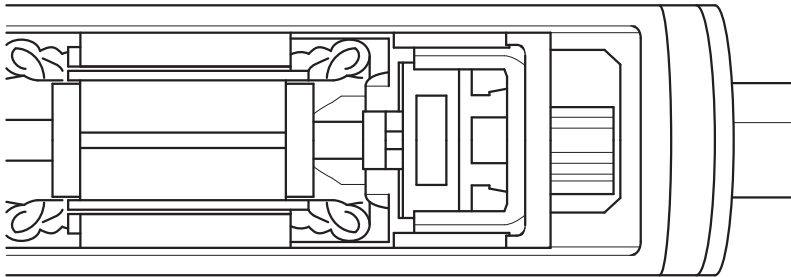


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User Manual
Interroll Drum Motor
C Series
S-SMP Series
S Series (DC Versions)

Manufacturer

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Introduction

Notes about working with the installation and operating instructions

The following drum motor types are described in these installation and operating instructions:

- 80C, 113C
- 113S-SMP, 113S-SMP
- 80S DC, 113S DC

Contents of these installation and operating instructions

These installation and operating instructions contain important notes and information about the various operating phases of the drum motor.

The installation and operating instructions describe the drum motor at the time of its initial delivery by Interroll.

In addition to these installation and operating instructions, special contractual agreements and technical documents apply to special versions.

Installation and operating instructions are part of the product

- ▶ For trouble-free, safe operation and warranty claims, read the installation and operating instructions first and follow the instructions.
- ▶ Always keep the installation and operating instructions in the vicinity of the drum motor.
- ▶ Pass the installation and operating instructions on to any subsequent operator or user.
- ▶ **NOTICE! The manufacturer does not accept any liability for faults or defects due to non-observance of these installation and operating instructions.**
- ▶ If you still have questions after reading the installation and operating instructions, please contact Interroll customer service. Contact persons close to you can be found on the Internet under www.interroll.com/contact.

Introduction

Warning notices in this manual

The warning notices refer to risks which may arise while using the drum motor. They are available in four danger levels with the following callouts:

Signal word	Meaning
DANGER	Identifies a danger with high risk that can lead to death or serious injury if it is not avoided.
WARNING	Identifies a danger with medium risk that can lead to death or serious injury if it is not avoided.
CAUTION	Identifies a danger with low risk that can lead to minor or medium injury if it is not avoided.
NOTICE	Identifies a danger that can lead to property damages.

Symbols



This symbol marks useful and important information.

Requirement:

- This symbol represents a prerequisite to be met prior to assembly and maintenance work.
- ▶ This symbol marks the steps to be carried out.

Safety

General safety instructions

The drum motor is designed according to the state of the art and is reliable in operation, once distributed. However, risks may still arise:

- Danger of death or risk of physical injury to the user or bystanders.
- Adverse effects on the drum motor and other facts.



Disregarding the notices in these installation and operating instructions may lead to serious injury.

- ▶ Always read the entire installation and operating instructions with the safety instructions before starting to work with the drum motor and follow the notices.
- ▶ Only instructed and qualified persons may work with the drum motor.
- ▶ Always keep these installation and operating instructions on hand when working on the drum motor so that you can consult them quickly if required.
- ▶ Always comply with relevant national safety regulations.
- ▶ If you have any questions after reading these installation and operating instructions, feel free to contact the Interroll customer service: www.interroll.com/contact

Intended use

The drum motor is intended for use in industrial environments, supermarkets and airports and is used for transporting general cargo, such as parts, cardboard boxes or boxes, as well as transporting bulk material such as granular material, powder and other fluid materials. The drum motor must be integrated into a conveyor module or conveyor system. Any other use is considered inappropriate.

Use of the drum motor is only allowed in the areas described in the product information chapter.

Any modifications that affect the safety of the product are not permitted.

The drum motor may only be operated within the defined operating limits.

Unintended use

The drum motor must not be used for transporting people.

The drum motor is not intended for use under impact or shock loads.

The drum motor is not designed to be used under water. Such a use leads to personal or fatal injuries from electrocution as well as the penetration of water, resulting in a short circuit or motor damage.

The drum motor may not be used as a drive for cranes or lifting devices or for the corresponding hoist ropes, cables or chains.

Use of the drum motor for anything other than the intended purpose is subject to approval by Interroll.

Safety

Unless otherwise stated in writing and/or specified in a quote, Interroll and its dealers shall assume no liability for product damage or failure which result from failure to observe these specification and restrictions (see the chapter "Electrical data" of the respective series).

Personnel qualification

Unqualified personnel cannot recognize risks and, as a result, is subject to greater dangers.

- ▶ Authorize only qualified personnel with the activities described in these installation and operating instructions.
- ▶ The operating company must ensure that the personnel follows locally applicable regulations and rules during their work with regard to safety and dangers.

The following target groups are addressed in these installation and operating instructions:

Operators	Operators have been instructed in operating and cleaning the drum motor and follow the safety guidelines.
Service personnel	The service personnel features a technical training or has undergone training by the manufacturer and performs the maintenance and repair tasks.
Electricians	Persons working on electrical installations must have the pertinent technical training.

Dangers



The following list informs you about the various types of danger or damage that may occur while working with the drum motor.

- | | |
|----------------------|--|
| Bodily injury | <ul style="list-style-type: none"> ▶ Maintenance or repair work must only be executed by authorized and qualified persons in accordance with the applicable regulations. ▶ Before turning on the drum motor, ensure that no unauthorized persons are near the conveyor. |
| Electricity | <ul style="list-style-type: none"> ▶ Only perform installation and maintenance work after you have switched off the power. Ensure that the drum motor cannot be turned on accidentally. |
| Oil | <ul style="list-style-type: none"> ▶ Do not ingest the oil. In general, the oil used is relatively non-toxic, but it can still contain hazardous substances. Ingestion can lead to nausea, vomiting and/or diarrhea. Generally, medical care is not required, unless large quantities have been ingested. Nevertheless, a physician should be consulted. ▶ Avoid skin and eye contact. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin and lead to skin problems such as oil acne and folliculitis. ▶ Wipe up spilled oil as quickly as possible to avoid slippery surfaces. Ensure that oil does not reach the environment. Properly dispose of dirty rags or cleaning materials to avoid self-ignition and fires. ▶ Extinguish oil fires with foam, spraying water or water mist, dry chemical powder or carbon dioxide. Do not extinguish with water jet. Wear suitable protective clothing, incl. breathing mask. ▶ Observe the corresponding certificates at www.interroll.com. |



Safety

- Rotating parts**
 - ▶ Do not reach into areas between drum motor and conveyor belts or roller chains.
 - ▶ Tie long hair together.
 - ▶ Never wear loose clothing.
 - ▶ Never wear jewelery, such as necklaces or bracelets.
- Hot motor parts**
 - ▶ Do not touch the surface of the drum motor. It can result in burns, even under regular operating temperature.
- Working environment**
 - ▶ Do not use the drum motor in explosive atmospheres.
 - ▶ Remove equipment or material which is not required from the workspace.
 - ▶ Wear safety shoes.
 - ▶ Clearly specify and monitor the way materials are placed on the conveyor.
- Faults during operation**
 - ▶ Regularly check the drum motor for visible damage.
 - ▶ In case of fumes, unusual noise or blocked or damaged materials, stop the drum motor at once and ensure that the RollerDrive cannot be started accidentally.
 - ▶ Contact qualified personnel immediately to find the source of the fault.
 - ▶ During operation, do not step on the drum motor or the conveyor/the system in which it is installed.
- Maintenance**
 - ▶ Check the product regularly for visible damages, unusual noise and firm seating of fittings, screws and nuts. An additional maintenance is not required.
 - ▶ Do not open the drum motor.
- Accidental motor start**
 - ▶ Take care during installation and maintenance work or in the event of a drum motor fault: The drum motor could start up unintentionally.

Interfaces to other devices

Hazards may occur while integrating the drum motor into a complete system. These are not part of these installation and operating instructions and have to be analyzed during the design, installation and startup of the complete system.

- ▶ After installing the drum motor in a conveyor module, check the complete system for new potential hazard zones before switching on the conveyor.
- ▶ Additional constructive measures may be required.

Product information

Product description

The drum motor is a completely enclosed electrical drive roller. It replaces external components, such as motors and gear boxes that require frequent maintenance.

The drum motor can be used in environments with high coarse and fine dust exposure as well as exposed to water jets and spraying water and is resistant to most of the aggressive ambient conditions. Thanks to protection classification IP66 or IP69k and its stainless steel design (upon request), the drum motor is also suitable for use in the food processing industry and pharmaceutical industry, as well as for applications with high hygienic demands. The drum motor can be used without and with a rubber lagging to increase the friction between drum motor and conveyor belt, or with a profile coating to drive modular or profile belts.

The drum motors of the C and S-SMP series are driven by an asynchronous AC induction motor. It is available in different power stages and for most of the international supply voltages.

Drum motors of the S-DC series are driven by a 24-V DC brush motor.

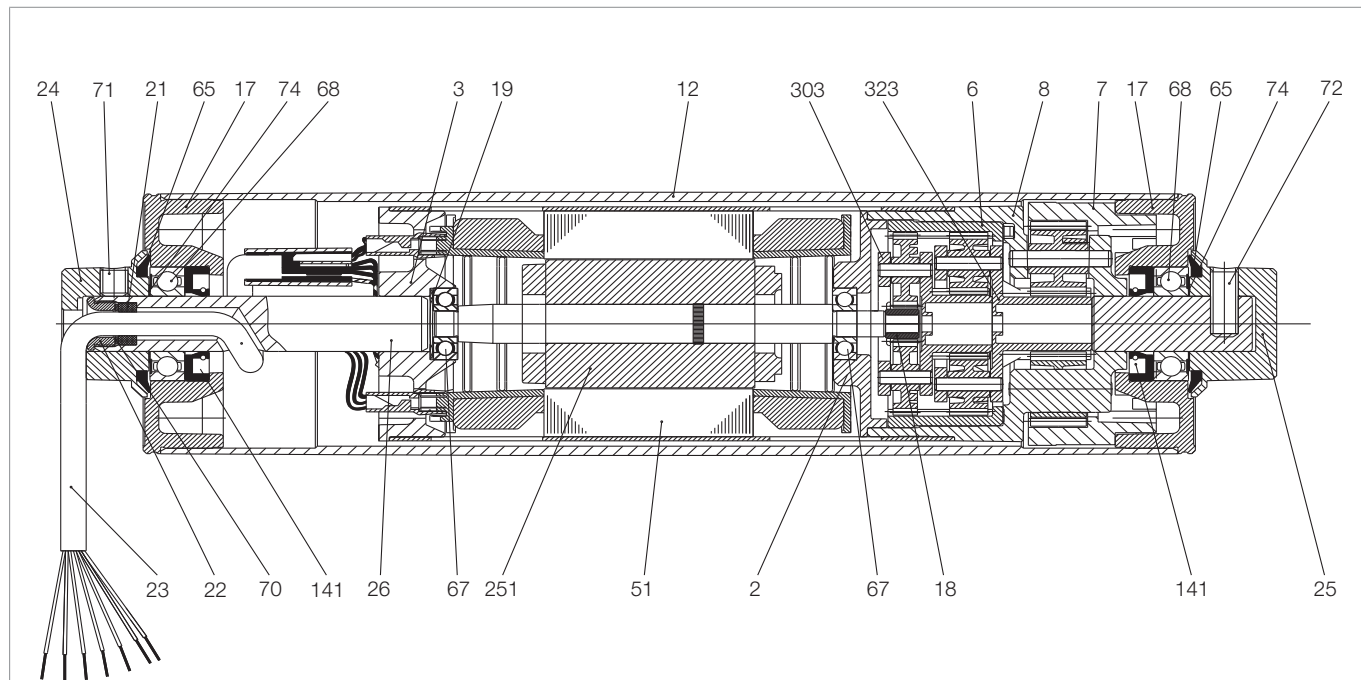
The drum motor contains oil as lubricant and coolant which dissipates the heat via the drum shell and the conveyor belt.

