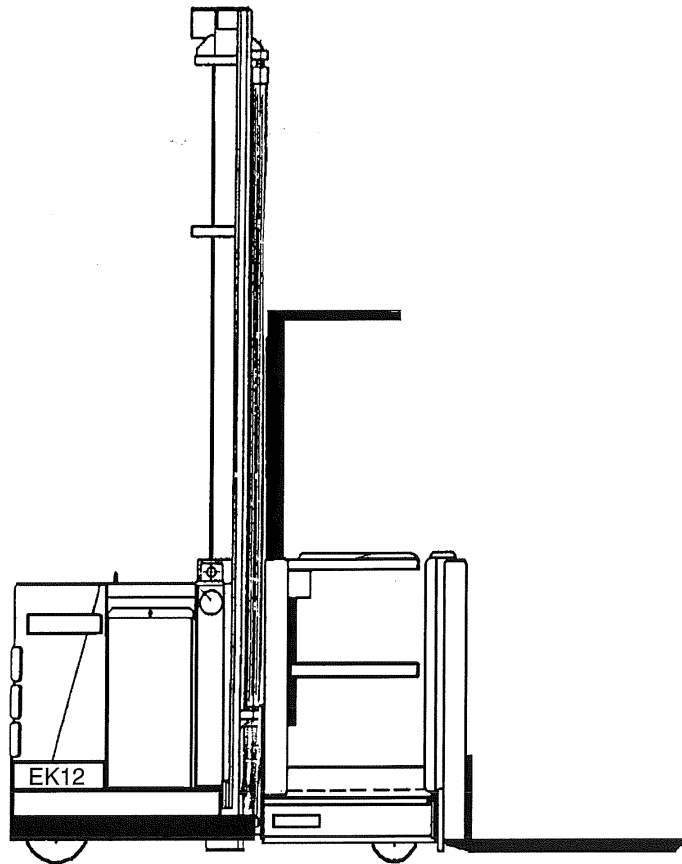


# Workshop Manual

# EK12

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## Commissioning the travel drive system (after exchanging)

The following oil viscosities must be used:

Standard oil: SAE 80/90  
Ambient temperature: 0°C to 40°C

Low-temperature oil: SAE 75 W  
Ambient temperature: to -40°C

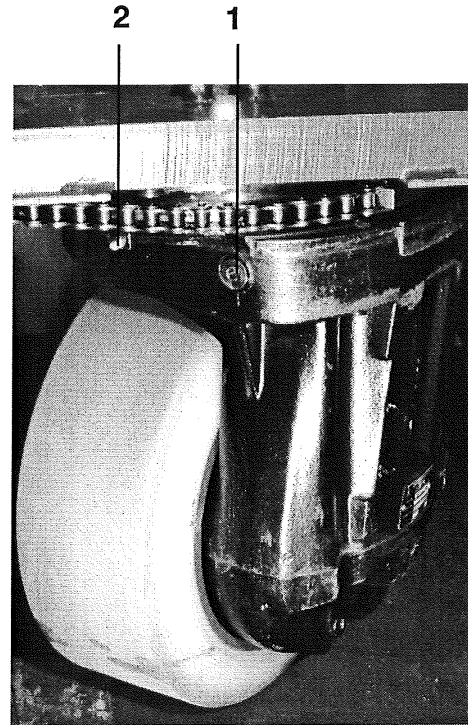
For special requirements, we recommend contacting the manufacturer.

Oil quantity: appr. 3,5 l

### ***Remark:***

The specified oil quantity is a guideline value. The correct oil quantity is ascertained by filling the tank up to the lower edge of the filling hole (1).

It is important to avoid overfilling, as otherwise the seals are damaged and it is possible that the operating temperature will not be adhered to.



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### **Lubrication of the slewing ring bearing:**

The slewing ring bearing should be relubricated twice a year using the two lubricating nipples (2), in particular after cleaning the gearbox (using a steam jet).

**Grease type:** All-purpose grease

## Description of the steering controller

**Remark:** See block diagrams (B2,B3)

### Safety test when vehicle is switched on:

When the supply voltage 1+ 24 V is applied to X1:1 and 2+24V to X1:10, a safety test is carried out. The error memory checks the opened contact of safety relay 3K1 via connections R, L and +.

If this safety test has a positive result, output X1:9 "Safety relay" is set. The steering motor contactor responds and closes its contact. As a result, 24V are applied to connections R, L and + of the steering controller.

Once these conditions are met, and if there are no other errors, output X1:9 remains set.

