



Elephant

Pit lifts, suspended

nogra Operating instructions

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Technical appendix

1 General notice

All nogra hydraulic Pit lifts are equipped with the protected nogra Rust protection system. The nogra Pit Lifts with hydraulic operation are available in different executions concerning lifting height and carrying capacity. With all models the lifting- and lowering movements are steplessly controllable. Operating, handling and servicing is mostly identical with all models. There is a particular mark in the instructions for use for operating and servicing.

The different executions are as follows

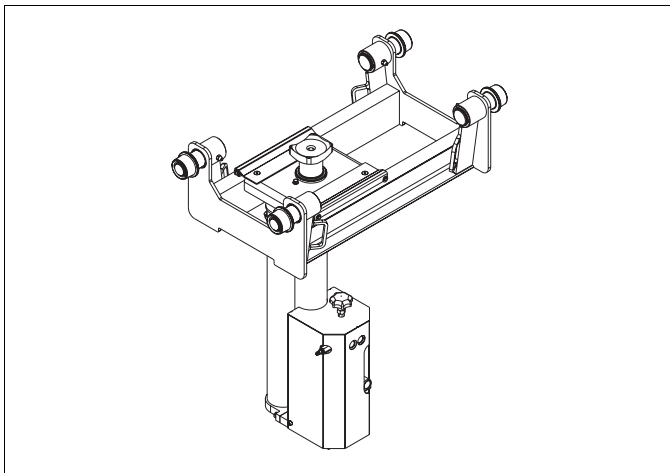


Abb. 1:

Series	Description
HH 4	Lifting height 560 mm, with hand pump
HH 6-HH 30	Lifting height 760 mm, with hand pump
PH 4	Lifting height 560 mm, with hand pump and pneumatic quick lift
PH 6- PH 30	Lifting height 760 mm, with hand pump and pneumatic quick lift
LM 4	Lifting height 560 mm, with hand pump and pneumatic motor
LM 6-LM 30	Lifting height 760 mm, with hand pump and pneumatic motor

Carriages

The carriages are adjustable up to a lifting capacity of 15 tons. Lifts with capacity above 15 tons will be supplied with rigid carriage.

2 Application range nogra pit lifts

nogra Pit Lifts are only to be used for partial lifting of vehicles with follow up support and/or lifting or lowering of vehicle parts (as e.g. engines, gear-boxes etc.). The total load must not exceed the allowable capacity of the pit lift.

Any other use above the described function is not allowed. This goes in particular for mounting the pit lift and ascending with it.

The nogra GmbH will not take any responsibility for damages resulting from misuse. The risk is entirely on the part of the user. The appropriate operation also covers observation of all items of these instructions for use and the carrying out of Inspection- and Serviceworks and the specified tests.

3 Warranty and Liability

Generally our "General Conditions of Sales and supplies" are valid. These are available to the user as of the time of contracting. Warranty- and Liability- claims for personal and property damage are excluded if based on one or more of the following reasons:

- use of the lift contrary to its destined application.
- inexpert mounting, set to operate, running and maintaining the pit lift.
- Operation with condensate- and/or dirt-holding compressed air.
- Operating of the pit lift with defect safety devices or inexpertly mounted or not functionable safety and protection devices.
- Neglecting the remarks in the instructions for use concerning transport, storage, mounting, starting, operating and maintaining of the pit lift.
- Unauthorised changing of the pit lift.
- Insufficient control of parts, which are liable to wear.
- Inexpertly carried out repairs.
- Cases of catastrophe by foreign matters and Act of God.

Service-requests and cost for returning, caused by non-observation of the listed points, cannot be accepted by us. Therefore in case of return please approach the manufacturer.

4 Safety/Accident Prevention

The pit lift must only be operated by trained personal. Unauthorised people are not allowed to operate the pit lift!

4.1 Remarks concerning observation of instructions for use

- Prior condition for safety-conform and faultless operation of the pit lift is the knowledge of the general safety remarks and safety instructions.
- The instruction for use have to be observed by all persons working with the pit lift. Especially the chapter „Safety/Accident Prevention“ has to be observed.
- In addition to the safety remarks of the instructions for use the regulations and instructions being valid at the place of operation have to be considered.

4.2 Obligations of the operator

The operator is obliged to allow only those persons complying to the following requirements to work at the unit

- being well acquainted with the basic regulations concerning labour safety and accident prevention and being trained to operate the unit
- having read and understood the chapter concerning safety and warning instructions and confirmed that by their signature.

4.3 Dangers when operating the pit lift

nogra Pit Lifts are designed and built according to technical standard and the approved regulations for technical security. Yet, danger for body and life of the operator may turn up when using the pit lift inexpertly. The unit must only be operated

- for its appropriate use
- in unobjectionable condition concerning technical security

Disturbances prejudicing the safety have to be removed immediately.

- The pit lift must only be operated when there is no danger for persons.
- The motion area of the pit lift must be held free.
- No persons should be allowed within the motion area of the pit lift.
- The allowable capacity of the pit lift must not be exceeded. Entering of the pit lift, ascending with it and mounting of the load is forbidden.
- The lift must only be loaded centrally, lift the vehicle, look for safe harbouring of it and only then can the vehicle be lifted to the desired height. Secure vehicle against rolling off.
- Lifting and lowering movements must be carried out evenly. While in motion observe the load.
- Lifted load must be secured by supporting bridges or tripods. (see load carrying devices, page 8).

4.4 Organizing requirements

- The instructions for use are constantly to be kept at the place of operation being at hand at any time.
- In addition to the instructions for use rules pertaining to other regulations i. e. accident prevention and environmental rules are to be observed and directed.
- Safety- and danger alert operation of personal is occasionally and by observing the instructions for use to be controlled.
- As far as required and ordered by regulations personal protective equipment is to be used.
- All safety- and danger-hints at the pit lift are to be observed.
- Keep all safety- and danger-hints at the pit lifts in readable condition.
- Changes, additional mountings or constructional variations impairing the safety must not be carried out without the approval of the manufacturers. This goes particularly as far as welding works at carrying parts are concerned.
- Spare parts must comply with technical requirements laid down by the manufacturer. This is only warranted with original parts.
- Consider time intervals given or fixed in instructions for use for repeated tests/inspections.
- **In case of malfunction stop and secure the pit lift immediately.** Care for remedy of faults immediately.