If a drum motor without belt or with a modular belt is used, a special design is available to ensure cooling.

Options

Integrated thermal overload protection: A thermal circuit breaker integrated in the winding head protects against overheating. The switch trips if the motor overheats. However, it has to be connected to a suitable external control device that interrupts the current supply to the motor in case of overheating (see "*Thermal protection*", page 29).

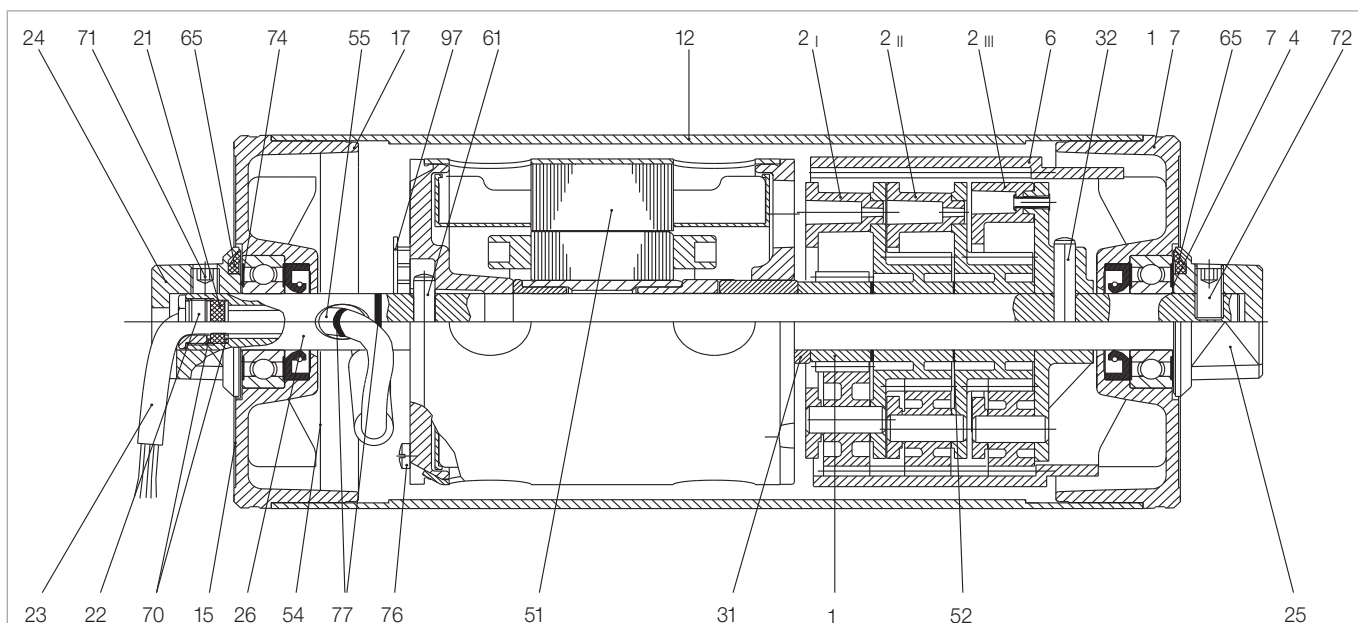
Components



80C, 80S-SMP

2	Front stator shield	26	Rear axle
3	Rear stator shield	51	Stator
6	Toothed sprocket	65	Lip seal
7	Toothed sprocket	67	Bearing 608 2RS
8	Gear boxes	68	Bearing 6003 2RS
12	Tube	70	Washer
17	Bearing cover	71	Stop screw M8 x 8 mm
18	Rotor pinion	72	Stop screw M8 x 20 mm
19	Shaft washer	74	Distance washer
21	Grommet	141	Oil seal
22	Connection	251	Rotor
23	Cable	303	Gear stage 1
24	Shaft cap (open)	323	Gear stage 2
25	Shaft cap (closed)		

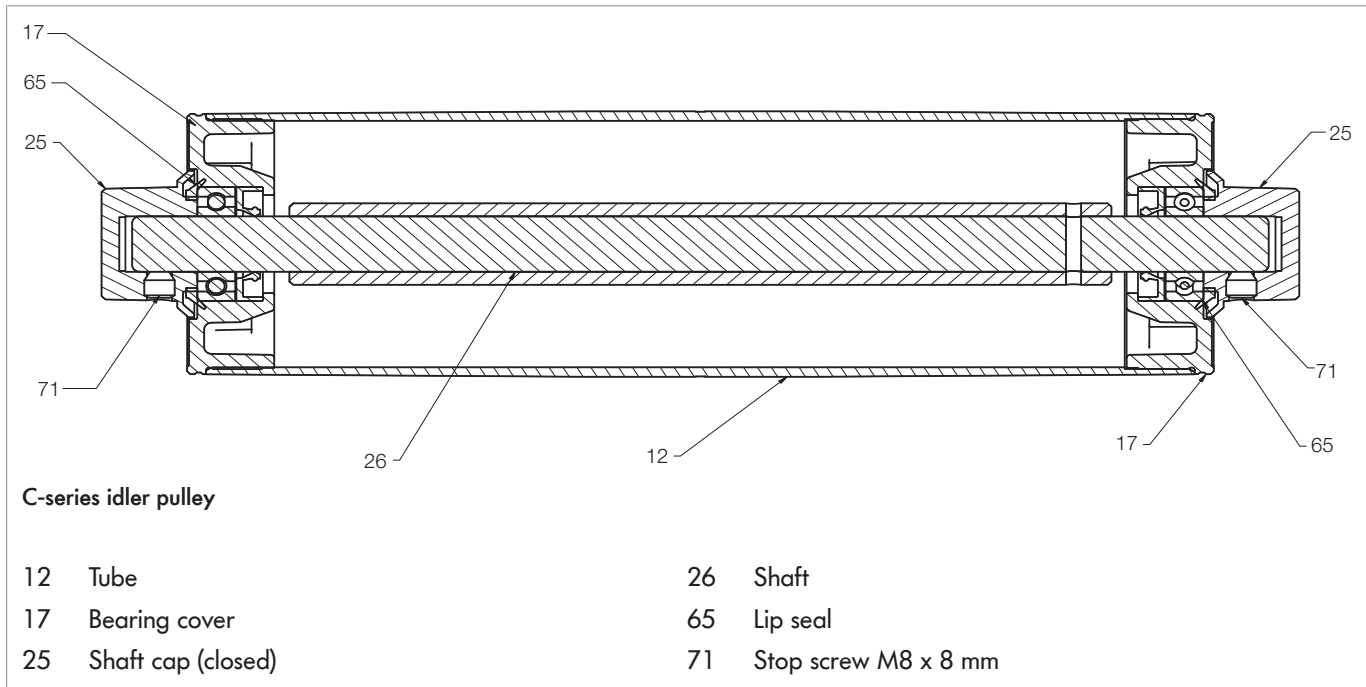
Product information



113C, 113S-SMP

- | | | | |
|----|---------------------------|----|----------------------|
| 1 | Shaft | 51 | Electric motor/rotor |
| 2 | Gear stages I, II and III | 52 | Washer |
| 6 | Toothed sprocket | 54 | Protective disk |
| 12 | Tube | 55 | Insulating tube |
| 15 | Nameplate | 61 | Gear pin |
| 17 | Bearing housing | 65 | Shaft seal |
| 21 | Rubber bushing | 70 | Washer |
| 22 | Pressure bushing | 71 | Setscrew |
| 23 | Cable | 72 | Setscrew |
| 24 | Shaft cap open | 74 | Distance washer |
| 25 | Shaft cap closed | 76 | Grounding screw |
| 26 | Shaft | 77 | Strain relief |
| 31 | Coupling | 97 | Cable clamping piece |
| 32 | Gear pin | | |

Product information



Product information

Type plate of drum motor

The information on the type plate of the drum motor is intended for its identification. This is the only way for the drum motor to be used properly.

Type plate of C series

1 Country of manufacture	11 Current consumption with blocked motor
2 Place of manufacture	12 Rated power
3 Max. ambient temperature and overload factor	13 Insulation class
4 Oil type	14 Serial number
5 Drum speed	15 Reference number
6 Rated voltage and rated frequency	16 Protection rate
7 Rated current	17 Power factor
8 Roller or tube length	18 Article number
9 International Electrotechnical Commission: Standard for drum motors	19 Drum motor type
10 Capacitor value	20 Country and date of manufacture



Product information

Product identification

The information given below is required in order to identify a drum motor. The values for a specific drum motor can be entered in the last column.

Information	Possible value	Own value
Type plate of drum motor	Motor type Speed in m/s Serial number Tube length in mm Number of poles Power in kW	
Drum diameter (tube diameter)	e.g. 112.3 mm drum ends 113.3 mm drum center	
Cover material	e.g. rubber, thickness, profile	

Technical data

C Series and S-SMP Series

Protection class	IP64 (standard) IP66 (optional)
Ambient temperature range for standard applications ¹⁾	+5 °C to +40 °C
Ambient temperature range for low-temperature applications ¹⁾	-25 °C to +15 °C
Cycle times	max. 3 starts/stops per minute Higher cycle times are possible when operated with a frequency inverter (VFA) or special design
Installation altitude above sea level	Max. 1000 m

¹⁾ Depending on the ambient temperature, different types of oil are required. For ambient temperatures below +5 °C, we recommend using a standstill heater. For temperatures below -20 °C, special shaft seals and cables have to be used.

Product information

S-DC Series	Power supply	12 V DC to 24 V DC Min. 3.2 A Frequency of voltage waves \geq 1 kHz
	Fuse	2.7 A
	Full load current	2.7 A
	Full load current for continuous operation	2.4 A
	Protection class	IP66/67
	Ambient temperature range for standard applications	0 °C to +40 °C
	Ambient temperature range for low-temperature applications ²⁾	-20 °C to +40 °C
	Cycle times	Max. 20 starts/stops per minute Higher cycle times on request
	Max. noise development	< 0.5 m/s: zero load/full load: 50/52 dBA > 0.5 m/s: zero load/full load: 58/60 dBA
	Expected service life	3,000 hrs in continuous operation 3,000,000 starts/stops
	Cable	Standard cable, halogen-free Cable length: min. 1.1 m Diameter: \varnothing 7 mm, cores 2 x 1.5 mm ²

²⁾ On request.



Product information

Electrical data for C series and S-SMP series

Abbreviations see "List of abbreviations", page 50.

