



# INTERROLL DRUM MOTOR 113D



Standard  
Synchronous  
Drum Motors  
113D

Compact and robust drive for smart belt conveyors with high dynamics

## Product Description

**Applications** The drum motor is perfect for high dynamic applications, food conveyors, smart belt and many servo conveyor belt applications.

- ✓ Small feed conveyors with high-duty cycles
- ✓ High performance packaging conveyors
- ✓ Dynamic weighing equipment
- ✓ Smart belts
- ✓ Pick and place applications
- ✓ Food processing (EHEDG)
- ✓ Dry, wet and wash-down applications

- Characteristics**
- ✓ Stainless steel end housings
  - ✓ 3-phase AC synchronous permanent magnet motor
  - ✓ High Torque
  - ✓ Integral motor protection
  - ✓ Steel-hardened planetary gear
  - ✓ Wide variable speed range
  - ✓ Maintenance-free
  - ✓ Lifetime lubricated
  - ✓ High efficiency

**Note:** Synchronous drum motors must be connected to a drive controller and not directly to the mains supply. For sensor-less drive operation use the Interroll IFI-IP55 Frequency inverter. For feedback or positioning applications use a servo-driver.

## Technical Data

Electrical data	
Motor type	AC Synchronous permanent magnet motor
Insulation class of motor windings	Class F, IEC 34 (VDE 0530)
Voltage	Special voltage on request 230/400 V
Internal shaft sealing system	Double-lipped, FPM
Protection rate	IP69K
Thermal protection (see p 245)	Bi-metal switch
Operating modes (see p 230)	S1
Ambient temperature, 3-phase motor (see p 207)	+5 to +40 °C
General technical data	
Max. shell length SL	900 mm

## Order Information

Please refer to the Configurator at the end of the catalogue..

## Material Versions

You can choose the following versions of drum body components and electrical connection. The versions depend on the material of the components.

Component	Version	Material			
		Mild steel	Stainless steel	Brass / Nickel	Techno-polymer
<b>Shell</b>	Crowned	✓	✓		
	Cylindrical	✓	✓		
	Cylindrical + key, for using sprockets	✓	✓		
<b>End housing</b>	Standard		✓		
<b>Shaft</b>	Standard		✓		
<b>External seal</b>	PTFE				
<b>Electrical connector</b>	Straight connector		✓	✓	
	Straight cable outlet				✓
	Elbow connector		✓		✓

Please contact your Interroll customer consultant for further versions.

## Options

- Lagging for friction drive belts, see p 128
- Lagging for plastic modular belts, see p 134
- Lagging for positive drive solid homogeneous belts belts, see p 138
- Sprockets for plastic modular belts, see p 142
- Feedback devices, see p 158
- Food-grade oil (EU, FDA), see p 256
- Low temperature oil, see p 256
- cULus safety certifications, see p 251
- Non-horizontal mounting (more than ± 5°), see p 231

## Accessories

- Plummer block bracket, see p 176
- Idler pulleys, see p 178 to p 183
- Conveyor rollers, see p 188
- IFI - IP55 Frequency Inverter, see p 122
- Drive control options, see p 198



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## Product Range

The following tables give an overview of the possible motor versions. When ordering, please specify the version in accordance with the configurator at the end of the catalogue.

All data and values in this catalogue refer to 200 Hz operation.

