

# Tailor-made drive technology

Spur gearboxes and actuators



# A FAMILY-OWNED AND HIGHLY INNOVATIVE SUPPLIER OF CUSTOMISED SOLUTIONS

halstrup-walcher GmbH was founded in 1946 and has been in family ownership ever since. We plan for the long-term and see ourselves as a partner. We have close and long-standing relationships not only with our customers but also with our approx. 110 employees, our local community in Kirchzarten and our suppliers.

halstrup-walcher GmbH is a successful company in three areas: we develop and manufacture positioning systems for mechanical engineering applications, pressure and volume flow measurement technology for building technology and OEM customers as well as spur gearboxes and actuators for OEM customers.

halstrup-walcher GmbH manufactures both catalogue products and customer-specific devices. We are renowned for our high level of expertise in development and manufacturing. Our strong quality assurance programme and lean processes have made us a highly professional supplier of customised products with impressive performance in terms of quality, cost and punctuality.



## THE HALSTRUP-WALCHER GROUP: SPECIALISTS IN THREE SECTORS

### PRESSURE AND VOLUME FLOW MEASUREMENT TECHNOLOGY



You have to regulate the air pressure in your cleanroom to prevent the entry of contaminated air. You have to monitor the air filters or ventilators in your air-conditioning system. Your machine requires a constant over- or underpressure to operate correctly. Or you need to measure a volume flow.

halstrup-walcher offers both standard and customer-specific solutions for performing high precision measurements. We also offer calibration services in our accredited, in-house calibration laboratory. To the highest standards of precision.

### POSITIONING SYSTEMS



As a manufacturer of machine tools, your customers expect you to supply highly flexible solutions with minimal retooling times. Format changes should be performed automatically and as quickly as possible. The positioning systems required to do this must be compatible with all standard bus systems. And, naturally, you want to be able to offer your customer optimum availability of the machine – supported by condition monitoring for your positioning systems.

halstrup-walcher supplies positioning systems with the wide range of forms, features and bus systems required by professional machine tool manufacturers. With a maximum of precision.

### SPUR GEARBOXES AND ACTUATORS



You need to make parts move, linear or rotary. Optimised for the existing construction space and with a sharp eye on the costs. With a constantly high level of precision. You need this solution quickly and tailored to your specific requirements. With or without housing. As a motor/gearbox combination. Regulated or with a control system or as a purely mechanical solution. With analog or digital communication.

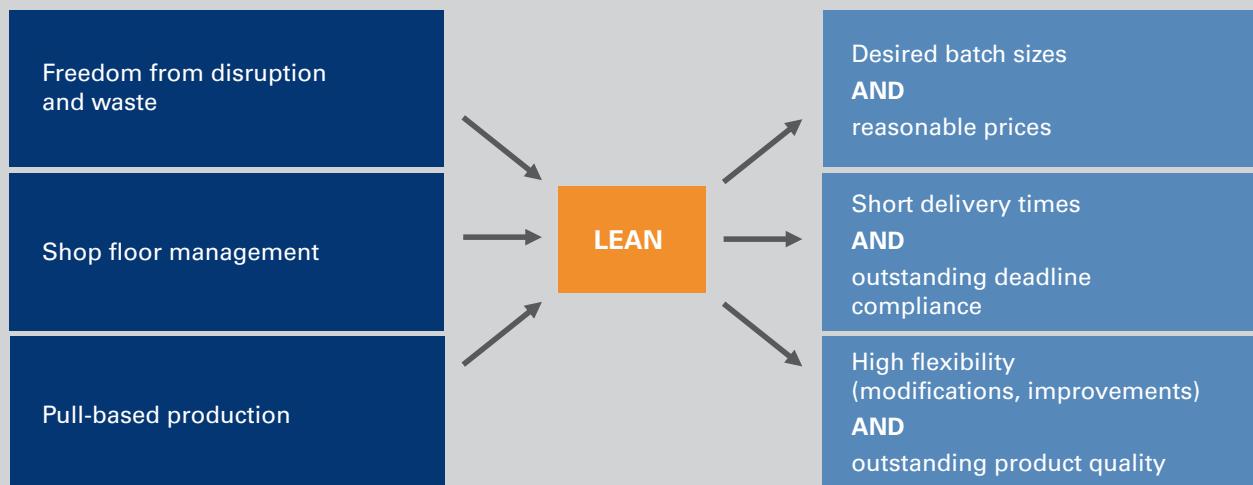
halstrup-walcher offers solutions covering every aspect of spur gearboxes and actuators. We develop mechanical designs, electronics and all the relevant stages of the manufacturing process in-house – from milled gear wheels to assembled SMD circuit boards. Tailor-made.

# LEAN MANAGEMENT AT HALSTRUP-WALCHER

## Focus on the customer and optimised internal processes

A number of years ago, business theorists spoke of a "magic triangle" of quality (Q), costs (C) and punctuality (P). These three factors were considered magical because any measures for improvement could benefit no more than two of them at any time – and these gains could only be obtained at the expense of the third. With the help of lean management, halstrup-walcher has succeeded in breaking the spell of this "magic triangle". We have done so by eliminating errors and failures from all the relevant processes and systematically tackling waste in every area. This liberates the whole team to concentrate fully on the real needs of our customers.

"Shop floor management" has also brought previously unimaginable successes. Employees in every department attend a meeting every working day, where they are able to raise awareness of and discuss current problems. Measures for eliminating these problems immediately and permanently are discussed and agreed at follow-up meetings in the company. These take into account all the relevant information. Everyone contributes, no problem is brushed under the carpet and solutions to the problems are implemented without delay. It is a culture that has won the hearts and minds of both our staff and our customers. halstrup-walcher has now begun "exporting" its insights into lean management and offers these as a service to medium-sized enterprises.





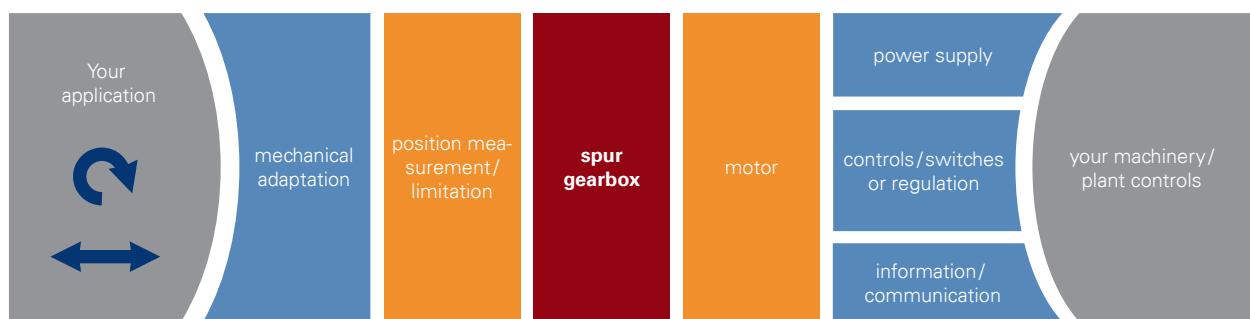
# THE RIGHT DRIVE

for your application

# FROM SINGLE GEARBOXES TO PERFECTLY TUNED ACTUATOR SOLUTIONS

At halstrup-walcher, we believe it is important that our drive solutions offer the optimum answer to your needs. Sometimes, we find that we have an "off-the-peg" spur gearbox that fits the job perfectly. Usually, however, there are a wide range of requirements that demand careful consideration. And we can almost always assist you in minimising the time and expense of integrating

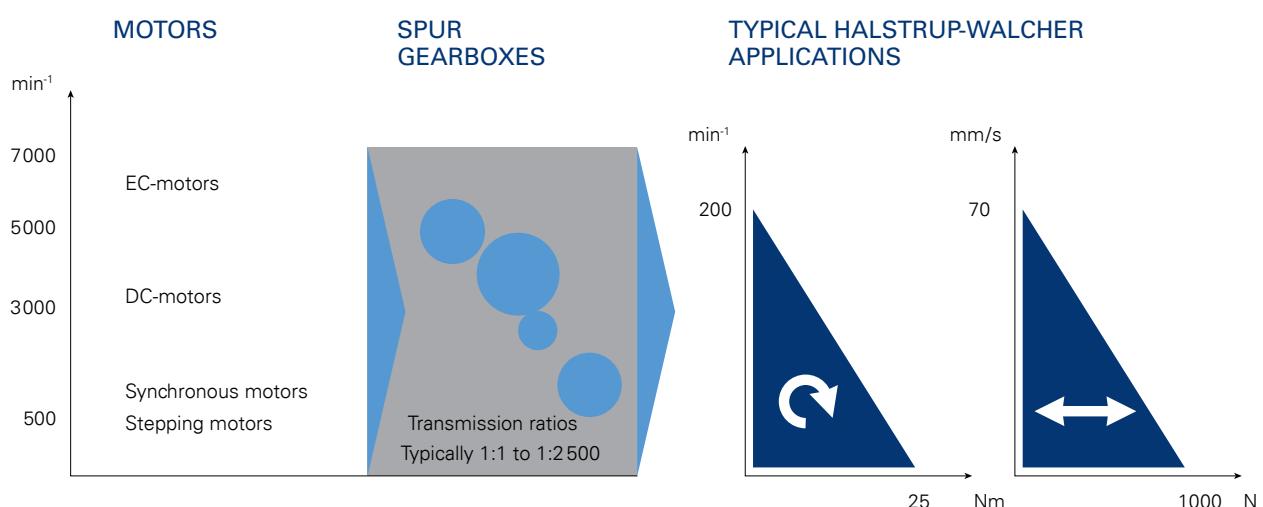
the mechanical and electrical aspects of these solutions. You will receive a complete solution from a single supplier instead of a multiple component solution that you then have to integrate yourself – a time-consuming job. The following diagram shows the major components we can combine into an optimized solution for you.



## SPEED AND TORQUE – A DUET FOR MOTOR AND GEARBOX

Spur gearboxes from halstrup-walcher are known for more than their precision and rugged design. One of their particular strengths is that they can realise **any technically feasible transmission ratio**. In practice, these are frequently transmission ratios with several decimal positions – providing the exact setting you need for your application.

Typical halstrup-walcher applications operate in the range up to 25 Nm resp. 200 min<sup>-1</sup> (rotary) or 1000 N resp. 70 mm/s (linear), see diagram. In order to provide this level of performance at the output shaft (rotary) or connecting rod (linear), halstrup-walcher combines the optimum motor with an appropriate spur gearbox.



# THE RIGHT TYPE OF MOTOR

Sometimes, the customer specifies the type of motor to be used. However, we are always happy to contribute our expertise and seek out the best possible motor for the application. Indeed, in this area, halstrup-walcher enjoys the advantage of being free to purchase motors from any manufacturer it chooses and can select the model that has produced the best results based on in-house tests (and years of experience as a supplier). The complete drive unit, i.e. the motor on the spur gearbox, should always be assembled by halstrup-walcher.

This puts the overall responsibility for the project, including testing of the complete solution at halstrup-walcher,

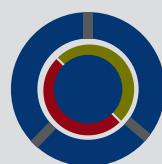
clearly into one set of hands. And the product can also be manufactured to the highest standards in terms of low noise emissions, lubrication and true running characteristics.

The *most commonly used types* of motor are EC-motors (brushless DC-motors, also known as BLDC-motors), stepping motors, DC-motors and AC-synchronous motors. The following diagram shows the advantages of each type in the application.



## EC-MOTORS

EC-motors are electronically commutated and therefore require no maintenance (*no brushes*). There are no wearing parts<sup>1)</sup> even with long operating times. An EC-motor is very convenient to use but **requires a motor control driver**. The programming time and costs must therefore be considered. In the case of a blockage, the EC-motor has **power in reserve**.



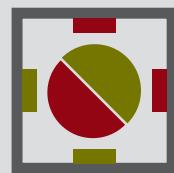
## (A-)SYNCHRONOUS MOTORS

Synchronous motors are very cheap to buy. A **capacitor** is required (for start-up). The asynchronous version, the "*shaded pole motor*," also has the advantage that it does **not heat up in the case of a blockage**. However, it is less efficient than standard synchronous motors. There are no wearing parts<sup>1)</sup>.



## DC-MOTORS

DC-motors are **easy to control**. They are powered by a simple power adapter. The direction is changed by reversing the polarity. However, brush commutation means that DC-motors are **subject to higher wear**.



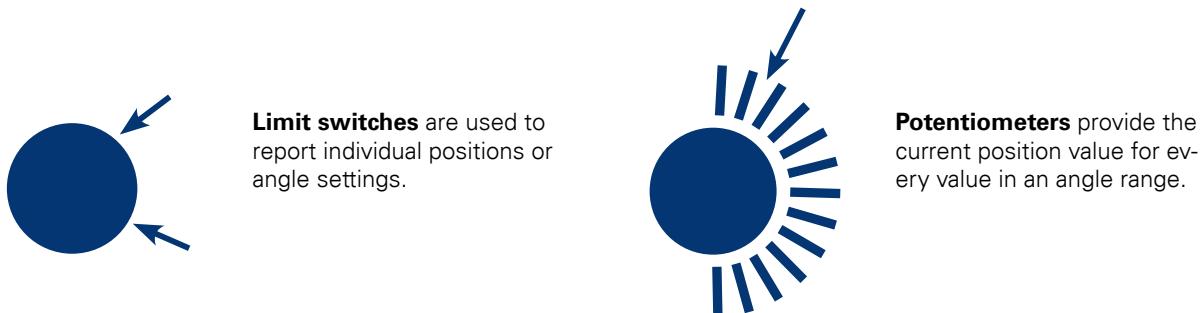
## STEPPING MOTORS

Stepping motors have no wearing parts<sup>1)</sup>. A **motor control driver is required**, which in turn involves additional programming and costs. Stepping motors are less convenient than EC-motors. This type of motor is strong at relatively low speeds (< 300 min<sup>-1</sup>). This means it is also usually **quieter than EC-motors**. However, they have no power in reserve if a blockage occurs.

<sup>1)</sup> Although bearings are wearing parts in any motor, these are oversized and therefore very durable in a high quality motor.

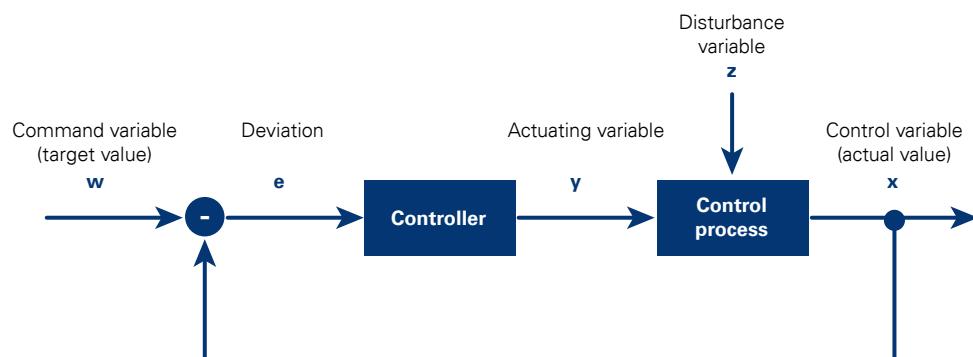
## POSITION MONITORING/POSITION REPORT

Many applications require the current position to be displayed or even corrected. To do this, halstrup-walcher uses limit switches and/or potentiometers.