80C/80S-SMP

P	I _{st}	U	f	n _p	I _f	I _k	I ₀	R _M	R _A	C	Cos φ	Th
kW	mm	V	Hz		A	A	A	Ω	Ω	μF		
0.025	75	1x230	50	4	0.39	0.68	0.31	150	150	3	0.998	S01
0.050	50	1x230	50	2	0.54	1.17	0.38	82	125	3	0.997	S01
0.075	60	1x230	50	2	0.68	1.53	0.48	66	85	4	1	S01
0.075	60	1x230	50	2	0.68	1.53	0.48	66	85	4	0.997	S01
0.110	75	1x230	50	2	0.94	1.86	0.61	51	37	6	0.999	S01
0.085	75	1x230	60	2	0.68	2.20	0.50	38	29	6	0.996	S01
0.085	75	1x230	50	2	0.73	1.80	0.37	48	52	6	0.98	S01
0.085	75	1x115	60	2	1.42	4.40	0.93	9.5	9.5	20	0.99	S01
0.085	75	1x100	50	2	1.73	4.40	1.32	9	7.3	25	0.95	S01
0.085	75	1x100	60	2	1.53	4.20	1.21	9	7.3	25	0.99	S01
0.050	60	3x400	50	2	0.22	0.74	0.17	342	-	-	0.71	S01
0.075	60	3x400	50	2	0.30	1.07	0.24	226	-	-	0.7	S01
0.085	60	3x400	50	2	0.32	1.07	0.24	226	-	-	0.74	S01
0.085	60	3x230	50	2	0.53	1.83	0.40	74.2	-	-	0.73	S01
0.085	60	3x230	60	2	0.50	1.70	0.30	74.2	-	-	0.78	S01
0.075	60	3x230	50	2	0.51	1.83	0.40	74.2	-	-	0.69	S01
0.075	60	3x230	60	2	0.49	1.70	0.30	74.2	-	-	0.74	S01
0.085	60	3x200	50	2	0.54	1.88	0.36	68.5	-	-	0.78	S01
0.085	60	3x200	60	2	0.53	1.67	0.31	68.5	-	-	0.82	S01
For frequency inverter												
0.085	60	3x230	50	2	0.53	1.83	0.40	74.2	-	-	0.73	S01
0.085	60	3x230	60	2	0.50	1.70	0.30	74.2	-	-	0.78	S01

Product information

113C/113S-SMP

P	I_{sr}	U	f	n_p	I_f	I_k	I₀	R_M	R_A	C	Cos φ	Th
kW	mm	V	Hz		A	A	A	Ω	Ω	μF		
0.015	40	1x220	50	8	0.37	0.50	0.34	280	335	3	1.00	SP1
0.040	60	3x480	60	8	0.3	0.42	0.32	260	-	3	0.57	S01 ¹⁾
0.040	48	3x230	50	8	0.64	0.93	0.63	125	-	-	0.58	S01
0.040	48	3x230	60	8	0.55	0.93	0.52	125	-	-	0.58	S01
0.040	48	3x400	50	8	0.37	0.53	0.36	125	-	-	0.58	S01
0.040	48	3x460	60	8	0.36	0.53	0.35	125	-	-	0.58	S01
0.060	40	1x220-240	50	4	0.73-0.76	1.40	0.60-0.63	63.5	100	4	0.98	-
0.060	40	1x220-240	60	4	0.85-0.86	1.45	0.60-0.61	63.5	100	4	0.97	-
0.060	40	1x220-240	50	4	0.73-0.76	1.40	0.60-0.63	63.5	100	4	0.98	S01
0.060	40	1x220-240	60	4	0.85-0.86	1.45	0.60-0.61	63.5	100	4	0.97	S01
0.060	40	1x110	50	4	1.90	6.60	1.80	10.8	24.8	12	0.85	S06
0.060-0.070	40	1x110-115	60	4	1.45-1.50	3.40-3.55	1.80	10.8	24.8	12	0.90	S06
0.090	40	1x115	60	4	2.20	4.30	1.80	7.7	13.7	20	0.90	S01
0.090	40	1x220-240	50	4	0.93-1.05	1.65-1.85	0.80-1.00	42.5	65.5	6	0.91	-
0.090	40	1x220-240	60	4	1.09-1.11	1.6-1.8	0.71-0.74	42.5	65.5	6	0.96	-
0.090	40	1x220-240	50	4	0.93-1.05	1.65-1.85	0.80-1.00	42.5	65.5	6	0.91	SP1
0.090	40	1x220-240	60	4	1.09-1.11	1.6-1.8	0.71-0.74	42.5	65.5	6	0.96	SP1
0.110	40	1x230	50	4	1.20	2.00	0.80	47	74	6	1.00	S06
0.110	40	1x230	50	4	1.20	2.30	0.95	26.5	83.5	6	0.85	S01
0.110	40	3x200	50	4	0.81	2.00	0.75	22.2	-	-	0.75	S01 ¹⁾
0.110	40	3x200-208	60	4	0.81	2.00	0.58-0.61	22.2	-	-	0.69	S01 ¹⁾
0.110	40	3x230	50	4	0.80	2.60	0.70	28	-	-	0.67	S01
0.110	40	3x230	60	4	0.75	2.40	0.58	28	-	-	0.71	S01
0.110	40	3x380-420	50	4	0.44-0.46	1.50	0.38-0.40	83.5	-	-	0.72	S01
0.110	40	3x380-440	60	4	0.42-0.44	1.40	0.35	83.5	-	-	0.70	S01
0.110	40	3x230	50	4	0.85	2.20	0.70	92.5	-	-	0.67	S01 ²⁾
0.110	40	3x230	60	4	0.78	2.16	0.59	92.5	-	-	0.71	S01 ²⁾
0.110	40	3x400	50	4	0.44-0.46	1.38	0.41	92.5	-	-	0.72	S01 ³⁾
0.110	40	3x460	60	4	0.42-0.44	1.50	0.42	92.5	-	-	0.70	S01 ³⁾
0.110	40	3x460	60	4	0.45	1.00	0.32	104	-	-	0.61	S01
0.110	40	3x480	60	4	0.43	1.00	0.34	104	-	-	0.61	S01
0.110	60	1x110	50	4	2.60	5.80	2.5	6.3	13.4	20	0.88	-

Product information

P	I_{st}	U	f	n_p	I_f	I_k	I₀	R_M	R_A	C	Cos φ	Th
kW	mm	V	Hz		A	A	A	Ω	Ω	μF		
0.110	60	1x110-115	60	4	2.15-2.20	5.60	1.44-1.52	6.3	13.4	16	0.94	–
0.110	60	1x110-115	50	4	2.60	5.80	2.50-2.75	6.3	13.4	20	0.88	S06
0.110	60	1x110-115	60	4	2.15-2.20	5.60	1.44-1.58	6.3	13.4	16	0.94	S06
0.110	60	1x200-240	50	4	1.00-1.13	2.40	0.85-0.90	32.5	51.5	6	0.88	–
0.110	60	1x208-240	60	4	1.05-1.27	2.30	0.70-0.88	32.5	51.5	6	0.99	–
0.110	60	1x200-240	50	4	1.00-1.13	2.4	0.85-0.90	32.5	51.5	6	0.88	SP1
0.110	60	1x208-240	60	4	1.05-1.27	2.03	0.70-0.88	32.5	51.5	6	0.99	SP1
0.110	60	1x200-240	50	4	1.00-1.13	2.40	0.85-0.90	32.5	51.5	6	0.88	S01
0.110	60	1x208-240	60	4	1.05-1.27	2.30	0.70-0.88	32.5	51.5	6	0.99	S01
0.110	75	1x220-240	50	6	1.16	2.20	1.05	45.9	55.5	8	0.99	S01 ¹⁾
0.110	75	1x220-240	60	6	1.40-1.43	2.25	1.00	45.9	55.5	8	0.99	S01
0.110	75	3x220-240	50	6	1.00-1.10	2.25	0.98	30	-	–	0.67	S01
0.110	75	3x240	60	6	0.98	1.90	0.98	30	-	–	0.67	S01
0.110	75	3x380-420	50	6	0.60-0.64	1.30	0.57-0.65	92	-	–	0.62	S01
0.110	75	3x440	60	6	0.57	1.10	0.55	92	-	–	0.62	S01
0.150	75	1x110-115	50	4	3.60	7.80	3.10	4	9.8	25	0.80	S06
0.150	75	1x110-115	60	4	2.80	7.50	1.95	4	9.8	20	0.89	S06
0.160	60	3x220-240	50	4	0.97-1.00	3.40	0.78-0.83	24.2	-	–	0.76	S01
0.160	60	3x220-240	60	4	0.96-1.03	3.40	0.71	24.2	-	–	0.79	S01
0.160	48	3x210-240	50	4	0.97-1.00	3.17	0.67	64.1	-	–	0.76	S01 ²⁾
0.160	48	3x210-240	60	4	0.87	2.97	0.67	64.1	-	–	0.79	S01
0.160	48	3x380-420	50	4	0.56-0.58	1.83	0.49	64.1	-	–	0.76	S01 ³⁾
0.160	48	3x380-440	60	4	0.52	2.00	0.47	64.1	-	–	0.78	S01
0.180	60	3x200	50	4	1.22	4.80	1.06	12.2	-	–	0.71	S01
0.180	60	3x200-208	60	4	1.09	4.50-4.70	0.83-0.87	12.2	-	–	0.75-0.72	S01
0.180	66	3x210-240	50	4	1.43	3.40	0.78-0.83	47	-	–	0.76	S01 ⁴⁾
0.180	66	3x210-240	60	4	1.23	3.30	0.7-0.73	47	-	–	0.73	S01
0.180	66	3x380-420	50	4	0.61-0.63	2.30	0.51	47	-	–	0.76	S01 ⁴⁾
0.180	66	3x460	60	4	0.63-0.70	2.60	0.49	47	-	–	0.73	S01
0.180	75	3x210-240	50	4	1.00	4.00	0.78-0.83	15	-	–	0.76	S01 ⁴⁾
0.180	75	3x210-240	60	4	1.00-1.25	4.75	0.70-0.73	15	-	–	0.73	S01
0.180	75	3x380-420	50	4	0.61-0.63	2.30	0.45-0.48	47	-	–	0.76	S01 ⁴⁾
0.180	75	3x380-440	60	4	0.63-0.70	2.60	0.40-0.42	47	-	–	0.73	S01
0.180	75	3x440	50	4	0.56	1.85	0.45	58	-	–	0.76	S01
0.180	75	3x460-500	60	4	0.58-0.51	2.00	0.43	58	-	–	0.66	S01

Product information

P	I _{st}	U	f	n _p	I _f	I _k	I _o	R _M	R _A	C	Cos φ	Th
kW	mm	V	Hz		A	A	A	Ω	Ω	μF		
0.180	75	3x525-575	60	4	0.40-0.47	1.90	0.31-0.40	88.5	-	-	0.66-0.73	S06
0.180	75	1x220	50	4	1.51	2.56	1.02	22.4	36.5	8	0.97	S01
0.250	60	3x380-420	50	2	0.68	2.60	0.44	33.5	-	-	0.86	S01

¹⁾ Not UL-conform

²⁾ Use low-voltage cable

³⁾ Use high-voltage cable

⁴⁾ Use low-voltage cable with physical insulation

Mechanical data for S-DC-series

Abbreviations see "List of abbreviations", page 50.

