



MASCHINENFABRIK

MFG: HUSS-HEINER, WILHIEM, &
CO.

NAME: UFO

NM-KIDDIE

OPERATING INSTRUCTIONS

for

Amusement Ride "UFO", Serial no.

Park Model

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ÜBERNAHMEPROTOKOLL

ACCEPTANCE CERTIFICATE

für
for

Rundfahrgeschäft

Amusement Ride .. U. F. O.

Auftrag-Nr.:

Order No.:

Die ordnungsgemäße, vollständige Aufstellung, Übergabe und Einweisung ist gemäß Kaufvertrag vom an den Käufer/ oder dessen Stellvertreter, Fa. erfolgt am

The proper, complete erection, handing-over and introduction of the buyer/ or his representative to the operation of the ride in accordance with the sales contract of has taken place on

Die Betriebs- und Wartungsanleitung sowie die gesonderten Hinweistafeln wurde übergeben/zugesandt und erklärt. Jeder Besitzer dieses Fahrgeschäftes ist verpflichtet, sich beim Herstellerwerk einweisen zu lassen und sich die neueste Fassung der Betriebs- und Wartungsanleitung auszuhändigen zu lassen.

The Operating and Maintenance Instructions as well as the separately given informative signs have been handed over/sent and explained. Every owner of this ride is obliged to obtain introduction to the operation from the manufacturer and to have the Operating and Maintenance Instructions - latest edition - handed over to him.

Bremen, 26.01.1990

Hersteller
Manufacturer

Käufer
Buyer



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RESPONSIBILITY OF MANAGERS AND OPERATORS

The following remarks are a compulsory condition for the safe operation of the ride:

1. In all cases the manager is ultimately responsible for the safety of passengers during operation of the ride.
2. Selection of operators must correspond to the demands made on them regarding operation of the ride.
3. The operator must devote his undivided attention to the operation of the ride.
4. He must be acquainted with the functioning of the ride, its safety devices, emergency devices, operating instructions and regulations, and ensure the safety of passengers and safe running of the ride.
5. He must have complete and safe control over the unloaded ride before he operates it with passengers.
6. If a malfunctioning occurs operation must cease immediately.
7. Malfunctioning may often be detected by a change in noise during operation. If this occurs, one should look for the cause and, if necessary, get in touch with experts to find the reason for any malfunctioning.
8. The operator must insist on maintenance work being carried out, as it is described in detail in the operating instructions. If he does not, he is obliged to cease operation.
9. Before initiation the operator has to check the ride on its perfect working condition by performing the ordered controls and the trial runs.
10. The carrying parts as well as the motor driven parts are to be checked on perfect working condition before each initiation. Damaged parts are to be substituted by perfect ones. Furthermore it has to be observed that the ride is in safe upright position during erection and dismantling. After erection all parts have to be orderly connected and all connecting parts and necessary anchorages have to be mounted in a safe way.
11. The complete operating instructions provided by the manufacturer have to be kept at hand in the operator's stand so that the operator can have a look at them at any time. Upon loss, the manufacturer has to be immediately requested to provide a new copy of the complete operating instructions.
12. During repair and maintenance works, the ride must be currentless, i.e. the main switch in the switch cabinet must be switched off. Should it be necessary to carry out maintenance work while the ride is in operation, an additional person to control the switch board is required.



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13. When carrying out repairs involving welding work it is essential to make sure that the welding current does not flow through bearings or other sensitive parts; in other words, the ground electrode must always be fitted close to the point of welding.

Welding repairs may only be carried out by properly approved specialist companies.

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II. Recommendations for the Erection of Stationary Rides

Central Section

1. Produce foundation as per our drawing A1-5.62.
2. Place the central section (1) onto the foreseen foundation true to dimensions.
3. Align central section (1) so that the axis (2) of the swinging arm is in an exactly horizontal position. The highest and lowest edges of the 2 longitudinal beams of the substructure must also be in an exactly horizontal position.
4. Insert stone bolts as per drawing A1-5.62 section B-B and D-D and grout in. Before doing so clean and wet the tubular receivers.
5. When the concrete has set, tighten the nuts.
6. Check that the central section is positioned acc. to drawing A1-5.62 section C-C.

Cantilevers

7. Mount the cantilevers in the correct order and fit, bolt and secure with the respective ring stays and crossover bracing struts as per drawing A1-7.8.
8. Connect the electrical plugs.

Ring Spacing Strut and Gondola

9. Hang the ring spacing strut (15) onto the pin at the end of the cantilever and then attach the passenger gondola (16) and hand-screw nut (17) without wrench so that, if necessary, the position of the ring spacing strut can be corrected.
10. When the ring spacing struts (15) and the passenger gondolas (16) have been attached, tighten nut (17) with a torque wrench set to 460 Nm (340 ft lb). Then mount flat counternut (20) and secure with safety pin. For the position of screws, washers, nuts and safety pins, see drawing no. A7. Connect light plugs.
11. Fix lightrails onto ring spacing strut.

Tween Roof

12. Hang roof between two gondolas, bolt and secure with safety pins. Connect light plugs.

Deaeration Tank

13. Open ball cock at the deaeration tank.



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ATTENTION !

All bolts must be secured with safety pins.

All plugs and sockets of the electric cables must be protected against soiling!

Keep sockets closed.

Take special care when using the maintenance switch (39). The lifted swinging arm comes down automatically and rapidly when the pump drive comes to a standstill, e.g. during a power failure. There is danger of accident!

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III. Daily Putting into Operation and Shutting DownProceed as follows for the daily putting into operation:

1. Switch on the electric main switch.
2. Check the oil level, i.e. the eye of the oil-level indicator at the oil tank must be covered by oil up to its middle.
3. Check that all bolts are secured by safety pins.
4. Switch on the hydraulic system and let it work off-load for approx. 10 min. Check for correct rotating direction of the 75-kW motor.
5. Grease the teeth of the ball bearing slewing rim (see V.C). Provide grease nipples of the ball bearing slewing rim with ball bearing grease always after approx. 30 hours of operation.
6. Run at least 5 complete rides without passengers using all control possibilities. Also check the support blocks and the stability of the stabilizers.
7. Lift the swinging arm approx. 4/5 and press the emergency stop button at the control panel. This results in absence of current. Now the swinging arm must come down independently and the wheel must slow down and stop. In case the operation is not as described above during absence of current, check the solenoid valves and make sure that the tappet of the delay valve (41) - which is situated in the area of the limit switches - comes down properly from the radial cam.
8. Check that all safety regulations and notice boards are displayed prominently.
9. Regular operation of the ride can be started once the proper test runs have been carried out.
10. During operation all gondola doors - also those of unoccupied gondolas - must always be closed.
11. During operation the platform must always be completely clear of passengers.

Shutting Down:

1. Run wheel with the gondolas into the exact entrance position.
2. Switch off hydraulics in the control panel and lock control panel by key.
3. Switch off electric main switch in the switch cabinet and lock by key.



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IV. Unusual Operating Conditions

1. cause 2. effect 3. steps to be taken

A1 Power failure or operation of the emergency stop button

A2 When the ride is elevated, the wheel disk is lowered automatically and then slows down and stops.

A3 The ride, the hydraulic system must not be switched on again before the swinging arm leans on its support in start position and before the wheel disk has come to a complete standstill.

B1 Speed drop

B2 Speed fluctuations are possible when the ride is loaded on one side only. This is registered by the overspeed monitor and the wheel disk is lowered automatically. However, braking is not carried out automatically.

B3 Press control button on control panel. Load evenly and start again as usual.

C1 Upper limit switch limitation is exceeded

C2 In case the normal upper limit switch limitation (35) fails, a second limit switch (33) is used which causes an emergency stop. The wheel disk is lowered and slowly comes to a standstill (see drawing no. A5).

C3 Defective limit switch limitation must be repaired by a specialist.

D1 Lower limit switch limitation(34) breaks down

D2 In this case, the hydraulic pump would not throttle the oil stream, i.e. the wheel disk will lower more abruptly.

D3 Defective limit switch limitation must be repaired by a specialist.

E1 Pressure drop in the pressure accumulator

E2 In case of a pressure drop of up to approx. 15° before the vertical position, the wheel disk lowers automatically. Braking of the rotation, however, is not carried out automatically when the wheel is down.

E3 Do not press the emergency stop button! The wheel disk will then keep on turning. Drive in the mushroom-shaped top (27) of the valve block at the pulling cylinder (19). Thus, the side of the burst hose is blocked. With the aid of the hand-operated pump (31) near the tank, the spinning wheel is lowered; time needed: approx. 6 min. When the ride is down, the normal braking process must then be induced. After the repair of the hose extract the mushroom-shaped top (27).

The refill of the pressure accumulator is described under "F1" (see drawing no. B1-5.31.1).



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V. Maintenance and Lubrication

A) 75 kW Electric Motor (28)

If dust accumulates, the motor must be blown through with dry air periodically in order to remove deposits in the interior part and in the ventilation openings. The 2 grease nipples must be kept clean. Periodical regreasing after 2000 hours of operation with ESSO all-purpose grease "BEACON EP 2" is required.

B) Reducing Gear (42)

Use ESSO gear oil GP 90 HYPOID (SAE 90). Required quantity for new filling approx. 6,5 l (220 fl oz.). First oil change after approx. 50 hours of operation, subsequently after 1500 hours of operation. The filler and drain plugs are marked respectively.

C) Live Ring (43)

The toothing of the live ring should be greased daily - at the latest when bare patches show on the gear teeth - with gear grease MOLYKOTE 165 LT.

The ball-bearing mounted tracks of the live ring must be greased daily - at the latest after 30 hours of operation - with ESSO all-purpose grease "BEACON EP 2". There are 4 grease nipples provided for this purpose. Turn bearing when greasing.

The fixing screws M 20 on the live ring must be checked regularly for tightness. For this purpose, use the torque wrench supplied. First undo the individual screws and then retighten with 460 Nm (340 lb ft).

D) Bearings

The pulling cylinder (19) is provided with 4, the 75 kW motor (28) with 2 grease nipples. All these bearings must be regreased periodically with ESSO all-purpose grease "BEACON EP 2". Moreover, the delay valve (41) has got a grease nipple at the tappet bearing.

E) Hydraulic System

The most important precondition for an efficient operation is a clean hydraulic system.

Dirt in the hydraulic system results in a faster fall-off in pump performance and shortens the service life of all parts. Dirt can also block control functions.

Care must be taken that there is a sufficient quantity of oil of at least 800 l (28 ft³). After extensive standstill periods (max. 2 months) as well as after the change of oil, any air bubbles which may have entered the system must be carefully eliminated. For this purpose, several ventilation facilities at different locations are provided.



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E1) Pump for Rotation Device (44)

Variable displacement (axial piston) pump, Linde, Type PV 140 TG, min. throughput 188 l (6,64 ft³).

Pump for Swinging Arm Device (45)

Variable displacement (axial piston) pump, Linde, Type PV 186 TS, min. throughput 261 l (9,21 ft³).

The pumps are deaerated by 2 ventilation valves placed on the upper part as follows:

Remove rubber caps from the valves and unscrew 2 turns. When the proper deaeration has been effected, close the valves and replace the caps.

The installed MANN easy-change filters are to be changed periodically, at the least on the occasion of each oil change.

E2) Hydro-Fixed Displacement Motor (46)

The fixed displacement motor, Linde, Type MF 75 T, is flanged directly to the reducing gear and is provided with pressure control valves.

E3) Lifting Cylinder (47)

On the lifting cylinder, 1 ventilation screw is fitted on the lower part and 2 on the upper part. If air enters the cylinder, the stages extend and draw in unevenly. Moreover, the service life of the packings can be reduced by air in the oil. After every reerection or approx. once a week, a deaeration should be effected while the hydraulic oil pump is operating. For this purpose, the ventilation screw at the lower end of the cylinder should be slightly loosened. For the same purpose, the cylinder top is provided with a hose coupling at the exterior cylinder tube and at the front part. A deaeration is effected by spraying out a small quantity of oil through a mini-measuring hose, without manometer.

E4) Pulling Cylinder (19)

On the pulling cylinder, 2 ventilation screws are fitted which must in any case be checked after each change of oil as well as after each refill of nitrogen.

For lubrication of the pivoting bearings see "D"!

E5) Oil Tank (23)

The entire hydraulic system has approx. 800 l (28 ft³) of hydraulic oil ESSO NUTO H 68 (SAE 20). Check oil for the first time after 50 hours of operation; filter or change oil if necessary. Subsequent oil changes every 1500 hours of operation.



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The new oil must always be poured in over a clean filter with a filter fineness of $\mu = 40$ (0,002 in.) at the oil tank.

The 2 magnetic needles (24) in the oil tank must be checked periodically. In the beginning of operation, they must be cleaned at least once a week.

E6) Hose Pipes

All hose pipes bear numbers which must be stated when ordering spares. According to the information of the supplier, the following hose pipes should be replaced after 4000 hours of operation:

item no. 5.30.41
item no. 5.30.46
item no. 5.30.63
item no. 5.30.64

When changing or when reconnecting a pressure tube, check for satisfactory position (bending on one level only).

F) Nitrogen System

The nitrogen bottle (25) with a contents of 50 l (1,8 ft³) and 200 bar (2900 psi) is placed under the oil tank and is connected to the piston accumulator (26) by means of a tube. When the wheel disk is on the ground, the operating pressure is 140 bar (2030 psi).

