

Operating manual | Inspection book Including spare parts list

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TOP LIFT TSK 12000 DJ TOP LIFT 2.50 TTKAS DG

Serial No.:

Contents

1 General informations	4
1.1 Lift purpose	4
1.2 Liability	4
1.3 Owner/Employer responsibilities	4
1.4 Lift operator responsibilities	5
1.5 Safety regulations	6
1.6 Safety devices	7
1.7 Safety labels affixed to lift	
1.8 Protocols	. 10
1.9 Set up and test the lift	. 10
2. Lift master forms	.13
2.1 Manufacturer	.13
2.2 Purpose	.13
2.3 Changes to the design / construction	.13
2.4 Changing the assembly location	.13
3. Technical information	.14
3.1 Technical data	.14
3.2 Data sheet	.15
3.3 Hydraulic plan	. 18
3.4 Pneumatic plan	. 20
3.5 Electrical circuit diagram	.21
4. Installation	. 23
5. Operating instructions	. 25
5.1 Lifting the vehicle	. 25
6. Behaviour in cases of error	. 27
6.1 Moving onto an obstacle	. 27
6.2 Emergency discharge with stand unit and safety latch	. 27
7. Maintenance and care of the lift	. 29
7.1 Lift maintenance plan	. 30
7.2 Cleaning the lift	.34
8. Assembly and commissioning	.34
8.1 Set up guidelines	.34
8.2 Assembly of the lift	.35
8.3 Commissioning	.36
9. Safety inspection	. 37
9.1 Single safety inspection before commissioning	. 38
9.2 Regular safety inspection and maintenance	. 39
9.3 Exceptional safety inspection	. 47
10. Spare part list	. 48

1 General informations

Important safety instructions – Save these instructions

1.1 Lift purpose

Nussbaum lifting systems are the result of over 35 years' experience in the automotive lifting industry. The high quality and superior concept ensures reliability, a long Lift life-time, and a strong economic business solution for your automotive lifting needs.

The TSK 12000 is a hydraulic symmetric In-Ground Lift with a lifting capacity of 12000 pounds.

The Lift features a powerful integrated power unit and hard-chromed cylinders. The maximum load distribution is 3000 lbs per arm.

1.2 Liability

To avoid unnecessary damage, injury or death, read all operating instructions carefully. Nussbaum is not liable for any damages, injuries, or deaths resulting from misuse of the Lift. The user carries the risk alone.

There will be no guarantee or liability for incidents involving injuries, death, or damage to equipment if these incidents are the result of one or more of the following:

- Inappropriate use of the Lift to include: Inappropriate installation, operation, and maintenance of the Lift.
- Use of the Lift while security devices are inoperative, not working properly, or are installed incorrectly.
- Failure to follow the operating instructions regarding transport, storage, installation, initiation, operation, and maintenance of the Lift.
- Unauthorized changes to the design and operation of the Lift.
- Wrong or incorrect maintenance practice.
- Catastrophes, acts of God, or external reasons.
- Nussbaum Lifts are warranted with the use of Nussbaum original or replacement parts. Use only replacement parts approved by the original equipment manufacturer or parts meeting original manufacturer specifications. Use of unauthorized parts may void the warranty. For parts, call Nussbaum at 1-704-864-2470.
- It should be recognized that any piece of equipment can be dangerous when operated improperly.

1.3 Owner/Employer responsibilities

Automotive lift institute safety requirements for operation, inspection and maintenance (ANSI/ALI ALOIM)

The Owner/Employer shall insure that lift operators are qualified and that they are trained in the safe use and operation of the lift: ALI/SM 10-1 safety manual; ALI/ST-17; ANSI/ALI ALOIM-2008 (R2013), American National Standard for Automotive Lifts-Safety Requirement for Operation, Inspection and Maintenance; ALI/WL Series, ALI Uniform Warning Label Decals/Placards; and in

case of frame engaging lifts, ALI/LP-GUIDE, Vehicle Lifting Points/Quick Reference Guide for Frame Engaging Lifts and SAE J2184, Vehicle Lifting Points for Service Garage Lifting.

The Owner/Employer shall establish procedures to periodically inspect the lift in accordance with the lift manufacturer's instructions or ANSI/ALI ALOIM- 2000, American National Standard for Automotive Lifts-Safety Requirements for Operation, Inspection and Maintenance; and the employer shall insure that the lift inspectors are qualified and that they are adequately trained in the inspection of the lift.

The Owner/Employer shall establish procedures to periodically maintain the lift in accordance with the lift manufacturer's instructions or ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts-Safety Requirements for Operation,

Inspection and Maintenance; and the employer shall insure that the lift maintenance personnel are qualified and that they are adequately trained in the maintenance of the lift.

The Owner/Employer shall maintain the periodic inspection and maintenance records recommended by the manufacturer or ANSI/ALI ALOIM-2008 (R2013), American National Standard for Automotive Lifts-Safety Requirements for Operation, Inspection and Maintenance.

The Owner/Employer shall display the lift manufacturer's operating instructions; : ALI/SM 10-1, safety manual; ALI/ST-17; ANSI/ALI ALOIM-2008 (R2013), American National Standard for Automotive Lifts-Safety Requirement for Operation, Inspection and Maintenance; ALI/WL Series, ALI Uniform Warning Label Decals/Placards; and in case of frame engaging lifts, ALI/LP-GUIDE, Vehicle Lifting Points/Quick Reference Guide for Frame Engaging Lifts; in a conspicuous location in the lift area convenient to the operator.

Additional owner/employer responsibilities

- Shall require that Personal Protective Equipment (PPE) be used according to the appropriate regulations.
- Shall display the "Safety Regulations" and adhere to them closely.
- Shall ensure that all safety- and danger signs on and around the Lift are observed and followed!
- Shall follow the specified time intervals between the recommended inspection and maintenance procedures and tests.
- Shall use only spare parts that comply with the technical requirements specified by the manufacturer.
- Shall ensure that loose screws, nuts, and bolts are firmly tightened after maintenance.
- Shall not modify the Lift without written consent of Nussbaum.
- Shall ensure that these instructions are maintained and available to all personnel that install, use or maintain the lift. This document contains important information about installation, operation, and maintenance of the automotive Lift. Any changes to the installation and or location of the automotive Lift must be documented.

1.4 Lift operator responsibilities

• Shall read and understand all safety and warning instructions in the manual or affixed to the lift.

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- Shall be trained to operate and use the TSK 12000 DJ Lift for its designed use.
- Shall be familiar with accident prevention and basic labor safety regulations.
- Shall not allow unauthorized personnel to operate the Lift.

Information of warning

Pay close attention to the danger and important information symbols shown below. Carefully read all marked passages throughout this manual.



Danger! This sign indicates danger to life. Improper handling of the de Scribed operation may cause serious injury or death.



Caution! This sign warns against possible damage to the automotive Lift or other material defects in case of improper handling.

Attention! This sign indicates an important function or note.

1.5 Safety regulations

The Safety Regulations must be observed and strictly adhered to while working with the automotive Lift. Read the safety regulations and the ANSI/ ALI ALOIM manual included with the lift documentation carefully before working with the Lift!

