EQUIPMENT

GST 4500 FA / GST 4600 FA
weartest 4500 FA / weartest 4600 FA
JPD 4520 FA / JPD 4620 FA
APD 7000 U FA / APD 4600 FA

Installation instructions Truck Joint play tester

Ref. no. T2000619719 – Version 12.0 dated 01.03.17

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1. General advise for the assembly

Before you begin with the assembly, the assembly openings should once again be compared with the pit plan.

Special attention should be paid to the adherence to the assembly depths. A proper function of the joint player tester can only be assured if the assembly depth is corresponding and if the test plates can be horizontally assembled in this installation depth.

ATTENTION:

When installing the hydraulic aggregate, pay attention to the assembly information!

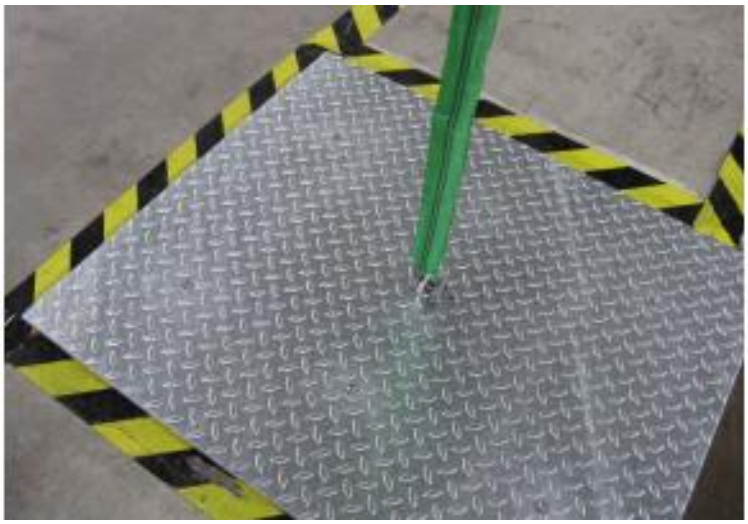
Read the **entire installation instructions carefully before beginning the assembly.** This will certainly save you much work and trouble.

2. Attachment possibilities for lifting devices

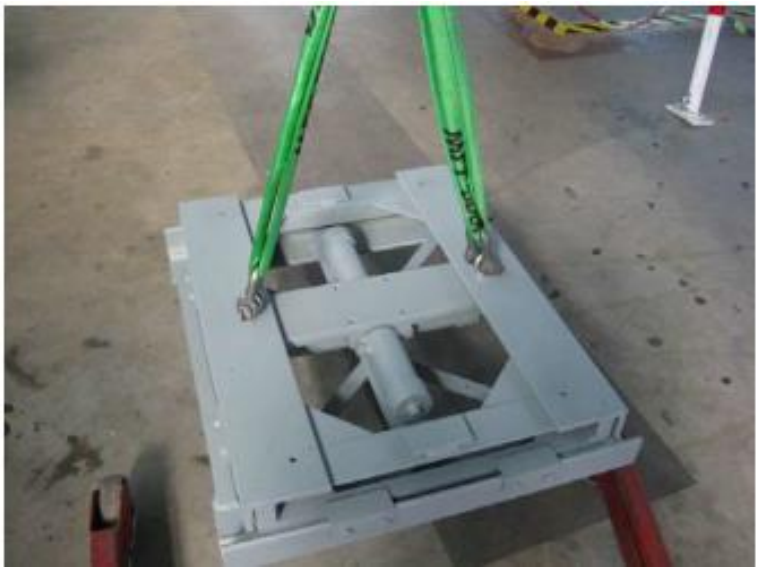
ATTENTION:

The test plate mechanics may only be lifted to the hanging points in the prepared installation opening which is stated by the manufacturer!

Remove cover plate (weight approx. 30kg)



Lift the mechanics (one side approx. 240kg)



3. Pit installation

- Before you install the mechanics in the pit, control once again to see that the pit is free from dirt and construction residues.
- The insertion of the joint-play tester mechanics (**approx. 240kg each side**) can occur with a lifting tool with sufficient lifting capacity (see image for fastening).
- Before inserting into the pit, make sure the mechanics are in the correct installation position.
- Align the two joint-play tester base plates in such a manner that they are parallel symmetrical and horizontal to each other. It is to be observed that the joint-play tester base plate is aligned in the middle of the pits.
- Shift the top plate of the mechanics forwards so that the drill holes are accessible for dowelling.
- Drill the corresponding holes with a ∅ 16mm stone drill for the 8 enclosed express anchors 16mm.
- Remove the drill dust with a vacuum cleaner.
- Attach the joint-play tester base plates in the pit with respectively four express anchors 16mm.

Minimum clearance of 2mm from the top edge of the dowel to the edge of the plate

- Make sure that the joint-play tester mechanism is assembled in a horizontal position. Level out unevenness through placing thin metal strips underneath so that there is a distance of approx. 5mm between the cover plate bottom and the workplace floor (or installation tub).
- Mount the cover plate, fixing torque M_A=30Nm. Thread sealant: low strength.

