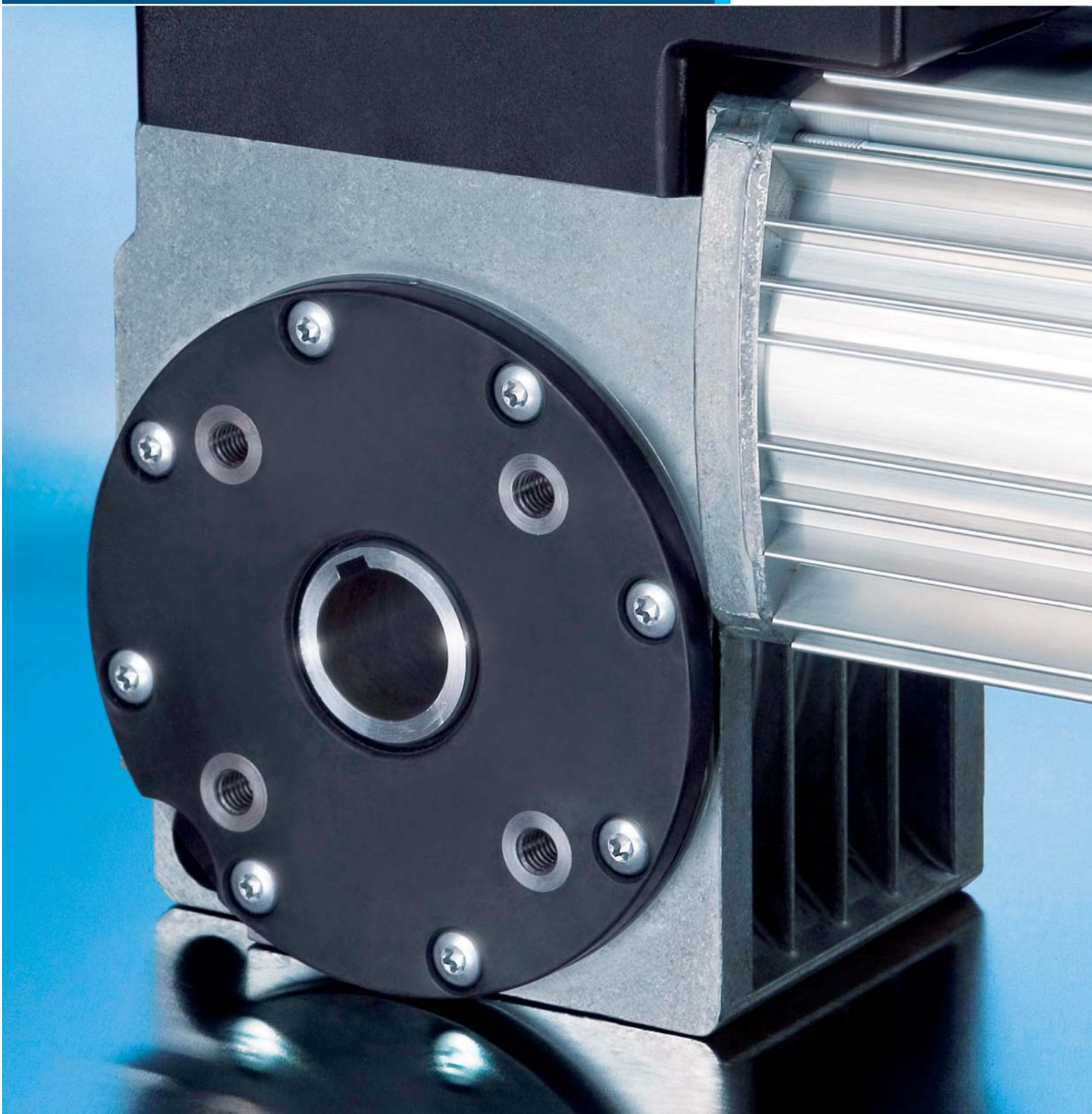


Sectional Door Drives

Product Catalogue



BECKER
It's that easy.



The data contained in this catalogue is intended for information purposes and is given in good faith. No liability may be derived therefrom. The information and illustrations are not binding and were correct to the best of our knowledge at the time of print. Becker-Antriebe reserves the right to modify dimensions and technical data.

As of: 10/2008
Item No.: 4995 800 800 1

Contents

Sectional Door Drives

■ General Information

<i>BECKER sectional door drives</i>	4
<i>Advantages of Becker sectional door drives at a glance</i>	5
<i>Article coding / Manual operation</i>	6
<i>Limit switch concepts</i>	7

■ Technical Information

<i>Load table</i>	8
<i>Technical data</i>	9
<i>Article numbers</i>	10
<i>Dimensional drawings A50 / A100</i>	11
<i>Dimensional drawings AW 50 / A80 / A130 / A140</i>	13