Important safety instructions - read all instructions

- The total weight of the lifted vehicle must not exceed 12000 pounds.
- The automotive Lift must be in its lowest position, and the Lift Carry Arms must be swung out before a vehicle can be driven into the Lift area.
- Total load must be distributed evenly on all arms.
- The Lift must not be installed in a hazardous location or in washing bays.
- The Lift must be checked by a service technician after initial installation and after ٠ repairs or changes have been made to the Lift.
- The operating and maintenance instructions must be followed while working with • the Lift.
- Pre-check low clearance or specially equipped vehicles for ample clearance to avoid damage to the vehicle and/or Lift.
- Only trained personnel are to operate the Lift.
- No one is to stand within the working area (danger area) during vehicle lifting • and lowering operations.
- No one is to occupy a vehicle during any phase of Lift operation.
- No one is to climb onto the automotive Lift when in a raised position.
- For unusual vehicles you may choose to instruct the user to contact Nussbaum for lifting advice.
- The main electrical switch must be switched off and locked out or tagged out ٠ according to OSHA Regulations before maintenance or repair work is performed on the Lift.
- The operator must continue to observe the vehicle and Lift throughout the lifting or lowering operation.
- Check the center of gravity of the vehicle if heavy parts, such as the engine are ٠ removed.

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- If heavy parts such as the engine must be removed, the center of gravity will change. Secure the vehicle before removing parts to avoid the possibility of the vehicle becoming insecure.
- Read all instructions before operating lift.

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- Care must be taken as burns may occur from touching hot parts.
- Do not operate the Lift with a damaged cord or if the Lift has been damaged until it has been examined by a qualified service person.
- To reduce the risk of fire, do not operate Lift in the vicinity of open containers of flammable liquids (gasoline).
- Adequate ventilation should be provided when working on operating internal combustion engines.
- Keep hair, loose clothing, fingers, and all parts of body away from moving parts.
- Use only as described in this manual. Use only manufacturer's recommended attachments.
- Always wear safety glasses. Everyday eyeglasses only have impact resistant lenses, they are not safety glasses.
- The proper positioning of the carrier plate below the vehicle is to be checked again after the vehicle has been raised slightly.
- After each set down of the vehicle, check the lifting arm positions below the fixture points again and adjust as required.
- When disassembling heavy, consider any possible center of mass shifts. The vehicle is to be appropriately secured using suitable materials (e.g. tensioning belts, beams, etc.) against falling.
- After design and maintenance on load bearing parts the lift must be inspected by a technical expert.
- Vehicles may only be attached at fixture points approved by the vehicle manufacturer.
- The entire lifting and lowering process is to be continuously observed.
- Initial access to the lift is only permitted after the main switch has been turned off and secured, and the operating lever is additionally secured against unauthorized use.

Save these instructions!

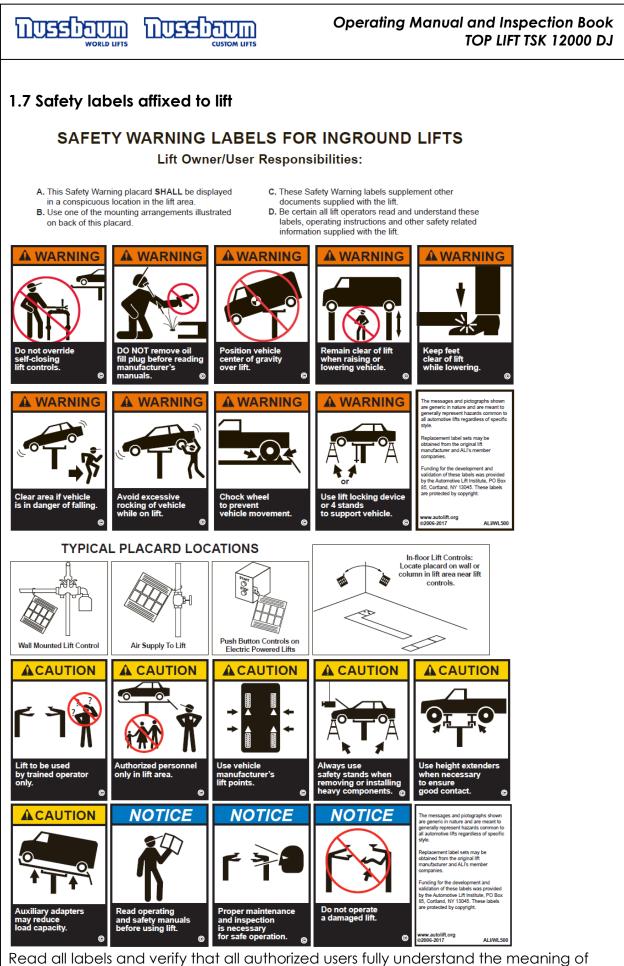
1.6 Safety devices

Nussbaum has designed several safety features into each Lift to ensure safe and efficient operations under a variety of conditions. Warranties will be voided and dangerous working conditions exist if any of the listed devices are altered or disabled.

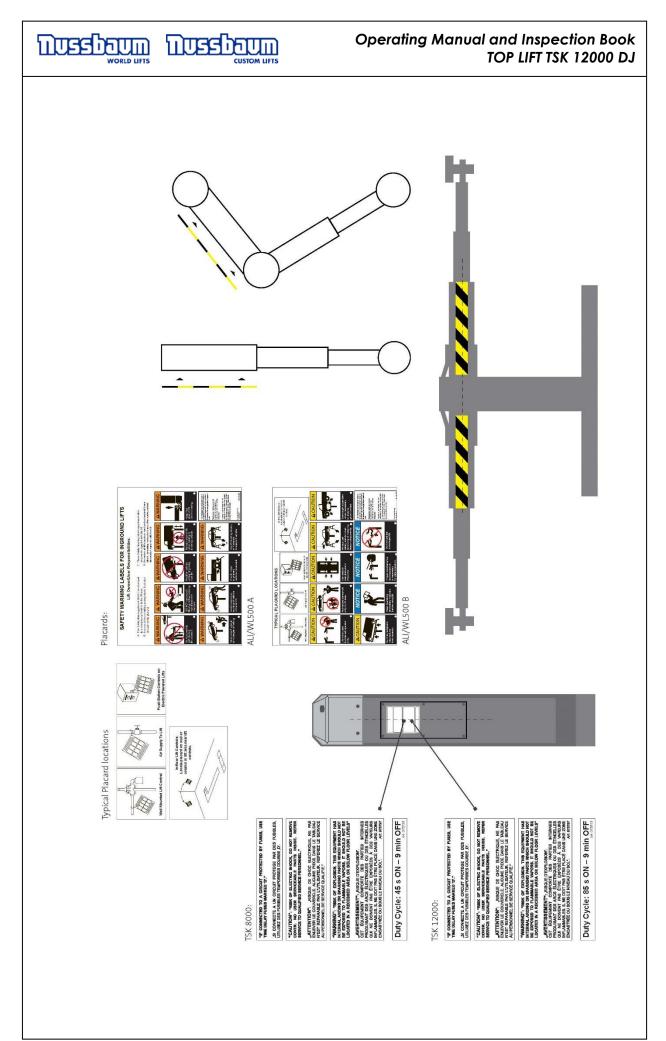
• Over-pressure valve

Hydraulic system fuse against over-pressure.

- Check valve Secure the vehicle against unauthorized lowering.
- Main switch with curtain lock device Fuse to prevent unauthorized use.
- Command / downstream system with latch Secure against unauthorized lowering of the lift.
- Deadman controls Lift movement stops when the operating lever is released.
- Lifting arm block Secures the lifting arm against horizontal movement in a lifted condition.



Read all labels and verify that all authorized users fully understand the meaning of each caution /warning / safety instruction. Do not remove or deface safety labels from the lift.



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1.8 Protocols

Technical documentation contains important information for safe operation and for retaining functional safety of the lift.

- To verify lift set up, the assembly protocol form is to be completed, signed and sent to the manufacturer.
- Forms are available in this inspection book for use in verifying single, regular and extraordinary safety checks. Use the forms to document inspections and leave the completed forms in the inspection book.
- The lift master forms must record changes to the construction or changes to set up location.