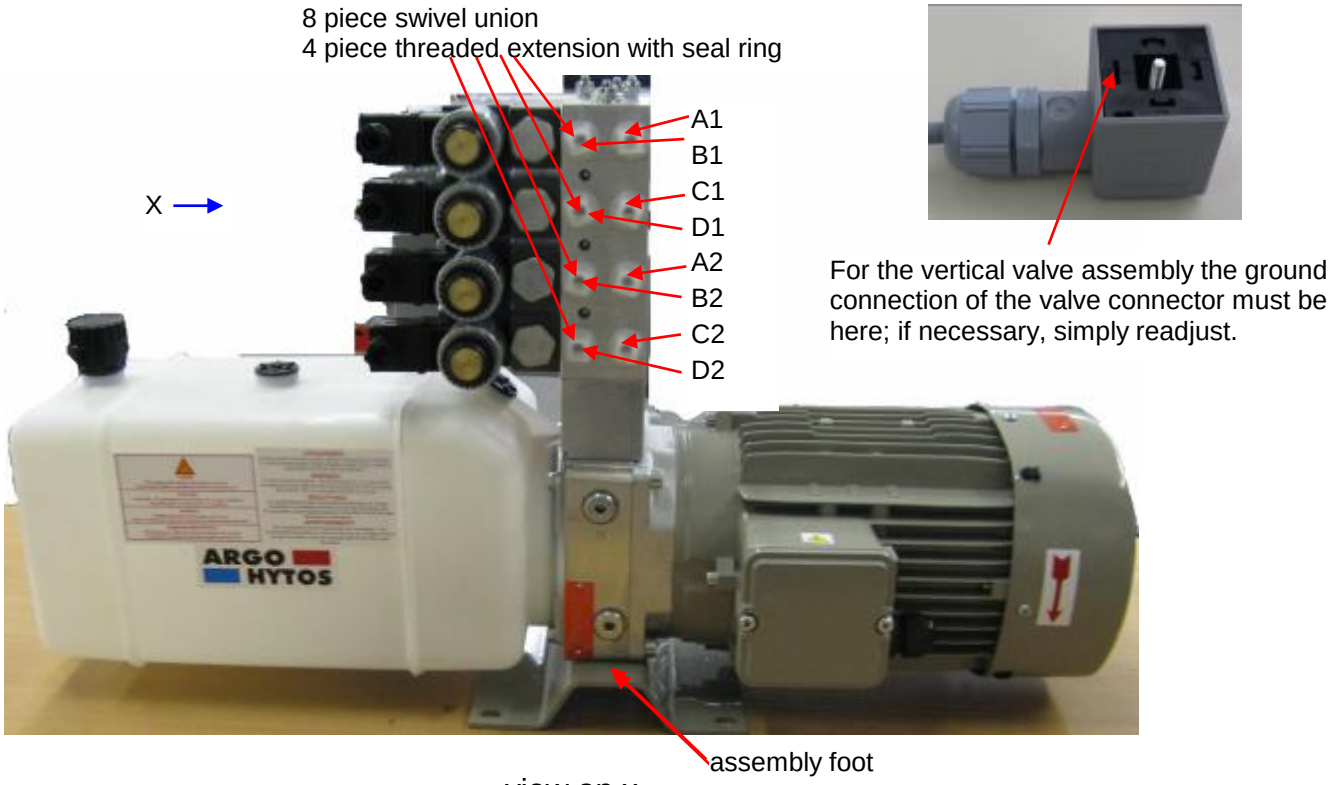
ATTENTION:

With an inexact pit or faulty pit assembly of the joint player tester, through the movement of the joint-play tester test plates there can be an opening of 50mm in the lifting area. In this case the corresponding protective plates are to be used in order to avoid squashings.

4. Installation of the hydraulic aggregate

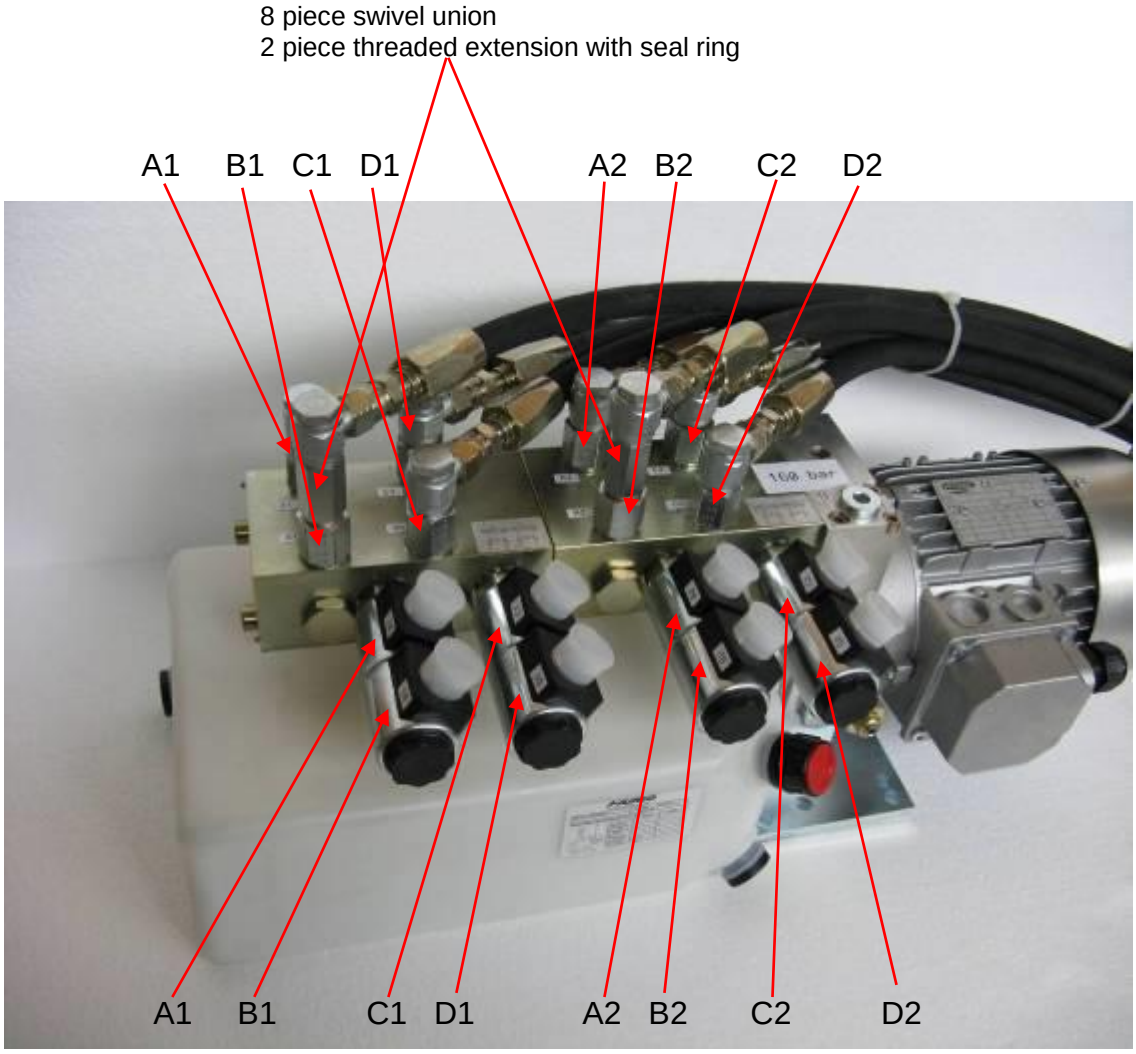
Hydraulic unit to be fitted to the bottom of the installation shell using 10mm bolts, see installation scheme.

4.1 Hydraulic unit with vertical valve assembly



view on x

4.2 Hydraulic unit with horizontal valve assembly



threaded extension with seal ring

Swivel union

For the horizontal valve assembly the ground connection of the valve connector must be here; if necessary, simply readjust.

4.3 Hydraulic connection

See hydraulic connection plan ZG2000611656.

