

PM605KT SERIE

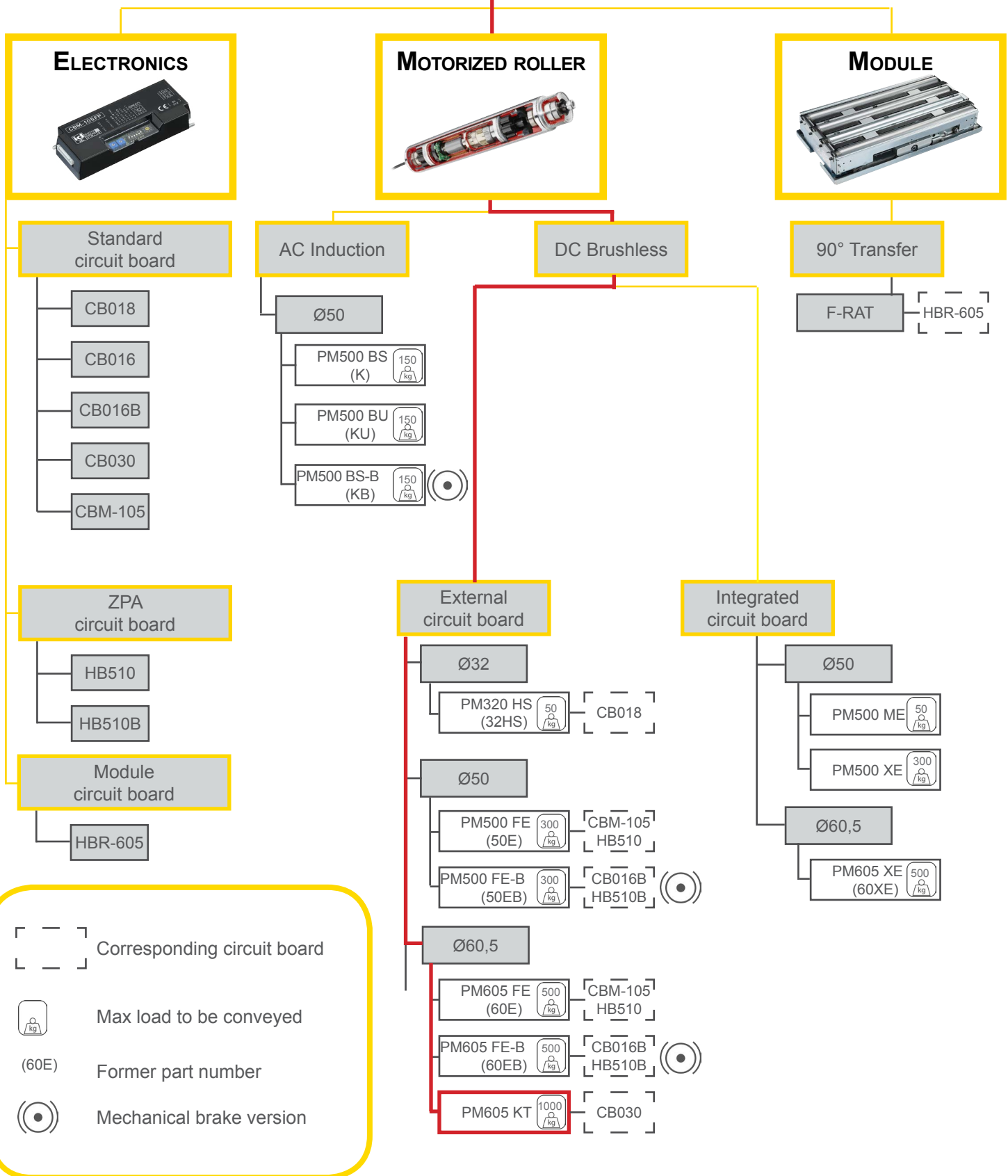
TECHNICAL DOCUMENTATION

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1 - PRESENTATION OF THE POWER MOLLER® PRODUCT RANGE

POWER MOLLER®












▶ 2 - PRESENTATION OF THE SERIES

This motorized roller with brushless technology 24VDC, used with circuit board CB-030, is the most powerful roller of our product's range, and on the market. It is designed for heavy loads transport, it can be used for roller conveyors with light to medium loads, and for belt conveyor with classic or plastic Intralox belts.