1.9 Set up and test the lift

Safety relevant work on the lift and safety inspections may only be done by personnel specifically trained to carry it out. They are designated in general and in this documentation as technical experts and specialists (competent people).

- Technical experts are people (freelance expert engineers, TÜV specialists) that may inspect and assess due to their education and experience with lifts. They are knowledgeable in the appropriate work safety and accident prevention regulations.
- Specialists (competent people) are people who have sufficient knowledge and experience with lifts and have participated in a special factory training by the lifts manufacturer.

Set up protocol

After successful set up, complete this form fully, sign it, make a copy and send the original to the manufacturer within a week. The copy remains in the inspection book.

Nussbaum Automotive Solutions, LP 1932 Jordache Court Gastonia, NC 28052 Fax: 1-704-864-2476 Email: warranty@nussbaum-usa.com

The lift with serial number...... Was set up on (date)

at (company name)..... in..... in..... in..... checked for function and safety and put into operation. The set up was done by the operating company / specialist (score out the one that does not apply).

The operating company confirms proper lift set up, has read and will comply with all information contained in this operating manual and inspection book, and will keep this document accessible to trained operators at all times.

The specialist confirms proper lift set up, has read all information in this operating manual and inspection book, and has transferred the documents to the operating company.

Date	Name, operating company	Operating company
	& company stamp	signature
Date	Name, specialist	Signature of specialist
Sonvico partnor:		
		••••••

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Transfer protocol							
The lift							
with serial number	was se	et up on					
at (company name)	in						
• • •	e (operators) were trai ssembler of the manuf	ned to handle the lift after it acturer or a contract partner					
Date	Name	Signature					
 Date	Name	Signature					
 Date	Name	Signature					
 Date	Name	Signature					
Date	Name	Signature					
 Date	 Name, specialist	Signature of specialist					
Service partner:							



2. Lift master forms

2.1 Manufacturer

Nussbaum Custom Lifts GmbH D-77694 Kehl-Sundheim, Germany Tel.: +49 78 53 899 100 www.nussbaumlifts.com info@nussbaum-group.de

2.2 Purpose

The Nussbaum lift TSK 12000 is for raising vehicles in normal workshop operations with a total weight of 12000 lbs (5000 kg).

The setup of the standard lift is not permitted in explosion endangered workshops. After construction and significant maintenance changes on load carrying parts, as well as changing the installation location, the lift must be inspected afterwards by a specialist who approves the changes. The lift is not set up for moving people.

2.3 Changes to the design / construction

Inspections by a technical expert are required before recommissioning (date, type of change, technical expert signature).

.....

Name, address of technical expert

Location, date

Technical expert signature

2.4 Changing the assembly location

Inspections by a technical expert are required before recommissioning (date, type of change, specialist signature)

Name, address of technical expert

Location, date

Technical expert signature

3. Technical information

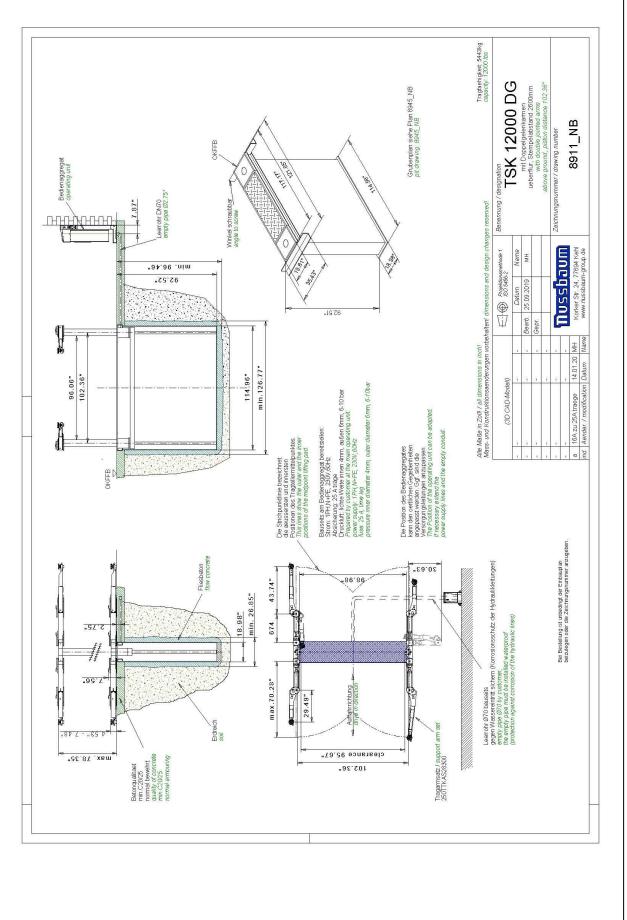
3.1 Technical data

Load bearing capacity: Loading a lifting arm:

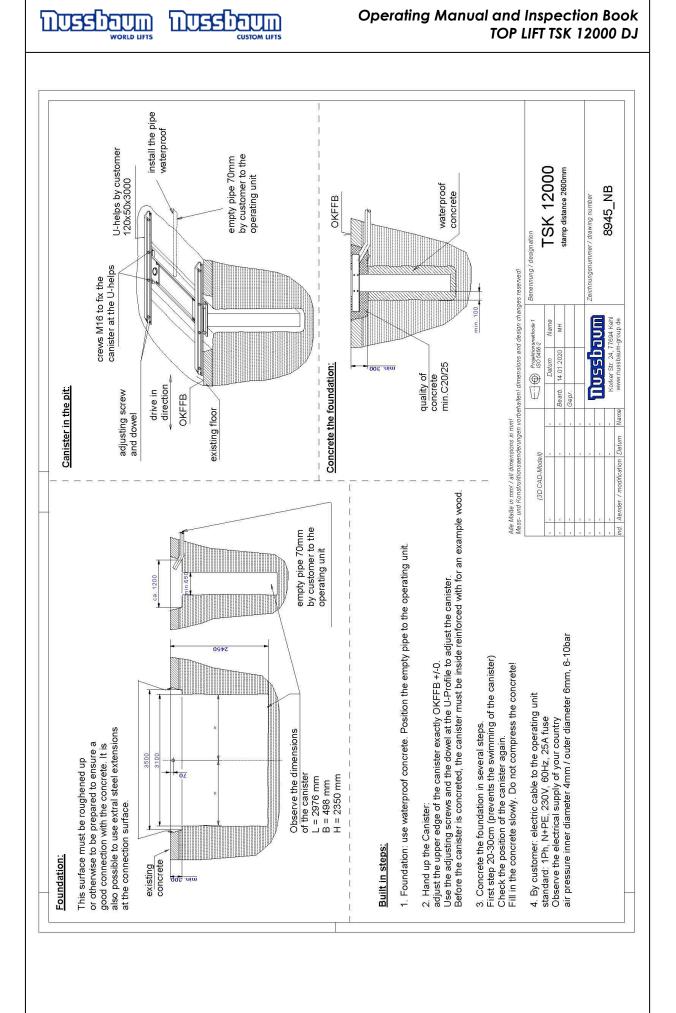
Lift time Lowering time Motor capacity Motor speed Operating pressure Pressure relief valve Oil volume Noise level One-site connection 12.000 lbs (5000 kg) A single load from only one lifting arm may not happen approx. 80 sec approx. 51 sec 2 HP 3450 rpm approx. 2200 psi (152 bar) approx. 2610 psi (180bar) approx. 4 GAL \leq 70 dB(A) 1 ~/N+PE, 230 V, 60 Hz with maximum 25 Amp fuse

