BELT DRIVE

PRODUCT BROCHURE

MAGNATORQUE

HYGIENIC DIRECT DRIVE MOTORS

MAGNATORQUE
BELT DRIVE MOTORS

Our direct drive motor is used for conveyor belts that benefit from a single sided mounting interface or so called cantilever design. This enables easy belts changes, cleaning and maintenance without the time consuming dismantling of the front side supporting frame.

On top of that, our brushless 3-phase PMSM motor reduces energy consumption significantly. They fall within the IE4 super premium efficiency class. Because of this, applications with a belt drive motor are very cost efficient, offering long term reduction in operation cost.

HIGH POSITION ACCURACY | **COMPACT MOTOR** | **ZERO MOTOR MAINTENANCE** | **ZERO BACKLASH**

TECHNOLOGY BEHIND THE BELT DRIVE (PMSM)

The belt drive is a new generation of single-side mounted direct drive 3-phase Permanent Magnet Synchronous motors (PMSM). The motor type is a brushless 3–phase PMSM with its rotor on the outside directly driving the conveyor belt.

The motor is equipped with an integrated single turn absolute encoder which enables direct control of the motor without the need for magnetic alignment and homing. The direct drive motor is fully integrated into the hub.

These belt drive motors are also called intelligent infeed motors and are specifically designed for high dynamic applications in the packaging equipment market.

UTILIZE MORE PRODUCTION FLOOR SPACE

With the changing market the question arises: how to keep up with the demand and growth without an expansion? Finding ways to save space can help companies to make room for new equipment and materials. This is one of the advantages of implementing the belt drive motor by MagnaTorque

Because you can integrate the brushless 3-phase PMSM motor into the construction, it saves a lot of space. With our motor integrated into your infeed conveyor system, you can offer your customers the possibility to utilize more production floor space.

BELT DRIVE | INFEED CONVEYOR BELT MOTOR

The Belt Drive Servomotor series SBM125 and the Belt Drive Sensorless Motor series DBM125, are a new generation of single side mounted (Balcony mount) 3-phase AC-Synchronous PM Servo motors specifically designed for High Dynamic Smart applications. Typical applications include Smart infeed conveyor belt systems, indexing tables and dynamic sorter applications.

DIRECT-DRIVE BELT MOTORS FEATURES:

- Unique formfactor to enable compact belt systems.
- Fast response to load and/or position variations.
- High position accuracy.
- No gears or external gearbox (no oil or grease).
- Zero motor maintenance.
- Zero backlash.
- Easy conveyor belt swap due to single side mount.
- Horizontal, vertical and diagonal mounting capability.
- Single turn absolute encoder (SBM125).
- Available encoder protocols (SBM125):
    - Absolute Sine/Cosine 1Vpp
    - Absolute BiSS (RS422)
    - Absolute SSi (RS422)
    - Incremental ABZ (RS422)
- Easily removable and adaptable HUB geometry for custom crowning or lagging.
- UL approval pending.
- Compatible with industry standard 3-phase Motor drives

SENSORED SERVO MOTOR AND SENSORLESS MOTOR

The efficient design of the belt drive motors have been proven in various dynamic packaging solutions. We offer two different series. The significant difference between the motors is sensored (servo motor) versus sensorless operation.

BELT DRIVE

SBM125

PRODUCT BROCHURE

MAGNATORQUE

HYGIENIC DIRECT DRIVE MOTORS

SBM125 PERFORMANCE & MOTOR PARAMETERS

PARAMETERS	SYMBOLS	UNITS	SBM125-103	SBM125-140	COMMENTS
Nominal Hub width	w	mm	103	140	
		in	4.05	5.51	
Nominal Hub dia.	Ø	mm	125	125	
		in	4.92	4.92	
Continuous Torque	Tc	Nm	3,5	8	
		oz-in	496	1133	
Peak Torque	Tp	Nm	7	16	@ 15% duty cycle
		oz-in	992	2266	
Maximum Torque	Tmax.	Nm	9	24	Short time overload
		oz-in	1275	3399	
Rated Speed	n cont.	rpm	300	300	
Maximum rotation speed	n max.	rpm	650	500	
Rated Belt speed	Vb	m/s	2	2	@ 125mm Hub outer diameter
		ft/ min	394	394	
Max. Belt Speed	Vb max.	m/s	3	3	@ 125mm Hub outer diameter
		ft/ min	591	591	
DC Bus Voltage	Vbus	Vdc	325	325	Based upon single phase rectified 230Vac
Continuous Current	Ic	Apk	1.4	2.7	
Peak Current	Ip	Apk	3.3	5.5	@ rated Peak Torque
Maximum current	Imax.	Apk	4.5	9.8	@ rated Maximum Torque
K_m constant	K_m	Nm/Apk	2.2	3.0	
K_emf constant	K_emf	Vpk/rpm	0.265	0.365	
Phase Inductance	Lph	mH	40	33.5	
Phase resistance	Rph	Ohms	5.9	4	@ 20 AC
Encoder resolution		Counts/rev	1024-4096	1024-4096	Supported interface protocols: • Absolute Sine/Cosine 1Vpp • Absolute BiSS or SSi (RS422) • Incremental ABZ (RS422)

