% LED (54) on the battery charger shows a steady green light.

The battery is being charged.

#### Completing battery charging; restoring the truck to operation

#### NOTE

If charging has been interrupted, the full battery capacity will not be available.

#### Procedure

- · Pull the mains plug out of the mains socket.
- Disconnect the battery charger to the socket "stationary battery charger" (21).

The truck is now ready for operation.

#### 4.4 Charging the Battery with the On-Board Battery Charger (AMX I15e)

#### - Mains connection

Mains supply: 90-250 V ~

Mains frequency: 50/60 Hz ±4%

The mains cable is included in the scope of delivery.

#### Charging the battery

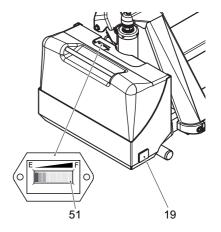
#### Requirements

 Park the truck securely, see "Parking the truck securely" on page 49.

#### Procedure

- Connect the mains plug to the mains socket on the on-board charger (19) and then connect the battery charger to the mains. The charge/discharge indicator shows that the battery charger is connected to the mains and that charging is in progress.
- Charge the battery until the 100% LED (51) shows a steady green light.

The battery is being charged.



#### Charging times

The charging time can take up to 12 hours depending on the battery discharge status.

Charging continues automatically after a mains failure. Charging can be interrupted by removing the mains connector and continued as partial charging.

#### Trickle charge

When the LED (51) shows a steady green light, the battery is fully charged. The charger changes to compensation charge. Trickle charging continues until the mains plug has been disconnected. To extend the battery life, regular (once a week) equalisation charging is recommended. The charger must be connected to the mains for at least 12 hours.

#### Partial charging

The charger is designed to automatically adapt to partially charged batteries. This keeps battery wear to a minimum.

Completing battery charging; restoring the truck to operation

#### NOTE

If charging has been interrupted, the full battery capacity will not be available.

#### Procedure

• Pull the mains plug out of the mains socket and then unplug the mains cable from the mains socket on the on-board charger (19).

The truck is now ready for operation.

## 5 Battery removal and installation

## **↑** WARNING!

## Accident risk during battery removal and installation

Due to the battery weight and acid there is a risk of trapping or acid burns when the battery is removed and installed.

- ▶ Note the "Safety regulations for handling acid batteries" section in this chapter.
- ▶ Wear safety shoes when removing and installing the battery.
- ▶ Park the truck on a horizontal surface.
- ▶ Make sure the battery is located securely in the truck's battery compartment.

## **↑** CAUTION!

### **Trapping hazard**

There is a risk of trapping when you close the battery cover.

► Make sure there is nothing between the battery cover and the truck when you close the battery cover.

## 5.1 Battery Replacement

## Removing the battery

#### Requirements

- Park the truck securely, see "Parking the truck securely" on page 49.
- Remove the cover, see "Preparing the truck for maintenance and repairs" on page 64.

#### Procedure

- Disconnect the battery cable from the negative battery terminal (black) first and then from the positive battery terminal (red).
- Remove the battery attachment (rubber strap)
- · Remove the battery.

The battery is now removed.

#### Battery installation

#### Requirements

- Park the truck securely, see "Parking the truck securely" on page 49.

#### \_ Procedure

- Assembly is the reverse order. Note the correct assembly position and make sure the battery is connected correctly.
  - Connect the battery cable to the positive battery terminal (red) first and then to the negative battery terminal (black).

## **↑** CAUTION!

#### Trapping hazard

There is a risk of trapping when you close the battery cover.

- Install the cover, see "Preparing the truck for maintenance and repairs" on page 64. The battery is now installed.
- After installing the battery again, check all cables and plug connections for visible signs of damage.

## **E** Operation

## 1 Safety Regulations for the Operation of the Forklift Truck

#### **Driver authorisation**

The truck may only be used by suitably trained personnel, who have demonstrated to the proprietor or his representative that they can drive and handle loads and have been authorised to operate the truck by the proprietor or his representative.

#### Operator's rights, responsibilities and rules of conduct

The driver must be informed of his duties and responsibilities and be instructed in the operation of the truck and shall be familiar with the operating instructions. Safety shoes must be worn on pedestrian-operated trucks.

#### Unauthorised use of truck

The operator is responsible for the truck during the time it is in use. The operator must prevent unauthorised persons from moving or operating the truck. Do not carry passengers or lift other people.

#### Damage and faults

The supervisor must be informed immediately of any damage or faults to the truck or attachment. Trucks which are unsafe for operation (e.g. wheel or brake problems) must not be used until they have been rectified.

#### Repairs

The operator must not carry out any repairs or alterations to the truck without authorisation and the necessary training to do so. The operator must never disable or adjust safety mechanisms or switches.

#### Hazardous area

## $\triangle$

#### **WARNING!**

#### Risk of accidents/injury in the hazardous area of the truck

A hazardous area is defined as the area in which people are at risk due to travel or lifting operations of the truck, its load handler or the load. This also includes the area within reach of falling loads or lowering/falling operating equipment.