The pressure on the pulling cylinder (19) is measured at the upper connection block of the two piston accumulators (26), the coupling being transposed, with a manometer (38).

F1) Nitrogen Refill

The nitrogen system is refilled with the aid of an additional nitrogen bottle. Proceed as follows:

1. Fix charger (36) to the refill bottle and connect coupling (30).
2. Open valve (37) of refill bottle. Nitrogen will flow into the system.
3. Close valve (29).
4. Press maintenance button (39) and lift swinging arm to a 45° position. The mushroom-shaped top (27) must in any case be in its normal position, i. e. extracted.
5. Open valve (29) again and lower swinging arm.
6. Repeat operation 3 to 5 until the nitrogen manometer (40) shows 140 bar (2030 psi) at the lowest position of the swinging arm.
7. In order to check the oil pressure, transpose coupling and connect manometer (38).



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8. Lift the empty ride completely several times with rotating wheel disk. In case the oil pressure drops below 100 bar (1450 psi), the pressure monitor lowers the swinging arm automatically. In this case, at least one additional liter of oil = 100 strokes must be pumped with the hand-operated pump (31). The most favourable position of the swinging arm for hand-operated pumping is 45°.
9. After successful test operation remove filling device (36) and refill bottle. Transpose coupling in order to disconnect manometer (38).

After the replacement of the hose between the piston accumulator (26) and the pulling cylinder (19) the mushroom-shaped top (27) must be extracted completely, i.e. until it snaps in.

All screws and fixing devices of the complete ride must be checked regularly!

G) Trailer Tires for Road Models

Tires 8.25 x 15 x PR 18

Air pressure 9 bar = 130 psi at 80 km/h

A T T E N T I O N

To fulfil the guarantee conditions, only original HUSS spare parts may be used!

Always state the serial number when ordering spares.

This is to be found on the manufacturer's nameplate on one of the booms.



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VI. Safety Regulations for Amusement Ride "UFO"

1. To ensure the stability and free access of the ride, the site has to be prepared and, if necessary, levelled accordingly.
2. The support blocks between the ground and the substructure trailer resp. the base construction must be kept low; they have to be produced stable and secure against shifting.
3. The ride must be erected so that a sufficient distance is maintained away from houses, trees, electrical cables etc. (min. 0,5 m = 1,64 ft.) in all positions of the swing so that passengers are not endangered.
4. Prior to each erection, the load-bearing and mechanical parts must be checked for perfect condition. Defective parts must immediately be replaced by perfect ones. Special care must be taken that the ride is also stable during erection. When erection is completed, all parts must be properly connected. Connecting elements and necessary anchorage have to be installed correctly.

The manager of the ride or his representative has to instruct the personnel engaged in charging, discharging and transporting the individual parts with regard to careful handling of the material. During execution of these works he has to supervise the personnel and, if necessary, give instructions.

5. All connecting elements of the ride must be secured by suitable means against unintentional loosening.
6. For auxiliary lighting, a sufficient number of flashlights has to be available.
7. For the operation of the ride, at least one machinist and - except in times of small attendance - four operating persons are required.
8. The ride must not be operated with more than 48 persons, i.e. each gondola must not be occupied by more than 4 passengers.
9. The passengers must be distributed as evenly as possible on the circumference of the ride.

A one-sided additional load of more than 8 passengers, i.e. max. 600 kg (1300 lb), must be avoided by all means.
10. Children under 10 years of age and of less than 152 cm (5 ft) of height must be excluded from the ride.
11. Drunken persons are not to be admitted to the ride.
12. The operator must not switch on the drive power until
 - a) all passengers stand in the gondolas,
 - b) all side doors are closed and locked



- c) the entire platform area swept by the horizontally circling gondolas as well as the first steps next to that area on all sides of the swinging arm (up to the intermediate railings) are clear of onlookers and waiting passengers.
13. Whenever the passengers themselves have not closed and locked the doors of the gondolas, this must be done by the operating personnel prior to starting.
 14. During the first turn after the ride has started, the operator must make sure that all passengers stand properly in their gondolas and that all doors are closed and locked.
 15. While the ride is in operation, waiting passengers must only be allowed to stand on the lower circular stepway around the platform area; do not allow passengers onto the steps bordering the range of the swinging arm. Appropriate supervision on the part of the operating personnel will be necessary.
 16. Do not change the control times set during acceptance test. (The final control elements resp. stops or their covers are under lead).

Note the following values:

Even acceleration of the rotating structure within approx. 22 sec. min. up to a maximum of 13,5 rpm and slowing-down within approx. 22 sec. min. until standstill.

Set minimum of 12,9 rpm at the overspeed monitor (limiting value for lift release).

Lifting and lowering within a minimum of approx. 24 sec., with a damping of at least approx. 3,0 sec. during lowering.

17. Before reaching the upper final position at approx. 90° limited mechanically by the cylinder lifting, a limit switch must become effective which switches off the lifting process, latest at 86°. In addition, there must be a safety limit switch which stops the lifting process latest at 88°.
18. Do not change the following set values of the relief valves:
 - a) for rotating device 350 bar (5075 psi)
 - b) for lifting device 285 bar (4132 psi)
 - c) for pulling cylinder 215 bar (3117 psi)
19. Do not change the pressure control device in the reservoir system of the pulling cylinder (90 bar - 1305 psi).
In position 0° of the swinging arm the pressure should be at least approx. 160 bar (2320 psi) - (see manometer of the nitrogen reservoir).



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20. Check daily before starting operation the effectiveness of the controls (item 16) and the effectiveness and correct setting of the limit switches for the hydraulic lifting cylinder (item 17).
21. When erecting the platform make sure that the entrance openings of the gondolas are not higher than 40 cm (1,31 ft) above the platform.
22. Passengers are not allowed to lean out of the gondolas, to smoke or to take animals, umbrellas, sticks or other bulky or pointed objects into the gondolas.
23. The notice boards drawing attention to the prohibitions and operating regulations as per items 10, 11, and 22 must be clearly and legibly displayed at suitable locations.
24. At site, the operating personnel must be instructed with regard to:
operating instructions,
what to do in case of power failure, fire, panic outbreak or other disturbances,
operation of the safety lighting or ancillary lighting,
location of the nearest fire alarm or nearest telephone which can be used to call the fire brigade.
25. The unabridged operation and service instructions must at all times be available to the operating personnel.
26. The operational safety of the amusement ride must be checked daily before starting operation. The main connections, moving and mechanical components must also be observed during operation; any faults which arise must be immediately corrected. If necessary, operation must be stopped. Repairs which could endanger passengers or operating personnel are not permissible during operation.
27. Sitting or standing on railings, swaying to the music and rhythmic stamping on the platform on the platform must not be permitted. If necessary, the music should be stopped and the machinery switched off.
28. Climbing in and out of gondolas during operation of the system, holding out arms or legs, leaning out of gondolas, sitting on side walls and smoking must not be allowed.
29. The ride is not calculated for snow load. If the ride is operated outside the snow-free season, any snow has to be immediately removed.
30. The frame of the substructure trailer must be supported according to drawing no. A5-43. A permissible ground pressure of 15 N/cm² (22 lb/in²) is required.
For stationary rides, the concrete foundations have to be calculated according to the loads indicated in drawing no. A1-5.62.



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31. For the frame props of the platform, the supports must have the following dimensions - for a permissible ground pressure of 15 N/cm² (22 lb/in²):
 - a) frame with backdrop props:

inner and outer frame prop:	37 x 37 cm (15 x 15 in.)
center frame prop:	25 x 25 cm (10 x 10 in.)
 - b) Other frames of platform:

all frame props:	25 x 25 cm (10 x 10 in.)
------------------	--------------------------
32. The rotation drive has to be set so that a maximum of 13,5 rpm is not exceeded and a minimum is not less than 12,9 rpm.
33. By means of an inherent electrical overspeed monitor it has to be ensured that the lifting of the swinging arm, before reaching the minimum rotations p.m., is prevented and that the lowering of the swinging arm will start automatically when the minimum number of rotations is not reached.
34. The electric control is to be set in such a way that the switching off resp. braking of the rotating structure upon lowering of the swinging arm will only become possible after the swinging arm has reached an inclination of approx. 40°.
35. The lowering brake incorporated in the lifting cylinder has to be set so that a too rapid lowering of the lifting arm in case of hose breaks or power failure is prevented, approx. 330 l (11,65 ft³) min.
36. By means of a pressure control device it has to be ensured that the rotating structure cannot be started if there is a pressure drop in the pulling cylinder resp. that the lowering process is immediately started with lifted swinging arm.
37. The screws M 24, quality 10.9, to connect the passenger gondolas with the cantilevers must be tightened with a torque of 460 Nm (340 ft lb). The screws should be lightly oiled.



VII.

Maintenance Instructions for Fiberglass Surfaces

We use only first-class materials to produce the surface finish of our fiberglass components. Although these require very little maintenance, they cannot do entirely without maintenance. To retain the brilliant surface gloss for a long time we recommend you to:

1. Clean the surfaces at least every 14 days with clear water and then polish with a leather cloth.
2. Never rub dust or dirt off the surfaces when dry.
3. Clean the surfaces with a solution of water and household washing-up liquid or similar as required but at the latest every 3 months; after drying, apply a good automobile wax and polish with a soft cloth.
4. If you use a high-pressure steam jet, never work with chemicals which are more aggressive than soapy water.
5. If you use a high-pressure steam jet with chemicals which comply with Point 4, wax and polish the surfaces again afterwards.
6. Stubborn spots and stains can be swiftly removed with moist acetone cloths; keep the contact time with acetone to a minimum.
Immediately after working with acetone or cleaning benzene, wash the surface well with clear water and then wax and polish.

Operating Instructions
for
Amusement Ride Type UFO

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I. ERECTION and DISMANTLING

Substructure:

1. The substructure ① with the 20 to double axle is to be driven onto the foreseen center in such a manner that the axle of the swinging arm ② lies in the entry area.
2. Fix the 20-ton double axle in position by means of brake blocks, place robust boards or similar under the 2 hydraulic supporting cylinders ③ to give good stability and, using the attached manual pumps, jack up the centre section ① so far as to enable the 10-ton chassis to be drawn out. For this purpose, the support ⑦ of the traction fork must first be swung down. On semitrailers, swing up the bearing block ⑥ with the central pivot pin and fix in the raised position by using the bolts at the front.
3. With the aid of the supporting cylinder the substructure is to be lowered and is to remain 50 mm above the highest point of the underground. Before you finish the lowering process, place the supports ⑤ accurately under the ④ consoles. The supporting cylinder will then stand on the lower plates of the supports, cf. drawing No. 2-19300.
4. Swing down the hydro-cylinders on the transverse beam ⑧. Place robust boards or similar under the cylinders to give good stability and jack up the base using the attached manual pump; swing down the rear anti-tilt struts and fix these onto the diagonal strut.
5. Adjust the substructure in such a way that the axle of the swinging arm ② is in an exact horizontal position. The highest and lowest edges of the 2 longitudinal beams of the substructure must also be in an exact horizontal position. The substructure is to be properly supported by the wooden supports designed for this purpose.
6. Swing out the front tipping safety device ⑨ and fit in the spindle prop ⑩ together with the support plates.

Cantilevers:

7. Remove the separator ⑪ from the center cantilever package No. 1-6 and unfold cantilevers which are to be connected with the resp. ring and cross stay.
8. Turn away the connected cantilevers No. 1-6 from the substructure area and assemble the cantilevers 7 till 9 resp. 10 till 12 in the correct order, provide them with the resp. ring and cross stays, bolt and secure them. Install the radially placed lighting rails.
9. Remove the transportation scaffold of the cantilevers and connect the el. plugs
10. Remove the safety device of the swing boom ⑫ and the special transport bridge ⑬.

CAUTION: Connection brackets at the rear end of the substructure are to be removed completely.

Radial Arm and Gondola:

11. Hang the radial arm (15) onto the pin at the end of the boom, then attach the passenger gondola (16) and tighten the nut (17) fingertight without a spanner so that if necessary the radial arms can still be shifted exactly into position.
12. When all radial arms (15) and passenger gondolas (16) are in place, tighten the nut (17) with a torque spanner set to 460 Nm or 46 Kpm. Then attach and tighten the flat counter nut (20) and secure with a safety pin. For the exact arrangement of the bolts, washers, nuts and safety pins see Drawing A7. Connect the lighting plug.
13. Fix lighting strips onto radial arms.

Tween-Roof:

14. Hang roof between two gondolas, bolt into position and secure with a safety pin. Connect the lighting plug.

Floor Rotunda:

15. The ground installation support (21) is bolted into position on one boom between the nut (17) and the counter nut (20).
16. With the aid of the floor assembling trestle (21) erect the floor framing according to drawing, starting from the substructure, and secure same properly with the resp. supports. The inner part of the floor frame ends are always to be placed onto (21). Thus the height and the center distance are fixed. The floor crossbeams determine the distances of the different floor frames one from another.
17. Place the floor covering and erect the fencing.
18. Install the railing of the radial arm ring, bolt into position and secure with safety pin.

Back Panel:

19. Back panel prop (12) and connection braces (13) are to be bolted in the correct order with the floor frame and the crossbeams with the cross-stays are to be inserted properly.
20. With the aid of the cross stays all back panel props must be aligned horizontally.
21. Insert face panels and install lettering.

Deaeration Tank

22. Open ball cock at the deaeration tank.

Dismantling is carried out in exactly the reverse order. Take special care that all el. cables are loosened in time.

