Type RO*66LA
Hydraulic lifting fifth wheel with remote control
The fifth wheel, type 66 HYDRA-LIFT is provided with a hydraulically liftable fifth wheel plate. This kind of fifth wheel has proved to be best wherever semitrailers are to be removed safely and without waste of time, and without any effort of having to wind up the supports.

Type 66 HYDRA-LIFT can be operated without any restriction when being lowered, thus also having a large clientele when distributing semitrailers in the local zone.

Type 66 HYDRA-LIFT is also favoured for easily emptying the semitrailer, e.g. for emptying bulk material. Almost 1000 of these fifth wheels are used at loading plants for containers in harbour and railway areas, at motor carriers, internally, and on public roads.

All functions are remote-controlled from the driver’s cabin.

The driver has no longer to leave his cabin for the purpose of steadily lifting and lowering as well as of opening the lock. The coupling procedure is fully automatic. The state of the locked and double-secured coupling is replied to the driver’s cabin.

Order designation: Type 66 LA
Delivery: Mechanic part with fifth wheel plate, lifting frame and hydraulic cylinder, hydraulic system with hydraulic pump, flexible tubes, oil reservoir, electro-valves and control-valve, as well as the operating device with switches for the driver’s cabin.

TECHNICAL DATA:
Type-tested, approved design No. M 3680

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissible empty weight of the truck tractor (T)</td>
<td>up to 10 t</td>
</tr>
<tr>
<td>Admissible imposed load (U) on public roads</td>
<td>up to 15 t</td>
</tr>
<tr>
<td>Admissible total weight of the semitrailer truck (m2)</td>
<td>up to 38 t</td>
</tr>
<tr>
<td>Corresponds to an admissible D-value of</td>
<td>110,5 kN</td>
</tr>
<tr>
<td>Admissible imposed load (U) on non-public roads</td>
<td>up to 22 t</td>
</tr>
<tr>
<td>Admissible speed at lifted state</td>
<td>20 km/h max.</td>
</tr>
<tr>
<td>For steering acceptance</td>
<td>not admitted</td>
</tr>
<tr>
<td>Lifting height</td>
<td>355 mm max.</td>
</tr>
<tr>
<td>Lifting time</td>
<td>approx. 10 sec. at 1200 r.p.m. of the accessory transmission</td>
</tr>
<tr>
<td>Dead weight of complete HYDRA-LIFT, typ 66 LA</td>
<td>approx. 600 kg</td>
</tr>
</tbody>
</table>
The D-value is calculated according to the following D-value formula:

\[ D = g \times \frac{0.6 \times T \times R}{T + R - U} \text{ in kN} \]

This means:

- \( g = 9.80665 \frac{m}{s^2} \)
- \( U = \text{admissible imposed load in t} \)
- \( T = \text{admissible total weight of the truck tractor in t} \) \( (m_k - m_L + A) \)
- \( R = \text{admissible total weight of the semitrailer in t} \)

**TECHNICAL DATA OF THE HYDRAULIC PUMP:**

- **Power consumption**: approx. 22 kW (30 PS)
- **Recommended revs of the hydraulic pump**: up to 1200 r.p.m
- **Hauling capacity at 1200 r.p.m**: 60 l/m
- **Pressure**: 175 bar max.

**MOUNTING INSTRUCTIONS:**

In order to use the HYDRA-LIFT, the truck tractor must be provided with an accessory power take-off.

**Necessary free space for the mechanic part:**

The coupling position of the truck tractor for the admissible imposed load which is given by the manufacturer, is to be respected for the mounting when the HYDRA-LIFT is in its initial position. When being lifted to maximum height, the fifth wheel plate is displaced to the rear for 240 mm.
Mounting of the mechanic parts:

For fixing the mechanic part to the frame of the vehicle place 10 to 12 mm thick mounting plates (A) between the frame of the HYDRA-LIFT and the frame of the vehicle or the subframe angles.

At the rear a completely traversing mounting plate is to connect both sides of the vehicle frame in order to reinforce the frame (B). This is provided in the front part by the double-T-profile of the HYDRA-LIFT. The plate material can be St 37-2 or St 52-3.

Weld the frame of the HYDRA-LIFT inside and outside to the mounting plates by welding beads of a length of approx. 7.5 cm at a distance of 15 cm with a hollow weld (throat 6-8 mm). In addition weld at least six reinforcing beads to each outer side.