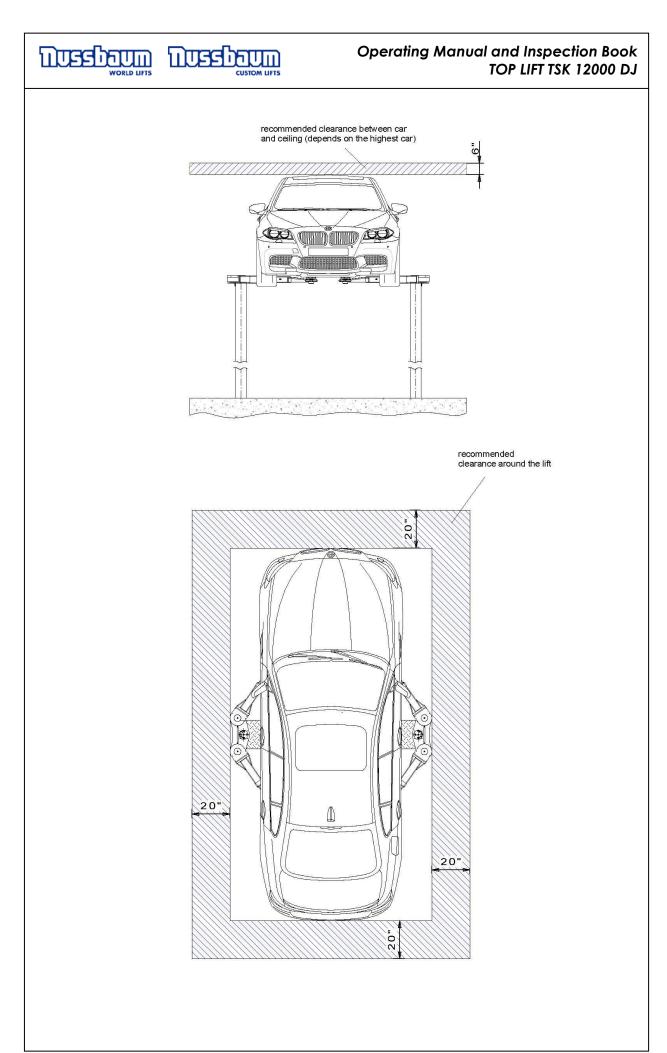
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3.2 Data sheet



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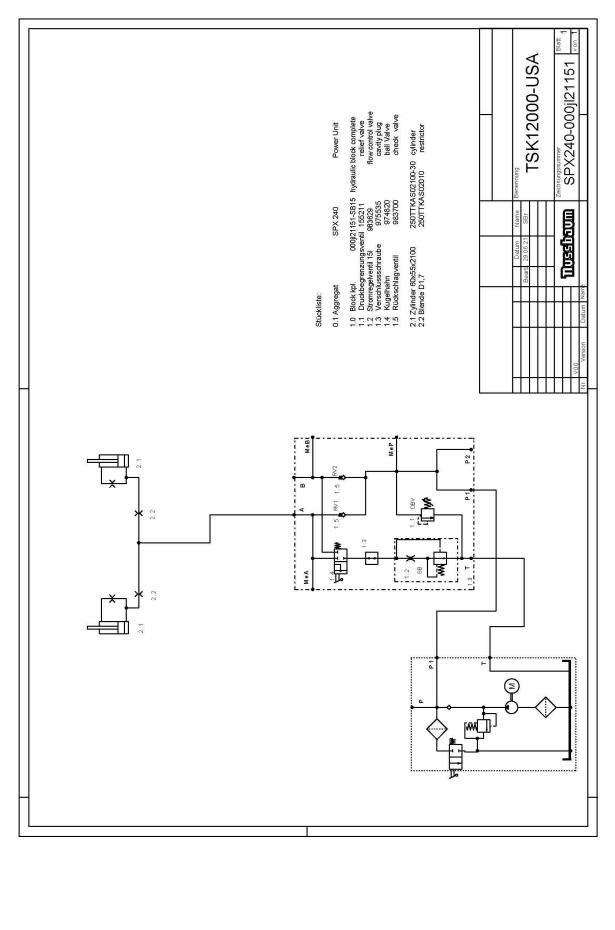






Operating Manual and Inspection Book TOP LIFT TSK 12000 DJ

3.3 Hydraulic plan





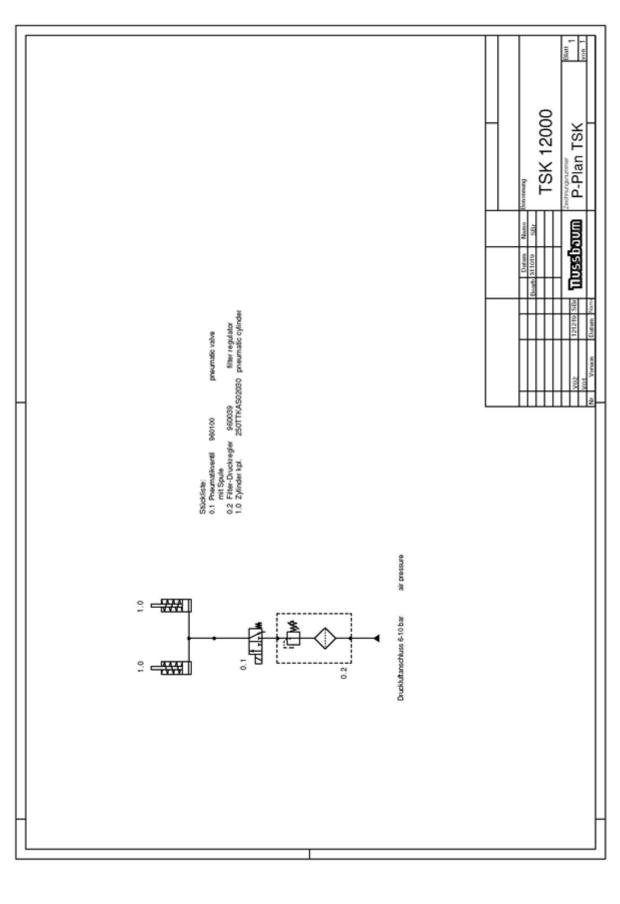
Hydraulic parts list

0.1	SPX 240	POWER UNIT
1.0	000jl21151-SB15	Block
1.1	155211	PRESSURE RELIEF VALVE
1.2	983629	FLOW CONTROL VALVE
1.3	975535	CAVITY PLUG
1.4	974820	BALL VALVE
1.5	983700	CHECK VALVE
2.1	250TTKAS02100-30	CYLINDER
2.2	250TTKAS02010	RESTRICTOR D 1.7



Operating Manual and Inspection Book TOP LIFT TSK 12000 DJ

3.4 Pneumatic plan



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3.5 Electrical circuit diagram

Grounding according to local regulations

Before commissioning check whether the nominal motor current matches the motor protection relay.

Check all terminal points for proper connection and that all contact screws are tight. Before commissioning, check all wiring and controls for proper function. Do not permit commissioning from the unauthorised side.

These plans were generated on a CAD system. To keep plans to the current state, we ask that you request Nussbaum to make the changes.

These circuit diagrams are intellectual property. They may not be given to third parties or reproduced without our permission!

Rights to make changes are retained.

