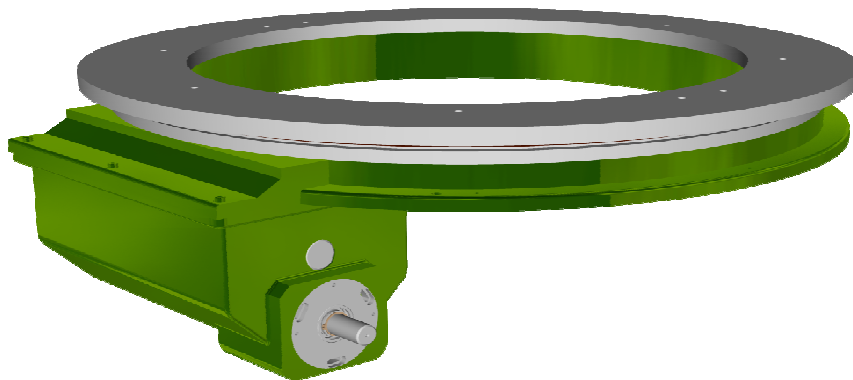


Operating Instructions

Cylindrical Ring Index Tables



Type :

Serial No. :

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7. Final remark

1. General

1.1 Validity

These operating instructions are valid for cylindrical cam ring tables. They are to be read and applied by all persons in the user's premises who are made responsible for the installation, operation, maintenance or repair of these gears.

For the sake of simplicity, cylindrical cam ring tables will be referred to as "the gears" within the following instructions.

Every gear is manufactured to the state-of-the-art and according to recognized safety regulations.

Applications other than specified or exceeding the limiting parameters, e.g. higher speeds and/or loads or other installation positions, are considered to be contrary to agreement.

**The manufacturer shall not be held responsible for any damage resulting from this.
In such cases, the risk is carried solely by the operating company.**

The agreement regarding application also covers reading the operating instructions and compliance with the inspection and maintenance stipulations. Maintenance work may only be carried out by qualified personnel who are acquainted with the principles of the gear function.

1.2 Safety instructions

The gear corresponds to the recognized safety regulations. When employed as part of a machine or plant, danger of injury or death for the user or a third person can result, e.g. due to removal of the lever, gear wheel with chain or similar parts. In such cases, suitable local protective measures should be taken by the user.

1.3 Shipment

Every gear is subjected to go through an inspection process and is properly packed. In spite of this, we request that the gear is unpacked immediately on arrival at the installation location and checked for transport damage. Any complaints should be reported immediately to the transport company.

1.4 Transport regulations

Eyebolts may be screwed into the fixing holes provided. Lifting ropes or chains may only be applied on these eyebolts. The weight of the gear should be taken from table 1.5.

1.5 Weight of gears types

Gear type	Housing	Weight without motor [kg]
HR 800	GG	240
HR 1100	GG	360
HR 1250	GG	605
HR 1600	GG	810

2. Instructions for application of the gears

2.1 Installation position

Due to its construction the gear can be integrated in one position into a machine or a plant. At the same time the axis of rotation has to be located vertically, while the output has to be located above the input.

It has to be ensured that the gear will be operated in this mounting position.

The predefined mounting position is decisive for the lubrication of the gear components and may not be changed.

In case the mounting position should be changed, the tightness of the gear is not ensured any longer, and mechanical damages can occur.



Illustration 1: Gear mounting position

2.2 Mounting of the gear

Due to the principle of the functioning of the gear, the output shaft as well as the input shaft are subjected to variable torques. The following must therefore be observed:

- The gear must be mounted on a rigid machined surface.
- The fixing bolts must be secured and, if possible, the position of the gear should be additionally fixed by means of dowel pins.
- The connection between the gear and the driven load must be direct, free of play and torsionally rigid. This also applies to the drive side of the gear.
- Serrated belt and driving chain have to be dimensioned sufficiently, those have to be taut according to regulations.

2.3 Gear operation

The following should be observed with regards to gear operation:

- Elasticity and play in the driven masses can result in vibration and must therefore be avoided.
- The gear should always be stopped or started in the dwell angle area. Otherwise supplementary vibrations may occur, which might cause damage to the gear.
- In case of an emergency stop (also during tap operation), the torques may be significantly higher as during normal operation (depending on the drive unit being used). This can damage the gear.

3. Start up

3.1 Gear function

HEINZ gears form a compact, robust unit which, through the use of accurately calculated cylindrical cams, enable the transformation of a constant input speed into an optimum, precise and impact-free (intermittent) output movement.