4.5 Maintenanceworks, remedy of faults and disposal

- Fixed Adjusting-, maintenance- and inspectionworks and time intervals including details for exchange of parts/ part components as mentioned in the instructions for use are to be adhered to. **These works must only be carried out by expert personal.**
- After maintenance- and repair works loose screw connections must always be firmly tightened.
- Care for safe and friendly to environment disposal of operating and auxiliary process materials as well as exchanged parts.

5 Special Dangers

5.1 Hydraulic, Pneumatic

Works at hydraulic devices must only be made by personal with special knowledge and experience in hydraulic!

All tubes, hoses and connections must in regular intervals be checked for leaks and visible damages. Damages must be repaired immediately. Splashing oil may lead to injures and fire!

Pressure lines to be opened (hydraulic, pneumatic) must be set pressureless prior to starting repair works.

Hydraulic- and pneumatic lines are to be laid out and mounted in an expert way. Do not interchange connections. Armatures, lengths and quality of tubings must comply with the requirements.

Oil, grease and other chemical substances: While handling oils, greases and other chemical substances the existing safety rules as they are valid for the single products are to be observed.

5.2 Complying Safety Standards

DIN EN 292 / DIN EN 294 / prEN 349 / EN 414 /
EN 418 / prEN 811 / EN 50099 / EN 60204
ISO 1219 / ISO/DIS 11530

5.3 Warning label identification

The following identifications or symbols for important works are used:



Danger

Imperative! Absolute care must be exercised. Carelessness can cause injuries. Non-compliance can cause damage to the equipment.



Attention

Please comply with these directions to prevent damage to property.



Important

Important information and recommendations.

6 Transport

During transport it is to be observed that in the horizontal position of the Lift the control instruments are to show upwards, as otherwise oil may be lost. (see also red label at pit lift)

7 Mounting

The nogra Pit lifts are supplied along with a carriage, being either adjustable or made to measurement.

The rails of the pit should be made from U-profile or in exceptional cases from a similar, suitable profile material. For the installation of the non adjustable carriages a profile-opening must be available.

7.1 Adjustable carriage

- Fit the carriage into the rails of the pit so that on the whole length a lateral tolerance of ca. 5-15 mm between the collar of the rolls and the edge of the rails is available. The axles must on both sides be pulled out evenly.

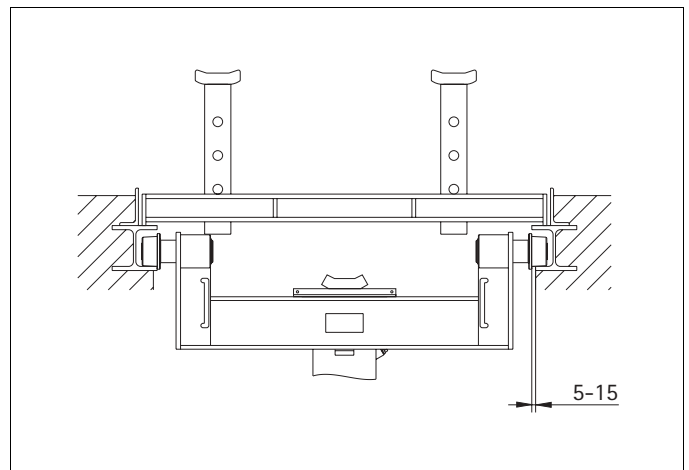


Abb. 2:

- After the adjustment of the axles securing by threaded pin (1) has to be made. Ride along the pit with the carriage and examine whether the rolls have sufficient rest on the rails.

Narrow- and wide positions by uneven width of pit!

- in case of need, adjust the position of the carriage.
- Fit enclosed clamping bow (2) pairwise by shortening in the intervals between rolls (4) and carrier (3)
- Put the fitted clamping bows into the intervals and secure them tightly by screws (5).
- Threaded pin (1) to be re-tightened and be countered with nut.

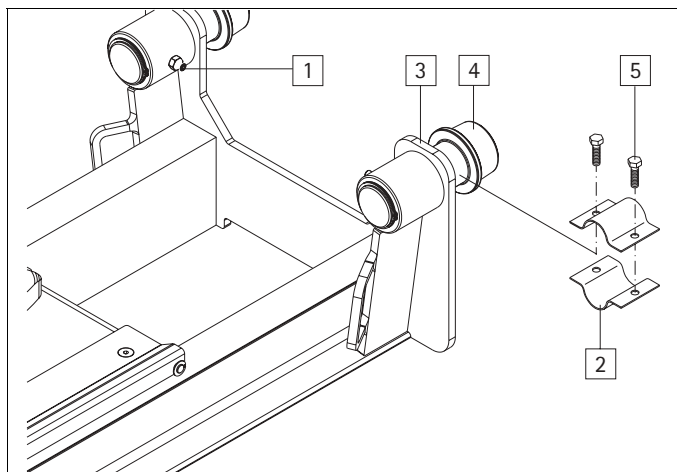


Abb. 3:

- Hanging lifting unit (6) to be secured at both sides with the anti-tilting angles (7) and fasten screw on oil tank (8). The offstanding brackets must reach below the U-profile of the carriage (9).

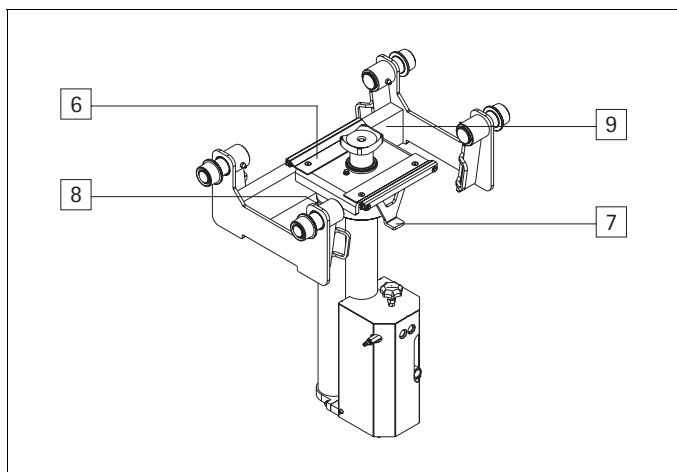


Abb. 4: a

8 Initial Operation



Danger

The pit lift must be examined by an expert prior to first operation for proper installation in the pit, completeness and function. The result is to be entered into an examination book. (These books are available from the manufacturer)

8.1 Prior to starting operation

Only models HH

- Turn out the locking screw (1) and exchange it against the vent-screw. Otherwise no function of the lift.

