



8.1 General Information	
For which professional activities do you need a <i>verification of special knowledge</i>?	<ul style="list-style-type: none">▪ crane operation▪ lift truck operation▪ blasting (explosions)▪ gas rescue service▪ diving (underwater) work
What types of lift trucks do you know?	<ul style="list-style-type: none">▪ front-end fork truck▪ high reach truck▪ side loader▪ special design (four way forklift; container handler)
Areas of application for a high reach forklift truck?	Narrow spaces + risk of tipping during transport is reduced + operates within narrow passage - not good for outdoors or loading trucks
Areas of application for side loaders?	Long goods + very stable - no row stacking possible
Name the preconditions of employees for lift truck operation!	<ul style="list-style-type: none">▪ at least 18 years old▪ mental & physical ability▪ proof of specialized knowledge▪ employer instruction▪ additional driver's licence
What are the four labels and signs that must be visible on a fork truck?	<ul style="list-style-type: none">▪ don't step under elevated loads▪ riding prohibited▪ load table▪ type plate



8.2 Legal Provisions	
What does the term “instructed by employer” mean?	<p>Employers have to instruct employees about safety and health issues in the following way:</p> <ul style="list-style-type: none"> ▪ verifiable ▪ understandable (mother tongue) ▪ by a qualified person ▪ before start of the work but during working hours ▪ if necessary repeat! <p>Reasons to repeat:</p> <ul style="list-style-type: none"> ▪ in case anything changes (new forklift, new goods, shelves, ...) ▪ accidents and nearly accidents
Obligations to be fulfilled by employees...	<p>Protect life & prevent accidents:</p> <ul style="list-style-type: none"> ▪ use provided safety equipment ▪ use work equipment safely ▪ don't change or deinstall safety installations ▪ no alcohol or drugs at work ▪ report accidents and nearly accidents to the company ▪ warn others of possible dangers ▪ make sure colleagues act accordingly
Preconditions for using fork trucks?	<ul style="list-style-type: none"> ▪ inspect for obvious faults (daily inspection!) ▪ make sure that nobody is endangered BEFORE starting the truck <p>Check breaks, lamps, warning devices, safety installations & functionality of lifting equipment and truck daily!</p>
Interval of lift truck periodic inspections (=recurring inspection)?	<ul style="list-style-type: none"> ▪ once a year ▪ maximum 15 month
How can the lift truck driver recognize that the inspection is necessary?	<p>Documented in the inspection log. The sticker only is not a valid proof!</p>
Name different types of inspections on a lift truck!	<p>Acceptance inspection</p> <ul style="list-style-type: none"> ▪ testing work baskets with the fork truck <p>recurring inspection</p> <ul style="list-style-type: none"> ▪ as described in <i>periodic inspection</i> <p>inspection after extraordinary incidents</p> <ul style="list-style-type: none"> ▪ falling of loads



	<ul style="list-style-type: none">▪ tipping over▪ collision▪ overload▪ influence of heat▪ substantial unprevented changes▪ major repairs
What must the lift truck driver consider regarding storage?	Storage of items has to be done in a way that prevents employees (health and safety). Take care about condition, character and danger of stored items, in particular: <ul style="list-style-type: none">▪ stability and applicability of basis / floor▪ stability of stored item itself & of equipment used▪ condition of container or packaging▪ angle of slope of bulk goods▪ spacing between stored items or distance to structural elements▪ possible external influences (weather, climate, ...)
What does <i>operating approval</i> mean?	Additional Driving License from Employer <ul style="list-style-type: none">• for cranes and self-acting equipment• only handed out after instruction
What regulations and precautions must be observed when working with work baskets?	<ul style="list-style-type: none">▪ work area must be secured▪ the ground must have sufficient load capacity▪ lift truck and work basket must fit together (acceptance inspection of lift truck with work basket)▪ only persons with physical and mental abilities may be lifted▪ lifted persons also has to be instructed▪ don't exceed maximum number of people and the load (type plate)▪ communication between people in the basket and lift truck operator must be possible▪ lift truck operator may not leave his operation place (driving seat)▪ don't raise stand within work basket (keep standing on the basket floor)



