Drive and return unit AL





- Basic units with interfaces on both sides for drive kit and transmission (active bridge)
- ► Free selection of the motor mounting position on site
- Configurable drive kit (standard gear motor or round shaft)
- Multi-track systems with standard components possible
- Reduced noise emission due to slide rails guided in the drive/return unit
- ► In-stock, standardized components
- Side elements with slots for accommodating holders
- Pulling section; pushing or reversible operation on request

High flexibility and short delivery times thanks to a novel drive concept

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Innovative drive concept



Basic unit AL (head drive direct, center or connection drive) or return unit

+

Configurable drive kit

(standard gear motor or round shaft + transmission kit where applicable)

=

complete drive (transmission drive)

Basic unit curve wheel AL

Configurable drive kit

(standard gear motor or round shaft)

=

complete drive



The well thought-out drive solution enables high flexibility and planning freedom

The in-stock, standardized basic units

- Are quickly and easily combined with the configurable drive kit (standard gear motor or customer-specific interface) into a complete drive
- Guarantee fast availability of the few modular elements/ spare parts

The interface on both sides in the basic unit and return unit

- Enables a free selection of the motor mounting position on-site
- Offers additional transmission interfaces (active bridge)



The standard drives and basic curve wheel units are easily to couple and enable straightforward implementation of multi-track systems and alpine conveyors

For attachment options, see the matrix on page 289

Note: High-pressure cleaning of the ball bearing areas is not permitted.

Basic unit AL head drive direct





- Reduced noise emission due to slide rails guided in the head drive
- Installation of the drive kit possible on the right/left (motor, coupling, flange)
- Drive of a parallel conveyor section or bridge using a hexagonal hollow shaft integrated as standard

Required accessories:

- Drive kit, see page 92
- Slide rail: Length calculation, see page 278
- Motor leg sets, see page 111/115

Optional accessories:

- Active or passive bridge connection kits, see page 102
- Synchronous drive connection kit, see page 104
- Chain sprocket for inclined sections, see page 81
- Transmission kit, see page 100

Scope of delivery: Incl. fastening material

The basic unit is quickly turned into a head drive with variable mounting position by adding a drive kit. With the double-sided hexagonal hollow shaft, other components can be easily driven using a transmission (active bridge).

- Size: all track widths
- Suitable chain types: all
- Permissible chain tensile force: F_{max} = 1250 N
- Section length: $L \le 30$ m
- Conveying speed: v_N = 2 ... 60 m/min, other speeds available on request
- Chain bag to compensate for chain elongation during service life
- Not suitable for reversible operation

Note: A chain sprocket must be used to limit the chain slipping back on inclined sections.

- Stainless steel ball bearings, with sealing on both sides and FDA-compliant lubrication
- Implementation of parallel sections with gap dimension down to zero
- Side elements with slot to attach holders for lateral guides, or similar

Condition on delivery: Assembled: Chain fender enclosed

- Housing: Die-cast aluminum, powder-coated, silver
- Chain wheel: PA
- Chain guide: PA
- Connector: steel; galvanized
- Hexagonal shaft
 up to size 160: PA
 from size 160: Stainless steel + PA
- Ball bearings: Stainless steel/ FDA



No.
3 842 546 120
3 842 546 121
3 842 546 122
3 842 546 123
3 842 546 124
3 842 546 125

3

Order the drive kit in addition to the AL basic unit (see p. 92), to complete your drive.