■ Order Form Sectional Door Drives

15

■ Notes

17

■ General Terms and Conditions of Sale

18



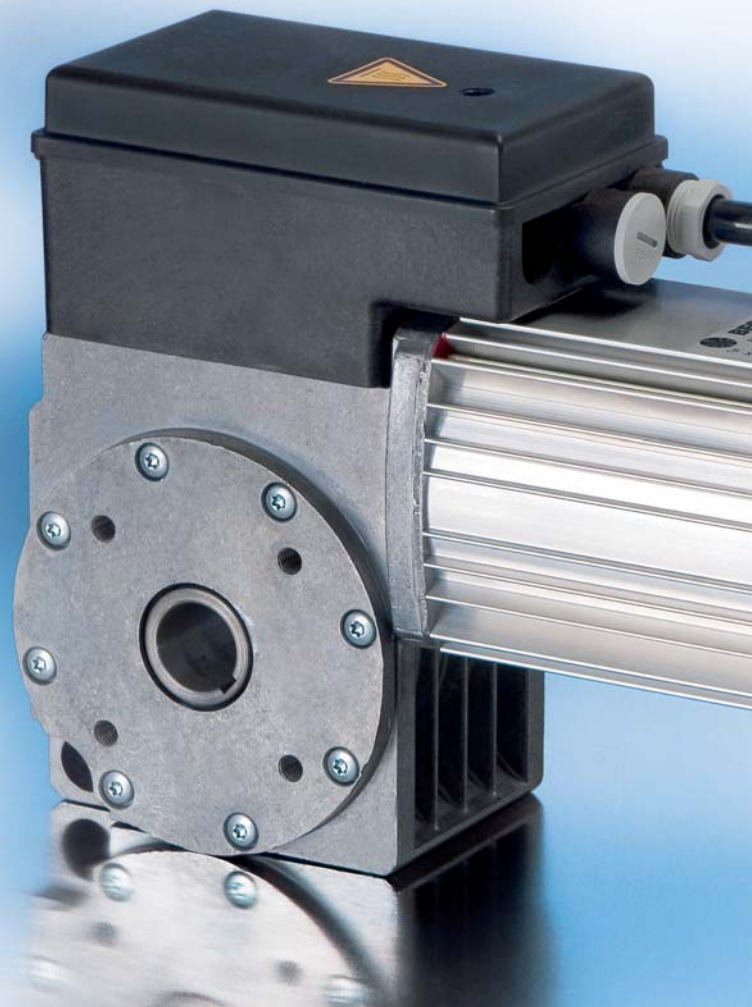
General Information

Becker sectional door drives: Flexible, compact, convenient

The sectional door is the most widely used door system for industrial applications in Europe. Therefore, the Becker sectional door range contains a large selection of drives to meet your individual requirements.

Our three limit switch concept provides the highest level of flexibility for spring-balanced sectional doors for domestic and industrial use.

No matter whether single phase or three-phase drives, mechanical limit switches, electronic limit switches or electronic limit switches with absolute value encoder, we have the right solution for every situation.



Advantages of Becker sectional door drives at a glance

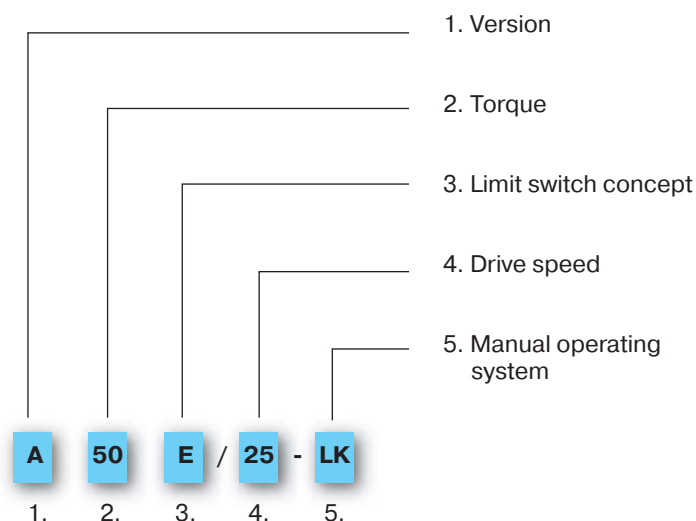
- Compact design
- installation in any mounting position
- Low operating noise
- Maintenance-free gear with lifetime lubrication
- Maintenance-free motor
- Simple and precise limit switch adjustment
- Suitable for door leaf weights up to 1000 kg (see load table)
- Pluggable control cable (4 m, 7 m und 10 m long)
- Universal application with a power supply of 3 x 230/400V/50 Hz

- Simple changeover from star (3 x 400 V) to delta (3 x 230 V) connection
- Various manual operating systems LK, AK, HK, AK + RK
- TÜV type examination test – certificate of approval in accordance with DIN EN 12453
- Special voltages/frequencies available on request



Article code description

Example:



1. = Version

A = Direct mount drive

AW = Direct mount drive for single phase

2. = Torque in Nm (see table on page 9)

3. = Limit switch concept

Without a letter = Mechanical limit switch

E = Becker electronic limit switch

AE = Electronic limit switch with absolute value encoder

4. = Drive speed in rpm. (see table on page 9)

5. = Manual operating system

LK = Light chain

AK = Disconnecting clutch

HK = Hand crank

AK + RK = Disconnecting clutch + Sliding clutch

Manual operation

Light chain (LK)

With this type of manual operating system, the door is opened or closed by pulling the chain via the motor shaft. A micro-switch automatically interrupts the control current. After manual operation, a spring mechanism disengages the mechanical components from the motor shaft.

Disconnecting clutch (AK)

With this type of manual operating system, the direct mount drive is mechanically disengaged from the door shaft by pulling the disconnecting chain. The counterweighted sectional door can be opened or closed manually. After manual operation, the drive is re-engaged by pulling on the chain again.

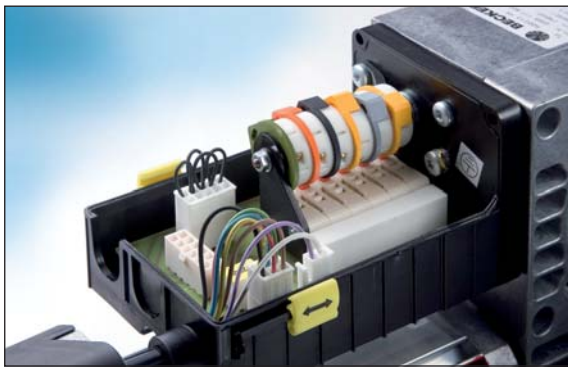
Hand crank (HK)

The HK version is possible for vertically and horizontally mounted direct mount drives. In case of power failure, the direct mount drive can be prepared for manual operation by inserting the hand crank into the motor shaft. A micro-switch automatically interrupts the control current when inserting the hand crank.