### Enabling:

When 24V ( deadman ) are applied to input X1:3 "Enable" and the error memory does not register any errors, output X1:8 "OK" is set.

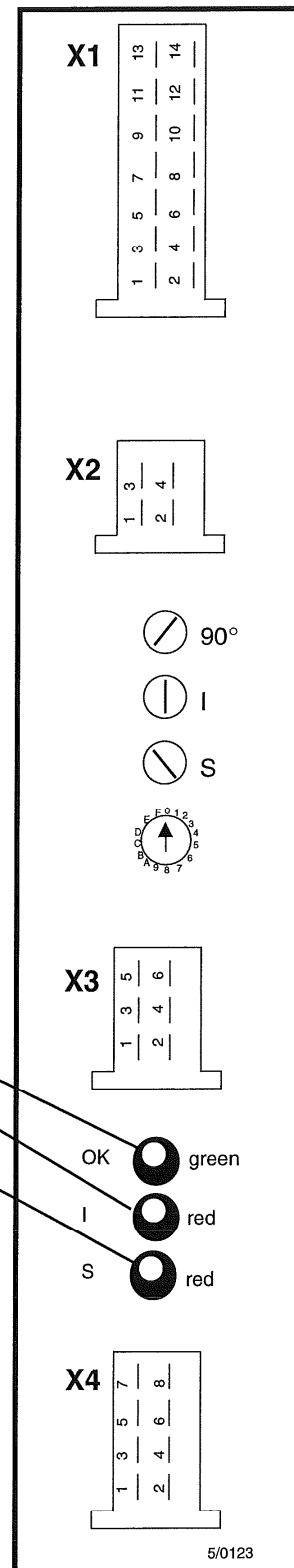
Relay 3K3 "STeering error" responds and the brake is released ( steering is ready for use ).

When the enable signal is removed from the steering controller, the steering remains active for about 2 seconds.

A green LED OK (1) indicates that the steering is enabled.

The enable signal is removed ( with a delay ), (green LED goes off) if:

- The "Enable" signal is missing at X1.3
- The signal 2+ 24 V is missing at X1.10
- There is a power supply error (internal 15 V)
- The contact for the steering motor contactor is not open before the test
- The steering motor is faulty or not connected
- Actual value error (red LED, "I", 2)
- Setpoint error (red LED, "S",3)
- Output stage error
- Controller error
- Short-circuit error



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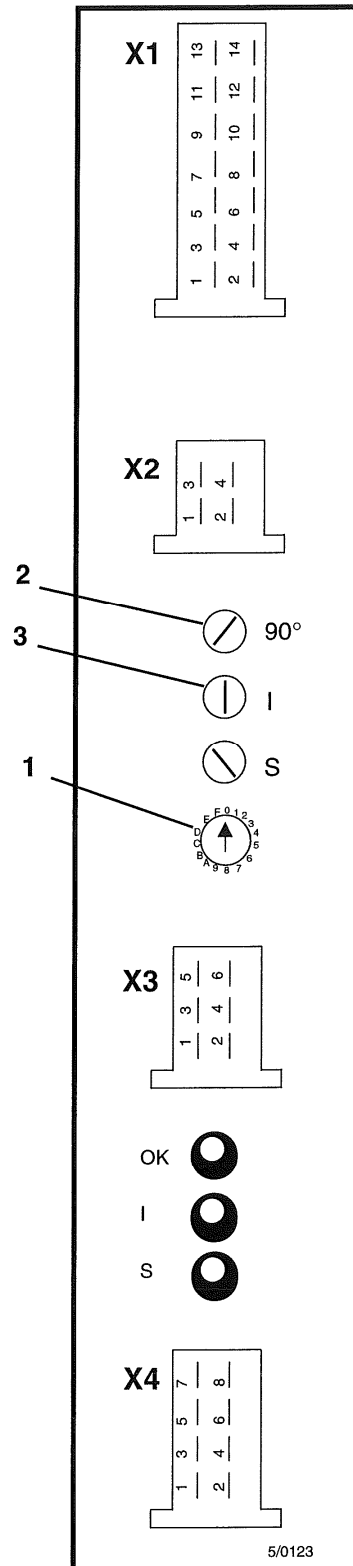
## Electronic steering controller

### Adjustment

Continued

17. Move the service switch (1) into the operating position:  
(see sheet nos. B10)
  18. Actuate the deadman's switch and turn it carefully to move the drive wheel to the maximum steering angle.  
This must be 90° to both sides.  
The drive wheel must not hit the mechanical steering stop.
  19. The "Steering angle" trimmer (2) (see sheet B3) can now be used for fine adjustment of the 90° steering angle (turning it clockwise makes the steering angle smaller).  
This must be carried out with both steering angles (right/left).
- Note:** Do not set the steering angle too large! The drive must not hit the mechanical end stop.
20. To test the maximum steering angle, make a steering movement from max. right to max. left and back again. The drive must not hit the mechanical end stop.
  21. Finally check the entire steering function again and readjust with the trimmers if necessary.

