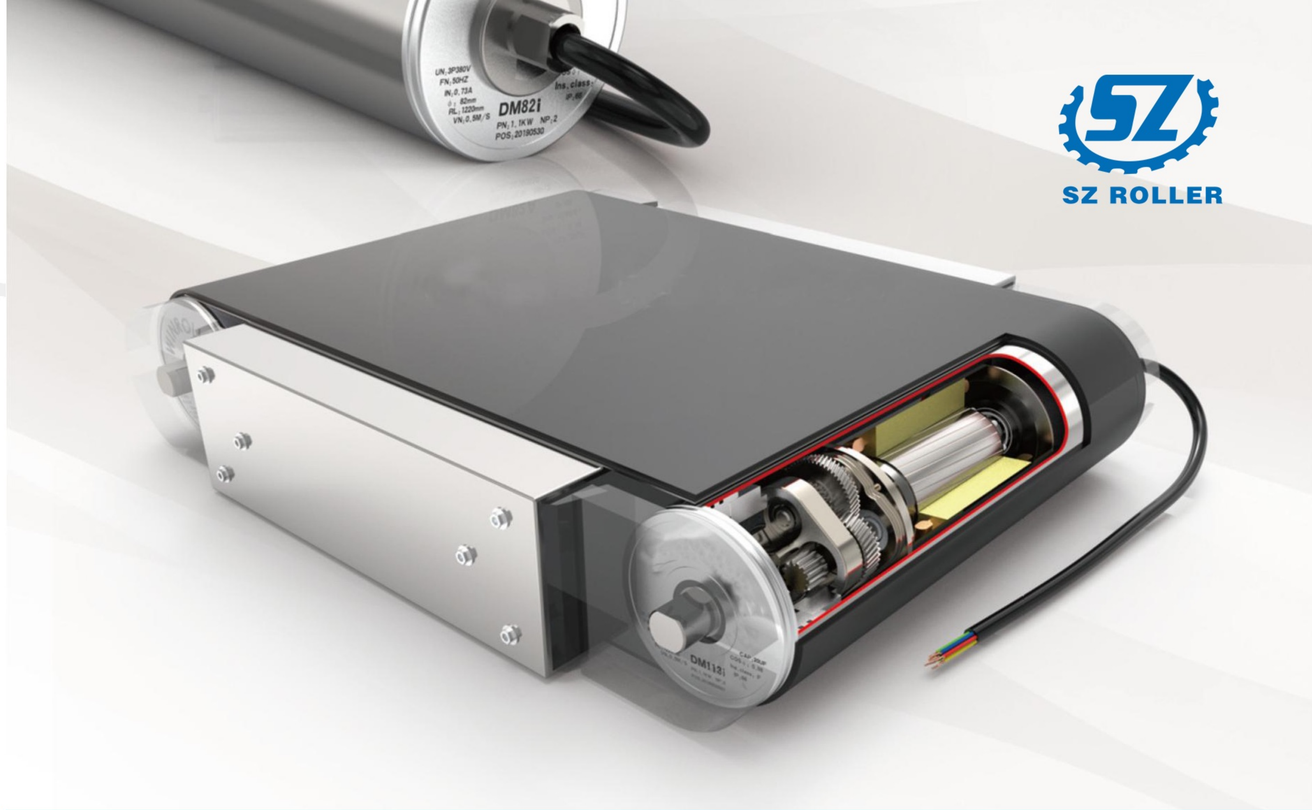
OIL-COOLED



Suzhou Zhisong Mould Co., Ltd

Suzhou Zhisong Mould Co.,Ltd
Manufacturer of Drum motor from P.R.C

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2023 | Drum Motor DM82 & DM113 Special for Belt conveyor

基本技术信息
BASIC TECHNICAL INFORMATION

Advantages of SZ-ROLLER Drum motor：

Fast and simple installation
Compared with the traditional power drive unit such as motor reducer. SZ-ROLLER Drum motor is faster and simpler when installing the conveying equipment. Only 1/4 of the installation time of the traditional motor reducer system is required.

Operation safety
Different from the composite combination of the transmission system of traditional motor reducer, SZ-ROLLER Drum motor assembles all components (such as motor, deceleration device) in a closed cylinder. Only the supporting shaft at both ends is fixed with the conveying equipment to make the conveying equipment operate safely.