Drive kit VFplus	No.
	3 842 998 291
See nage 92	

ee page 92



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Chain sprocket	No.
VFplus 65	3 842 553 047
VFplus 90	3 842 553 048
VFplus 120	3 842 553 049
VFplus 160	3 842 553 057
VFplus 240	3 842 553 058
VFplus 320	3 842 553 059

Basic unit AL Connection drive





- Reduced noise emission due to slide rails guided in the connection drive
- Installation of the drive kit possible on the right/left (motor, coupling, flange)
- Drive of a parallel conveyor section or bridge using a hexagonal hollow shaft integrated as standard
- Stainless steel ball bearings, with sealing on both sides and FDA-compliant lubrication
- Side elements with slot to attach holders for lateral guides, or similar

Required accessories:

- Drive kit, see page 92
- Active bridge (A) or passive bridge (B), see p. 102
- Slide rail: Length calculation, see page 278

Scope of delivery: Incl. fastening material

Condition on delivery: Fully assembled

The connection drive is used for driving the conveyor chain in circuit systems with a top-running chain. Supplementing the basic unit connection drive with the drive kit quickly turns it into a complete connection drive with a variable mounting position. For transferring the conveyed material, an active (**A**) or passive bridge (**B**) must be added. The active bridge (**A**) is driven by a transmission from the connection drive

- Size: 65, 90
- Suitable chain types: flat conveyor chain, static friction chain
- Permissible chain tensile force: F_{max} = 1250 N
- Section length: L ≤ 30 m
- Conveying speed: v_N = 2 ... 25 m/min, other speeds available on request
- Chain bag to compensate for chain elongation during service life
- Recommendation: No accumulation operation up to 1500 mm after the connection drive
- Can only be used with a closed profile, for safety reasons
- Reversible operation not permitted
- Not permitted for wet operation or rough ambient conditions

- Housing: Die-cast aluminum, powder-coated
- Chain wheel: PA
- Chain guide: PA
- Connector: steel; galvanized
- Hexagonal shaft up to size 160: PA from size 160: Stainless steel + PA
- Ball bearings: Stainless steel/ FDA
- Chain fender: steel; galvanized



Basic unit connection drive AL	No.
VFplus 65	3 842 547 712
VFplus 90	3 842 547 713

Drive kit VF <i>plus</i>	No.
	3 842 998 291
See page 92	
Connection kit active bridge	No.
VFplus 65	3 842 555 820
VFplus 90	3 842 555 821
See page 102	
Passive bridge connection kit	No.
VFplus 65	3 842 549 015
VFplus 90	3 842 549 016
See page 102	

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Basic unit with center drive





The center drive basic unit is used if the available space is limited at the ends of the sections.

It is quickly turned into a center drive with variable motor mounting position by adding the drive kit

- Size: 65-120
- Chain return on the underside of the profile
- Conveying speed: $v_N = 2 \dots 60$ m/min, other speeds available on request
- Permissible chain tensile force: F_{max} = 600 N
- Max. conveying length: 7 m
- Because no length compensation (chain bag) is present, the chain length must be checked regularly and shortened if necessary
- Recommendation: no accumulation operation until 1000 mm after the return unit
- An assembly module is required for assembling the chain
- Reduced noise emission due to slide rails guided in the center drive
- Installation of the drive kit possible on the right/left (motor, coupling, flange)
- Drive of a parallel conveyor section using a hexagonal hollow shaft integrated as standard

Required accessories:

- Drive kit, see page 85
- Slide rail, see page 56
- Motor leg sets/ESD motor leg sets, see page 115/189
- Assembly module, see page 61

Scope of delivery:

- Incl. fastening material
- For AL systems: Adapter VFplus AL-STS

Condition on delivery: Assembled, (profile connector enclosed)

- Stainless steel ball bearings, with sealing on both sides and FDA-compliant lubrication
- Side elements with slot for attaching holders for lateral guides, or similar

Optional accessories:

- Synchronous drive connection kit, see page 104
- Frequency converter, see page 96
- Transmission kit, see page 100

- Housing: Stainless steel
- Chain wheel: PA
- Chain guide: PA
- Connector: Stainless steel
- Hexagonal shaft, PA
- Ball bearings: Stainless steel/ FDA



Basic unit with center drive	No.
VFplus 65	3 842 552 940
VFplus 90	3 842 552 941
VFplus 120	3 842 552 942

3

Drive kit VFplus	No.
VFplus 65	3 842 998 291
See page 92	

Note: The selection of the parameter SP = STS is imperative. Even if an aluminum track is used because centering is not possible on an AL flange.