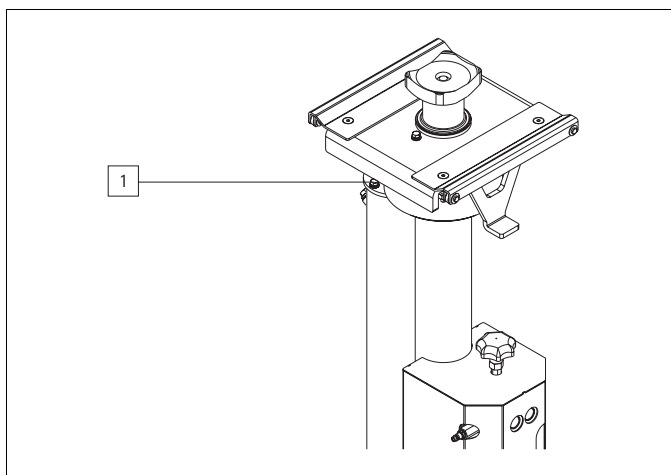


Abb. 5:

All Models

- Check oil level (see section service, page 10)
- Lift is to be greased (see section firm date works page 10)
- De-air hydraulic (see section service, page 10)

Compressed air supply must only be done via a service unit with water separator, oiler and pressure reducer installed directly in the pit. The unit has to be set to 13 bar. For the oiler must be used only non resinous hydraulic oil like HLP22.

9 Handling and Operation



Danger

When operating the pit lift you will have to observe all instructions from section „safety“ and the instructions for the valid accident prevention regulations.

- The pit lift must only be operated by specially trained personal.
- Pit lifts should only be put into movement when no persons are endangered.
- The movement range of the pit lift must be kept free and no persons should stay in the moving region.
- The maximal allowable capacity of the pit lift must not be exceeded.
- Standing on the pit lift, being lifted by it and mounting of load is not allowed.
- The lift must only be loaded centrally, lift the vehicle, look for safe harbouring of it and only then can the vehicle be lifted to the desired height.
- Lifting and lowering movements must be carried out evenly. While in motion observe the load.
- Lifted load must be secured by supporting bridges or tripods. (vide load carrying devices, page 8)

9.1 Load lifting

For load lifting the car wheel should be able to afterrun. (open break and put gear into neutral)

- If available press button "Quick lift" (2) until carrying plate has reached the load.
- Load carrying devices to be lead to even points meant for load lifting by car manufacturers.
- Pump-handle (3) to be inserted, start pumping until vehicle is slightly lifted.
- Check for safe load taking and continue pumping until the desired height is reached.
- After pumping pull out the pump-handle and deposit it.
- Secure vehicle against rolling off (drag shoe) and use supporting bridges.

Models with pneumatic motor

- Button "Quick Lift" (2) to be pressed until carrying plate has reached the load carrying point.
- Load carrying device to be lead to even points meant for load lifting by car manufacturers.
- Button "Pneumatic Motor" (1) to be pressed until vehicle is slightly lifted.
- Button "Pneumatic Motor" (1) to be pressed until the load has reached the desired height.
- Secure vehicle against rolling off (drag shoe) and use supporting bridge.



Important

For exact adjustment of desired height and in case of insufficient airsupply pumping can be done by the hand hydraulic pump (3).

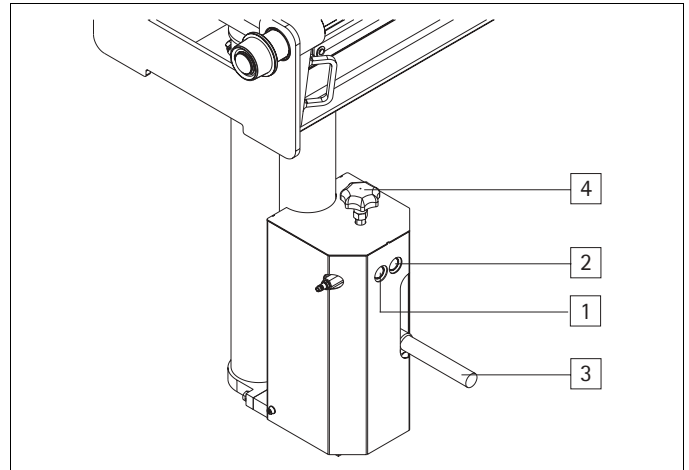


Abb. 6:

Models with 2 Handhydraulic Pumps

- Insert pump handle in handhydraulic pump for "Quick Lift" and pump until the load lifting point of the carrying plate is reached.
- Set load carrying devices to points being even, fit to take the load and directed by the car manufacturers.
- Continue pumping until the vehicle is slightly lifted.
- Pump handle to be inserted into second handhydraulic pump and continue pumping until the load has reached the desired height.
- Secure vehicle against rolling off (drag shoe) and with supporting bridges.

9.2 Lowering of load



Danger

Lowering motion to be carried out slowly and evenly. Observe the load during Motion.

- Remove roll-off-security measure (drag shoe)
- Lift vehicle slightly and remove supporting bridges.
- To lower the load turn the star grip (1) slowly anti-clockwise.



Important

The lowering speed will be regulated infinitely by the turning movement.

- To lower further without load turn star grip (1) to the left as far as it will go.

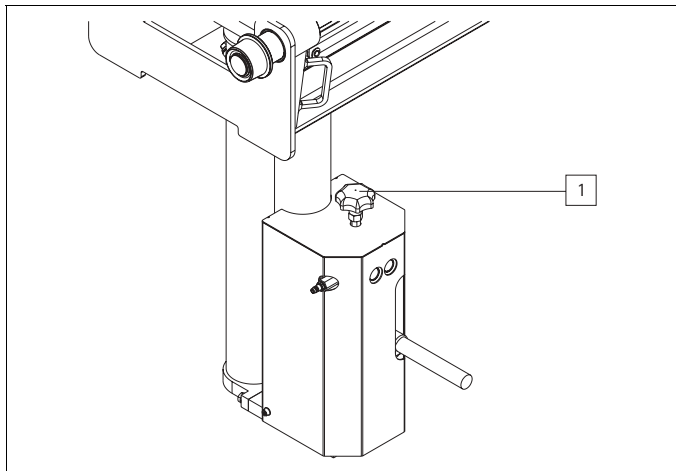


Abb. 7:

10 Load Carrying Devices

For safe lifting of vehicles and vehicle parts by means of the pit lift various load carrying devices are available, such as carrying plates, axle traverses, gear-box plates, special pick-up devices and extension pieces.