80S DC

P _N	gs	i	v	n _A	M _A	F _N	TE	Min. start weight	SL _{min}
kW			m/s	min ⁻¹	Nm	N	N	kg	mm
0.044	3	115.2	0.12	28	12.6	315	2000	100	285
		96.0	0.15	35	10.5	263	2000	80	285
		78.5	0.18	42	8.6	215	2000	67	285
		52.9	0.27	63	5.8	175	2000	52	285
		71.6	0.20	47	7.8	145	2000	44	285
		63.5	0.23	54	7.0	195	2000	60	285
		43.3	0.33	77	4.7	118	2000	36	285
		48.8	0.30	70	5.4	135	2000	40	285
		19.2	0.76	178	1.6	40	1500	16	285
		16.0	0.90	211	1.3	33	1500	13	285
13.1	1.10	258	1.1	28	1500	11	285		

Product information

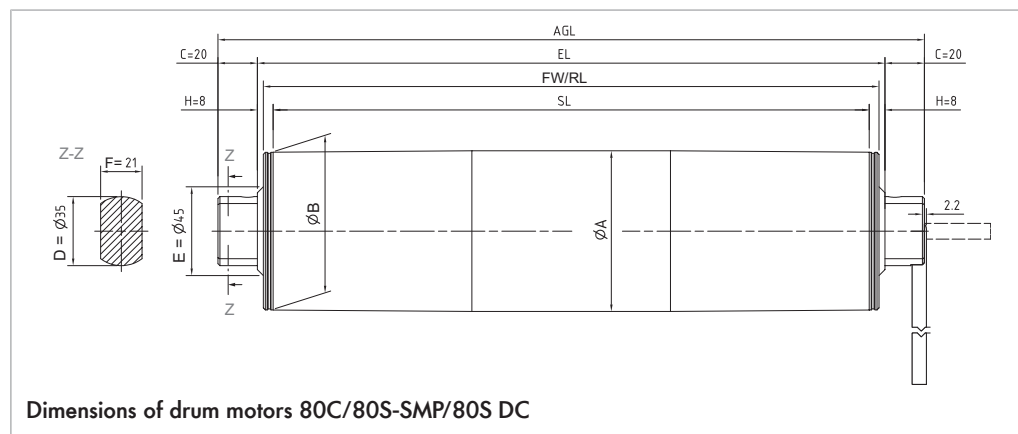
113S DC

P_N	gs	i	v	n_A	M_A	F_N	TE	Min. start weight	SL_{min}
kW			m/s	min^{-1}	Nm	N	N	kg	mm
0.044	3	115.2	0.18	26	12.6	223	2000	71	273
		96.0	0.21	30	10.5	186	2000	57	273
		78.5	0.26	37	8.6	152	2000	47	273
		71.6	0.29	42	7.8	138	2000	42	273
		63.5	0.32	46	7.0	124	2000	37	273
		52.9	0.39	56	5.8	103	2000	31	273
		48.8	0.42	60	5.4	96	2000	28	273
		43.3	0.47	68	4.7	83	2000	25	273
		19.2	1.07	154	1.6	28	1500	11	273
		16.0	1.28	184	1.3	23	1500	9	273
13.1	1.56	224	1.1	19	1500	8	273		

Dimensions

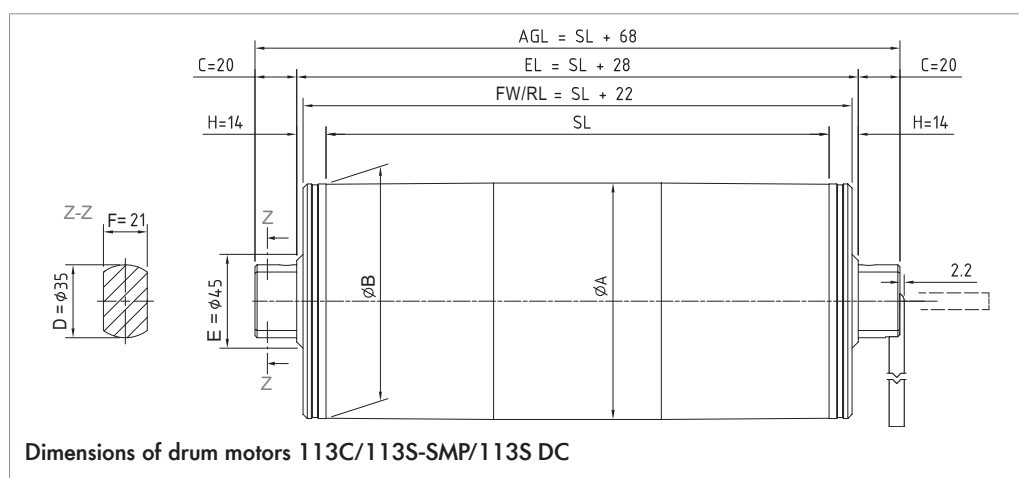
Some dimensions are listed as "SL+". SL is the abbreviation for "shell length" (tube length). This dimension can be derived from the RL data on the type plate of the drum motor (see "Type plate of drum motor", page 11). For drum motors 80S and 113C, the RL dimension is identical to the FW data.

- For drum motors 80C/80S-SMP/80S DC: $SL = RL - 10$
- For drum motors 113C/113S-SMP/113S DC: $SL = RL - 22$



Product information

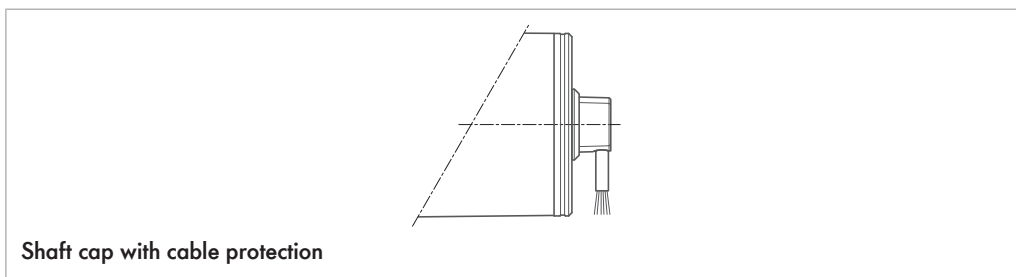
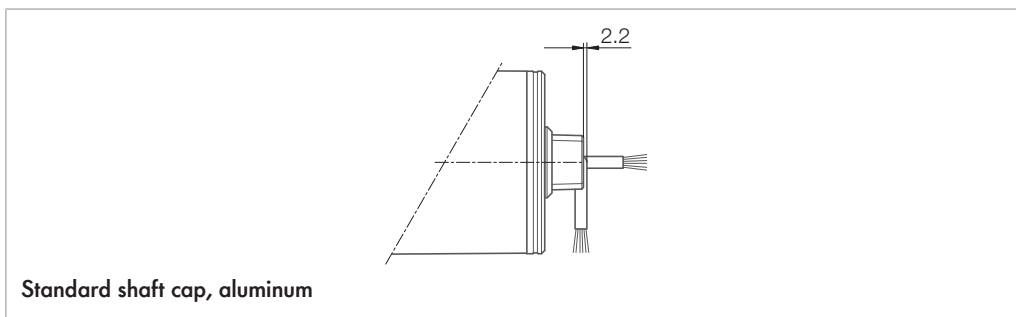
Type	A mm	B mm	C mm	D mm	S mm	F mm	H mm	FW mm	EL mm	AGL mm
80C, 80S-SMP, 80S-DC convex SL 270 to 612 mm	81.5	80	20	35	45	21	8	SL+10	SL+16	SL+68
80C, 80S-SMP, 80S-DC convex SL 612 to 962 mm	83	81	20	35	45	21	8	SL+10	SL+16	SL+68
80C, 80S-SMP, 80S-DC cylindrical SL 270 to 612 mm	80.5	80.5	20	35	45	21	8	SL+10	SL+16	SL+68
80C, 80S-SMP, 80S-DC cylindrical SL 612 to 962 mm	83	83	20	35	45	21	8	SL+10	SL+16	SL+68



Type	A mm	B mm	C mm	D mm	S mm	F mm	H mm	FW mm	EL mm	AGL mm
113C, 113S-SMP, 113S-DC convex	113.3	112.5	20	35	45	21	14	SL+22	SL+28	SL+68
113C, 113S-SMP, 113S-DC cylindrical	113.3	113.3	20	35	45	21	14	SL+22	SL+28	SL+68

Product information

Shaft caps and screwed cable glands



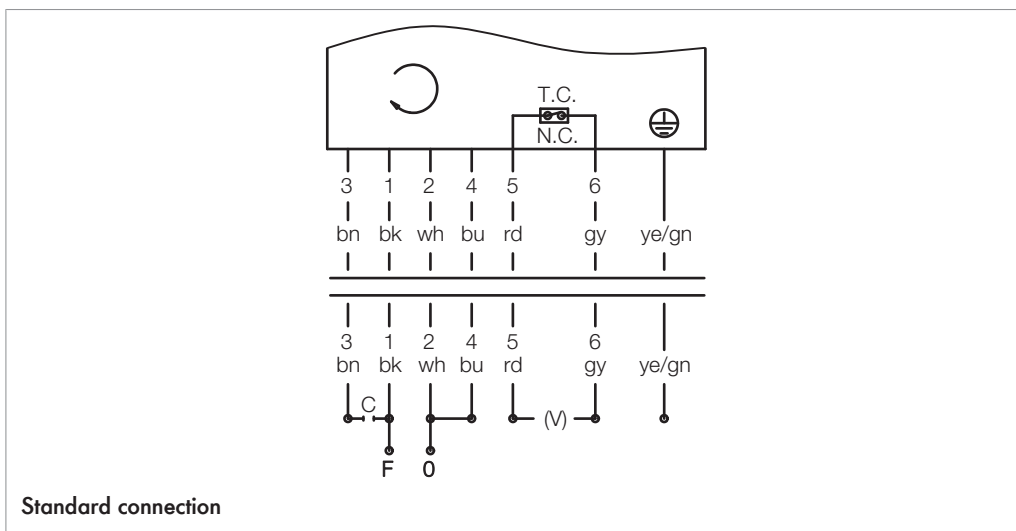
Connection diagrams for C series

These installation and operating instructions list only standard connection diagrams. For other connection types, the connection diagram is supplied separately with the drum motor.

Abbreviations, see "List of abbreviations", page 50.

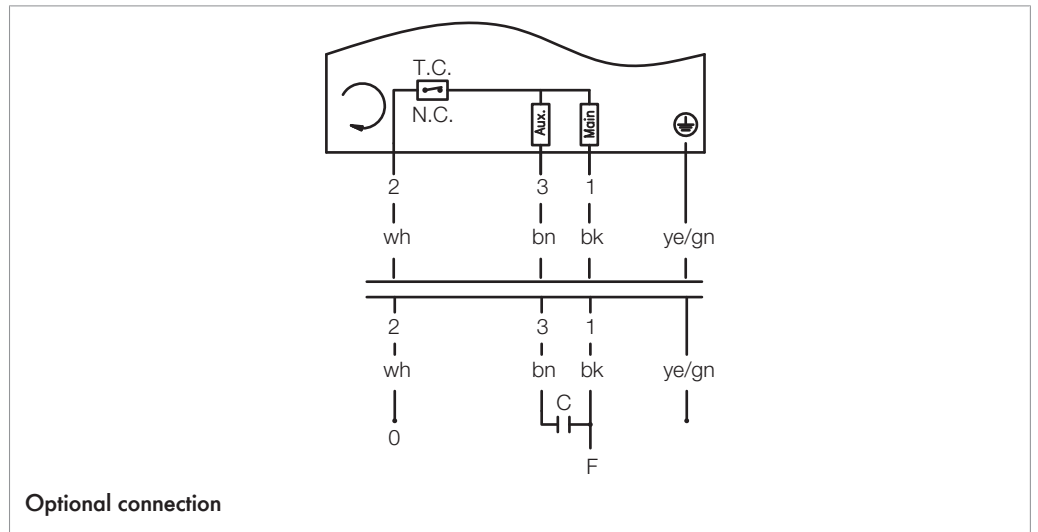
Color coding, see "Color coding", page 51.