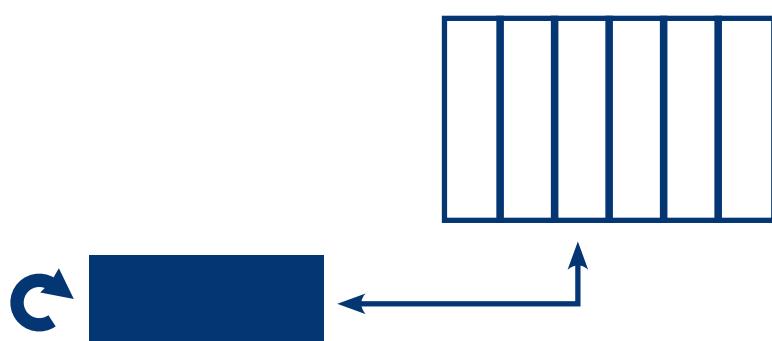
## POSITION CORRECTION AND CONTROL

Position correction and control tasks are usually the responsibility of a superior control unit. However, in order to reduce the load on the PLC, and also to *minimise the complexity* of the overall plant, customers often request that a **position correction and control module is integrated** into the halstrup-walcher drive itself. Position correction is usually responsible for *regulating the position*, i.e. the drive itself ensures that it takes the correct target position. Control functions, on the other hand, receive and execute movement commands from the upstream PLC.



## ELECTRICAL AND COMMUNICATION ADAPTATION

halstrup-walcher also offers **precise adaptation of wiring and communication** to customer specifications. Many of these issues have already been discussed above in the sections on limit switches, potentiometers, position correction and control. However, we also offer a wide range of sophisticated options in the areas of *power supply* and *wiring* as well as *analog and digital communication*.





# DESIGNING

## your drive solution

The following questionnaire is the fastest way to find the best drive for your application.  
Our specialists will be pleased to help you if you have any questions.

## APPLICATION

What do you want to drive? (**Purpose of movement?** **Mass** and **shape** of the object to be moved?)

Application

## AMBIENT CONDITIONS

**Ambient temperature** from  to  °C/°F



### Special requirements

Must the drive be particularly quiet? Does it require protection against dirt etc. (*housing*)? Must it comply with an *IP protection class*? Does it require an integrated brake? Will there be strong external influences on the drive such as *shocks or vibrations*?

## MOVEMENT AND TORQUE

How is the mass of the application to be moved?

### ROTARY

$$\begin{aligned} \text{Power}^1) &= \text{torque} \times \text{speed (rpm)} \\ P [\text{W}] &= M^2) [\text{Nm}] \times n [\text{min}^{-1}] \times 0.1 \end{aligned}$$



**Two** of the following values should be known:

(Output) torque (M):  Nm

(Output) torque (n):  min<sup>-1</sup>

Power (P):  W

### Angle range:

- limited to  °
- unlimited



### Speed (rpm):

- limited to  rotations unlimited
- unlimited

<sup>1)</sup> output side

<sup>2)</sup> simplified formula. The value can be determined for the application using a torque wrench.

### LINEAR

$$\begin{aligned} \text{Power}^1) &= \text{force} \times \text{velocity} \\ P [\text{W}] &= F [\text{N}] \times v [\text{m/s}] \end{aligned}$$



**Two** of the following values should be known:

Force (F):  N

Velocity (v):  m/s

Power (P):  W

### Alignment:

- vertical movement
- horizontal movement



### Path:

- upstroke  mm
- horizontal displacement  mm

## MECHANICAL ADAPTATION

### Max. construction space / diagram:



### Fastening dimensions

(hole pattern, alignment of the fastening in relation to the output shaft etc., if required)

### Output shaft dimensions

(ø mm, fit, flattening, length, cross bore etc.)

### Neighbouring modules

Would you like halstrup-walcher to manufacture/supply/install the modules neighbouring the drive?

**Manually operated disconnecting lever required?**  (for manually disconnecting the gearbox during servicing)

## MOTOR INTEGRATION

**Selection** of the most suitable motor by halstrup-walcher

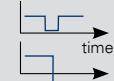
Motor

**Requirement:** The following motor should be *integrated* in the design and manufacturing processes:

## MODE OF OPERATION AND LIFETIME

How often and how long should the application be in motion?

### Mode of operation:

- Continuous 
- Intermittent 
- Short 
- Reversing



### Required lifetime:

- |                 |
|-----------------|
| Operating hours |
| Movement cycles |
| Years           |

### Start-up time (OT)

(e.g. 40 % OT 10 min  
→ 4 min operation, then 6 min break)

## POSITION MONITORING / POSITION REPORT

### Questions about limit switches

- Quantity
- Switching angle
  - At what *angle* should the switch be activated?
  - *Fixed position or adjustable position?*
  - *Direction of rotation*
  - *Relative angular distance* to a positive engagement position (flattening, cross bore etc.)
- Should the feedback contact be designed as a *change-over, NC or NO contact?* What is the expected *max. switching current* (e.g. 1 A)?
- Is this *purely a feedback function* or should the switch *break the motor circuit?*



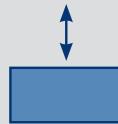
### Questions about potentiometers

- Assignment of the *angle of rotation* (incl. direction of rotation) to the potentiometer resistance
- Should a specific *potentiometer base resistance* (e.g. 5 or 20 kΩ) be used?
- Type of *feedback signal* (e.g. remote tap of the resistance value, 0..10 V or digital)



## ELECTRICAL / COMMUNICATION ADAPTATION

- **Power supply** to be provided  
(DC/AC, voltage, possible max. power consumption? Special sources of interference: e.g. elevated EMC-resistance required?)
- Required **wiring**:
  - Should the contact be produced using screw collars, connectors or a soldered connection made by the customer?
  - Are there detailed cable/wiring specifications?
  - How should the cable(s) be guided out of the housing?
- **Communication** specifications:
  - Analog signal transmission, e.g. 0..10 V
  - Digital signal transmission
    - What is the name of the bus protocol to be used?  
(halstrup-walcher uses both proprietary and standard buses)
    - What commands must be transmitted (e.g. run command, stop command)?
    - For what signals/values/states is feedback required (from the drive to the control module)?



## POSITION CORRECTION/CONTROL

### Position correction:

- Area of application: Position correction within what *angle range/stroke range?*
- *Accuracy specification* of the position to be reached (rotary: in degrees of angle, linear: in mm)
- *Velocity specification*: After what period of time must the target position be reached? ± what tolerance?
- *Special requirements*, e.g. slow approach to the limit position, prevent overshooting etc.



### Control:

- Is a simple right/left signal sufficient? (*the signal activates the movement which continues until a limit switch is reached*)
- Is it necessary to reach one (or several) specified position(s), e.g. a specific angle after n rotations?
- Is there a *stop signal*? Should the application stop immediately or run to a resting position?

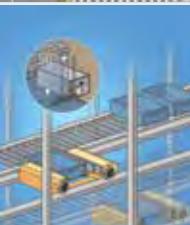




# PRODUCTS

and applications

# OVERVIEW OF DRIVE PRODUCTS

Base product		p.	Max. torque	Max. motor speed	Special features	Examples of applications		p.
N 40V		14	1 Nm	15 min <sup>-1</sup> (version with AC-motor) 120 min <sup>-1</sup> (version with DC-motor)	Compact spur gearbox with rugged circuit board design up to 1 Nm	Venetian blind control with SLA 1.5		15
						N 40x50 P Semi-intelligent auxiliary drive logistics system		16
N 64V30		17	3 Nm	60 min <sup>-1</sup> (version with AC-motor) 160 min <sup>-1</sup> (version with DC-motor)	Very compact spur gearbox with rugged circuit board design up to 3 Nm	Brush rotation drive N 64V30 KG		18
						Positioning drive for furnace air intake N 64V30 IF		19
N 72		20	5 Nm	10 min <sup>-1</sup>	Spur gearbox (and drive) in metal housing IP 65	Turnstile adjustment with N 72 K		21
N 100		22	20 Nm	4 min <sup>-1</sup> (version with AC-motor) 30 min <sup>-1</sup> (version with DC-motor)	Compact power-house up to 20 Nm	Ball control valve N 100 P		23
						Pellet conveyor screw N 100 W		24
						Damper actuator GT 50		25

Base product	p.	Max. torque	Max. motor speed	Special features	Examples of applications		p.
N30x120	26	-	-	Small drive for restricted construction spaces	Smoke extraction damper		26
N22x65	27	-	-	Precision drive with fine manual adjustment	Adjustment of colour zones		27
BK80	28	8 Nm	-	Toolbox system with many transmission ratios	Beverage vending machines		29
ST 120 KG	30	10 Nm	30 min <sup>-1</sup>	Rugged drive in plastic housing IP 55	Positioning the lid in textile machines with TR 30i		31
Complete module with drive	32	-	-	Cost optimised drive with plastic and brass gear wheels  Also supplied with complete mechanical module (here: flap)	Flue gas damper drive		32
SP72	33	-	-	Linear drive in metal housing	Linear drive for speed control of ship's diesel engines		33

We have realised many customer-specific solutions. This overview and the examples presented here are merely an illustration of the broad range of possibilities.

If you wish to send us a specific enquiry, we recommend that you use the questionnaire on p.9.  
Our specialists will be pleased to assist you.

## Spur gearbox up to 1 Nm N 40V

Max. power output	8 W
Permitted axle load radial	30 N
axial	20 N
Temporary peak torque	1.2 Nm
Gear backlash, unloaded	0.9..2° depending on design
Operating temperature range	-10..65°C
Weight (without motor)	approx. 0.1 kg
Protection class	IP 40
Service life	At the nominal load, the gearboxes have a service life of min. 2.000 operating hours

### Technical data (typical values)

1. AC-motor (*motor speed approx. 375 min<sup>-1</sup>*)

Output speed	Nominal torque	A
0.5 min <sup>-1</sup>	1 Nm	1A
0.75 min <sup>-1</sup>	1 Nm	2A
1.5 min <sup>-1</sup>	0.6 Nm	3A
3.75 min <sup>-1</sup>	0.25 Nm	4A
5 min <sup>-1</sup>	0.2 Nm	5A
7.5 min <sup>-1</sup>	0.14 Nm	6A
15 min <sup>-1</sup>	0.08 Nm	7A

Others available upon request.

Supply voltage	B
230 VAC, +6 % / -15 % (50 Hz)	230
115 VAC, +6 % / -15 % (50 Hz)	115
24 VAC, +6 % / -15 % (50 Hz)	24A

2. DC-motor (*motor speed approx. 3000 min<sup>-1</sup>*)

Output speed	Nominal torque	A
4 min <sup>-1</sup>	1 Nm	1D
6 min <sup>-1</sup>	1 Nm	2D
12 min <sup>-1</sup>	1 Nm	3D
30 min <sup>-1</sup>	0.8 Nm	4D
40 min <sup>-1</sup>	0.7 Nm	5D
60 min <sup>-1</sup>	0.5 Nm	6D
120 min <sup>-1</sup>	0.3 Nm	7D

Others available upon request. The nominal speed of gearboxes with DC-motor is dependent on the load.

Supply voltage	B
24 VDC, +20 % / -15 %	24D
12 VDC, +20 % / -15 %	12D

Order code	A	B
N 40V	-	-

Customer-specific solutions available on request!

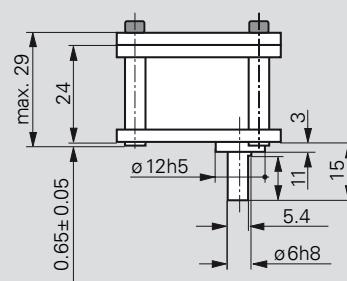
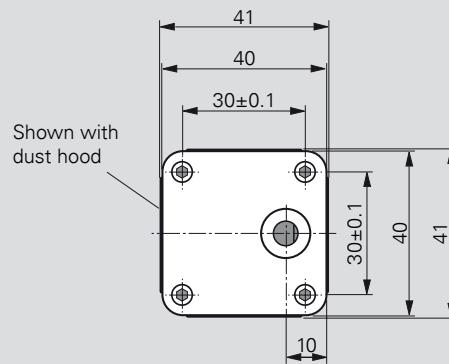