	<ul style="list-style-type: none">▪ lift truck breaks have to be activated permanently while lifting people▪ lift truck may not be moved when people are in the work basket▪ lifting and lowering speed of basket may not exceed 0,5m/s▪ work basket may only be used for short-time work▪ in case of pneumatic tyres: twin-tires mandatory!!!
How can you tell the difference between a work basket and a wire mesh box?	<ul style="list-style-type: none">▪ closed bottom▪ rim boards (8cm)▪ minimum height of railing 1m plus a central bar▪ door is at least 0,5m wide▪ door opens to the inside and can be locked▪ safety roof only needed in case of danger from above▪ type plate (maximum number of people and weight)▪ warning markings▪ at least 175cm at the back and protected against pinching and shear points
Name reasons under which the company can deviate from the road traffic ordinance (Straßenverkehrsordnung) in operating areas?	<ul style="list-style-type: none">▪ absolutely necessary▪ changes must not endanger anyone▪ anyone who enters the company area must be informed (sign or instruction)
What must be considered if the lift truck performs longer drives on public roads? (exceptions possible for very short distances)	<ul style="list-style-type: none">▪ design speed up to 10 km/h<ul style="list-style-type: none">- complete light equipment- breakdown triangle, medical kit & reflecting vest- fork prong protection guard (driving without load on roads with public traffic)- 10km sign▪ design speed > 10km/h additionally:<ul style="list-style-type: none">- legal registration plate- according driver's license according to gross weight (C, F, or G)



Target Questions

Operating Fork Trucks

	<ul style="list-style-type: none">▪ design speed > 25km/h additionally: - periodic inspection (§57 KFG)
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8.3 Basic Concepts of Mechanics	
How can you determine the mass (weight) of an object?	<ul style="list-style-type: none"> ▪ accompanying document ▪ written on the load ▪ professional experience (serial production; same weights) ▪ based on calculation ▪ weighing
Explain the term “density” and give some “specific weights”?	<p>Density of mass is a known material value. It is the relation between mass (of a material) to its volume (or simply the weight of a material per m³).</p> <ul style="list-style-type: none"> ▪ 1m³ water = 1000kg (1t) ▪ 1m³ wood = 800kg (0,8t) ▪ 1m³ concrete = 2400kg (2,4t) ▪ 1m³ aluminum = 2700kg (2,7t) ▪ 1m³ steel = 8000kg (8t)
How can you determine the maximum load capacity of a fork truck?	Load table
Explain the term <i>load's center of gravity</i>!	This is the weight wise “center point” of a body.
How do you determine the center of gravity for asymmetrical loads?	<ul style="list-style-type: none"> ▪ estimating by lifting slightly from multiple sides ▪ by the international symbol for center of gravity
Explain the term <i>load center of gravity distance</i>!	the distance between center of gravity and fork prong back
List tilting reasons of a lift truck!	<ul style="list-style-type: none"> ▪ overloading (either mass or center of mass distance) ▪ travelling too fast into curves with elevated load ▪ unequal tire pressure ▪ lifting on slopes and rough (uneven) surfaces ▪ forward slanted load abrupt braking