SBM125 PERFORMANCE & MOTOR PARAMETERS

PARAMETERS	SYMBOLS	UNITS	SBM125-103	SBM125-140	COMMENTS
Rotor Inertia without sleeve	J	Kg-m²	0.00324	0.00484	
		oz-in-s²	0.459	0.685	
Rotor Inertia with crowned sleeve	J	Kg-m²	0.0047	0.00678	
		oz-in-s²	0.666	0.96	
Weight	Wt	Kg	3.8	5.4	
		oz.	134	190	
Power	P	W	476	838	
		hp	0.64	1.12	
Pole pairs		Nm	7	7	

Note: Customization is possible. Please contact MagnaTorque for more information.

SBM125 CONNECTOR CONFIGURATION

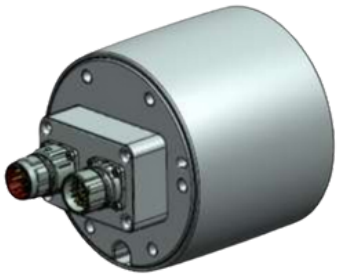
PIN#	FUNCTION
A	Motor Phase U
B	Motor Phase V
C	Motor Phase W
D	PE
E	Not Connected
F	PT100 (+)
G	PT100 (-)
H	Not Connected
I	Not Connected

POWER CONNECTOR

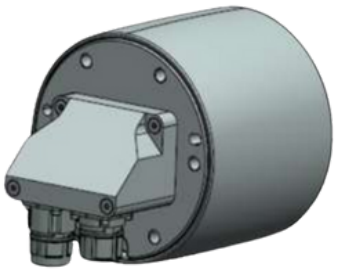
PIN#	FUNCTION	PIN#	
1	V supply (+)	10	(SLO) BiSS/SSi Clock in (-)
2	Ground	11	Z (-)
3	Sin (+)	12	Z (+)
4	Sin (-)	13	B (-)
5	Cos (+)	14	B (+)
6	Cos (-)	15	A (-)
7	(SLO) BiSS/SSi Data in (+)	16	A (+)
8	(SLO) BiSS/SSi Data in (-)	17	proprietary
9	(MA) BiSS/SSi Clock in (+)		