### Features

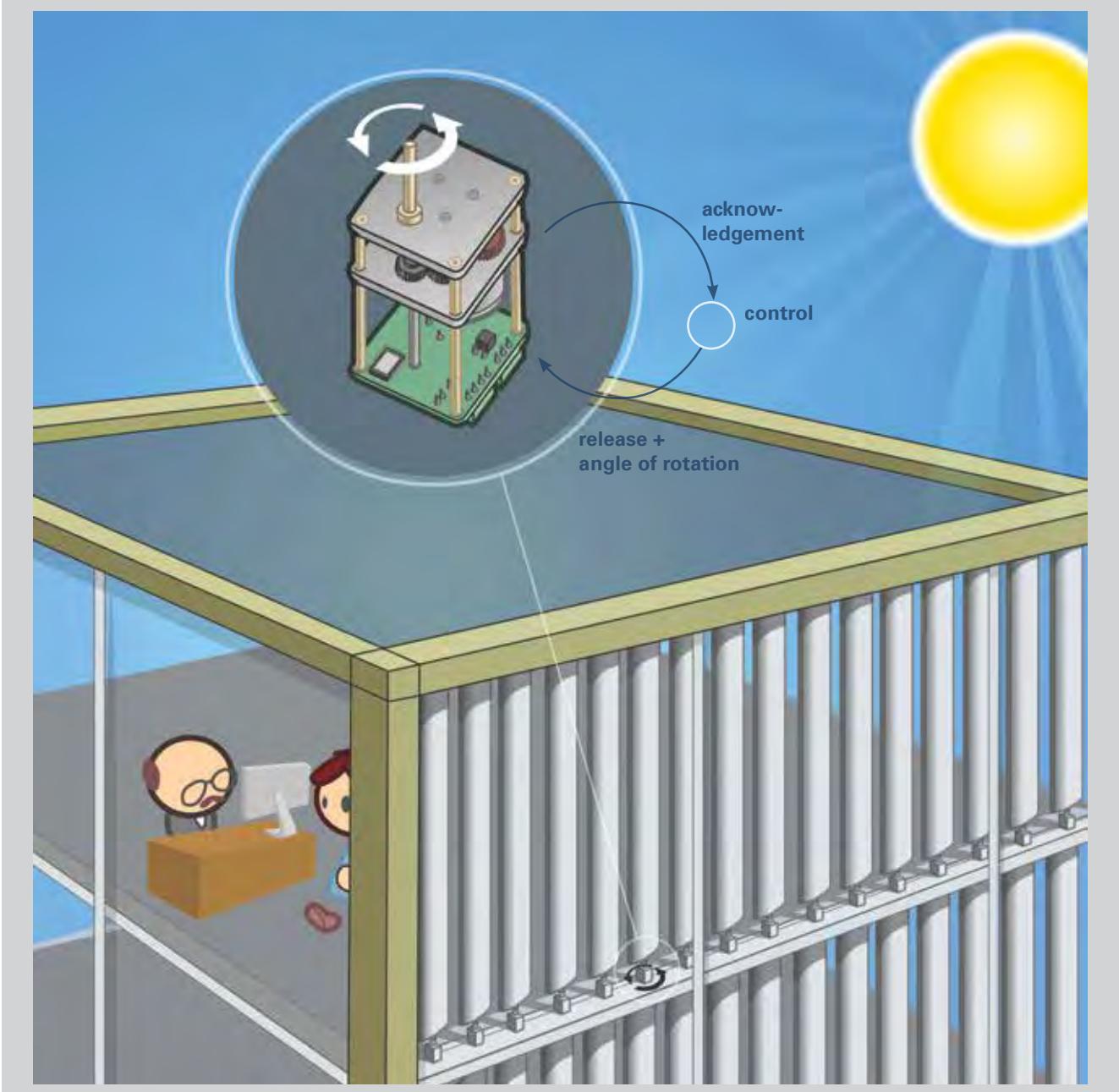
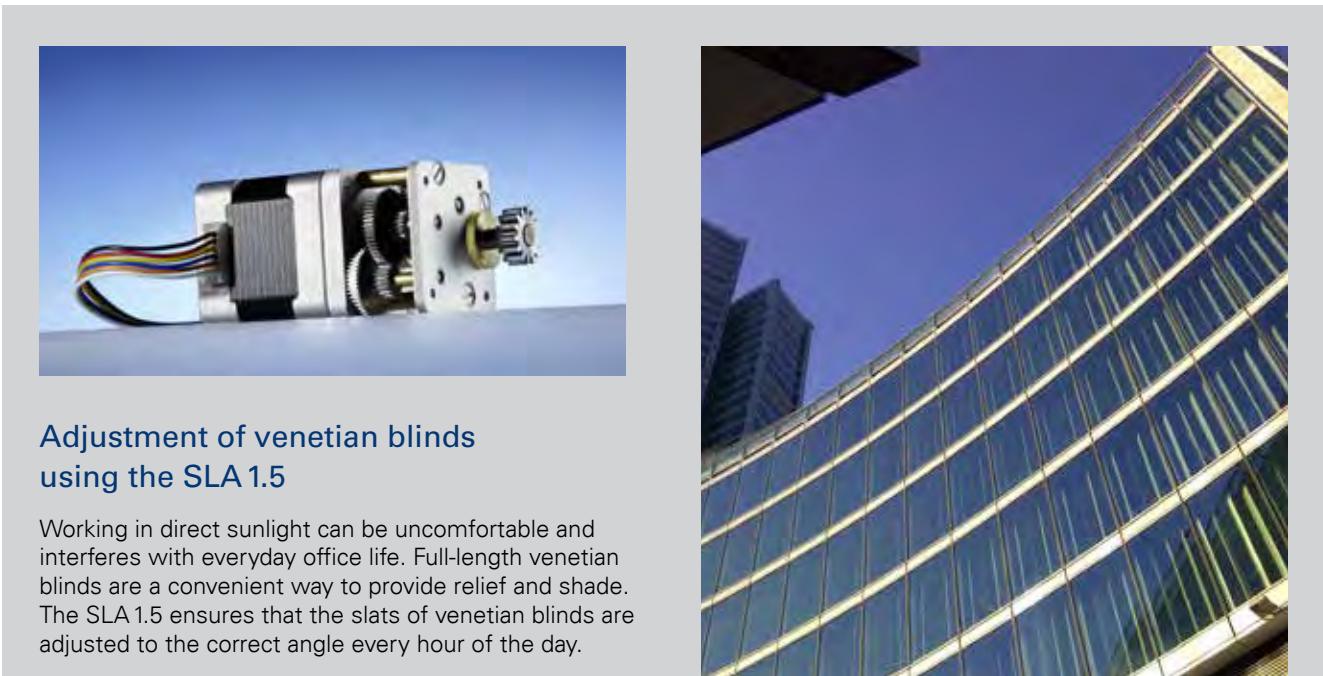
- Compact spur gearbox with rugged circuit board design up to 1 Nm
- Output shaft is case hardened and plain-bearing mounted
- Steel gear wheels
- Plastic dust hood
- Continuous greasing

### Options

- Special designs for the output shaft
- Ball-bearing mounted output shaft
- Low noise emission design
- Special lubrication for extended temperature range
- Limit switch



## TURNING VENETIAN BLINDS

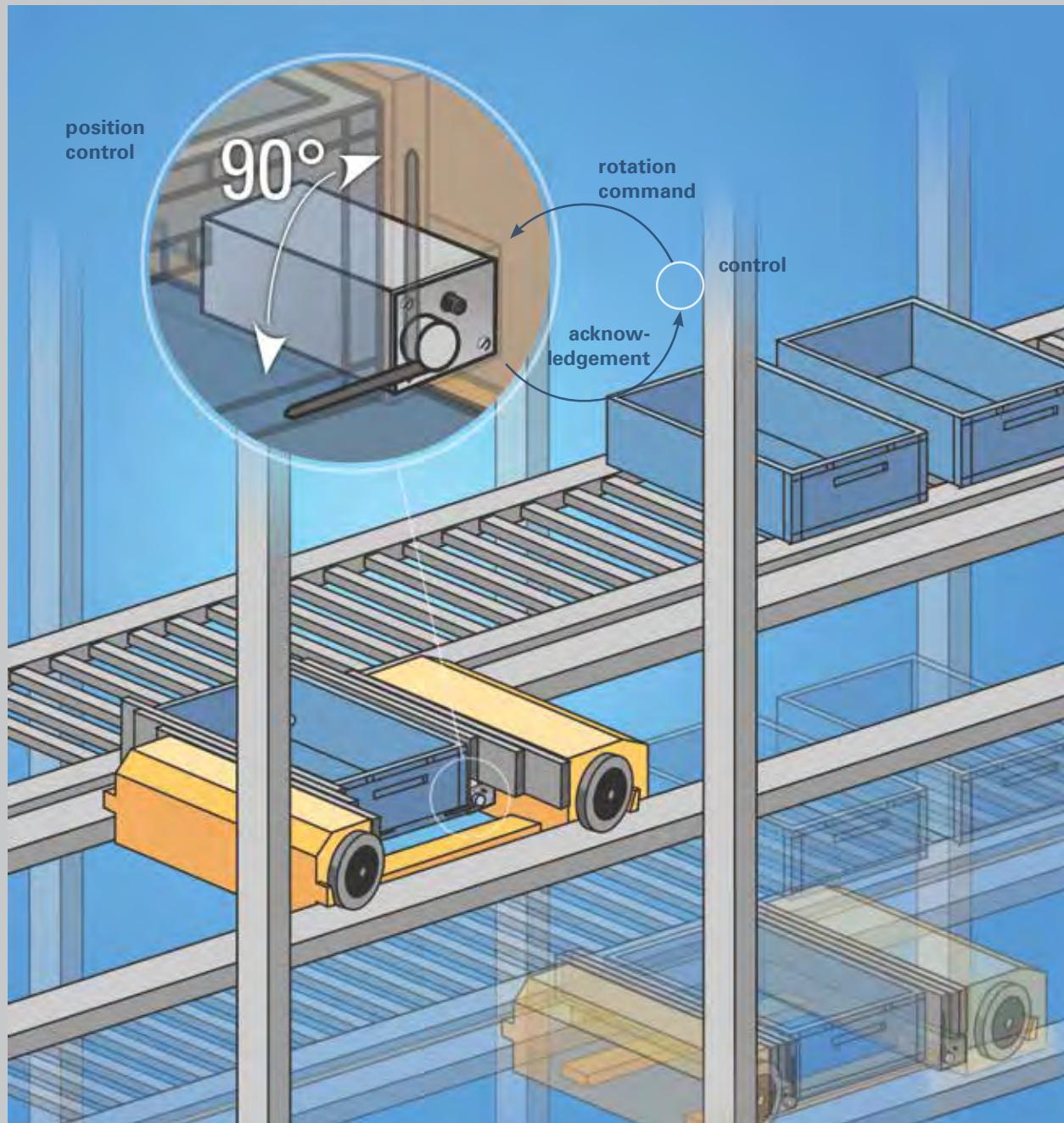


# AUXILIARY DRIVE FOR LOGISTICS SYSTEM



## Moving logistics boxes with the N40x50P

At -30°C, these boxes are stored and retrieved using fully automated processes. A conveyor carriage is dispatched to the specified storage bay where it extends its side arms under the box. Four N40x50P units turn a finger under each corner – and the box and carriage glide away smoothly to their destination.



# Spur gearbox up to 3 Nm N 64 V 30

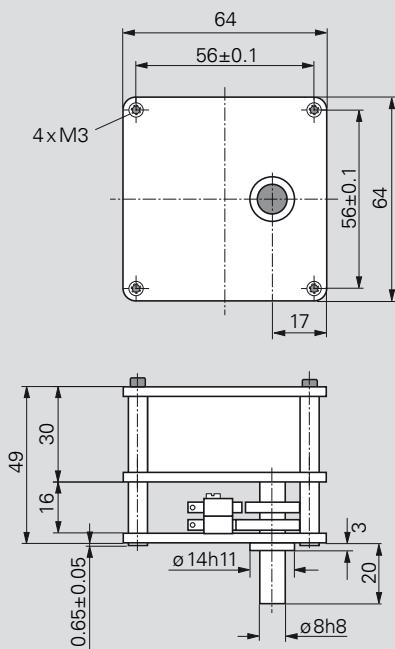


## Features

- Very compact spur gearbox with rugged circuit board design up to 3 Nm
- Output shaft is case hardened and plain-bearing mounted
- Steel gear wheels
- Plastic dust hood
- Continuous greasing

## Options

- Special designs for the output shaft
- Ball-bearing mounted output shaft
- Low noise emission design
- Special lubrication for extended temperature range
- Limit switch



Max. power output	50 W
Permitted axle load radial	30 N
axial	20 N
Temporary peak torque	5 Nm
Gear backlash, unloaded	0.9..2° depending on design
Operating temperature range	-10..65 °C
Weight (without motor)	approx. 0.3 kg
Protection class	IP 40
Service life	At the nominal load, the gearboxes have a service life of min. 2000 operating hours

## Technical data (typical values)

1. AC-motor (*motor speed approx. 375 min<sup>-1</sup>*)

Output speed	Nominal torque	A
0,5 min <sup>-1</sup>	3 Nm	1A
1 min <sup>-1</sup>	3 Nm	2A
2,5 min <sup>-1</sup>	3 Nm	3A
5 min <sup>-1</sup>	3 Nm	4A
10 min <sup>-1</sup>	2.5 Nm	5A
20 min <sup>-1</sup>	1.5 Nm	6A
60 min <sup>-1</sup>	0.6 Nm	7A

Others available upon request.

Supply voltage	B
230 VAC, +6 % /-15 % (50 Hz)	230
115 VAC, +6 % /-15 % (50 Hz)	115
24 VAC, +6 % /-15 % (50 Hz)	24A

2. DC-motor (*motor speed approx. 3000 min<sup>-1</sup>*)

Output speed	Nominal torque	A
2 min <sup>-1</sup>	3 Nm	1D
4 min <sup>-1</sup>	3 Nm	2D
8 min <sup>-1</sup>	3 Nm	3D
20 min <sup>-1</sup>	3 Nm	4D
40 min <sup>-1</sup>	3 Nm	5D
80 min <sup>-1</sup>	1.7 Nm	6D
160 min <sup>-1</sup>	1 Nm	7D

Others available upon request. The nominal speed of gearboxes with DC-motor is dependent on the load.

Supply voltage	B
24 VDC, +20 % /-15 %	24D
12 VDC, +20 % /-15 %	12D

Order code	A	B
N 64 V 30 -	-	

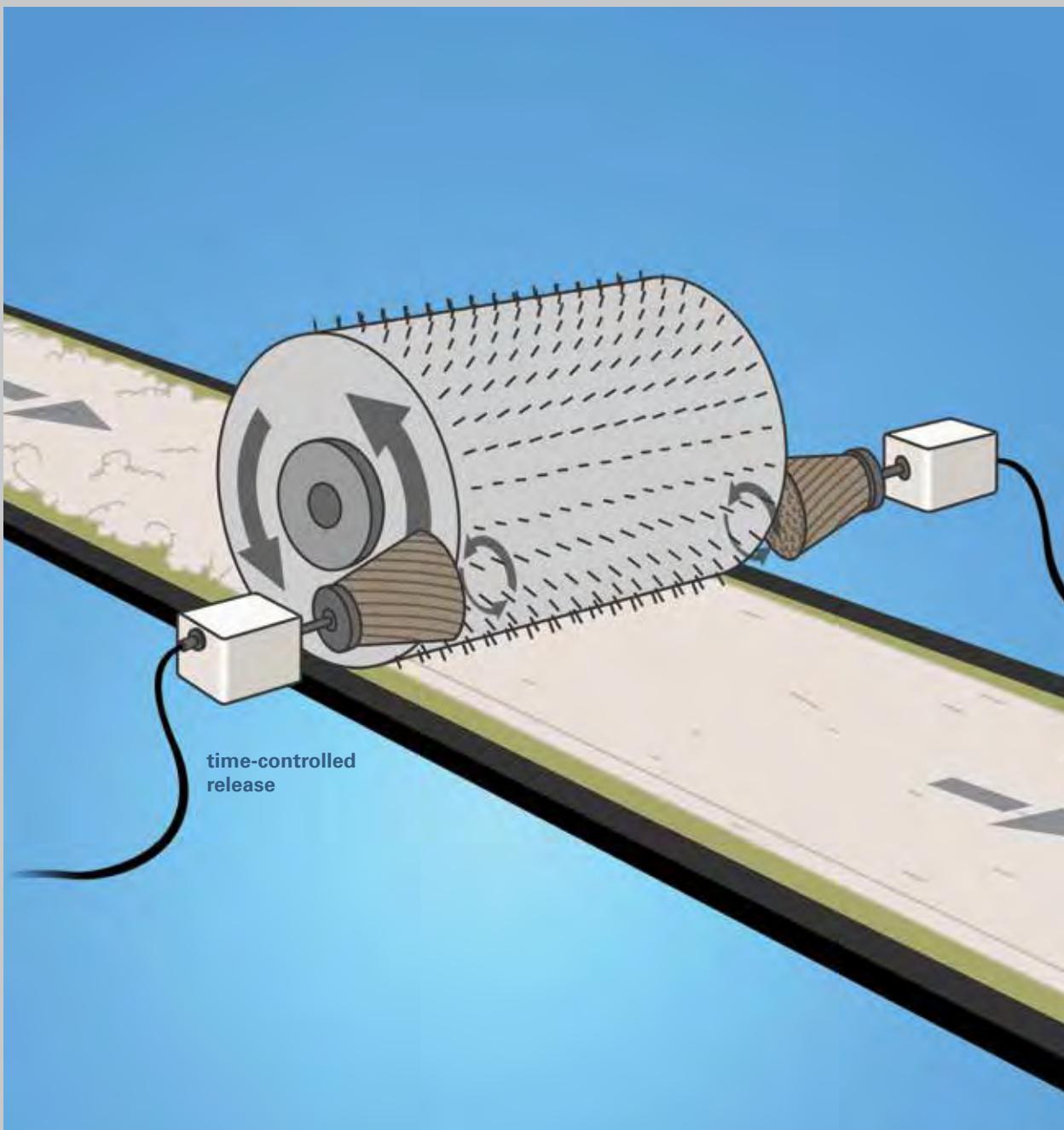
**Customer-specific solutions available on request!**

## BRUSH ROTATION DRIVE



**N 64 V 30 KG rotation drive  
in textile machines**

Carding is a process that aligns cotton fibres to produce loose textile fibres (fleece). Brushes at the sides remove clumps and aggregations of material. The compact N64V30KG drive performs this task efficiently and is resistant to the microscopic dust particles generated in the immediate environment by the process.