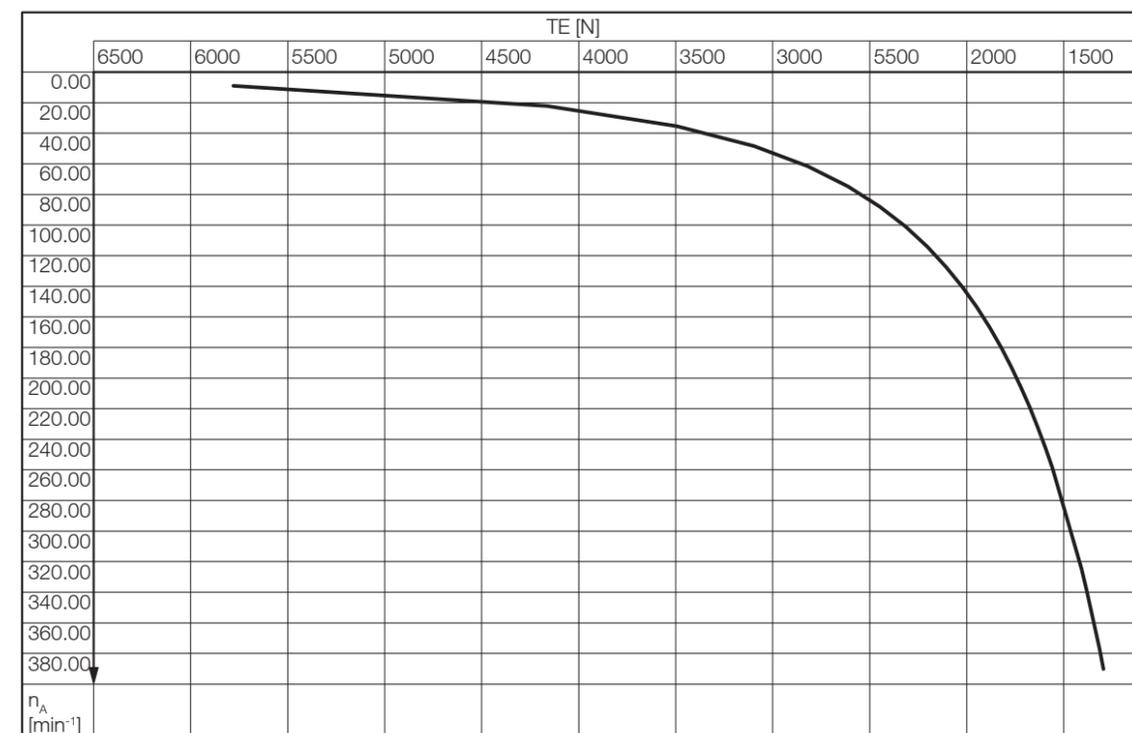
### Motor versions

#### Mechanical data for 3-phase motors

$P_N$ kW	np	gs	i	v m/s	$n_A$ min <sup>-1</sup>	$M_A$ Nm	$F_N$ N	$SL_{min}$ mm		
0.145	8	3	160	0.111	18.8	59.8	1,059	215		
			120	0.148	25.0	44.9	794	215		
			100	0.177	30.0	41.1	727	215		
			80	0.222	37.5	32.9	582	215		
			60	0.296	50.0	24.6	436	215		
			40	0.444	75.0	17.0	301	200		
		2	32	0.555	93.8	13.6	240	200		
			25	0.710	120.0	10.6	188	200		
			20	0.887	150.0	8.5	150	200		
			16	1.109	187.5	6.8	120	200		
			12	1.479	250.0	5.1	90	200		
			8	2.219	375.0	3.5	62	185		
			1	3	60	0.296	50.0	50.7	897	265
					40	0.444	75.0	34.9	618	250
32	0.555	93.8			27.9	494	250			
25	0.710	120.0			21.8	386	250			
20	0.887	150.0			17.5	309	250			
16	1.109	187.5			14.0	247	250			
0.298	8	2	40	0.444	75.0	49.8	881	265		
			32	0.555	93.8	39.8	705	265		
			25	0.710	120.0	31.1	551	265		
			20	0.887	150.0	24.9	441	265		
		1	16	1.109	187.5	19.9	352	265		
			12	1.479	250.0	14.9	264	265		
			8	2.219	375.0	10.3	182	250		
			40	0.444	75.0	49.8	881	265		
0.425	8	2	40	0.444	75.0	49.8	881	265		
			32	0.555	93.8	39.8	705	265		
			25	0.710	120.0	31.1	551	265		
			20	0.887	150.0	24.9	441	265		
		1	16	1.109	187.5	19.9	352	265		
			12	1.479	250.0	14.9	264	265		
			8	2.219	375.0	10.3	182	250		
			40	0.444	75.0	49.8	881	265		

$P_N$	Rated power
np	Number of poles
gs	Gear stages
i	Gear ratio
v	Rated velocity of the shell
$n_A$	Rated revolutions of the drum shell
$M_A$	Rated torque of drum motor
$F_N$	Rated belt pull of drum motor
$SL_{min}$	Min. shell length

### Belt Tension



TE	Belt Tension
$n_A$	Rated revolutions of the drum shell
SL	Shell length

**Note:** To get the right value of the maximum allowed belt tension, find the maximum allowed TE value for the drum motor RPM. The TE value for SL does not need to be considered for standard 113D.