Disconnecting clutch + Sliding clutch (AK + RK)

With this version, a disconnecting clutch is combined with a sliding clutch. The additional sliding clutch is used to limit the maximum drive torque and can be adapted precisely to each door. This helps to prevent damage caused by overloading of the door system.

Limit switch concepts



The mechanical limit switch is based on the cam limit switch with micro-switch system and is characterised by the following features:

- Rapid pre-setting of the limit switch cams via 30° contact
- Precise adjustment possible due to fine adjustment of the limit switch cams



The Becker electronic limit switch is based on a 4 Bit Gray-Code encoder system in conjunction with an incremental encoder and is characterised by the following features:

- Adjustment of the limit switches from the ground with the aid of the control
- Quick recognition of torque changes is possible due to the incremental encoder (blocking recognition)



The electronic limit switch with absolute value encoder is based on a potentiometric system and is characterised by the following features:

- Adjustment of the limit switches from the ground with the aid of the control
- Initialisation is not required after power failure or manual operation

Technical information

Recommended drives depending on the door leaf weight and cable drum for spring-balanced sectional doors

Load table

Door leaf weight [kg]	Cable drum diameter [mm]	Resulting torque * [Nm]	Single-stage gear		Two-stage gear			
			A 50/25	A 100/25	A 80/29	A 130/29	A 140/20	AW 50/22
200	102	17	●	●	●	●	●	●
	134	22	●	●	●	●	●	●
	146	24	●	●	●	●	●	●
	165	27	●	●	●	●	●	●
	203	33	●	●	●	●	●	●
400	102	33	●	●	●	●	●	●
	134	43	●	●	●	●	●	●
	146	47	●	●	●	●	●	●
	165	53		●	●	●	●	
	203	66		●	●	●	●	
600	102	50	●	●	●	●	●	●
	134	65		●	●	●	●	
	146	71		●	●	●	●	
	165	80		●	●	●	●	
	203	99		●		●	●	
800	102	66		●	●	●	●	
	134	87		●		●	●	
	146	95		●		●	●	
	165	107				●	●	
	203	131					●	
1000	102	83		●		●	●	
	134	108				●	●	
	146	118				●	●	
	165	134					●	
Limit switch range [rev]			13	13	24	24	24	18
Static holding torque [Nm]			300	300	400	400	400	400

● = minimum drive to be applied according to the required torque

* taking 10% friction and 15% spring losses into consideration

The table is only an overview of the drives which can be applied. The applied drive must be determined via the actual door characteristics. To calculate the maximum permissible door weight, the load bearing capacity of the cable and cable drums, the setting properties of the springs, the system-related friction and the manual operating force must, amongst other things, be taken into consideration. Please note that according to EN 12453 the permissible manual operating force must not exceed $260\text{ N} + 50\% = 390\text{ N}$. Please also note that if the counterweight spring breaks, the static holding torque of the drive must not be exceeded, or additional safety elements (e.g. spring break protection) must be applied.

Technical data

Type		One-stage gear		Two-stage gear			
		A 50	A 100	AW 50	A 80	A 130	A 140
Output torque	[Nm]	50	100	50	80	130	140
Output speed	[rpm]	25	25	22	29	29	20
Hollow shaft diameter	[mm]	25.4	25.4	25.4	25.4	25.4	25.4
Operating voltage	[V]	3 ~ 230/400	3 ~ 230/400	1 ~ 230	3 ~ 230/400	3 ~ 230/400	3 ~ 230/400
Frequency	[Hz]	50	50	50	50	50	50
Nominal current	[A]	2.5 / 1.4	4.6 / 2.6	4.2	2.9 / 1.7	4.2 / 2.4	3.8 / 2.2
Efficiency factor	[cos \geq]	0,80	0,71	0,99	0,76	0,78	0,78
Insulation class		H	H	H	H	H	H
Thermal circuit breaker	[°C]	170	170	170	170	170	170
Type of operation	[%]	S3 40	S3 40	S2 - 4min.	S3 40	S3 40	S3 40
Degree of protection	[IP]	54	54	54 ¹⁾	54 ¹⁾	54 ¹⁾	54 ¹⁾
Limit switch range	[rev.]	13	13	18 ²⁾	24	24	24
Static holding torque	[Nm]	300	300	400	400	400	400
Customer-provided fuse	[A]	3 x 10 A T	3 x 10 A T	1x 10 AT	3x 10 A T	3x 10 A T	3x 10 A T
Permissible ambient operating temperature	[°C]	-20 to +40	-20 to +40	-10 to +35	-10 to +35	-10 to +35	-10 to +35
Approx weight 3)	[kg]	10	10	11	10	11	11
Manual operation		LK, AK, HK, AK+RK	LK, HK	LK, AK, HK	LK, AK, HK	LK, AK, HK	LK, AK, HK
Limit switch systems		M, E, AE	M, AE	M, E, AE	M, E, AE	M, E, AE	M, E, AE

1) Degree of protection IP 65 optionally possible

2) Restricted limit switch range for adherence to max. permissible temperature according to EN 12453