**Note:** It is particularly important to ensure that straight-on travel with simulated rail travel (connect 24 V to straight-on input) is correct. There should only be a minimal deviation (appr. 0.5 m) from straight-on travel over an extended stretch (approx. 10m) .  
If necessary, adjust with the "actual value offset" trimmer (3).



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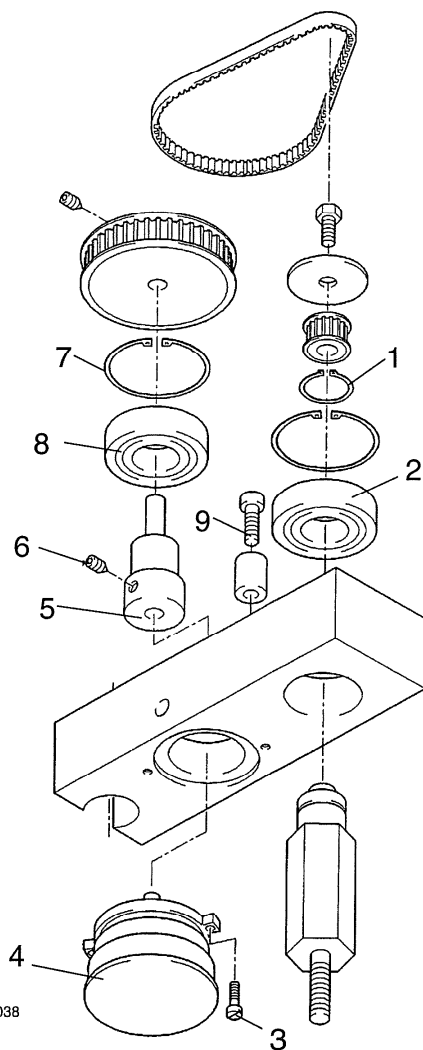


## Actual value potentiometer gear I = 4.17

Id. Nr. W8 361 719

### Continued Dismantling

4. Remove the circlip (1) and pull off the ball bearing (2) with a puller device.
5. Release the 2 screws (3) and remove the potentiometer (4) by pressing on the axle (5) from below.
6. Release the 2 threaded pins (6) and remove the potentiometer (4).
7. Remove the circlip (7) and push out the ball bearing (8).



### Assembly

To assemble the actual value potentiometer gear, follow the dismantling instructions in reverse order.

**Remark:** When tightening the fastening screw of the toothed belt tensioning roll (9) ensure that the roll can still be turned easily. Secure the screw and threaded pins with Loctite.

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## Setting brake clearance

Brake not energized ( in braked state)

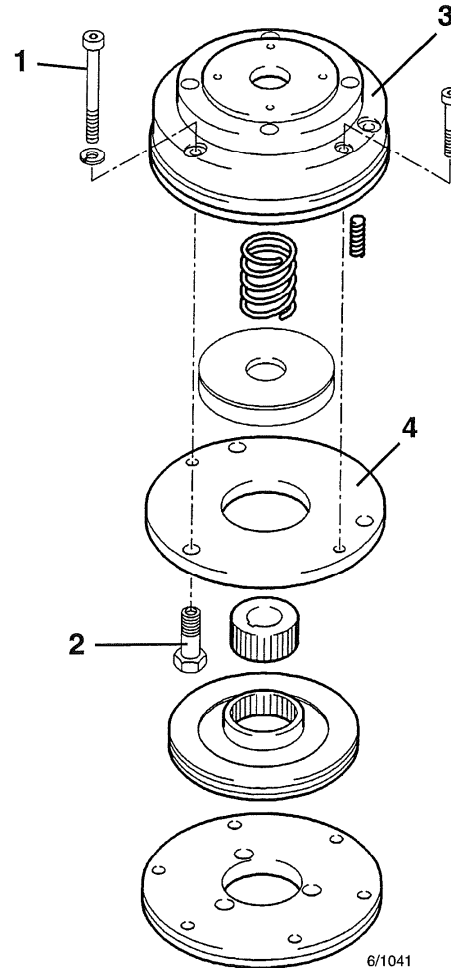
Loosen the three fillister-head screws (1) (do not unscrew).