All plugs and plug sockets of the el. cables must be protected against soiling!
The plug sockets must remain closed!

CAUTION:

Take special care when using maintenance switch (39) . The lifted swinging arm comes down automatically and abruptly when the pump drive comes to a standstill - for instance during a power break down. In such cases there is danger of accident!

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II. STARTING and STOPPING of OPERATION

Proceed as follows for the daily putting into operation:

1. Check the oil level, i. e. the eye of the oil-level indicator at the oil tank must be completely covered by oil.
2. Switch on the el. main switch.
3. Switch on the hydraulic system and let it work off-load for approx. 10 min.
4. At least 5 complete drives without any passengers are to be carried through and all possibilities of control are to be checked. Also check the supports and the stability of the tipping safety devices.
5. Lift the swinging arm approx. 4/5 and press the emergency stop button at the control board. This results in absence of current. Now the swinging arm has to be lowered independently and the wheel has to slow down and stop. In case the operation is not as described above for absence of current, check the magnetic valves and make sure that the tappet of the delay valve (41) - which is situated in the area of the limit switches - comes down properly from the radial cam.
6. The regular operation of the amusement ride can be started once the proper test run has been carried out.

For stopping of operation proceed in reverse order. Switch off the hydraulic system as well as the el. main switch.

CAUTION!

When switching on the hydraulic system check the correct sense of rotation of the 75 kW engine!

All gondola doors - also of the unused gondolas - must always be closed for the drive!

The floor rotunda with its steps must be completely clear of passengers when the ride is operated!

III. UNUSUAL OPERATING CONDITIONS

1. cause 2. effect 3. steps to be taken

A 1 Power Shortage or Operation of the Emergency Stop Key Button

A 2 When the amusement ride is elevated the wheel disc is lowered automatically and then slows down and stops.

A 3 The amusement ride, the hydraulic system must not be switched on again before the swinging arm leans on its support in start position and before the wheel disc has come to a complete standstill.

B 1 Speed Drop

B 2 Speed fluctuations are possible when the ride is loaded on one side only. This is registered by the overspeed monitor and the wheel disc is lowered automatically, however, braking is not carried out automatically.

B 3 Press control button on control panel. Load evenly and start again as usual.

C 1 Upper Limit Switch Limitation is exceeded

C 2 In case the normal upper limit switch limitation (35) fails a second limit switch (33) is used which effects an emergency stop. The wheel disc is lowered and slowly comes to a standstill.

C 3 Defective limit switch limitation must be repaired by a specialist.

D 1 Lower Limit Switch Limitation (34) breaks down

D 2 In this case the hydraulic pump would not throttle the oil stream, i. e. the wheel disc will lower more abruptly.

D 3 Defective limit switch limitation must be repaired by a specialist.

E 1 Pressure Drop in the Pressure Accumulator

E 2 In the case of a pressure drop of up to approx. 15° before the vertical position the wheel disc lowers automatically. Braking of the rotation, however, is not carried out automatically on the ground.

In the case of a considerable pressure drop while the wheel is spinning in the vertical position- caused for instance by the bursting of a hose - the wheel disc cannot be lowered.

E 3 Do not press the emergency stop key button! The wheel disc will then keep on turning. Drive in the mushroom-shaped top (27) of the valve block at the pulling cylinder (19). Thus the side of the bursted hose is blocked. With the aid of the hand-operated pump (31) near the tank the spinning wheel is lowered; time needed: approx. 6 min. On the ground the normal braking process must then be induced. After the repair of the hose extract the mushroom-shaped top (27).

The refill of the pressure accumulator is described under "F 1".

IV. MAINTENANCE and LUBRICATION

A) 75 kW - el. Engine (28)

In the case of excessive dust the engine must be blasted with dry air periodically in order to remove deposits in the interior part and in the ventilator openings. The 2 grease nipples are to be kept clean. Periodical regreasing after 2000 hours of operation with ESSO all-purpose grease "BEACON 2" is required.

B) Reducing Gear (42)

Use ESSO gear-oil GP 90 HYPOID (SAE 90). Required quantity for new filling approx. 6,5 ltrs. First oil change after approx. 50 hours of operation, subsequently after 1500 hours of operation. The filling and emptying plugs are marked respectively.

C) Turn Table (43)

The cogs of the turn table should be greased daily - at the latest when the cog edges show blank areas - with cog grease MOLYKOTE 165 BR.

The ball-bearing track of the turn table must be greased daily - at the latest after 30 hours of operation - with ESSO all-purpose grease "BEACON 2". There are 4 grease nipples provided for this purpose. Turn bearing when greasing.

The fit of the fixing screws M 20 on the turn table must be checked regularly. For this purpose use the torque wrench supplied. First loosen the screws one after the other and then tighten again with 46 mkp.

D) Bearings

The pulling cylinder (19) is provided with 4, the 75 kW-engine (28) with 2 grease nipples. All these grease nipples must be regreased periodically with ESSO all-purpose grease "BEACON 2". Moreover the delay valve (41) has got a grease nipple at the bearing application of the tappet.

E) Hydraulic System

The most important stipulation for an efficient running is a clean hydraulic installation.

Dirt in the hydraulic installation results in a rapid capacity loss and the durability of all parts is reduced. Dirt can also block control devices.

Care must be taken that there is a sufficient quantity of oil of at least 800 ltrs. After extensive standstill periods (max. 2 months) as well as after the change of oil air-chambers which might have occurred in the system must be removed. For this purpose several deaeration screws are provided.

E 1) Pump for Rotation - Device (44)

Adjustable axial piston pump, Linde, Type PV 140 TG, 188 l/min. throughput.

Pump for Swinging Arm - Device (45)

Adjustable axial piston pump, Linde, Type PV 186 TS, 261 l/min. throughput.

The pumps are deaerated by 2 deaeration valves placed on the upper part as follows:

Remove rubber caps from the valves and unscrew 2 rotations. When the proper deaeration has been effected close the valves and replace the caps.

The installed MANN easy-change filters are to be changed periodically, at the least on the occasion of each oil change.

E 2) Hydro-fixed displacement Engine (46)

The axial piston engine, Linde, type MF 75, is flanged directly to the reducing gear and is provided with pressure control valves.

E 3) Lifting Cylinder (47)

On the lifting cylinder 1 deaeration screw is fitted on the lower part and 2 on the upper part. If air enters into the cylinder the stages extend and draw-in unevenly. Moreover the durability of the packings can be reduced by air in the oil. After every reerection or approx. once every week a deaeration should be effected while the hydraulic oil pump is operating. For this purpose the deaeration screw at the lower end of the cylinder should be slightly loosened. For the same purpose the cylinder top is provided with a hose coupling at the exterior cylinder tube and at the front part. A deaeration is effected by spraying out a small quantity of oil through a mini-measuring hose, without manometer.

E 4) Pulling Cylinder (19)

On the pulling cylinder 2 deaeration screws are fitted which must in any case be checked after each change of oil as well as after each refill of nitrogen.

For lubrication of the pivoting bearings see "D" 1

E 5) Oil Tank (23)

The oil tank has approx. 800 ltrs. of hydraulic oil ESSO NUTO H 54 (SAE 20). Check oil for the first time after 50 hours of operation; filter or change oil if necessary. Subsequent oil changes every 1500 hours of operation

The new oil must always be pured in over a clean filter with a filter fineness of = 60 at the oil tank.

The 2 magnetic needles (24) in the oil tank are to be checked periodically. In the beginning of operation they must be cleaned at least once a week.

E 6) Hose Pipes

All hose pipes bear numbers which must be stated when ordering spares. According to the information of the supplier the following hose pipes should be replaced after 4000 hours of operation.

item No.	5.30.41
item No.	5.30.46
item No.	5.30.63
item No.	5.30.64

When changing or when reconnecting a pressure tube, check satisfactory position (bending on one level only).

F) Nitrogen Plant

The nitrogen bottle (25) with a content of 50 ltrs. and 200 bar is placed under the oil tank and is connected to the piston accumulator (26) by means of a tube. When the wheel disc is on the ground the operating pressure is 140 bars.

The pressure on the pulling cylinder (19) is measured at the upper connection block of the two piston accumulators (26), the coupling being transposed, with a manometer (38).

F 1) Nitrogen - Refill

The nitrogen plant is refilled with the aid of an additional nitrogen bottle. Proceed as follows:

1. Fix charger (36) to the refill bottle and connect coupling (30).
2. Open valve (37) of refill bottle. Nitrogen will flow into the plant.
3. Close valve (29) by screwing in of the square spindle.
4. Press maintenance button (39) and lift swinging arm to a 45° position. The mushroom-shaped top (27) must in any case be in its normal position, i. e. extracted.
5. Open valve (29) again and lower swinging arm.
6. Repeat operations 3 to 5 until the nitrogen manometer (40) shows 140 bar at the lowest position of the swinging arm.
7. In order to check the oil pressure transpose coupling and connect manometer (38).

8. Test drive the empty ride several times with completely lifted wheel disc. In case the oil pressure goes below 100 bar the pressure monitor lowers the swinging arm automatically. In this case at least one additional liter of oil = 100 strokes must be pumped with the handoperated pump (31). The most favourable position of the swinging arm for handoperated pumping is 45°.
9. After successful test operations remove filling device (36) and refill bottle. Replace cap (28) on the open valve (29) and transpose coupling in order to disconnect manometer (38).

After the replacement of the hose between the piston accumulator (26) and the pulling cylinder (19) the mushroom-shaped top (27) must be extracted completely, i. e. until it snaps in.

All screws and fixing devices of the complete ride must be checked periodically!

WIRING DIAGRAM AND DESCRIPTION
FOR CARROUSEL " U F 0 "

- PAGE 1: INDEX
2: SHORT DESCRIPTION AND SWITCHING FUNKTION
3: DISTRIBUTIONS BOX 1 - POWER
4: SERVOMOTOR CONTROL
5: CONTROL
6: CONTROL
7: CONNECTION DIAGRAM
8: DISTRIBUTIONS BOX 2 - POWER
9: DISTRIBUTIONS BOX 2 - POWER
10: CONTROL LIGHT

POWER SUPPLY:

MOTOR: 75 KW
150 A
380 V / 3 PHASE
60 CY

LIGHT: 30 KW
50 A
380 / 220 V
60 CY

Working voltage: three-phase current 380 volt + neutral / 60 cy
 Control voltage: 115 volt AC / 60 cy and 24 volt DC
 Total connected load: 150 kilowatt
 Main fuses: 250 ampere, max. 335 ampere

Protective measure if contact voltage is too high:

All distributors, all motors and solenoid valve are earthed. For the control voltage is built in an isolation transformer, the secondary side is earthed short-circuit protection with protective switch with thermal- and magnetic trip-out. The solenoid valve for the hydraulic circuit control is carried on with 24 volt d.c.

DESCRIPTION

Switching on: By pressing the button "Hydraulic-on" the E-motor works about 25 sec. in start-stage (). During this time the pumps are controlled to point of rest. The solenoid valves are free from tension. Only after switching-over to the operations-stage () the rotation-drive can be switched on.

Rotation: Now the rotation-drive can be switched on by the button "Rotation-on". The servo-motor controls the pump to full capacity in about 20 sec.

Moving forward: The rotation-drive only works as long as the button "Move forward" is pressed. The pump works in part capacity. During moving forward can not be elevated.

Braking: The brake can only be switched on, if the swing-arm is at the lower final position.

Lifting: The use of the button "Lift" gives a signal, which is registered. The liftings begins, however, not till the rotation-speed-controller at the wheel-disk signals the minimum rotation-speed of 12,9 r.p.m.. Now the servo-motor controls the pump in about 2,5 sec. to full capacity-lift. If the top-final-switch is reached, the servo-motor controls the pump back to the point of rest.

Lowering: When the button "Low" is pressed, the servo-motor controls the pump in about 2,5 sec. to full capacity-low. If the lower final-switch (7b4) is reached, the servo-motor controls the pump back to the point of rest.

Stop: When the button "Stop" is pressed, the swing-arm remains in intermediate positions.

Emergency-stop + Mains-voltage-fallout: When the mushroom-button "Emergency-stop" is pressed, carousel stops just like at mains-voltage-fallout, but the illumination remains switched on. At mains-voltage-fallout the swing-arm get down automatically and the wheel-disk comes to rest. At return of mains-voltage the illumination is lighting.

Attention! switch on hydraulic only during standstill!

Safety-control: The rotation-drive can not be switched-on, if:

- 1) The compression in the accumulator is dropped under the minimum-compression.
- 2) The safety-limit-switch (5b2) is damaged.
- 3) The limit-switch is not pressed.