SIGNAL CONNECTOR

SBM125 CONNECTION OPTIONS

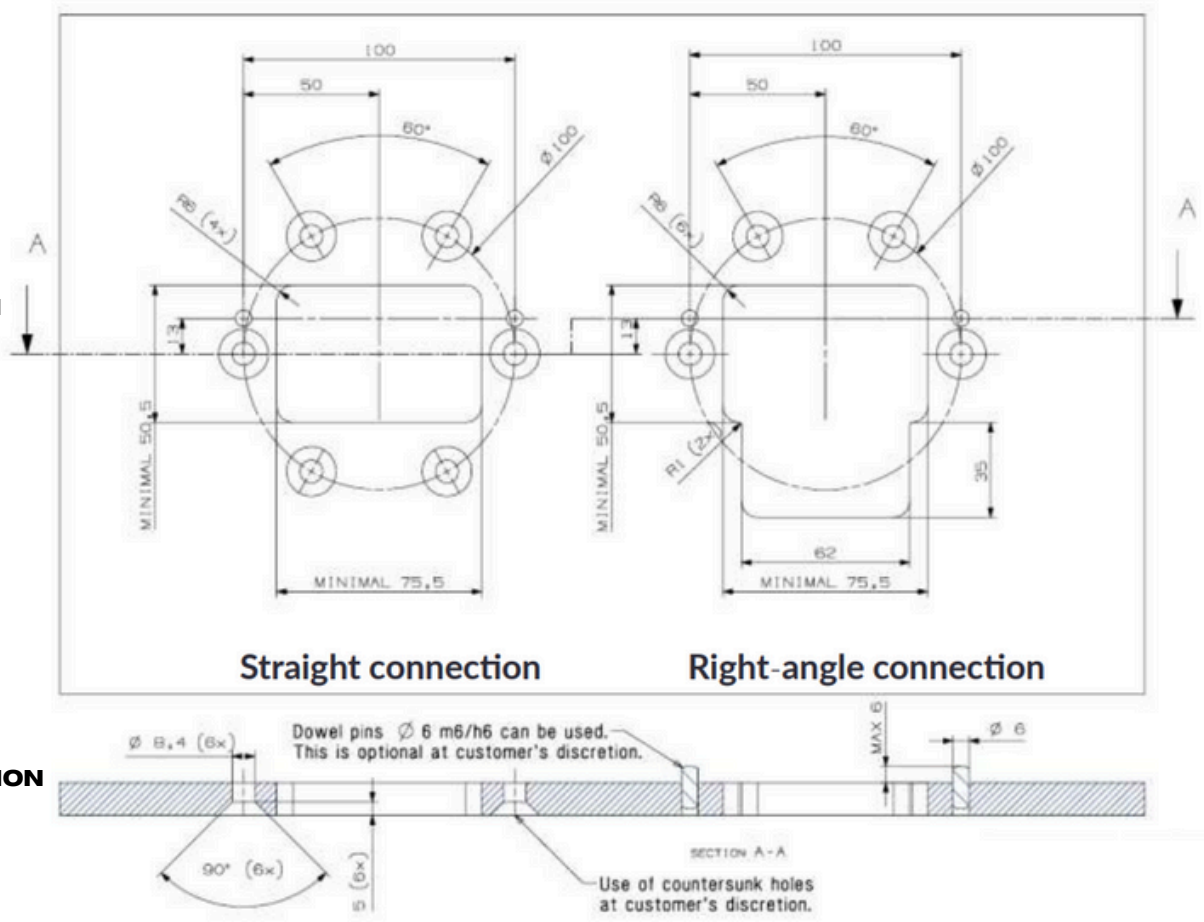


STRAIGHT CONNECTION



RIGHT-ANGLE CONNECTION

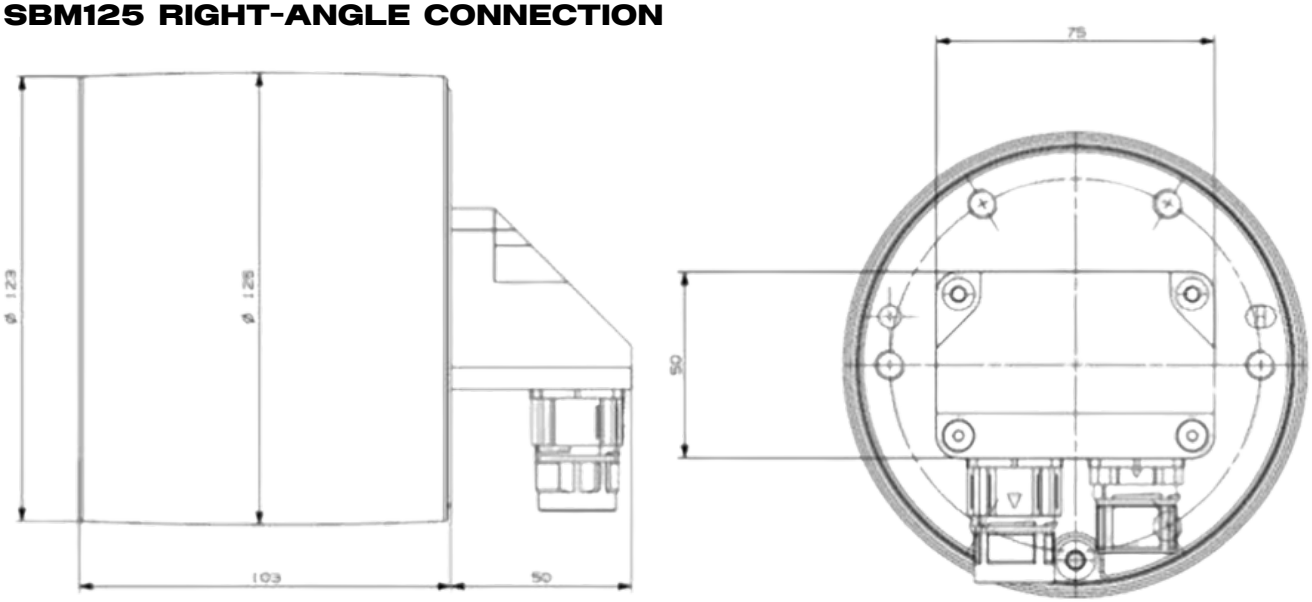
MOUNTING PLATE CUTOUT



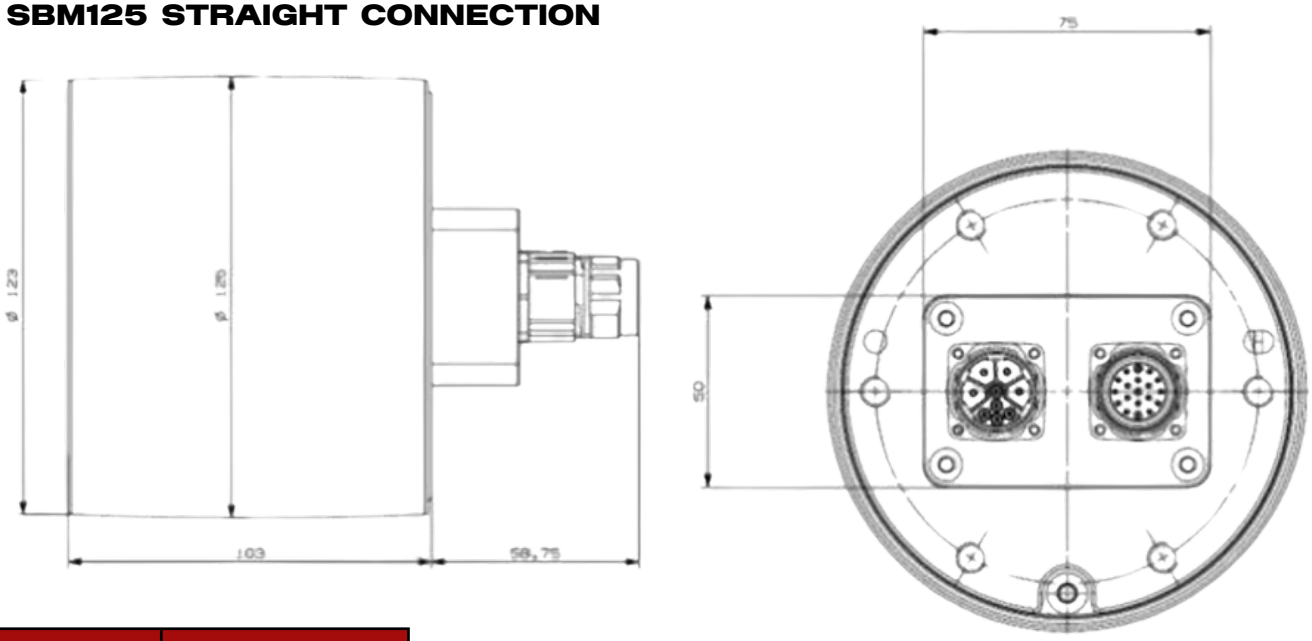
SBM125 OUTLINE DRAWINGS

1. All dimensions are in mm.
2. Receptacles:
   Power: Speedtec® M23 9-pin E (3+PE+5) Intercontec series 923
   Signal: Speedtec® M23 17-pin E uncoded Intercontec series 623