The cam rollers fitted in the turret are guided precisely in the cylindrical cam by the hardened and ground cam path. This cam path is formed with a variable slope and is divided into a dwell angle and index angle area. When the cam is rotated, the precise jolt and impact-free movement of the output is produced by the cam path and the cam follower. As the cam course is constructed standard symmetrically, it is possible to choose rotation to the left or to the right.

The dwell angle area has a zero slope. Through this, the cam followers result in a precise, self-locking positioning of the output without an additional locking mechanism.

A spurwheel is available between the input shaft of the gear and the cylindrical cam with the following possible ratio:

1:1	1:2	1:3	1:4	1:5
-----	-----	-----	-----	-----

When a brake motor is employed, the positioning of the output shaft is independent on the braking accuracy of the motor as the accurate positioning is dictated by the position of cam followers in the dwell angle area. The whole dwell angle area is available for braking (see 3.3).

3.2 Oil level

The oil level should be checked before start up. It is sufficient if the oil can be observed through the oil level indicating glass (see also 4.4 "gear unit")

Gear type	oil volume [L]
HR 800	1,00
HR 1100	3,0
HR 1250	3,5
HR 1600	4,0

3.3 Interruption Operation

If the dwell angle area of the cylindrical cam is insufficient for the interval of interruption required for production, the interval can be prolonged by using a brake motor. The procedure is initiated by an end position switch which is operated by one of the cams connected to cylindrical cam. During the start up as well as during operation it has to be observed that after the breaking has occurred, the mounted end position switch is always activated (cam followers should be in the middle of the dwell).

3.4 Important Instructions

With two speed drives, normal operation occurs always at the higher speed (high speed). The lower speed (low speed) may only be used for setting up the unit or moving into the dwell angle area after an emergency stop. During automatic operation, the gear may not be switched into the low speed position while the unit is in the movement phase. With control systems which only allow switching of the high speed through the low speed, this may only occur during the dwell angle, this means during the standstill period of the output shaft.

Any damage which is caused by failure in complying with these instructions will result in the rejection of any guarantee claim by the manufacturer.

4. Maintenance Instructions

4.1. General Remark

In case of queries i.e. spare part orders, please state the type and serial number of the gear in question.

4.2 Drive

The maintenance instructions for the gear brake motor or other drive units should be taken from the instructions supplied by the corresponding manufacturer.

4.3 Motor brake

Due to wear of motor brake, the interruption in the dwell angle area as described in 3.3. should be checked from time to time. The brake should be re-adjusted or renewed if necessary.

4.4 Gear unit

4.4.1. Oil Lubrication

In Standard the gear unit is delivered with the synthetic lubricating oil **"Klübersynth GHE 6 – 460"**

It is lubricated for life, i.e. no oil changes are necessary at all. The oil level should be checked at regular intervals. Sufficient oil is present if when the gear unit is stationary the oil can be seen in the sightglass. The lubrication of the cam rollers and the came is thus guaranteed.

For rotating speed < 150 rpm	For rotating speed > 150 rpm
Klübersynth GHE 6 - 460	Klübersynth GHE 6 - 100
Mobil Glygoyle HE 460 (ISO V6 460)	Mobil Glygoyle 22 (ISO V6 150)
Shell Omala S4 WE 460	Shell Omala S4 WE 150



WARNING

Warning: Never mix different oil sorts!



WARNING

Only top up with the lubricant described above!

If used for the food industry, the gear unit is delivered with NSF H1 registered, conform to FDA 21 CFR § 178.3570 oil "Klübersynth UH1 6 - 460"

It is lubricated for life, i.e. no oil changes are necessary at all. The oil level should be checked at regular intervals. Sufficient oil is present if when the gear unit is stationary the oil can be seen in the sightglass. The lubrication of the cam rollers and the came is thus guaranteed.

For rotating speed < 150 rpm	For rotating speed > 150 rpm
Klübersynth UH1 6 – 460	Klübersynth UH1 6 – 150



WARNING

Warning: Never mix different oil sorts!



WARNING

Only top up with the lubricant described above!

4.4.2. Grease Lubrication

It is lubricated for life, i.e. no grease are necessary at all. The grease level should be checked at regular intervals.

Normal Grease Lubrication	NSF H1 registered, conform to FDA 21 CFR § 178.3570
Castrol Olit 00	Cassida RLS 00
Microlube GB 00	Klübersynth UH1 14-1600



WARNING

Warning: Never mix different oil sorts!