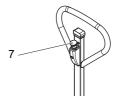
- Instruct unauthorised persons to leave the hazardous area.
- ▶ In case of danger to third parties, give a warning signal in good time.
- ▶If unauthorised persons are still within the hazardous area, stop the truck immediately.

#### Safety devices, warning signs and warning instructions

The safety devices, warning signs (see "Identification Points and Data Plates AMX I15 / AMX I15p / AMX I15x" on page 22 or see "Identification Points and Data Plates

AMX I15e / AMX I15ep" on page 23) and warning instructions in these operating instructions must be strictly observed.

Applying the EMERGENCY DISCONNECT switch (7) rapidly disconnects all electrical functions in hazardous situations.



# 2 Additional Clause to the Safety Regulations for Operating the Explosion-Protected Truck Model (Ex)

Explosion-protected trucks are labelled as follows:



II 2G IIB T4 (Gas)

Trucks with this label can be used in zone 1 areas at risk from explosion due to gas, steam or mist of explosion group IIB and temperature group T4. The lesser requirements of zone 2 and temperature classes T3, T2 and T1 are also covered.



II 2D T130°C

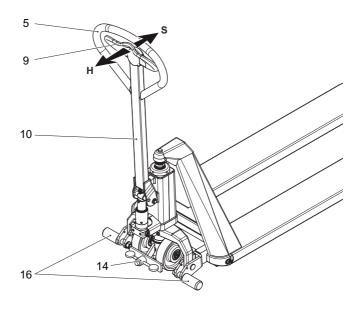
Trucks with this label can be used in zone 21 areas at risk from explosion due to fibres, lint or electrically conductive dust. The maximum surface temperature of the truck is 130 °C and the minimum ignition temperature must be at least 195 °C. The smouldering temperature must be 205 °C for a maximum truck surface temperature of 130 °C.

## **↑** WARNING!

Dust, contamination and paint, acids and caustic solutions can cause a reduction or complete failure of electrical/electronic energy conducted to the ground.

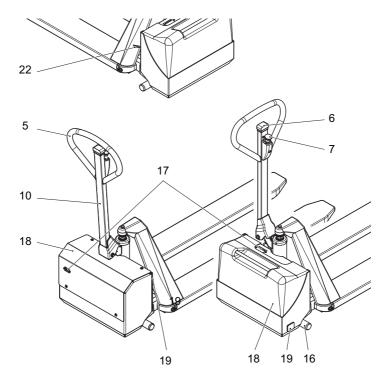
▶ The truck and transport routes must be treated accordingly.

# 3 Description of the Display and Controls AMX I15 / AMX I15p / AMX I15x



Item	Control /Display		Function
5	Handle	•	To pull the truck.
			<ul> <li>To push the truck.</li> </ul>
9	"Lift//neutral/lower load handler" handle	•	<ul> <li>In position "H" (lifting): Moving the tiller raises the load handler.</li> </ul>
			In position "neutral": Travel
			<ul><li>In position "S" (lowering): Lowers the</li></ul>
			load handler.
10	Tiller	•	<ul> <li>Steers the truck.</li> </ul>
			<ul> <li>Raises the load handler.</li> </ul>
14	Foot-operated parking brake	0	Prevent the truck from rolling away.
16	Support legs	•	<ul> <li>Support the truck when the load handler is raised.</li> </ul>

# 4 Description of the Display and Controls AMX I15e / AMX I15ep



Item	Control /Display		Function
5	Handle	•	<ul> <li>To pull the truck.</li> </ul>
			<ul> <li>To push the truck.</li> </ul>
6	"Load handler lift/lower" rocker switch	•	Lifts or lowers the load handler.
7	Emergency disconnect	•	<ul> <li>Emergency cut-out for the lifting and</li> </ul>
	switch		lowering functions.
10	Tiller	•	<ul> <li>Steers the truck.</li> </ul>
16	Support legs	•	<ul> <li>Support the truck when the load handler</li> </ul>
			is raised.
17	Battery discharge indicator	•	<ul> <li>Shows the battery charge status.</li> </ul>
18	Cover	•	<ul> <li>Protects the battery and power units.</li> </ul>
19	Charging socket	•	<ul> <li>Charging the battery.</li> </ul>
22	Foot-operated parking brake	0	<ul> <li>Prevents the truck from rolling away (only AMX 115e).</li> </ul>

## 5 Starting up the truck

## 5.1 Checks and Operations to Be Performed Before Starting Daily Work

## **↑** WARNING!

Damage and other truck or attachment (optional equipment) defects can result in accidents.

If damage or other truck or attachment (optional equipment) defects are discovered during the following checks, the truck must be taken out of service until it has been repaired.

- ▶ Report any defects immediately to your supervisor.
- ► Mark defective truck and take out of service.
- ▶ Do not return the industrial truck to service until you have identified and rectified the fault.