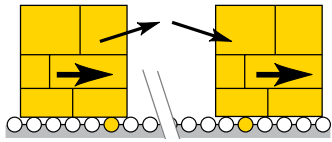


General characteristics

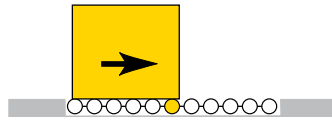
CHARACTERISTICS		SPEED CODE 15	SPEED CODE 55	
ELECTRO-MECHANICAL	Motor	Direct current and brushless 24 VDC		
	Absorbed power (W)	nominal	41 à 92	
		start-up	168	
	Tangential force (N)	nominal	174 - 308	48 - 85
		start-up	848	235
	Operation	Continuous or intermittent 1800 starts/h max. Minimum duty cycle : 1s ON / 1s OFF		
	Brake	Dynamic braking		
	Nominal speed (m/min)	2,2 - 17,2	8,2 - 65,4	
Protection index	IP54, cold room (Contact us for other classes)			
Lenght (contact us L>1500)	360 à 1500 mm	340 à 1500 mm		
Static load max.	360 < L < 1500 = 160kg per roller			
CONTROL	Input signal	Start / Stop, Direction of rotation		
	Selection of rotation direction	By dip switch (CW/CCW)		
	Speed setting	20 speeds with a rotating switch or 20 speeds by external analog voltage of 0-10VDC		
	Acceleration and deceleration	Adjustable with potentiometer from 0 to 2,5s		
	Pulse signal out-put	89,90 pulse / roller rotation	25,28 pulse / roller rotation	
	Error signal in-put	Over-heating, wiring error, under-voltage, over-voltage...		
Protection	Against polarity reversal 0/24V and power backfeed, fuse, integrated thermal protection			

MECHANICAL	Shaft and flange motor side :	 Plain hexagonal	<ul style="list-style-type: none"> • Plain hexagonal 13,5mm • Heat-treated and phosphated steel shaft • Heat-treated flange
	Shaft and flange free side :	 Hexagonal spring loaded  Set screw	<ul style="list-style-type: none"> • Plain hexagonal 13,5mm with spring or Ø 15mm x 8mm, 13mm flat M10 threaded • Heat-treated and phosphated steel shaft • Heat-treated flange
	Tube :	 Zinc plated steel  Stainless steel	<ul style="list-style-type: none"> • Tube in precision cold drawn steel, ST37-2 quality, outer diam. 60,5mm • Zinc plated steel or stainless steel (304L)
	Pulleys :	 Ribbed with hexagonal spring loaded  Ribbed with M10 threaded	Pulleys for : <ul style="list-style-type: none"> • Ribbed belt 12 teeth, zinc plated steel • Plain hexagonal 13,5mm with spring or M10 threaded
	Lagging :	 Polyurethane  Natural rubber / nitrile	<ul style="list-style-type: none"> • Polymerized polyurethane coating, thickness 4,75 mm, 90 ShA, grey • Natural hot vulcanized rubber coating, thickness 4,75 mm, 60~65 ShA

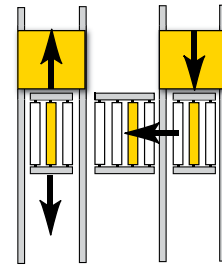
■ Applications



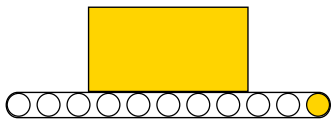
Acceleration / Deceleration



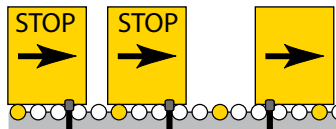
Floor conveyor



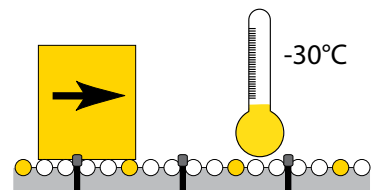
90° transfer



Belt conveyor



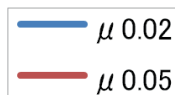
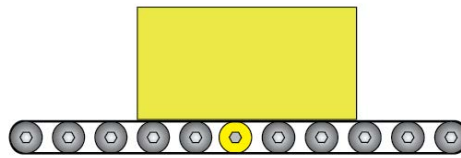
Areas control (ZPA)



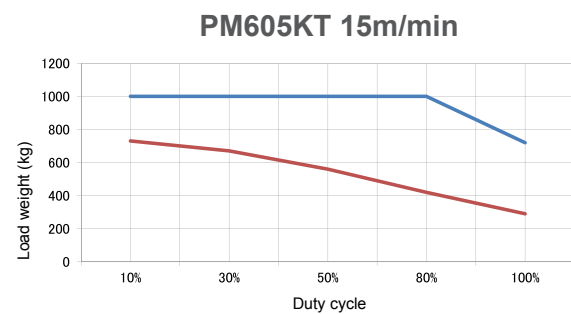
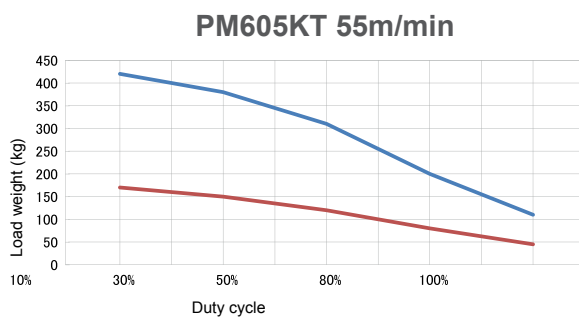
Cold room

3 - TRANSFER CAPACITY

Roller conveyor

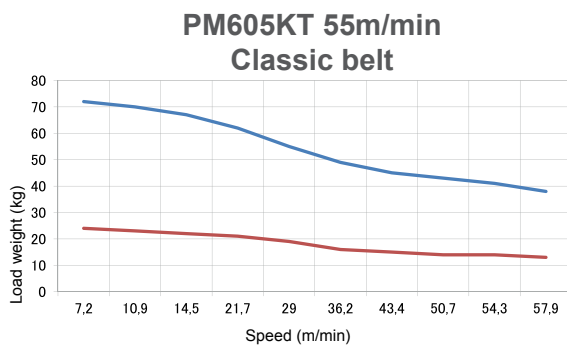
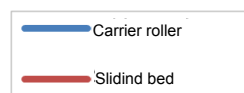
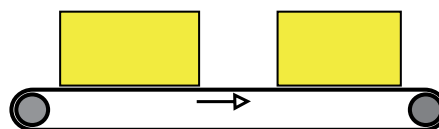


* μ : coefficient of rolling friction FYI : 10 slave rollers driven by ribbed belts with a pitch of 155mm.