Drum motors 80C, 113C

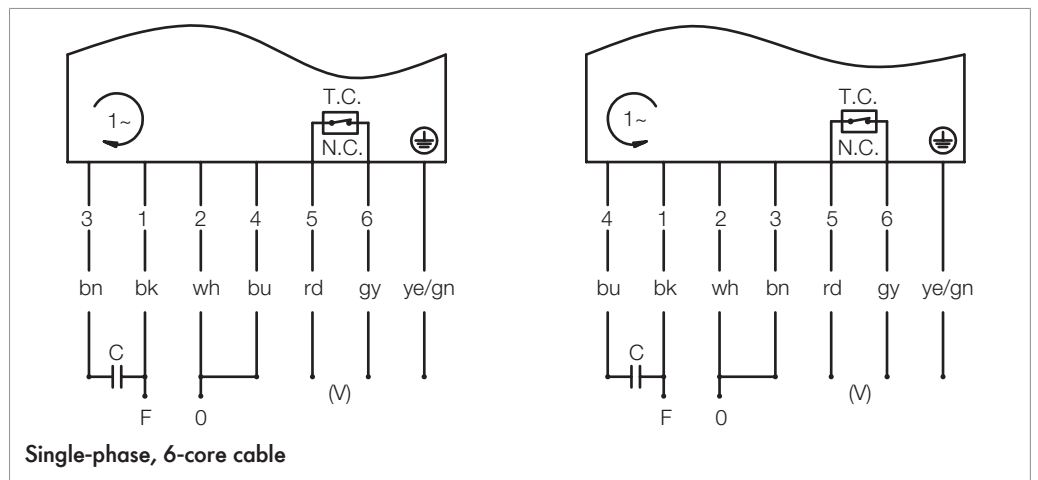
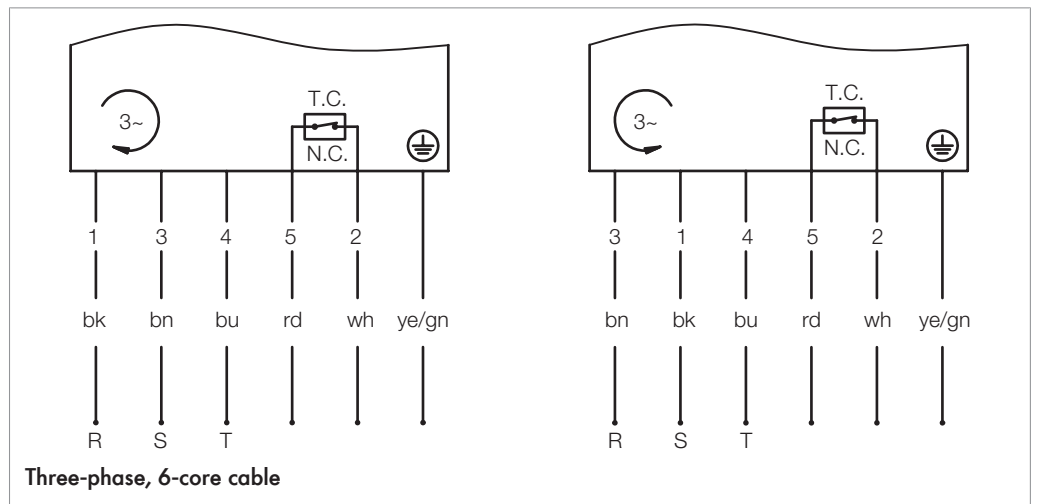


Thermal protection as an option. For a drum motor without thermal protection, cores 5 and 6 are dummies.

Product information

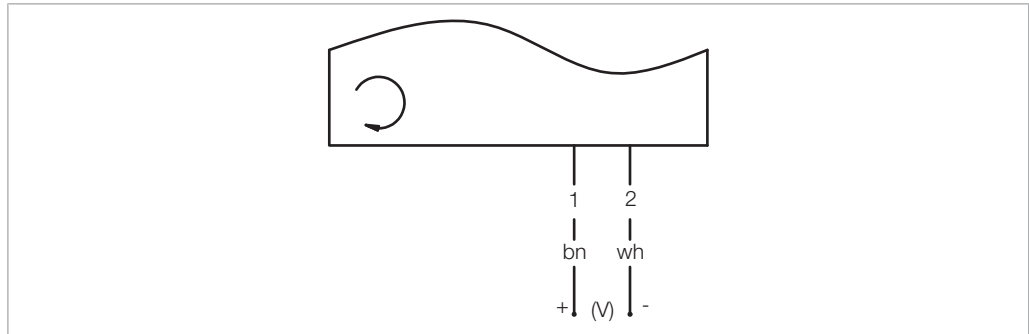


Drum motors 80S-SMP,
113S-SMP



Product information

Drum motors 80S DC,
113S DC

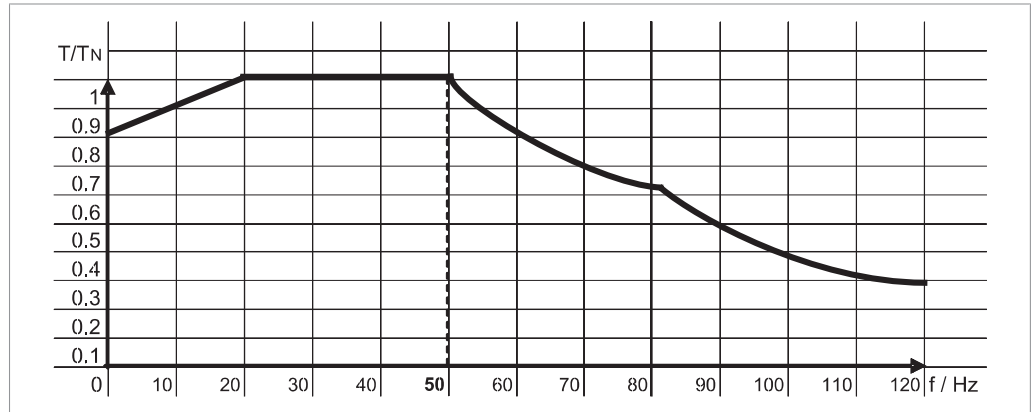


Note: For counter clockwise direction of rotation, reverse brown and white.

Options and accessories

Asynchronous drum motors with frequency inverters

Torque depends on input frequency



Operating frequency Hz	5	10	15	20	25	30-50	55	60	65	70	
Available motor torque in %											
Motor rated frequency	50 Hz	80	85	90	95	100	100	91	83	77	71
	60 Hz	75	80	85	90	95	100	100	100	92	86

Operating frequency Hz	75	80	85	90	95	100	105	110	115	120	
Available motor torque in %											
Motor rated frequency	50 Hz	67	63	58	51	46	42	38	34	32	29
	60 Hz	80	75	71	68	63	60	55	50	45	42

Value 1: based on motor rated frequency 50 Hz

Value 2: based on motor rated frequency 60 Hz

The torque dependency depicted in the figure above is expressed as $P = T \times \omega$. At a reduced operating frequency of below 20/24 Hz, motor torque is reduced by changing heat dissipation conditions. The power loss dissipation is a result of the oil quantity, in contrast to standard fan motors. For frequencies starting at 80- 85/95- 100 Hz, the curve for the output torque does not have the hyperbolic shape indicated above, but is instead replaced by a quadratic function that is the result of the effect of the pull-out torque and the voltage. The output/frequency characteristics of most frequency inverters supplied with 3 x 400 V/3 x 460 V can be parameterized to 230 V/50 Hz in order to connect 230-V motors. This causes further losses in the motor and leads to its overheating.



Options and accessories

Frequency inverter
parameters

- **Clock frequency:** A high clock frequency leads to a better utilization factor of the motor. Optimum frequencies are 8 or 16 kHz. Parameters such as smooth running test quality (motor is running smoothly) and noise development are also affected positively by high frequencies.
- **Voltage increase:** Interroll motor windings are dimensioned for a rated voltage increase rate of 1 kV/ μ s. If a frequency inverter generates a steeper voltage increase, motor chokes can be installed between frequency inverter and motor. But since all drum motors from Interroll run in an oil bath, the risk of overheating or damage to the motor due to large voltage increases is extremely low. If in doubt, please contact your local Interroll dealer.
- **Voltage:** If a frequency inverter with single-phase supply is installed at the drum motor, it must be ensured that the specified motor is dimensioned for the supply voltage used and is connected accordingly!
- **Output frequency:** Caution should be exercised for applications with output frequencies above 87/100 Hz. High frequencies can cause noise, vibrations and resonances, and reduce the rated output torque of the motor. Caution should be exercised when using inverters with frequencies below 25 Hz since this could result in overheating or power loss of the motor. If in doubt, please contact your local Interroll dealer.
- **Motor output:** Not all frequency inverters can operate motors with more than 6 poles and/or output powers below 0.2 KW/0.25 HP. If in doubt, please contact your local Interroll dealer or the supplier of the frequency inverters.
- **Frequency inverter parameters:** Frequency inverters are usually delivered with a standard parameter set. This allows the inverter to be used immediately. However, the standard parameters may not be optimally set for your motor and may have to be adjusted to the specific motor.

Options and accessories

Thermal protection

Under normal operating conditions, the thermal circuit breaker integrated in the stator winding is closed. When the motor limit temperature is reached (overheating), the switch opens at a preset temperature (depending on the insulation class of the winding) to prevent damage to the motor.

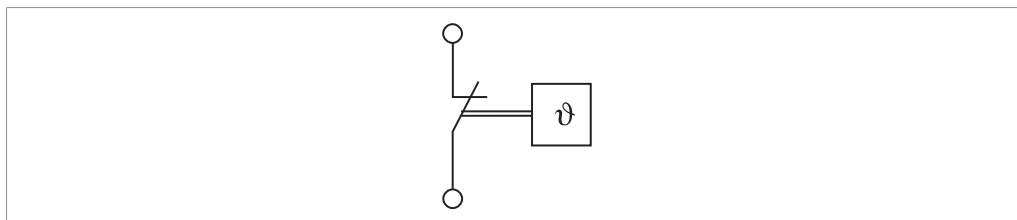
⚠ WARNING

The thermal circuit breaker is automatically reset after the motor has cooled off.

Inadvertent start-up of the motor

- ▶ The thermal circuit breaker must be connected in series with a suitable relay or contactor so that the current supply to the motor is safely interrupted when the switch trips.
- ▶ After the switch has tripped, wait until the motor has cooled off, and ensure prior to switch-on that there is no danger to persons.

**Standard design:
Temperature limiter,
automatically resetting**

**Service life: 10,000 cycles**

AC	$\cos \varphi = 1$	2.5 A	250 VAC
	$\cos \varphi = 0.6$	1.6 A	250 VAC
DC		1.6 A	24 VDC
		1.25 A	48 VDC

Service life: 2,000 cycles

AC	$\cos \varphi = 1$	6.3 A	250 VAC
Reset temperature		40 K \pm 15 K	
Resistance		< 50 m Ω	
Contact bounce time		< 1 ms	

Transport and storage

Transport

CAUTION

Improper transport poses a risk of injury.