### Inspection before daily operation

#### Procedure

- · Check the whole of the outside of the truck for signs of damage and leaks.
- Check the load handler for visible signs of damage such as cracks, bent or severely worn forks.
- · Check the load wheels for damage.
- Check that the markings and labels are present, clean and legible, see "Identification Points and Data Plates AMX I15 / AMX I15p / AMX I15x" on page 22 or see "Identification Points and Data Plates AMX I15e / AMX I15ep" on page 23.

## 5.2 Preparing the Truck for Operation AMX I15e / AMX I15ep

## Switching on the lift function

#### Requirements

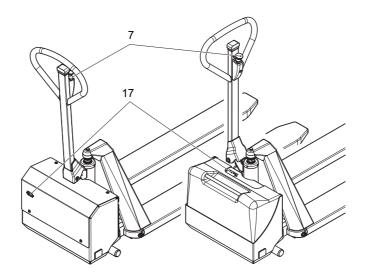
For checks and operations to be performed before starting daily operation, see
 "Checks and Operations to Be Performed Before Starting Daily Work" on page 46.

#### Procedure

• Turn the emergency disconnect switch (7) clockwise as far as it will go.

Truck is operational.

The battery discharge status is indicated by the battery discharge indicator (17).



## 6 Industrial Truck Operation

## 6.1 Safety regulations for truck operation

#### Travel routes and work areas

Only use lanes and routes specifically designated for truck traffic. Unauthorised third parties must stay away from work areas. Loads must only be stored in places specially designated for this purpose.

The truck must only be operated in work areas with sufficient lighting to avoid danger to personnel and materials. Additional equipment is necessary to operate the truck in areas of insufficient lighting.

## ↑ DANGER!

Do not exceed the permissible surface and point loading on the travel lanes. At blind spots get a second person to assist.

The driver must ensure that the loading dock /dock leveller cannot be removed or come loose during loading/unloading.

#### Conduct when pulling/pushing

The operator must adapt the travel speed to local conditions. The truck must be pushed/pulled at slow speed when negotiating bends or narrow passageways, when passing through swing doors and at blind spots. The operator must always observe an adequate braking distance between the forklift truck and the vehicle in front and must be in control of the truck at all times. Abrupt stopping (except in emergencies), rapid U turns and overtaking at dangerous or blind spots are not permitted. Do not lean out or reach beyond the working and operating area.

#### Visibility when pulling/pushing

The operator must look in the direction of travel and must always have a clear view of the route ahead. If the truck is carrying loads that affect visibility, the truck must be pulled against the load direction. If this is not possible, a second person must walk alongside the truck as a lookout to observe the travel route while maintaining eye contact with the operator. Move the truck only at walking pace and with particular care. Stop the truck as soon as you lose eye contact.

#### Negotiating slopes and inclines

## **⚠ WARNING!**

Do not negotiate slopes or inclines.

## Negotiating lifts and dock levellers

Lifts may only be negotiated if they have sufficient capacity, are suitable for driving on and authorised for truck traffic by the owner. The driver must satisfy himself of the above before entering these areas. The truck must be pushed into lifts with the load in front and must take up a position which does not allow it to come into contact with the walls of the lift shaft. Persons riding in the lift with the forklift truck must only enter the lift after the truck has come to a rest and must leave the lift before the truck.

## 6.2 Parking the truck securely

## **↑** WARNING!

#### An unsecured truck can cause accidents

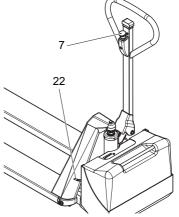
- ► Always park the truck on a level surface. In special cases the truck may need to be secured with wedges.
- ► Always fully lower the load handler.
- Select a place to park where no other people are at risk of injury from the lowered load handler.

## AMX I15ep / AMX I15e

#### Procedure

- Press down the emergency disconnect switch (7) fully.
- Only for (○) AMX I15e Press down the foot-operated parking brake (22).

The truck is parked.

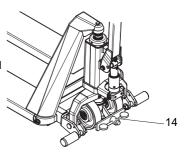


## (O) AMX I15 / AMX I15p / AMX I15x

#### Procedure

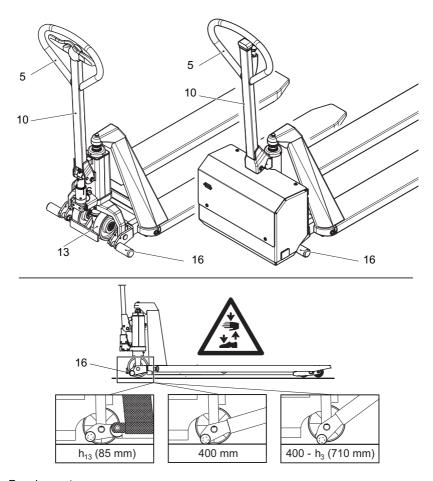
 Press down the right-hand foot-operated parking brake (14).

The truck is parked.



## 6.3 Pushing/Pulling, Steering, Braking

## 6.4 Pushing/Pulling



#### Requirements

- Start up the truck, see "Starting up the truck" on page 46.