8.4 Technology	
What inspections are required on the steering systems?	<ul style="list-style-type: none"> ▪ leak proofness of hydraulic system ▪ no free movement of steering wheel ▪ air tires: <ul style="list-style-type: none"> - air pressure according to user manual - tire-profile (use indicator)
List the tire types and their advantages and disadvantages!	<ul style="list-style-type: none"> ▪ air tires: shock absorbing but easily damaged ▪ solid rubber tires: for heaviest loads & very robust but not shock absorbing ▪ super elastic tires: shock absorbing and robust but creates black dust
Describe the functional inspection for brakes!	<ul style="list-style-type: none"> ▪ Standing brake test: lift truck may not be moved when parking brake is activated. ▪ Rolling brake test: brakes have to act synchronously. They may not pull to one side or lock (wheel).
How do you inspect the lift chains?	<ul style="list-style-type: none"> ▪ good connection of the bolts ▪ good lubrication - no rust! ▪ equal tension among both chains under load
Explain the term <i>free lift</i>?	The height that the fork prongs can reach without extending the total height of the lift truck (without the drive mast going up)
What inspection are required on the fork prongs?	Daily inspection: <ul style="list-style-type: none"> ▪ visual inspection for cracks (use spray to make visible) ▪ wear down on the bottom side max. 10% ▪ maximum angle 90°
Which transport equipment do you know?	<ul style="list-style-type: none"> ▪ euro pallets ▪ wire mesh boxes ▪ BIG BAGS ▪ IBC (Intermediate Bulk Container) Attention: Be careful when transporting liquids → centre of gravity can shift drastically! <ul style="list-style-type: none"> ▪ liquid gas bottles: always transport horizontally and use protective cap



Give the dimension and gross weight of a Euro pallet?	80 x 120 cm; maximum 1500 kg
List different options for securing goods?	<ul style="list-style-type: none"> ▪ wrapping foil ▪ plastic or metal bands ▪ special (shape) pallets ▪ attached frames ▪ wire-mesh boxes
List the various types of attached devices – what changes when they are used?	<ul style="list-style-type: none"> ▪ turning Device ▪ boom ▪ crane Arm (swinging load on ropes or chains) ▪ dumper ▪ snow Plough ▪ container Dumper <p>The load capacity of lift trucks is reduced by increased weight and additional rack dimensions.</p> <p>A new specific load table is required!!!</p>
How do you inspect the hydraulic system of a lift truck?	<ul style="list-style-type: none"> ▪ check for leaks (look underneath) ▪ proper function (check possible movements) ▪ fluid level (lifting frame in lowest position)
What hydraulic pressure is used in lift trucks?	100-300 bar
List the types of hydraulic safety equipment and their functions?	<p>pressure limiting valve: protects the hydraulic system against overpressure from pump.</p> <p>lowering brake valve: keeps the lowering speed with or without load equal.</p> <p>hose rupture safety valve: prevents lowering load in case of hose rupture.</p>
What must be done after charging the battery on an electrical lift truck?	<p>ALLWAYS turn of charger before unplugging connection (prevent sparks)!</p> <p>Then,</p> <ul style="list-style-type: none"> ▪ check vent holes ▪ check battery liquid level (10mm above lead plates)



	<ul style="list-style-type: none">▪ check battery capacity (displayed on an instrument)
Welches Gas entsteht beim Laden von Batterien (+ Eigenschaften)?	<ul style="list-style-type: none">▪ hydrogen (electrolytic gas)<ul style="list-style-type: none">- lighter than air → travels up- no smoking or open fire!
Explain the procedure for changing the liquid gas bottle on a lift truck?	<ul style="list-style-type: none">▪ outdoors only▪ never park on manholes (3m distance!)▪ close bottle valve tightly, let forklift run empty - until engine stops (emptying pipes)▪ open pipe connections slowly (left hand thread)▪ attach protection cap and remove gas bottle▪ place empty to the returnable bottle deposit▪ pick a full gas bottle (pay attention on the designation <i>Motorgas</i>)▪ check the valve on foreign matter or substances (e.g. dirt)▪ secure gas bottle thoroughly to the bottle-bracket▪ check valve sealing (bottle valve or hose) - replace sealing periodically▪ connect and check the fitting connection on leak-proofness▪ open valve slowly (don't use force)▪ check tightness (use soapy water or sprays - no fire!)▪ check whether gas bottle is secured properly
How do you store liquid gas bottles?	<ul style="list-style-type: none">▪ in well ventilated rooms▪ close to ground▪ full and empty bottles separately and labeled▪ standing and secured against falling over▪ close bottle valve tightly▪ secure bottle valve with a protective cap▪ bottle may not be pushed or thrown (no impact on bottle wall or valve)