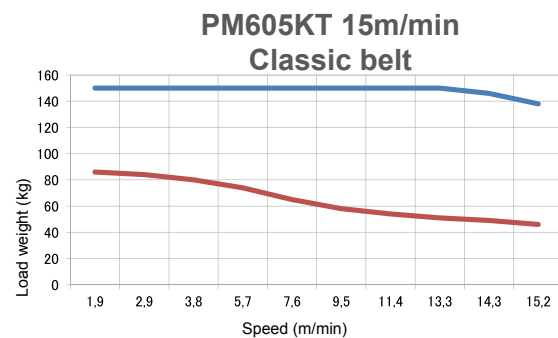


These curves are given as a guide. Transfer capacity depends on the nature and quality of the transported load, the belt tension, the quality of the bearings, the nature of the sleeves, the ambient temperature...

Belt conveyor



Belt conveyor dimension (lxL): 1mx3m



Belt conveyor dimension (lxL): 1mx4m

These curves are given as a guide. Transfer capacity depends on the nature and quality of the transported load, the belt tension, the quality of the bearings, the nature of the sleeves, the ambient temperature...

4 - TECHNICAL DATA DEPENDING ON SPEED CODE WITH CIRCUIT BOARD CB030P

SPEED CODE 15

SW1-5	SW2	V (m/min) +/- 3%		Tangential force (N)		Torque (Nm)		Current (A)			Nominal absorbed power (W)	Rated output power (W)	Speed selection by external tension
		No load	Nominal	Nominal	Start-up	Nominal	Start-up	No load	Nominal	Start-up			
ON	9	17,2	17,2	174,3	848,0	5,3	25,7	0,7	3,8	7,0	90,4	58,9	9.6~9.9
	8	15,8	15,8	180,2		5,5		0,7	3,7		88,1	57,7	9.1~9.4
	7	15,1	15,1	183,8		5,6		0,6	3,6		85,6	55,7	8.6~8.9
	6	14,3	14,3	188,7		5,7		0,6	3,4		81,9	53,1	8.1~8.4
	5	13,6	13,6	192,4		5,8		0,5	3,3		78,3	51,0	7.6~7.9
	4	12,9	12,9	199,3		6,0		0,5	3,2		76,4	49,0	7.1~7.4
	3	11,5	11,5	208,3		6,3		0,5	3,1		73,9	46,9	6.6~6.9
	2	10,8	10,8	215,9		6,5		0,4	3,0		72,5	45,7	6.1~6.4
	1	10,1	10,1	222,2		6,7		0,4	3,0		71,1	43,8	5.6~5.9
	0	9,3	9,3	232,0		7,0		0,4	2,9		69,7	42,4	5.1~5.4
OFF	9	8,6	8,6	240,2	7,3	0,3	2,8	67,2	40,6	4.6~4.9			
	8	7,9	7,9	245,3	7,4	0,3	2,7	64,8	37,5	4.1~4.4			
	7	7,2	7,2	252,4	7,6	0,3	2,6	63,1	35,4	3.6~3.9			
	6	6,4	6,4	261,3	7,9	0,3	2,6	61,1	33,1	3.1~3.4			
	5	5,7	5,7	271,2	8,2	0,2	2,5	59,5	30,5	2.6~2.9			
	4	5,0	5,0	278,7	8,4	0,2	2,4	56,5	27,0	2.1~2.4			
	3	4,3	4,3	289,6	8,8	0,2	2,2	53,4	24,3	1.6~1.9			
	2	3,6	3,6	295,9	9,0	0,1	2,1	50,3	21,6	1.1~1.4			
	1	2,9	2,9	301,2	9,1	0,1	1,9	45,2	17,3	0.6~0.9			
	0	2,2	2,2	308,4	9,3	0,1	1,7	40,7	13,1	0.1~0.4			

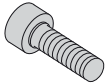

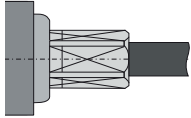
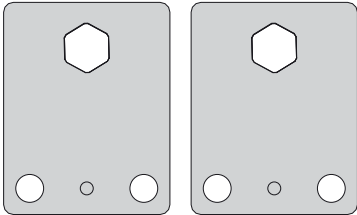
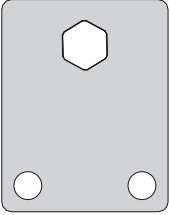
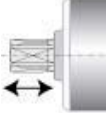
Reduction ratio : 1/54,87