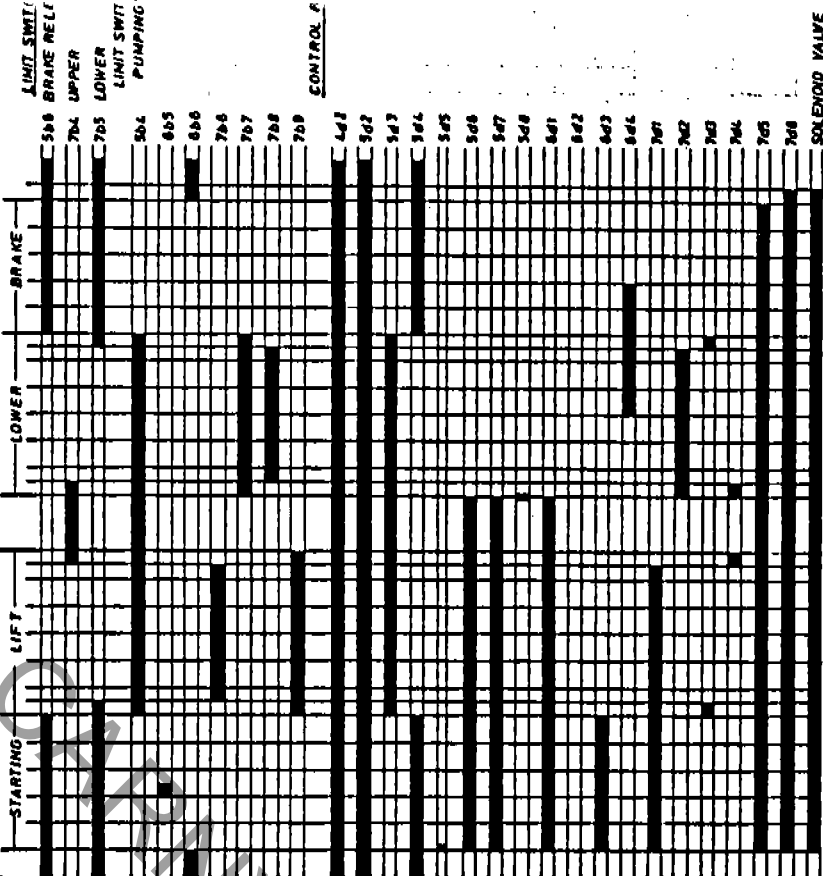
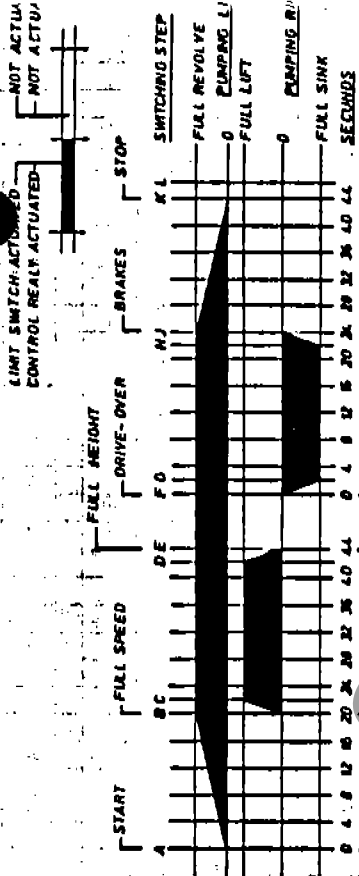
The lifted swing-arm is lowered at once, if:

- 1) The compression in the accumulator drops.
- 2) The rotation-speed at the wheel-disk drops. (In case of unilateral loading.)
- 3) The safety-switch (5b2) (above) is touched.

In case of disturbance the control-lamp lights in the control-disk. (Before switch on of the hydraulic the lamp lights for control.)

Solenoid-valves: The solenoid-valves attract, if the rotation is switched on and drop, if the braking is finished.

Direction of rotation: A phase sequence indicator (relay 5d1) switches off the control voltage if the direction of rotation of the working voltage is wrong.



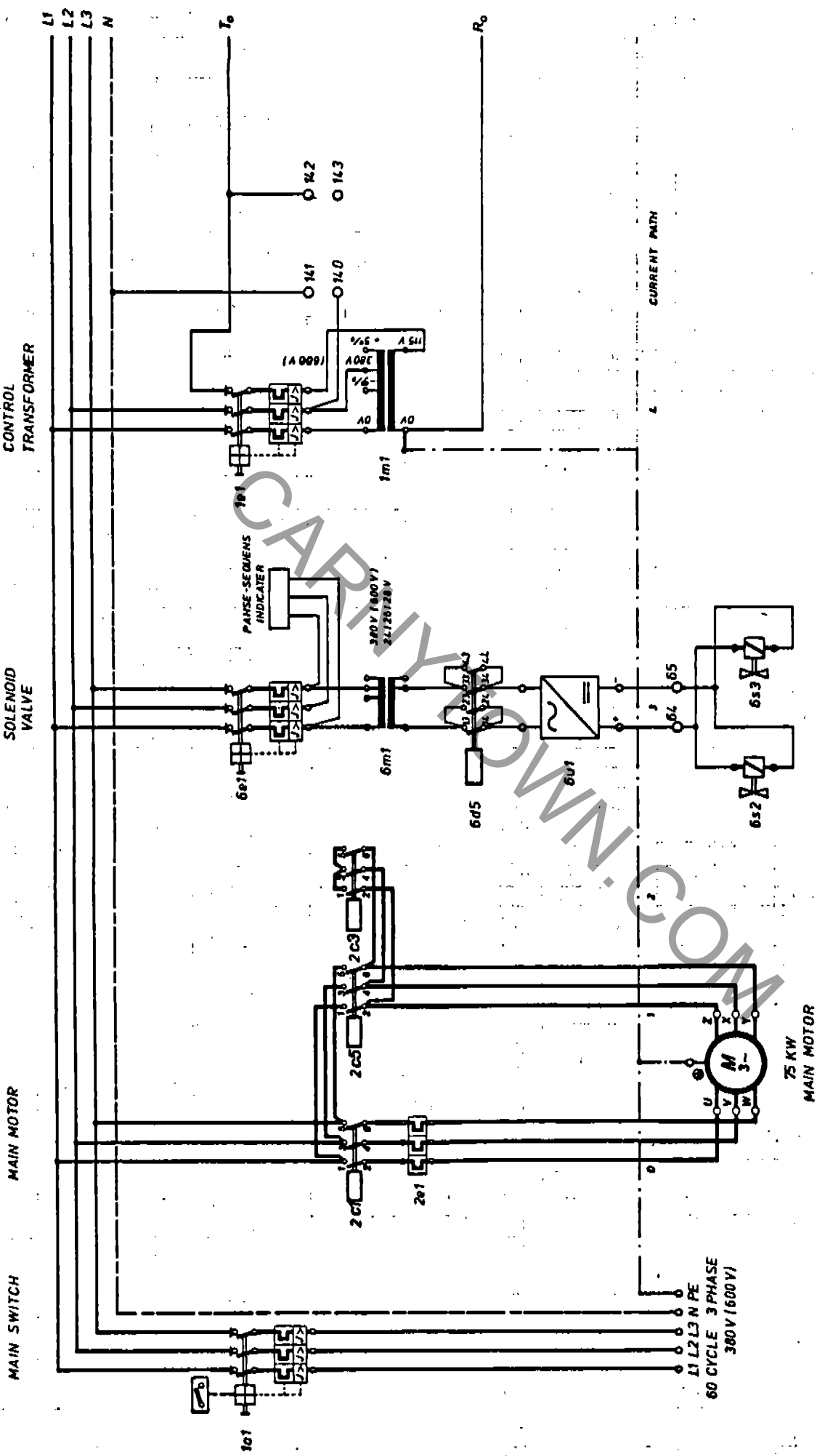
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SHORT DESCRIPTION

CARROUSEL UFO

2



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MAIN DRIVE MOTOR

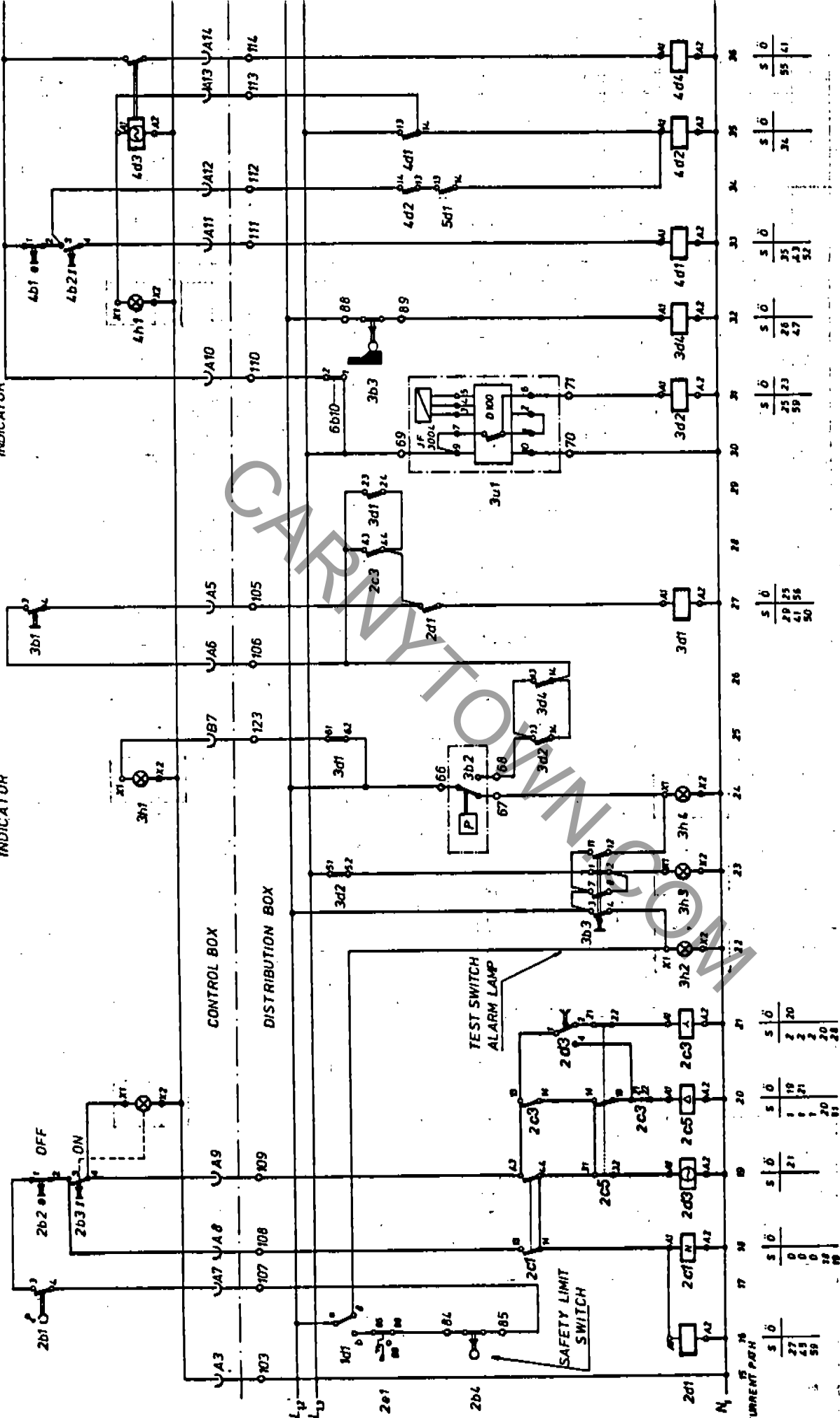
PRESSURE INDICATOR

SPEED INDICATOR

CONTROL BOX
DISTRIBUTION BOX

TEST SWITCH
ALARM LAMP

SAFETY LIMIT
SWITCH



CURRENT PATH

S	0
27	27
43	43
59	59

S	0
21	21
19	19
21	21
20	20
28	28

S	0
20	25
41	56
50	50

S	0
25	23
59	59

S	0
35	35
43	43
52	52

S	0
34	34
55	41

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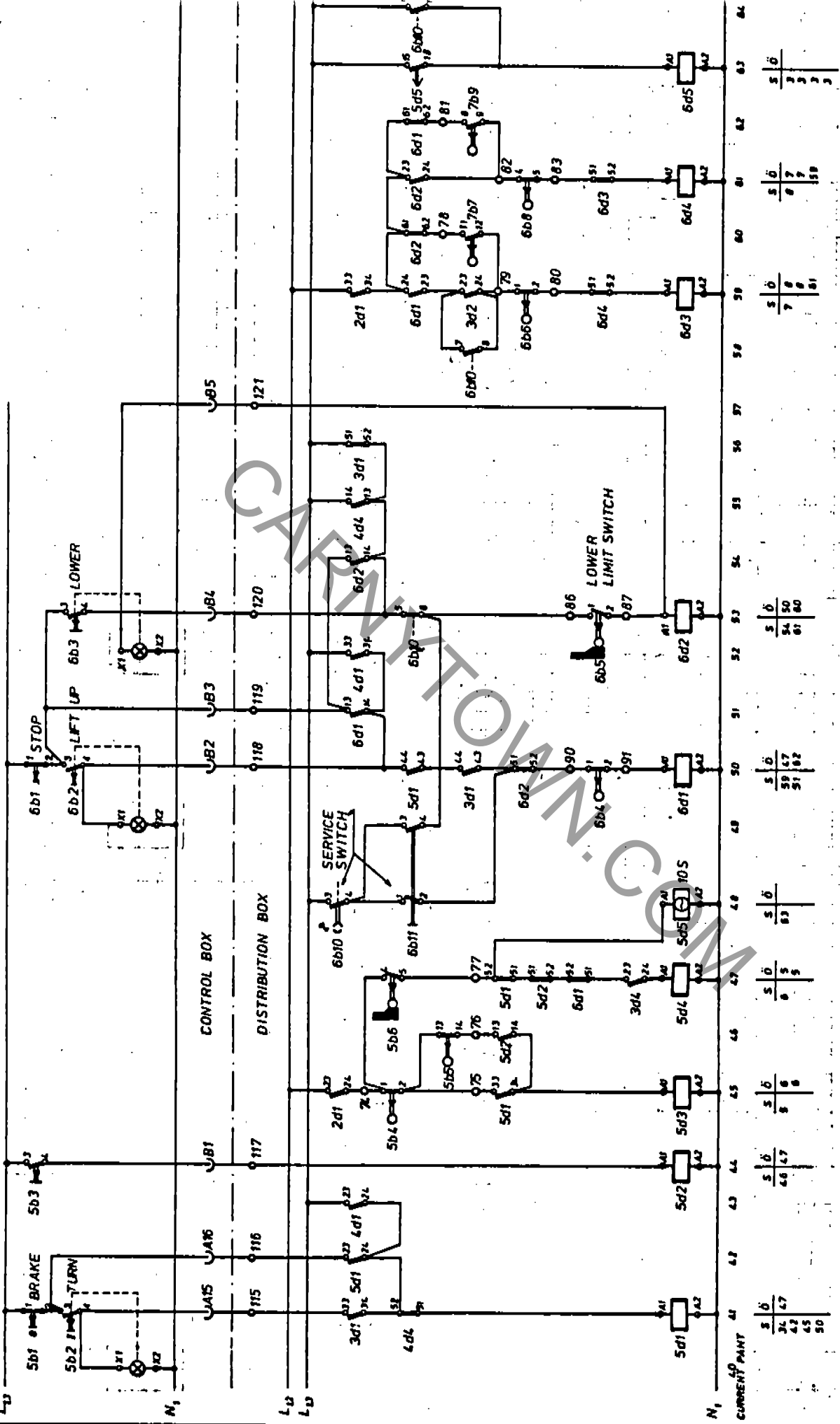
TURN BRAKE