Return unit AL Closed head drive AL





- Reduced noise emission due to slide rails guided in the return unit
- Installation of the drive kit possible on the right/left (motor, coupling, flange)
- Drive of a parallel conveyor section or bridge using a hexagonal hollow shaft integrated as standard

Required accessories:

- Slide rail: Length calculation, see page 278
 For use as a drive:
- Assembly module, see page 61
- Drive kit, see page 92
- Motor leg sets, see page 111/115

Scope of delivery: Incl. fastening material

Condition on delivery: Fully assembled Thanks to the innovative drive concept, the return unit can be operated simply by itself or supplemented with a drive kit to be operated as a head drive without chain bag. The section length is limited to a maximum of 7 m.

- Size: all track widths
- Suitable chain types: all
- Permissible chain tensile force
 Return unit function: F_{max} = 1250 N
 Head drive without chain bag function: F_{max} = 600 N
 With shortened maintenance interval, due to chain elongation
- Section length for return unit function: L ≤ 30 m
 Section length for function as drive: L ≤ 7 m
- Conveying speed: v_N = 2 ... 60 m/min, other speeds available on request
- Use as a drive for wedge conveyors, when combined with a drive kit
- Not suitable for reversible operation
- Stainless steel ball bearings, with sealing on both sides and FDA-compliant lubrication
- Implementation of parallel sections with gap dimension down to zero
- Side elements with slot to attach holders for lateral guides, or similar

Optional accessories: Transmission kit, see page 100

- Housing: Die-cast aluminum, powder-coated
- Chain wheel: PA
- Chain guide: PA
- Connector: steel; galvanized
- Hexagonal shaft
 up to size 160: PA
 from size 160: Stainless steel + PA
- Ball bearings: Stainless steel/ FDA



Return unit AL	No.
VFplus 65	3 842 547 516
VFplus 90	3 842 547 517
VFplus 120	3 842 547 518
VFplus 160	3 842 547 519
VFplus 240	3 842 547 520
VFplus 320	3 842 547 521

90° return unit





Advantage over alpine conveyor with head drive:

 shorter chain return, so the required tensile force of the conveyor chain is lower and therefore the possible volume of the alpine conveyor is larger.

Scope of delivery:

- Incl. fastening material
- For AL systems: AL-STS adapter

Condition on delivery: Fully assembled For building alpine conveyors with chain running only on the upper side.

- Only for use with:
 - Connection drive (AL and STS)
 - Curve wheel drive AL (drive kit parameter AC = 1)
- Size: 65, 90
- Section length: L_{max} = 30 m
- Alpine conveyor for curve wheel drive or connection drive

Note: When using conveyor systems without a returning chain, a cover must be mounted by the customer to ensure personal safety.

- No longer necessary to mount the slide rails required for the chain return on the bottom side of the profile
- The required conveyor chain is shorter

- Housing: Stainless steel
- Chain wheel: PA
- Chain guide: PA
- Connector: Stainless steel
- Hexagonal shaft, PA
- Ball bearings: Stainless steel/ FDA





90° return unit		No.
VFplus 65	1	3 842 552 984
VFplus 90	1	3 842 552 985

3

Basic unit Curve wheel drive AL





- Driving several superimposed basic curve wheel units is easily implemented via the integrated hexagonal hollow shafts
- Stainless steel ball bearings, with sealing on both sides and FDA-compliant lubrication
- Side elements with slot to attach holders for lateral guides, or similar

Required accessories:

- Curve wheel drive kit, see page 94
- Assembly module, see page 61
- Slide rail: Length calculation, see page 278
- Leg set, see page 113

Optional accessories:

Alpine conveyor connection kit, see page 106

The curve wheel drive is used for driving the conveyor chain in circuit systems with a top-running chain. Combining the basic unit curve wheel 180° AL with the appropriate drive kit quickly turns it into a curve wheel drive.