Circuit diagram and switch documents

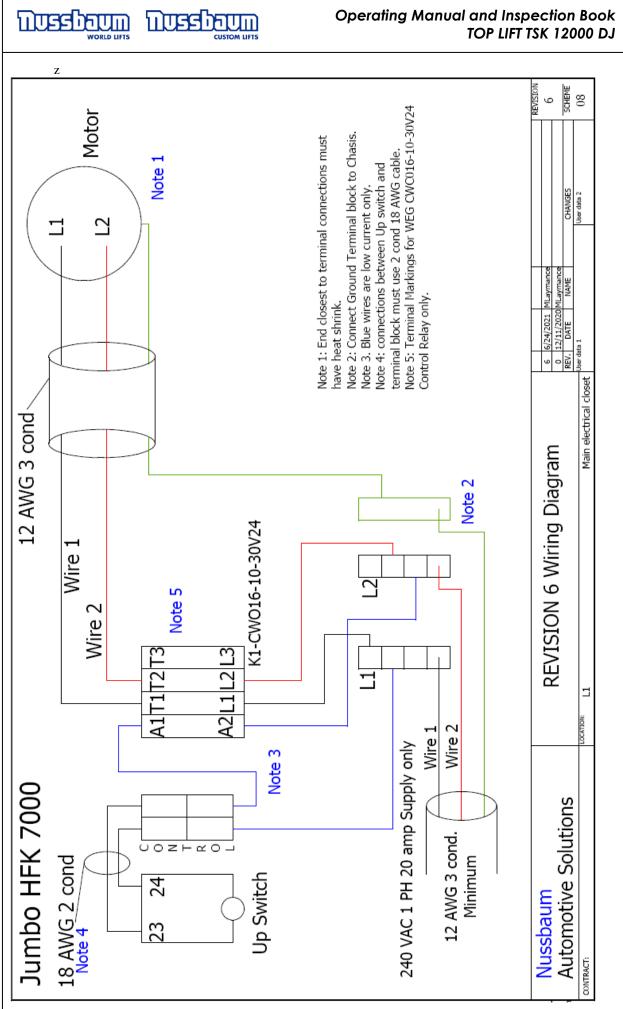
Circuit diagrams were made to the best of our knowledge. No guarantee is made for the accuracy of enclosed circuit diagrams and switch plans contained in this document. This is particularly relevant for switches that were completed by us according to third party plans. This was done by us from purchaser provided manufacturer documentation.

Functional test of switch systems

Circuit diagrams are not standard documents. When checking the control cabinet at the factory, field devices such as sensors, thermostats and motors cannot be included. For this reason, even with careful inspection, functional and switch errors cannot always be prevented.

Deficiencies are removed within the scope of guarantee during commissioning. During commissioning, if our services are not used, then no deficiency liability is accepted. Rework, including informing of circuit diagrams of switch systems not commissioned by us are therefore only done to an invoice according to our service terms and conditions.

Costs for rework by third parties cannot be honored.



Operating Manual and Inspection Book

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4. Installation

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The installation of the Lift is performed by manufacturer trained technicians or by the manufacturer's distribution partner. The Lift owner may use their trained mechanics to install the Lift. The installation must be performed according to the following regulations:

- Use architectural plans, if available, to determine Lift location.
- Lift is intended for indoor installation only. Installation in an outdoor application is prohibited and will void the warranties of the product.
- Always consult a qualified person regarding local regulations for seismic requirements. The owner has to consult a qualified person to address any local or state requirements (per the ALCTV standard: "a qualified person should be consulted to address any seismic loads and other local or state requirements")
- Do not install Lift in hazardous locations, pit or depression areas, or washing stalls.
- Concrete must have compression strength (see chapter 8).
- Mount on a foundation deeper than the local external frost line.
- Be sure to read the ANSI/ALI ALIS prior to installation.
- The installer has to return the instructional materials furnished with the lift back to the owner

Shipping / parts list

POS		ITEM CODES	QUAN- TITY	LOCATION
1	POWER UNIT	235TSKUS01000	1	BOX
2	CONTROL UNIT WITH REAR PLATE, NAMEPLATE AND WEIGHT STICKER	250TTKAS03100	1	BOX
3	CYLINDER SCREWS (LOW HEAD SCREW) FOR GUIDING TUBE M16x30	97984M16x030ZN	8	PLASTIC BAG
4	CARRYING ARM (SET)	250TTKAS28300-6	1	BOX
5	CYLINDER SCREWS M24x150 10.9	9912M24x15010.9	8	PLASTIC BAG
6	SEALING PLUGS D21,7	9GPN300F182	2	PLASTIC BAG
7	CARRIAGE (2600)	250TTKAS06100	1	BOX
8	LEDGE FOR THE LATCH	250TTKAS10103	2	BOX
9	BOLT FOR THE LATCH	232TTL10005	2	BOX
10	SPLINT FOR THE LATCH DIN 94, 5x32	994-5-32	2	BOX
11	CYLINDER	250TTKAS02100-30	2	BOX
12	GUIDING TUBE 1	250TTKAS06070	1	BOX
13	GUIDING TUBE 2	250TTKAS06080	1	BOX
14	SEALING PLUGS D33,5	9GPN300F26	8	PLASTIC BAG
15	GALVANIZED TUB WITH COVER FOR LIFT	250TTKAS05400	1	BOX
16	FOAMED RUBBER 40x8 LIGHT GREY	970676 (146886)	8 m	PLASTIC BAG
17	HOSE GUIDE	250TTKAS01100	1	BOX
18	MANUAL	250TTKASDG	1	BOX

5. Operating instructions

When handling the lift, it must absolutely comply with safety regulations. Carefully read the safety regulations in Section 4 before first operation! After raising the arms, we recommend, to always park them into the locking mechanism.

5.1 Lifting the vehicle

• Drive the vehicle in the middle of the lift.



The total weight limit may not be exceeded, otherwise there may be damage to the lift.

- Secure the vehicle against rolling away. Apply the handbrake, put into gear.
- Position the lifting arms on the fixture points of the vehicle.
- Inspect the hazardous area. No person or object may stand in the working area of the lift, or on the lift.
- Lift the vehicle until the wheels are off the ground. Push the operating lever forwards → "Lift" (see figure 1)
- If the wheels are not blocked, interrupt the lifting process and check for proper seating of the carrier pad. Similarly check whether the lifting arm blocks are ratcheted in. Otherwise, lower the lift and reposition the vehicle.
- After each set down of the vehicle, check the lifting arm positions below the fixture points again and adjust as required.
- Check that there are no people or objects in the hazardous area of the lift.
- Afterwards, lift the vehicle to the desired working height.
- Check that the swivel arm safety is latched in on all lifting arms.



• The entire lifting process must continuously be observed by the operator.

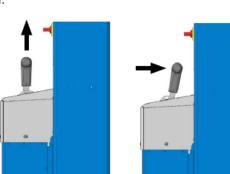
- 1- Lifting
- 2- Stop
- 3- Lowering



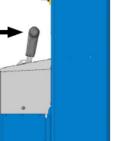
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Lift:

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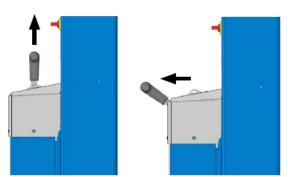


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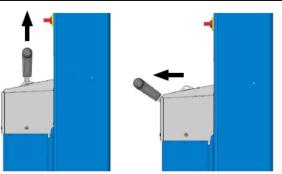
Um

Lower:

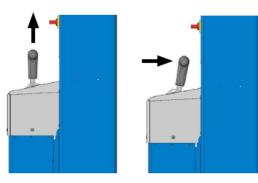


5.2 Lowering the vehicle

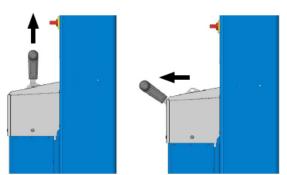
- . Check that there are no people or objects in the hazardous area of the lift.
- . Lower the vehicle to the desired working height or to its lowest position; pull the operating lever slowly → "Lower".
- Then lower onto the locks by pushing button #3 and at the same time lift and pull the operating lever #2.