	<ul style="list-style-type: none">▪ bottle must be protected against heat exposure▪ damaged bottles must be marked and withdrawn (out of order)▪ don't store gas bottles next to ducts and pits (3m distance minimum)
What must be done in the event of fire on a lift truck?	<ul style="list-style-type: none">▪ switch off the ignition▪ reduce speed and park forklift with parking brake▪ extinguish fire (use appropriate extinguishing agent – never water)<ul style="list-style-type: none">- for electric lift trucks – press EMERGENCY OFF BUTTON▪ disconnect battery (when possible)<ul style="list-style-type: none">- for liquid gas lift trucks – close bottle valve



8.5 Safety Installations	
What types of mechanical safety installations are there?	<ul style="list-style-type: none">▪ driver's cab▪ roof▪ load protection grate▪ parking brake▪ restraint system▪ driver's seat▪ fork prong guard
What electrical safety equipment is required on a lift truck?	<ul style="list-style-type: none">▪ horn▪ optical and acoustical warning devices (reverse beeper, blue light, ...)▪ work light▪ seat contact switch
Which installations must be used on public roads?	<ul style="list-style-type: none">▪ safety belt▪ fork prong guard (only without loads)



8.6 General Forklift Operations	
List regulations for the safe transport of loads!	<ul style="list-style-type: none">▪ operate only on adequate tracks and driving routes (plane, stable sustainable)▪ observe traffic code (Straßenverkehrsordnung)▪ cross railroad crossings slowly and in 90° angle▪ pay increased attention when operating indoors▪ observe passage heights and widths (on both sides at least 0,5m)▪ in danger situations use the horn to warn employees▪ pass swinging door in the middle - reduce to walking speed - give warning signals.▪ switch on the lights in darkness or by reduced sight▪ observe areas with reduced floor load capacity▪ reduce the load, when possible - pay attention on the load capacity of platforms, ramps coverings and elevators.▪ the sum of forklift, load and driver must be less than the load capacity▪ pay attention when entering elevators with loads▪ forklifts with operator stands or seats may not be operated from the floor (standing beside the fork lift truck)▪ never leave the forklift with elevated load.
How do you pick up loads correctly?	<ul style="list-style-type: none">▪ observe the load capacity of the forklift▪ determine the mass (weight)▪ determine the center of gravity distance▪ compare the load weight with the diagram▪ adjust the fork prongs (adjust distance according the load)



	<ul style="list-style-type: none"> enter the load with the fork prongs until the load touches the back of the fork prongs (deviation possible) <p>Then:</p> <ol style="list-style-type: none"> lift slightly up (15cm above ground) tilt back mast deactivate brake look back and drive
Where should lift trucks be parked?	<ul style="list-style-type: none"> in defined parking areas, or parallel to walls fork prongs hidden in dead spaces
How should you park a lift truck?	<ul style="list-style-type: none"> slant mast forward ALL THE WAY lower down fork prongs ALL THE WAY activate parking brake stop engine take out key and store safely close liquid gas bottle valve activate emergency shut off
How do can you recognize an explosion proof device?	EX - sign
List storage-bans!	<p>don't block:</p> <ul style="list-style-type: none"> roads and walkways rail tracks stairs and ramps doors & gates emergency exits escape routes safety installations (fire extinguisher, fire hose, water hydrants, gas valves, first aid kits, defibrillator, telephone, electrical circuit switches) crane entrances battery charging areas (1m distance)
What do you know about high racks?	<ul style="list-style-type: none"> field load: sum of all shelf loads shelf load: maximum permissible load per shelf <p>Only use NORM pallets in shelves (EUR/EPAL, ...)!!!</p> <p>Report damages immediately!!!!</p>