

MFG: SCHWARZKOPF  
NAME: BAYERN KURVE  
TYPE: NON-KIDDIE

BAYERN KURVE

OPERATING SET-UP

MAINTENANCE AND INSPECTION GUIDE

CARNY TOWN.COM

BAYERN KURVE

TABLE OF CONTENTS

	Page
Operating instructions.....	1
Description of electrical functions.....	3
Maintenance.....	12
Inspection.....	14
Trouble shooting chart.....	16

## OPERATING INSTRUCTIONS

The Bayernkurve is operated from the control console only. Turning the key switch "Control" in the "on" position activates the control voltage, the indicator lamp "Control voltage" lights up and the air compressor is turned on. When the air pressure reaches 3 bar (43 psi), the ride is ready for operation.

After the cars are loaded, the operator has to check, that all passengers are seated properly. Then he pushes the button "Horn" on the control console, which sounds a horn as a signal for waiting passengers, to clear the loading area.

The ride is started through pushing the "Start" button, which activates a semi-automatic program for the ride functions, and the indicator lamp "Drive cars" lights up.

Sequence of the automatic program: the cars accelerate to full speed, tilting down at the same time, running on full speed for a preset time, decelerating and lifting up at the same time, after reaching slow speed the drive motors are shut off, the indicator lamp "Stop cars" lights up. The operator then, has to stop the slow moving cars in the loading position through pushing the button "Brake".

It is very important, that the brake is not used until the drive motors are turned off and the indicator lamp "Stop cars" is on. Otherwise the drive motors overheat and one of the overload relays 1e13, 1e14 or 1e15 turns off the control voltage.

During the entire ride, the operator has to watch the passengers and the cars. Should any dangerous or emergency situation arise, the "Emergency stop" button has to be pushed (which turns off the drive motors and lifts up the cars) and the "Brake" button to stop the cars.

Following controls are installed in the control console:

1. Air pressure gauge
2. 3 Ammeters for the drive motors
3. Key switch "Control on"
4. Push button "Emergency stop"
5. Push button "Start"
6. Push button "Brake"
7. Push button "Horn"
8. Indicator lamp "Control voltage"
9. Indicator lamp "Failure drive"
10. Indicator lamp "Drive cars"
11. Indicator lamp "Stop cars"

## DESCRIPTION OF ELECTRICAL FUNCTIONS

The ride is turned on through the key switch 2b1 in the control console. The indicator lamp 2h1 lights up. The air compressor starts up, and after the air pressure reaches 3 bar (43 psi), the ride can be started through pushing the button 2b11 "Start".

Following conditions in the control panel are necessary to start the ride:

1. The autotransformer must be in the bottom position, the limit switch 1b12 "Bottom on" has to be closed, the limit switch 1b16 "Bottom off" has to be open.
- 2 The overload relays 1e13, 1e14 and 1e15 have to be in normal position.
3. Contactor 1c1 for the drive motor fields has to be pulled up, field current has to flow through the relays 1d1, 1d2 and 1d3 to activate them.

If these conditions are met, the drive contactor 1c4 pulls up first, and then contactor 1c2, which activates the "Servomotor up" on the autotransformer. Indicator lamp 2h8 lights up.

The power pick up, located on the autotransformer, activates the limit switch 1b18, which pulls up contactors 1c6 and 1c8 to tilt the cars.

When the power pick up reaches the limit switch 1b14 "Top off", the contactors 1c2 "Servomotor up" and 1c6 "Tilt cars" drop out, the timer 1d13 starts up. The contactor 1c8 stays pulled up for the car lights.

After 1d13 has timed out, the contactors 1c3 "Servomotor down" and 1c7 "Lift cars" pull up.

When the power pick up reaches the bottom position, relay 1d12 drops out the contactors 1c1, 1c7, 1c8, 1c3 and 1c4, the indicator lamp 2h9 "Stop cars" lights up.

The cars are stopped then, through pushing the button 2b5 "Brake".

During the ride, the drive motors can be turned off immediately through the push button 2b20 "Emergency stop", the autotransformer returns to its bottom position automatically.

To signal waiting passengers, that the ride will start, a horn is provided and has to be operated before each start.

If one of the overload relays 1e13, 1e14 or 1e15 drops out, the indicator lamp 2h2 "Failure drive" lights up.

Over the Ammeters 2g1, 2g2 and 2g3, the load of the drive motors has to be checked constantly. The maximum readings should be the same on all three meters.

## MAINTENANCE

### 1. Drive units

- a) The gearbox is filled with 8 kg (~ 18 lbs) Gearlubricant (Minelubricant). Change lubricant every 1000 hours of operation.
- b) Lubricate the brake linkage every 200 hours of operation with multi purpose grease.
- c) Check drive tires 4.00 - 8 for wear and air pressure, 4.5 bar (65psi).
- d) Clean drive motors every 500 hours of operation, blow out dust from brushes, check for wear.  
ATTENTION! High voltage, make sure the power is turned off.