- Size: 65 and 90
- Suitable chain types: all
- − Permissible chain tensile force: F_{max} = 400 N per level Section length for closed circuits L ≤ 10 m
- Permissible torque: M_{max} = 60 Nm
 When combining several curve wheel basic units, the motor torque must be distributed across the individual levels
- Conveying speed: $v_N = 4 \dots 21 \text{ m/min}$ For drives with frequency converters (FU), the speed must be limited to a maximum of 21 m/min using control technology
- Recommendation: no accumulation operation until 1000 mm after the curve wheel drive
- Can only be used with a closed profile

Scope of delivery: Incl. fastening material

Condition on delivery: Not assembled

- Housing: Aluminum, die-cast
- Chain wheel: PA; white
- Ball bearings: Stainless steel/ FDA



Basic unit curve wheel AL	α(°)	No.
VFplus 65	180	3 842 547 380
VFplus 90	180	3 842 547 381

	R (mm)	Z ¹⁾
VFplus 65	153.0	28
VFplus 90	165.5	30
¹⁾ Number of teeth		

Drive kit curve wheel VFplus AL	No.
	3 842 998 742
See also page 94	



Drive kit





The adjustable ball catch coupling is protected and integrated in the flange to save space The drive kit is designed to operate the basic head drive/ connection drive units and the return unit (closed drive). It contains a flange for attaching the motor to the basic unit, a hexagonal shaft for transmission of force, as well as other optional equipment features.

- Versions in aluminum (SP = AL) or stainless steel (SP = STS)
- For SP=AL, with adjustable ball catch coupling (Kpg = 1) or without (Kpg = 0). The coupling does not provide personal safety. Preset to maximum chain tensile force at the factory
- With Lenze gear motor (GM = 1) or with an interface for attaching an SEW SA47 gear motor (GM = 2).
 An adaptation is required by the customer for attaching other gear motors (GM = 0), see page 93
- Fixed or adjustable speed (v_N). For an adjustable speed, gear motors must be retrofitted with an FU (frequency converter), see page 96
- Different voltages and supply frequencies (U/f)
- Connections are made using terminal boxes (AT = K) or plugs (AT = S)
- GM = 1 without surface and corrosion protection

Optional accessories: Frequency converter, see page 96

Scope of delivery:

- Incl. fastening material
- Incl. flange, shaft and gear motor (GM = 1)

Material:

- Flange, motor: Die-cast aluminum
- Shaft: Stainless steel/PA
- Ball catch coupling: steel

Condition on delivery: Assembly kit

3

21

ø 25

32



Drive kit VF <i>plus</i>	SP	GM	Kpg	v ℕ (m/min)	U/f (V/Hz) See page 281	AT	No.
	AL; STS*	0: 1; 2	0; 1	5, 10, 13, 16, 21, 27, 33, 40, 50		K; S	3 842 998 291 SP = GM = Kpg = V _N = U/f = AT =

* STS version see page 156

AL GM = 0



Drive kit curve wheel AL





- The transmission of force of several superimposed curve wheels is possible. The motor torque then has to be distributed across all curve wheel levels.
- The adjustable ball catch coupling is protected and integrated in the flange to save space

Required accessories: Motor leg sets, see page 115

Scope of delivery:

- Incl. fastening material
- Incl. fender (contact protection from below)
- Incl. flange, shaft and gear motor (GM = 1)

Material:

- Flange: Aluminum, die-cast
- Shaft: STS
- Connecting sheet, cover sheet: Steel; galvanized
- Ball catch coupling: Steel

The 180° curve wheel (aluminum version) is quickly transformed into a curve wheel drive by using a drive kit. It contains a flange for attaching the motor to the curve wheel, a hexagonal shaft for transmission of force, as well as other optional equipment features.