3. CAD files can be made available on request.

SBM125 RIGHT-ANGLE CONNECTION



SBM125 STRAIGHT CONNECTION

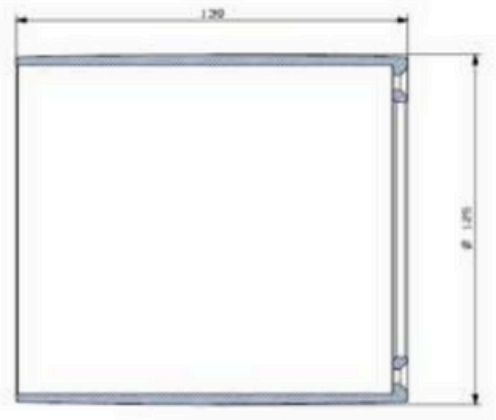


MODEL NUMBER	"A"(mm)
SBM125-103	103.0 ±0.25
SBM125-140	140.0 ±0.25

SBM125 SLEEVE & APPLICATION EXAMPLE

SLEEVE / INTERFACE

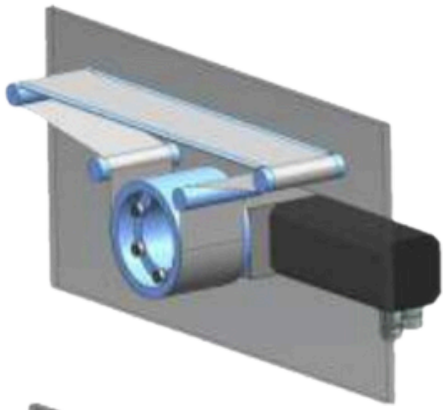
All Alternative sleeve variations like Cogged, V-groove, surface lagging or any other surface configuration as well as extended length sleeves, can be made available.