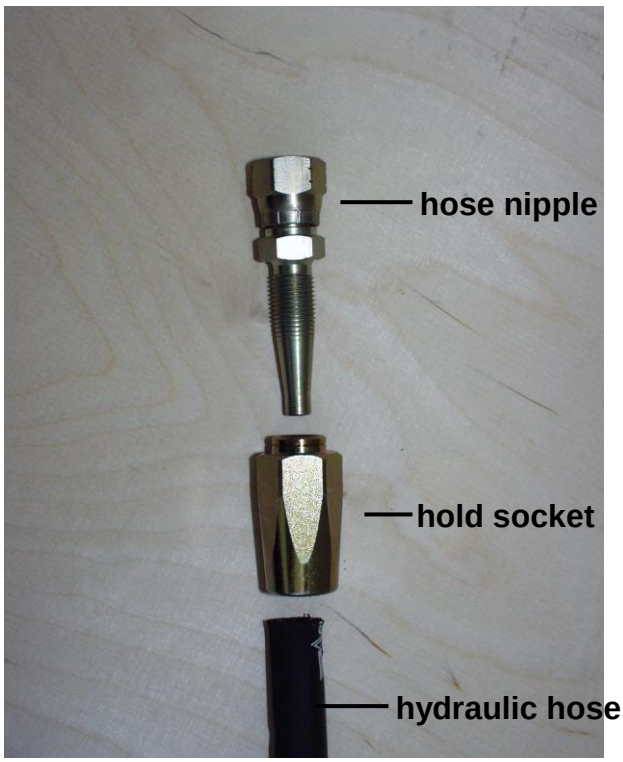
4.4 Note

Hydraulic connection parts, hoses, lines, connection points must be **cleaned** before the assembly.

Each dirt particle in the hydraulic system can cause a disturbance in operation.

4.5 Laying the hydraulic hoses

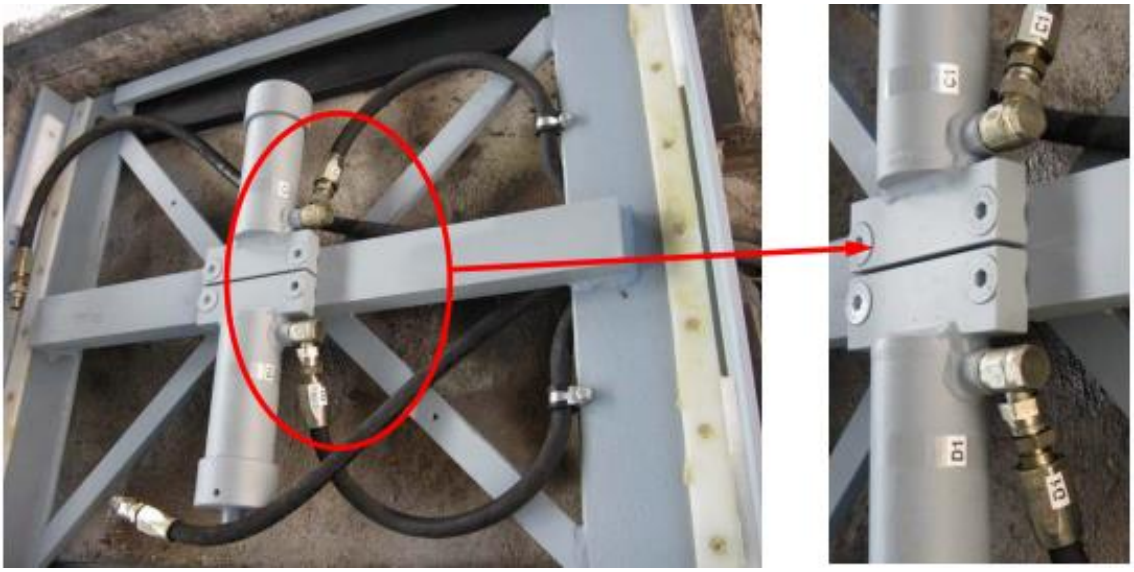
- Cut hydraulic hoses (meter goods) to the needed length **with a reserve** using a metal saw or cut-off wheel. **Clean** the cut edges, remove rubber and metal remains, e.g. using pressurised air.
- The hydraulic hose is screwed into the socket manually and counterclockwise. Assemble the bottom of the socket to the hydraulic hose end with a **small** assembly play.