- To construct a circuit with curve wheel (AC = 0) or an alpine conveyor (AC = 1)
- With preset ball catch coupling (Kpg = 1) for limiting torque or for the alpine conveyor drive kit (AC = 1), also without (Kpg = 0). The coupling does not provide personal safety.
- With Lenze gear motor (GM = 1) or with an interface for attaching an SEW SA47 gear motor (GM = 2).
 An adaptation is required by the customer for attaching other gear motors (GM = 0), see page 95
- Fixed or adjustable speed (v_N). For an adjustable speed, gear motors must be retrofitted with an FU (frequency converter), see page 96
- Different voltages and supply frequencies (U/f)
- Connections are made using terminal boxes (AT = K) or plugs (AT = S)
- GM = 1 without surface and corrosion protection
- Conveying speed: $v_N = 4 \dots 21 \text{ m/min}$. For drives with frequency converters (FU), the speed must be limited to a maximum of 21 m/min using control technology.

Condition on delivery: Assembly kit



Drive kit curve wheel AL	GM	AC	b (mm)	Kpg	v _N (m/min)	U/f (V/Hz) See page 281	AT	No.
	0; 1; 2	0; 1	65; 90	0; 1	5, 10, 13, 21		K; S	3 842 998 742 GM = AC = b = Kpg = V _N = U/f = AT =









Frequency converter motec 8400





In order to operate a gear motor with adjustable speed, the motor needs to be retrofitted with a frequency converter (FU). The frequency converter has a modular design so that it can be easily mounted on a leg set and connected to the motor by cable.

- Connection power: 0.55 kW (connection voltage: 400 V ± 10% ... 460 V/480 V ± 10%)
- Speed (v_N) depending on the base speed of the gear motor used



Complete frequency converter consisting of the modules

- Frequency converter power element (A)
- Communication module (B)
- Connection unit (C)
- Attachment kit (D)
- Optional: Connection cable (E) for the plug-in connection to the gear motor (AT = S)

The individual modules can be ordered separately and are easy to connect with the supplied screws. For the internal and external voltage supply, the modules must be wired by the user (see terminal box assignment, page 285).



Frequency converter (A)

Power unit: 0.55 kW

- (400 V ± 10% ... 460 V/480 V ± 10%)
- Easy commissioning via hand-held terminal
- Easy to replace memory module
- Large LED as status display

Frequency converter	No.
Power element 0.55 kW	3 842 553 447

The speed range of the frequency converter *⁾ is based on the base speed of the motor:

Base speed of motor (m/min) at 50 Hz	Min¹⁾ (m/min)	Max²⁾ (m/min)
5 ³⁾	2	6
10 ³⁾	4	12
13	5	15
16	6	19
21	7	25
27	9	32
33	11	39
40	13	48
50	16	60

*) By accepting a resulting loss of power, a higher bandwidth can be covered (see page 285)

¹⁾ Min corresponds to approx. 16 Hz supply frequency

²⁾ Max corresponds to approx. 60 Hz supply frequency

³⁾ At 460 V/60 Hz max (m/min) 20% higher

Communication module (B)

- Used to control the frequency converter
- Cable connection options

Depending on their function, the individual communication modules are provided with the corresponding connections.

Communication module	No.
Standard I/O	3 842 553 449
AS-i	3 842 553 453
CANopen	3 842 553 454
EtherNet/IP	3 842 553 451
EtherCAT	3 842 553 459
PROFIBUS	3 842 553 452
PROFINET	3 842 553 450







Connection unit (C)

- Power grid connection options

Connection unit	No.
	3 842 553 445

Attachment kit (D)

 For the simple attachment of the frequency converter to the AL section support (slot/s with a 60 or 80 strut profile)

Attachment kit	No.
	3 842 553 457

Connection cable (E)

- For connecting the gear motor with the frequency converter (length: 1 m)
- For the drive kit AT = S (direct wiring with AT = K)

Connection cable	No.
	3 842 553 512



Manual control unit Switch/potentiometer unit



29416



Manual control unit

The manual control unit is required for the parameterization of drives with frequency converters.

In addition, you can:

- Control (e.g. block and release)
- Display operating data
- Steplessly regulate the transport speed
- Transfer parameter sets to other basic devices

Manual control unit	No.
	3 842 552 821



Switch/potentiometer unit

The switch/potentiometer unit is used to fine tune the transport speed within a range that has been preset with the manual control unit. The switch/potentiometer unit is connected to the frequency converter by a cable. The drive can be started or stopped with the rotary switch.