3) The weight increases by approx. 0.5 kg for the LK version



Technical information

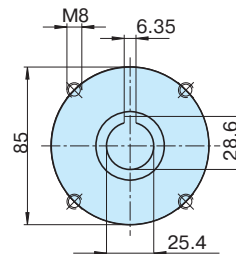
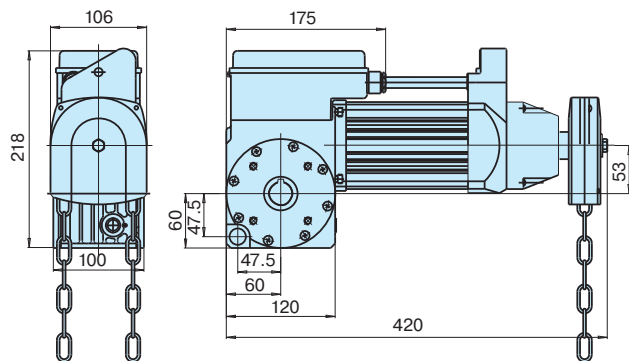
Item numbers

Type	A 50/...	A 100/...	AW 50/...	A 80/...	A 130/...	A 140/...
20-LK	•	•	•	•	•	2355 169 600 0
20-AK	•	•	•	•	•	2355 136 100 0
20-HK	•	•	•	•	•	2355 117 100 0
E/20-LK	•	•	•	•	•	2375 146 100 0
E/20-HK	•	•	•	•	•	2375 117 100 0
AE/20-LK	•	•	•	•	•	2355 169 760 0
AE/20-AK	•	•	•	•	•	2355 136 710 0
AE/20-HK	•	•	•	•	•	2355 117 710 0
22-LK	•	•	2351 169 600 0	•	•	•
22-AK	•	•	2351 136 600 0	•	•	•
22-HK	•	•	2351 117 000 0	•	•	•
E/22-LK	•	•	2371 169 600 0	•	•	•
E/22-HK	•	•	2371 117 000 0	•	•	•
AE/22LK	•	•	2351 169 760 0	•	•	•
AE/22-AK	•	•	2351 136 760 0	•	•	•
AE/22-HK	•	•	2351 117 700 0	•	•	•
25-LK	2340 146 600 0	2349 146 500 0	•	•	•	•
25-AK	2340 136 600 0	•	•	•	•	•
25-HK	2340 117 600 0	2349 117 500 0	•	•	•	•
25-AK+RK	2340 164 600 0	•	•	•	•	•
E/25-LK	2347 146 600 0	•	•	•	•	•
E/25-HK	2347 117 600 0	•	•	•	•	•
E/25-AK+RK	•	•	•	•	•	•
AE/25-LK	2340 146 760 0	2349 146 750 0	•	•	•	•
AE/25-AK	2340 136 760 0	•	•	•	•	•
AE/25-HK	2340 117 760 0	2349 117 750 0	•	•	•	•
AE/25-AK+RK	2340 164 760 0	•	•	•	•	•
29-LK	•	•	•	2353 146 600 0	2355 146 600 0	•
29-AK	•	•	•	2353 136 000 0	2355 136 000 0	•
29-HK	•	•	•	2353 117 000 0	2355 117 000 0	•
E/29-LK	•	•	•	2373 146 600 0	2375 146 000 0	•
E/29-HK	•	•	•	2373 117 000 0	2375 117 000 0	•
AE/29-LK	•	•	•	2353 146 760 0	2355 146 760 0	•
AE/29-AK	•	•	•	2353 136 700 0	2355 136 700 0	•
AE/29-HK	•	•	•	2353 117 700 0	2355 117 700 0	•

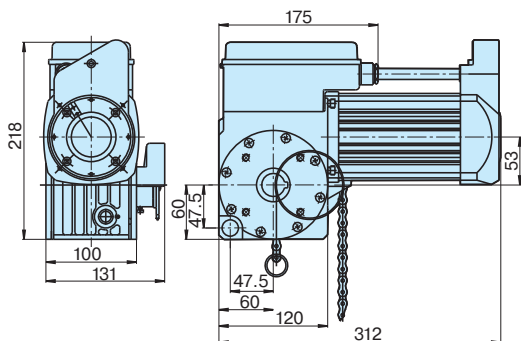
Dimensional drawings A 50/A 100 series

A 50/25 light chain (LK)

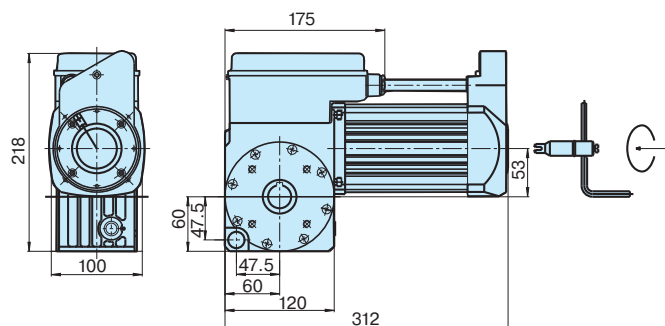
Hollow shaft and hole pattern



A 50/25 disconnecting clutch (AK)

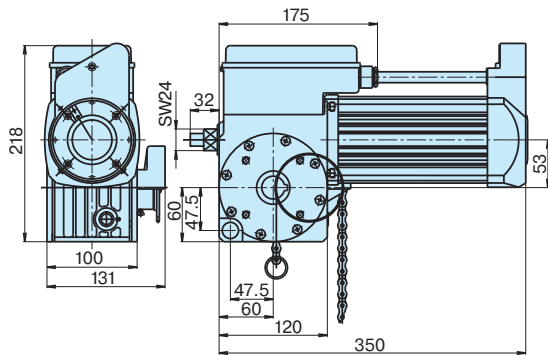


A 50/25 hand crank (HK)