WARNING

Only top up with the lubricant described above!

5. Inspection instructions

5.1. Interspection Intervals

We recommend to control the oil level approximately every 8.000 hours of operation to avoid damage of the gear through insufficient lubrication

5.2 Changing or Filling up of Lubricant



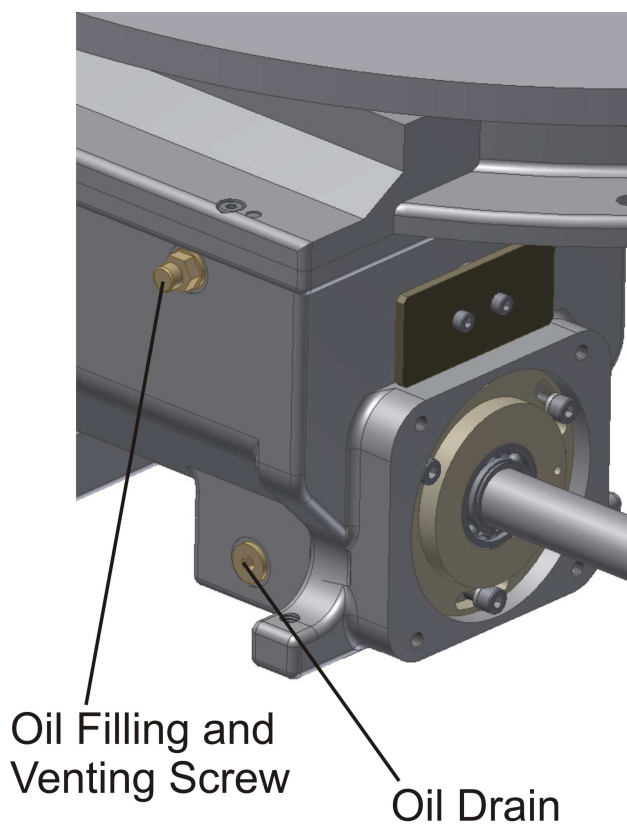
NOTE

To preserve the guarantee on the mechanical function sufficient lubrication of all active elements is mandatorily necessary. Regular inspection of the gear boxes for leakage is prerequisite for the safeguarding of the function ability.