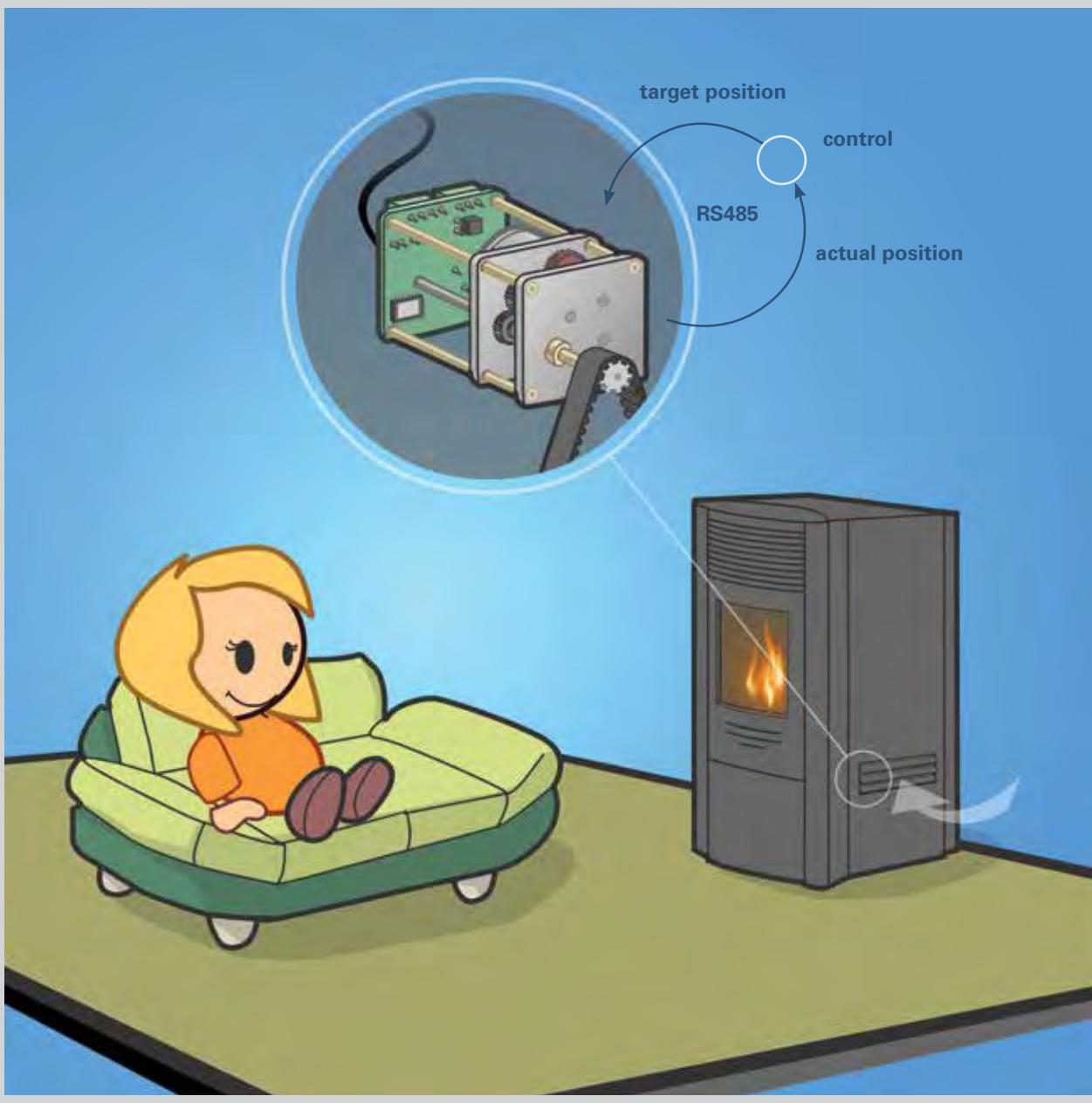


## POSITIONING FURNACE AIR INTAKE FLAPS



**N64V30IF positioning drive  
for air intake flaps in furnaces**

The N64V30IF positioning drive is exceptionally quiet and was developed for positioning furnace air intake flaps. In order to ensure that fuel is burned with maximum efficiency, a precisely defined volume of air is allowed to enter during each phase of combustion. The absolute position is measured using a potentiometer. Communication is via an RS485 interface. The drive must comply with the highest standards of safety and reliability as incorrect functioning can result in deflagration.



## Spur gearbox up to 5 Nm N 72

Max. power output	2 W
Permitted axle load radial	30 N
axial	20 N
Temporary peak torque	8 Nm
Gear backlash, unloaded	0.9..2° depending on design
Operating temperature range	-10..65 °C
Weight (without motor)	approx. 0.7 kg
Protection class	IP 65
Service life	At the nominal load, the gearboxes have a service life of min. 2.000 operating hours

### Technical data (typical values)

AC-motor (motor speed approx. 375 min<sup>-1</sup>)

Output speed	Nominal torque	A
0.5 min <sup>-1</sup>	5 Nm	1A
1 min <sup>-1</sup>	5 Nm	2A
2 min <sup>-1</sup>	4 Nm	3A
5 min <sup>-1</sup>	2 Nm	4A
10 min <sup>-1</sup>	1 Nm	5A

Others available upon request.

Supply voltage	B
230 VAC, +6%/-15% (50 Hz)	230
115 VAC, +6%/-15% (50 Hz)	115
24 VAC, +6%/-15% (50 Hz)	24A

Order code	A	B
<b>N72</b>	—	—

**Customer-specific solutions available on request!**

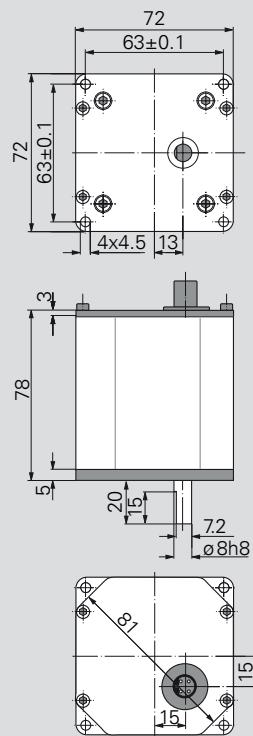


### Features

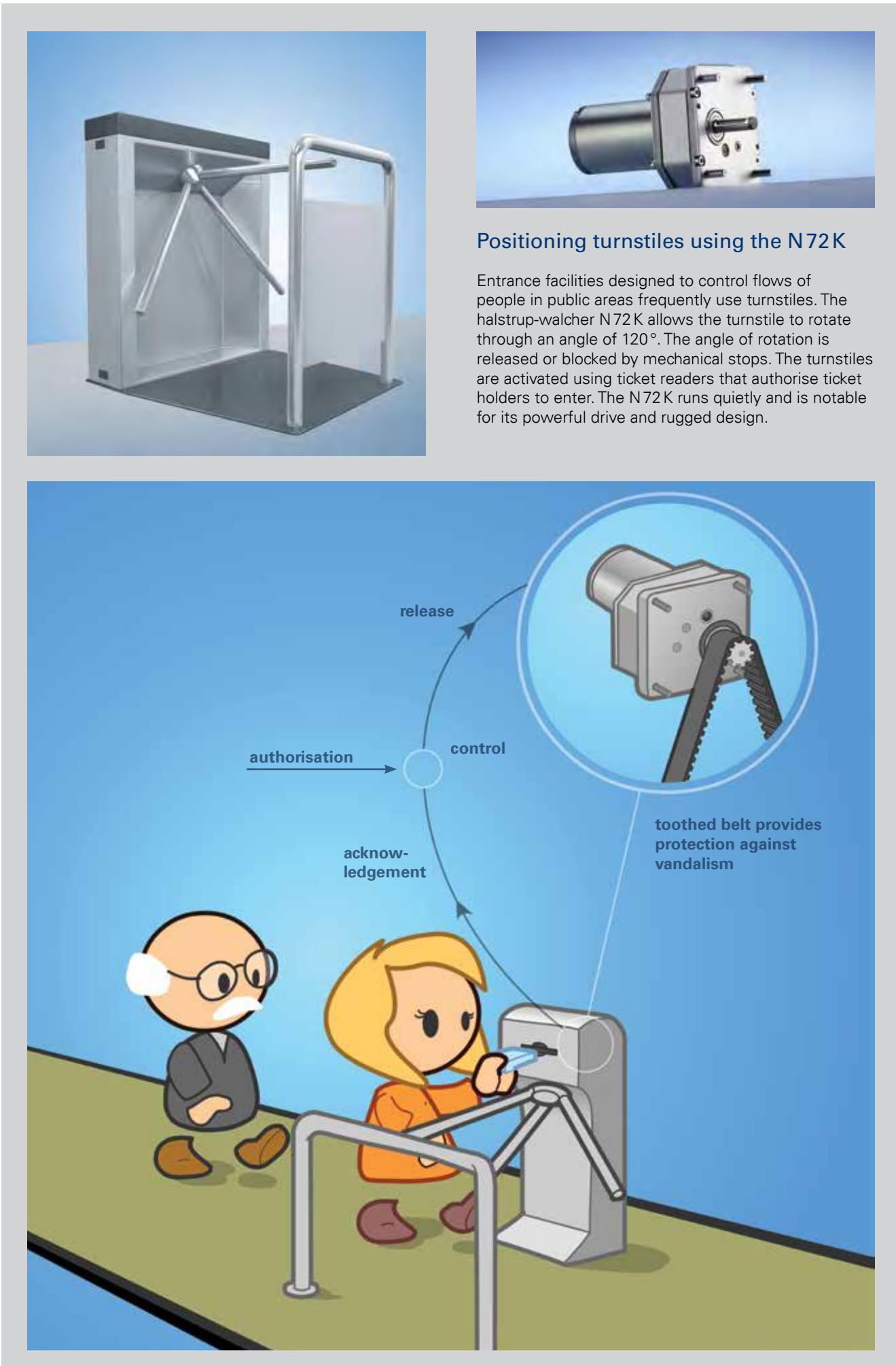
- Spur gearbox (and motor) in aluminium housing
- Protection class: IP65
- Rugged design
- Output shaft is case hardened and plain-bearing mounted
- Steel gear wheels
- Continuous greasing

### Options

- Special designs for the output shaft
- Ball-bearing mounted output shaft
- Special lubrication for extended temperature range
- Limit switch



## SPUR GEAR FOR POSITIONING OF TURNSTILES



## Spur gearbox up to 20 Nm N 100

Max. power output	80 W
Permitted axle load radial	80 N
axial	60 N
Temporary peak torque	22 Nm
Gear backlash, unloaded	0.9..2° depending on design
Operating temperature range	-10°..65°C
Weight (without motor)	approx. 0.45 kg
Protection class	IP 44
Service life	At the nominal load, the gearboxes have a service life of min. 2.000 operating hours

### Technical data (typical values)

1. AC-motor (*motor speed approx. 375 min<sup>-1</sup>*)

Output speed	Nominal torque	A
0.25 min <sup>-1</sup>	20 Nm	1A
0.5 min <sup>-1</sup>	20 Nm	2A
1 min <sup>-1</sup>	20 Nm	3A
2 min <sup>-1</sup>	10 Nm	4A
4 min <sup>-1</sup>	6.5 Nm	5A

Others available upon request.

Supply voltage	B
230 VAC, +6 % / -15 % (50 Hz)	230
115 VAC, +6 % / -15 % (50 Hz)	115
24 VAC, +6 % / -15 % (50 Hz)	24A

2. DC-motor (*motor speed approx. 3000 min<sup>-1</sup>*)

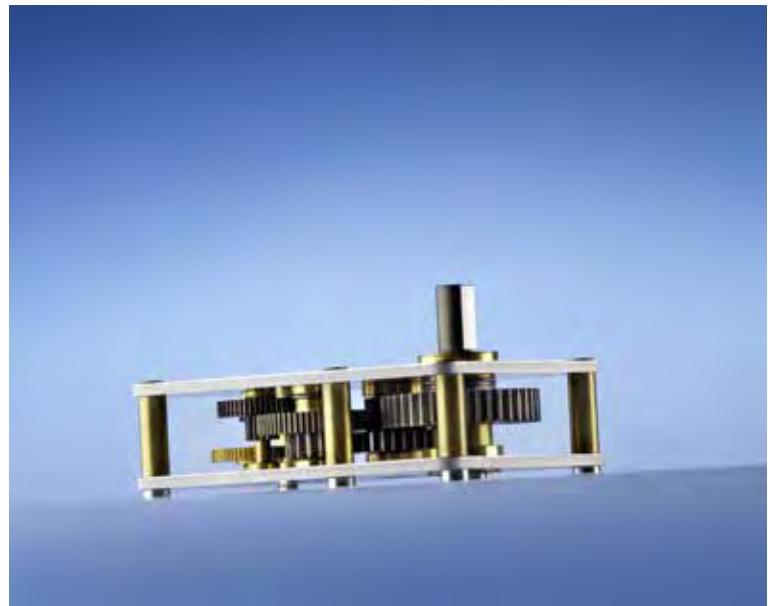
Output speed	Nominal torque	A
2 min <sup>-1</sup>	20 Nm	1D
4 min <sup>-1</sup>	20 Nm	2D
7.5 min <sup>-1</sup>	14 Nm	3D
15 min <sup>-1</sup>	7 Nm	4D
30 min <sup>-1</sup>	4 Nm	5D

Others available upon request. The nominal speed of gearboxes with DC-motor is dependent on the load.