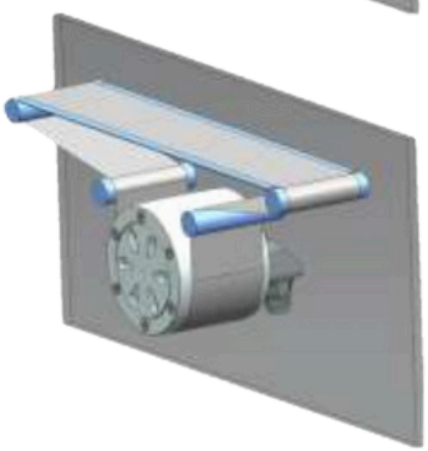
MODEL NUMBER	"A"(mm)
SBM125-103-000	102.0 ±0.25
SBM125-140-000	139.0 ±0.25

APPLICATION EXAMPLE

Balcony mounted Smart belt with traditional motor & gearbox hanging on the side of the construction.



Balcony mounted Smart belt with **SBM125** or **DBM125** *Direct Drive Belt Motor* integrated into the construction.



BELT DRIVE

DBM125

PRODUCT BROCHURE

MAGNATORQUE

HYGIENIC DIRECT DRIVE MOTORS

DBM125 PERFORMANCE & MOTOR PARAMETERS

PARAMETERS	SYMBOLS	UNITS	DBM125-103	DBM125-140	COMMENTS
Nominal Hub width	w	mm	103	140	
		in	4.05	5.51	
Nominal Hub dia.	Ø	mm	125	125	
		in	4.92	4.92	
Continuous Torque	Tc	Nm	3,5	8	
		oz-in	496	1133	
Peak Torque	Tp	Nm	7	16	@ 15% duty cycle
		oz-in	992	2266	
Maximum Torque	Tmax.	Nm	9	24	Short time overload
		oz-in	1275	3399	
Rated Speed	n cont.	rpm	300	300	
Maximum rotation speed	n max.	rpm	650	500	
Rated Belt speed	Vb	m/s	2	2	@ 125mm Hub outer diameter
		ft/ min	394	394	
Max. Belt Speed	Vb max.	m/s	3	3	@ 125mm Hub outer diameter
		ft/ min	591	591	
DC Bus Voltage	Vbus	Vdc	325	325	Based upon single phase rectified 230Vac
Continuous Current	Ic	Apk	1.4	2.7	
Peak Current	Ip	Apk	3.3	5.5	@ rated Peak Torque
Maximum current	Imax.	Apk	4.5	9.8	@ rated Maximum Torque
K_m constant	K_m	Nm/Apk	2.2	3.0	
K_emf constant	K_emf	Vpk/rpm	0.265	0.365	
Phase Inductance	Lph	mH	40	33.5	
Phase resistance	Rph	Ohms	5.9	4	@ 20 AC

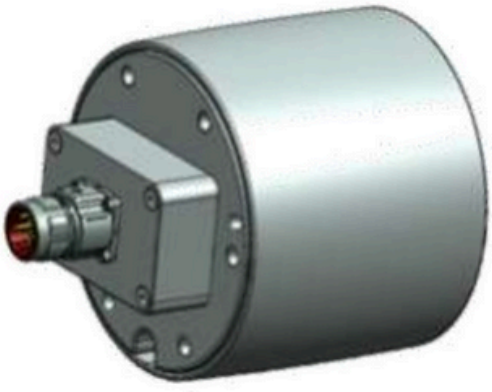
DBM125 PERFORMANCE & MOTOR PARAMETERS

PARAMETERS	SYMBOLS	UNITS	DBM125-103	DBM125-140	COMMENTS
Rotor Inertia without sleeve	J	Kg-m²	0.00324	0.00484	
		oz-in-s²	0.459	0.685	
Rotor Inertia with crowned sleeve	J	Kg-m²	0.0047	0.00678	
		oz-in-s²	0.666	0.96	
Weight	Wt	Kg	3.8	5.4	
		oz.	134	190	
Power	P	W	476	838	
		hp	0.64	1.12	
Pole pairs		Nm	7	7	