Space saving
Different from the traditional motor drive system (generally composed of motor, reducer, motor roller, chain and support), the motor roller assembles all the external components in the same cylinder to form a simple driving unit, thus reducing the space occupied by the conveyor equipment.
Energy saving

Energy saving
SZ-ROLLER Drum motor directly transmits the power from the motor to the roller surface, which greatly shortens the conduction process, improves the working efficiency of the motor by 97% and saves energy consumption by up to 30%.

Low operation noise
SZ-ROLLER Drum motor is assembled with high-quality alloy steel finishing gear, European standard motor and complete machine meeting tolerance requirements to ensure high quality and extremely low noise during operation of motor roller. The noise value is far lower than the European Union's marking requirements for motor roller.

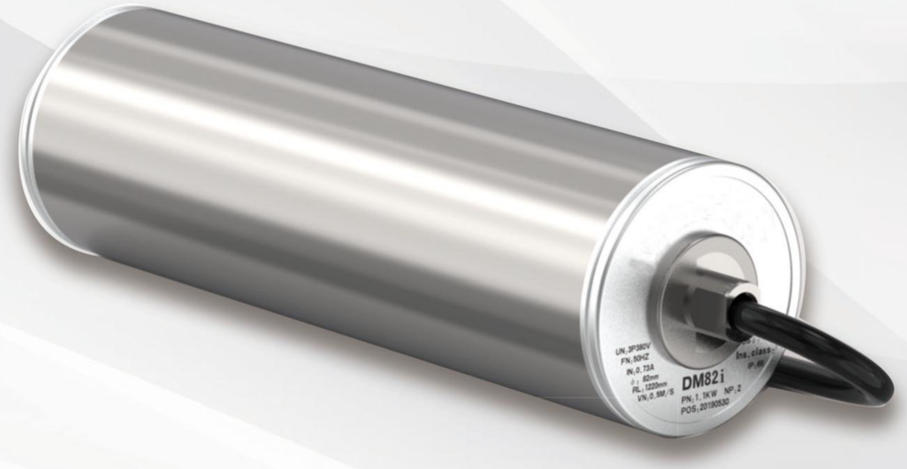
Adaption to rough environment
IP66/67 high-precision design ensures the use of SZ-ROLLER Drum motor in a suitable severe environment (such as water, dust, sand, chemicals and grease). The food-level motor roller can be washed using high-pressure hot water.

Convenient and simple maintenance
All core components will not be damaged by the external environment with the closed special design of SZ-ROLLER Drum motor. The oil of metal gear of motor roller is replaced every 50000 hours. The motor roller of high polymer materials is free of life-time maintenance.

电动滚筒——DM82i

DRUM MOTOR—DM82I

适用于小型轻型输送机的强大驱动器



Application fields

Special for Supermarket

*Cash register conveyor

*Small security inspection machine

*Small and light-weighted conveyor

*Light packaging equipment

* Food Processing

SZ ROLLER

DM82i DRUM MOTOR FEATURES:

Drive light load using high-tech polymer or high-tech polymer steel gearbox

Due to its strength, reliability and zero maintenance,

It's very suitable for small feed conveyor,packaging equipment and transfer conveyor.

Cylinder

The standard cylinder is made of low carbon steel . Antirust oil is applied on the finished surface.

The food-level cylinder is made of 304 stainless steel.

The surface of standard cylinder is machined with anti-slip thread.

Gear drive

Grinding gear of high alloy steel ensures ultra-low noise transmission.

Die-casting aluminum gear box

Motor

The frequency is 50Hz or 60Hz, which is suitable for the universal voltage all over the world.

Motor insulation class: F class.

All motors are equipped with thermal protectors

Motor oil immersion heat dissipation

Cable outlet, the standard length of the cable is 1.2 meters.

Sealing grade

Double seal design for shaft end

Seal protection grade of motor roller is IP66/67.

Oil injection

Before the delivery, the Drum motor has filled oil as per the standard.

Change oil every 50000 hours.

Others

Horizontal installation

Speed and length of cylinder can be made according to customer's requirement.

The non-Standard drum motor may be made according to the customers requirements.