Supply voltage	B
24 VDC, +20 % / -15 %	24D
12 VDC, +20 % / -15 %	12D

Order code	A	B
<b>N 100</b>		

**Customer-specific solutions available on request!**

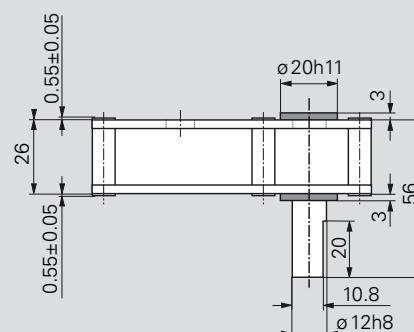
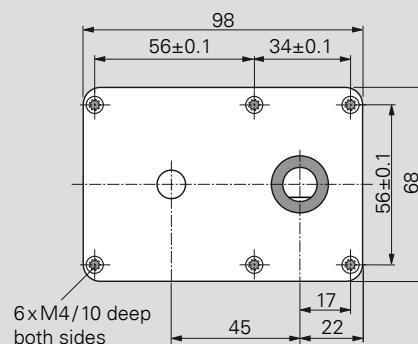


### Features

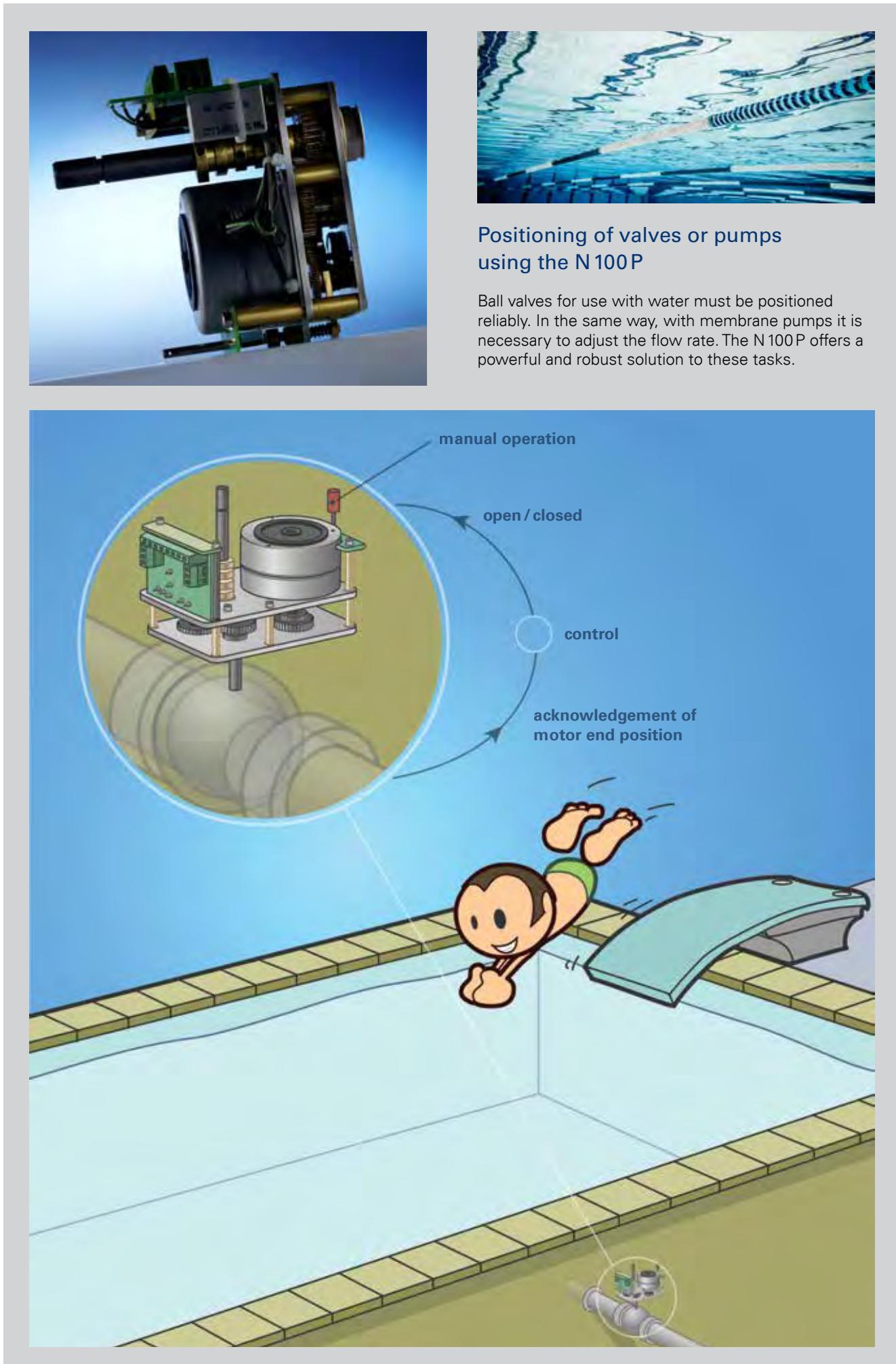
- Compact pocket powerhouse up to 20 Nm
- Output shaft is case hardened and plain-bearing mounted
- Steel gear wheels
- Plastic dust hood
- Continuous greasing

### Options

- Special designs for the output shaft
- Ball-bearing mounted output shaft
- Low noise emission design
- Special lubrication for extended temperature range
- Limit switch
- Potentiometer for position measurement



## BALL CONTROL VALVE

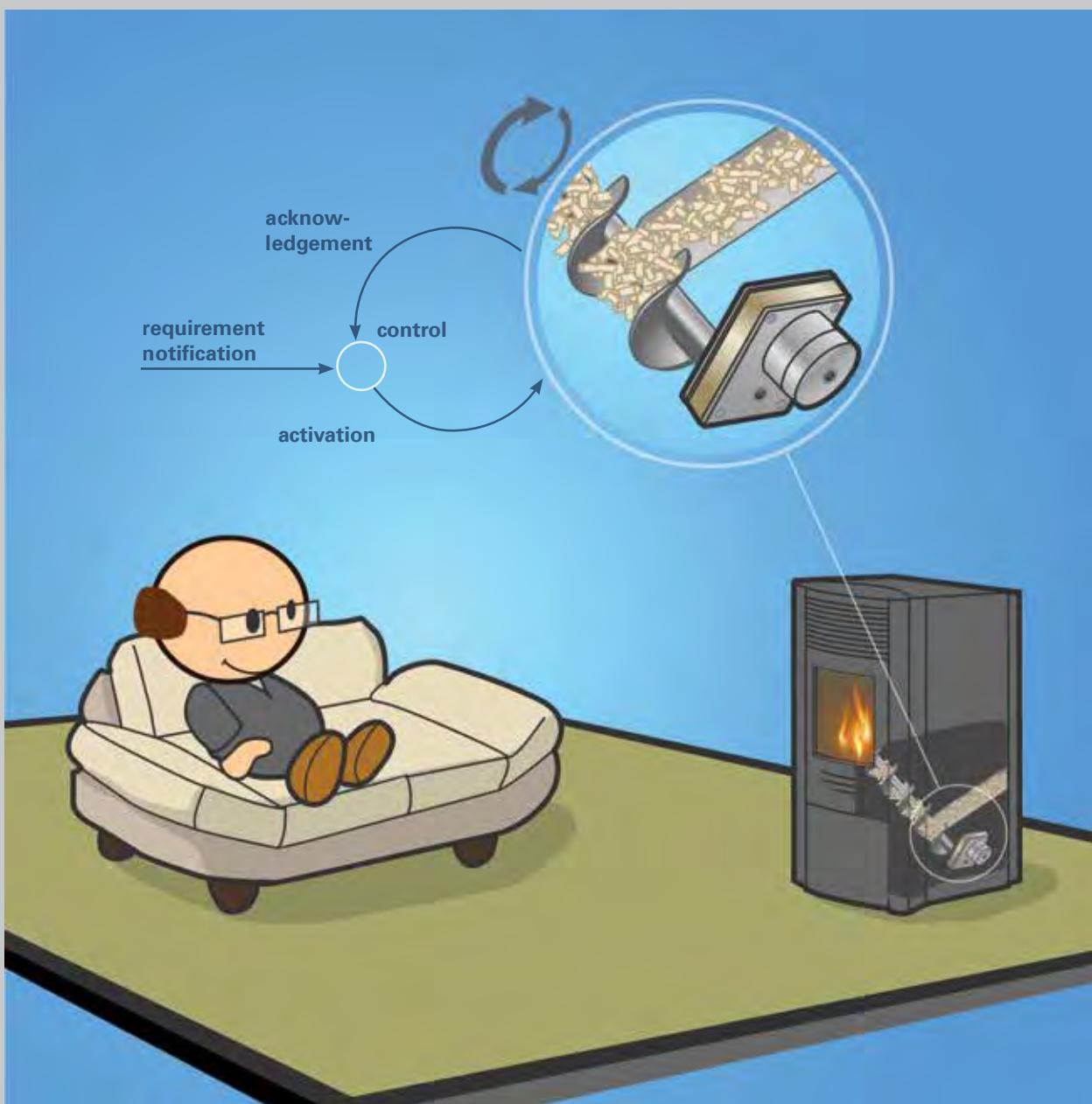


## SCREW CONVEYOR FOR SOLID FUEL PELLETS

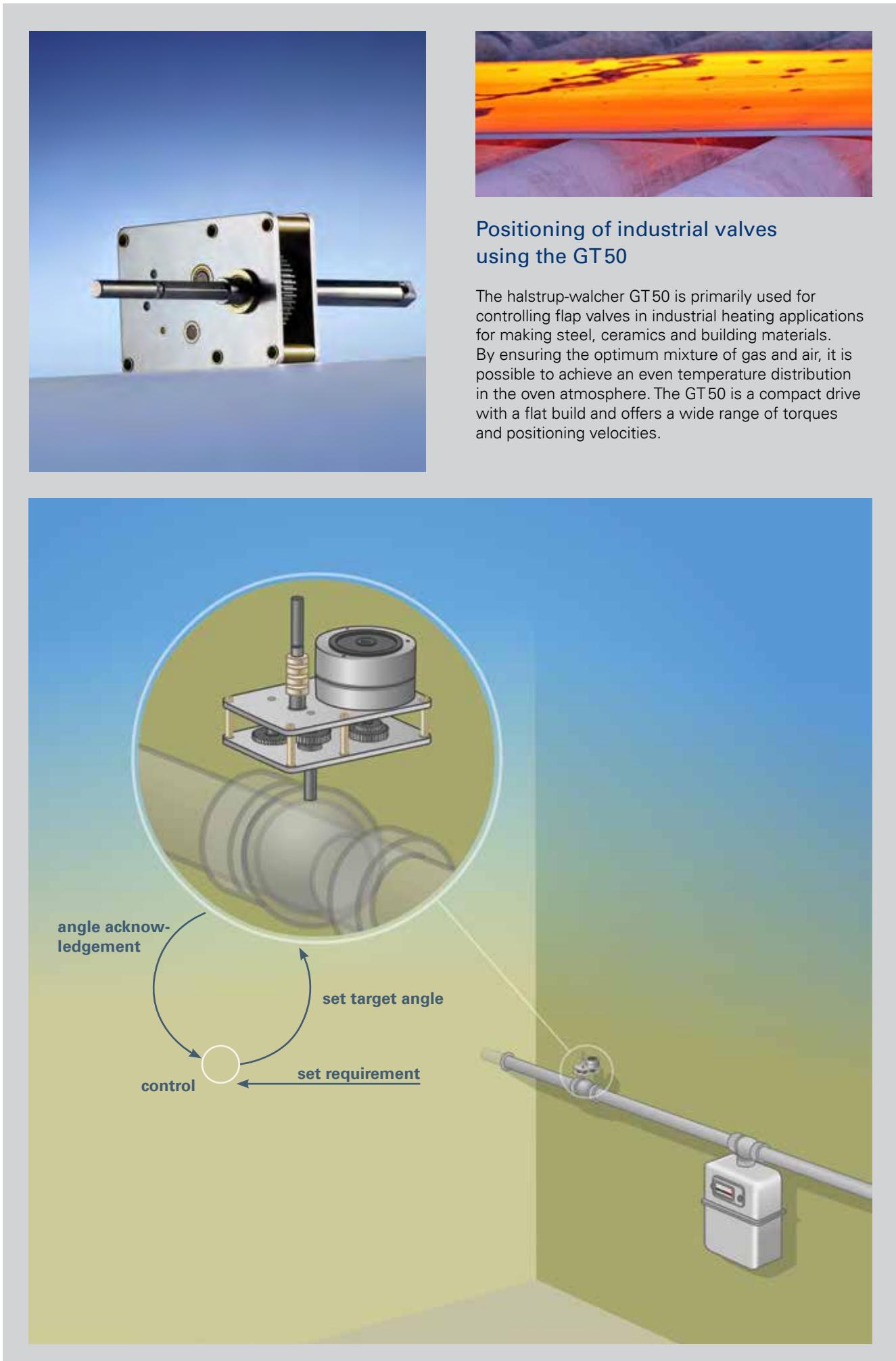


### Driving screw conveyors for solid fuel pellets with the N 100 W

A powerful motor/gearbox drive unit propels a screw conveyor, moving pellets from a reserve tank into the combustion chamber of a pellet furnace. The speed (rpm), and therefore the quantity of fuel being delivered to the furnace, can be regulated according to the heat output required so the room temperature can be controlled flexibly and evenly. The halstrup-walcher N 100 W motor/gearbox unit runs exceptionally quietly and is notable for its compact, powerful design.