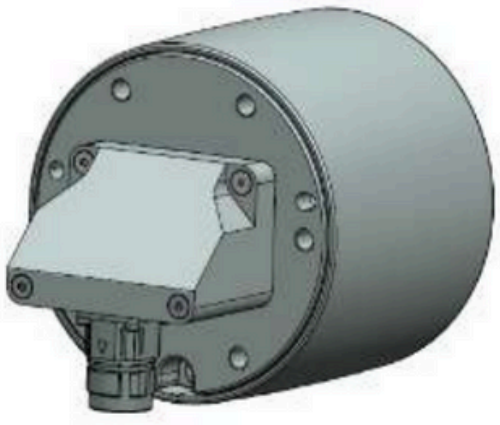
Note: Customization is possible. Please contact MagnaTorque for more information.

DBM125 CONNECTION CONFIGURATION

CONNECTION OPTIONS



STRAIGHT CONNECTION



RIGHT-ANGLE CONNECTION

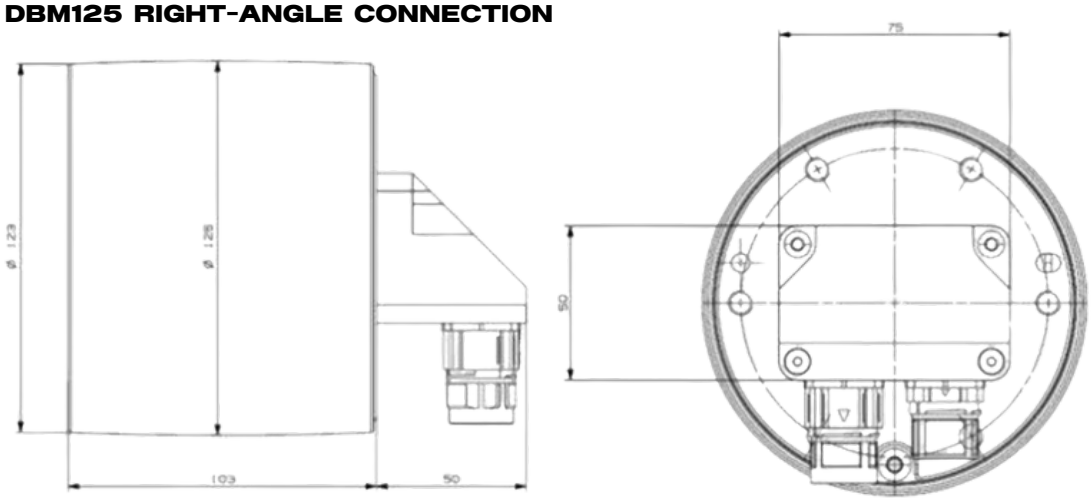
PIN#	FUNCTION
A	Motor Phase U
B	Motor Phase V
C	Motor Phase W
D	PE
E	Not Connected
F	PT100 (+)
G	PT100 (-)
H	Not Connected
I	Not Connected