SPEED CODE 55

SW1-5	SW2	V (m/min) +/- 3%		Tangential force (N)		Torque (Nm)		Current (A)			Nominal absorbed power (W)	Rated output power (W)	Speed selection by external tension
		No load	Nominal	Nominal	Start-up	Nominal	Start-up	No load	Nominal	Start-up			
ON	9	65,4	65,4	48,3	234,9	1,5	7,1	0,8	3,8	7,0	90,4	58,9	9.6~9.9
	8	59,9	59,9	49,9		1,5		0,7	3,7		88,1	57,7	9.1~9.4
	7	57,2	57,2	50,9		1,5		0,7	3,6		85,6	55,7	8.6~8.9
	6	54,3	54,3	52,3		1,6		0,6	3,4		81,9	53,1	8.1~8.4
	5	51,8	51,8	53,3		1,6		0,6	3,3		78,3	51,0	7.6~7.9
	4	49,0	49,0	55,2		1,7		0,6	3,2		76,4	49,0	7.1~7.4
	3	43,5	43,5	57,7		1,7		0,5	3,1		73,9	46,9	6.6~6.9
	2	40,9	40,9	59,8		1,8		0,5	3,0		72,5	45,7	6.1~6.4
	1	38,2	38,2	61,6		1,9		0,4	3,0		71,1	43,8	5.6~5.9
	0	35,5	35,5	64,3		1,9		0,4	2,9		69,7	42,4	5.1~5.4
OFF	9	32,6	32,6	66,5	2,0	0,4	2,8	67,2	40,6	4.6~4.9			
	8	30,0	30,0	67,9	2,1	0,3	2,7	64,8	37,5	4.1~4.4			
	7	27,2	27,2	69,9	2,1	0,3	2,6	63,1	35,4	3.6~3.9			
	6	24,4	24,4	72,4	2,2	0,3	2,6	61,1	33,1	3.1~3.4			
	5	21,8	21,8	75,1	2,3	0,3	2,5	59,5	30,5	2.6~2.9			
	4	19,0	19,0	77,2	2,3	0,2	2,4	56,5	27,0	2.1~2.4			
	3	16,3	16,3	80,2	2,4	0,2	2,2	53,4	24,3	1.6~1.9			
	2	13,7	13,7	82,0	2,5	0,2	2,1	50,3	21,6	1.1~1.4			
	1	11,0	11,0	83,4	2,5	0,1	1,9	45,2	17,3	0.6~0.9			
	0	8,2	8,2	85,4	2,6	0,1	1,7	40,7	13,1	0.1~0.4			

Reduction ratio : 1/14,44

▶ 5 - PRESENTATION OF THE DIFFERENTS FIXING OPTION

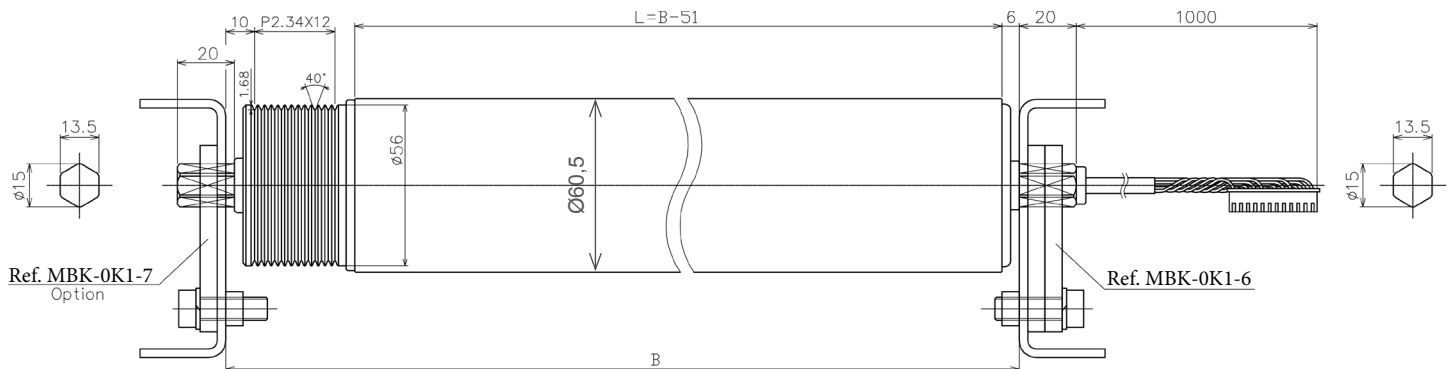
FIXING IDLE END CAP SIDE		FIXING CABLE SIDE	
 SCREW M10x14			 MBK-0KI-6
 MBK-0KI-7 (Optional)			

6 - DIMENSIONAL CHARACTERISTICS

Roller with pulley for ribbed belt

PM605KT (60KT)

Hexagonal plain shaft motor side and hexagonal spring loaded shaft on free end



Dimensions PM605KT (60KT)

Speed code	Dimension (B)	Tube length (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	411 ≤ B ≤ 1551	360 ≤ L ≤ 1500
55	391 ≤ B ≤ 1551	340 ≤ L ≤ 1500