#### Procedure

• Using the handle (5) on the tiller (10), the truck can be pushed or pulled in the required direction.

Support legs (16) stabilise the truck when the load handler is raised. The support legs lower automatically when the load handler reaches a lift height of 400 mm, so that the truck cannot be moved. The support legs are mounted eccentrically and can be adjusted as they gradually wear down.

## 6.5 Steering

Procedure

- Swing the tiller (10) to the left or right.
- In tight bends the tiller extends beyond the truck geometry.

#### 6.6 Brakes

The truck's braking characteristics depend largely on the surface condition of the lanes. The operator must take this into account when travelling.

## Manual braking

Procedure

• Pull or push on the handle (5) to counter the banking movement.

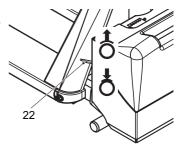
The truck brakes.

## (C) Braking the AMX I15e with the footoperated parking brake

Procedure

 Press down the foot-operated parking brake (22).

The truck brakes.

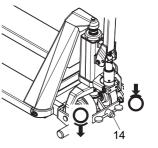


## (O) Braking the AMX I15e / AMX I15p / AMX I15x with the foot-operated parking brake

Procedure

 Press down the right-hand foot-operated parking brake (14).

The truck brakes.



## 6.7 Lifting, transporting and depositing loads

## **↑** WARNING!

### Unsecured and incorrectly positioned loads can cause accidents

Before lifting a load unit, the driver must make sure that it has been correctly palletised and does not exceed the truck's capacity.

- ▶ Instruct other people to move away from the hazardous area of the truck. Stop using the truck if people do not vacate the hazardous area.
- ▶ Only carry loads that have been correctly secured and positioned. Use suitable precautions to prevent parts of the load from tipping or falling down.
- ▶ Damaged loads must not be transported.
- ▶ Never exceed the maximum loads specified on the capacity chart.
- Never stand underneath a raised load handler.
- ▶ Do not stand on the load handler.
- ▶ Do not lift other people on the load handler.
- Insert the load handler as far as possible underneath the load.

## NOTE

Adapt a slower speed when stacking and retrieving.

#### 6.7.1 Raising a load

#### Lifting loads

#### Requirements

- Load unit correctly palletised.
- Load unit weight matches the truck's capacity.
- Load handler evenly laden for heavy loads.

#### Procedure

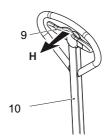
- · Drive the truck slowly up to the pallet.
- Slowly insert the load handler into the pallet until the fork face touches the pallet.
   The load unit must not extend by more than 50 mm beyond the fork tips.

### **AMX I15 / AMX I15p / AMX I15x**

#### Procedure

- Push handle (9) in the "H" direction.
- Lift the load handler by moving the tiller (10) up and down until you reach the desired lifting height.

The load is lifted.

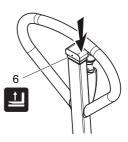


## AMX I15e / AMX I15ep

#### Procedure

 Press "Load handler lift/lower" rocker switch (6) to the right.

The load is lifted.



## 6.7.2 Transporting a load

## Transporting loads

#### Requirements

- Load unit positioned correctly on the forks.
- Good ground conditions.

#### Procedure

- Adapt your travel speed to the conditions of the route and the load you are transporting.
- Move truck at a constant speed.
- Watch out for other traffic at crossings and passageways.
- Always move the truck with a lookout at blind spots.

## **↑** WARNING!

Do not negotiate slopes or inclines.

#### 6.7.3 Depositing a load

#### Depositing load units

#### NOTE

Loads must not be deposited on travel or escape routes, in front of safety mechanisms or plant equipment that must be accessible at all times.

### Requirements

- Storage location suitable for storing the load.

#### Procedure

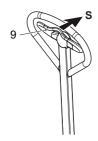
· Drive the truck carefully up to the storage location.

#### **AMX I15 / AMX I15p / AMX I15x**

#### Procedure

• Push handle (9) in the "S" direction.

The load is lowered.

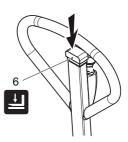


## AMX I15e / AMX I15ep

#### Procedure

 Press "Load handler lift/lower" rocker switch (6) to the left.

The load is lowered.



Do not set down the load abruptly in order to avoid damaging the load and the load handler.

Carefully remove the load handler from the pallet.

The load unit has been lowered.

## 7 Troubleshooting

This chapter enables the user to locate and rectify basic faults or the results of incorrect operation on his own. When trying to locate a fault, proceed in the order shown in the table.

If the industrial truck cannot be restored to operational status after carrying out the following remedial operations, contact the manufacturer's service department. Additional troubleshooting must only be performed by the manufacturer's specialist service engineers. The manufacturer has a service department specially trained for these tasks.

In order for customer services to react quickly and specifically to the fault, the following information is essential:

- Truck serial number
- Error description
- Current location of truck.