Note: It is imperative that the direction in which the chain conveyor is running is checked prior to commissioning.

No.
3 842 553 184

Scope of delivery:

A, B: Incl. 2.5 m connection cable

Transmission kit





- Installation of the drive kit possible on the right/left (motor, coupling, flange)
- Very quiet, as transmission takes place through toothed

Required accessories: Leg set, see page 111

Scope of delivery: Incl. fastening material

Material:

- Side plates: Stainless steel
- Belt: Rubber compound
- Cover: ABS
- Connecting parts: aluminum

If the available space is not sufficient for mounting the drive kit directly on the basic unit, the transmission kit also enables conversion to a transmission drive at a later date. The basic units head drive, connection drive and closed head drive are quickly turned into a transmission drive with variable mounting position with the transmission kit and drive kit.

- Only for AL systems
- Size: 65, 90, 120
- Permissible chain tensile force: F_{max} = 1250 N
- Support required
- Not suitable for wet operation/cleaning
- Mounting on STS version on request

belt

 Stainless steel ball bearings, with sealing on both sides and FDA-compliant lubrication

Condition on delivery: Fully assembled



|--|

Transmission kit VFplus	No.
	3 842 552 900

b = 65, 90, 120

Motor support

The leg set is mounted on the inside (below the chain).

Note: The motor must be mounted so that there are no collisions with the support.

- H: Transport height (top edge of chain)
- S: Leg set height
- L: Profile length (L = S 15)

Connection kit active (A) bridge Connection kit passive (B) bridge





 A: Simple transmission of the drive force using hexagonal hollow shafts integrated into the basic unit or return unit as standard

A+B: Can be retrofitted into a standard configuration at any time

Scope of delivery:

- A+ B: Incl. fastening material
- A: Transmission and protective cover

Material:

- Active bridge: Stainless steel/PA/POM/ABS/PUR
- Passive bridge: Stainless steel/POM

The active and passive bridges are used as a transfer unit between the basic unit and return unit or with the connection drive to bridge the flat conveyor chain.

- Size: 65-160
- Only for flat conveyor chain and static friction chain
- For dimensionally stable products with an even transport surface
- Height adjustment: approx. 3 mm
- Additional versions (e.g. machine variants) available on request

A: The active bridge is driven by a transmission (on the drive or return unit side).

- Suitable for conveyed materials from approx. 100 mm in length (depending on the speed, position of the center of gravity, product friction, etc.)
- Freely selectable mounting position (L/R)
- Not permitted for wet operation or rough ambient conditions
- B: The passive bridge serves to bridge the conveyor trench.
- The conveyed goods are transferred via passive rollers
- Suitable for goods from approx. 300 mm length
- ► A+B: Active and passive bridges can be used at section ends for product transfer

Condition on delivery: Partially assembled



В	No.
174	3 842 555 820
199	3 842 555 821
229	3 842 555 822
269	3 842 555 823
	B 174 199 229 269

No.
3 842 549 015
3 842 549 016
3 842 549 017
3 842 549 018



Connection kit Synchronous drive, external motor/internal motor





The synchronous drive connection kit is used to synchronously drive two conveyor sections with only one motor.

- External synchronous drive:
 - Motor mounting position outside the parallel sections
 - Use of AL holders (see page 111, 115), minimum distance between the sections: $A_{min AL} \ge 20 \text{ mm}$
- Internal synchronous drive:
 - Motor mounting position between the parallel sections for drive kit GM = 1 (see page 92), customer check required for other motor types

Condition on delivery: Not assembled

- Shaft: Stainless steel
- Coupling: PA

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Alpine conveyor connection kit





With the alpine conveyor connection kit, an alpine conveyor can be easily assembled in sizes 65 mm or 90 mm by combining multiple aluminum curve wheels.

- Shaft: Stainless steel
- Coupling: polyamide