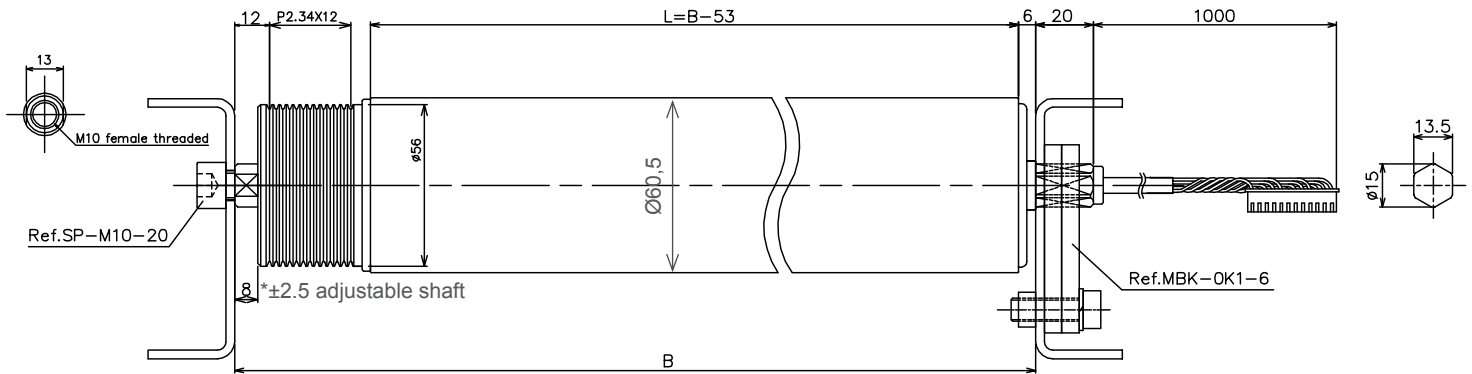
WEIGHT / STATIC LOAD / AXIAL FORCE

Tube length		350	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Weight (Kg)	15 m/min	5,1	5,3	5,7	6,1	6,5	6,9	7,3	7,7	8,1	8,5	8,9	9,3	9,7
	55 m/min	4,8	5,0	5,4	5,8	6,2	6,6	7,0	7,4	7,8	8,2	8,6	9,0	9,4
Static load		160	160	160	160	160	160	160	160	160	160	160	160	160
Axial force max (N)		490												

Roller with pulley for ribbed belt

PM605KT (60KT)

Hexagonal threaded shaft motor side and M10 threaded shaft with screw on free end



Dimensions PM605KT (60KT)

Speed code	Dimension (B)	Tube length (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	413 ≤ B ≤ 1553	360 ≤ L ≤ 1500
55	393 ≤ B ≤ 1553	340 ≤ L ≤ 1500

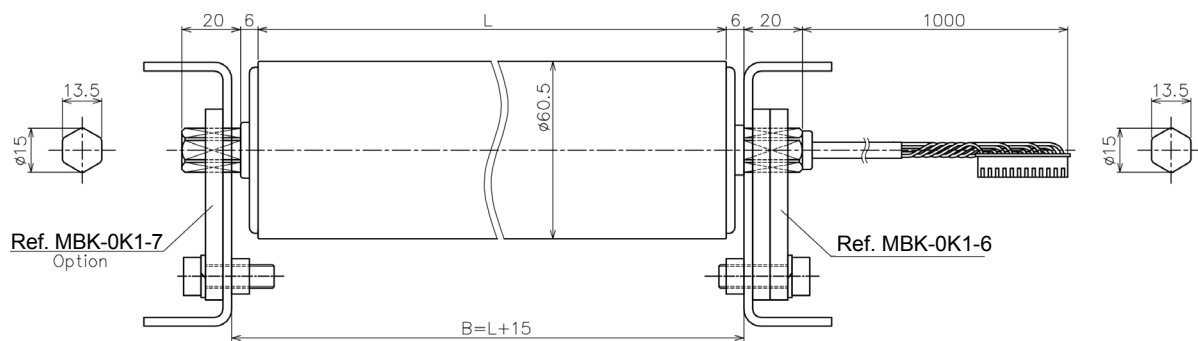
WEIGHT / STATIC LOAD / AXIAL FORCE

Tube length		350	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Weight (Kg)	15 m/min	5,0	5,2	5,6	6,0	6,4	6,8	7,2	7,6	8,0	8,4	8,8	9,2	9,6
	55 m/min	4,8	5,0	5,4	5,8	6,2	6,6	7,0	7,4	7,8	8,2	8,6	9,0	9,4
Static load		160	160	160	160	160	160	160	160	160	160	160	160	160
Axial force max (N)		490												

Roller without drive

PM605KT (60KT)

Hexagonal plain shaft motor side and hexagonal spring loaded shaft on free end



Dimensions PM605KT (60KT)

Speed code	Dimension (B)	Tube length (L)
	mini \leq B \leq max	mini \leq L \leq max
15	$375 \leq B \leq 1515$	$360 \leq L \leq 1500$
55	$355 \leq B \leq 1515$	$340 \leq L \leq 1500$