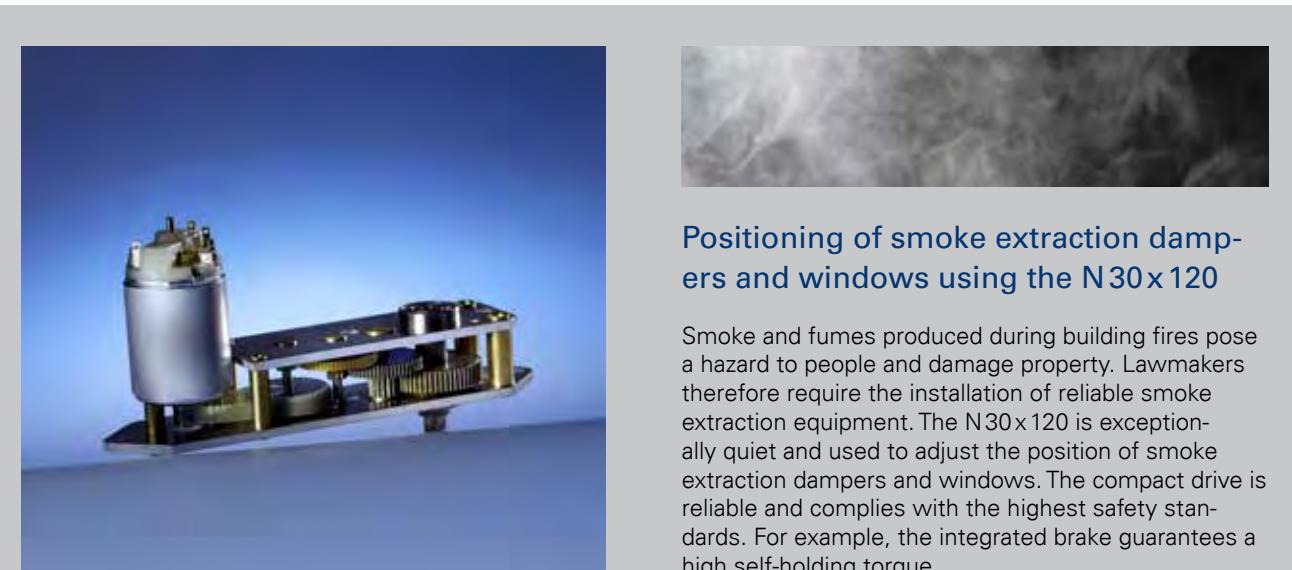
## DRIVE FOR FLAP VALVE



### Positioning of industrial valves using the GT50

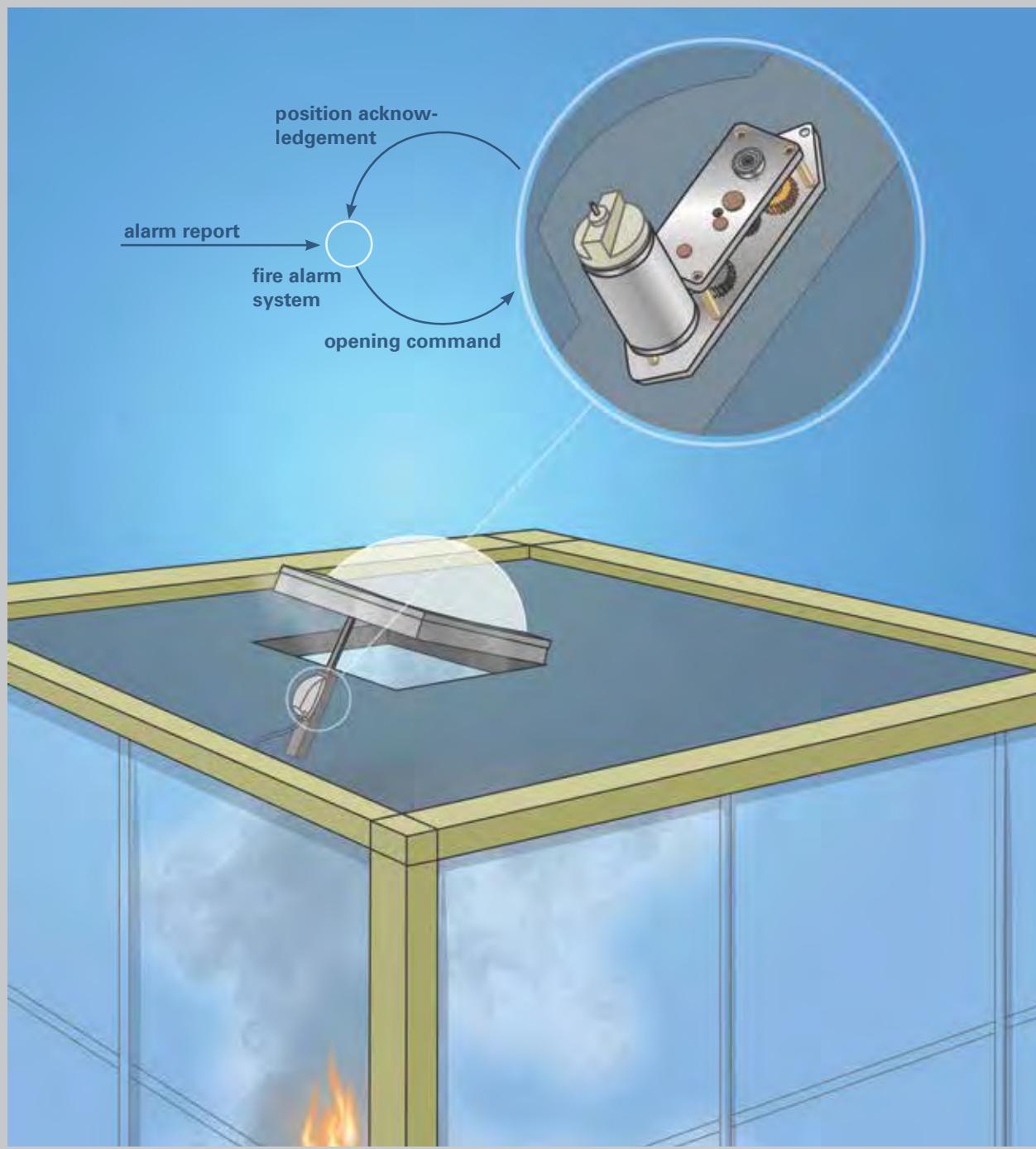
The halstrup-walcher GT50 is primarily used for controlling flap valves in industrial heating applications for making steel, ceramics and building materials. By ensuring the optimum mixture of gas and air, it is possible to achieve an even temperature distribution in the oven atmosphere. The GT50 is a compact drive with a flat build and offers a wide range of torques and positioning velocities.

## SMALL DRIVE FOR SLIM CONSTRUCTION DESIGNS



### Positioning of smoke extraction dampers and windows using the N 30x 120

Smoke and fumes produced during building fires pose a hazard to people and damage property. Lawmakers therefore require the installation of reliable smoke extraction equipment. The N 30x 120 is exceptionally quiet and used to adjust the position of smoke extraction dampers and windows. The compact drive is reliable and complies with the highest safety standards. For example, the integrated brake guarantees a high self-holding torque.

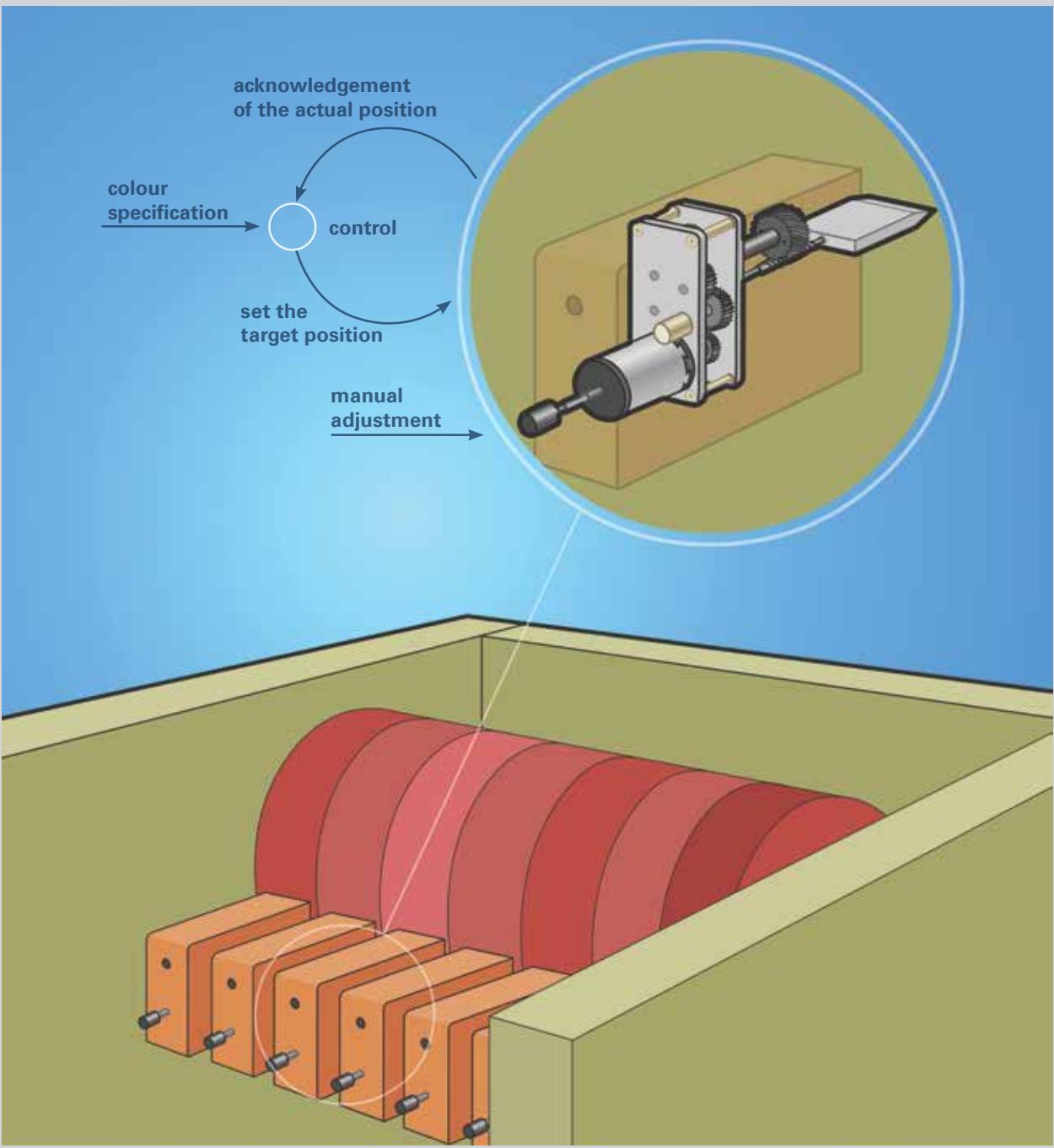


## PRECISION DRIVE WITH FINE MANUAL ADJUSTMENT



### Positioning colour zones in printing machines using the N 22x65

The N 22x65 drive adjusts the positions of the metal tongues attached to the printing rollers. A special fine manual adjustment feature is also provided. The distance between the metal tongues and the printing roller controls the quantity of ink applied. The N 22x65 is reliable and notable for its compact size and long service life – an important factor in reducing service intervals and costs.



## Spur gearbox kit up to 8 Nm BK80

Max. power output	60 W
Permitted axle load radial	60 N
axial	40 N
Nominal torque	8 Nm
Temporary peak torque	10 Nm
Gear backlash, unloaded	0.9..2° depending on design
Operating temperature range	-10..65°C
Weight (without motor)	approx. 0.4 kg
Protection class	IP 54
Service life	At the nominal load, the gearboxes have a service life of min. 2000 operating hours

### Technical data

Gearbox transmission ratios	Max. motor shaft Ø	A
i = 37.5	5 mm	1
i = 75	7 mm	2
i = 93.75	7 mm	3
i = 100	7 mm	4
i = 150	4 mm	5
i = 187.5	4 mm	6
i = 250	4 mm	7
i = 375	5 mm	8
i = 500	5 mm	9
i = 1000	4 mm	10

Motor	B
Manufacturer, model, supply voltage, output shaft diameter	

Order code	A	B
BK80	-	-

**Customer-specific solutions available on request!**

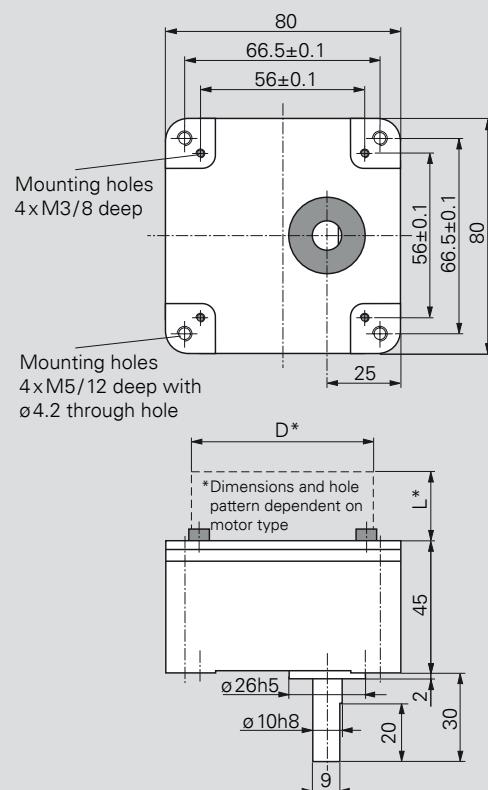


### Features

- Kit with wide selection of pre-developed transmission ratios (further ratios available on request)
- Long service life and stability with case hardened output shaft, ball bearings and steel gear wheels
- Closed aluminium housing ensures low noise emissions and high protection class
- Maintenance free with continuous greasing

### Options

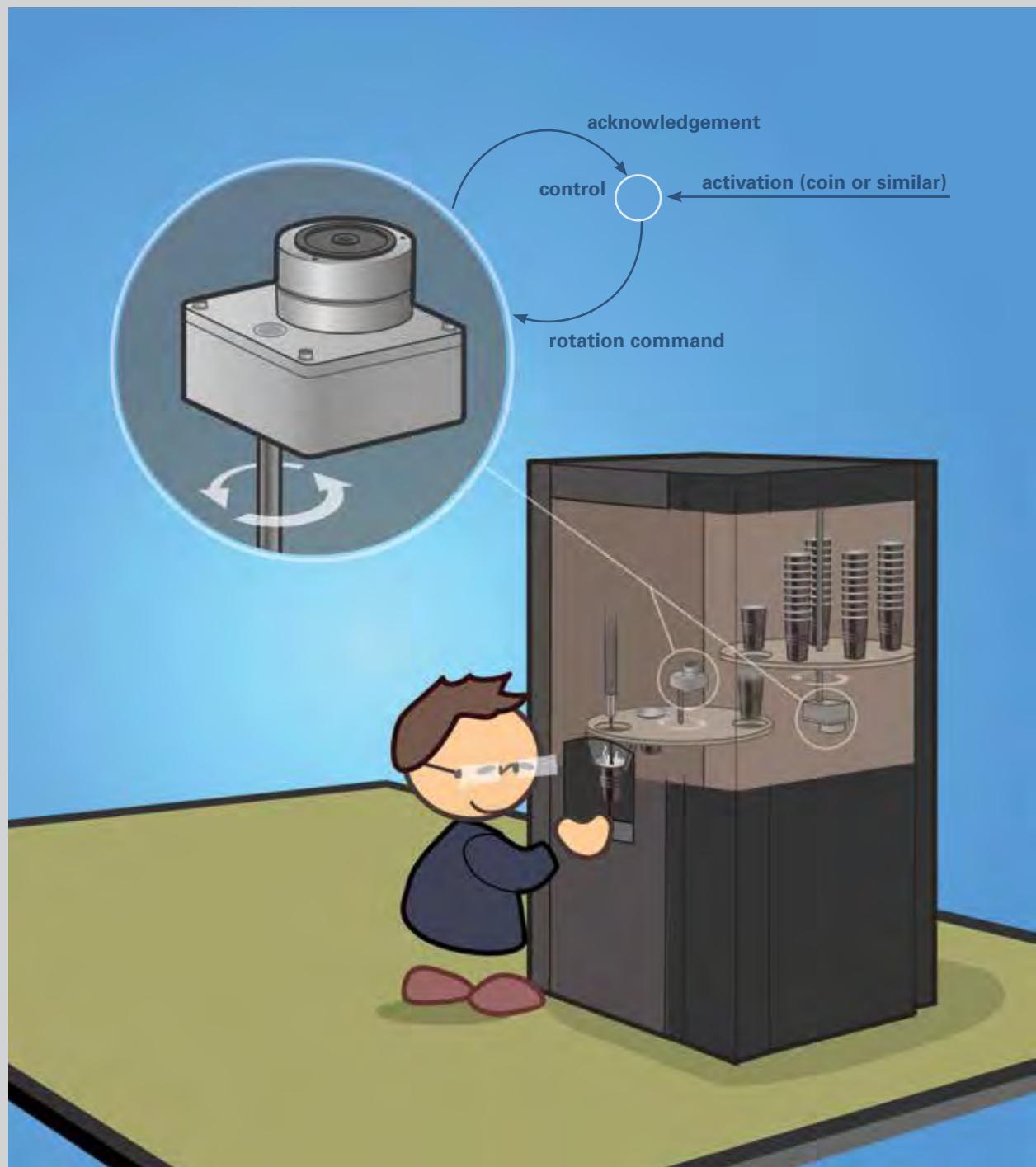
- Special output shafts
- Special lubrication for extended temperature range
- Motor assembly



# REVOLVING CUP DISPENSERS IN BEVERAGE VENDING MACHINES

## Automated cup supply with the BK80

Revolving cup dispensers are frequently used in automated beverage vending machines to provide a compact and trouble-free supply of cups. The BK80 offers persuasive performance in this application with a compact, rugged design, and long service life.