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## Electrical data for 3-phase motors

$P_N$ kW	$U_N$ V	np	$U_L$ V DC	$I_N$ A	$M_N$ Nm	$\eta$	$f_N$ Hz	$n_N$ min <sup>-1</sup>	$T_e$ ms	$K_E$ V/krpm	$K_{TN}$ Nm/A	$I_0$ A	$M_0$ Nm	$I_{MAX}$ A	$M_{MAX}$ Nm	$J_R$ kgcm <sup>2</sup>	$R_{M20}$ $\Omega$	$R_{M75}$ $\Omega$	$L_{sd}$ mH	$L_{sq}$ mH
0.145	400	8	560	0.47	0.46	0.83	200	3,000	4.41	72.23	0.98	0.47	0.46	1.41	1.38	0.1413	62.54	75.95	130.7	138.0
	230	8	325	0.81	0.46	0.85	200	3,000	4.97	41.57	0.57	0.81	0.46	2.43	1.38	0.1413	21.62	26.26	45.60	53.70
0.298	400	8	560	0.78	0.95	0.87	200	3,000	6.48	83.09	1.22	0.78	0.95	2.34	2.85	0.2826	29.06	35.29	81.90	94.10
	230	8	325	1.30	0.95	0.86	200	3,000	5.75	47.46	0.73	1.30	0.95	3.90	2.85	0.2826	10.20	12.39	27.80	29.30
0.425	400	8	560	1.32	1.35	0.86	200	3,000	6.70	80.80	1.02	1.32	1.35	3.96	4.05	0.4239	17.60	21.38	49.80	59.00
	230	8	325	2.30	1.35	0.87	200	3,000	6.86	45.81	0.59	2.30	1.35	6.90	4.05	0.4239	5.66	6.87	16.26	19.42

$P_N$	Rated power
np	Number of poles
$U_N$	Rated voltage
$U_L$	DC link voltage
$I_N$	Rated current
$M_N$	Rated torque of rotor
$\eta$	Efficiency
$f_N$	Rated frequency
$n_N$	Rated speed of rotor
$T_e$	Electrical time constant
$k_e$	BEMF (Back Electromotive Force) constant: effective phase to phase
$K_{TN}$	Torque constant
$I_0$	Standstill current
$M_0$	Standstill torque
$I_{MAX}$	Maximum current
$M_{MAX}$	Maximum torque
$J_R$	Rotor moment of inertia
$R_{M20}$	Phase to phase resistance at 20 °C
$R_{M75}$	Phase to phase resistance at 75 °C
$L_{SD}$	d-axis inductance
$L_{SQ}$	q-axis inductance

## Cable Specifications

Available cables for connectors (see also p 252):

- Standard, screened
- Halogen-free, screened

Available length: 1 / 3 / 5 / 10 m

**Note:** A maximum cable length of 2 m between the motor and the IFI-IP55 should not be exceeded in order to ensure compliance with the EMC Cat C2 requirements.

## Connection Diagrams

For connection diagrams, see Planning Section on p 261.



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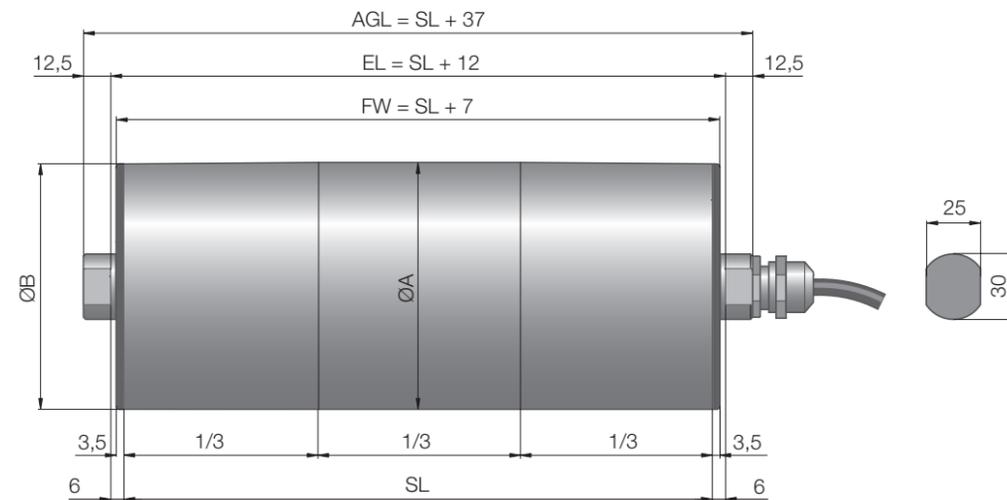