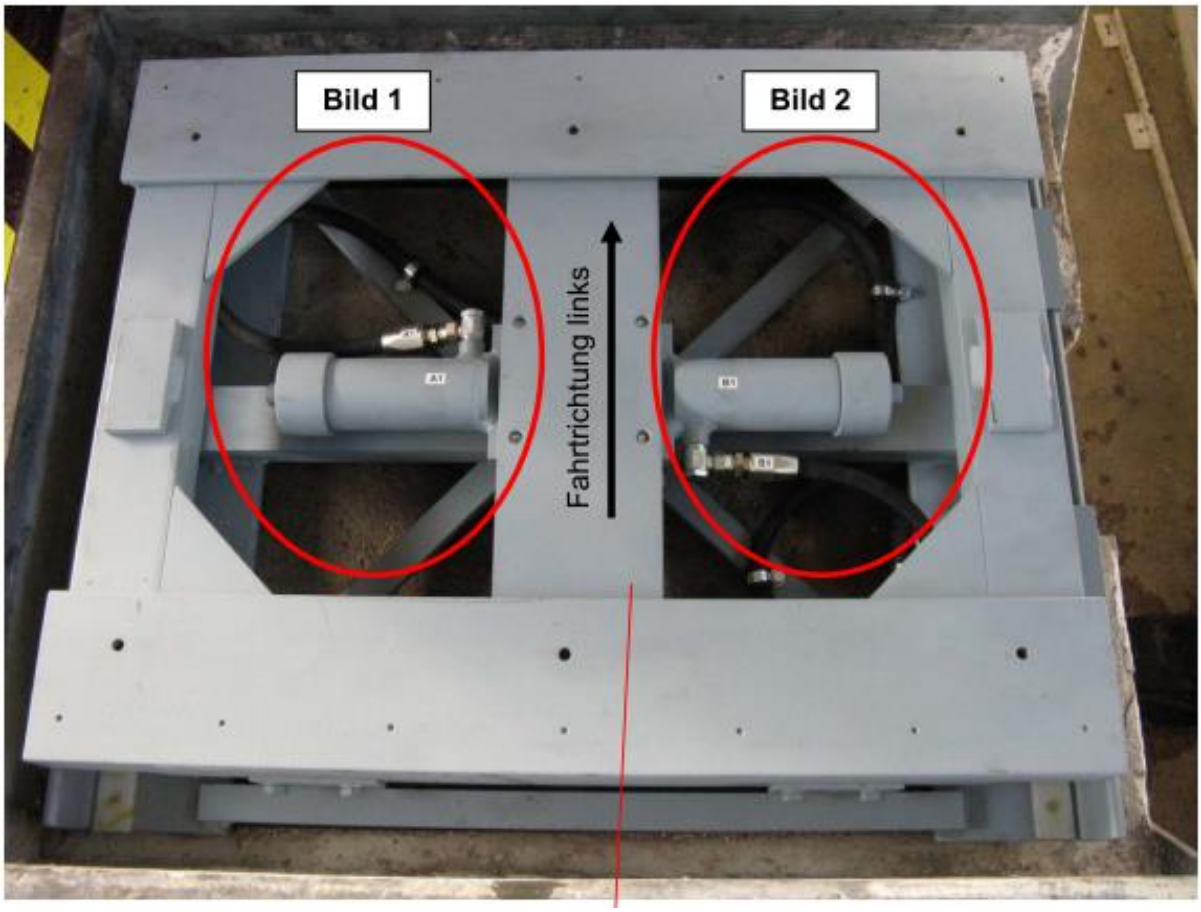


- Provide the hose nipple and the hydraulic hose holes with some lubrication. Hold socket (with hydraulic hose) using a fixing device. Screw in the hose nipple using a screw wrench to the catch in the hydraulic hose hole.
- Both ends of the hydraulic hoses which have been cut in length must be labelled according to the hydraulic connection diagram: A1, B1, C1, D1 for mechanics left side; A2, B2, C2, D2 for mechanics right side.
- Also label the hydraulic cylinders.

4.5.1 Installing in mechanics left-hand side

Remove 2 plates from above for viewing purposes.
Removal of plates not necessary for the installation of the system.





<<Bild 1 = Image 1
Bild 2 = Image 2
Fahrtrichtung links = Left of drive direction>>

Image 1

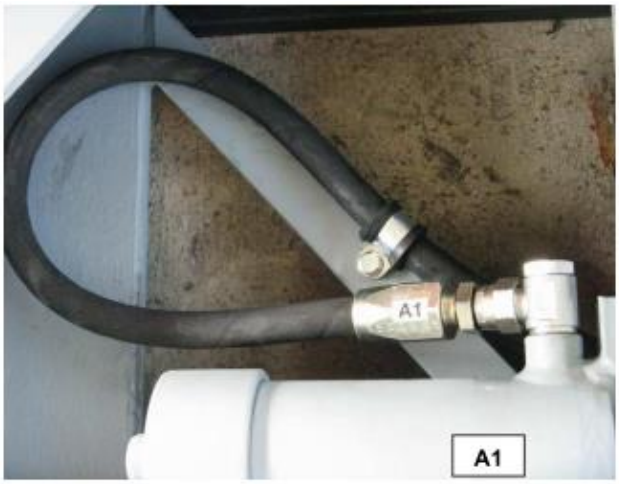
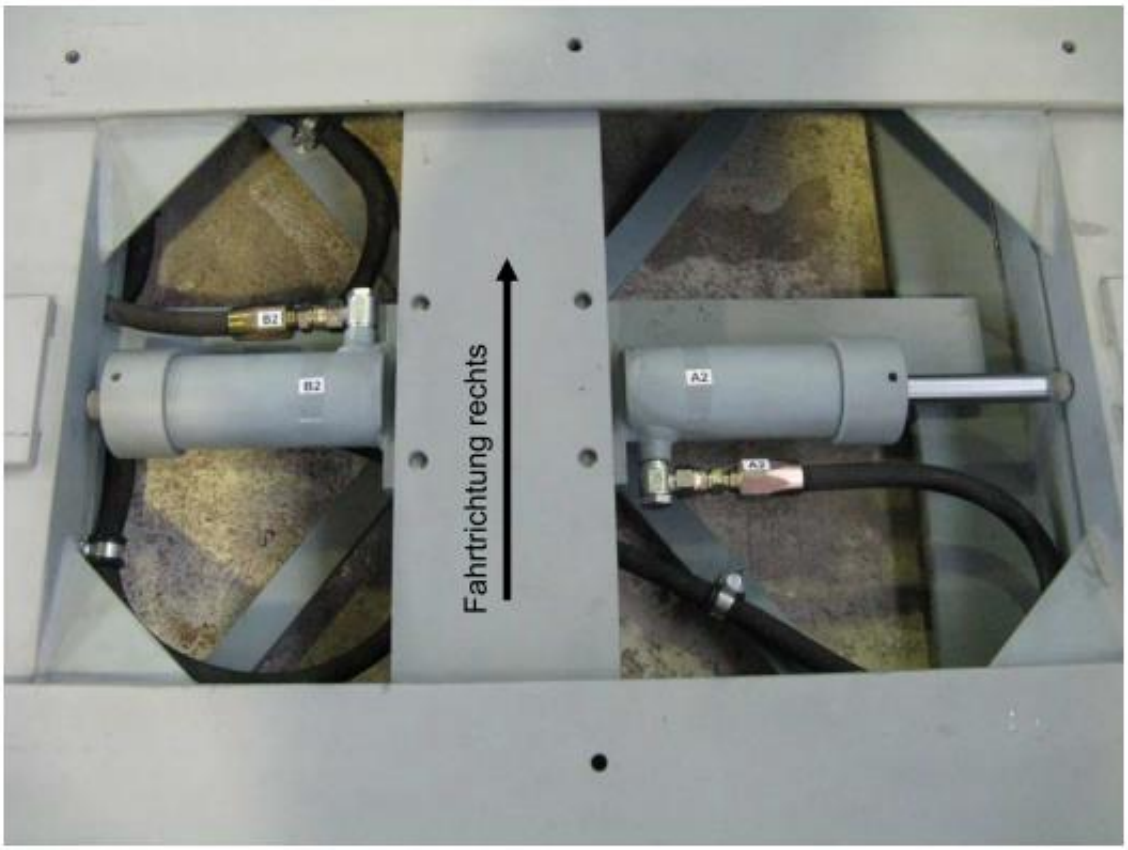