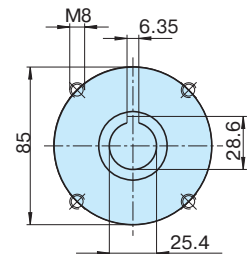
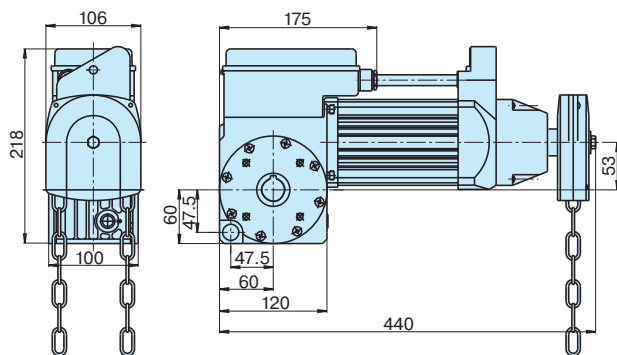
Dimensional drawings A 50/A 100 series

A 50/25 disconnecting clutch + sliding clutch (**AK+RK**)

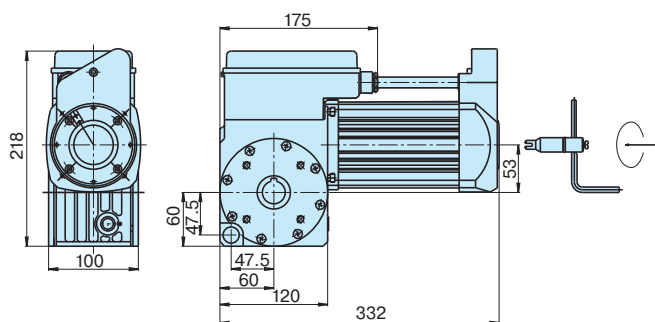


A 100/25 light chain (**LK**)

Hollow shaft and hole pattern



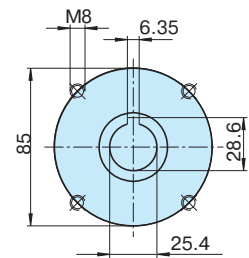
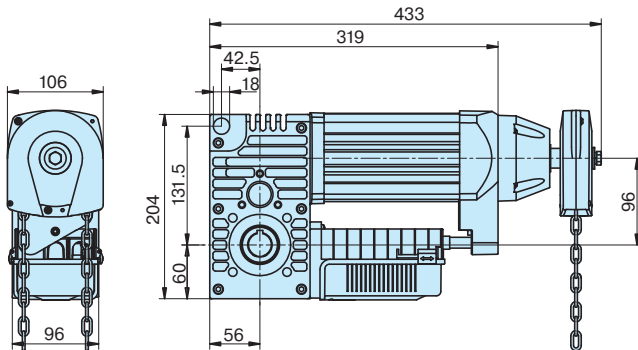
A 100/25 hand crank (**HK**)



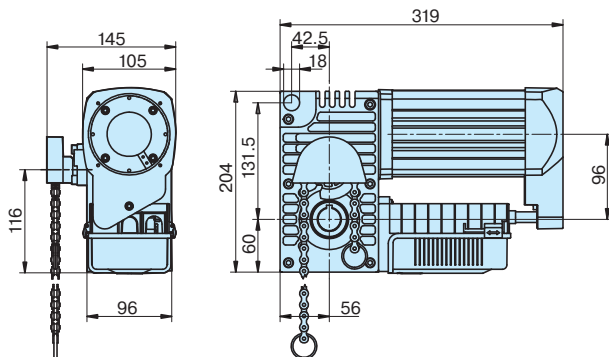
Dimensional drawings AW 50/A 80/A 130/A 140 series

AW 50 – A 140 light chain (LK)