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Standard  
dimensions

## Dimensions



Type	Ø A mm	Ø B mm
113D crowned shell	113.5	112.0
113D cylindrical shell	112.0	112.0
113D cylindrical shell + key	113.0	113.0

Connector  
dimensions

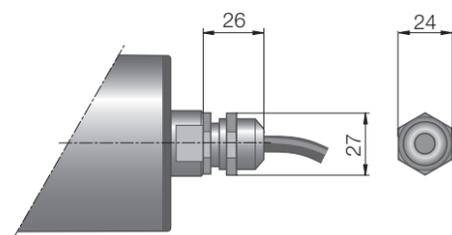


Fig.: Straight connector, brass/nickel or stainless steel

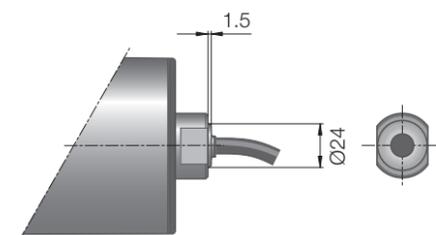


Fig.: Straight cable outlet, PU shaft plug

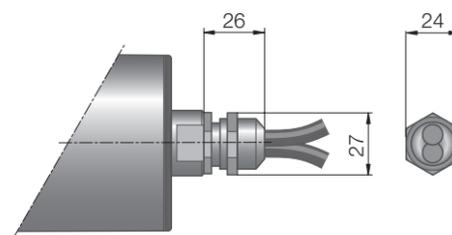


Fig.: Straight connector / Feedback device, brass/nickel or stainless steel

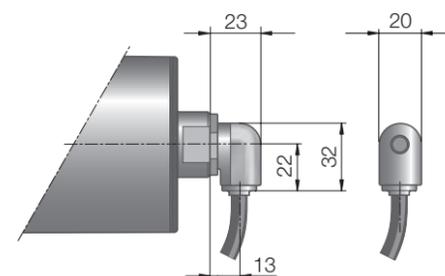


Fig.: Elbow connector, technopolymer

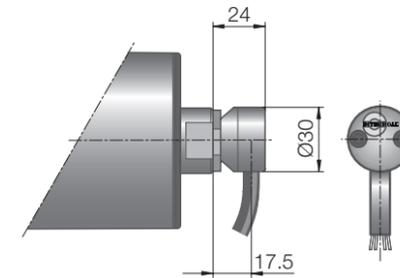


Fig.: Elbow connector, stainless steel

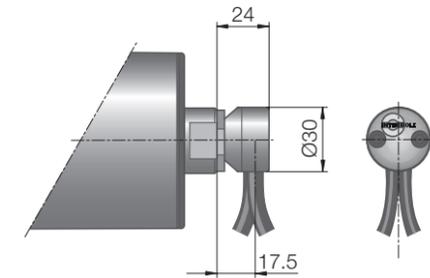


Fig.: Elbow connector / Feedback device, stainless steel

The following options increase the minimum length of the drum motor.

Option	Min. SL with option mm
Feedback device	Min. SL + 50 (SL + 75 for Hiperface feedback option)

Min. length with  
option

Standard drum motor lengths and their weights:

Shell length SL in mm	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
Average weight in kg	9.8	10.6	11.3	12.0	12.8	13.5	14.3	15.0	15.7	16.4	17.1	17.9	18.6	19.3	20.0

Standard length  
and weight