- ▶ Transport-related tasks should only be carried out by qualified and authorized persons.
 - ▶ For drum motors with a diameter of 136 mm or more, use a crane or hoisting equipment during the transport. The rated load of the crane or hoisting equipment must be greater than the weight of the drum motor. Crane rope/cable and hoisting equipment must be securely fastened to the shafts of the drum motor during lifting.
 - ▶ Do not stack pallets.
 - ▶ Before the transport, ensure that the drum motor is sufficiently secured.
-

NOTICE

Risk of damages to the drum motor due to improper transport

- ▶ Avoid serious impacts during transport.
 - ▶ Do not lift the drum motor at the cable or terminal box.
 - ▶ Do not transfer the drum motors between warm and cold environments. This may lead to the formation of condensation.
 - ▶ For the transport in shipping containers, ensure that the temperature in the container is not permanently above 70 °C (158 °F).
 - ▶ Ensure that motors of the S-series that are intended for vertical mounting are transported in horizontal position.
-
- ▶ Check each drum motor visually for damage after transport.
 - ▶ In the event of damage, take photos of the damaged parts.
 - ▶ In case of a transport damage, immediately notify the carrier and Interroll to avoid losing any claims for compensation.

Transport and storage

Storage

⚠ CAUTION

Risk of injury due to improper storage

- ▶ Do not stack pallets.
 - ▶ Do not stack more than four cardboard boxes on top of each other.
 - ▶ Ensure that proper fastening is in place.
-
- ▶ Store the drum motor in a clean, dry and enclosed location at +15 to +30 °C; protect it from moisture and humidity.
 - ▶ For storage times exceeding three months, turn the shaft occasionally to prevent damage to the shaft seals.
 - ▶ Inspect each drum motor for damage after storage.

Assembly and installation

Warning notices concerning the installation

CAUTION

Rotating parts and inadvertent startup of the motor

Risk of crushing for fingers



- ▶ Do not reach into areas between drum motor and conveyor belts or roller chains.
- ▶ Install a protection device (such as a guard plate) to prevent fingers from getting trapped in the chain belts or roller chains.
- ▶ Install an appropriate warning on the conveyor.

NOTICE

Risk of damage leading to failure or shortened service life of the drum motor

- ▶ Observe the following safety information.
- ▶ Do not drop or mishandle the drum motor to avoid internal damages.
- ▶ Prior to the installation, inspect each drum motor for damage after storage.
- ▶ Do not hold, carry, or support the drum motor by the wires extending out of the mounting shaft to avoid damage to the internal parts and seals.
- ▶ Do not twist the motor cable.
- ▶ Do not overtension the belt.

Installing the drum motor

Positioning the drum motor

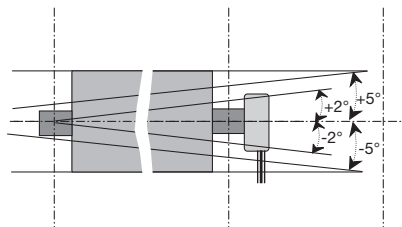
- ▶ Ensure that the data on the type plate are correct and match the ordered and confirmed product.



A special design must be used for installing the drum motor in non-horizontal applications. The exact version must be specified at the time of ordering. In case of doubt, contact Interroll.



The drum motor must be mounted horizontally with a clearance of $\pm 5^\circ$ (drum motor 113S: $\pm 2^\circ$), unless specified otherwise in the order confirmation.



Position of the drum motor

Assembly and installation

Installing the motor with mounting brackets

The mounting brackets must be sufficiently robust to withstand the motor torque.

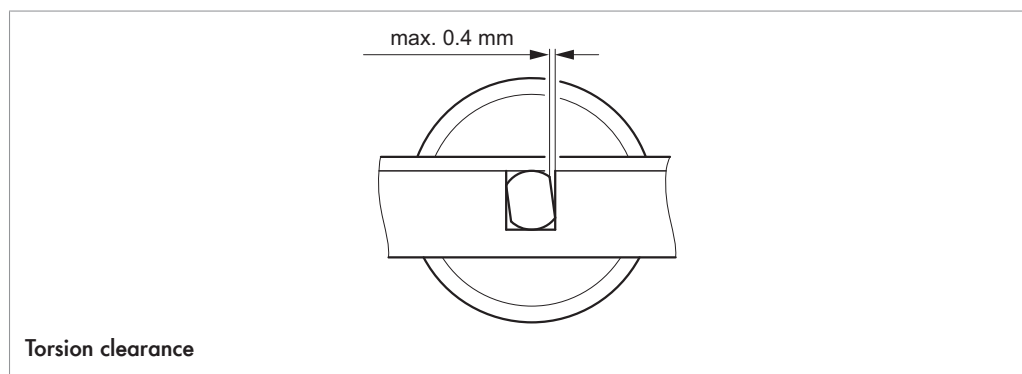
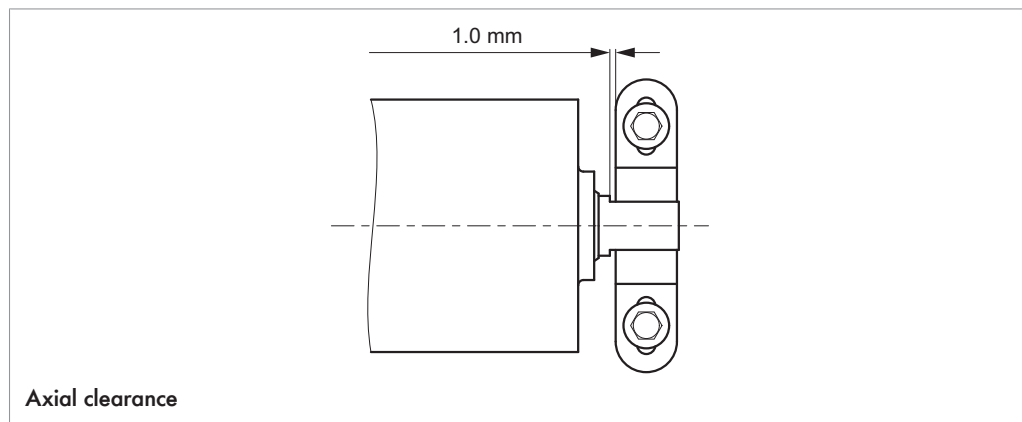
- ▶ Install the brackets at the conveyor or machine frame. Ensure that the drum motor is installed parallel to the idler pulley and at a right angle to the conveyor frame.
- ▶ Insert the shaft ends of the drum motor into the mounting brackets according to the "Mounting position" table (see above).
- ▶ If the shaft has to be attached to the mounting brackets (e.g. with a screw through a cross bore in the journal), it should be done on one side only so that the other side is axially movable in case of thermal expansion.

Fastening for motors of S and D series as well as motors of type 80i, 113i, 217i and 315i: on the side without cable connection
 Fastening for motors of type 138i, 165i, 216i and 113E: on the side of the cable connection

- ▶ Ensure that at least 80% of the drum motor flats are held by the mounting brackets.
- ▶ Ensure that the distance between the flats and the bracket is not more than 0.4 mm.
- ▶ If the drum motor is used for frequent reversing duty or for start/stop operation: Ensure that there is no gap between the flats and mounting brackets.



The drum motor can also be installed without mounting brackets. In this case, the shaft ends must be installed into corresponding recesses in the conveyor frame; these recesses must be reinforced in such a way that they meet the aforementioned requirements.



- ▶ If necessary, install a support plate above the mounting bracket to secure the drum motor axle. However, ensure that the axle remains movable to one side to compensate for thermal expansion.

Belt assembly

Belt width / tube length

NOTICE

Risk of overheating if belt is too small

- ▶ Ensure that the drum motor is operated with a conveyor belt that covers at least 70 % of the drum tube.

For drum motors with less than 70 % belt contact and drum motors with form-fit driven belts or without belt, a motor dimensioned for this purpose is required. This must be specified at the time of ordering. If in doubt, please contact Interroll.

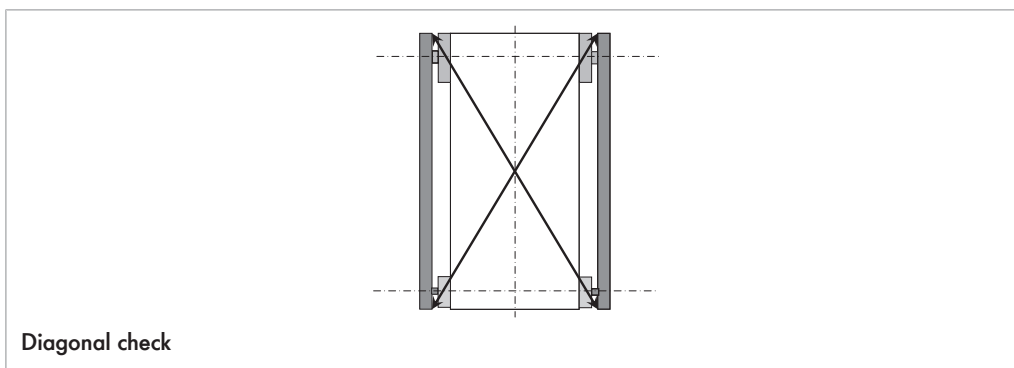
Belt adjustment

Convex tubes center and guide the belt during regular operation. Nevertheless, the belt should be carefully aligned, frequently checked during startup and readjusted depending on the load.

NOTICE

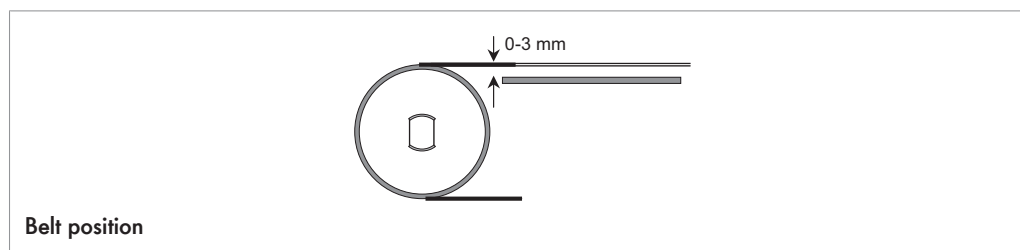
Adjustment errors can lead to a shortened service life as well as damages of the belt and the drum motor ball bearings.

- ▶ Adjust the drum motor, belt and idler pulleys according to the instructions in this instruction manual.
- ▶ Adjust the belt with the synchronous returning rollers and support rollers and/or (if available) with the idler pulleys or snub pulleys.
- ▶ Check the diagonal dimensions (between the shafts of the drum motor and the shafts of the end/guide rollers or from belt edge to belt edge).
The difference must not be greater than 0.5 %.



The distance between the belt and the gliding plate must not exceed 3 mm.

Assembly and installation



Tensioning the belt

The required belt tension depends on the respective application. The pertinent information is located in the catalog of the belt manufacturer, or contact Interroll.

NOTICE

Overtensioned belts can lead to a shortened service life, wear of bearings or oil leakage.

- ▶ Do not tension the belt beyond the value recommended by the manufacturer or specified in the product tables of the catalog.
 - ▶ Link belts, steel belts, Teflon-coated fiberglass belts and hot-formed PU belts should not be tensioned (see the instructions from the belt manufacturer).
-
- ▶ Adjust the belt tension by tightening or loosening the corresponding screws on both sides of the conveyor to ensure that the drum motor is positioned at a right angle to the conveyor frame and parallel to the end roller/idler pulley.
 - ▶ Tension the belt only so much that belt and load are being driven.

Rubber coating

A rubber coating that was applied retroactively can cause the drum motor to overheat. For some drum motors, there may be restrictions concerning the thickness of the rubber coating. To avoid a thermal overload, the required output should be multiplied by 1.2.



Please contact Interroll concerning the type and maximum thickness of a rubber coating, if you want to apply one.