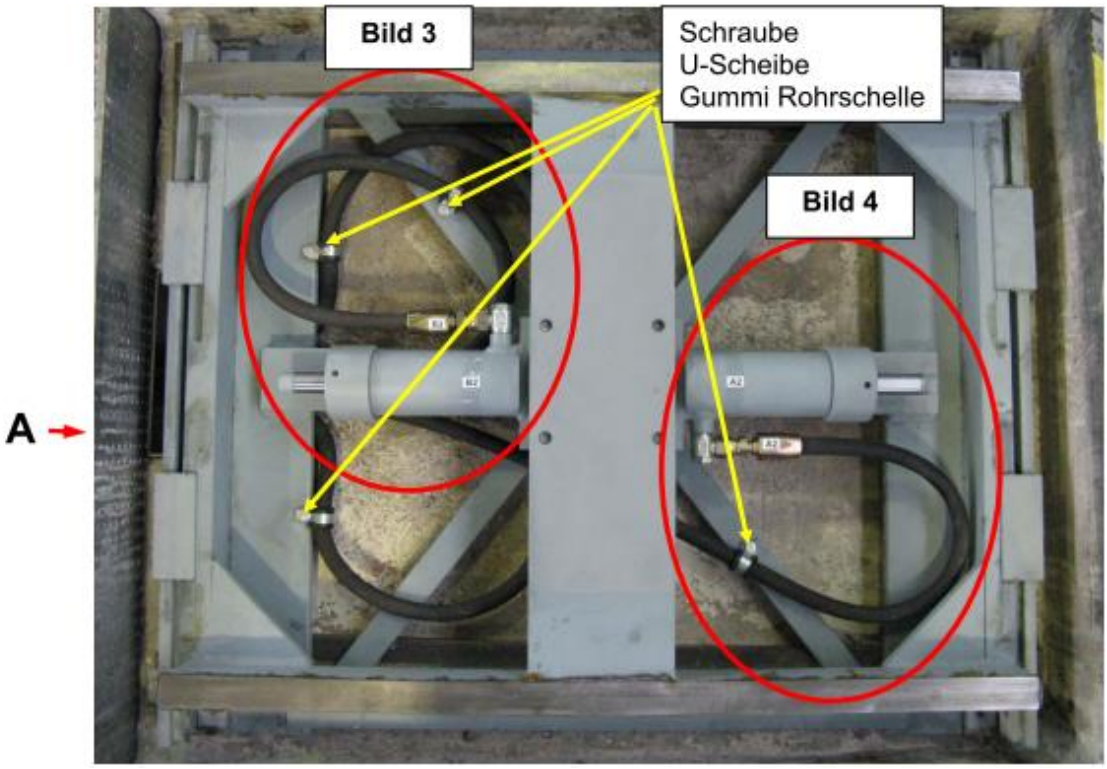
Image 2

4.5.2 Installing in mechanics right-hand side



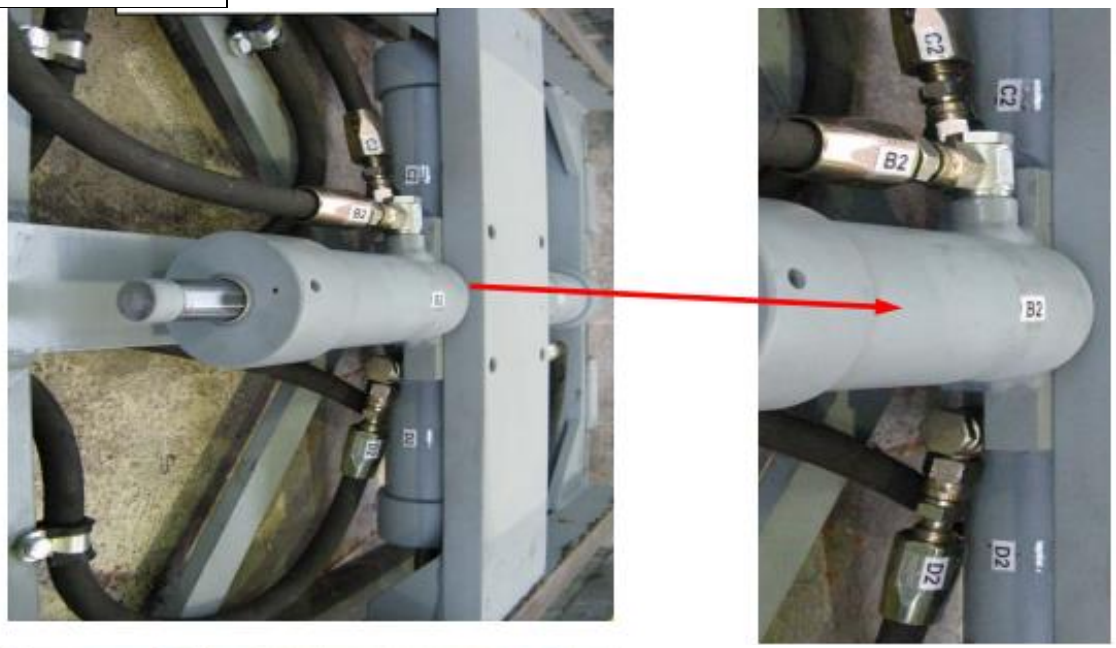
<<driving direction right>>

Remove 1 plate from above for viewing purposes.
Removal of plates not necessary for the installation of the system.



<<Bild 3 = Image 3
Schraube = Screw
U-Scheibe = Washer
Gummi Rohrschelle = Rubber pipe clamp>>

View from A



Abstand halten
über gesamten Weg

<<Bild 3 = Image 3
Abstand halten über gesamten Weg = Ensure clearance for the entire channel
Bild 4 = Image 4>>

<<Hydraulikschläuche so verlegen, daß diese bei allen Bewegungen nicht scheuern = Lay the hydraulic hoses in such a way that they do not rub at all under any kind of movement>>

4.5.3 Connecting the hydraulic hoses

- Cover the hoses to be inserted with caps or adhesive tape **to protect against dirt**
- Lay the hydraulic hoses through retraction using a retraction aid, through the connection hose pit of joint-play tester mechanics to the hydraulic aggregate.
- Assemble hydraulic hoses using banjo couplings to the upper joint-play tester hydraulic cylinders according to the hydraulic connection diagram, **free of leakage** (sealed).

4.5.4 General information

- The **customer** is to ensure that the hose lines are exchanged at an adequate time interval, even if no faults which could impair the safety can be recognised on the hose line. The time intervals are to be measured according to dangers which are to be expected when there is a failure in the hose lines (**recommended review period of 12 months, replacement recommended after 6 years)**.
- Hose lines must be laid or secured in such a manner that **a danger** is avoided if possible when the hose lines fails.
- Hose lines must be installed in such a manner that their natural position and movement is **not influenced.**
- Hose lines may also **not** be strained with tension, torsion and compression during operation, also through external effects **Rmin>=100**.
- Hose lines must if possible be **protected** against damage through mechanical, thermal and chemical effects from the outside.

5. Installation of the electronic switching unit = switching cabinet

See the "installation scheme" annex.