POWER CONNECTOR

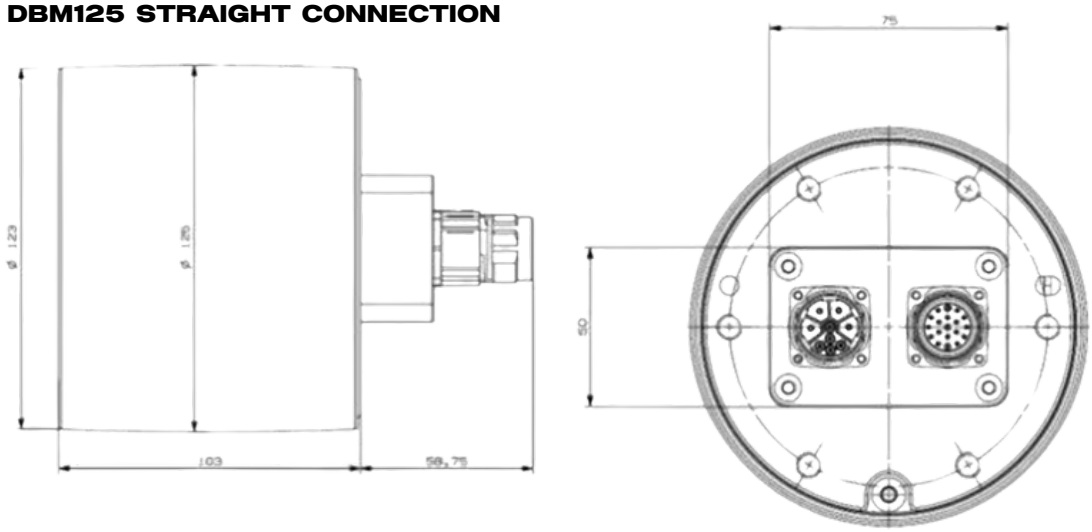
DBM125 OUTLINE DRAWINGS

1. All dimensions are in mm.
2. Receptacles:
   Power: Speedtec® M23 9-pin E (3+PE+5) Intercontec series 923
3. CAD files can be made available on request.