## 7.1 Load Cannot Be Lifted AMX I15 / AMX I15p / AMX I15x

Possible cause	Corrective measures
Hydraulic oil level too low	Check the hydraulic oil level
Handle (9) in the wrong position	Push handle into "H" position
Excessive load	Note maximum capacity, see data plate

## 7.2 Load Cannot Be Lifted/Lowered AMX I15e / AMX I15ep

Fault	Possible cause	Corrective measures		
No lifting or lowering	Emergency disconnect switch	Turn the emergency disconnect switch fully clockwise.		
function when	Battery charge too low	Charge the battery		
operating the "Load handler	Faulty fuse	Check fuses F1, 2F1, F10		
lift/lower"	Hydraulic oil level too low	Check the hydraulic oil level		
rocker switch (6)	Excessive load	Note maximum capacity, see data plate		
	Lift cylinder damaged	Notify manufacturer's service department.		
LED on the	Charging error	Restart charging		
charge/ discharge indicator flashing red rapidly	Motor / motor controller error	Restart the truck. If the message persists, contact the manufacturer's service department.		
LED on the charge/ discharge indicator flashing red	Battery charge too low.	Charging the battery.		

## F Industrial Truck Maintenance

## 1 Operational Safety and Environmental Protection

The checks and servicing operations contained in this chapter must be performed in accordance with the maintenance checklist service intervals.

## ↑ WARNING!

#### Risk of accidents and component damage

Any modification to the truck, in particular the safety mechanisms, is prohibited.

**Exception:** Operating companies should only make changes or have changes made to powered industrial trucks if the manufacturer is no longer operating in the field and there is no successor to the business; operating companies must however:

- Ensure that the changes to be made are planned, tested and performed by a specialist engineer in industrial trucks taking safety into account.
- Keep permanent graphic records of the plans, tests and completion of the changes
- Carry out and have authorised the respective changes to the capacity data plates, decals and stickers as well as the operator and service manuals.
- Attach permanent and clearly visible marking to the truck indicating the types of changes made, the date of the changes and the name and address of the organisation responsible for the work.

#### NOTE

Only original spare parts are subject to the manufacturer's quality control. To ensure safe and reliable operation, use only the manufacturer's spare parts.

**→** 

On completion of inspection and service work, carry out the operations listed in the "Recommissioning the truck after cleaning or maintenance work" section (see "Restoring the truck to service after maintenance and repairs" on page 67).

#### 2 **Maintenance Safety Regulations**

### Maintenance and repair personnel

**→** 

The manufacturer has a service department specially trained for these tasks. A maintenance contract with the manufacturer will ensure trouble-free operation.

Truck maintenance and repair work must only be carried out by specially trained personnel. The following operations are assigned to the following target groups.

#### **Customer Services**

Customer Services are specially trained in the use of the truck and are able to carry out maintenance and repairs independently. Customer Services are aware of the relevant standards, quidelines and safety regulations as well as potential risks.

#### Operating company

The maintenance personal of the operating company has the technical expertise and experience to perform the activities in the maintenance check list for the operating company. The maintenance and repair work to be performed by the operating company are also written down, see "Maintenance and repairs" on page 64.

#### Lifting and jacking up

#### ↑ WARNING!

## Lifting and jacking up the truck safely

In order to raise the truck, the lifting gear must only be secured to the points specially provided for this purpose.

In order to raise and jack up the truck safely, proceed as follows:

- ▶ Jack up the truck only on a level surface and prevent it from moving accidentally.
- ► Always use a jack with sufficient capacity.
- In order to raise the truck, the lifting gear must only be secured to the points specially provided for this purpose, see "Transport and Commissioning" on page 25.
- ▶ When jacking up the truck, take appropriate measures to prevent it from slipping or tipping over (e.g. wedges, wooden blocks).

#### Cleaning



## CAUTION!

#### Fire hazard

Do not use flammable liquids to clean the industrial truck.

- ▶ Disconnect the battery before starting cleaning work.
- ► Carry out all necessary safety measures to prevent sparking before cleaning (e.g. by short-circuiting).

## **↑** CAUTION!

## Risk of component damage when cleaning the truck

Cleaning with a high-pressure cleaner can result in malfunctions due to humidity.

- ► Cover all electronic system assemblies (controllers, sensors, motors etc.) before cleaning the truck with a high-pressure cleaner.
- ▶ Do not hold the jet of the high-pressure cleaner on the labels to avoid damaging them (see "Identification Points and Data Plates AMX I15 / AMX I15p / AMX I15s" on page 22 or see "Identification Points and Data Plates AMX I15e / AMX I15ep" on page 23.
- ▶ Do not clean the truck with a steam jet.

#### Cleaning the truck

#### Requirements

 Prepare the truck for maintenance and repairs (see "Preparing the truck for maintenance and repairs" on page 64).

#### Tools and Material Required

- Water-based solvents
- Sponge or cloth

#### Procedure

- Clean the surface of the truck with water-based solvents and water. Use a sponge or cloth to clean.
- In particular, clean the following areas:
  - · Oil filler ports and their surroundings
  - Grease nipples (before lubrication)
- Dry the truck after cleaning, e.g. with compressed air or a dry cloth.
- Carry out all the tasks in the section "Recommissioning the truck after cleaning or maintenance work" (see "Restoring the truck to service after maintenance and repairs" on page 67).