C-level safety certification of international authoritative bodies

Drum Motor DM82i-1*230V/50Hz

Special for cash register belt conveyor

DM82A-1*230V/50Hz									
Power (kw/hp)	Poles	Gear Series	Gear Ratio	Speed (m/s)	Torque (Nm)	Traction (N)	Rated Current (A)	Min.Length (MM)	Min.Weight (KG)
0.034/0.045	4	3	74.79	0.08	16.41	400	0.48	290	6
			55.11	0.10	13.11	320			
			37.89	0.15	8.73	214			
		2	28.95	0.20	6.55	160			
			21.33	0.27	4.85	118			
			14.67	0.40	3.28	80			
			11.81	0.50	2.62	64			
0.06/0.08	2	3	74.79	0.15	15.42	391	0.57	270	5
			55.11	0.20	11.01	269			
			37.89	0.30	7.71	188			
		2	28.95	0.39	5.91	142			
			21.33	0.52	4.37	104			
			14.67	0.76	2.95	71			
			11.81	0.95	2.36	56			
0.085/0.115	2	3	74.79	0.16	19.28	489	0.66	290	6
			55.11	0.22	13.77	336			
			37.89	0.32	9.63	236			
		2	28.95	0.41	7.38	177			
			21.33	0.56	5.46	131			
			14.67	0.81	3.69	89			
			11.81	1.01	2.96	71			
0.11/0.15	2	3	55.11	0.22	22.02	538	0.99	290	6
			37.89	0.32	15.42	376			
		2	28.95	0.42	11.82	284			
			21.33	0.56	8.74	208			
			14.67	0.82	5.90	142			
			11.81	1.02	4.72	112			

Based on the minimum cylinder length and weight, the weight of Drum motor increases about 1.2kg when the cylinder length increases 100mm

Drum Motor DM82i-3*400V/50Hz

Special for cash register belt conveyor

SZ ROLLER

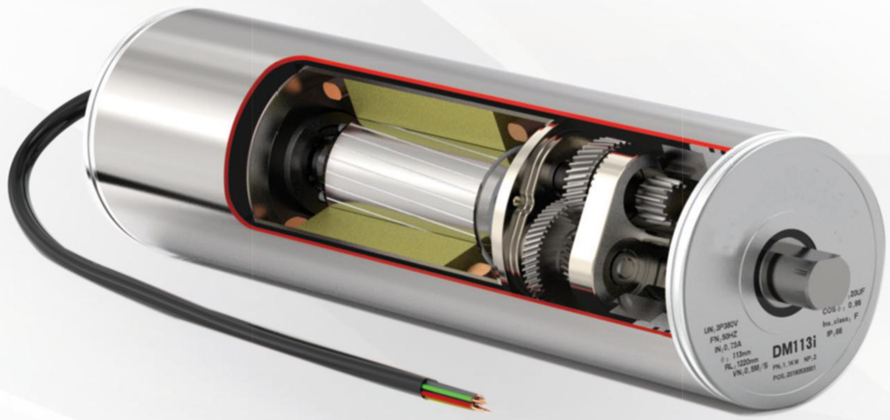
DM82A-3*400V/50Hz									
Power (kw/hp)	Poles	Gear Series	Gear Ratio	Speed (m/s)	Torque (Nm)	Traction (N)	Rated Current (A)	Min.Length (MM)	Min.Weight (KG)
0.04/0.05	4	3	74.79	0.08	18.00	450	0.43	290	6
			55.11	0.10	14.40	360			
			37.89	0.15	9.60	240			
0.06/0.08	2	3	74.79	0.15	19.28	489	0.30	270	5
			55.11	0.20	13.77	336			
			37.89	0.30	9.63	236			
		2	28.95	0.39	7.38	177			
			21.33	0.52	5.46	131			
			14.67	0.76	3.69	89			
			11.81	0.95	2.96	71			
	4	3	55.11	0.10	28.91	705	0.36	290	6
			37.89	0.15	19.27	470			
0.09/0.12	2	3	74.79	0.16	23.13	587	0.43	290	6
			55.11	0.22	16.52	403			
			37.89	0.32	11.56	283			
		2	28.95	0.41	8.86	212			
			21.33	0.56	6.55	157			
			14.67	0.82	4.43	106			
			11.81	1.01	.3.55	85			
0.12/0.16	2	3	55.11	0.22	22.02	538	0.53	290	6
			37.89	0.32	15.42	376			
		2	28.95	0.42	11.82	284			
			21.33	0.56	8.74	208			
			14.67	0.82	5.90	142			
			11.81	1.02	4.72	112			

Based on the minimum cylinder length and weight, the weight of Drum motor increases about 1.2kg when the cylinder length increases 100mm

电动滚筒——DM113i

DRUM MOTOR—DM113I

适用于高强度轻型和中型输送机的卓越的强力驱动装置



Application fields

Special for Security baggage handling system

*X-ray machine (airports and stations)

* Packaging Machinery

* Power belt scale

* Food Processing

* Meat processing

* Postal sorting

* Belt conveyor

* Agricultural sorting and delivery equipment

SZ ROLLER

DM113i DRUM MOTOR FEATURES:

Light load drive and steel gearbox.