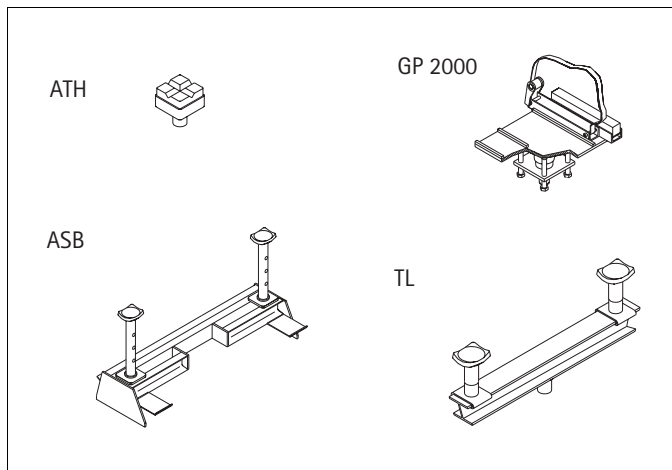


Abb. 8:

10.1 Supporting Bridges

Lifted vehicles have to be secured by means of supporting bridges or trestles. Supporting bridges are always manufactured according to pit measurements. Their safe support must be granted over the whole length of pit.



Important

- The allowable capacity of the load carrying device must not be exceeded.
- Irrespective of the load carrying device, always position the load-centre-point centrally over the pit lift.
- Use only load carrying devices with correct diameter of pin.
- Do not stack extension pieces.
- Vehicle parts must only be transported on the pit lift if it is completely lowered and if parts are secured with tapes or chains prior to being moved.
- Fix all load carrying devices directly on to the lifting ram. Do not use any extension pieces between the lift and the load carrying devices (traverses, gearbox plate etc.).

For further information concerning the complete program for load carrying and load supporting devices please approach the manufacturers.

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nogra Operating instructions

11 Faults/Reasons/Remedies

Piston rod does not move up completely

Reason	Remedy
Insufficient oil in tank.	→ Refill oil up to recommended quantity. (see oil change in section "Maintenance and repair")

Piston rod does not move up or descends under load.

Reason	Remedy
Ball valves untight or lip ring damaged.	→ Ask for service people!

Pit lift loses oil at the handhydraulic pump

Reason	Remedy
Seal untight or damaged.	→ Complete hydraulic pump to be changed. (see section "Maintenance and repair")

Pit lift loses oil at the control.

Reason	Remedy
Condensate in hydraulic oil.	→ Check oil level, if required drain condensate (see section "Maintenance and repair")
Piston gasket untight	→ Ask for service people!

Losing oil at the piston.

Reason	Remedy
Piston damaged and consequently seal damaged.	→ Ask for service people!

Push button blocks

Reason	Remedy
Contamination/damaged in the control.	→ Exchange control (see section "Maintenance and repair")

Permanent exit of air at control.

Reason	Remedy
Contamination in control/seal damaged	→ Exchange control (see section "Maintenance and repair")

12 Maintenance and repair



Danger

- Maintenance and repair works must only be carried out by specialists at unloaded, pressureless lift.
- After finishing maintenance and repairs loose screw connections are to be tightened properly.
- Care for safe and environment-friendly disposal of operating and auxiliary process materials (hydraulic oil) as well as exchanged parts.
- The lifting devices are to be kept in proper condition and prior to its use are to be checked for safety to the personal and the vehicles.
- Prior to all maintenance and repair works disconnect the pit lift from the air supply!
- After having finished work at the hydraulic system it must by all means be de-aired.
- After all Maintenance and repair works test the pit lift and enter the result into the examination book.

12.1 Maintenance works

General

- The ram and the pin of the load carrying device must be kept free from sand and dirt.
- While working with adhesive underseal agents or with lacquer the ram must be protected.
- The pit lift should not be cleaned with high pressure or steam cleaners.
- For cleaning the pit lift no aggressive cleaning agents should be used.

12.2 Time-fixed works

Weekly

- oil all rolls
- Service-unit of compressed air-line to be checked and serviced.
- With daily use remove condensate weekly (see page 10).
With occasional use of the pit lift drain condensate monthly.
- The pin of load carrying devices as well as the hole of the pit lift should be cleaned and sprayed with a rust protecting oil.

Quarterly

- Check oil level (see page 10)

Yearly

- Oil-change (see page 12)
- Clean and grease bearings of all rolls.

12.3 Description of Maintenance works

De-Airing of hydraulic system

- Handpump (1) without pump handle to be operated 5 to 10 times with simultane operation of the lowering valve (2).

Oil level control

Prior to oil level control

- Disconnect the pit lift from the pressure line.



Important

2 oil levels will have to be controlled.

Oil level 1 (Container for load stroke)

- lifting ram to be descended completely.
- Remove oil bar (4) by unscrewing and check oil level.



Important

Is the oil level too low: refill oil

With oil level too high: let off condensate.

Oil level 2 (container for descending)

- lifting ram to be ascended completely.
- Oil bar (3) to be unscrewed and oil level to be checked.



Important

Is the oil level too low: refill oil

With oil level too high: let off condensate.

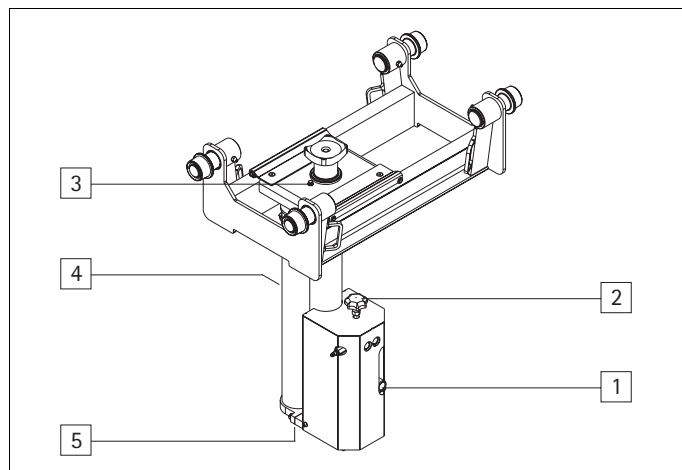


Abb. 9:

Condensate drain



Important

Condensate (water) may reach the hydraulic system with the air. The condensate rests at the bottom of the oil container. The oil level rises and possibly oil may extrude at the control.

For draining of condensate

- Oil drain screw (5) to be loosened until liquid (water/oil mixture) comes out.
- With drain of oil only: fasten the oil drain screw.
- In case of need refill oil

Oil change



Important

nogra Pit lifts are equipped with 2 hydraulic drives. The lower one actuates the load lifting. The upper one supports the return action and overflows with every lifting- and lowering motion the cylinder with oil. Thus an optimal rust protection over the complete cylinder surface is reached.