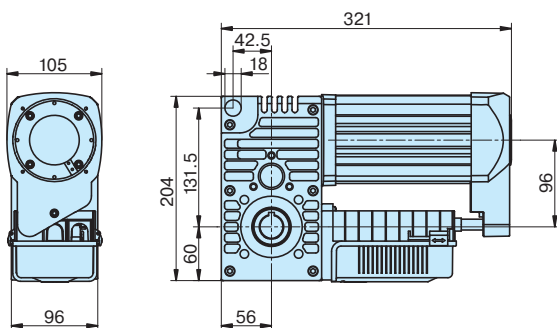
Hollow shaft and hole pattern

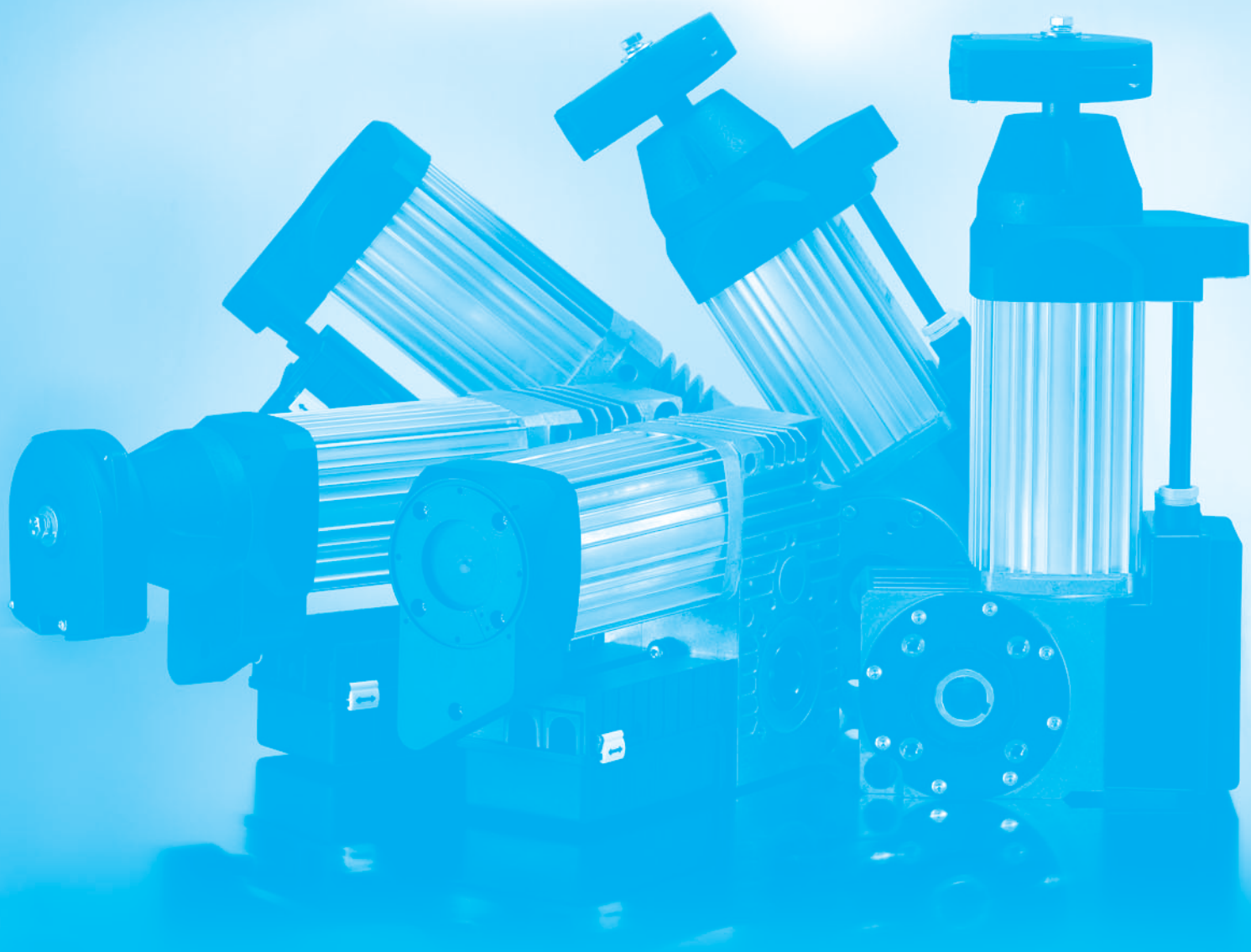


AW 50 – A 140 disconnecting clutch (AK)



AW 50 – A 140 hand crank (HK)





Order Form Sectional Door Drives

Customer ID

Delivery by

- Parcel post
 - Forwarding agent
 - Fixed time delivery by forwarding agent
- _____ hrs
- Standard post c.o.d.
 - TNT
- _____ hrs

Despatch Address

Company

Company

Address

Address

Town/City, Postcode

Town/City, Postcode

Contact

Requested delivery date (of dispatch from Becker)

Order No. / Consignment

[illegible]

Comments

Becker Internal Reference No.

Handling note



Order Form Sectional Door Drives

Customer ID

Delivery by

- Parcel post
 - Forwarding agent
 - Fixed time delivery by forwarding agent
- _____ hrs
- Standard post c.o.d.
 - TNT
- _____ hrs

Despatch Address

Company

Company

Address

Address

Town/City, Postcode

Town/City, Postcode

Contact

Requested delivery date (of dispatch from Becker)

Order No. / Consignment

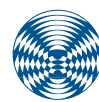
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Comments

Becker Internal Reference No.

Handling note

Notes



General Terms and Conditions of Sale

Clause 1 Applicability of Terms and Conditions

As from 1 January 2005, all contractual relations between BECKER-Antriebe GmbH (hereinafter also referred to as the "Manufacturer") and its customers (hereinafter also referred to as the "Buyer") shall be exclusively governed by the following Standard Terms and Conditions of Sale. They shall also govern all business relations formed in the future, even if this has not been expressly agreed.

The Buyer shall be deemed to have accepted these Terms and Conditions on ordering the goods on the basis of the Manufacturer's offers/quotations. Any counter acknowledgements by the Buyer with reference to its own terms and conditions of business or terms and conditions of sale are hereby rejected. They shall only apply if the Manufacturer has expressly agreed to them beforehand.

All agreements between the Manufacturer and the Buyer for the purpose of executing the order must be recorded in writing.

Clause 2 Quotations and placing orders

Quotations provided by the Manufacturer that are not expressly designated as binding in written form are subject to change without notice. The Buyer's orders shall be held to be offers to form a contract and shall be binding on the Buyer.

The documents belonging to the offer, such as catalogues, illustrations, drawings, weights and measurements, are only approximate unless they are expressly designated as binding and as long as the utility and the functionality of the goods, as agreed by contract, are not impaired by subsequent deviations.

The Manufacturer reserves rights of ownership and copyright to cost estimates, drawings, samples and other documents. They may not be made accessible to third parties. If the Buyer has designated certain plans as confidential, the Manufacturer may only make them available to third parties if the Buyer has given its consent.

Clause 3 Prices

In as far as nothing else is stated in the acknowledgement of the order, the prices are quoted ex works, including loading at the works. However, they do not include packaging, freight charges, postage and insurance. The Manufacturer shall only insure the goods against damage during transport at the Buyer's express wish and for the Buyer's account.

The prices do not include statutory value added tax. Value added tax shall be added at the statutory rate on the date that the invoice is issued and shown separately in the invoice. Additional deliveries or services shall be charged separately.

Clause 4 Time allowed for performance and delivery

Binding dates or time limits for delivery or the performance of services must be agreed in writing.

If the delivery or the services are delayed, either partially or completely, due to circumstances that are not the fault of the Manufacturer, particularly due to Acts of God such as traffic disturbances, strikes, fire, water damage, power cuts, operational disturbances, measures taken by the authorities, lock-outs, shortage of material or other unavoidable incidents, the Manufacturer shall have the right to extend the delivery period for as long as the impediment lasts, plus a reasonable start-up time, or to terminate the contract, either in part or in full, as regards that part of the contract which has not yet been performed.