The truck is now clean.

#### Consumables and used parts



#### Consumables and used parts are an environmental hazard

Used parts and consumables must be disposed of in accordance with the applicable environmental-protection regulations. Oil changes should be carried out by the manufacturer's customer service department, whose staff are specially trained for this task.

Note the safety regulations when handling these materials.

#### Settings

When repairing or replacing hydraulic or mechanical components, always note the truck-specific settings.

## ↑ WARNING!

## The use of wheels that do not comply with the manufacturer's specifications can result in accidents

The quality of wheels affects the stability and driving characteristics of the truck.

Uneven wear affects the truck's stability and increases the stopping distance.

- ► After replacing wheels, make sure the truck is not skewed.
- ► Always replace wheels in pairs, i.e. the left- and right-hand wheels at the same time.



When replacing wheels fitted at the factory, only use the manufacturer's original spare parts. Otherwise the manufacturer's specification will not be adhered to.

#### Hydraulic system

## MARNING!

#### Hydraulic leaks can cause accidents

Hydraulic oil can escape from a leaking and faulty hydraulic system. Pressurised hydraulic oil can penetrate the skin through fine holes or hairline cracks in the hydraulic system, causing severe injury.

- ► Call for a doctor immediately in the event of an injury.
- ▶ Report any defects immediately to your supervisor.
- ► Mark defective truck and take out of service.
- ► Do not return the industrial truck to service until you have identified and rectified the fault
- ▶ Spilled or leaking fluids must be removed immediately with an appropriate bonding agent. The bonding agent / consumable mixture must be disposed of in accordance with regulations.

#### 3 Lubricants and Lubrication Schedule

## 3.1 Handling consumables safely

## Handling consumables

Consumables must always be handled correctly. Follow the manufacturer's instructions.

## **↑** WARNING!

## Improper handling is hazardous to health, life and the environment

Consumables can be flammable.

- ▶ Keep consumables away from hot components and naked flames.
- ► Always keep consumables in prescribed containers.
- ► Always fill consumables in clean containers.
- ▶ Do not mix up different grades of consumable. The only exception to this is when mixing is expressly stipulated in the operating instructions.

## **↑** CAUTION!

#### Spilled consumables can cause slipping and endanger the environment

Risk of slipping from spilled consumables. The risk is greater when combined with water.

- ▶ Do not spill consumables.
- ▶ Spilled consumables must be removed immediately with an appropriate bonding agent.
- ▶The bonding agent / consumable mixture must be disposed of in accordance with regulations.

## ↑ WARNING!

#### Improper handling of oils can be hazardous

Oils (chain spray / hydraulic oil) are flammable and poisonous.

- ▶ Dispose of used oils in accordance with regulations. Store used oil safely until it can be disposed of in accordance with regulations.
- ▶ Do not spill oil.
- ▶ Spilled oils must be removed immediately with an appropriate bonding agent.
- ▶The mixture consisting of the bonding agent and oil must be disposed of in accordance with regulations.
- ▶ Observe national regulations when handling oils.
- Wear safety gloves when handling oils.
- ▶ Prevent oil from coming into contact with hot motor parts.
- ▶ Do not smoke when handling oil.
- Avoid contact and digestion. If you swallow oil do not induce vomiting but seek medical assistance immediately.
- ▶ Seek fresh air after breathing in oil fumes or vapours.
- ▶ If oil has come into contact with your skin, rinse your skin with water.
- If oil has come into contact with your eyes, rinse them with water and seek medical assistance immediately.
- ▶ Replace oil-soaked clothing and shoes immediately.

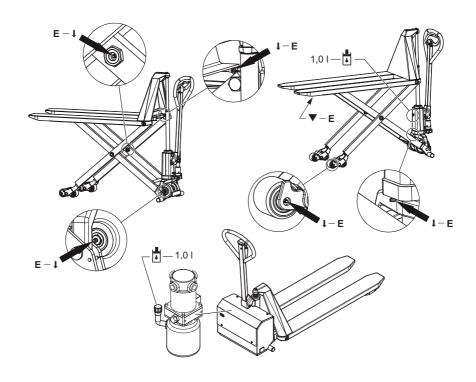
### **↑** CAUTION!

#### Consumables and used parts are an environmental hazard

Used parts and consumables must be disposed of in accordance with the applicable environmental-protection regulations. Oil changes should be carried out by the manufacturer's customer service department, whose staff are specially trained for this task.

Note the safety regulations when handling these materials.