TURN FORWARD

STOP

LIFT

LOWER

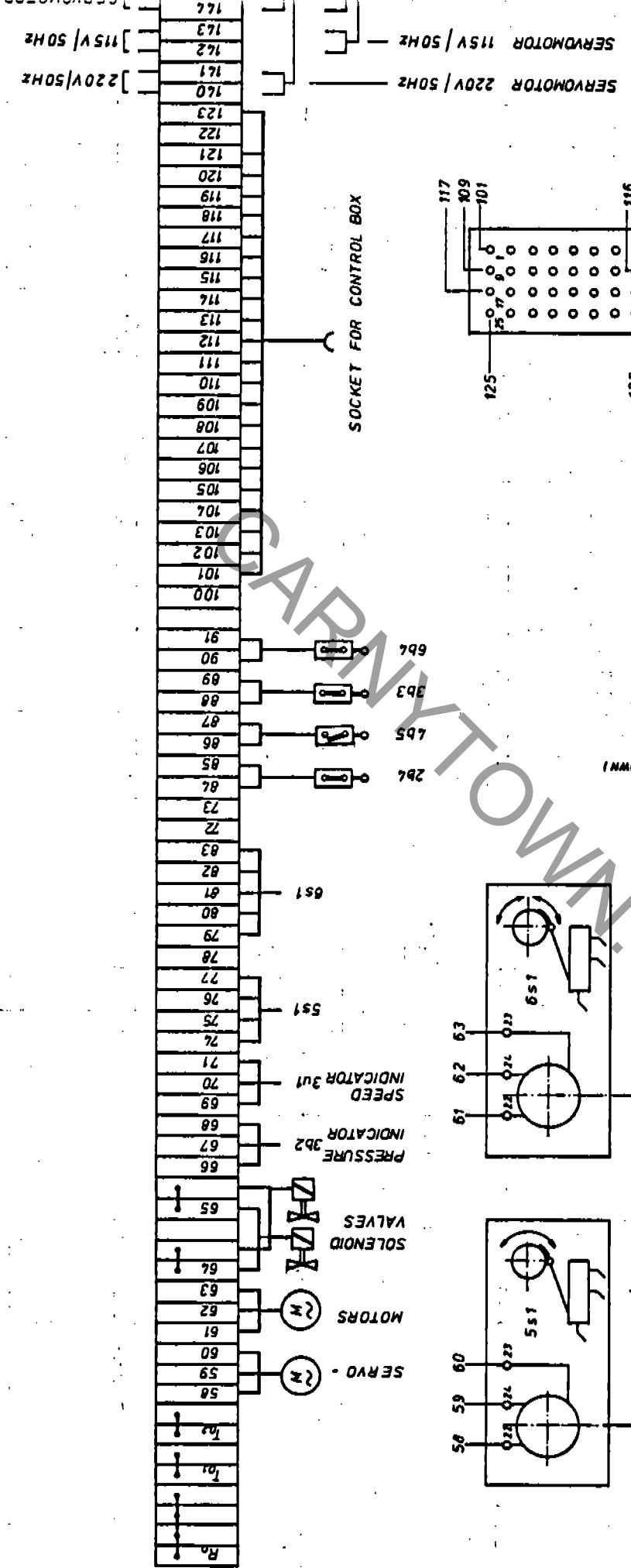


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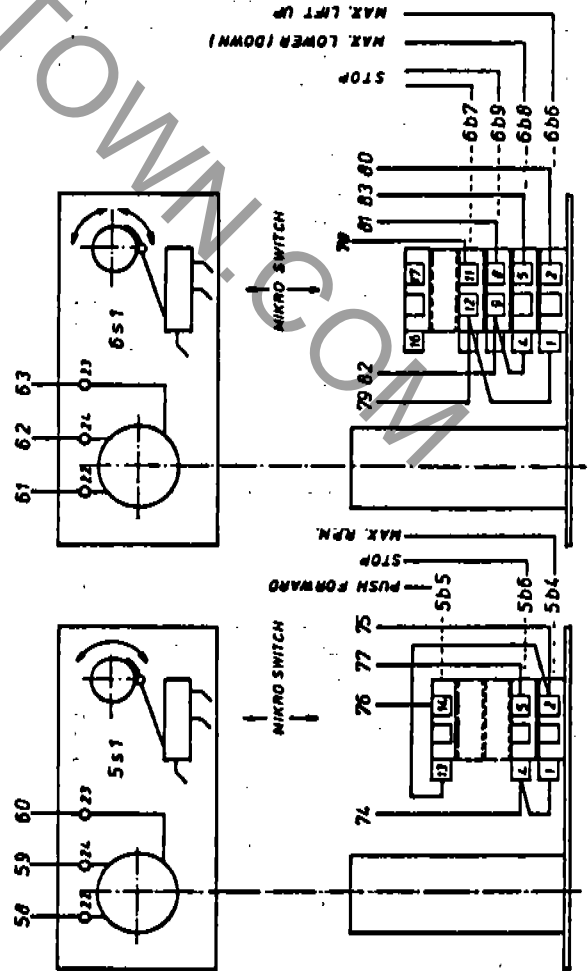


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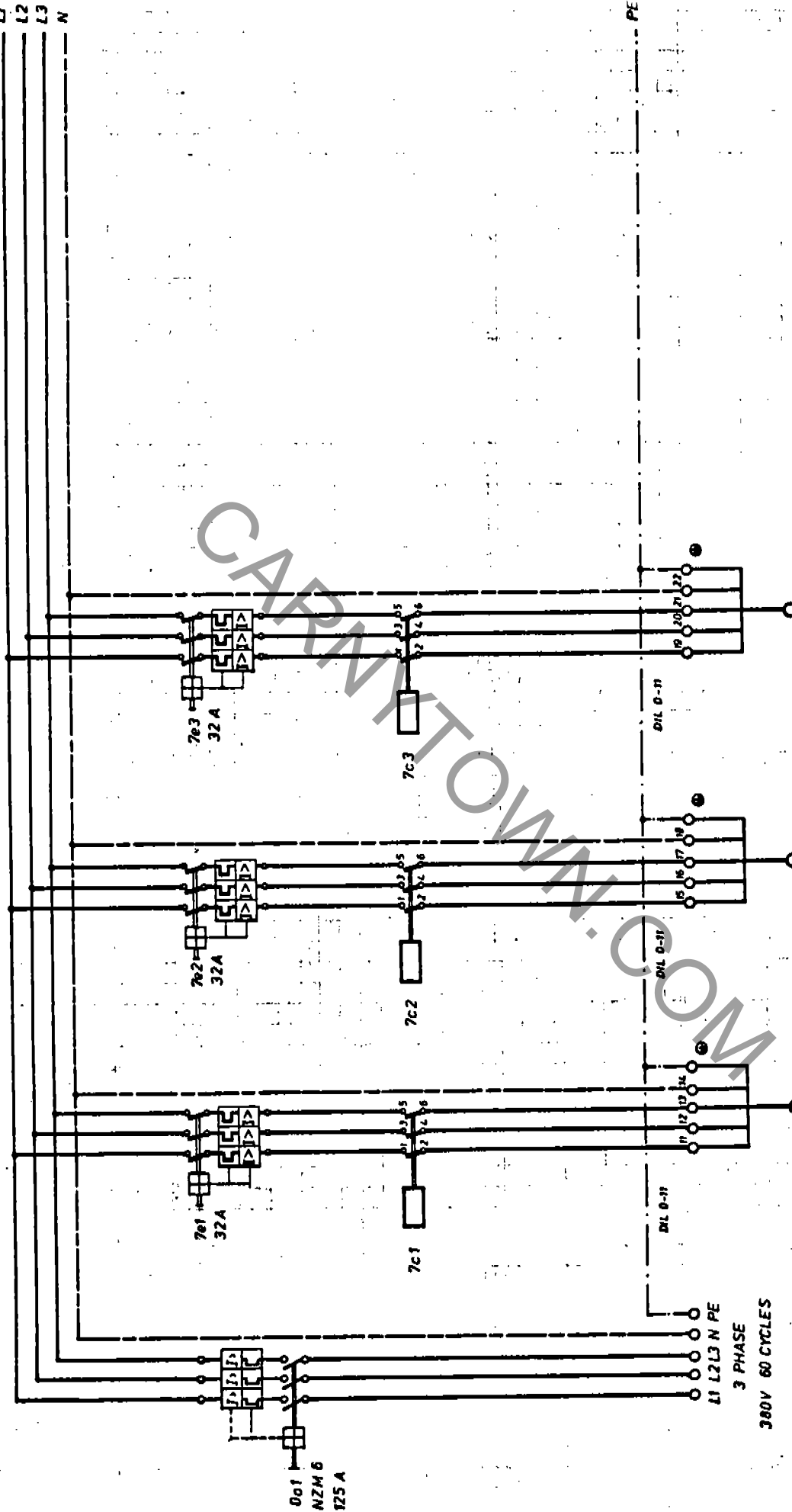
**CONNECTION DIAGRAM
CARROUSEL UFO**

7

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L1
L2
L3
N



LIGHT SIGN.