For being fixed to the vehicle, the mounting plates are screwed to the subframe angles. Use screws M 16 grade 8.8 and place them at a distance of approx. 230 mm to one another. Additionally, in order to absorb the longitudinal forces, limiting blocks (C) are to be welded to the subframe angles on both sides in front and at the rear.

If new, longer subframe angles must be fixed, re-use as far as possible, the already existing borings of the vehicle frame. No welding is authorized at the vehicle frame itself! Place additional borings only according to the mounting instructions of the manufacturer.

Weld the holding devices for the stand-by oilreservoir (108), the control valve (87), and the electrovalve-block (92) to the HYDRA-LIFT frame.
Connecting of the hydraulic system:

Attention:

During the installation of the whole hydraulic system always pay attention to that no foreign substances get into the hydraulic system. Impurities may lead to the destruction of the pump and the cylinder. We recommend, as a precautionary measure, to flush the whole system before its initiation.

The hydraulic pump can be flanged to an accessory power take-off (standardized by manufacturer ZF) N../1c, N../2c, N../3c. It can also be driven via a propeller shaft with coupling.

The sense of rotation of the hydraulic pump is arbitrary.

When mounting the countertorque lowering valve (96) pay attention to that connection B points to the hydraulic cylinder with the screwed connection (97), and that connection F points to the control valve (82).

Topping-up of hydraulic oil:

Approx. 1-8 | of hydraulic oil are required for the hydraulic system. We recommend to use hydraulic oil of quality HLP 36 ... to SAE 20 (30) or SO (+O). The valves indicated in parenthesis are for peak achievements at 22 t of imposed load.

For the first topping-up of the system at the T-piece (109), close the oil reservoir by screwing out the screw (turning it to the left).

The topping-up is done via the replenishing screw (69) on the top of the hydraulic cylinder. In order to keep the control valve (87) at free flow, the ignition must be switched on during the top-up procedure and the button "LOWER" of the operating device in the driver's cabin must be pressed down. Moreover the vent screw (50) at the hydraulic cylinder must be opened.

Top up oil until it penetrates at this vent screw. Close the vent screw (50) and completely top up the hydraulic cylinder with oil. Close the replenishing screw (69) and top up the reservoir (108) until a level of approx. 5 cm below the charging hole is reached. Open the reservoir by screwing in the screw (turning it to the right) at the T-piece (109).

When having lifted the HYDRA-LIFT several times up to its highest position, bleed the hydraulic system, when it has reached its almost lowest position, at the vent screw (50) of the cylinder.

The filling level of the reservoir must not exceed a level of approx. 5 cm below the charging hole. (Temperature rise = expansion).

Connecting of the pneumatic system:

(D) = the connection to the pneumatic system.

In case that a four-cycle protective valve is installed in the vehicle (as it usually is), then the connection to HYDRA-LIFT can be directly established there at one of the connections for secondary consumers (e.g. connections 23 or 24), or, if those connections are already taken, via a T-piece in parallel to a secondary consumer.

If already connected secondary consumers are to be protected, an additional relay valve is to be installed after the T-piece (description in next paragraph).

If the pneumatic system has no connections for secondary consumers, the following is to be respected:

A relay valve is to be installed as near to the air reservoir as possible. The set pressure of the relay valve must be higher than the calculated pressure of the brake system in the final air reservoir.

A relay valve without backstreaming according to DIN 74279 can be used (e.g. WABCO 434 100 1250, or GRÄU 314 012 004, or KNORR DR 4340).

This valve is not included in the delivery of the HYDRA-LIFT.

The operating of the HYDRA-LIFT requires compressed air at working pressure of 5-10 bar. The admissible extreme pressure is limited by the connector of the air tubes and is not to exceed 10 bar.
Connecting of the elektric system:

Mount the operating unit in the driver’s cabin in a way that the switches are protected against being unintentionally pressed by the dead weight of the covering plate. The operating unit is equipped with incandescent lamps of 12 V, which are to be replaced by the incandescent lamps of 24 V (loosely enclosed) at a 24 V-operation. All other electric units are designed for operation at 12 V and 24 V.