Warning notices concerning the electrical installation

⚠ WARNING

Electrocution due to improper installation

- ▶ All electrical work should only be performed by qualified and authorized persons.
- ▶ Disconnect the power supply before installing, removing or rewiring the drum motor.
- ▶ Always observe the connection instructions and ensure that the power and control circuits of the motor are correctly connected.
- ▶ Ensure that metal conveyor belt frames are sufficiently grounded.

NOTICE

Damage of the drum motor from incorrect power supply

- ▶ Do not connect an AC drum motor to an excessively high DC voltage supply and a DC drum motor to an AC voltage supply – this will lead to irreparable damages.
 - ▶ Do not connect drum motors of the D-series directly to the supply system. D-drum motors must be operated via suitable frequency inverters or servo drive controllers.
-

Electrical connection of the drum motor

Connecting the drum motor – with a cable

- ▶ Ensure that the motor is connected to the correct supply voltage according to the motor type plate.
- ▶ Ensure that the drum motor is correctly grounded with the yellow-green cable.
- ▶ Connect the motor according to the connection diagrams (see "Connection diagrams for C series", page 24).

Single-phase motor

If a starting torque of 100% is required, single-phase drum motors should be connected to a starting capacitor and a run capacitor. An operation without starting capacitor can reduce the starting torque to 70 % of the rated torque listed in the Interroll catalog.

Interroll recommends the use of capacitor type class B 10,000 hours / 450 V according to EN 60252.

Connect the starting capacitors according to the connection diagrams (see "Connection diagrams for C series", page 24).

External motor protection

The motor must be protected by a suitable fuse or other external protective device. The protective device must be set to the rated current of the corresponding motor (see type plate).

The voltage supply must be protected against a potential counter EMF. The motor generates a counter EMF if an external force acts upon it.

- ▶ Install one overload protection for each motor. Such a protection can consist of, e.g. a slow fuse, a circuit breaker or a current limiter.

Integrated thermal protection

CAUTION

Accidental motor start

Crushing hazard for fingers

- ▶ Connect the integrated thermal circuit breaker to an external control device that interrupts the current supply to the motor at all poles in case of overheating.
 - ▶ After the thermal circuit breaker has tripped, examine and remove the cause for overheating before the current supply is reactivated.
-

The standard maximum switching current of the thermal circuit breaker is 2.5 A. For other options, please contact Interroll.

Assembly and installation

For operational safety, the motor must be safeguarded against overload with an external motor protection, as well as an integrated thermal protection; otherwise, there is no warranty if the motor fails.

Frequency inverter

Asynchronous drum motors can be operated with frequency inverters. Frequency inverters from Interroll are general adjusted to factory setting and have to be parameterized for the respective drum motor. For this purpose, Interroll can supply parameterization instructions. In this case, please contact your local Interroll partner.

- ▶ If no frequency inverter from Interroll is used, the frequency inverter must be correctly parameterized according to the specified motor data. Interroll can provide only very limited support for frequency inverters that are not being sold by Interroll.
- ▶ Resonance frequencies in the power supply line must be prevented since they create voltage spikes in the motor.

If the cable is too long, frequency inverters generate resonance frequencies in the line between frequency inverter and motor.

- ▶ Use a completely shielded cable to connect the frequency inverter to the motor.
- ▶ Install a sine-wave filter or a motor choke if the cable is longer than 10 meter or if a frequency inverter controls several motors.
- ▶ Ensure that the cable shield is connected to a grounded part according to the electrotechnical guidelines and local EMC recommendations.
- ▶ Always observe the installation guidelines of the frequency inverter manufacturer.



Initial startup and operation

Initial startup

The drum motor may be put into operation only if it is correctly installed and connected to the power supply and all rotating parts have been fitted with the corresponding protective devices and guards.

Checks before the initial startup

The drum motor is filled with the correct oil quantity at the factory and ready for installation. Prior to the initial startup of the motor, the following steps have to be performed:

- ▶ Ensure that the motor type plate matches the version ordered.
- ▶ Ensure that no contact points exist between objects, conveyor belts and rotating or moving parts.
- ▶ Ensure that the drum motor and the conveyor belt can move freely.
- ▶ Ensure that the belt features the correct tension according to the recommendations from Interroll.
- ▶ Ensure that all bolts are tightened according to the specifications.
- ▶ Ensure that no additional dangerous areas arise due to interfaces to other components.
- ▶ Ensure that the drum motor is correctly wired and connected to the voltage supply with the correct voltage.
- ▶ Check all safety devices.
- ▶ Ensure that no bystanders are in dangerous areas around the conveyor.
- ▶ Ensure that the external motor protection is correctly adjusted to the rated motor current and a corresponding switching device can switch off the motor voltage at all poles if the integrated thermal circuit breaker trips.

Initial startup and operation

Operation

CAUTION

Rotating parts and accidental starting



Risk of crushing for fingers

- ▶ Do not reach between drum motor and belt.
- ▶ Do not remove the protection device.
- ▶ Keep fingers, hair and loose clothing away from the drum motor and the belt.
- ▶ Keep wristwatches, rings, necklaces, piercings and comparable jewelry away from the drum motor and the belt.

NOTICE

Damage of drum motor in reversing operation

- ▶ Ensure that a time delay is in place between forward and reversing movement. Before reversing, the motor must come to a complete standstill.



If exact speeds are required, a frequency inverter and/or encoder may have to be used. The specified rated speeds of the motor can deviate by $\pm 10\%$. The belt speed indicated on the type plate is the calculated speed at the drum diameter under full load, rated voltage and rated frequency.

Checks before every startup

- ▶ Check the drum motor for visible damage.
- ▶ Ensure that no contact points exist between objects, conveyor belts and rotating or moving parts.
- ▶ Ensure that the drum motor and the conveyor belt can move freely.
- ▶ Check all safety devices.
- ▶ Ensure that no bystanders are in dangerous areas around the conveyor.
- ▶ Clearly specify and monitor the way materials are placed on the conveyor.

Procedure in case of accident or fault

- ▶ Stop the drum motor at once and ensure that it cannot be started accidentally.
- ▶ In case of an accident: Provide first aid and make an emergency call.
- ▶ Inform the responsible person.
- ▶ Have the malfunction repaired by qualified persons.
- ▶ Start the drum motor only after this has been approved by qualified persons.

Maintenance and cleaning

Warning notices concerning maintenance and cleaning

CAUTION

Risk of injury due to improper handling or accidental motor starts

- ▶ Maintenance work and cleaning must only be performed by qualified and authorized persons.
 - ▶ Perform maintenance work only after switching off the power. Ensure that the drum motor cannot be turned on accidentally.
 - ▶ Set up signs indicating that maintenance work is in progress.
-

Preparation for maintenance and cleaning by hand

- ▶ Switch off the power supply to the drum motor.
- ▶ Switch off the main power switch to switch off the drum motor.
- ▶ Open terminal box or distribution box and disconnect the cables.
- ▶ Attach a sign to the control station that maintenance work is in progress.

Maintenance

Generally, Interroll drum motors do not have to be maintained and require no special care during their regular service life. Nevertheless, certain checks have to be performed at regular intervals:

Checking the drum motor

- ▶ Ensure daily that the drum motor can rotate freely.
- ▶ Check the drum motor for visible damage every day.
- ▶ Ensure daily that the belt is correctly aligned and centered on the drum motor as well as parallel to the frame of the conveyor. Correct the alignment as necessary.
- ▶ Ensure weekly that motor shaft and brackets are firmly fastened to the conveyor frame.
- ▶ Ensure weekly that cables, lines and connections are in good condition and securely fastened.
- ▶ Refill synthetic Shell Cassida RLS 2 in food-grade quality every week, if there are lubricating nipples.

Oil change

The oil of the drum motor does not have to be changed.

Replacing drum motors

If a drum motor is damaged or defective, it must be removed before a repair or a replacement (see "Shutdown", page 48 and see "Installing the drum motor", page 32).

Maintenance and cleaning

Cleaning



Material deposited on the drum motor or the underside of the belt can lead to slippage of the belt and to damage to the belt. Material deposited between belt and gliding plate or rollers can also lead to a decrease of the belt speed and to increased current consumption. Regular cleaning guarantees a high effect on the drive and a correct alignment of the belt.

- ▶ Remove foreign material from the drum shell.
- ▶ Do not use sharp-edged tools to clean the drum shell.



Troubleshooting

Troubleshooting

Fault	Possible cause	Remedy
Motor does not start or stops during operation	No power supply	Check voltage supply.
	Incorrect connection or loose/defective cable connection	Check connection according to connection diagram. Check whether cables are defective or connections are loose.
	Motor overheating	See the fault "Motor heats up in regular operation".
	Motor overload	Disconnect main power supply, determine and remove cause of overload.
	Internal thermal circuit breaker tripped/failure	Check whether it is overloaded or overheating. After cooling off, check continuity of internal thermal protection. See the fault "Motor heats up in regular operation".
	External thermal circuit breaker tripped/failure	Check whether it is overloaded or overheating. Check continuity and function of external overload protection.
	Motor winding phase error	Replace the drum motor or contact your local Interroll dealer.
	Motor winding short circuit (insulation fault)	Replace the drum motor or contact your local Interroll dealer.
	Drum shell or conveyor belt blocked	Ensure that belt and drum motor are not being blocked and all rollers and drum shells can turn freely. If the drum motor cannot turn freely, the gear box or the bearing may be blocked. In this case, contact your local Interroll dealer.
Motor is running, but drum shell does not turn	Low ambient temperature/high oil viscosity	Check whether the oil viscosity is suitable for the current ambient temperature. If not, fill in new oil with the correct viscosity. Install a heater or more powerful drum motor. In this case, contact your local Interroll dealer.
	Transfer loss	Contact local Interroll dealer.



Troubleshooting

Fault	Possible cause	Remedy
Motor heats up in regular operation	Overload of the drum motor	Check rated current for overload.
	Ambient temperature above 40 °C	Check ambient temperature. If the ambient temperature is too high, install a cooling unit. Contact local Interroll dealer.
	Excessive or frequent stops/starts	Check whether the number of stops/starts corresponds to the specifications of the drum motor and reduce this number if necessary. Install a frequency inverter to optimize the motor output.
	Belt tension too high	Check belt tension and reduce as necessary.
	Motor is not suitable for the application	Check whether the application meets the specifications of the drum motor. Use special reduced-power motors for the operation with link belts or without belts.
	Coating too thick	Replace coating or contact local Interroll dealer.
	Wrong voltage supply	Check the voltage supply. For single-phase motors, ensure that the correct starting or run capacitors are used.
Loud noise of drum motor in regular operation	Wrong settings at frequency inverter	Check whether the frequency inverter settings meet the specifications of the drum motor and change them if necessary.
	Loose motor mount	Check motor mount, shaft tolerances and fastening screws.
	Belt tension too high	Check belt tension and reduce as necessary.
	Wrong/incorrect profile between drum shell and belt	Ensure that belt and drum profile match and are correctly connected. Replace as needed.
	An outer conductor failed	Check connection, check supply system.
Drum motor vibrates heavily	Wrong settings at frequency inverter	Check whether the frequency inverter settings meet the specifications of the drum motor and change them if necessary.
	Loose motor mount	Check motor mount, shaft tolerances and fastening screws.
	Drum motor runs unevenly	Check whether the specifications of the drum motor contain a static or dynamic balancing and adjust it.
Drum motor runs with interruptions	Drum motor/belt is occasionally or partially blocked	Ensure that belt and drum motor are not being blocked and all rollers and drum shells can turn freely.
	Wrong or loose power cable connection	Check connections.
	Gear box is damaged	Check by hand if the drum shell can be turned freely. If not, replace drum motor or contact local Interroll dealer.
	Wrong or faulty voltage supply	Check the voltage supply. For single-phase motors: Check capacitors.