- The platform moves down a little and sets down in the next latch
- When a vehicle is serviced the lift must be en-_ gaged in the latch
- · Before starting the lowering process, the lift must be moved out of the latch again.
- Lift and press the operating lever #2 briefly to unlock the latch



· Lower the lift to the floor



- · For heavier vehicles, lift it slightly before lowering to prevent an "sticking" and any corresponding jolt during lowering.
- The lowering speed can be varied seamlessly.
- · Once the lift is in the lowest position, push the lifting arms to the start position.

6. Behaviour in cases of error

Defective operational readiness of the lift may be due to a simple error. Check the system for the listed sources of error.

If the error cannot be removed after an inspection to the named causes, then inform customer service or your dealer.

Problem: Motor does not start!

possible causes:

- No power supply present
- Defective fuse
- Power supply interrupted
- The thermal circuit breaker of the motor is active (let it cool)
- Power outage
- Operating button defective

Problem: Motor starts, load is not lifted!

possible causes:

- The vehicle is too heavyHydraulic oil filling level is too low
- The pressure lines are blocked or defective
- Leak in the hydraulic system

Problem: The lift cannot be lowered!

possible causes:

- Lifting table is sitting on an obstacle
- Hydraulic valve defective
- The latch is engaged

6.1 Moving onto an obstacle

If the lift moves onto an obstacle during lowering, then it remains in position due to the mechanical resistance. In this case the lift must be moved upwards by pushing the "Lifting handle" forward on the operating unit until the obstacle can be removed. Afterwards the lift is in a normal work condition and can continue to be operated as described in the operating manual.

6.2 Emergency discharge with stand unit and safety latch



An emergency discharge is an access into the lift controls and may only be done by experienced specialists.

The emergency discharge must be done in the following described sequence, otherwise it can lead to damage and hazard to life and limb. Any kind of external leakage is not permitted and must immediately taken care of. This is absolutely necessary especially before an emergency discharge.





Fig. 2: Pneumatic air supply for actuating the ratchet cylinders.

6.2.2 Defect of the Pneumatic valve

If there is a defect on a pneumatic value the safety latches cannot be opened. However there is still the option of opening the value using a hand pump or compressor.

- 1. Open the top cover of the external unit.
- 2. Remove the black pneumatic hose coming from the lift at the pneumatic valve. (see Fig. 2).
- 3. This air hose must be connected to a hand pump or compressor. The required operating pressure to unlock is 6 to a max. 10 bars.
- 4. Push the handle backward and lower the lift until the lowest position is reached.
- 5. If the lift cannot be lowered, push the handle forward to lift briefly until the latch is released. Push the "Lower" button again until the lift has reached the lowest position.

Lowering

- 1. The entire lowering process must be continuously observed.
- 2. Once the lift is at the lowest position, the vehicle can be driven off the lift.
- 3. The lift must be stopped until defective parts have been exchanged and the lift is in a technical perfect condition again.
- 4. If required, do maintenance.

7. Maintenance and care of the lift

Before maintenance, do all preparation work so there is no danger to life or limb or object damage during maintenance and repair work.

Value is placed on long lifetimes and safety in the development and production of Nussbaum products. To guarantee the safety of the operator, product reliability, low running costs, keep the warranty and also the long-lifetime of the product, proper set up and operation is just as important as regular maintenance and sufficient care.

Our lifts fulfil the safety standard of the country where it is sold. To guarantee the largest possible availability and functional capacity of the lift system, ensure the list of any cleaning, care and maintenance work is done.

The lift system is to be serviced at regular intervals according to the following plan. For intensive operation and higher degree of contamination shorten the service interval. The complete function of the lift system is to be observed during daily use. Customer service must be informed of any malfunctions or leaks.

7.1 Lift maintenance plan

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Visual inspection	Spray	Oil	Lubricate	Clean with compressed air	Clean	Inspect

Т	Time frame Type of maintenance		Person in charge	Maintenance plan
Daily	$ \begin{array}{c} 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 4 \\ 7 \\ 6 \\ 5 \\ 4 \\ 4 \\ 7 \\ 6 \\ 5 \\ 4 \\ 7 \\ 6 \\ 5 \\ 4 \\ 7 \\ 6 \\ 5 \\ 7 \\ 6 \\ 5 \\ 7 \\ 6 \\ 5 \\ 7 \\ 6 \\ 7 \\ 6 \\ 7 \\ 6 \\ 7 \\ 6 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7$	9	Lift owner / employer	Model and information signs, labels, brief operating instructions, safety stickers and warning information are to be cleaned and exchanged if damaged.
Annually	$ \begin{array}{c} $		Trained ser- vice personnel	Check the lifting arm block and gear for wear. Ex- change if there is visible damage.
Annually	$ \begin{array}{c} & 1 \\ & 1 \\ & 1 \\ & 1 \\ & 2 \\ & 1 \\ & 1 \\ & 2 \\ & 3 \\ & 4 \\ & 5 \\ & 5 \\ & 4 \\ & 5 \\ $		Trained ser- vice personnel	Lifting arm booms, lifting arm bolts, carrier plate threaded bolts are to be checked for ease of running. If required, lightly grease with multi-purpose grease. Do not over-lubricate.
Daily	$ \begin{array}{c} 11 \\ 12 \\ 9 \\ 365 \\ 8 \\ 7 \\ 6 \\ 5 \end{array} $		Lift owner / employer	The rubber acceptance plate is to be checked for wear and replaced if necessary.
Every 3 months	$ \begin{array}{c} $		Lift owner / employer	Check the tracks and the lift rail equalization parts for wear. After cleaning, grease with multi-purpose grease. We exclusively recommend that MO-2 high performance lubricating grease is used. (available for purchase directly from Oest).

Operating Manual and Inspection Book TOP LIFT TSK 12000 DJ

Ті	me frame	Position Type of maintenance	Person in charge	Maintenance plan			
As required			Lift owner / employer	The lift cylinder can sweat and small oil droplets can form on the base plate, this is however, not a leak.			
Annually	$ \begin{array}{c} 1112 \\ 1212 \\ $	×	Trained ser- vice personnel	Check all fastening screws and anchors with a torque wrench. Fastening class 8.8 0.08* 0.12** 0.14*** M8 17.9 23.1 25.3 M10 36 46 51 M12 61 80 87 M16 147 194 214 M20 297 391 430 M24 512 675 743 Fastening class 10.9 0.08* 0.12** 0.14*** M8 26.2 34 37.2 M10 53 68 75 M12 90 117 128 M16 216 285 314 M20 423 557 615 M24 730 90 1060 * Lubricated slide friction number 0.8 MoS2 ** *** Lightly oiled slide friction number 0.12 *** Ensured slide friction number 0.14 screw with micro-encap-sulated plastic Sulated plastic			
Annually	$ \begin{array}{c} 1112 \\ 9 \\ 9 \\ $		Trained ser- vice personnel	All weld seams must have a visual inspection. Stop the system and contact the manufacturer if there are cracks or breaks in weld seams of the lift.			
Annually	$ \begin{array}{c} 1 12 \\ 1 12 \\ $		Trained ser- vice personnel	 Check electrical components for function and condition. Plug. Operating lever with button switch. During assembly and maintenance always check the condition of electrical lines. All cables and lines must be secured so they cannot be crushed, kinked or contact any moving assembly. 			
Annually	$ \begin{array}{c} $		Trained ser- vice personnel	Optional energy set: • Electrical socket • Pneumatic connection Check for condition and function.			