If the impediment lasts for longer than three months, the Buyer, after setting a reasonable extended deadline, shall have the right to terminate the contract as regards that part of the contract that has not yet been performed. If the delivery period is extended or if the Manufacturer is released from its obligation, the Buyer may not use this as a reason to claim damages.

If the Manufacturer is to comply with its obligations in relation to delivery and the performance of services, the Buyer must duly fulfil its own obligations in good time. If the Buyer delays in accepting the goods, the Manufacturer shall have the right to claim compensation for the damage sustained. As soon as the Buyer is late in accepting the goods, the risk of their accidental deterioration and accidental destruction shall pass to the Buyer.

Clause 5 Partial deliveries

The Manufacturer shall at all times have the right to make partial deliveries and render partial services.

Clause 6 Industrial property rights of third parties

If the Manufacturer is obliged to deliver the goods according to the Buyer's specifications (drawings, models, samples, sketches etc.), the Buyer must guarantee that this will not infringe any industrial property rights applicable to third parties. If the Buyer is in wilful or negligent breach of its obligations, the Buyer must indemnify the Manufacturer against any claims made by third parties.

Clause 7 Passage of risk

In as far as nothing else is stated in the acknowledgement of the order, the risk of the consignment becoming lost or damaged shall pass to the Buyer when the consignment is handed over to the forwarding agent, the carrier or any other person or body engaged to effect shipping. After the passage of risk, the Buyer shall bear the risk for any loss of or damage to the consignment or to the work.

Clause 8 Warranty

The following provisions apply to claims made under warranty if there should be any damage to drives for roller shutters, sunshades/awnings and doors as well as their control components:

1. General
 - 1.1 These terms of warranty and guarantee are valid for products that are used in roller shutter, sunshade/awning and door systems.
 - 1.2 The Manufacturer guarantees that any defects in new products shall be repaired during a period of 2 years in accordance with the statutory provisions in as far as nothing else is agreed in these Standard Terms and Conditions of Sale. The warranty period shall be one year in the case of second-hand products.
 - 1.3 In order for a claim to be made under the warranty, a defect that is the fault of the Manufacturer must be identified during an inspection on the Manufacturer's premises.
 - 1.4 The warranty period shall commence on the delivery of our products to our customers.
 - 1.5 No claim may be made under the warranty if an inspection in accordance with point 1.3. reveals that the complaint is based on improper handling of the product or if the defect is not the fault of the Manufacturer for other reasons.
 - 1.6 If a defect is ascertained, the Manufacturer shall have the right to first make three attempts at subsequent correction. The Manufacturer reserves the right to decide whether a repair shall be carried out, whether to provide a replacement for the equipment or whether to deliver a new piece of equipment.
 - 1.7 If the attempt at subsequent correction has finally failed, the Buyer, after setting a deadline, may exercise the rights set out in Section 437 points 2 and 3 of the German Civil Code (Bürgerliches Gesetzbuch). The deadline must be set in writing; the time limit must be reasonable and be at least 14 working days.

If the Buyer has a statutory right of rescission, this shall only obviate the obligation to provide compensation for lost value under Section 346 (3) point 3 of the German Civil Code if the Buyer has exercised the care of a conscientious businessman.
 - 1.8 The Manufacturer's right to make subsequent correction shall not lapse until damages are paid, even if the Buyer has first made a request to this effect.
 - 1.9 Claims under warranty shall be exclusively governed by the law of the Federal Republic of Germany. The provisions of the UN Sales Convention shall not apply.
 - 1.10 In purchasing the Manufacturer's products, the Buyer acknowledges the terms of the warranty and the guarantee in their currently applicable form.
2. Guarantee for drive mechanisms for roller shutters and sunshades/awnings
 - 2.1 In addition, the Manufacturer gives a three-year guarantee beyond the term of the warranty.

2.2 Drive mechanisms will be repaired free of charge for a period of 5 years as from the date of manufacture. The decision whether to carry out a repair, to provide a replacement of equivalent value for the equipment or whether to deliver a new piece of equipment shall be taken by the Manufacturer on the basis of economic considerations.

2.3 The Manufacturer shall not bear any further costs.

3. Obligation to inspect the goods and give notification of defects

In relation to all deliveries and services provided by the Manufacturer the Buyer undertakes to inspect the goods and give notification of defects in accordance with Section 377 of the German Commercial Code (Handelsgesetzbuch). Section 377 of the German Commercial Code shall apply accordingly if a contract for work and services is formed. After accepting the service or after the passage of risk in relation to the product, the Buyer must immediately inspect the product to ascertain whether it is in good working condition and must immediately (within 10 days) give the Manufacturer comprehensible written notification of any defects found.

After the expiry of this time limit, the goods shall be deemed to have been free of defects at the time of the passage of risk. The Buyer must provide the Manufacturer with all information and verifiable documents that are necessary in order to ascertain the defects. If the Manufacturer inspects the goods and fails to find any defect, the Buyer shall bear the costs of such an inspection.

Clause 9 Reservation of title

Until the satisfaction of all claims that the Manufacturer may have against the Buyer, now or in the future and on any legal grounds (including all balance claims from a current account), the Manufacturer shall be granted the following securities, which it shall release on request in as far as their value permanently exceeds the sum of the claims by more than 10%, the Manufacturer having the right to choose which securities to release.