Troubleshooting

Fault	Possible cause	Remedy
Drum motor/belt runs more slowly than specified	Wrong motor speed ordered/ delivered	Check drum motor specifications and tolerances. Replace drum motor or contact local Interroll dealer.
	Drum motor/belt is occasionally or partially blocked	Ensure that belt and drum motor are not being blocked and all rollers and drum shells can turn freely.
	Wrong settings at frequency inverter	Check whether the frequency inverter settings meet the specifications of the drum motor and change them if necessary.
	Belt slips	See the fault "Belt slips on drum motor".
Drum motor/belt runs more slowly than specified	Coating slips on the drum shell	Check condition of coating and fix coating on drum shell. Replace coating. Sandblast or abrade drum surface to guarantee a good adhesion of the coating.
	Use of a 60-Hz motor in a 50-Hz supply system	Check whether motor specifications and tolerances correspond to the supply voltage/frequency. Replace drum motor or contact local Interroll dealer.
Drum motor runs faster than specified.	Wrong motor speed ordered/ delivered	Check drum motor specifications and tolerances. Replace drum motor or contact local Interroll dealer.
	Wrong settings at frequency inverter	Check whether the frequency inverter settings meet the specifications of the drum motor and change them if necessary.
	Use of a 50-Hz motor in a 60-Hz supply system	Check whether motor specifications and tolerances correspond to the supply voltage/frequency. Replace drum motor or contact local Interroll dealer.
	Thickness of rubber coating increased the belt speed beyond the rated speed of the motor	Measure thickness of rubber coating and check whether this value was considered and calculated in the selection of the drum motor speed. Reduce thickness of rubber coating or install a frequency inverter or install new drum motor with lower speed.
Motor winding: one phase failed	Failure/overload of winding insulation	Check continuity, current and resistance of phase winding. Replace drum motor or contact local Interroll dealer.
Motor winding: two phases failed	Power failure at one phase which leads to overload at the other two phases / separating failure	Check power supply to all phases. Check continuity, current and resistance of phase winding. Replace drum motor or contact local Interroll dealer.
Motor winding: all three phases failed	Motor overload / wrong current connection	Check whether the correct supply voltage is present. Check continuity, current and resistance of phase winding. Replace drum motor or contact local Interroll dealer.



Troubleshooting

Fault	Possible cause	Remedy
Belt slips on drum motor	Belt blocked	Ensure that belt and drum motor are not being blocked and all rollers and drum shells can turn freely.
	Friction too low between drum motor and belt	Check condition and tension of the belt. Check condition of drum shell or coating. Check whether oil or grease is between belt and drum motor.
	Friction too high between belt and bracket/gliding plate	Check underside of belt and gliding plate for contamination / defective surface coating. Check whether water entered between belt and gliding plate and a suction/draft occurs.
	Belt tension too low	Check condition of belt and tension or shorten it.
	Drum profile too low for link belt or wrong	Ensure that belt and drum profile / teeth are correctly connected. Ensure that height and tension of belt meets the manufacturer data.
	Oil, lubricant or grease between belt and drum shell of drum motor	Remove excess oil, grease or lubricant. Ensure correct functioning of cleaning devices.
	Diameter of start roller/end roller/transfer roller too low for the belt	Check minimum drum diameter for belt. Knife edges/roller with small diameter can cause excessive friction and, therefore a higher current demand.
	Coating slips on the drum shell	Check condition of coating and fix coating on drum shell. Replace coating. Sandblast or abrade drum surface to guarantee a good adhesion of the coating.
Belt skips on drum motor	Belt blocked or material deposits on the drum shells	Ensure that belt and drum shell are not being blocked and all rollers and drum shells can turn freely.
	Poor or damaged belt connection	Check belt connection.
	Friction too high between belt and gliding plate	
	Conveyor belt loose or damaged	Check tension and condition of belt and condition of coating. Check belt tracking and belt adjustment.
Wrong coating/sprocket profile for link belt	See the fault "Belt slips on drum motor".	



Troubleshooting

Fault	Possible cause	Remedy
Belt not correctly adjusted / belt does not run centered	Material deposits on drum motor/rollers/belt	Ensure that belt and drum shell are not being blocked and all rollers and drum shells can turn freely. Check belt connection.
	Material deposits on rollers	Check whether material detaches itself and ensure that the cleaning devices function correctly.
	Defective or poorly fixed belt	Check belt condition and belt connections.
	Belt tension higher on one side	Ensure that the belt tension is equal on both sides.
	Top/bottom rollers not correctly adjusted	Check adjustment of support and returning rollers.
	Start roller/end roller/interim roller not correctly adjusted	Check adjustment of drum motor and roller.
	Conveyor frame not correctly adjusted	Ensure that the conveyor frame is rectangular, parallel and straight over the entire length.
	Feeding materials from one side	Check force or friction at transfer point.
	Belt profile not connected with drum profile	Ensure that belt and drum profile match and are correctly connected and adjusted.
	Drum camber too low for belt	Check belt / drum motor specifications.
Oil exiting at shaft seal	Shaft seal worn	Check whether negative chemical or aggressive materials/ conditions are present. Check operating service life of seals.
	Shaft seal damaged	Ensure that there are no steel residues, material deposits or other particles at the seals.
	Cap bearing damaged/worn	Check whether the belt is tensioned or loaded too much. Check whether water or chemicals have entered.
Oil leaking at the cable	Loose cable connection socket Defect at internal cable seal	Ensure that cable connection socket and seals are tight and not stressed by overheating or chemicals.
	Loose cable connection socket	Ensure that cable connection socket and seals at terminal box are tight and not stressed by overheating or chemicals.
Oil leaking at drum shell/end cap	End cap in drum shell is loose	Check whether there are gaps between drum shell and end cap. Check whether the belt is tensioned too much or impact-loaded.
	End cap/drum seal defective	Check whether the belt is overheated, tensioned too much or impact-loaded.
Cable defective or damaged	Wrong operation by the customer or damage during installation	Check type of damage and possible cause. Replace terminal box.
	Damage during transport	Check type of damage and possible cause. Replace terminal box.



Troubleshooting

Fault	Possible cause	Remedy
Cap bearing failed	Overload	Check whether the load of the application meets the specifications of the drum motor.
	Impact load	Check whether the load of the application meets the specifications of the drum motor.
	Belt tension too high	Check whether the belt is tensioned too much. Reduce belt tension as necessary.
	Poor lubrication	Check oil level and installation of drum motor. With vertical installation, check the specifications of the drum motor.
	Load or incorrect adjustment of shaft	Check whether screws have been overtightened and whether frame or motor mount are incorrectly adjusted.
	Shaft seal damaged/worn	Check for external contamination. Contact local Interroll dealer.
	Loose or fixed seating of bearing on the shaft	Contact local Interroll dealer.
Gear box failure	Overload/impact load or regular wear	Check whether the load of the application meets the specifications of the drum motor. Check service life.



Decommissioning and disposal

Shutdown

CAUTION

Risk of injury due to incorrect handling

- ▶ Shut-down may only be executed by qualified and authorized persons.
 - ▶ Only shut down the drum motor after switching off the power. Ensure that the drum motor cannot be turned on accidentally.
-

- ▶ Disconnect the motor cable from the power supply and motor control.
- ▶ Relax the belt.
- ▶ Remove holding plate from the motor mount.
- ▶ Remove the drum motor out of the conveyor frame.

Disposal

The operator is responsible for the proper disposal of the drum motor.

- ▶ In doing so, industry-specific and local provisions must be observed for the disposal of the drum motor and its packaging.

Appendix

Warranty for Interroll drum motors

Interroll gives a two-year warranty on its drum motor range; the warranty applies to manufacturing and material defects and starts with the delivery or pickup at the factory. The warranty period is based on the regular operational use of the product eight hours per day, provided no written agreement to the contrary is in effect.

As part of this warranty, Interroll repairs or replaces any defective product, free of charge, that is returned to the factory before the warranty period expires. The warranty period shall not be extended by repairs performed within the framework of the warranty.

Restrictions

Interroll and its dealers do not assume any liability for shutdowns or damages to the product that are due to the following causes:

- Non-observance of the installation or maintenance notes from Interroll
- Operation of the motor without suitable motor protection
- Not connecting the internal Interroll thermal cut motor protection switch (if available)
- Reversing the rotational direction before the motor has reached complete standstill
- Use of the drum motor under other conditions as those listed on the type plate and/or in the current Interroll catalog or in the quote

Repairs, modifications or conversions to the product that are not performed by a qualified Interroll technician or service partner, void the warranty, unless such work was clarified beforehand with Interroll in writing.

Exceptions

The Interroll warranty excludes any liability for the following damages:

- Damages to the shell lagging or other additional materials through regular wear or incorrect use
- Costs for removal and return shipment of the product to Interroll as part of this warranty
- Damages to other systems that are used in conjunction with the product
- Los of income, injuries or other costs in conjunction with the failure of the product

Appendix

List of abbreviations

Electrical data	P in kW	Power
	l_{st} in mm	Stator length
	U in V	Voltage
	f in Hz	Frequency
	n_p	Number of pole pairs
	I_f in A	Full load current
	I_k in A	Current consumption with blocked motor
	I_0 in A	Zero load current
	R_M in Ω	Main resistor
	R_A in Ω	Phase resistance of auxiliary winding
	C in μF	Capacitor
	cos	Power factor
	Th	Thermal type 125 °C
	Mechanical data	P_N
gs		Gear stages
i		Speed ratio
v		Rated velocity of tube
n_A		Rated speed of tube
M_A		Rated torque of drum motor
F_N		Rated belt pull of drum motor
TE		Max. belt tension
SL_{min}		Minimum tube length



Appendix

Connection diagrams

TC	Thermal protection
NC	Not connected
1~	Single-phase motor
3~	Three-phase motor
C	Capacitor

Color coding

Color coding of cables in the connection diagrams:

rd: red	bk: black	bn: brown	or: orange
ye: yellow	gy: gray	pk: pink	vi: violet
bu: blue	gn: green	wh: white	

Appendix

Installation Declaration

In accordance with the EC Machinery Directive 2006/42/EC, Appendix II 1 B

The manufacturer

Interroll Joki A/S
Hammerholmen 2-6
2650 Hvidovre
Denmark

hereby declares with sole responsibility that the product series

- Drum motor C series
- Drum motor S-SMP series
- Drum motor S series DC version
- Cassette C series

fully complies with the safety and health requirements of the Machinery Directive 2006/42/EC Appendix I.

The relevant technical documents according to EC Machinery Directive 2006/42/EC, Annex VII B are available and will be presented to the competent national authorities electronically, if required.

Person authorized to prepare the technical documents: Jan Støvring Jensen, Interroll Joki A/S, Hammerholmen 2-6, 2650 Hvidovre, Denmark.

The partly completed machinery complies with the following EC directives:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- RoHS Directive 2011/65/EC

The following harmonized standards were applied:

- EN ISO 12100:2010

Initial startup of the partly completed machinery is not permitted until the partly completed machinery is incorporated into a machinery which complies with the machinery directive. The EC declaration of conformity must be available according to appendix II A.

The EC declaration of conformity must be available according to Machinery Directive 2006/42/EC Annex II 1 A.

April 20, 2016
Hvidovre, Denmark



Anders Staf Hansen
(General Manager)