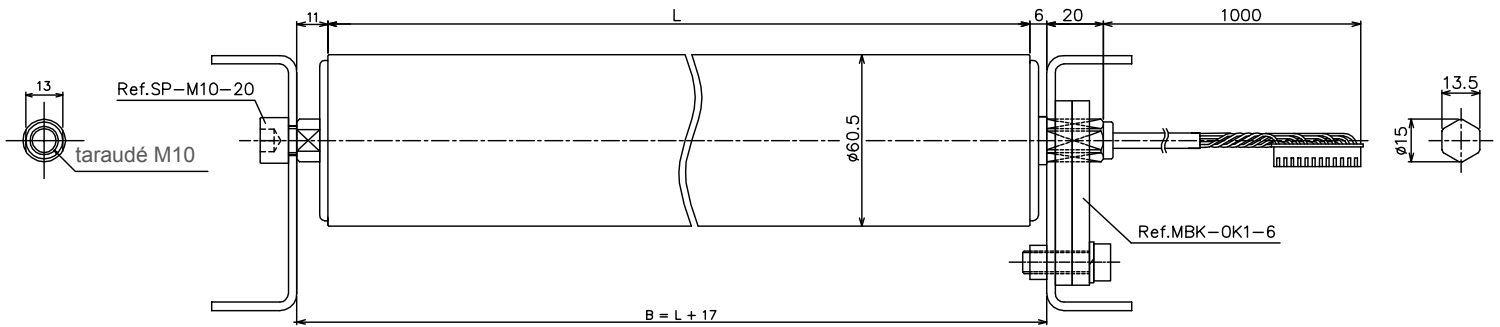
WEIGHT / STATIC LOAD / AXIAL FORCE

Tube length		350	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Weight (Kg)	15 m/min	4,8	5,0	5,4	5,8	6,2	6,6	7,0	7,4	7,8	8,2	8,6	9,0	9,4
	55 m/min	4,6	4,8	5,2	5,6	6,0	6,4	6,8	7,2	7,6	8,0	8,4	8,8	9,2
Static load		160	160	160	160	160	160	160	160	160	160	160	160	160
Axial force max (N)		490												

Roller without drive

PM605KT (60KT)

Hexagonal threaded shaft motor side and M10 threaded shaft with screw on free end



Dimensions PM605KT (60KT)

Speed code	Dimension (B)	Tube lenght (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	377 ≤ B ≤ 1517	360 ≤ L ≤ 1500
55	357 ≤ B ≤ 1517	340 ≤ L ≤ 1500

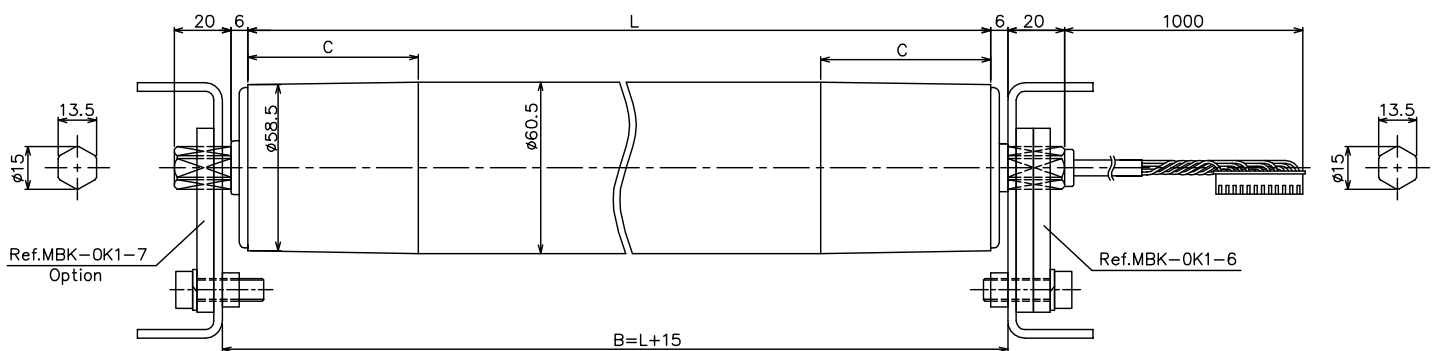
WEIGHT / STATIC LOAD / AXIAL FORCE

Tube lenght		350	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Weight (Kg)	15 m/min	4,8	5,0	5,4	5,8	6,2	6,6	7,0	7,4	7,8	8,2	8,6	9,0	9,4
	55 m/min	4,6	4,8	5,2	5,6	6,0	6,4	6,8	7,2	7,6	8,0	8,4	8,8	9,4
Static load		160	160	160	160	160	160	160	160	160	160	160	160	160
Axial force max (N)		490												

Crowned tube

PM605KT (60KT)

Hexagonal plain shaft motor side and hexagonal spring loaded shaft on free end



Dimensions PM605KT (60KT)

Speed code	Dimension (B)	Tube length (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	375 ≤ B ≤ 1015	360 ≤ L ≤ 1000
55	355 ≤ B ≤ 1015	340 ≤ L ≤ 1000