The Drum motor is developed for applications requiring a strong driving force.

DM113i may be used for transmission equipment with special requirements for space, low noise and high power of transmission system.

Full of High-tech machining,High-alloy steel gear and Special high-precision assembly method.

Cylinder

The standard cylinder is made of low carbon steel . Antirust oil is applied on the finished surface.

The food-level cylinder is made of 304 stainless steel.

The surface of standard cylinder is machined with anti-slip thread.

Gear drive

Grinding gear of high alloy steel ensures ultra-low noise transmission.

Die-casting aluminum gear box

Motor

The frequency is 50Hz or 60Hz, which is suitable for the universal voltage all over the world.

Motor insulation class: F class.

All motors are equipped with thermal protectors

Motor oil immersion heat dissipation

Cable outlet, the standard length of the cable is 1.2 meters.

Sealing grade

Double seal design for shaft end

Seal protection grade of motor roller is IP66/67.

Oil injection

Before the delivery, the Drum motor has filled oil as per the standard.

Change oil every 50000 hours.

Others

Horizontal installation

Speed and length of cylinder can be made according to customer's requirement.

The non-Standard drum motor may be made according to the customers requirements.

C-level safety certification of international authoritative bodies

Drum Motor DM113i-1*230V/50Hz

Special for luggage scanner belt conveyor

DM113i-1*230V/50Hz									
Power (kw/hp)	Poles	Gear Series	Gear Ratio	Speed (m/s)	Torque (Nm)	Traction (N)	Rated Current (A)	Min.Length (MM)	Min.Weight (KG)
0.12/0.16	4	3	60.66	0.15	49.04	868	0.84	290	11
			49.36	0.18	39.83	705			
			41.07	0.21	35.41	627			
			37.07	0.23	31.87	564			
			31.59	0.27	25.49	451			
			25.70	0.34	21.24	376			
			21.38	0.40	17.68	313			
			19.63	0.44	15.93	282			
		2	15.71	0.55	12.88	230			
			13.07	0.65	10.85	192			
			12.00	0.71	10.34	183			
	6	3	60.66	0.08	79.67	1410	1.00	325	13
			49.36	0.10	63.73	1128			
0.15/0.20	4	3	60.66	0.14	61.30	1085	1.24	300	11
			49.36	0.17	49.78	881			
			41.07	0.21	44.24	783			
			37.70	0.22	39.83	705			
			31.59	0.26	31.87	564			
			25.70	0.33	26.56	470			
			21.38	0.39	22.15	392			
			19.63	0.43	19.94	353			
		2	15.71	0.54	16.27	288			
			13.07	0.64	13.56	240			
			12.00	0.70	12.94	229			

Based on the minimum cylinder length and weight, the weight of Drum motor increases about 2.0kg when the cylinder length increases 100mm

Drum Motor DM113i-1*230V/50Hz

Special for luggage scanner belt conveyor

SZ ROLLER

DM113i-1*230V/50Hz									
Power (kw/hp)	Poles	Gear Series	Gear Ratio	Speed (m/s)	Torque (Nm)	Traction (N)	Rated Current (A)	Min.Length (MM)	Min.Weight (KG)
0.18/0.24	4	3	60.66	0.14	73.56	1302	1.40	300	12
			49.36	0.17	59.78	1058			
			41.07	0.21	53.11	940			
			37.07	0.22	47.80	846			
			31.59	0.26	38.25	677			
			25.70	0.33	31.87	564			
			21.38	0.39	26.56	470			
			19.63	0.43	23.90	423			
		2	15.71	0.54	19.49	345			
			13.07	0.64	16.27	288			
			12.00	0.70	15.48	274			
0.23/0.31	4	3	49.36	0.17	76.33	1351	1.67	325	13
			41.07	0.20	67.86	1201			
			37.07	0.22	61.08	1081			
			31.59	0.26	48.87	865			
			25.70	0.32	40.74	721			
			21.38	0.38	33.96	601			
			19.63	0.42	30.57	541			
		2	15.71	0.53	24.97	442			
			13.07	0.63	20.79	368			
			12.00	0.68	19.78	350			