For oil change you will require:

- Oil tray
- Hydraulic oil, class HLP, viscosity ISO-VG 10, 22 or 32. (e.g,HLP 22). Quantity of oil see technical data.
- 4 seal rings (spare part catalogue items 28, 315, 337 and 379)

Before changing oil

- disconnect pit lift from air supply.



Important

You will have to change oil contents from 2 different oil containers!



Attention

Drain oil into a suitable container and care for proper disposal.

Oil container 1 (container for load stroke)

- descend ram completely.
- oil drain screw (5) to be taken out and oil to be drained.
- oil drain screw (5) with seal ring (Spare part item 28) to be inserted and fixed tightly.
- Oil bar (3) to be turned out.
- refill oil up to recommended level.
- Oil bar (3) with seal ring (Spare part item 337) to be turned in and fixed tightly.

Oil container 2 (descending)

- ascend ram completely
- turn out locking screw (2) and drain oil.
- Locking screw (2) with seal ring (Spare part item 315) to be remounted and tightly fixed.
- turn out oil bar (1)
- refill oil up to recommended level.
- Oil bar (1) with seal ring (Spare part item 379) to be turned in and fixed tightly.

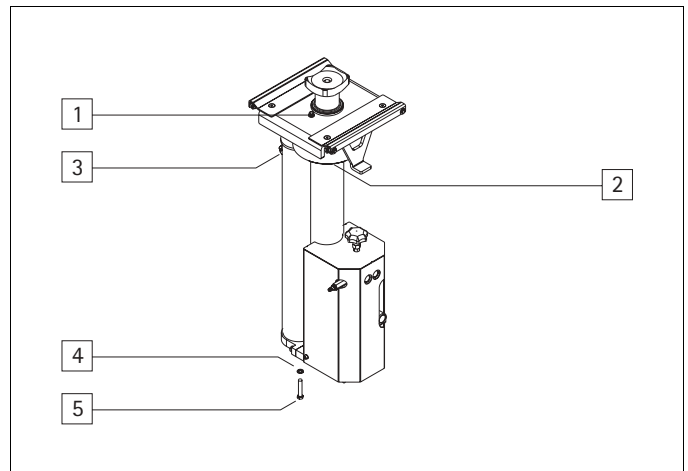


Abb. 10:

12.4 Repair works

Exchange complete control

- Loosen screw (1) and remove.

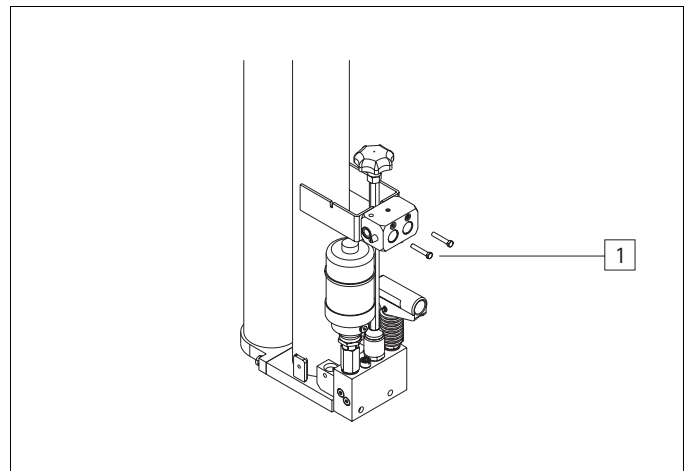


Abb. 11:

nogra Operating instructions

Complete hydraulic pump (pump block) to be exchanged

- Separate lift from air network and drain oil (see oil change).
- Disconnect compressed-air supply (1).
- Loosen spanner bolts (2) and remove together with locking ring (3).
- Remove hydraulic pump (4) to the front.
- Replace O-ring seals (5).
- Position new hydraulic pump and fasten with the spanner bolts (2).
- Re-connect compressed-air supply (1).
- Refill oil (see oil change).

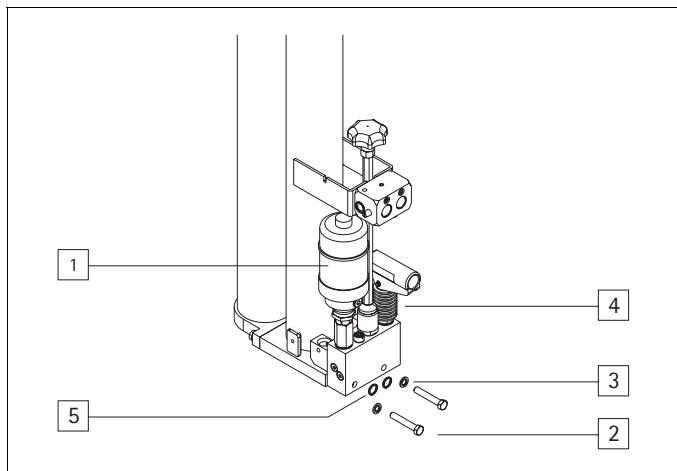


Abb. 12:

13 Technical data

13.1 Inscriptions at pit lift

Order No. _____

3600012



3261922



3303922



3304922



3036921



100841



3306922



3626922



3600920



786657



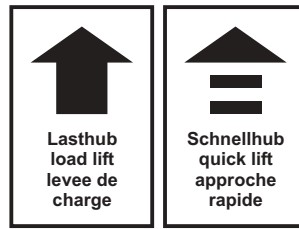
860930



3240923



3720924



708649

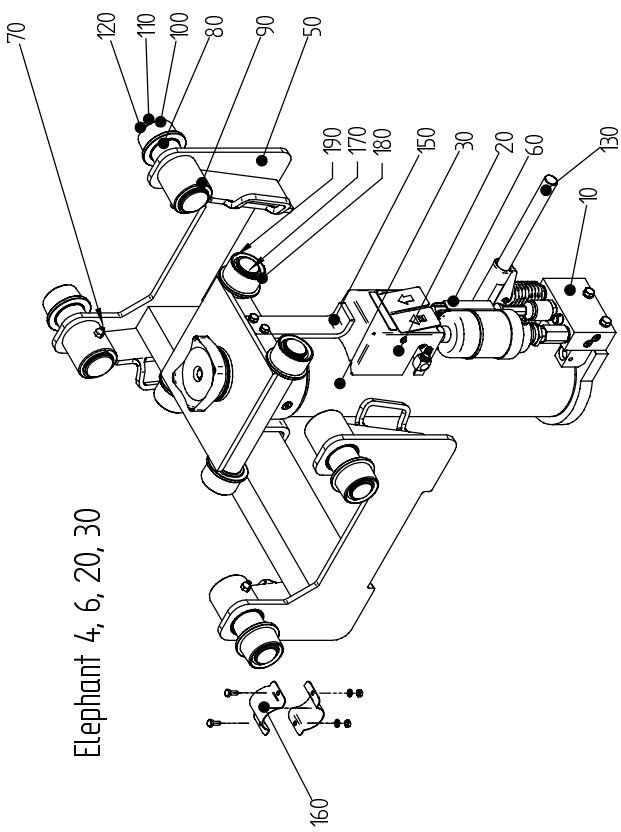


13.2 Overview

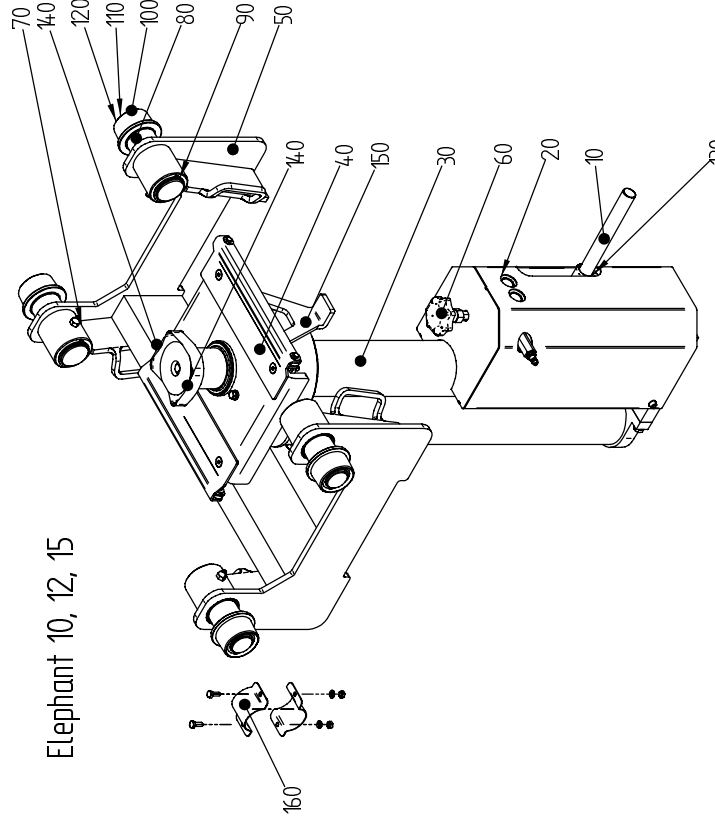
Model		4	6	10	12	15	20	30
HH, PH, LM								
Capacity	t	4	6	10	12	15	20	30
Working pressure								
hydraulic	bar	105	180	199	220	163	163	245
pneumatic	bar	12	12	12	12	12	12	12
Oil capacity								
Tank 1	l	5,0	5,0	5,5	5,5	5,5	12	12
Tank 2	l	1,2	1,2	0,75	0,75	0,75	2,1	2,1
Lifting height	mm	560	760	760	760	760	800	800
Noise level when descending with units having air connection L_{TA}	db(A)	83						
max. lowering speed at nominated load	m/s	0,15						

Check valves have been incorporated as security against undesired lifting or lowering motion. An overpressure valve cares against overloading. Adjusting values of overpressure valve see under working pressure.

Elephant 4, 6, 20, 30



Elephant 10, 12, 15

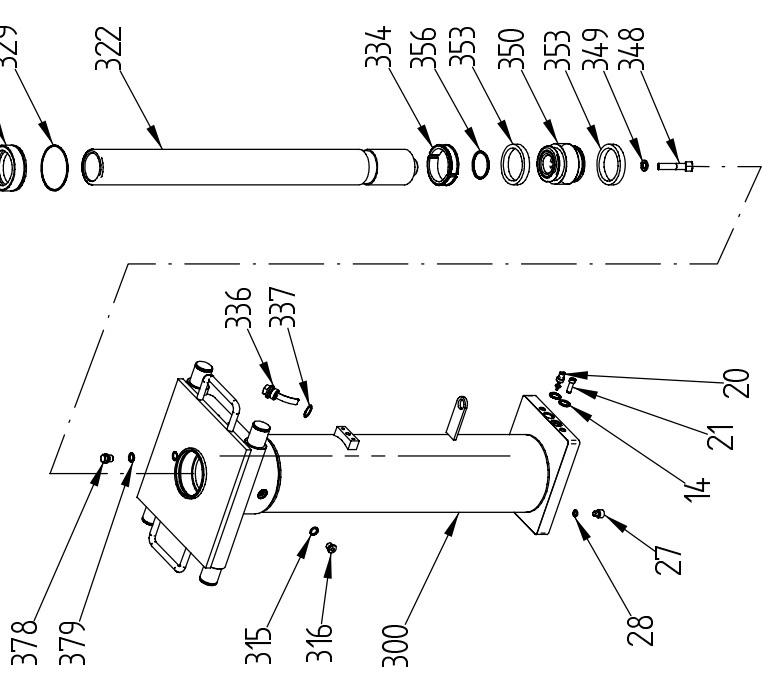


Pos. Stk.	Bezeichnung	4t, 6t	10t, 12t, 15t	20t, 30t
10	1	Hydraulikpumpe kpl.	3172000	3172000
20	1	Hydraulikpumpe kpl.	3173000	3173000
30	1	Steuerung kpl.	3200003	3616002
40	1	Steuerung kpl.	3662002	3662002
50	1	Hubereinheit kpl.	3623003	3784003
60	2	Rollenträger kpl.	3804360	3804360
70	1	Fahrgesteil kpl.	nach Auftrag	nach Auftrag
80	1	Ablaufstange	3602030	3784390
90	4	Gewindestift	701255	701255
100	4	Führungsbolzen	3324413	3324413
110	4	Sicherungsring	704032	704032
120	4	Laufrolle	3322416	3322416
130	4	Sicherungsring	704028	704028
140	1	Nadelrollen	705381	705381
150	1	Pumpenstange	3320900	3320900
160	1	Tragrollen	3325910	3328910
170	2	Kippsicherung	3324970	3325970
180	1	Kippsicherung	3784391	3784391
190	4	Klemmbügel kpl.	3239974	3239974
200	4	Laufrolle	32613312	36263312
210	4	Sicherungsring	704022	704029
220	1	Nadelrollen	705380	705381