Using the fork wrench, pull the adjusting sleeves (2) far enough in or out to create a clearance of 0.3 mm using the sensor gauge between the magnet element (3) and the anchor plate (4).

Tighten the three fillister-head screws (1) and measure the clearance again, adjust if necessary.

### **Note:**

If one of the three adjusting sleeves is adjusted, it is necessary to also adjust the others so as to ensure that the distance between the base plate and the magnet element is even in every position.



## Setting the brake delay

The brake delay for both braking stages is firmly prescribed and cannot be altered.

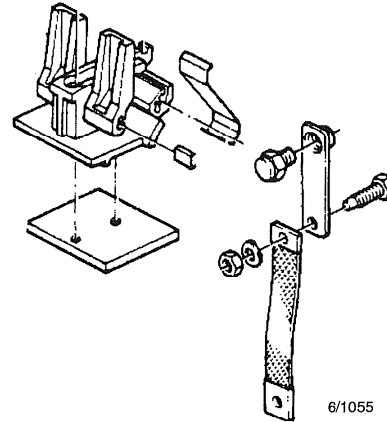
## Contd. Contactors

### Armature assembly

The armature assembly, the flexible part of the contactor, is mounted between the contactor housing and the coil assembly.

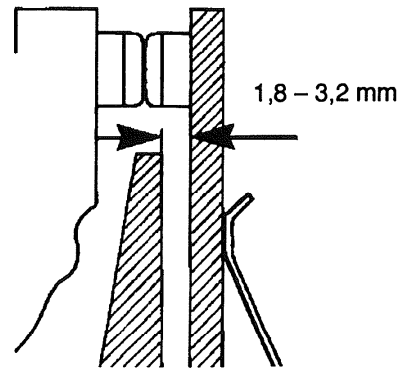
The armature assembly is made up of:

- Plastic carrier
- Armature plate
- Contact bridges with contact screws
- Flexible links
- Contact springs
- Tension springs



The contact screws of the contactor housing and the armature assembly are identical.

Tightening torque 10 Nm.



### Contact clearance

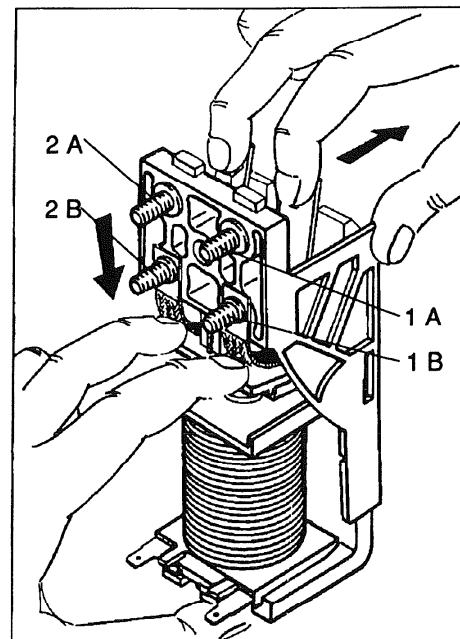
If correctly assembled, there must be a distance of between 1.8 and 3.2 mm between the contact bridge and the support arm when the contactor is energized.

### Contact pressure

Contact pressure of the contactor when fully actuated: Setpoint 11-14 N per contact, relative to centre contact.

#### ***Remark:***

The contact spring exercises a certain friction. The contact is therefore correctly adjusted if, when subjected to a load of 12 - 13 N, the contact does not close when moved slowly, but touches and remains closed if moved quickly.



## Capacitors

Id. Nr. W8 002 895 Drive pulse control

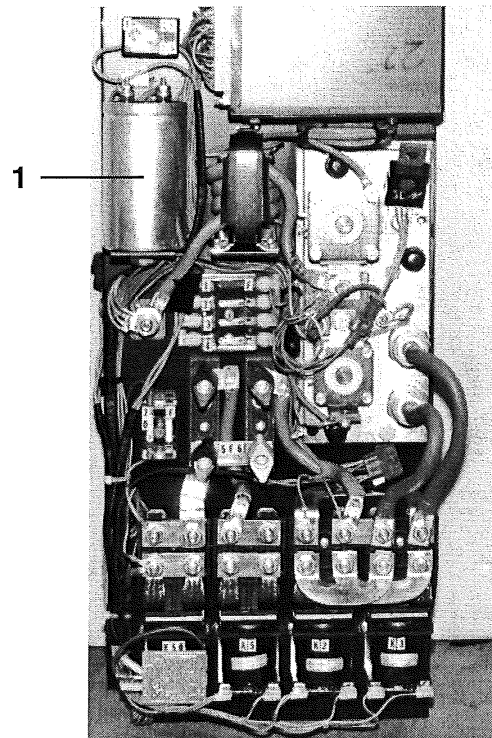
### Functional Characteristics

The capacitor (1) has the capability of storing electrical energy.