## Actuator ST 120 KG

Nominal power output	AC-motor: 0.6 W (100 % OT) DC-motor: 3 W (30 % OT)
Nominal current	with AC-motor: 0.2 A with DC-motor: 1 A
No-load current	with AC-motor: 0.2 A with DC-motor: 0.2 A
Shock resistance in accordance with IEC/DIN EN 60068-2-27	50 g 11 ms
Vibration resistance in accordance with IEC/DIN EN 60068-2-6	10..55 Hz 1,5 mm/ 55..1000 Hz 10 g/ 10..2000 Hz 5 g
Output shaft	12 h 8 circular shaft
Maximum axial thrust	20 N
Maximum radial force	30 N
Positioning range	300°
Potentiometer (optional)	5 KΩ, linearity ± 2 %
Ambient temperature	-10..60°C
Storage temperature	-20..70°C
Protection class	IP 55
Certificates	CE

Motor	Nominal torque	Nominal speed (rpm)	A
AC	3 Nm	2 min⁻¹	120/1
	6 Nm	1 min⁻¹	120/2
	10 Nm	0.5 min⁻¹	120/3
	10 Nm	0.25 min⁻¹	120/4
DC	1 Nm	30 min⁻¹	120/5
	5 Nm	5 min⁻¹	120/6
	10 Nm	2 min⁻¹	120/7

Mains voltage	B
24 VAC (+ 6/-15 %)	A
115 VAC (+ 6/-15 %)	B
230 VAC (+ 6/-15 %)	C
12 VDC (+ 20/-15 %)	D
24 VDC (+ 20/-15 %)	E

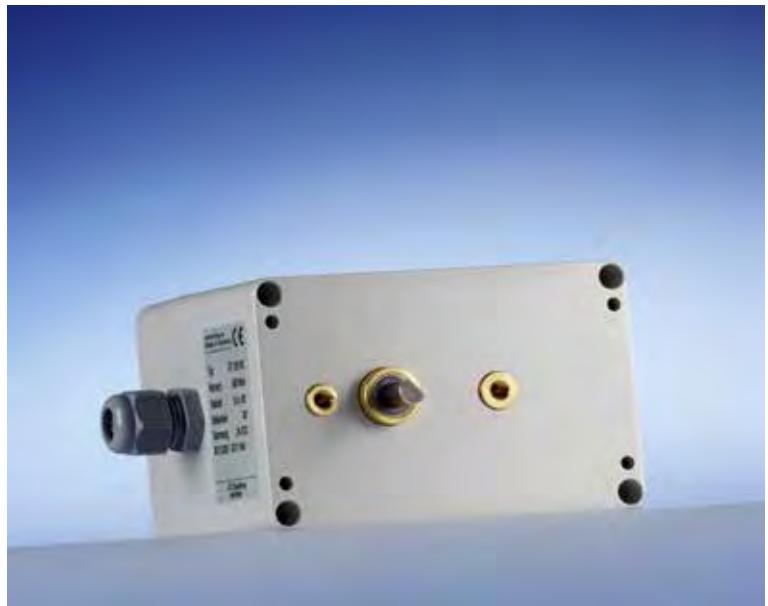
Frequency (for AC-motors only)	C
50 Hz	50
60 Hz	60

Angle of rotation	D
max. 300°	(please specify)

Potentiometer	E
without	O
with	P

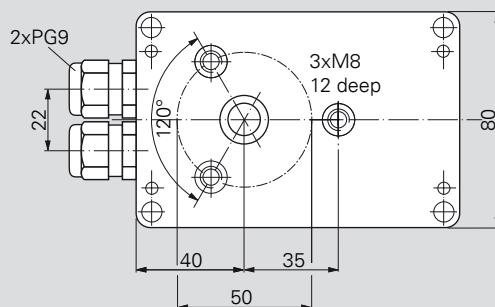
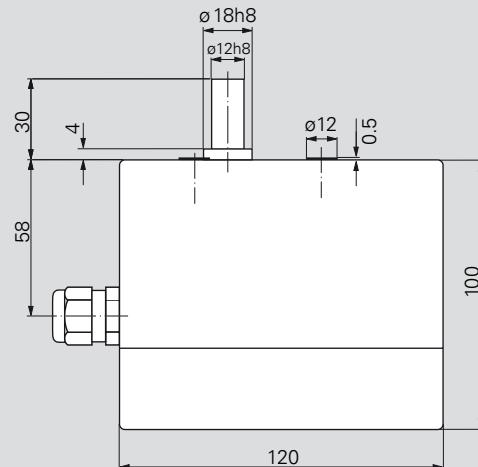
Order code	A	B	C	D	E
ST	-	-	-	-	-

Customer-specific solutions available on request!



### Features

- Robust drive in stable plastic (ABS) housing
- Rotation angle limited via micro switch and adjustable cam discs
- Position acknowledgement via potentiometer (optional)
- Positioning drive mounting directly fixed to gear without straining the housing
- Maintenance-free

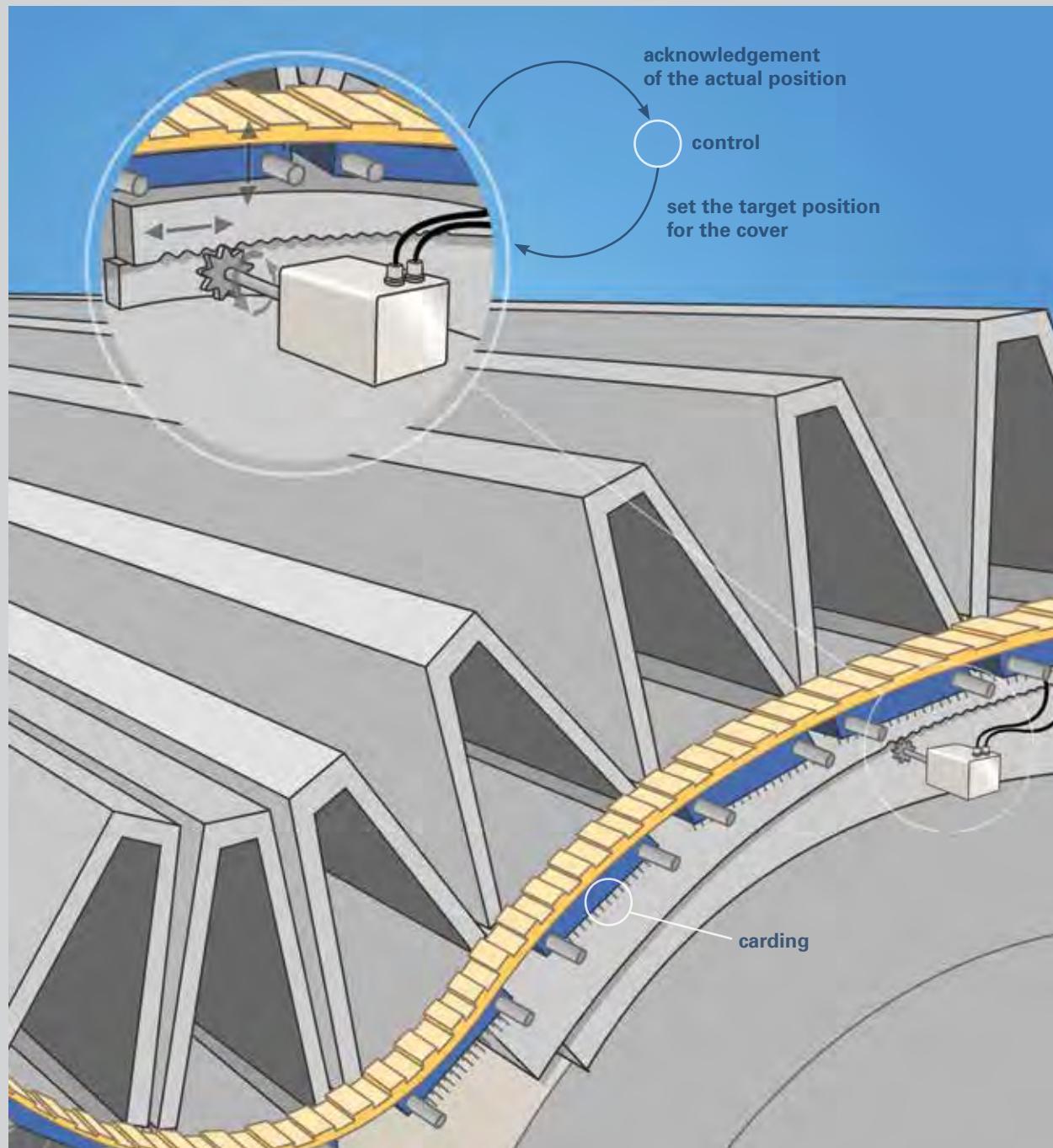


# POSITIONING IN TEXTILE MACHINES

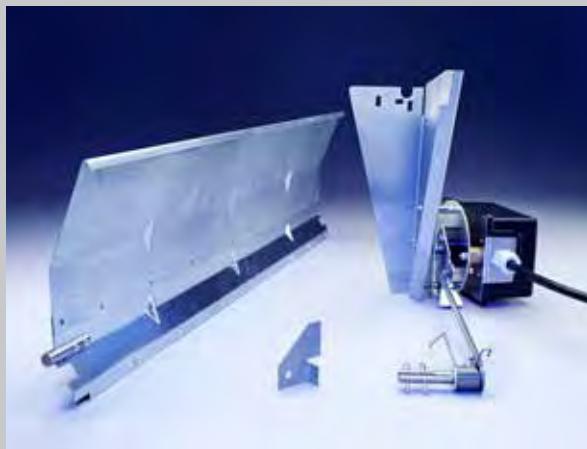
## Positioning of covers in textile machines using the TR 130i

Carding is a stage in the process of spinning yarns (or manufacturing fleeces). The fibres are thoroughly cleaned and then processed to form a web on drums fitted with sets of teeth. The teeth and flexible hooks on these drums face in different directions and straighten the textile fibres so they run in parallel. The resulting web is then wound into card sliver, which is finally spun into yarn after stretching.

The distance between the cover of the carding machine on which the sets of teeth are mounted and the cotton fibres determines the quality of the fleece material produced. The robust and powerful TR 130i drive provides highly reliable adjustment of this distance.



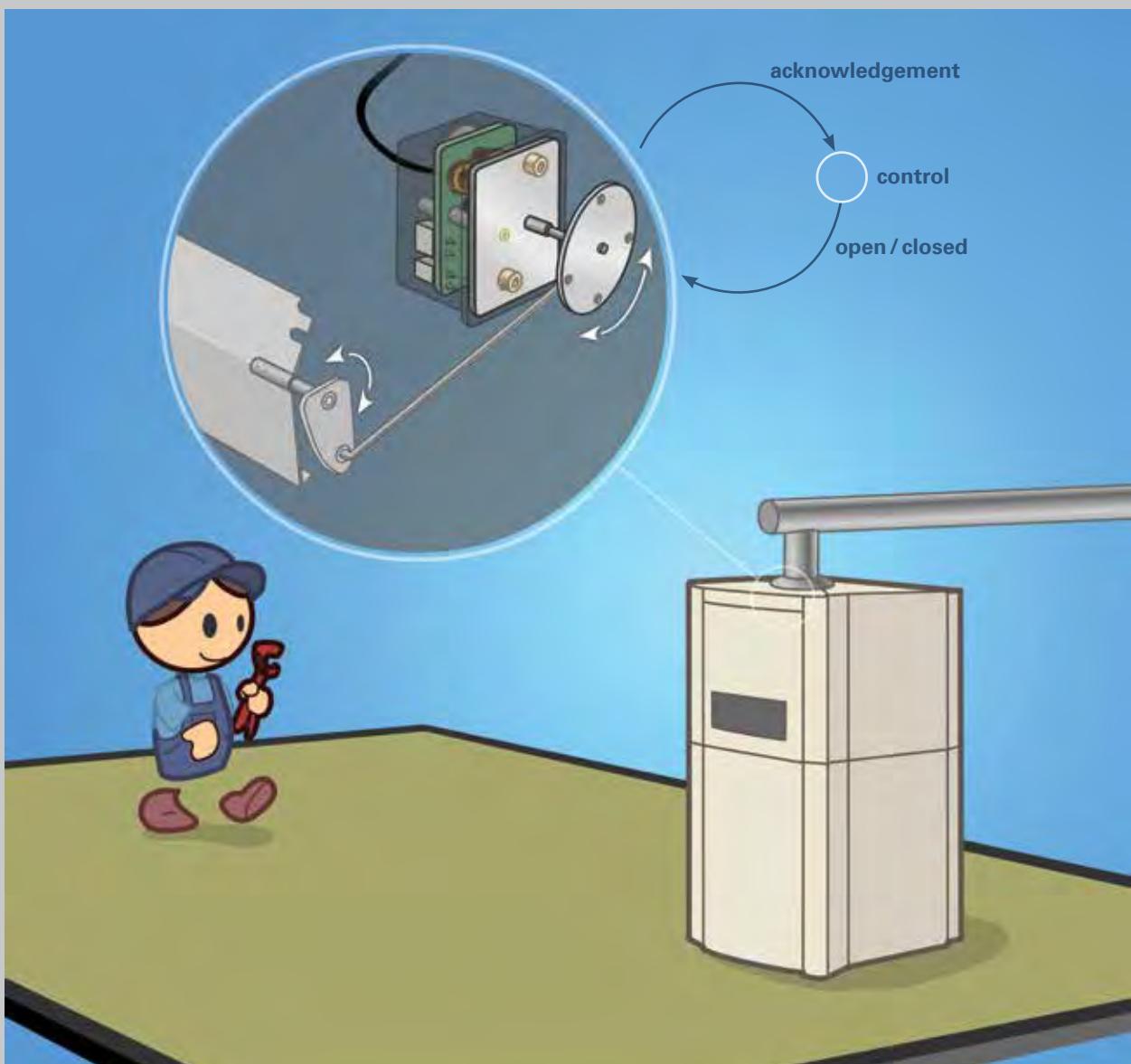
## DELIVERY OF THE COMPLETE DRIVE AND FLAP MODULE



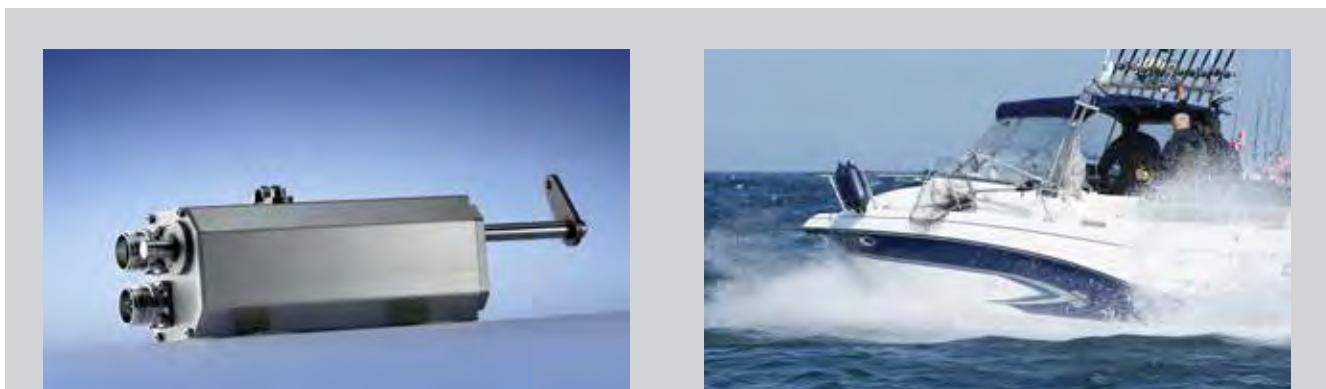
### Easy-to-operate flue gas flap

During combustion, the flue gas damper is open so that the flue gas can escape via the chimney. Once combustion is complete, the flue gas damper closes again to ensure that no heat energy escapes into the environment via the exhaust duct. The drive of the complete module is powerful, reliable and suitable for all safety-relevant applications.