Werkstoff / Fahrzeug / DIN		Benennung		Zeichn.Nr.	
Modell Nr. / Werkzeug Nr.		1:10		101057	
nogra GmbH		78199 Braunlingen		Ersatzteilliste nogra-Elephant 0	
die Maße werden besonders geprüft		Ersatz für		nogra-Elephant 4, 6, 10, 12, 15, 20, 30	
Oberflächenbehandlung		Anm.:		Datum	
Name		U.S.:		Name	
17.02.002		17.02.002		17.02.002	

Menge	Toleranz											
	h18	h16	h14	h12	h10	h8	h7	h6	h5	h4	h3	h2
±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05
±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1	±0,1
±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2	±0,2
±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3	±0,3
±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4	±0,4
±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5	±0,5
±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6	±0,6
±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7	±0,7
±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8	±0,8
±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9	±0,9
±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0	±1,0
±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2	±1,2
±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5	±1,5
±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0	±2,0
±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0	±3,0
±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0	±4,0
±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0	±5,0
±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0	±6,0
±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0	±8,0
±10	±10	±10	±10	±10	±10	±10	±10	±10	±10	±10	±10	±10
±12	±12	±12	±12	±12	±12	±12	±12	±12	±12	±12	±12	±12
±15	±15	±15	±15	±15	±15	±15	±15	±15	±15	±15	±15	±15
±20	±20	±20	±20	±20	±20	±20	±20	±20	±20	±20	±20	±20
±30	±30	±30	±30	±30	±30	±30	±30	±30	±30	±30	±30	±30
±40	±40	±40	±40	±40	±40	±40	±40	±40	±40	±40	±40	±40
±50	±50	±50	±50	±50	±50	±50	±50	±50	±50	±50	±50	±50
±60	±60	±60	±60	±60	±60	±60	±60	±60	±60	±60	±60	±60
±80	±80	±80	±80	±80	±80	±80	±80	±80	±80	±80	±80	±80
±100	±100	±100	±100	±100	±100	±100	±100	±100	±100	±100	±100	±100

Über Zeichnung darf nur ein Zerteilen
 erlaubt werden, wenn der Zeichner
 ausdrücklich veranlassen kann,
 insbesondere Konstruktionen ohne unsere
 Erlaubnis nicht zu fertigen.
 Einmalig mitgeteilt oder zugänglich
 gemacht werden.



Pos. Stk.	Bezeichnung	Zchg.-Nr. 4t, 6t	Zchg.-Nr. 20t, 30t	Dichtungssatz
14	O-Ring	707614	707614	
20	Senkbremventil	751702	751702	X
21	Sieb	3142015	3142015	
27	Zylinderschraube	7008340	7008340	
28	Dichtung Cu	706801	706801	X
300	Hubeinheit kpl. geschw.	3602300	3605900	
315	Dichtung Cu	706902	706902	X
322	Kolbenstange 800mm	3268322	3625322	
323	Sicherungsring	704131		
324	Stoßbuchse	3602324	3107324	X
325	Abstreifring	707927	707931	X
325.1	Zwischenring	3602325.1		
329	O-Ring	707635	707645	X
330	Dichtsatz	708006	707883	X
334	Distanzbuchse	3263334	3604334	
336	Ölrentfällstopfen	3260336	3260336	
337	O-Ring	706812	706812	X
348	Zylinderschraube	701012	700886	
349	Federring	703515	7035070	
350	Kolben	3263350	3266350	
353	Zylinder-Dichtsatz	708012	707851	X
356	O-Ring	707667		X
378	Oimeßstab kompl.	3601378	3601378	
379	Dichtung Cu	706902	706902	

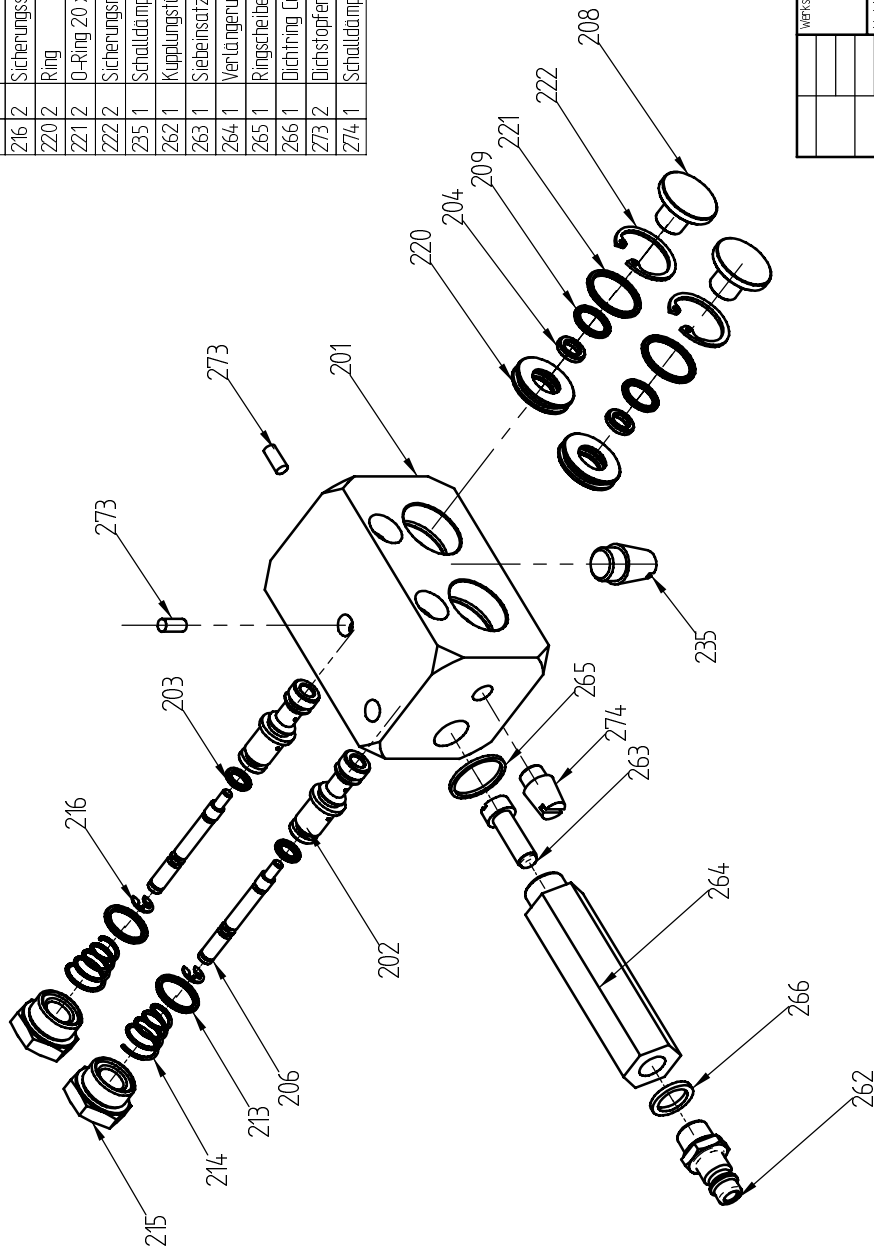
Werkstoff / Maßstab / DIN Modell Nr. / Werkzeug Nr.			Änderungsnummer Maßstab 1:10		Zeichnung 3602003X		
nogra GmbH 78199 Bräunlingen			Name Datum Zeichnung 3602003X		Name Datum		
Oberflächenbehandlung				Bemerkung Ersatzteiliste Hubeinheit		Zeichnung 0	
die Maße werden besonders geprüft Ersatz für				für		für	