Ū				Operating Manual and Inspection Book TOP LIFT TSK 12000 DJ
Т	Time frame Position Person in charge		Person in charge	Maintenance plan
Annually	$ \begin{array}{c} 1 \\ 1 \\ 2 \\ 8 \\ 7 \\ 6 \\ 5 \end{array} $		Trained ser- vice personnel	 Check the paint: Check the powder coating and improve if required. Damage by external influences is to be treated immediately after detection. If these points are not treated, infiltration of deposits of all kinds can cause wide-ranging and permanent damage. These points are to be lightly sanded (120 grit), cleaned and degreased. Afterwards, rework with a suitable touch up paint (note the RAL No.). Check galvanised surfaces, touch up as needed. White rust is fostered by permanent humidity, poor ventilation. The affected areas can be treated by using a sanding cloth (A 280 grit). If required, the parts are to be treated with a suitable, resistant material (paint etc.). Check the RAL colour selection. Rust is brought out by mechanical damage, wear, aggressive deposits (de-icing salt, leaking operating fluids) cleaning that is not done or incomplete. The affected areas can be treated by using a sanding that is not done or incomplete.
Annually	$ \begin{array}{c} 1 & 12 \\ 9 & 1 \\ 8 \\ 7 \\ 6 \\ 5 \end{array} $		Trained ser- vice personnel	According to manufacturer instructions, the hydrau- lic oil should be changed every two years in normal operations. Various environmental influences e.g. lo- cation, temperature swings, intensive operation etc., can have an influence on the quality of the hydraulic oil. For this reason, the oil must be checked during an- nual safety inspections and maintenance. The oil is used if it has a milky colour or if the hydraulic oil smells unpleasantly. To change oil, lower the lift is to its lowest position then suction the oil out of the oil container and replace the contents. The manufacturer recommends high-quality clean hy- draulic oil. The required oil volume and type is to be taken from the technical data. After filling, the hydrau- lic oil must be between the upper and lower marking on the oil dipstick, or approx. 2.5 cm below the oil fill- ing opening. Dispose of the old oil according to regulations to the intended location (district offices, environmental pro- tection office or commercial regulatory office has the obligation to disclose about disposal points).

Û				Operating Manual and Inspection Book TOP LIFT TSK 12000 DJ
Т	ïme frame	Position Type of maintenance	Person in charge	Maintenance plan
Annually	$ \begin{array}{c} 11 & 12 & 1 \\ 9 & 1 & x / 12 \\ 8 & 7 & 6 & 5 \\ \end{array} $		Trained ser- vice personnel	 Hydraulic hose lines Storage and duration of use Excerpt from DIN20066:2002-10 For permitted loading, hoses undergo a natural change. This limits the duration of use. Improper storage, mechanical damage and unpermitted loads are the most frequent cause of breakdowns. The duration of use of a hose line including any storage time should not exceed six years. Hose lines are to be replaced if/when, Damage to the outer coating up to the insert (chafe marks, cuts, cracks). The outer coating becomes brittle (crack formation). Deformation from the natural shape in the depressurised and pressurised conditions. Leakage. Damage or deformation of the mounting fixture. Meandering of the mounting fixture. The lifetime has been exceeded. Repair of the hose line using the implemented hose / mounting fixture is not permitted. Extending the replacement intervals given in the guideline is possible if the inspection for safe-work condition is done in adjusted, shortened time frames, if required and by competent personnel. If there is an extension of the replacement interval, no situation may occur which could result in injury of employees or other personnel.
Annually	$ \begin{array}{c} 1 \\ 1 \\ 9 \\ 1 \\ 8 \\ 7 \\ 6 \\ 5 \\ 4 \end{array} $		Trained ser- vice personnel	Excerpt from BGR237: Specifications for the hydraulic hose lines. Normal specification: Recommended exchange intervals: 6 years (operation duration including max. 2 years storage time). Increased demands e.g. by • Increased demands e.g. multi-shift, short cycle times and pressure impulses. • Increased exterior and interior (due to media) influ- ences which significantly reduce the lifetime of the hose lines. Recommended exchange intervals: 6 years (operation duration including max. 2 years storage time).

7.2 Cleaning the lift

A regular and expert clean helps retain the value of the lift.

Additionally, it can also be a pre-requisite for the preservation of guarantee claims for any eventual corrosion damage.

The best protection for the lift is regular removal of contaminants of any kind.

- This includes above all:
 - de-icing salt
 - sand, pebbles, earth
 - industrial dust of all types
 - Water, also in connection with other environmental influences
 - Aggressive deposits of all types
 - Permanent humidity due to insufficient ventilation

The frequency of lift cleaning depends, among other things on the frequency of use, of lift handling, of workshop cleanliness, and the location of the lift. Furthermore, the degree of contamination depends on the time of year, the weather conditions and workshop ventilation. Under adverse circumstances, weekly lift cleaning might be required, however a monthly cleaning may be sufficient. Do not use and aggressive and abrasive materials for cleaning, rather use mild cleaners, e.g. a commercially available detergent and luke warm water.

- For cleaning, do not use high pressure washers (e.g. steam cleaners).
- Carefully remove all contamination with a sponge, or if required with a brush.
- Make sure that there is no residue of the cleaner on the lift.
- After cleaning, dry the lift with a cloth and spray it with a spray wax or oil.

8. Assembly and commissioning

8.1 Set up guidelines

- Lift assembly is done by trained manufacturer personnel or a contract partner. If the operating company has appropriately trained assemblers, the lift can also be assembled by them. Set up is to be done acc. to the assembly instructions.
- A standard lift may not be assembled in explosion endangered spaces or wash halls.
- Before setting up, verify that there is a sufficient foundation or make it according to the guidelines in the foundation plan (see foundation plan). The installation location must be level. Foundations in open air and spaces where winter storms or frost are to be expected, must have a foundation to frost depth.
- An on-site electrical connection of 1 ~/N + PE, 230V, 60Hz is to be provided. The supply line is to be correspondingly secured on-site. The connection point is located on the electrical boxes.
- To protect the electrical cable all cable conduits are to be fitted with cable sleeves or flexible plastic pipes.

• After successful lift installation and before first commissioning, the operating company must have the lift grounding conductors inspected onsite according to IEC regulation (60364-6-61). An insulation resistance test is also recommended.

8.2 Assembly of the lift

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When assembling the lift (in particular the fixture on the lifting post pipes) ensure that the proper fastening screws are used; also comply with the minimum screw-in depth. Otherwise this can lead to damage and endanger life and limb. Ensure that the listed screws are tightened to the required torque. For this, see the torque table in the maintenance plan. The fastening screws are to be checked before first commissioning and as needed for the annual safety inspection and maintenance.

- Insert the lift according to the details of the corresponding foundation plan, if required, use an assembly aid to position the pan.
- The pan must be reinforced using suitable means (e.g. wood) before being placed in concrete. The reinforcements must be removed before commissioning the lift. Otherwise there may be damage to the lift.
- The pan has been hot-dip galvanised for reasons of corrosion protection. For manufacturing reasons a hole has been drilled in the lower reason of the pan to allow excess zinc to flow out. This threaded hole has been sealed again with a screw and may not be removed from the pan during assembly. Otherwise water can flow into the pan and adversely affect the corrosion protection.
- Align the lift precisely in the lengthwise and width wise directions.
- To prevent concrete from entering the pan, the pan covers must be in place before pouring concrete.
- Cementing the pan.
- Afterwards, remove the cover between both post pipes.
- Position the power unit (power unit see figure 1)
- Guide and connect the hydraulic, power and pneumatic lines though the empty pipe and connect the power unit.
- Fill with hydraulic oil, the manufacturer recommends a high value hydraulic oil with a viscosity of 32 cst. The required oil volume is approx. 12 litres.
- Check the oil level.
- Connect the power supply.
- Raise the lift to approx. 500 mm.
- Mount the fixture.
- Lower and raise the lift several times while empty.
- Check the oil level again, refill oil if necessary.
- Lower and raise the lift several times with a vehicle.