The use of plastic and brass gear wheels together with a plastic housing ensures low noise emissions and excellent value for money. If required, we can also deliver the neighbouring module, e.g. the appropriate metal flaps.

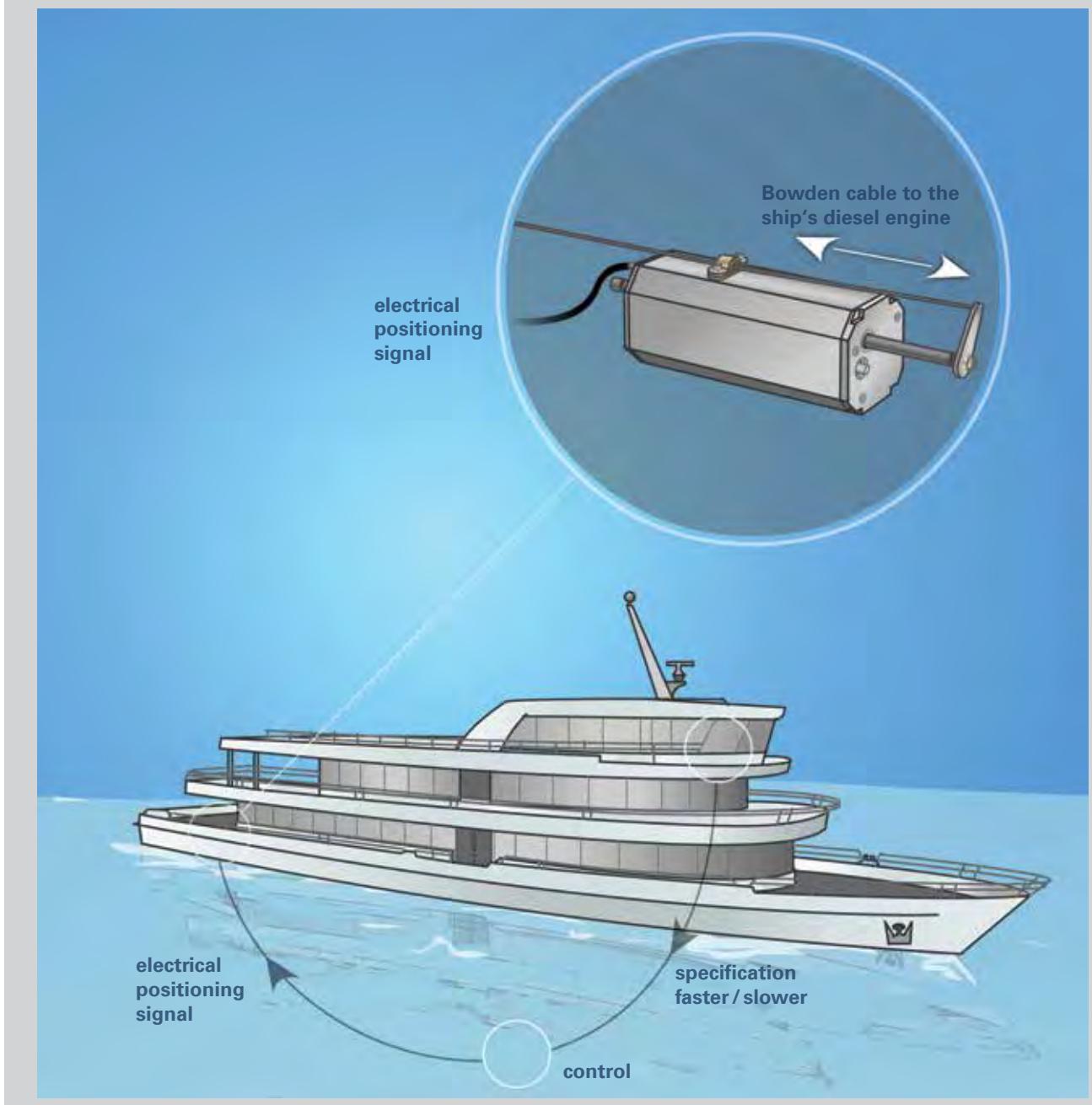


## LINEAR DRIVE IN METAL HOUSING



### SP 72 positioning drive for diesel drive engines

Located directly adjacent to the ship's diesel engine or to its reversing gear, the SP 72 spindle drive offers infinitely variable control of the setting range and stroke. It replaces mechanical rope, chain or cable pulleys from the ship's rudder to the engine. Electrical cables run from one or more navigating bridges to the SP 72 spindle drive. The actuator provides infinite adjustment of the speed of the ship's diesel engine. The SP 72 is approved by German Lloyd, certified resistant to seawater (protection class IP 65) and consequently already used as standard in many ship systems.



## AUTOMATED SAUNA INFUSION MILL TURNED BY A ROBUST DRIVE



Fig. 1: The patented infusion mill from EOS Saunatechnik GmbH, the market leader for sauna equipment, automates the infusion process

Modern sauna technology scores highly in the quality of its design and innovation. This is particularly true of the market leader for sauna technology, EOS Saunatechnik GmbH from Driedorf, Germany. Traditional sauna cabins are still available, of course, but the design aspirations are growing constantly. The sauna has broken out of the basement and is now a firm part of the bathroom and wellness landscape. For example, saunas in the wellness areas of country hotels or swimming pools have windows or glass doors that allow visitors to let their eyes wander freely over the picturesque landscape.

Finnish-style sauna cabins, in which the air is heated to 100°C, continue to be popular. However, sauna cabins that are heated to a temperature below 60°C with a steady supply of steam are in ever greater demand, because they are more gentle for an organism. And steam enriched with essential oils also benefits the respiratory system. This is the reason why some saunas contain large lumps of rock salt, which dissolve gradually in the humid air. Here, too, EOS Saunatechnik with its 100 employees and global sales organisation sets the standard with its modular salt tiles.

In most sauna cabins, a manual infusion is still an act of celebration. As water is poured from a wooden spoon over the scorching hot stones, the humidity increases to breathtaking effect. But who is prepared to stand up and take on this role in a large public sauna? Is it good etiquette to ask the other sauna guests beforehand to find out whether the majority wants an infusion at this particular moment? Joking apart, EOS Saunatechnik has developed and launched an impressive innovation to perform this task in the growing number of saunas in wellness areas but also for private individuals, who wish to offer their guests a special event.

The product in question is the patented „infusion mill.“ This robust, hygienic wheel is fitted with a number of stainless steel scoops, which deliver a precise volume of water from a reservoir with a regulated level. As the wheel turns, the water is poured over special heated stones (olivine diabase). If necessary, it is even possible to adjust the intervals between the infusions. The result is an even infusion in perfect harmony with the size of the sauna.



Fig. 2: Not just technically but also visually impressive: the infusion mill is an eye-catching centrepiece not only in the sauna but also at exhibitions



Fig. 3: The halstrup-walcher drive is located on the rear of the infusion mill

Actually, the mill wheel only needs to turn during infusion itself. However, experience has shown that sauna users and visitors to exhibitions and trade fairs find the experience even more attractive if it continues to move between the infusions. At these times, the mill wheel simply goes into reverse as soon as the infusion has been completed and thus remains in motion whenever the sauna is open.

The drive for the infusion mill has to cope with challenging conditions. Firstly, temperatures can climb as high as 80 °C and the humidity levels are exceptional during the infusion. Secondly, infusion mills have to operate continuously every day in public saunas, often from 8 a.m. until after midnight. They must also generate a minimum of noise – after all who wants to visit a sauna where the hum of an electric motor drowns out the relaxing splash-splash of the infusion mill? Without a special lubricant for continuous maintenance-free operation and an exceptionally robust design, no drive could be expected to meet these requirements.

But there was more to come. In practice, the supplier of the drive (OEM specialist halstrup-walcher from Kirchzarten, Germany) repeatedly found that sauna visitors would move the wheel by hand – perhaps just for fun or perhaps to bring forward the time of the next infusion a little. Once this problem was identified, halstrup-walcher redesigned the drive and integrated a slip clutch. This made it possible to prevent damage to the drive caused by manual intervention and also stopped the drive belt from slipping off. In accordance



Fig. 4: With a robust design and slip clutch, the drive is fully prepared to cope with harsh ambient conditions

with halstrup-walcher's standard practice, the new drive was subjected to practical tests in order to guarantee that it functioned perfectly under real-world conditions.

What trends can we expect in sauna technology over the next few years? The development specialists at EOS Saunatechnik take a relaxed view: the company is so close to the market that it is confident of remaining one of the major trendsetters in the future. And if there should be any tasks that require exceptional drive technology, they already know the perfect partner to consult on the matter.



Fig. 5: Drive solutions from halstrup-walcher offer impressive customer specific designs, optimum price-performance ratios, even for small batch sizes – and, last but not least, reliable and traceable supply quality

halstrup-walcher GmbH  
Stegener Str. 10  
79199 Kirchzarten  
Germany

Tel. +49(0) 7661 3963-0  
Fax +49(0) 7661 3963-99  
[www.halstrup-walcher.com](http://www.halstrup-walcher.com)  
[info@halstrup-walcher.de](mailto:info@halstrup-walcher.de)

**Austria / Hungary /**

**Poland / Slovenia**

Kwapil & Co. GmbH  
Kammelweg 9  
1210 Wien  
Austria  
Tel. +43(0) 1 2788585  
Fax +43(0) 1 2788586  
[verkauf@kwapil.com](mailto:verkauf@kwapil.com)  
[www.kwapil.com](http://www.kwapil.com)

**Belgium / Luxembourg**

Rotero Belgium bvba  
Wayenborgstraat 10  
2800 Mechelen  
Belgium  
Tel. +32(0) 15451840  
Fax +32(0) 15451841  
[info@rotero.be](mailto:info@rotero.be)  
[www.rotero.com](http://www.rotero.com)

**China**

Shanghai Yu Ting  
Scientific Co., LTD  
BeiGuan Village, MaLu Town,  
JiaDing District,  
Shanghai City, PRC  
Tel. +86 21 6915 3366  
Tel. +86 21 6915 5916  
Fax +86 21 6915 3939  
[ch-sys@ch-sys.net](mailto:ch-sys@ch-sys.net)  
[www.ch-sys.com](http://www.ch-sys.com)

**France**

ICA Systèmes Motion  
2, rue du Château  
67610 La Wantzenau  
Tel. +33(0)390 22 66 83  
Fax +33(0)390 22 66 84  
[info@icacontact.fr](mailto:info@icacontact.fr)  
[www.icacontact.fr](http://www.icacontact.fr)

**Italy**

A.R.I.E.T.E. SAS  
di Mangone Fabio & C.  
Via Benessere n°4  
20095 Cusano Milanino (MI)  
Tel./Fax +39 02 61 93 10 7  
Cell +39 334 11 31 71 9  
[ariete.mangone@tiscali.it](mailto:ariete.mangone@tiscali.it)

**Netherlands**

Elmekanic B.V.  
Spelleweg 3  
7475 GV Markelo  
Tel. +31(0) 547 367 357  
Fax +31(0) 547 367 356  
[info@elmekanic.nl](mailto:info@elmekanic.nl)  
[www.elmekanic.nl](http://www.elmekanic.nl)

**Slovakia / Czech Republic**

Kwapil & Co. GmbH  
Hlavní 1054/131  
624 00 Brno  
Czech Republic  
Tel. +420 (0) 541 211 538  
Fax: +420 (0) 541 217 467  
E-Mail: [sales@kwapil.cz](mailto:sales@kwapil.cz)  
[www.kwapil.cz](http://www.kwapil.cz)

**Spain**

INTRA AUTOMATION S. L.  
Camino Alabau, 20  
46026 Valencia  
Tel. +34 963 961 008  
Fax +34 963 961 018  
[info@intraautomationssl.com](mailto:info@intraautomationssl.com)  
[www.intraautomationssl.com](http://www.intraautomationssl.com)

**Switzerland**

Trelco AG  
Gewerbestrasse 10  
5037 Muhen  
Tel. +41(0) 62 737 62 62  
Fax +41(0) 62 737 62 70  
[trelco@trelco.ch](mailto:trelco@trelco.ch)  
[www.trelco.ch](http://www.trelco.ch)

**Taiwan**

Chih Horng Scientific Co.  
3F. No.162 WEN LIN N. RD.  
112 PEITOU TAIPEI R.O.C.  
Tel. +886 2 28 221466  
Fax +886 2 28 23 80 03  
[chih.mail@msa.hinet.net](mailto:chih.mail@msa.hinet.net)  
[www.ch-sys.com](http://www.ch-sys.com)

**Turkey**

CAGDAS Automation  
& Engineering Co. Ltd.  
Kizilay cad. 28006 sok No: 5  
01010 Seyhan/Adana  
Tel. +90(0) 322 359 81 85  
Fax +90(0) 322 359 36 39  
[cagdas@cagdasltd.com.tr](mailto:cagdas@cagdasltd.com.tr)  
[www.cagdasltd.com.tr](http://www.cagdasltd.com.tr)

**USA**

Intelligent Measurement Solutions LLC  
7801 Clinton-Macon Road  
49236 Clinton, MI  
Tel. +1 (616) 608 79 19  
Mobil +1 (734) 637-1596  
Fax. +1 (616) 608 79 54  
[darrell@i-m-solutions.net](mailto:darrell@i-m-solutions.net)  
[www.h-wusa.com](http://www.h-wusa.com)