Based on the minimum cylinder length and weight, the weight of Drum motor increases about 2.0kg when the cylinder length increases 100mm

Drum Motor DM113i-3*400V/50Hz

Special for luggage scanner belt conveyor

DM113i-3*400V/50Hz									
Power (kw/hp)	Poles	Gear Series	Gear Ratio	Speed (m/s)	Torque (Nm)	Traction (N)	Rated Current (A)	Min.Length (MM)	Min.Weight (KG)
0.12/0.16	4	3	60.66	0.14	49.04	868	0.42	270	8
			49.36	0.17	39.83	705			
			41.07	0.20	35.41	627			
			37.07	0.22	31.87	564			
			31.59	0.27	25.49	451			
			25.70	0.33	21.24	376			
			21.38	0.39	17.68	313			
			19.63	0.43	15.93	282			
		2	15.71	0.54	12.88	230			
			13.07	0.64	10.85	192			
			12.00	0.70	10.34	183			
	6	3	60.66	0.09	79.67	1410	0.67	290	11
			49.36	0.11	63.73	1128			
0.15/0.20	4	3	60.66	0.14	61.30	1085	0.47	290	11
			49.36	0.17	49.78	881			
			41.07	0.21	44.24	783			
			37.70	0.22	39.83	705			
			31.59	0.26	31.87	564			
			25.70	0.33	26.56	470			
			21.38	0.39	22.15	392			
			19.63	0.43	19.94	353			
		2	15.71	0.54	16.27	288			
			13.07	0.64	13.56	240			
			12.00	0.70	12.94	229			
	6	3	49.36	0.11	79.67	1410	0.82	300	13
0.18/0.24	4	3	60.66	0.11	73.56	1302	0.57	290	11
			49.36	0.17	59.78	1058			
			41.07	0.20	53.11	940			
			37.07	0.22	47.80	846			
			31.59	0.26	38.25	677			
			25.70	0.32	31.87	564			
			21.38	0.39	26.56	470			
			19.63	0.42	23.90	423			
		2	15.71	0.53	19.49	345			
			13.07	0.64	16.27	288			
			12.00	0.69	15.48	274			

Drum Motor DM113i-3*400V/50Hz

Special for luggage scanner belt conveyor

SZ ROLLER

DM113i-3*400V/50Hz									
Power (kw/hp)	Poles	Gear Series	Gear Ratio	Speed (m/s)	Torque (Nm)	Traction (N)	Rated Current (A)	Min.Length (MM)	Min.Weight (KG)
0.25/0.34	4	3	49.36	0.16	82.99	1469	0.84	300	13
			41.07	0.20	73.73	1305			
			37.07	0.22	66.39	1175			
			31.59	0.26	53.11	940			
			25.70	0.32	44.29	784			
			21.38	0.38	36.89	653			
			19.63	0.42	33.22	588			
		2	15.71	0.52	27.12	480			
			13.07	0.62	22.60	400			
			12.00	0.68	21.47	380			
0.37/0.50	4	3	31.59	0.26	78.60	1391	1.13	325	14
			25.70	0.32	65.50	1159			
			21.38	0.38	54.59	966			
			19.63	0.42	49.13	870			
		2	15.71	0.52	40.14	710			
			13.07	0.62	33.45	592			
			12.00	0.68	31.86	564			
0.55/0.75	2	3	41.07	0.40	81.14	1436	1.24	325	14
			38.50	0.44	73.03	1293			
			31.59	0.53	59.66	1056			
			25.70	0.65	49.72	880			
			21.38	0.79	40.57	718			
			19.63	0.85	36.51	646			
		2	15.71	1.10	29.83	528			
			13.07	1.30	24.86	440			
			12.00	1.40	23.68	419			