Elektric-hydraulic-pneumatic-circuit diagram:

Functional description:

Lifting:
By the press button for “LIFT” the electrovalve (I) is switched. It provides compressed air for connection (A) at the control valve and for connection (MI) at the switching cylinder for the secondary power take-off. The control valve switches the pressure pipe from the hydraulic pump to the cylinder.

Lowering:
By the press button for “LOWER” the electrovalve (II) is switched. It provides compressed air for connection (B) at the control valve. The control valve releases the oil back-flow from the piston side of the hydraulic cylinder to the rod side of the cylinder. By means of the countertorque lowering valve (96), mounted at the cylinder bottom, the fifth wheel plate is retardingly lowered, even at maximum imposed load.

Decoupling:
By the pull switch (Z) the electrovalve (III) is switched. It provides compressed air for the release cylinder under the fifth wheel plate. The coupling lock is opened. The yellow control lamp in the driver’s cabin is out.
OPERATING INSTRUCTIONS:

Initiation:
In order to avoid shipping damage, the fifth wheel is delivered with its lock closed. Therefore, before initiation, the coupling lock must be opened.

This is done by pulling the pull switch in the driver's cabin "RELEASE LOCK" and by retaining it as long as the coupling hook is manually set in open position by means of a mounting device.

Then the coupling lock is in ready position for the fully automatic coupling procedure.

Before the first coupling procedure the surface of the fifth wheel plate must be amply greased with multi-purpose grease.

In order to obtain a troublefree coupling, the semitrailer truck must be equipped with a standardized king pin 50 according to DIN 74080 or ISO-standard 334 (2 inch king pin). King pins which are bent or with wrong size or in angular position in the fifth wheel plate impair the perfect function of the automatic operations and may cause accidents.

Coupling:
Pay attention to that the semitrailer truck is approx. 5 cm below the fifth wheel for the coupling procedure. When the two vehicles are linked, the turntable of the tractor and the fifth wheel plate must closely fit.

The coupling procedure is fully automatic. The king pin 50 according to DIN 74080, mounted at the truck turntable, releases the automatic operations. The king pin is then inevitably gripped and closely surrounded by the tilting and strong coupling hook. Then the coupling hook is seized by the latch, thus being positively locked and secured. The latch is secured by a further security devise, which is only released by actuating the release cylinder.

Any unintended release of the coupling is thus excluded.

The yellow control lamp "LOCK CONTROL" must light when the coupling procedure is finished, otherwise there is hazard of accident!

Lifting:
Actuate the clutch pedal with the engine turning. Press the press button "LIFT" and keep it pressed. Release the clutch pedal and accelerate the engine to mean revs (pump revs approx. 1200 r.p.m). The fifth wheel plate is lifted. After having reached the desired height, release press button "LIFT" and shortly actuate clutch pedal again.

The lifting procedure can be stopped by releasing the press button "LIFT". Then HYDRA-LIFT will stay at the height reached. For further lifting the lifting procedure must be started again as described before.

The yellow control lamp "LIFT CONTROL" check valve incorporated in the control valve prevents the fifth wheel plate from lowering.

Lowering:
When the press button "LOWER" is actuated, the fifth wheel plate is lowered. It will rest at any position reached when the press button is released. The green control lamp in the driver's cabin lights at lowest position. Lowering is not possible without compressed air.

Decoupling:
Decoupling is only admitted at lowered state of the semitrailer truck.

For decoupling, pull the pull switch (2) and keep it pulled as long as the vehicles have moved apart. Then the coupling lock is already in ready position for the next fully automatic coupling procedure.

Accident prevention:
The operations "LIFT" "LOWER" and "DECOUPLING" are only allowed at complete standstill of the vehicle.

With the ignition switched off and with switched-off engine, the fifth wheel plate will rest in its respective height position.

Before starting any maintenance and repair works, secure HYDRA-LIFT against unintended movements.

Maintenance:
The complete mechanic part of the fifth wheel plate must always be amply greased with multipurpose grease.

Depending an operation, grease daily.

The first oil change of the new hydraulic system is to be carried out after one week operation. At this occasion also clean the magnetic hexagon head pipe plug (52) magnetic hexagon bolt in the plug connection block at the lower side of the hydraulic cylinder.

In order to obtain a long life of the hydraulic unit, also change the oil of HYDRA-LIFT when carrying out the regular oil change of the truck tractor.
HYDRA-LIFT

Hydraulically steadily lifting fifth wheel with remote control

Type 66 LA