Abmessung	A		B		C		D		E		F		G		H		I		J	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Ø	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04
L	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04	±0.02	±0.04

0 = keine Angabe
 A = ±0.05
 B = ±0.02
 C = ±0.02
 D = ±0.02
 E = ±0.02
 F = ±0.02
 G = ±0.02
 H = ±0.02
 I = ±0.02
 J = ±0.02

Diese Zeichnung darf nur zu den Zwecken
 benutzt werden, wozu sie den Empfänger
 ausschließlich nach der Bestimmung
 insbesondere Konstruktion firmen ohne unsere
 Erlaubnis mitgeteilt oder zugänglich
 gemacht werden.

Pos. / Stk.	Benennung	Zg.Nr.	Dichtungssatz
201 1	Ventilkörper	3294201	
202 2	Ventilstößel	3220202	
203 2	O-Ring 7 x 2	707604	X
204 2	O-Ring 7 x 2,5, ca. 90 SH	7076891	X
206 2	Stößel	3220206	
208 2	Druckknopf	3294208	X
209 2	O-Ring 12 x 2	707609	X
213 2	O-Ring 15 x 2	707684	X
214 2	Feder-Kegel, Nr. 199	3616274	
215 2	Verschlußkappe	3294215	
216 2	Sicherungsscheibe schwarz	703901	
220 2	Ring	3294220	
221 2	O-Ring 20 x 2	707615	X
222 2	Sicherungshing schwarz	704105	
235 1	Schalldämpfer R 1/4"	708951	
262 1	Kupplungstülle	325262	
263 1	Siebinsatz kpl.	3142015	
264 1	Verlängerung	3294265	
265 1	Ringscheibenelement-Hilt	706705	
266 1	Dichtung Cu R 1/4"	706902	X
273 2	Dichstopfen D 5	707030	
274 1	Schalldämpfer R 1/8"	708950	



Gruppennr. A 1 bis A 4	Größe			Nennweite			Werkstoff							
	A 1	A 2	A 3	A 1	A 2	A 3	Gr. 01	Gr. 02	Gr. 03	Gr. 04	Gr. 05	Gr. 06	Gr. 07	Gr. 08
1	X			1	2	3	1	2	3	4	5	6	7	8
2	X			1	2	3	1	2	3	4	5	6	7	8
3	X			1	2	3	1	2	3	4	5	6	7	8
4	X			1	2	3	1	2	3	4	5	6	7	8
5	X			1	2	3	1	2	3	4	5	6	7	8
6	X			1	2	3	1	2	3	4	5	6	7	8
7	X			1	2	3	1	2	3	4	5	6	7	8
8	X			1	2	3	1	2	3	4	5	6	7	8
9	X			1	2	3	1	2	3	4	5	6	7	8
10	X			1	2	3	1	2	3	4	5	6	7	8
11	X			1	2	3	1	2	3	4	5	6	7	8
12	X			1	2	3	1	2	3	4	5	6	7	8
13	X			1	2	3	1	2	3	4	5	6	7	8
14	X			1	2	3	1	2	3	4	5	6	7	8
15	X			1	2	3	1	2	3	4	5	6	7	8
16	X			1	2	3	1	2	3	4	5	6	7	8
17	X			1	2	3	1	2	3	4	5	6	7	8
18	X			1	2	3	1	2	3	4	5	6	7	8
19	X			1	2	3	1	2	3	4	5	6	7	8
20	X			1	2	3	1	2	3	4	5	6	7	8
21	X			1	2	3	1	2	3	4	5	6	7	8
22	X			1	2	3	1	2	3	4	5	6	7	8
23	X			1	2	3	1	2	3	4	5	6	7	8
24	X			1	2	3	1	2	3	4	5	6	7	8
25	X			1	2	3	1	2	3	4	5	6	7	8
26	X			1	2	3	1	2	3	4	5	6	7	8
27	X			1	2	3	1	2	3	4	5	6	7	8
28	X			1	2	3	1	2	3	4	5	6	7	8
29	X			1	2	3	1	2	3	4	5	6	7	8
30	X			1	2	3	1	2	3	4	5	6	7	8

Werkstoff / Maßstab / DIN			
Modell. Nr. / Zeichnung			
Benennung	Material	Maßstab	Zerth.Nr.
		1:2	3294003X
Datei	Gr. 2	Gr. 2	Gr. 2
	Gr. 3	Gr. 3	Gr. 3
Datei	Gr. 4	Gr. 4	Gr. 4
	Gr. 5	Gr. 5	Gr. 5
Datei	Gr. 6	Gr. 6	Gr. 6
	Gr. 7	Gr. 7	Gr. 7
Datei	Gr. 8	Gr. 8	Gr. 8
	Gr. 9	Gr. 9	Gr. 9
Datei	Gr. 10	Gr. 10	Gr. 10
	Gr. 11	Gr. 11	Gr. 11
Datei	Gr. 12	Gr. 12	Gr. 12
	Gr. 13	Gr. 13	Gr. 13
Datei	Gr. 14	Gr. 14	Gr. 14
	Gr. 15	Gr. 15	Gr. 15

Ventilkörper kompl. 0

nogra-Element IM

Type

Serial No.

Date

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