## 3.2 Lubrication Schedule



•	Contact surfaces	<b>Ů</b>	Hydraulic oil filler cap
	Grease nipple		

## 3.3 Consumables

Code	Order no.	Quantity	Description	Used for
Α	50 449 669	5.0 L	H-LP 46, DIN 51524	Hydraulic system
В	29 202 020	5.0 L	Aeroshell Fluid 4	Hydraulic system
Е	29 202 050	1.0 kg	Grease	Lubrication service

## Grease guidelines

Code	Saponification	Dew point °C	Worked penetration at 25 °C		Application temperature °C
Е	Lithium	185	265 - 295	2	-35/+120

## 4 Maintenance and repairs

## 4.1 Preparing the truck for maintenance and repairs

To avoid accidents observe the following:

#### Procedure

- Park the truck securely, see "Parking the truck securely" on page 49.
- When working under a raised lift truck, secure it to prevent it from lowering, tipping
  or sliding away.
- Disconnect the battery (AMX I15e and AMX I15ep) to prevent the truck from being switched on accidentally.

## 4.2 Removing the Cover AMX I15e / AMX I15ep

#### Requirements

 Prepare the truck for maintenance and repairs, see "Preparing the truck for maintenance and repairs" on page 64.

## **↑** CAUTION!

#### Risk of tripping due to a carelessly placed cover

- ▶ The cover is to be put aside so that there is no risk of tripping over it.
- ▶ Do not place the cover in a rack.
- ▶ Replace the cover immediately after maintenance and repair work.

#### AMX I15e

#### Procedure

Pull the cover up using the handle (65).

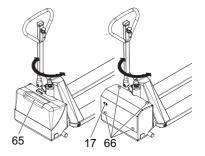
The cover has been removed.

## AMX I15ep

#### Procedure

- Remove 4 screws (66).
- Lift the cover up carefully and pull off the connector on the battery discharge indicator (17).

The cover has been removed.



## 4.3 Checking the Electrical Fuses AMX I15e / AMX I15ep

### 

#### Electrical current can cause accidents

Make sure the electrical system is voltage-free before starting work on it. Before starting maintenance on the electrical system:

- ▶ Park the truck securely, see "Parking the truck securely" on page 49.
- ▶ Press the emergency disconnect switch.
- ▶ Disconnect the battery.
- ▶ Remove any rings or metal bracelets etc. before working on electrical components.

#### **↑** CAUTION!

#### The use of incorrect fuses can cause fire and damage components

The use of incorrect fuses can damage the electrical system and result in fire. The safety and functionality of the truck cannot be ensured.

▶ Use only fuses with the prescribed rated current.

#### Checking fuses

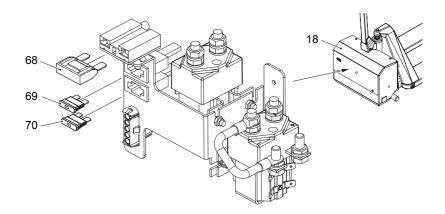
#### Requirements

 Truck prepared for maintenance and repairs, see "Preparing the truck for maintenance and repairs" on page 64.

#### Procedure

- Remove the cover, (18), see "Removing the Cover AMX I15e / AMX I15ep" on page 64.
- · Check the fuse ratings against the table and replace if necessary.

The fuses are now checked.



Item	Description	To protect	Rating
68	F1	Overall control circuit fuse	100 A

Item	Description	To protect	Rating
69	2F1	Pump motor	5 A
70	F10	Battery charger fuse	20 A

## 4.4 Restoring the truck to service after maintenance and repairs

#### Procedure

- Thoroughly clean the truck.
- Lubricate the truck according to the lubrication schedule, see "Lubrication Schedule" on page 63.
- Check the hydraulic oil for condensed water and replace if necessary.

  The manufacturer's customer service department is specially trained to carry out these operations.
  - If necessary, clean the battery, grease the battery terminal screws with terminal grease and connect the battery.
  - Charge the battery, see "Charging the battery" on page 32.

## **↑** WARNING!

## Faulty brakes can cause accidents

Test the brakes immediately as soon as the truck has been commissioned.

- ▶ Report any defects immediately to your supervisor.
- ► Tag out and decommission a faulty lift truck.
- ▶ Only return the truck to service when you have identified and rectified the fault.
- Start up the truck, see "Starting up the truck" on page 46.

## 5 Decommissioning the Industrial Truck

If the truck is to be out of service for more than a month, it must be stored in a frostfree and dry room. All necessary measures must be taken before, during and after decommissioning as described hereafter.

When the truck is out of service it must be jacked up so that all the wheels are clear of the ground. This is the only way of ensuring that the wheels and wheel bearings are not damaged.

Jack up the truck, see "Maintenance Safety Regulations" on page 58.

If the truck is to be out of service for more than 6 months, agree further measures with the manufacturer's customer service department.

## 5.1 Prior to decommissioning

#### Procedure

- Thoroughly clean the truck, see "Maintenance Safety Regulations" on page 58.
- · Prevent the truck from rolling away accidentally.
- Check the hydraulic oil level and replenish if necessary, see "Consumables" on page 63.
- · Apply a thin layer of oil or grease to any non-painted mechanical components.
- Lubricate the truck according to the lubrication schedule, see "Lubrication Schedule" on page 63.
- If necessary, charge the battery, see "Charging the battery" on page 32.
- Disconnect the battery, clean it and grease the battery terminal screws with terminal grease.
- In addition, follow the battery manufacturer's instructions.