DM113i选型表——电动滚筒/从动滚筒

DM113I SELECTION TABLE -- ELECTRIC DRUM/DRIVEN DRUM

	Description of Components	Motor roller	Driven roller
	Simplified		
	Carbon steel coronary cylinder	1	1
	Carbon steel straight cylinder	2	2
	Stainless steel (Standard 304) Coronal cylinder	2	2
	Stainless steel (standard 304) straight cylinder	2	2
	Front and back end cover		
	Cast aluminum end cap	1	1
	Stainless steel (standard 304) end cover	2	2
	Anterior -posterior axis		
	Carbon steel shaft	1	1
	Nickel plated shaft	2	2
	Stainless steel (standard 304) shaft	2	2
	Coating		
	Black plane vulcanizing coating	2	2
	White plane vulcanizing coating	2	2
	Polyurethane flat vulcanizing coating	2	2
	With mesh belt sprocket	2	2
	V-groove coating	3	3
	Motor		
	Single-phase or three-phase asynchronous motor	1	
	Voltage 1*230v/50Hz or 3*400v/50Hz	1	
	Dual voltage motor	2	
	Universal voltage at 50Hz or 60Hz	1	
	Install motor overheat protector	1	
	Low-temperature environmental oil	2	
	Food oil and grease (FDA and USDA)	2	
	Electrical connection		
	Straight outlet	1	
	Curved outlet	2	
	Stainless steel curved outlet	3	
	Cast aluminum terminal box	2	
	Stainless steel terminal box	3	
	PVC cable	1	
	Shielding cable (frequency converter)	3	
	Low-smoke and halogen-free cable	2	
	Other options		
	Backstop	2	
	Vertical or inclined mounting	3	
	Connecting inverter	2	

Notes:

1- Standard assembly options

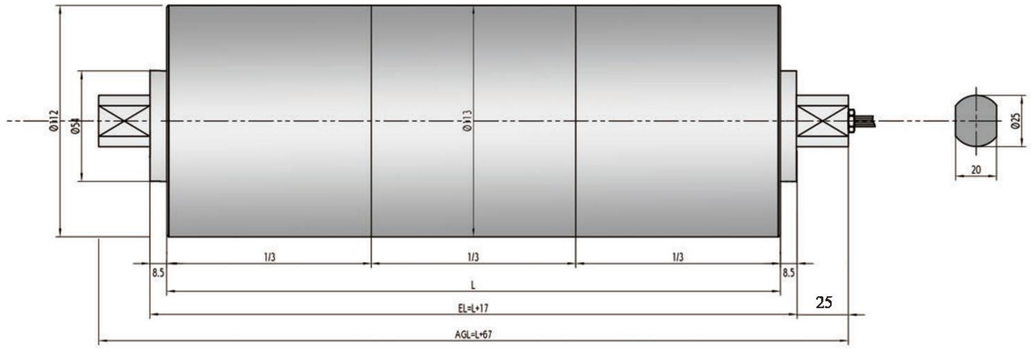
2- Non-standard common options

3 - Restrictive options. Selection should be confirmed by the manufacturer

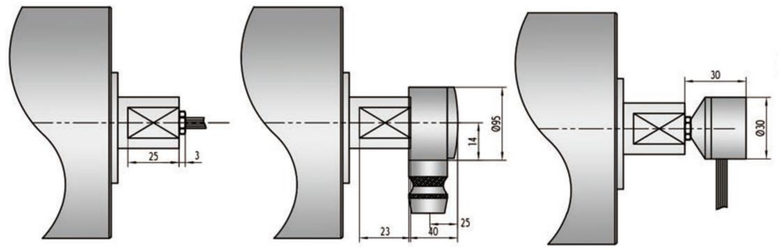
外形尺寸

OVERALL DIMENSIONS

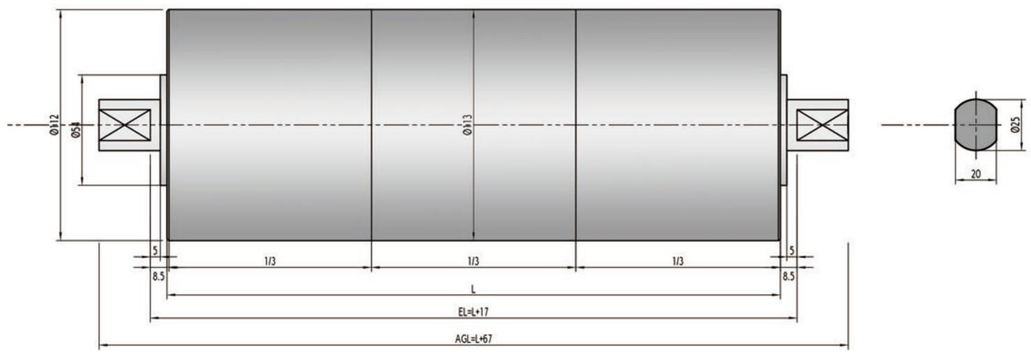
DM113i Motor roller



Straight outlet **Wiring terminal box** **Stainless steel curved outlet**



DM113i Driven roller



电动滚筒的安装注意事项

MATTERS NEEDING ATTENTION FOR INSTALLATION OF ELECTRIC ROLLER

Installation precautions of motor roller

Installation

1. Generally, the motor roller is installed horizontally, parallel to the driven roller and vertical to the conveyor frame. All motor rollers must be fully supported and fixed on the frame of the conveyor, and the shaft end must not be deformed. Both ends of the shaft must be fully supported on the support.
2. When installing the support, the support should be in close contact with the shaft end plane of the motor roller to ensure no axial clearance. If the support is not used for installation, more than 80% of the plane part of the shaft end must be supported, and the gap between the plane part of the shaft end and the support should be less than 0.4mm. There should be no gap when the motor roller starts or stops frequently.
3. DM80i/DM113i/DM138i/DM165i/DM216i/ motor roller shaft end is marked "UP" or "UP↑". During installation, make sure that the words "UP" or "UP ↑" face upward or towards the direction of the driven roller (to ensure the full lubrication of the gear), otherwise it will cause excessive noise, overheating of the cylinder and complete damage of the motor roller.
4. Inclined mounting of motor roller: It is forbidden to use when the inclination angle of DM 80i/DM113i and DM138 series is larger than 2° and DM165DM216 series is larger than 4°. Otherwise, the gear cannot be fully lubricated because the internal cooling lubricating oil is concentrated at one end, and the heat of the motor cannot be cooled. Long running will cause damage to motor roller. When the installation angle of motor roller is too large or the motor roller is used vertically, the customer should communicate with the manufacturer and use the special motor roller.

Belt tension and belt width

1. After the motor roller is installed, how to correctly transport the belt tensioning degree? Generally speaking, the standard is that the belt is sufficient to transfer traction and the belt does not slip when the load is running. It is strictly forbidden to strain the belt too much, otherwise it will cause excessive noise of the motor roller, overheating of the motor and bending deformation of the front and rear shafts, or directly cause complete damage to the motor roller. When adjusting the belt, make sure that the motor roller and the driven roller are parallel and the belt is tightened evenly, otherwise it will cause belt deviation or belt damage.
2. The motor roller completely relies on the belt for heat dissipation, and idling is strictly prohibited when the conveyor belt is not installed. Otherwise, the surface temperature of the cylinder will rise rapidly, and the heat inside the motor roller cannot be emitted in time, thus burning out the motor.
3. The width of the conveyor belt must cover more than 2 / 3 of the width of motor roller, so as to prevent the cylinder from overheating due to the internal heat of the motor roller. If there is little or no belt running in contact with the motor roller, a special motor roller must be used. For special motor rollers, the buyer should contact the production supplier.

Cylinder coating

The coating intersection of motor roller will affect the heat dissipation of motor roller. The larger the thickness of the rubber layer, the worse the heat dissipation effect of the cylinder.

Electrical connection

1. The wiring diagram of motor roller is provided with the machine. The wiring drawings are attached to the product manual and company sample in detail.
2. The motor roller must be equipped with motor protection switch or relay. Generally, only the running capacitor is used for the motor. The capacitance value of single-phase motor with different power is marked on the label of motor roller, or asks the supplier directly.
3. The motor roller can be connected to the frequency converter. When connecting the frequency converter, the frequency resonance of the wire should be avoided to produce voltage oscillation to the motor. If the wire is too long, it may cause frequency resonance between frequency converter, wire and motor.

There are two ways to eliminate possible frequency resonances:

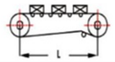
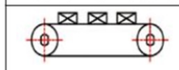
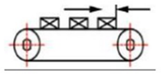
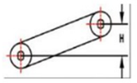
(1) Limit the length of the wire (many inverter manufacturers recommend that the length of the wire should not exceed 10 meters);

(2) Install filters directly on the frequency converter (frequency converter manufacturer can provide). To avoid electromagnetic interference from motor roller, the inverter shall be shielded according to the requirements of "electromagnetic compatibility" - EMC-89/336/EEC - in the EU ECO document.