II

LIGHT BACKWALL I

PE

3 PHASE
380V 60 CYCLES

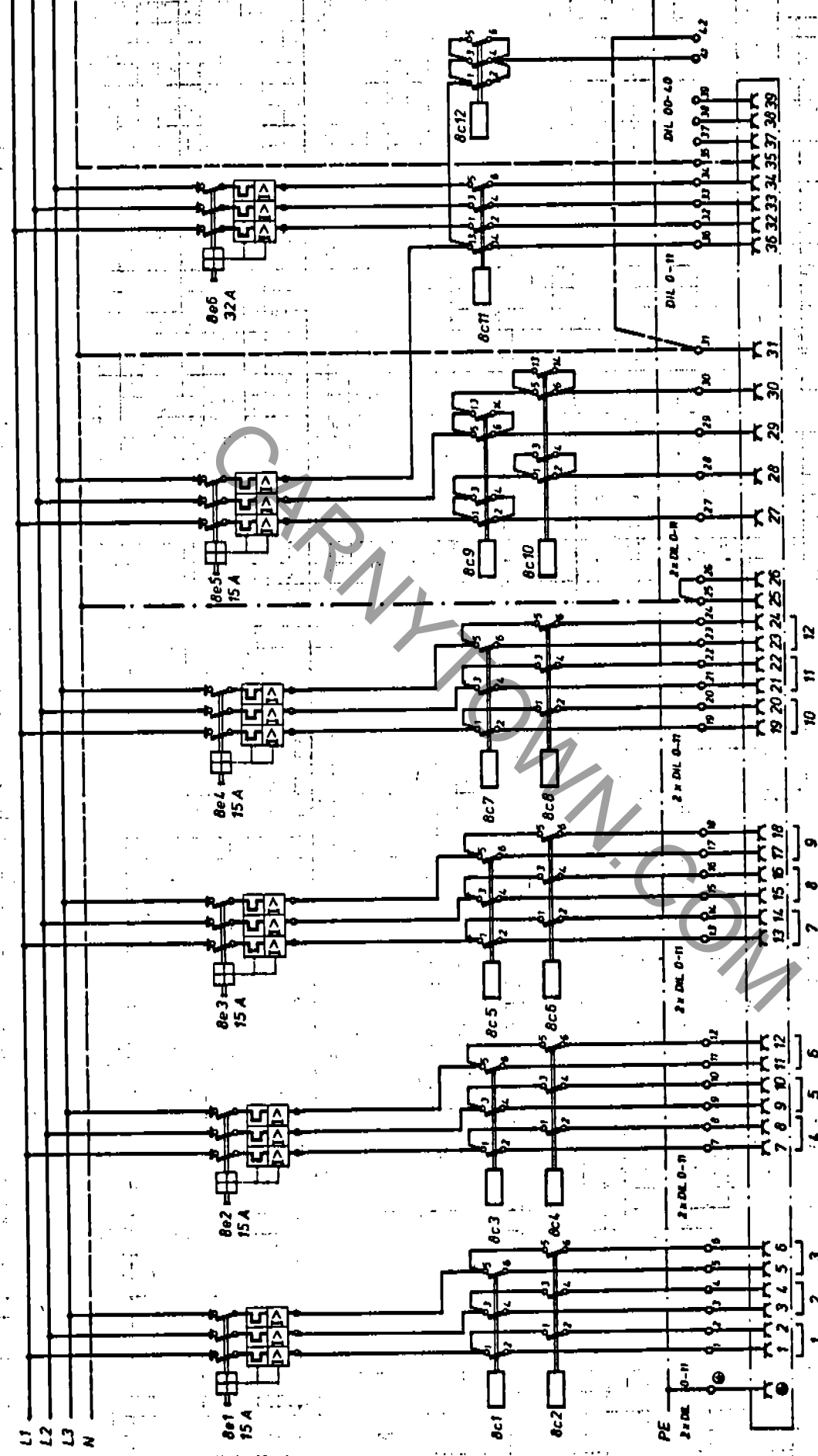
0a1
NZM 6
125 A

Drücker:	Name:	
Gesetzblatt:	07.09.79	Dr.
Geprüft:		
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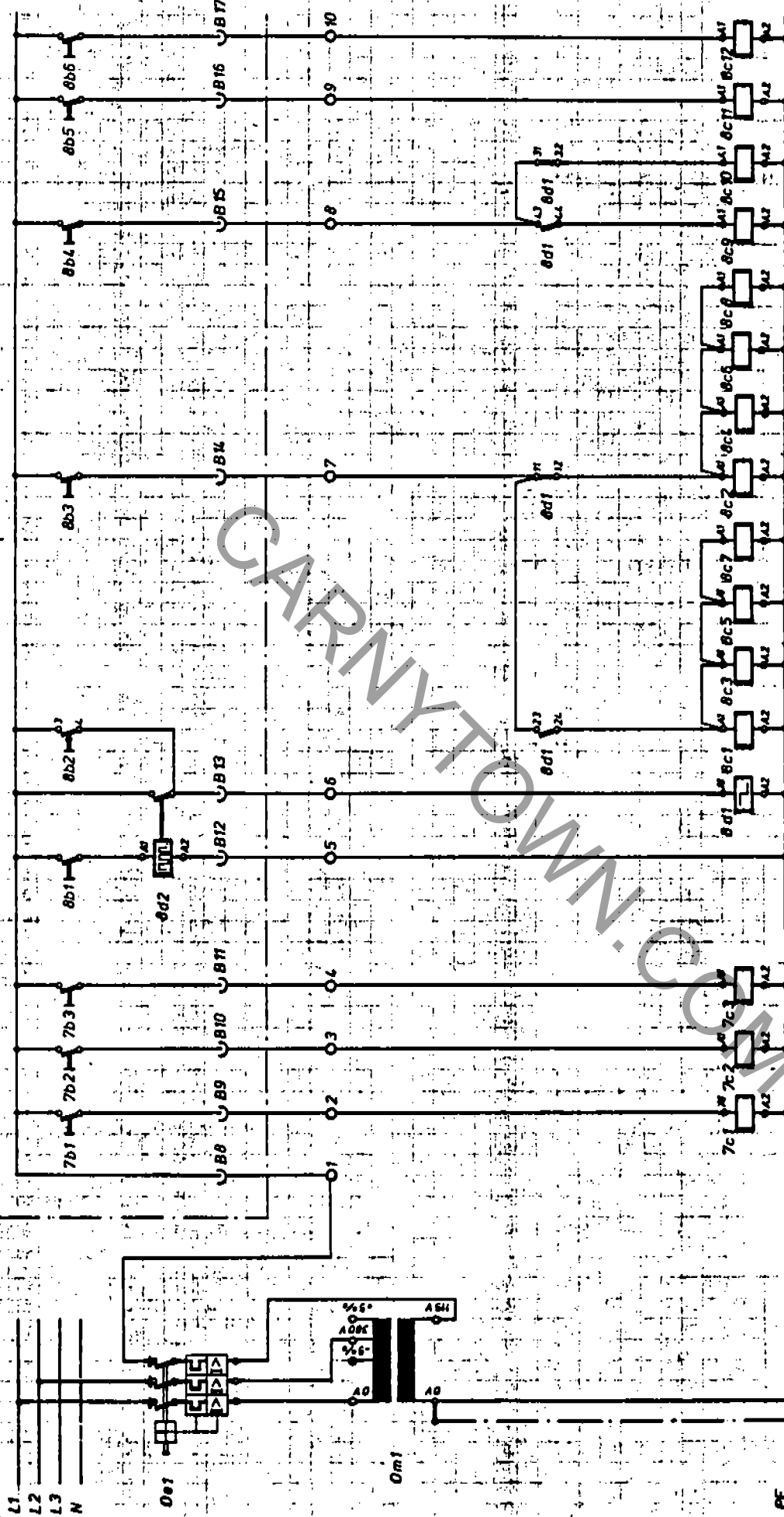
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LIGHT BACKWALL LIGHT SIGN. CHANGE MANUEL

LIGHT CANTILEVER

LIGHT CENTER

LIGHT LIGHT CARS BORDER

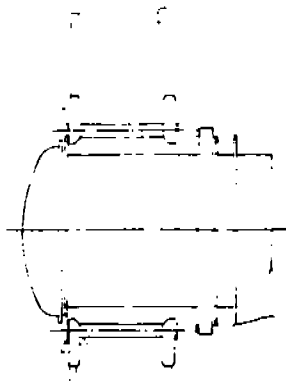


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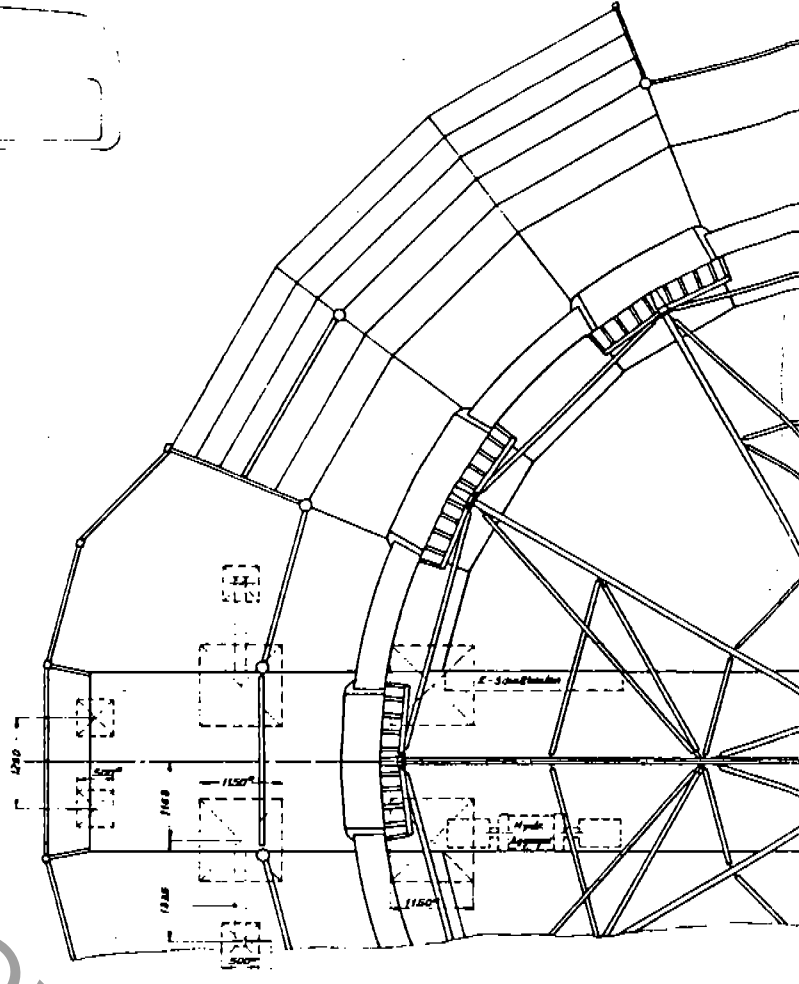
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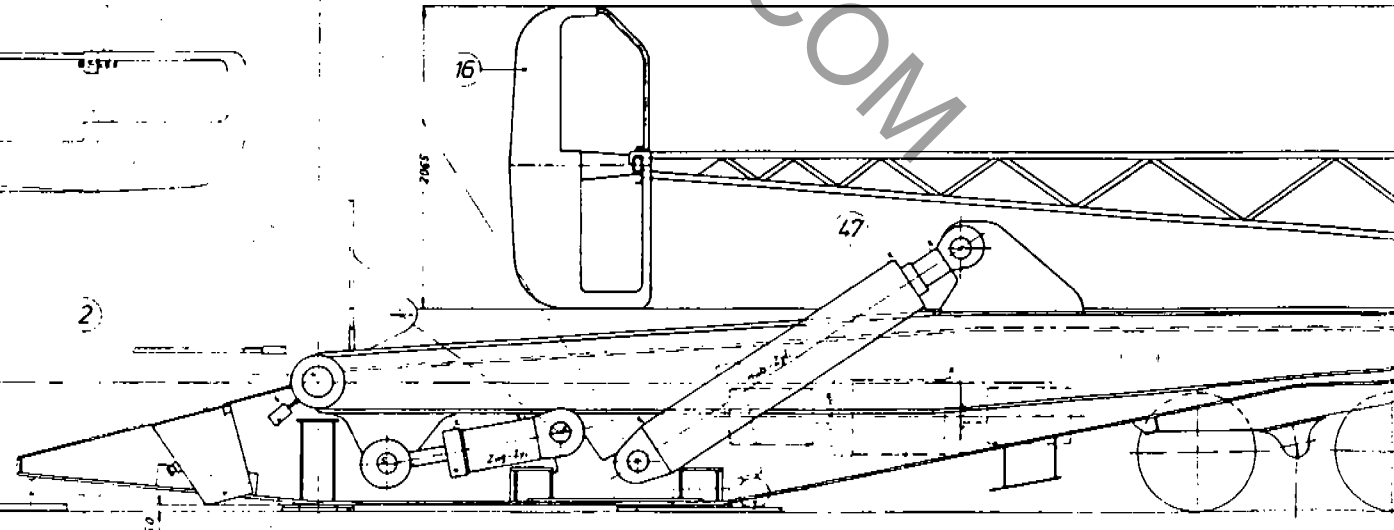
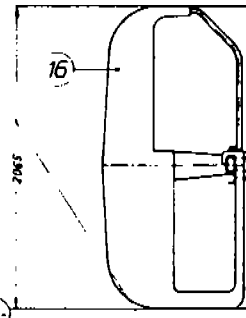
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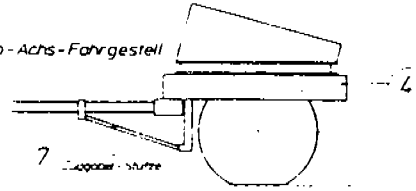
Höhe max ca 20000