It consists of a roll of special paper and a dielectric fluid. Both are mounted in an aluminium beaker with a plastic lid from which the terminals project. This metal paper capacitor is not polarized, i.e. it can also be charged with reverse polarity.

When fluid escapes from the beaker or an internal short circuit occurs, the capacitor is defective.

The capacitor has two terminals. The voltage at the capacitor is around 48 V in a charged state. When discharged, the voltage is 0.



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**STILL  
WAGNER**

## Basic circuit board

### EKB1

### Internal wiring

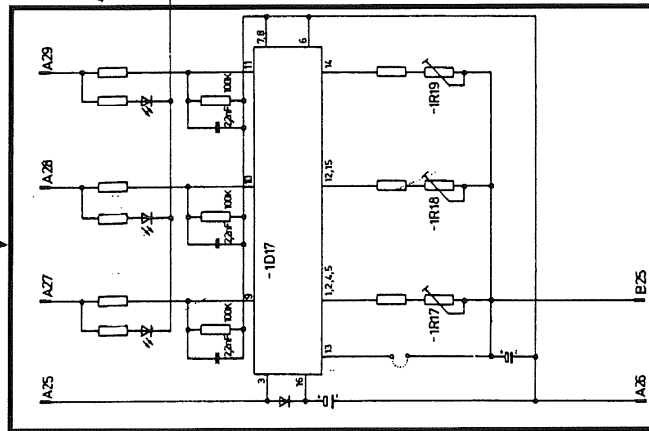
For pin assignment see sheet nos. B26, 27, 28

For meaning of LEDs

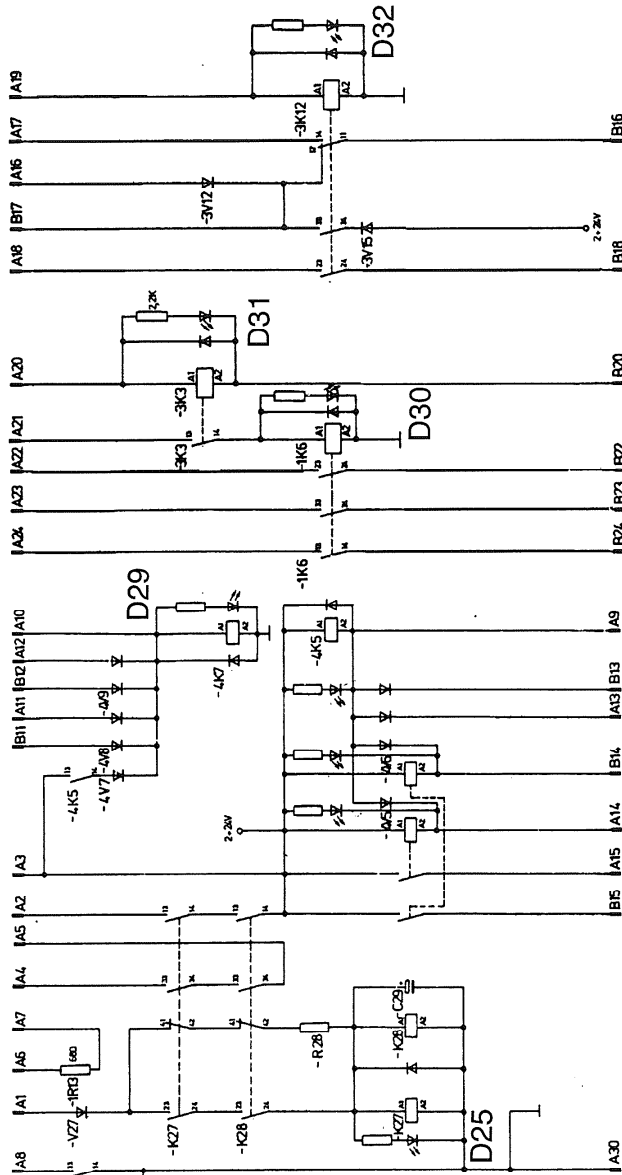
D22-D32 see B29

Deceleration is not used

D22 → D23 D24



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D26 D27 D28

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