4. Most motors of motor roller are grade 2/4/6/8.
5. The motor roller is designed to start directly. When connected to a soft starter, such as a star, triangle switch, the starting power of the motor will be sharply reduced and may cause the motor to overheat. As a safety measure, grounding screws in the junction box shall be used, protective conductors must be connected to grounding screws, and ground wires must be connected to protective conductors of the main power supply.
6. When the motor roller is equipped with an anti-reverse device, the motor is connected to the correct direction of rotation, otherwise the motor will be damaged when powering on. The rotation direction is generally marked on the end cover of motor roller.
7. The wiring of the motor roller must be completed by the professional electrician, comply with the electrician standard, and connect the motor roller to the correct main power supply according to the connection instructions.
8. The motor roller cannot be electrified or put into operation before it is properly installed, properly connected and installed with rotary protection device.
9. Before the motor roller starts, it must be confirmed that the motor roller is connected correctly with correct connection power and the motor roller and belt can be rotated freely.

电动滚筒的皮带牵引力计算

CALCULATION OF BELT TENSION OF ELECTRIC ROLLER

Calculation formula of traction force under different conditions			
Belt conveying system	Belt on the roller 	Belt on the plate 	Plates on the way back and forth 
 Traction without load	FO=04*L*(2Gn+Gr)	F0 = 11* + Gn* + f2	F0 = 10 * L * Gn * (f2 + f4)
 Traction during horizontal delivery	F1 = 0 . 4 * L*GM1	F1 = 11 * L * Gm * f2	F1 = 10 * L* (Gm1* f2 + Gm2*f4)
 Traction when gathering and transporting goods	F2 = 10 * L * Gm1 * f1	F2 = 10 * L * Gm * f1	F2 = 10 * L * (Gm1 * f1 + Gm2 * f3)
 Traction when climbing to transport goods	F3 = 10 * H * Gm1	F3 = 10 * H *Gm1	F3 = 10 * H * (GM1-GM2)
F: Traction of motor roller (N), F=F0+F1+F2+F3 f1: Friction coefficient between conveying goods and belt bearing surface (see table 2) f2: Friction coefficient between conveying plates and belt bearing surface (see table 1) f3: Friction coefficient between conveying goods and return belt bearing surface (see table 2) f4: Friction coefficient between conveyor plate and belt bearing surface (see table 1)		L: Horizontal projection of center distance of driving roller and reversing roller (m) H: Conveying height (mm) Gm1: Load weight per meter belt conveyor, indicating incoming distance (kg/m) Gm2: Load weight per meter belt conveyor, indicating return (kg/m) Gn: Belt weight per meter (kg/m) Gr: Total rotary weight per meter belt conveyor, including parts back and forth (kg/m)	

Friction factor: Table 1

f2/f4	PE Belt	PP Belt	POM belt	PVC belt	Polyester fiber
PE Sliding panel	0.34	0.12	0.11	-	-
Low carbon or stainless steel plate	0.15	0.27	0.22	0.48	0.28

Friction factor: Table 2

f1/f3	PE Belt	PP Belt	POM belt	PVC belt	Polyester fiber
Steel products	0.14	0.34	0.23	-	-
Glass products	0.10	0.20	0.16	-	-
Plastic products	0.09	0.18	0.16	-	-

Notes: All the data in the parameter table are based on the voltage frequency of 50Hz; If the motor is powered by a power supply of 60Hz frequency, the motor speed will increase by 20%.

Belt tension

·When calculating the belt tension, we should pay attention to the following points:
·Length and width of conveyor belt
·Belt type
·Check conveyor belt tension required to carry loads
·Check belt extension length for installation. According to the load, the belt extension length should be 0.2% to 0.5% of the belt length.
·Belt tension and belt extension lengths are available from belt suppliers.
·Ensure that the required belt tension does not exceed the maximum belt tension of the motor roller.

The required belt tension T1 (front) and T2 (bottom) can be calculated according to DIN22101 or CEMA standard. The actual belt tension can be roughly determined by measuring the elongation during belt tension with reference to the manufacturer's specifications. Excessive belt tensioning may damage other internal components of bearings or motor rollers and shorten the service life of the product.