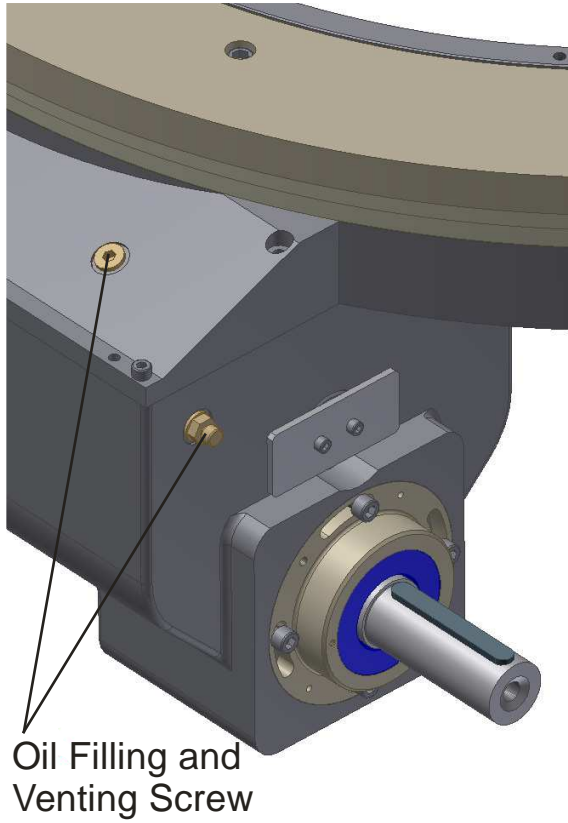
NOTE

Position of the Oil Fittings at the different Sizes of indexer

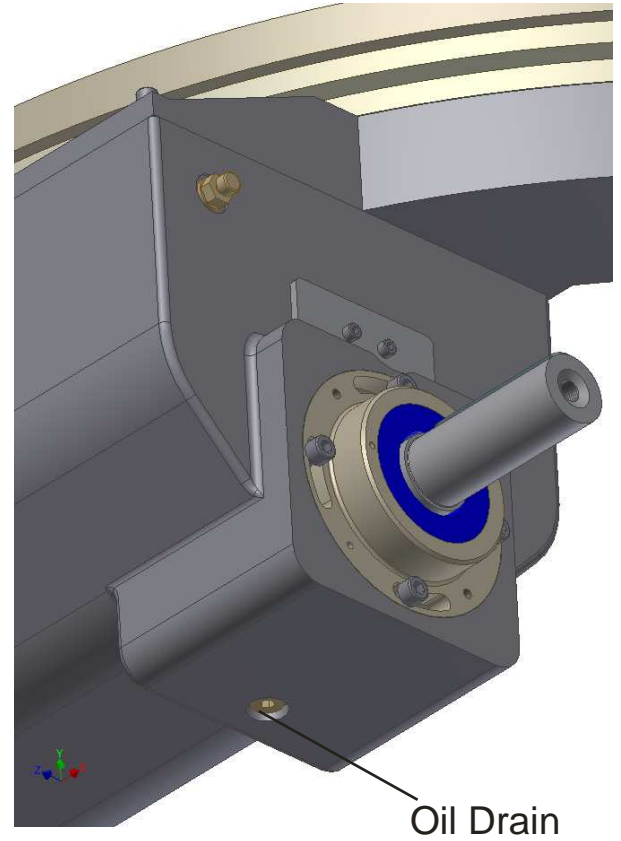


Picture 1: Oil Fittings at HR800

Picture 2: Oil Fittings at HR1100



Picture 3: Oil Filling at HR1250 / HR600



Picture 4: Oil Drain HR1250 / HR1600

5.2.1 Changing of Lubricant

In case an oil change is required, the oil drain screw has to be opened to remove all the old oil out of the housing.



WARNING

No residues of waste oil may remain inside the housing!

If necessary, the indexer needs to be rinsed with a qualified cleanser.

After the oil drain, screw at the gear housing needs to be securely closed again and the new lubricant can be filled in.

Oil level gauge - please also see 3.2 "Oil level"

5.2.2 Filling up of Lubricant

In case of a leakage or a loss of oil, filling up of lubricant is required.

For that the filling and venting screw need to be opened to fill up the lubricant to the required level.



NOTE

Check the lubricant inside the housing.

When the oil level is right, the lubricant is visible in the oil level gauge.

Oil level gauge - please also see 3.2 "Oil level"

Some types of gear housings do not have an oil level glass / gauge!



NOTE

So in case of doubt, if the oil quantity meets the requirements, please continue with 5.2.1 Changing of Lubricant



WARNING

Performance and life time of indexer depend on proper handling and sufficient lubrication

6 .Spare part assembly

6.1 Note

Read through the complete text attentively before beginning with the following dismantling work.
Clean all components before installation and check their faultless condition. For dismantling and assembly of the components the spare part list is helpful

6.2 Mechanism

The mechanism consists of barrel cam, roller followers and turret.

Due to wear of roller followers, barrel cam and turret, it might be necessary to replace

- cam followers
- turret
- complete mechanism

6.2.1 Replacing cam followers (barrel cam remains built in)

- Drain oil
- Turn pinion shaft (15) into dwell angle area
- Unscrew rotary plate (5)
- Remove V-seal on the inside (20) and on the outside (21)
- Unscrew bearing ring (4)
- Remove survey anti friction bearing (19) (see also adaption supplement!)
- Take out turret ring (19) with cam followers of housing (1)
- Turn cylinder head screws from turret ring (3), remove cam followers
- Check shaft bore of cam followers regarding damage and possibly extension.
- In case of faulty bore hole: see 6.2.2
- In case of faultless bore holes press new cam followers (2) into turret ring (3)
- Secure cam followers (2) with cylinder head screws
- Check barrel cam (6) and replace –if necessary- by new one (see section 6.2.3)
- Put back turret ring (3) into housing (1)
- Put in wire ball bearing (19)
- Check seal (17), replace if necessary
- Assemble bearing ring (4) (adjust initial bearing tension with adaption supplement)
- Assemble V-seal inside (20) and outside (21)
- Bolt on rotary plate (5)
- Turn pinion shaft (15) and check mechanism for even running
- Refill oil