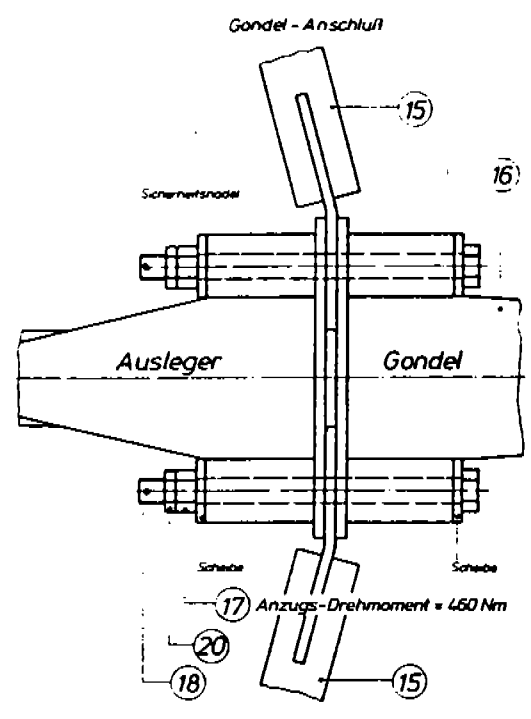
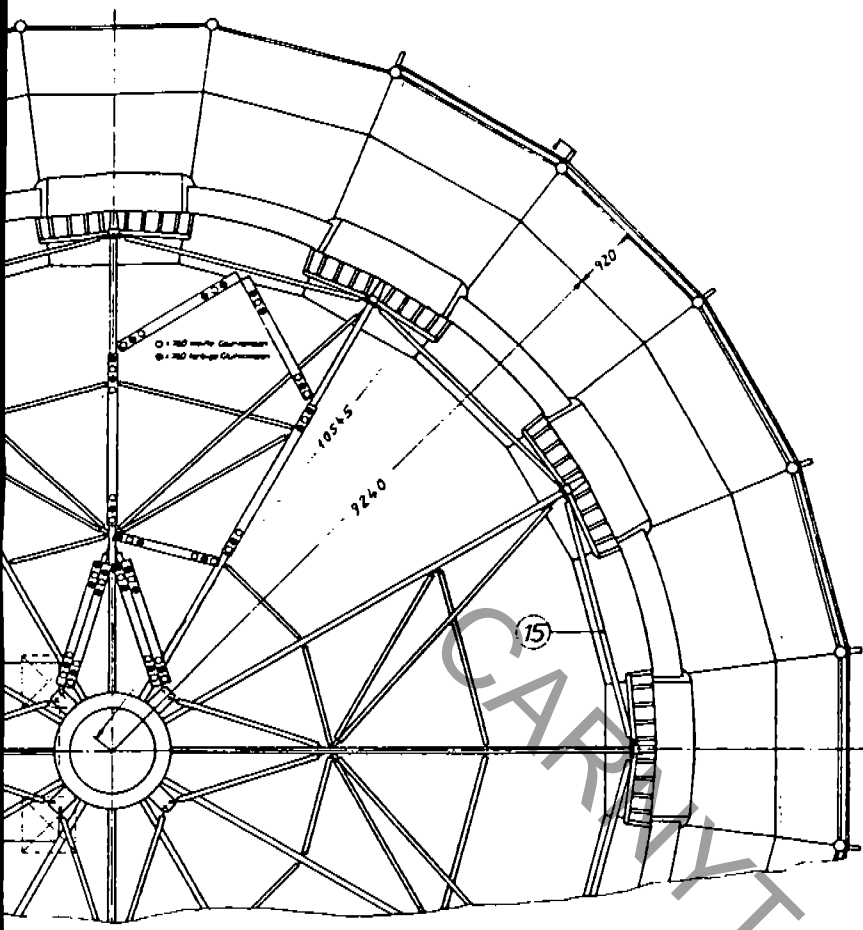
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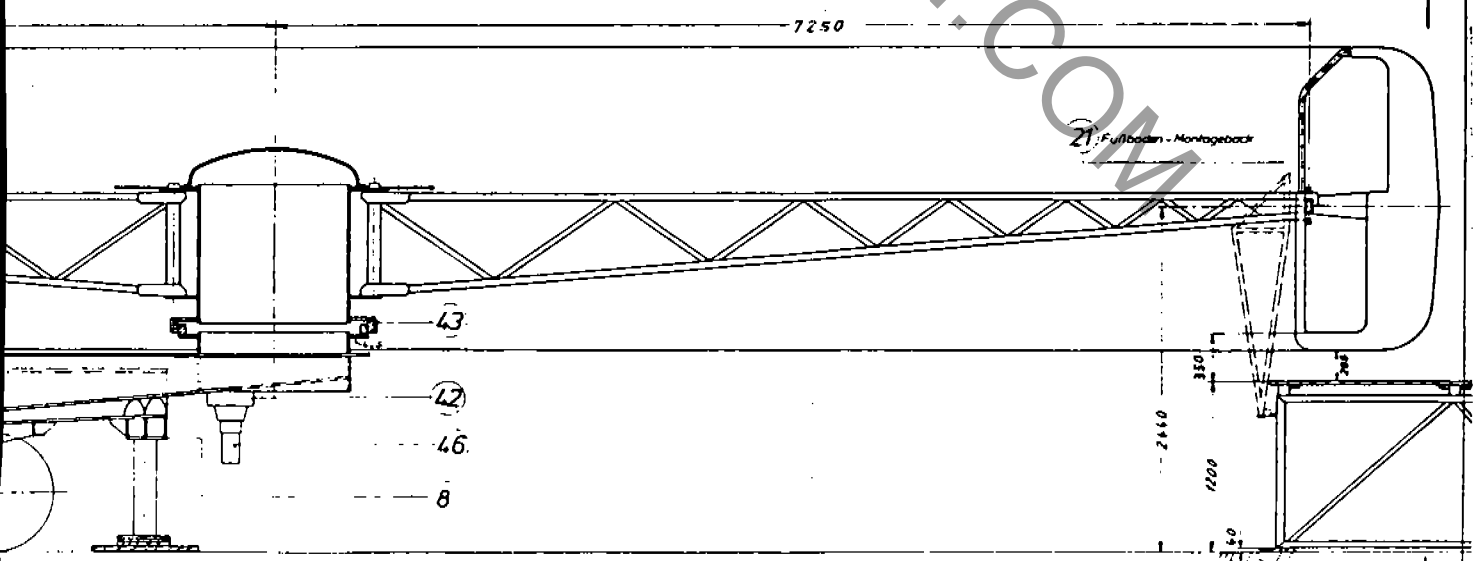
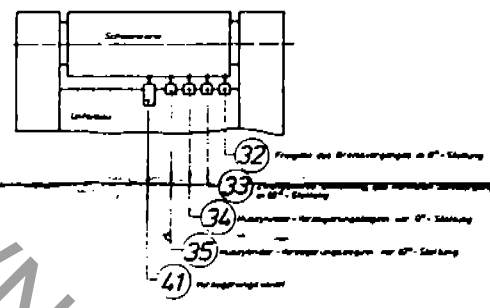
Mto-Achs-Fahrgestell



1. Entwurf
S. Schenker



Endschalter - Anordnung am Schwenkarmlager



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Stück	Benennung	Teil	DN	Material	Bemerkung
	Datum: 12.08.2011	Modell-Nr.	Typ	GIJSSS <small>HERBIL WILHELM HUSS & CO D-78832 Breisach - Postfach 11 09 06 Tel. 071 44 03 33 Fax 071 44 03 33</small>	
	Gezeichnet				
	Material	Complete derwina Rundfahrtgeschäft		Zeichnung Nr. A7	
	1:25	UFO		Größe Nr. Größe Datum	
	1:50				

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OPERATING INSTRUCTIONS

for

Amusement Ride "UFO", Serial no.

Park Model

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RESPONSIBILITY OF MANAGERS AND OPERATORS

The following remarks are a compulsory condition for the safe operation of the ride:

1. In all cases the manager is ultimately responsible for the safety of passengers during operation of the ride.
2. Selection of operators must correspond to the demands made on them regarding operation of the ride.
3. The operator must devote his undivided attention to the operation of the ride.
4. He must be acquainted with the functioning of the ride, its safety devices, emergency devices, operating instructions and regulations, and ensure the safety of passengers and safe running of the ride.
5. He must have complete and safe control over the unloaded ride before he operates it with passengers.
6. If a malfunctioning occurs operation must cease immediately.
7. Malfunctioning may often be detected by a change in noise during operation. If this occurs, one should look for the cause and, if necessary, get in touch with experts to find the reason for any malfunctioning.
8. The operator must insist on maintenance work being carried out, as it is described in detail in the operating instructions. If he does not, he is obliged to cease operation.
9. Before initiation the operator has to check the ride on its perfect working condition by performing the ordered controls and the trial runs.
10. The carrying parts as well as the motor driven parts are to be checked on perfect working condition before each initiation. Damaged parts are to be substituted by perfect ones. Furthermore it has to be observed that the ride is in safe upright position during erection and dismounting. After erection all parts have to be orderly connected and all connecting parts and necessary anchorages have to be mounted in a safe way.
11. The complete operating instructions provided by the manufacturer have to be kept at hand in the operator's stand so that the operator can have a look at them at any time. Upon loss, the manufacturer has to be immediately requested to provide a new copy of the complete operating instructions.
12. During repair and maintenance works, the ride must be currentless i.e. the main switch in the switch cabinet must be switched off. Should it be necessary to carry out maintenance work while the ride is in operation, an additional person to control the switch board is required.



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13. When carrying out repairs involving welding work it is essential to make sure that the welding current does not flow through bearings or other sensitive parts; in other words, the ground electrode must always be fitted close to the point of welding.

Welding repairs may only be carried out by properly approved specialist companies.

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II. Recommendations for the Erection of Stationary Rides

Central Section

1. Produce foundation as per our drawing A1-5.62.
2. Place the central section (1) onto the foreseen foundation true to dimensions.
3. Align central section (1) so that the axis (2) of the swinging arm is in an exactly horizontal position. The highest and lowest edges of the 2 longitudinal beams of the substructure must also be in an exactly horizontal position.
4. Insert stone bolts as per drawing A1-5.62 section B-B and D-D and grout in. Before doing so clean and wet the tubular receivers.
5. When the concrete has set, tighten the nuts.
6. Check that the central section is positioned acc. to drawing A1-5.62 section C-C.

Cantilevers

7. Mount the cantilevers in the correct order and fit, bolt and secure with the respective ring stays and crossover bracing struts as per drawing A1-7.8.
8. Connect the electrical plugs.

Ring Spacing Strut and Gondola

9. Hang the ring spacing strut (15) onto the pin at the end of the cantilever and then attach the passenger gondola (16) and hand-screw nut (17) without wrench so that, if necessary, the position of the ring spacing strut can be corrected.
10. When the ring spacing struts (15) and the passenger gondolas (16) have been attached, tighten nut (17) with a torque wrench set to 460 Nm (340 ft lb). Then mount flat counternut (20) and secure with safety pin. For the position of screws, washers, nuts and safety pins, see drawing no. A7. Connect light plugs.
11. Fix lightrails onto ring spacing strut.

Tween Roof

12. Hang roof between two gondolas, bolt and secure with safety pins. Connect light plugs.

Deaeration Tank

13. Open ball cock at the deaeration tank.



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ATTENTION !

All bolts must be secured with safety pins.

All plugs and sockets of the electric cables must be protected against soiling!

Keep sockets closed.

Take special care when using the maintenance switch (39). The lifted swinging arm comes down automatically and rapidly when the pump drive comes to a standstill, e.g. during a power failure. There is danger of accident!

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III. Daily Putting into Operation and Shutting Down

Proceed as follows for the daily putting into operation:

1. Switch on the electric main switch.
2. Check the oil level, i.e. the eye of the oil-level indicator at the oil tank must be covered by oil up to its middle.
3. Check that all bolts are secured by safety pins.
4. Switch on the hydraulic system and let it work off-load for approx. 10 min. Check for correct rotating direction of the 75-kW motor.
5. Grease the teeth of the ball bearing slewing rim (see V.C). Provide grease nipples of the ball bearing slewing rim with ball bearing grease always after approx. 30 hours of operation.
6. Run at least 5 complete rides without passengers using all control possibilities. Also check the support blocks and the stability of the stabilizers.
7. Lift the swinging arm approx. 4/5 and press the emergency stop button at the control panel. This results in absence of current. Now the swinging arm must come down independently and the wheel must slow down and stop. In case the operation is not as described above during absence of current, check the solenoid valves and make sure that the tappet of the delay valve (41) - which is situated in the area of the limit switches - comes down properly from the radial cam.
8. Check that all safety regulations and notice boards are displayed prominently.
9. Regular operation of the ride can be started once the proper test runs have been carried out.
10. During operation all gondola doors - also those of unoccupied gondolas - must always be closed.
11. During operation the platform must always be completely clear of passengers.

Shutting Down:

1. Run wheel with the gondolas into the exact entrance position.
2. Switch off hydraulics in the control panel and lock control panel by key.
3. Switch off electric main switch in the switch cabinet and lock by key.



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IV. Unusual Operating Conditions

1. cause 2. effect 3. steps to be taken

A1 Power failure or operation of the emergency stop button

A2 When the ride is elevated, the wheel disk is lowered automatically and then slows down and stops.

A3 The ride, the hydraulic system must not be switched on again before the swinging arm leans on its support in start position and before the wheel disk has come to a complete standstill.

B1 Speed drop

B2 Speed fluctuations are possible when the ride is loaded on one side only. This is registered by the overspeed monitor and the wheel disk is lowered automatically. However, braking is not carried out automatically.

B3 Press control button on control panel. Load evenly and start again as usual.

C1 Upper limit switch limitation is exceeded

C2 In case the normal upper limit switch limitation (35) fails, a second limit switch (33) is used which causes an emergency stop. The wheel disk is lowered and slowly comes to a standstill (see drawing no. A5).

C3 Defective limit switch limitation must be repaired by a specialist.

D1 Lower limit switch limitation(34) breaks down

D2 In this case, the hydraulic pump would not throttle the oil stream, i.e. the wheel disk will lower more abruptly.

D3 Defective limit switch limitation must be repaired by a specialist.

E1 Pressure drop in the pressure accumulator

E2 In case of a pressure drop of up to approx. 15° before the vertical position, the wheel disk lowers automatically. Braking of the rotation, however, is not carried out automatically when the wheel is down.

E3 Do not press the emergency stop button! The wheel disk will then keep on turning. Drive in the mushroom-shaped top (27) of the valve block at the pulling cylinder (19). Thus, the side of the burst hose is blocked. With the aid of the hand-operated pump (31) near the tank, the spinning wheel is lowered; time needed: approx. 6 min. When the ride is down, the normal braking process must then be induced. After the repair of the hose extract the mushroom-shaped top (27).

The refill of the pressure accumulator is described under "F1" (see drawing no. B1-5.31.1).



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V. Maintenance and Lubrication

A) 75 kW Electric Motor (28)

If dust accumulates, the motor must be blown through with dry air periodically in order to remove deposits in the interior part and in the ventilation openings. The 2 grease nipples must be kept clean. Periodical regreasing after 2000 hours of operation with ESSO all-purpose grease "BEACON EP 2" is required.

B) Reducing Gear (42)

Use ESSO gear oil GP 90 HYPOID (SAE 90). Required quantity for new filling approx. 6,5 l (220 fl oz.). First oil change after approx. 50 hours of operation, subsequently after 1500 hours of operation. The filler and drain plugs are marked respectively.

C) Live Ring (43)

The tothing of the live ring should be greased daily - at the latest when bare patches show on the gear teeth - with gear grease MOLYKOTE 165 LT.