### 2. Air compressor

- a) Check oil level daily
- b) 1st oil change after 30 operating hours.  
2nd oil change after 100 operating hours.  
3rd oil change after 150 operating hours.
- c) Oil change every 500 hours of operation thereafter.

### 3. Cars

- a) Lubricate car hinges, lifting rods and car couplings every 30 operating hours with multi purpose grease.
- b) Lubricate car lifting spindle with Molycote BR2 every 20 hours of operation.
- c) Lubricate chain every 200 operating hours with Molycote BR2.
- d) Check that bolts on tilt motor are tight.
- e) To lubricate the car wheels use bearing grease.

### 4. Track

Lubricate the track surface with a thin oil film, to cut down wheel wear (use SAE 10 industrial oil and apply sparingly with brush).

## INSPECTION

To insure the safety of the passengers and avoid any possibility for accidents, following points need special attention:

### 1. Cars

- a) Bolt in car coupling has to be tight and secured with safety pin.
- b) Check that all bolts on wheels, axle, sprockets, lift gear box, seats and hand rails are tight.
- c) For maintenance, see page 13

### 2. Track

- a) Connecting bolts on track have to be secured with double nut.
- b) Track joints have to be smooth.

### 3. Conductor bars

- a) Inspect mounting clamps, joint covers and insulation on conductor bars.
- b) The coverplate over the pick up arms on car #9 has to be installed for operation.

#### 4. Drive units

- a) Check that bolts to frame and support are tight.
- b) The frame has to be secured to the base with pins.
- c) Check that all bolts on rims are tight
- d) Check tires for wear or damage.
- e) Inspect brake lines and cables for damage.
- f) For maintenance, see page 13
- g) Air pressure for tires: 4.5 bar (65 psi)  
Max. air pressure for brake: 5.0 bar (72 psi)

#### 5. Warning

- a) Bolts, double nuts, pins, safety pins and covers are used to connect structural parts and to secure the connection. Also they are needed for the safety of the passengers and to avoid accidents.
- b) Not to install any of the above parts or to take them off for reasons like saving time, better working conditions or likely, endangers the passengers, waiting people and operators.

## TROUBLE SHOOTING CHART

### 1. Trouble: no control voltage

#### Probable cause:

- a) No line voltage or missing phase.
- b) Fuse for control voltage defect.

#### Corrective action:

- a) Check voltage with Voltmeter 1g1
- b) Check fuses 1e3, 1e4, 1e5, replace if defect.

### 2. Trouble: the cars won't start

#### Probable cause:

- a) One of the overload relays 1e13, 1e14, 1e15 tripped, indicator lamp 2h2 lights up.
- b) Autotransformer is not in bottom position, servomotor fuse 1e7 defect.
- c) One of the two bottom limit switches 1b12 or 1b16 is defect.
- d) Motor field fuse 1e6 is blown.
- e) Timer 1e13 is not working.

#### Corrective action:

- a) Reset overload relay, indicator lamp 2h2 will go off.
- b) Check fuses 1e3, 1e4, and 1e7, replace if defect.
- c) Check limit switches, replace if defect.
- d) Check fuses 1e3, 1e4, 1e7 and 1e6,--replace if defect.
- e) Check timer and replace if defect.

3. Trouble: lamp "Drive cars" is on, but cars won't move

Probable cause:

a) Fuses 1e8 or 1e9 defect

b) Fuses 1e10, 1e11 or 1e12 defect.

Corrective action:

a) Check fuses and replace if defect.

Attention! Replace fuses 1e9 only with rectifier fuses.

b) Check fuses and replace if defect.

4. Trouble: one of the drive motors is not working or not running smooth.

Probable cause:

a) Fuses 1e10, 1e11 or 1e12 defect.

b) Motor brushes are used up.

Corrective action:

a) Check fuses and replace if defect.

b) Replace brushes.

5. Trouble: cars accelerate but won't tilt down

Probable cause:

a) Limit switch 1b18 on autotransformer defect.

b) Fuses 1e19 defect.

c) Power pick up from conductor bars to car #9 defect.

Corrective action:

a) Check limit switch and replace if defect.

b) Check fuses and replace if defect.

c) Check knives in pick up arm and replace if worn.

Check wire connection to conductor bars and on car.

6. Trouble: the air compressor is not working

Probable cause:

- a) Overload relay 1e20 tripped.
- b) Fuses 1e18 or 1e16 defect.

c) Pressure switch 3a1 is defect.

Corrective action:

- a) Reset relay.
- b) Check fuses and replace if defect.
- c) Check adjustment, if defect replace.

All repairs have to be made by highly qualified technicians.

Always try to find an explanation for a malfunction or failure.

Test rides without passengers must be made after the daily maintenance, and after repairs have been performed.

CARNYTOWN.COM