Connections required on-site:

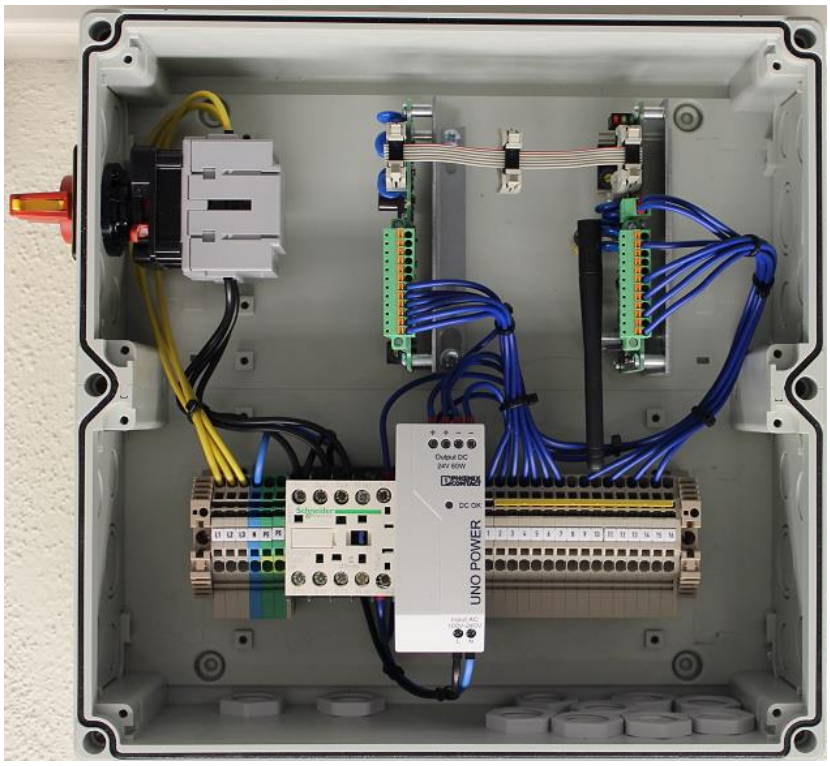
Socket 230V; 10A for torch charger cable
Supply 3x400V/N/PE 50Hz; 5x1.5qmm; 3x10A

Attach the switching unit (switching cabinet) on the back wall of the prepared slot.

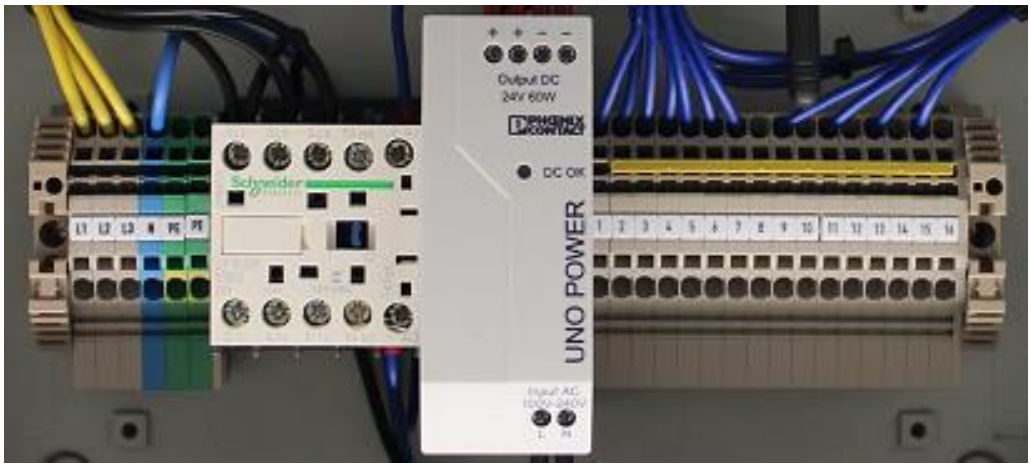
For this proceed as follows:

- Open the switch cabinet
- Attach the switch unit with four enclosed screws and 6 mm feather screws and 8 mm pegs on the back wall of the slot.
- Fix the inspection lamp bracket with a dowel.

Switch cabinet – control unit



6. Electrical connection



Power supply

L1	L2	L3	N	PE	PE
BN	BK	GY	BU	GN/ YE	

Power supply
3/N/PE AC 50Hz 400V
3/PE AC 50Hz 230V

Hydraulic motor

1	3	5	13		
					A1
2	4	6	14		

Hydraulic motor
Attention:
Motor in star-connection with 3x400V
Motor in delta-connection with 3x230V

Magnet valves:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
C2 Y4.1		**D2** Y4		**B2** Y5.1		**A2** Y5		**C1** Y2.1		**D1** Y2		**A1** Y3.1		**B1** Y3	

6.1 Mains connection

ATTENTION:

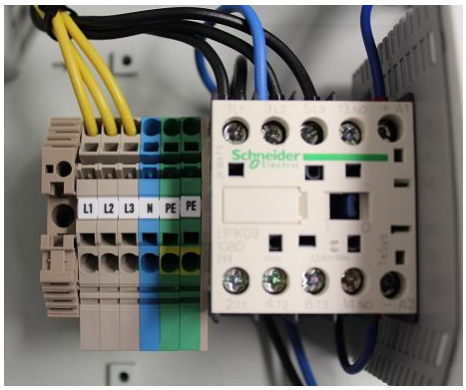
The mains connection may only be carried out by an electrician and by authorised personnel!

The electrical supply for the joint-play tester is carried out with a cable 5 x 1.5mm² from a distributor with a fuse of 10 A to the switching box of the joint-play tester.

The clamps L1 – L2 – L3 – N and the grounding conductor clamp on the terminal block "POWER" are provided for the mains connection.

With power supply 3/PE AC 50 Hz 230V:

The blue wire strand has to be reconnected from clamp "N" to the clamp "3" (L2) of the motor connector.
The main connection has to be done on the clamps L1, L2, L3 and the grounding conductor PE.



6.2 Connection of the hydraulic aggregate (motor)

On the hydraulic aggregate there is a cable with four wires. This cable is clamped in the switching cabinet on the terminal block "MOTOR" in the clamps L1-L2-L3 as well as in the grounding conductor clamp. Bridge from T to T` if no bi-metal protective switch is connected from the motor

Attention:
Motor in star-connection with 3x400V
Motor in delta-connection with 3x230V

6.3 Connection of the magnet valves

Clamp the cable with a valve connector (VAK-95-00) in the terminal block in accordance with the connection plan on point 6.

Apply the **A1, B1, C1, D1, A2, B2, C2** and **D2** stickers to the valve connectors.

7. Start up of operations joint play tester

7.1 Hydraulic aggregate – Fill hydraulic oil

- Through a corresponding **filter (20my)**, fill approx. 3.7 litres of hydraulic oil through the filling opening in the oil container. Through the oil measurement stick, the min / max oil level can be determined.

Full hydraulic oil amount approx. 6 litres

Hydraulic oil in accordance with DIN 51524, part 2
Temperature range: -20°C to +80°C
Viscosity range: min. 10mm^2/s max. 380mm^2/s

- Regularly check the oil level using the oil measurement stick and refill.

7.2 Controls

Before starting operation of the joint-play tester, please check the following:

☞ Are the test plates parallel and horizontally assembled and attached?

☞ Are the aggregate and the switch box attached in the installation slot?

☞ Have all electrical connections been carried out according to instructions?