## 5.2 Action to be Taken while Taking the Truck out of Service AMX I15e / AMX I15ep

#### NOTE

### Full discharge can damage the battery

Self-discharge can cause the battery to fully discharge. Full discharge shortens the useful life of the battery.

► Charge the battery at least every 2 months.

Charge the battery, see "Charging the battery" on page 32.

## 5.3 Restoring the truck to service after decommissioning

#### Procedure

- Thoroughly clean the truck, see "Maintenance Safety Regulations" on page 58.
- Lubricate the truck according to the lubrication schedule, see "Lubrication Schedule" on page 63.
- If necessary, clean the battery, grease the battery terminal screws with terminal grease and connect the battery.
- · Charge the battery, see "Charging the battery" on page 32.
- Check the hydraulic oil for condensed water and replace if necessary.

  The manufacturer's customer service department is specially trained to carry out these operations.
  - Start up the truck, see "Starting up the truck" on page 46.

### ↑ WARNING!

#### Faulty brakes can cause accidents

As soon as the truck has been started, test the brakes several times.

- ▶ Report any defects immediately to your supervisor.
- ▶ Tag out and decommission the faulty industrial truck.
- ▶ Only return the truck to service when you have identified and rectified the fault.

## 6 Safety tests to be performed at intervals and after unusual incidents

The truck must be inspected at least annually (refer to national regulations) or after any unusual event by a qualified inspector. The manufacturer offers a safety inspection service which is performed by personnel specifically trained for this purpose.

A complete test must be carried out on the technical condition of the truck with regard to safety. The truck must also be examined thoroughly for damage.

The operating company is responsible for ensuring that faults are rectified immediately.

## 7 Final de-commissioning, disposal

Final de-commissioning or disposal of the truck in must be performed in accordance with the regulations of the country of use. In particular, regulations governing the disposal of batteries, consumables and electronic and electrical systems must be observed.

The truck must only be disassembled by trained personnel in accordance with the procedures as specified by the manufacturer.

## 8 Human vibration measurement

Vibrations that affect the operator over the course of the day are known as human vibrations. Excessive human vibrations will cause the operator long term health problems. The European "2002/44/EC/Vibration" operator directive has therefore been established to protect operators. To help operators to assess the application situation, the manufacturer offers a service of measuring these human vibrations.

## 9 Servicing and Inspection

## ↑ WARNING!

#### Lack of maintenance can result in accidents

Failure to perform regular servicing can lead to truck failure and poses a potential hazard to personnel and equipment.

▶Thorough and expert servicing is one of the most important requirements for the safe operation of the industrial truck.

The application conditions of an industrial truck have a considerable impact on component wear. The following service intervals are based on single-shift operation under normal operating conditions. They must be reduced accordingly if the equipment is to be used in conditions of extreme dust, temperature fluctuations or multiple shifts.

#### NOTE

To prevent damage due to wear, the manufacturer recommends an on-site application analysis to agree on appropriate service intervals.

The following maintenance checklist lists the activities to be performed and the respective intervals to be observed. Maintenance intervals are defined as:

W = Every 50 service hours, at least weekly

A = Every 500 service hours

B = Every 1000 service hours, or at least annually

C = Every 2000 service hours, or at least annually

= Standard maintenance interval

\* = Cold store maintenance interval (in addition to standard maintenance interval)



"W" maintenance interval operations should be performed by the operating company.

During the run-in period, after approx. 100 service hours, the owner must check the wheel nuts/bolts and re-tighten if necessary.

## 10 Maintenance checklist

Elect	rical system AMX I15e / AMX I15ep	W	Α	В	С
1	Check operation.	•			
2	Make sure cables are secure and check for damage.	•			
3	Check fuse ratings.	•			
4	Make sure switches are secure and are operating correctly.	•			
5	Check battery terminal connections are secure.	•			
6	Check battery cables for damage, replace if necessary.	•			

Trave	Travel		Α	В	С
1	Check wheels for wear and damage.	•			
2	Check bearings and fastening.	•			
3	Check tiller return function.	•			
4	Check the steering play	•			
5	Check the mechanical parts of the steering column; grease if necessary.	•			

Chas	sis and superstructure	W	Α	В	С
1	Check chassis and load-bearing components for damage.	•			
2	Check screw connections	•			
3	Check labels are legible and complete.	•			

Hydraulic operations		W	Α	В	С
1	Check the lift function.	•			
2	Check that hydraulic connections, hoses and pipes are secure and check for leaks and damage.	•			
3	Make sure hydraulic cylinder is secure and check for leaks and damage.	•			
4	Check hydraulic oil level and top up if necessary.	•			
5	Replace hydraulic oil				•

Agreed services		W	Α	В	С	
Г	1	Lubricate truck according to the lubrication schedule.			•	
	2	Demonstration after maintenance.			•	
	3	Carry out a test run with the rated load and, if necessary, with a customer-specific load.			•	