The goods shall remain the property of the Manufacturer. Any processing or redesign of the goods shall always be carried out for the Manufacturer as Manufacturer, but without implying any obligation on the Manufacturer's part. If the Manufacturer's (co-) ownership of the goods should lapse due to their being amalgamated with other goods, it is hereby agreed that the Buyer's (co-) ownership of the amalgamated item shall pass to the Manufacturer to the extent of the value represented by its own item (the value of the invoice). The Buyer shall store the (jointly owned) property of the Manufacturer free of charge. Goods to which the Manufacturer has a right of (co-) ownership are referred to below as goods under reservation of title.

The Buyer has the right to process and sell the goods under reservation of title in ordinary business transactions as long as the Buyer is not in default. It is not permissible to pledge the goods or assign them by way of security. The Buyer hereby assigns to the Manufacturer by way of security all claims in relation to the goods under reservation of title (including all balance claims from a current account) and resulting from the resale of the goods or arising on other legal grounds (insurance, tort). The Manufacturer grants the Buyer revocable powers to collect the claims assigned to the Manufacturer for the Manufacturer's account in the Buyer's own name. This authorisation to collect claims may only be revoked if the Buyer does not duly comply with its payment obligations.

If third parties attempt to take possession of the goods under reservation of title and particularly in the case of attachment, the Buyer must draw their attention to the fact that they are the property of the Manufacturer and immediately notify the Manufacturer so that the Manufacturer may enforce its rights of ownership. If the third party is not in a position to reimburse the Manufacturer for the costs incurred in this connection, either in or out of court, the Buyer shall be liable for such costs.

If the Buyer is in breach of its contractual obligations – particularly in the case of late payment – the Manufacturer shall have the right to demand the surrender of the goods under reservation of title or, if applicable, to demand the assignment of the Buyer's claims to the surrender of the goods by third parties. If the Manufacturer takes back or seizes the goods under reservation of title, this shall not mean that the Manufacturer has rescinded the agreement.

Clause 10 Payment

In the absence of any other agreement the Manufacturer's invoices are payable within 30 days of the date of the invoice without any deductions. If payment is made within 10 days of the date of the invoice, the Manufacturer shall grant the Buyer a cash discount of 2%.

If delivery is made to a country other than Germany, the Manufacturer shall have the right to demand that the Buyer provide an absolute guarantee of unlimited duration from a German bank to cover the value of the goods in order to secure the Manufacturer's claims to payment.

In the case of partial deliveries or partial services, the Manufacturer shall have the right to charge for the services already rendered. If the Buyer does not punctually comply with its payment obligations in relation to partial deliveries or partial services, the Manufacturer shall have the right to withhold further partial deliveries or partial services or to make further partial deliveries only in return for cash on delivery (C.O.D.) or at the Buyer's expense.

In as far as the Manufacturer has justified doubts concerning the Buyer's creditworthiness or if the Buyer has been late in paying for a previous delivery or partial delivery, the Manufacturer shall have the right to make partial deliveries only in return for cash on delivery (C.O.D.) or at the Buyer's expense. The Buyer shall not have any right of retention or the right to set off claims against the Manufacturer's claims to payment unless these are recognised or undisputed counterclaims or unless they have been established by a final court judgment.

If the Buyer is late in paying the invoices, the Manufacturer shall have the right to claim interest at a rate of 10% above the applicable base rate of the European Central Bank in damages as from the date that the claim becomes due for payment. The interest shall be charged at a lower rate if the Buyer proves that the actual loss was lower. The Manufacturer shall be entitled to prove that the loss was greater.

Clause 11 Limitation of liability

Claims to damages – regardless of the legal grounds – shall be excluded both against the Manufacturer and against its vicarious agents in as far as they have not acted with wilful intent or gross negligence.

In the case of a grossly negligent act or omission, the Manufacturer's liability shall be limited to the typical, foreseeable damage. In the case of an ordinary negligent breach of major contractual obligations through an act or an omission on the part of non-executive staff, the Manufacturer's liability shall be limited to the typical, reasonably foreseeable damage.

At no event shall this affect the Manufacturer's liability for death, physical injury or damage to health, liability under the Product Liability Act and other claims arising from its liability as producer and claims under any Manufacturer's guarantee. If the Buyer invokes the Manufacturer's guarantee, the Buyer shall bear the burden of proving the damage is covered by the terms of the guarantee.

The provision in clause 11 shall also apply to the Buyer's claims to damages in connection with control components and drives for doors, roller shutters and sunshades/awnings.

Clause 12 Liability for defects on processing materials provided

When processing materials provided, the Manufacturer shall not be liable for defects resulting from the behaviour of the material. If parts provided are unfit for use due to material defects or other defects occurring during processing, the Manufacturer must be compensated for the processing costs.

Clause 13 Applicable law, place of jurisdiction, severability

These Terms and Conditions of Sale and all legal relations between the Manufacturer and the Buyer shall be governed by the law of the Federal Republic of Germany.

The provisions of the UN Sales Convention shall not apply.

In as far as the Buyer deals as a business (a "full merchant" in the meaning of the German Commercial Code), is a legal person under public law or a special public fund, the Manufacturer's principal place of business shall be the sole place of jurisdiction for all disputes directly or indirectly arising under the contractual relations.

The same shall apply if the Buyer has no general place of jurisdiction in Germany or if the Buyer's place of residence or usual place of abode is not known at the time that legal action is brought.

If any term of these Terms and Conditions of Sale or any term of other contracts should be or become void, this shall not affect the validity of any other terms or agreements. In this case, the completely or partially void term shall be replaced by a term which is valid and whose commercial purpose comes as close as possible to that of the invalid term.

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BECKER-Antriebe GmbH

Friedrich-Ebert Str. 2-4

35764 Sinn

Deutschland

Tel.: +49 (0) 27 72/5 07-0

Fax: +49 (0) 27 72/5 07-110

E-Mail: info@becker-antriebe.com

www.becker-antriebe.com



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It's that easy.