The ball-bearing mounted tracks of the live ring must be greased daily - at the latest after 30 hours of operation - with ESSO all-purpose grease "BEACON EP 2". There are 4 grease nipples provided for this purpose. Turn bearing when greasing.

The fixing screws M 20 on the live ring must be checked regularly for tightness. For this purpose, use the torque wrench supplied. First undo the individual screws and then retighten with 460 Nm (340 lb ft).

D) Bearings

The pulling cylinder (19) is provided with 4, the 75 kW motor (28) with 2 grease nipples. All these bearings must be regreased periodically with ESSO all-purpose grease "BEACON EP 2". Moreover, the delay valve (41) has got a grease nipple at the tappet bearing.

E) Hydraulic System

The most important precondition for an efficient operation is a clean hydraulic system.

Dirt in the hydraulic system results in a faster fall-off in pump performance and shortens the service life of all parts. Dirt can also block control functions.

Care must be taken that there is a sufficient quantity of oil of at least 800 l (28 ft³). After extensive standstill periods (max. 2 months) as well as after the change of oil, any air bubbles which may have entered the system must be carefully eliminated. For this purpose, several ventilation facilities at different locations are provided.



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E1) Pump for Rotation Device (44)

Variable displacement (axial piston) pump, Linde, Type PV 140 TG, min. throughput 188 l (6,64 ft³).

Pump for Swinging Arm Device (45)

Variable displacement (axial piston) pump, Linde, Type PV 186 TS, min. throughput 261 l (9,21 ft³).

The pumps are deaerated by 2 ventilation valves placed on the upper part as follows:

Remove rubber caps from the valves and unscrew 2 turns. When the proper deaeration has been effected, close the valves and replace the caps.

The installed MANN easy-change filters are to be changed periodically, at the least on the occasion of each oil change.

E2) Hydro-Fixed Displacement Motor (46)

The fixed displacement motor, Linde, Type MF 75 T, is flanged directly to the reducing gear and is provided with pressure control valves.

E3) Lifting Cylinder (47)

On the lifting cylinder, 1 ventilation screw is fitted on the lower part and 2 on the upper part. If air enters the cylinder, the stages extend and draw in unevenly. Moreover, the service life of the packings can be reduced by air in the oil. After every reerection or approx. once a week, a deaeration should be effected while the hydraulic oil pump is operating. For this purpose, the ventilation screw at the lower end of the cylinder should be slightly loosened. For the same purpose, the cylinder top is provided with a hose coupling at the exterior cylinder tube and at the front part. A deaeration is effected by spraying out a small quantity of oil through a mini-measuring hose, without manometer.

E4) Pulling Cylinder (19)

On the pulling cylinder, 2 ventilation screws are fitted which must in any case be checked after each change of oil as well as after each refill of nitrogen.

For lubrication of the pivoting bearings see "D"!

E5) Oil Tank (23)

The entire hydraulic system has approx. 800 l (28 ft³) of hydraulic oil ESSO NUTO H 68 (SAE 20). Check oil for the first time after 50 hours of operation; filter or change oil if necessary. Subsequent oil changes every 1500 hours of operation.



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The new oil must always be poured in over a clean filter with a filter fineness of $\mu = 40$ (0,002 in.) at the oil tank.

The 2 magnetic needles (24) in the oil tank must be checked periodically. In the beginning of operation, they must be cleaned at least once a week.

E6) Hose Pipes

All hose pipes bear numbers which must be stated when ordering spares. According to the information of the supplier, the following hose pipes should be replaced after 4000 hours of operation:

item no. 5.30.41
item no. 5.30.46
item no. 5.30.63
item no. 5.30.64

When changing or when reconnecting a pressure tube, check for satisfactory position (bending on one level only).

F) Nitrogen System

The nitrogen bottle (25) with a contents of 50 l (1,8 ft³) and 200 bar (2900 psi) is placed under the oil tank and is connected to the piston accumulator (26) by means of a tube. When the wheel disk is on the ground, the operating pressure is 140 bar (2030 psi).

The pressure on the pulling cylinder (19) is measured at the upper connection block of the two piston accumulators (26), the coupling being transposed, with a manometer (38).

F1) Nitrogen Refill

The nitrogen system is refilled with the aid of an additional nitrogen bottle. Proceed as follows:

1. Fix charger (36) to the refill bottle and connect coupling (30).
2. Open valve (37) of refill bottle. Nitrogen will flow into the system.
3. Close valve (29).
4. Press maintenance button (39) and lift swinging arm to a 45° position. The mushroom-shaped top (27) must in any case be in its normal position, i. e. extracted.
5. Open valve (29) again and lower swinging arm.
6. Repeat operation 3 to 5 until the nitrogen manometer (40) shows 140 bar (2030 psi) at the lowest position of the swinging arm.
7. In order to check the oil pressure, transpose coupling and connect manometer (38).



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8. Lift the empty ride completely several times with rotating wheel disk. In case the oil pressure drops below 100 bar (1450 psi), the pressure monitor lowers the swinging arm automatically. In this case, at least one additional liter of oil = 100 strokes must be pumped with the hand-operated pump (31). The most favourable position of the swinging arm for hand-operated pumping is 45°.
9. After successful test operation remove filling device (36) and refill bottle. Transpose coupling in order to disconnect manometer (38).

After the replacement of the hose between the piston accumulator (26) and the pulling cylinder (19) the mushroom-shaped top (27) must be extracted completely, i.e. until it snaps in.

All screws and fixing devices of the complete ride must be checked regularly!

G) Trailer Tires for Road Models

Tires 8.25 x 15 x PR 18

Air pressure 9 bar = 130 psi at 80 km/h

A T T E N T I O N

To fulfil the guarantee conditions, only original HUSS spare parts may be used!

Always state the serial number when ordering spares.

This is to be found on the manufacturer's nameplate on one of the booms.

VI. Safety Regulations for Amusement Ride "UFO"

1. To ensure the stability and free access of the ride, the site has to be prepared and, if necessary, levelled accordingly.
2. The support blocks between the ground and the substructure trailer resp. the base construction must be kept low; they have to be produced stable and secure against shifting.
3. The ride must be erected so that a sufficient distance is maintained away from houses, trees, electrical cables etc. (min. 0,5 m = 1,64 ft.) in all positions of the swing so that passengers are not endangered.
4. Prior to each erection, the load-bearing and mechanical parts must be checked for perfect condition. Defective parts must immediately be replaced by perfect ones. Special care must be taken that the ride is also stable during erection. When erection is completed, all parts must be properly connected. Connecting elements and necessary anchorage have to be installed correctly.

The manager of the ride or his representative has to instruct the personnel engaged in charging, discharging and transporting the individual parts with regard to careful handling of the material. During execution of these works he has to supervise the personnel and, if necessary, give instructions.

5. All connecting elements of the ride must be secured by suitable means against unintentional loosening.
6. For auxiliary lighting, a sufficient number of flashlights has to be available.
7. For the operation of the ride, at least one machinist and - except in times of small attendance - four operating persons are required.
8. The ride must not be operated with more than 48 persons, i.e. each gondola must not be occupied by more than 4 passengers.
9. The passengers must be distributed as evenly as possible on the circumference of the ride.

A one-sided additional load of more than 8 passengers, i.e. max. 600 kg (1300 lb), must be avoided by all means.

10. Children under 10 years of age and of less than 152 cm (5 ft) of height must be excluded from the ride.
11. Drunken persons are not to be admitted to the ride.
12. The operator must not switch on the drive power until
 - a) all passengers stand in the gondolas,
 - b) all side doors are closed and locked



- c) the entire platform area swept by the horizontally circling gondolas as well as the first steps next to that area on all sides of the swinging arm (up to the intermediate railings) are clear of onlookers and waiting passengers.
13. Whenever the passengers themselves have not closed and locked the doors of the gondolas, this must be done by the operating personnel prior to starting.
14. During the first turn after the ride has started, the operator must make sure that all passengers stand properly in their gondolas and that all doors are closed and locked.
15. While the ride is in operation, waiting passengers must only be allowed to stand on the lower circular stepway around the platform area; do not allow passengers onto the steps bordering the range of the swinging arm. Appropriate supervision on the part of the operating personnel will be necessary.
16. Do not change the control times set during acceptance test. (The final control elements resp. stops or their covers are under lead).

Note the following values:

Even acceleration of the rotating structure within approx. 22 sec. min. up to a maximum of 13,5 rpm and slowing-down within approx. 22 sec. min. until standstill.

Set minimum of 12,9 rpm at the overspeed monitor (limiting value for lift release).

Lifting and lowering within a minimum of approx. 24 sec., with a damping of at least approx. 3,0 sec. during lowering.

17. Before reaching the upper final position at approx. 90° limited mechanically by the cylinder lifting, a limit switch must become effective which switches off the lifting process, latest at 86°. In addition, there must be a safety limit switch which stops the lifting process latest at 88°.
18. Do not change the following set values of the relief valves:
- a) for rotating device 350 bar (5075 psi)
 - b) for lifting device 285 bar (4132 psi)
 - c) for pulling cylinder 215 bar (3117 psi)
19. Do not change the pressure control device in the reservoir system of the pulling cylinder (90 bar - 1305 psi).
In position 0° of the swinging arm the pressure should be at least approx. 160 bar (2320 psi) - (see manometer of the nitrogen reservoir).

20. Check daily before starting operation the effectiveness of the controls (item 16) and the effectiveness and correct setting of the limit switches for the hydraulic lifting cylinder (item 17).
21. When erecting the platform make sure that the entrance openings of the gondolas are not higher than 40 cm (1,31 ft) above the platform.
22. Passengers are not allowed to lean out of the gondolas, to smoke or to take animals, umbrellas, sticks or other bulky or pointed objects into the gondolas.
23. The notice boards drawing attention to the prohibitions and operating regulations as per items 10, 11, and 22 must be clearly and legibly displayed at suitable locations.
24. At site, the operating personnel must be instructed with regard to:
operating instructions,
what to do in case of power failure, fire, panic outbreak or other disturbances,
operation of the safety lighting or ancillary lighting,
location of the nearest fire alarm or nearest telephone which can be used to call the fire brigade.
25. The unabridged operation and service instructions must at all times be available to the operating personnel.
26. The operational safety of the amusement ride must be checked daily before starting operation. The main connections, moving and mechanical components must also be observed during operation; any faults which arise must be immediately corrected. If necessary, operation must be stopped. Repairs which could endanger passengers or operating personnel are not permissible during operation.
27. Sitting or standing on railings, swaying to the music and rhythmic stamping on the platform on the platform must not be permitted. If necessary, the music should be stopped and the machinery switched off.
28. Climbing in and out of gondolas during operation of the system, holding out arms or legs, leaning out of gondolas, sitting on side walls and smoking must not be allowed.
29. The ride is not calculated for snow load. If the ride is operated outside the snow-free season, any snow has to be immediately removed.
30. The frame of the substructure trailer must be supported according to drawing no. A5-43. A permissible ground pressure of 15 N/cm² (22 lb/in²) is required.
For stationary rides, the concrete foundations have to be calculated according to the loads indicated in drawing no. A1-5.62.



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31. For the frame props of the platform, the supports must have the following dimensions - for a permissible ground pressure of 15 N/cm² (22 lb/in²):
- a) frame with backdrop props:
 - inner and outer frame prop: 37 x 37 cm (15 x 15 in.)
 - center frame prop: 25 x 25 cm (10 x 10 in.)
 - b) Other frames of platform:
 - all frame props: 25 x 25 cm (10 x 10 in.)
32. The rotation drive has to be set so that a maximum of 13,5 rpm is not exceeded and a minimum is not less than 12,9 rpm.
33. By means of an inherent electrical overspeed monitor it has to be ensured that the lifting of the swinging arm, before reaching the minimum rotations p.m., is prevented and that the lowering of the swinging arm will start automatically when the minimum number of rotations is not reached.
34. The electric control is to be set in such a way that the switching off resp. braking of the rotating structure upon lowering of the swinging arm will only become possible after the swinging arm has reached an inclination of approx. 40°.
35. The lowering brake incorporated in the lifting cylinder has to be set so that a too rapid lowering of the lifting arm in case of hose breaks or power failure is prevented, approx. 330 l (11,65 ft³) min.
36. By means of a pressure control device it has to be ensured that the rotating structure cannot be started if there is a pressure drop in the pulling cylinder resp. that the lowering process is immediately started with lifted swinging arm.
37. The screws M 24, quality 10.9, to connect the passenger gondolas with the cantilevers must be tightened with a torque of 460 Nm (340 ft lb). The screws should be lightly oiled.



VII.

Maintenance Instructions for Fiberglass Surfaces

We use only first-class materials to produce the surface finish of our fiberglass components. Although these require very little maintenance, they cannot do entirely without maintenance. To retain the brilliant surface gloss for a long time we recommend you to:

1. Clean the surfaces at least every 14 days with clear water and then polish with a leather cloth.
2. Never rub dust or dirt off the surfaces when dry.
3. Clean the surfaces with a solution of water and household washing-up liquid or similar as required but at the latest every 3 months; after drying, apply a good automobile wax and polish with a soft cloth.
4. If you use a high-pressure steam jet, never work with chemicals which are more aggressive than soapy water.
5. If you use a high-pressure steam jet with chemicals which comply with Point 4, wax and polish the surfaces again afterwards.
6. Stubborn spots and stains can be swiftly removed with moist acetone cloths; keep the contact time with acetone to a minimum.
Immediately after working with acetone or cleaning benzine, wash the surface well with clear water and then wax and polish.