☞ Have the cables been screwed into the cable bushings?

☞ Are the hydraulic connections connected according to the description?

☞ Is the cover of the switch box closed?

☞ Is the aggregate filled with hydraulic oil?

☞ Is the filling opening for the hydraulic oil closed?

If all questions have been clarified and can be answered with "yes", switch on the electricity supply. With the test lamp you can now operate the joint-play tester as described in the operating instructions.

7.3 Function test joint play tester

- Check the rotational direction of the hydraulic aggregate.
  If necessary, swap L1 with L2 on the line.

- Check the joint-play tester test plate movements in the whole lifting area of 50mm
- Remove the air from the lines by moving both mechanics repeatedly in all directions
- Check whether the hydraulic hoses are free and do not rub by moving them in all directions
- Check to see that the hydraulic system is sealed.
- Fill up the hydraulic oil (around 2 litres)
- Assemble the cover plate, tightening torque = 40Nm. Tool required: hexagonal torque wrench with peg
- Function check of the joint play tester with motor vehicle.

8. Changing the transmission channel and the frequency

The channel 0 is set as standard. The channels 1, 3, 4, 5, 6, 7, 8, 9 can also be set.

- In order to change the channel, the button "F1" and the button "F3" need to be pressed for at least 5 seconds.
- When the buttons are pressed for 5 seconds, this is indicated by all the LEDs turning on for a short amount of time.
- The wireless inspection lamp is then in the channel set-up modus.
- The current channel number is displayed in the "Mode"-LED.
- If the LED is completely out, this indicates channel 0. If the LED flashes once, this indicates channel 1. If the LED flashes three times, this indicates channel three etc. In order to change the channel, the "Mode" button is pressed. Each time the button is pressed, the channel number increases by one channel. After channel 9, it is channel 0 once again.
- In order to save the set channel, the "F1" button and the "F3" button need to be pressed for 5 seconds once again. When the buttons are pressed for 5 seconds, this is indicating by all the LEDs turning-on for a short amount, the new channel is then saved. If the channel is not changed, the channel setting modus can also be left by using the "F1" and "F3 " buttons.

Please note:
In order to minimise the negative influence of several inspection lamps, the channels 0, 1, 9 should be selected. The channels 0, 1, 9 are transmitted at frequencies that are as different as possible in order to ensure that an optimised separation of the channels is guaranteed and the reciprocal influencing is minimised.

There are also 3 further channels available on very different frequencies for testing purposes. The three test channels are numbered 10, 11, 12. The test channels are set in the exact same way as the channels 0, 1 and 3 to 9. The only difference is that the shift key needs to be activated. If the shift key is active, instead of the channels 0,1,3...9, the channels 0,1,3 ... 12 are available.

Please note:
The channels 10, 11, 12 transmit on frequencies that are outside the licence-free SRD frequencies. It is therefore not permitted to use these channels. If two or more devices are installed in very close proximity to one another, and thus interfere with each other’s remote control, it is necessary, that different addresses are created for the wireless communication between the controller and the control cabinet. The frequency can also be changed when other devices are working on the same frequency, meaning that the correct function would otherwise be impaired.

8.2. Radio frequencies

Channel 0	Carrier frequency =**868 000 000** Hz	Radio-Baudrate = 19200
Channel 1	Carrier frequency =**869 850 000** Hz	Radio -Baudrate = 9600
Channel 2	Carrier frequency =**868 300 000** Hz	Radio -Baudrate = 9600
Channel 3	Carrier frequency =**868 200 000** Hz	Radio -Baudrate = 38400
Channel 4	Carrier frequency =**869 525 000** Hz	Radio -Baudrate = 9600
Channel 5	Carrier frequency =**868 800 000** Hz	Radio -Baudrate = 38400
Channel 6	Carrier frequency =**869 800 000** Hz	Radio -Baudrate = 38400
Channel 7	Carrier frequency =**868 400 000** Hz	Radio -Baudrate = 9600
Channel	Carrier frequency =**868 950 000** Hz	Radio -Baudrate = 9600

Order for preferable large distance:

Channel	Frequency (Hz)	Diff. (kHz)
3	868300	
		1550
1	869850	
		1850
0	868000	
		950
9	868950	
		750
4	868200	
		1325
5	869525	
		1125
8	868400	
		1400
7	869800	
		1000
6	868800	

9. Final control

Before starting operation of the joint-play tester, please check the following:

- ☞ Are the test plates attached?
- ☞ Have the cables been screwed into the cable bushings?
- ☞ Is the cover of the switch box closed?
- ☞ Is the aggregate filled with hydraulic oil?
- ☞ Is the filling opening for the hydraulic oil closed?
- ☞ Does the system work without any faults?
- ☞ *Leave the place of assembly in a tidy and clean condition!*

10. Trouble shooting

In case of malfunction, please control the following points:

10.1 Mains voltage

- ☞ Rotating direction control
- ☞ Are the fuses in the line to the switch box intact?
- ☞ Is there 3 x 400 V in the main switch?
- ☞ Exchange faulty fuses.
- ☞ Control the line for interruptions.