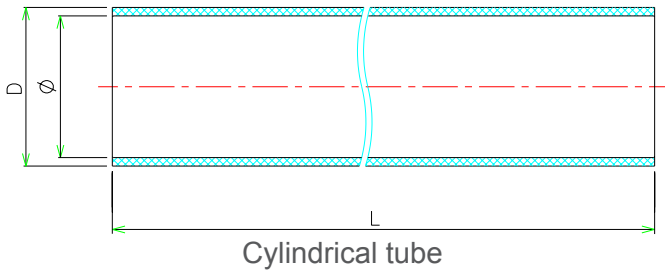
WEIGHT / STATIC LOAD / AXIAL FORCE

Tube length		350	400	500	600	700	800	900	1000
Weight (Kg)	15 m/min	4,8	5,0	5,4	5,8	6,2	6,6	7,0	7,4
	55 m/min	4,6	4,8	5,2	5,6	6,0	6,4	6,8	7,2
Static load		160	160	160	160	160	160	160	160
Axial force max (N)		490							

7 - DIMENSIONAL CHARACTERISTICS - MISCELLANEOUS

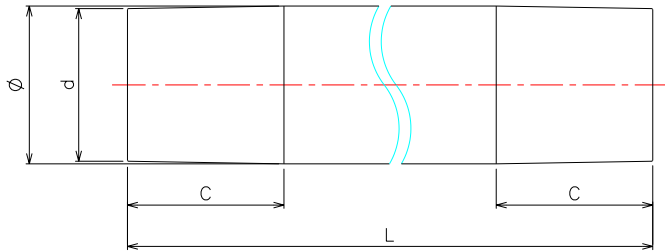
Coated in natural rubber, nitrile rubber and polyurethane

Matière	Characteristics	Hardness (ShA)	Thickness (mm)
Natural rubber	It improves the adherence of the products conveyed and reduces noise. Do not use in contact with hydrocarbon, oil or grease.	60~65	4,75
Nitrile rubber			
Polyurethane	High resistance to abrasion, tearing and oil.	90	



L (mm)	Ø (mm)	D (mm)
≤1200	60,5	70

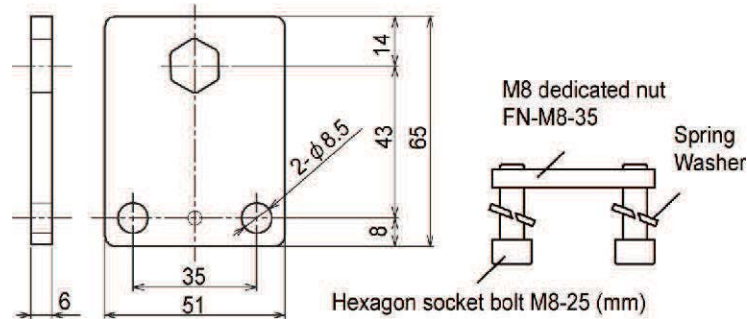
Crowned machining



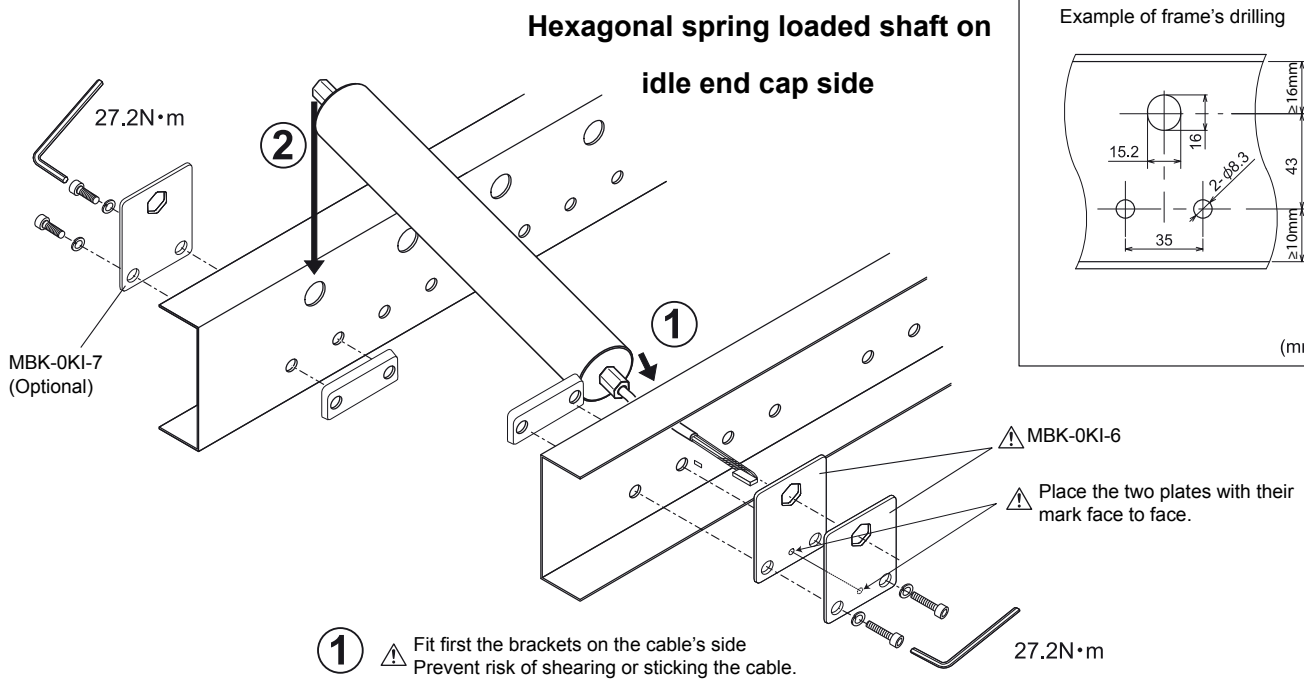
L (mm)	C (mm)	Ø (mm)	d (mm)
≤600	60	60,5	59
601≤800	100		
≥800	120		