6.2.2 Replacing turret ring (barrel cam remains built in)

- Drain oil
- Turn pinion shaft (15) into dwell angle area
- Unscrew rotary plate (5)
- Remove V-seal inside (20) and outside (21)
- Unscrew bearing ring (4)
- Remove survey anti friction bearing (19) (see also adaption supplement!)
- Lift switching cam (3) with cam followers (2) out of housing
- Check barrel cam (6) and replace by new one if necessary (see section 6.2.3)
- Put turret ring (3) and possibly new new cam followers (2) into housing (1). For assembly of cam followers (2) see 6.2.1
- Put in survey anti friction bearing (19)
- Check seal (17) and replace if necessary
- Assemble bearing ring (4) (adjust initial bearing tension with adaption supplement)
- Assemble V-seal inside (20) and outside (21)
- Bolt on rotary plate (5)
- Turn pinion shaft (15) and check mechanism for even running
- Refill oil

6.2.3 Replacing barrel cam (turret ring remains built in)

- Drain oil
- Turn pinion shaft (15) into dwell angle area
- Unscrew housing tray (11)
- Release lock washer (35) and remove lock nuts (34)
- Drive stub axle (13) from barrel cam (6). Attention: It is necessary to fix the position of barrel cam (6).
- Take barrel drum (6) out of housing tray (11)
- Dismantle spur wheel (8), flange (7) and switch cam (9)
- Replace angular ball bearings (22, 23) and insert into new barrel cam (6), replace damaged bearings by new ones.
- Fit spur wheel (8), flange (7) and switch cam (9) to barrel cam (6)
- Place barrel cam (6) into housing tray (11)
- -Drive stub axle (13) into housing tray (11) and barrel cam (6). Attention: It is necessary to fix the position of barrel cam (6).
- Tighten lock nuts (34) and safeguard lock washer (35)
- Bolt on housing tray (11)
- It is important to have an even contact reflection of the cam followers and the barrel cam during the dwell angle. **Check by means of inking past**
- Turn pinion shaft (15) and check even running of mechanism
- Refill oil