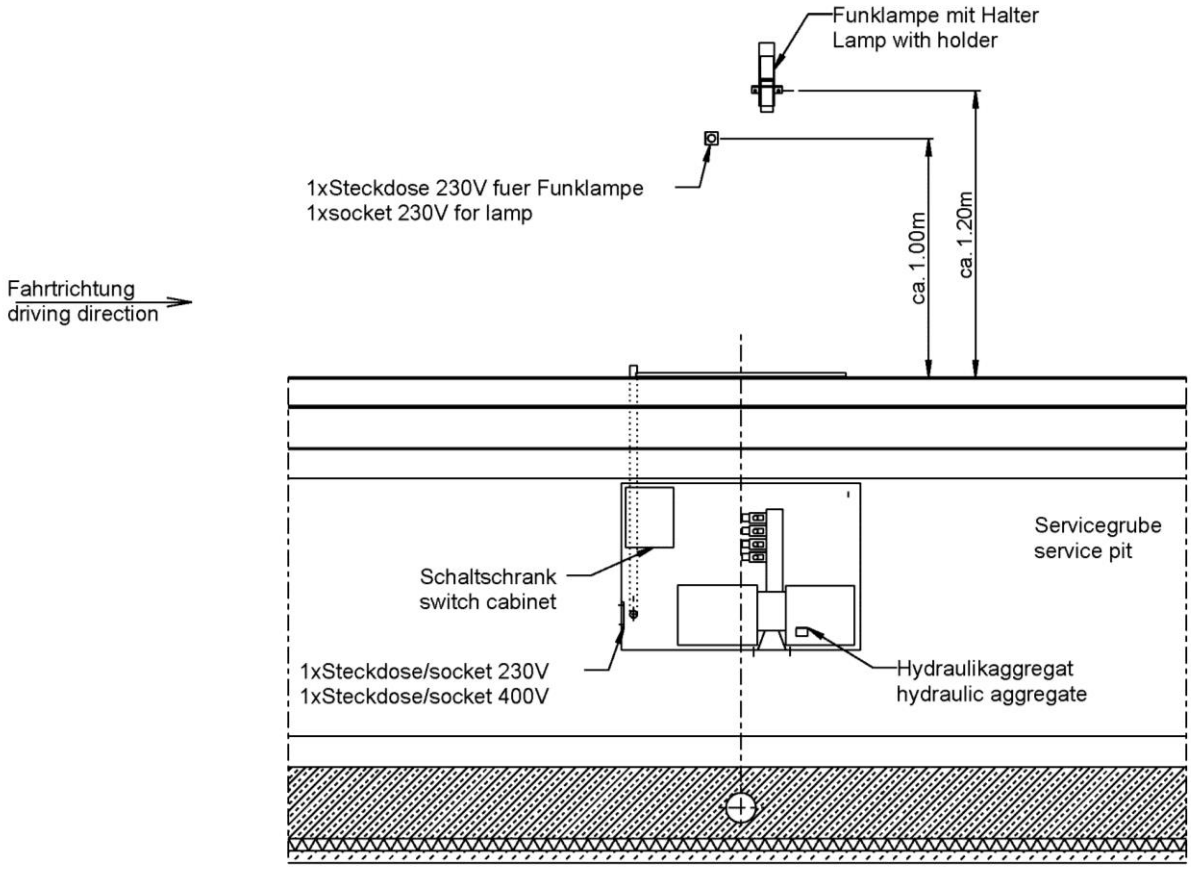
10.2 Low voltage

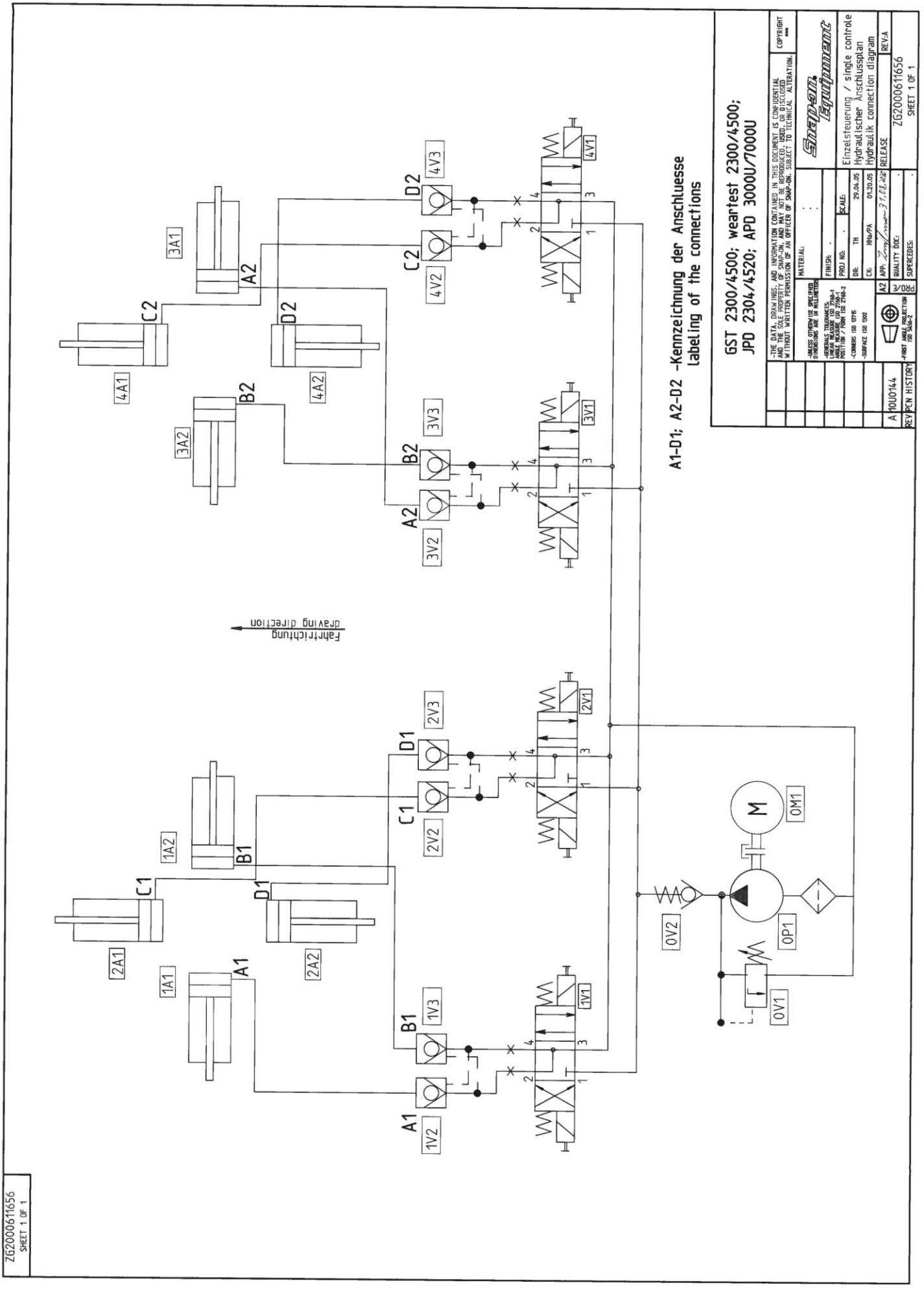
- ☞ Are the fuses in the switch box in order?
- ☞ Exchange faulty fuses.
- ☞ Check all plugged connections to make sure they are tight.
- ☞ Check to see if the LEDs in the switch box light up when activating the corresponding key on the test lamp (visual test).
- ☞ Control the oil level in the aggregate.

11. Necessary tools

- Standard tool set
- Electrical hand drill
- Stone drill replacement with a diameter of up to 12mm
- Angle grinder
- Metal saw
- 8 mm hexagon wrench with peg

12. Installation scheme




GST 2300/4500; weartest 2300/4500;
JPD 2304/4520; APD 3000U/7000U
A1-D1; A2-D2 -Kennzeichnung der Anschluesse
labeling of the connections
Einzelsteuerung / single controle
Hydraulischer Anschlussplan
Hydraulik connection diagram
ZG2000611656
SHEET 1 OF 1
Fahrtrichtung
drawing direction
1A1
1A2
2A1
2A2
3A1
3A2
4A1
4A2
1V1
1V2
1V3
2V1
2V2
2V3
3V1
3V2
3V3
4V1
4V2
4V3
0M1
0P1
0V1
0V2