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- Remove the pan covers and check the leak-tightness of the hydraulic system.
- Check the function of the safety latch.
- Fasten the covers.

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Fastening screws required for Nussbaum post lifts (Connecting from the lifting post pipe to the fixture)

Туре	Fastening screws	Standard	Tensile strength	Number of pieces per lifting post	Number of pieces per lift
TSK 12000	M24x150*	DIN 912	12.9	4	8

* Screws and spring washer galvanised

8.3 Commissioning

Before commissioning, a single safety inspection must be done (use the "single safety inspection" form)

If the lift set up is done by a specialist (factory trained assembler) then he can also do the safety inspection. If the set up is done by the operating company then a specialist must be tasked with the safety inspection. The specialist confirms seamless operation of the lift on the set up protocol for single safety inspection and releases the lift for use.

After commissioning, the set up protocol must be completed and sent to the manufacturer.

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9. Safety inspection

The safety inspection is required to guarantee operational safety of the lift. It is to be done:

- 1. before first commissioning after setting up the lift use the "single safety inspection" form
- 2. After first commissioning, check regularly at least once per year. Use the "regular safety inspection" form
- 3. After changes to the lift system construction Use the "extraordinary safety inspection" form
- Single and regular safety inspections must be done by a specialist. It is recommended to do maintenance at the same time.
- After a change in design (for example changing the load carrying capacity or changing the lifting height) and after significant maintenance on load carrying parts (e.g. welding work), inspection by a technical expert is required (extraordinary safety inspection).

This inspection book contains forms with a printed inspection plan for safety inspections. Please use the appropriate form, record the condition of the inspected lift and leave the completed form in this inspection book.

9.1 Single safety inspection before commissioning

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete	st is re	quired then	check it a	gain!)
Safety inspection done on:				
Performed by Company:				
Name, address of specialist:	•••••			
Result of inspection: Continued of Continued of No deficient	operati	on possible	, remove de	pection required efects
Signature of specialist	••		Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	perating cor	mpany signature

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete Safety inspection done on:				
Performed by Company:				
Name, address of specialist:				
Result of inspection: Continued of Continued of No deficience	perati	on possible	, remove de	pection required efects
Signature of specialist	••		Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	perating cor	npany signature

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
Condition of the lifting post pipe Fastening screw torque Condition of pan Unit condition Cover conditions Hydraulic system leak-tightness Pan leak-tightness Hydraulic oil filling level Hydraulic line conditions Condition of operating panel Condition of operating panel Condition electrical lines Functional test lift with vehicle Condition of rubber plate Condition of rubber plate		Quired then		gain!)
Safety inspection done on:				
Performed by Company:				
Name, address of specialist: Result of inspection: Continued of No deficient	operatio	on questior on possible	nable, reinsp , remove de	pection required
Signature of specialist	••		Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	erating cor	npany signature

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a retern Safety inspection done on: Performed by Company: Name, address of specialist: Result of inspection: Continued of Ontinued of No deficient	peratio	on questior on possible	nable, reinsp , remove de	pection required
Signature of specialist			Operating o	company signature
Deficiency removed on:		 Op		npany signature

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete Safety inspection done on:				
Performed by Company:				
Name, address of specialist:				
Result of inspection: Continued of Continued of No deficient	peratio	on possible	, remove d	pection required efects
Signature of specialist	••		Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	perating co	mpany signature

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete				gain!)
Safety inspection done on: Performed by Company:				
Name, address of specialist:				
Result of inspection:	operati	on questior on possible	nable, reinsp , remove de	pection required
Signature of specialist			Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	perating cor	mpany signature

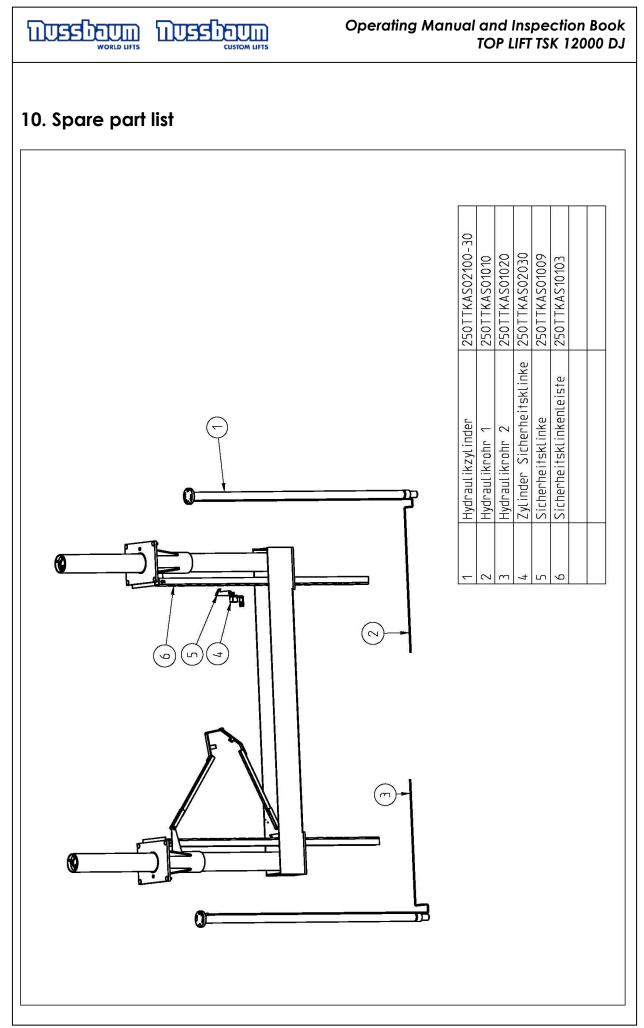
Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete				jain!)
Safety inspection done on:	•••••	•••••		
Performed by Company:		•••••	•••••	
Name, address of specialist:				
Result of inspection: Continued of Continued of No deficient	peratio	on possible	, remove de	pection required efects
Signature of specialist	••		Operating (company signature
If requested to take care of deficiencies			,	, , , , , ,
Deficiency removed on:				
(use a new form for reinspection!)		Op	erating con	npany signature

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete				gain!)
Safety inspection done on:				
Performed by Company: Name, address of specialist:				
Result of inspection:	operati	on questior on possible	nable, reinsp , remove de	pection required
Signature of specialist			Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	perating cor	npany signature

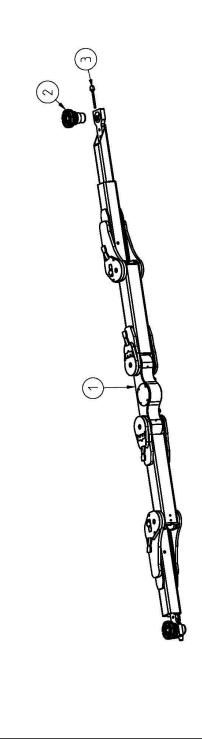
Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete Safety inspection done on:				
Performed by Company:				
Name, address of specialist:				
Result of inspection: Continued of Continued of No deficience	perati	on possible	, remove de	pection required efects
Signature of specialist			Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 Op	perating cor	npany signature

9.3 Exceptional safety inspection

Test step	OK	Defect missing	Retest	Remarks
Quick operating manual				
(place a checkmark in the relevant, if a rete Safety inspection done on:				
Performed by Company:				
Name, address of specialist:				
Result of inspection: Continued of Continued of No deficience	perati	on possibl	e, remove de	pection required efects
Signature of specialist	••		Operating	company signature
If requested to take care of deficiencies				
Deficiency removed on:		 O	perating cor	mpany signature







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