DBM125 RIGHT-ANGLE CONNECTION



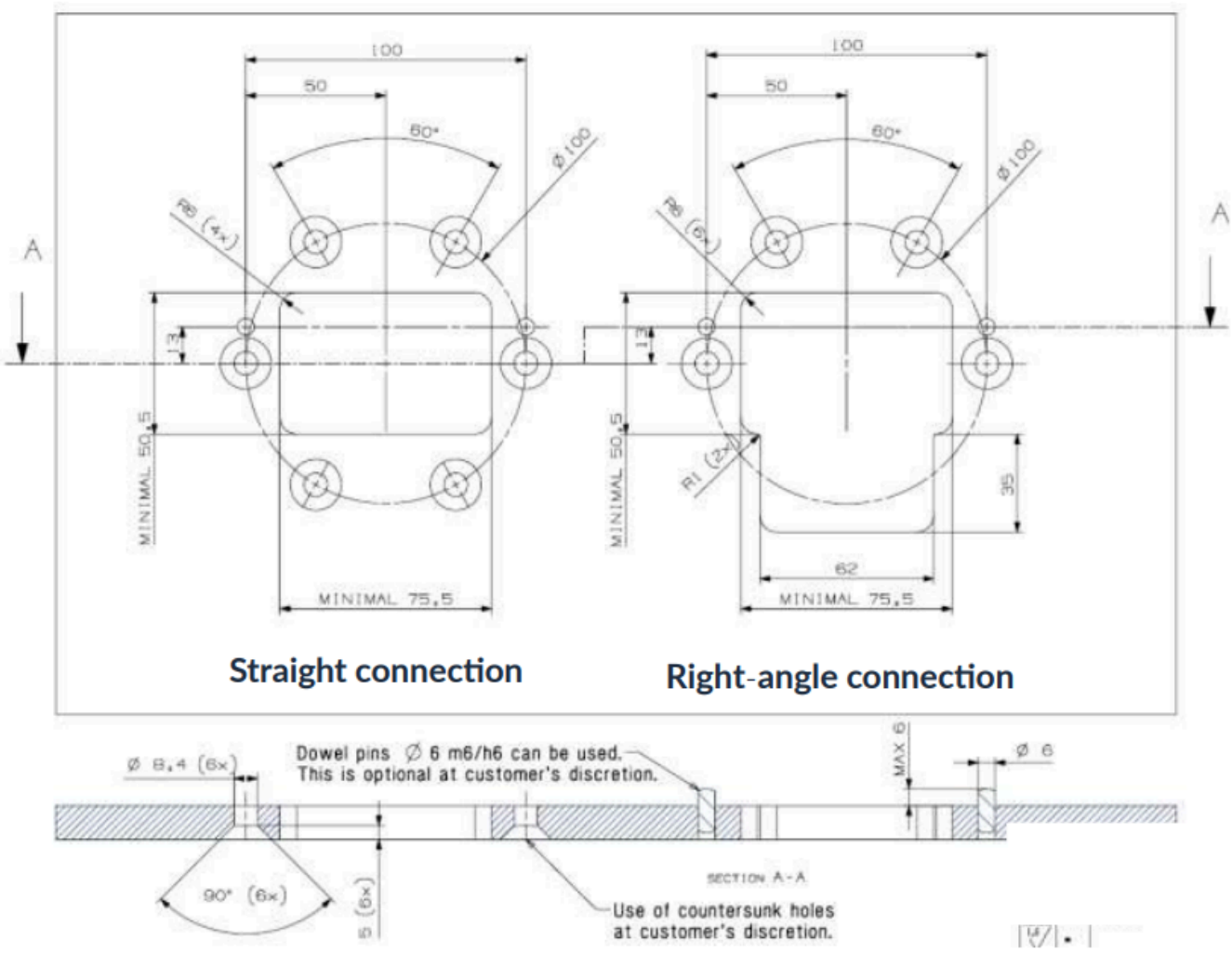
DBM125 STRAIGHT CONNECTION



MODEL NUMBER	"A"(mm)
DBM125-103	103.0 ±0.25
DBM125-140	140.0 ±0.25

DBM125 CONNECTION OPTIONS

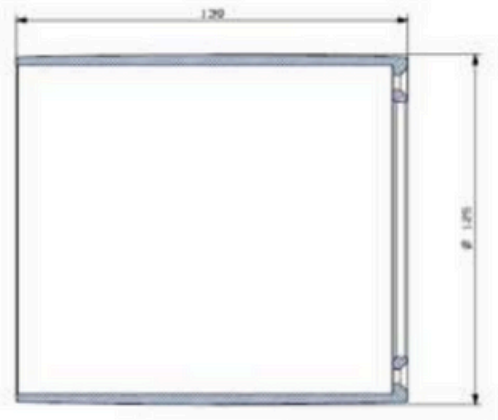
MOUNTING PLATE CUTOUT



DBM125 SLEEVE & APPLICATION EXAMPLE

SLEEVE / INTERFACE

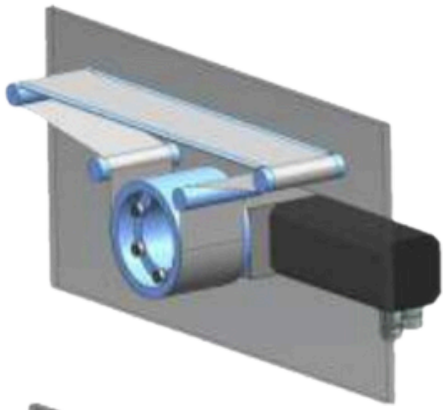
All Alternative sleeve variations like Cogged, V-groove, surface lagging or any other surface configuration as well as extended length sleeves, can be made available.



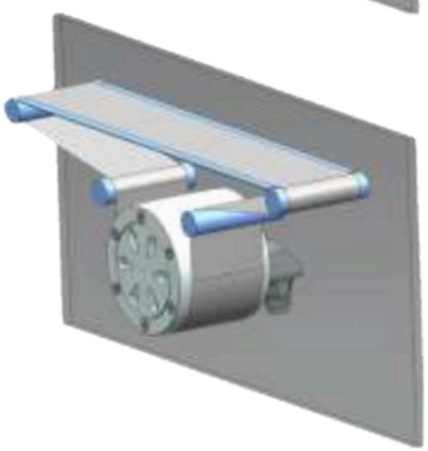
MODEL NUMBER	"A"(mm)
DBM125-103-000	102.0 ±0.25
DBM125-140-000	139.0 ±0.25

APPLICATION EXAMPLE

Balcony mounted Smart belt with traditional motor & gearbox hanging on the side of the construction.



Balcony mounted Smart belt with **SBM125** or **DBM125** *Direct Drive Belt Motor* integrated into the construction.



PARTNUMBERING INDEX SBM125 AND DBM125

Family		Model	Connector	Sleeve	Slv ID#	Enc.
XXXXXX	—	XXX	X	X	XXX	X

Family:

DBM125: Sensorless

SBM125: Servo w/Absolute Encoder

Model:

- 103 : Hub Length 103 mm

- 140 : Hub Length 140 mm

Connector options:

Straight : S

Right-angle : R

Sleeve options:

Sleeve : Y

Without Sleeve : N

Sleeve type identifier:

Crowned Sleeve (std.): 000

Non-standard Sleeves will be identified with a unique 3 digit ID#

Encoder protocol (SBM125 only):

Absolute Sin/Cos :A

Absolute BiSS (default) :B

Absolute SSi :C

Incremental ABZ :D

Partnumbering examples:

SBM125 - 103 R Y 000 C
SBM125-103 Servo motor w/ right-angle connection, standard crowned sleeve, Absolute SSi.

DBM125 - 140 S N
DBM125-140 sensorless motor w/ straight connection, no sleeve.

CUSTOMIZED BELT DRIVE MOTORS

If higher levels of customization are required, please contact **MagnaTorque** to share and let us understand your requirements. We are able to develop customized motors based on specific customer needs. Call or e-mail us for more information and see what we have to offer!

GO DIRECT DRIVE

CHOOSE A MAINTENANCE FREE AND ENERGY EFFICIENT DESIGN

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