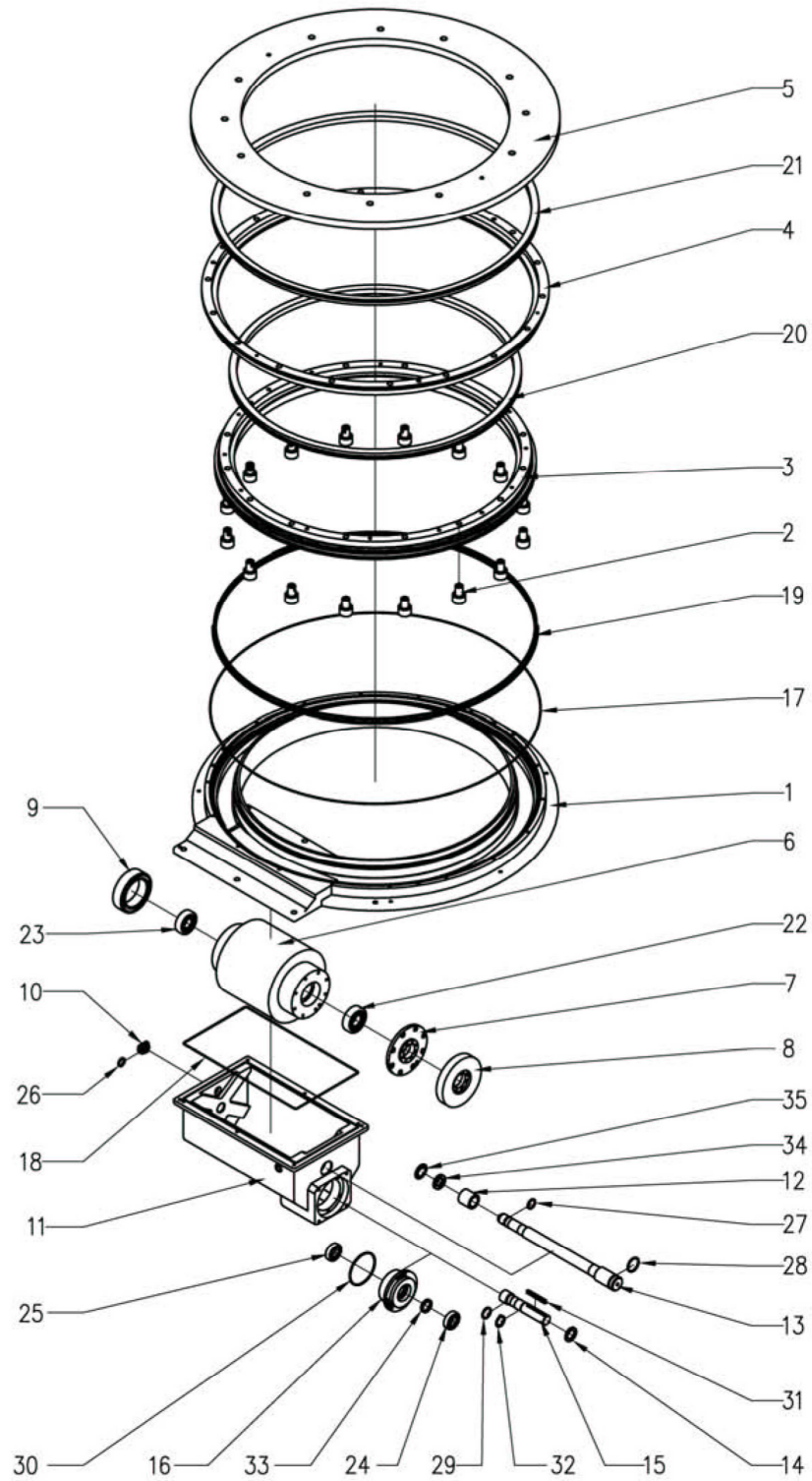
6.2.4 Replacing mechanism completely

For dismantling and mounting of turret ring, cam follower and barrel cam, please refer to sections 6.2.1 to 6.2.3

6.3 Roller bearing

With regard to the installation of new roller bearings, please consider that the bearing has to be adjusted free of play. In case the bearing play should be too big or too small, this can be corrected by adjustment of the shim and distance bushing, or also with the torque of the lock nut. Afterwards check the perfect running of the mechanism by turning the pinion shaft, re-adjust if necessary.

6.4 Spare part drawing



6.5

Spare and wearing parts

Pos.:	Term
1	Housing
2	Cam follower
3	Turret ring
4	Bearing ring
5	Rotary plate
6	Barrel cam
7	Flange
8	Spur wheel
9	Switch cam
10	Holder for proximity switch
11	Housing tray
12	Distance bushing
13	Stub axle
14	Shim
15	Pinion shaft
16	Eccentric flange
17	Seal
18	Seal
19	Survey anti friction bearing
20	V-Seal
21	V-Seal
22	Angular ball bearing
23	Angular ball bearing
24	Grooved ball bearing
25	Grooved ball bearing
26	O-Ring
27	O-Ring
28	O-Ring
29	Washer
30	O-Ring
31	Key
32	Retaining ring
33	Oil seal
34	Lock nut
35	Lock washer

7. Final remark

All repair work requires a certain amount of experience and should therefore be carried out by HEINZ fitters.

Address of HEINZ:

HEINZ AUTOMATIONS-SYSTEME GmbH
Lilienthalstr. 21
D-64625 Bensheim

Tel.: 0049 (0)6251 / 1069-0

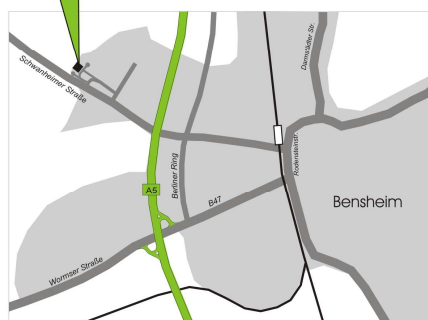
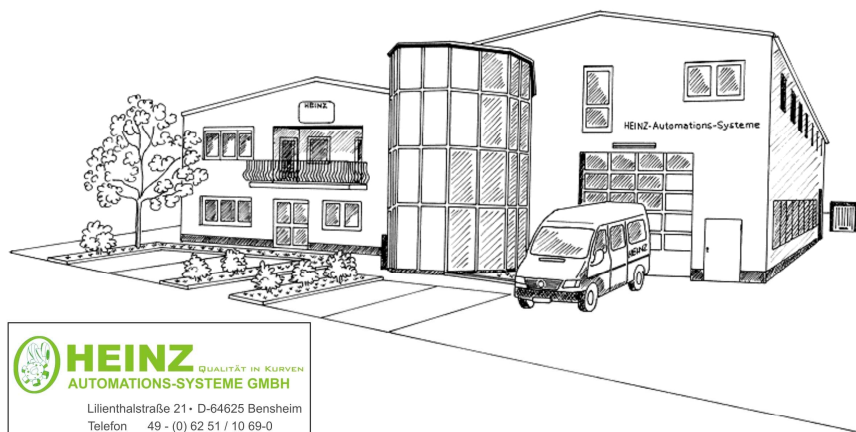
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