8 - MOUNTING ON THE FRAMES

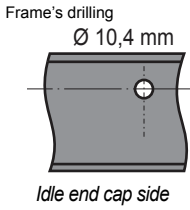
Mounting plate for plain 13.5 mm hexagonal shaft - ANGLE ON TOP



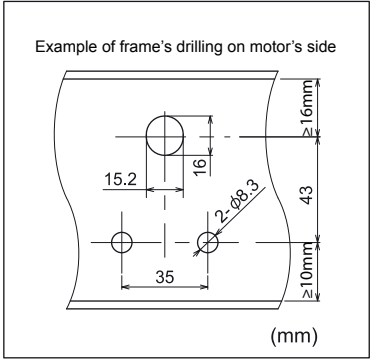
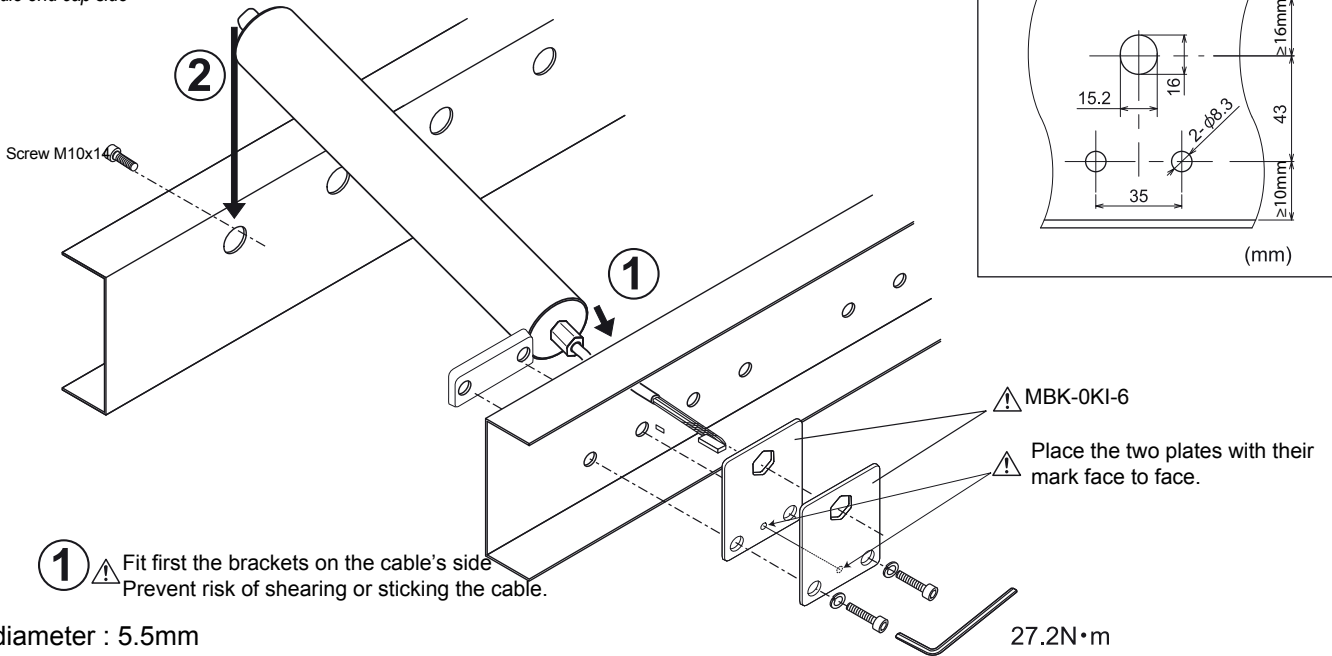
	Cable side bracket	Flange side bracket (optional)
Reference	MBK-0KI-6	MBK-0KI-7



Cable diameter : 5.5mm
The minimum bend internal radius is 16.5mm.



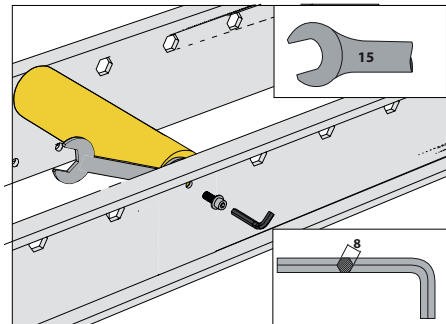
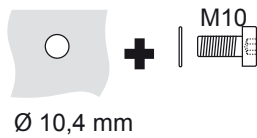
M10 threaded shaft on idle end cap side



Cable diameter : 5.5mm
The minimum bend internal radius is 16.5mm.

M10 threaded shaft on idle end cap side

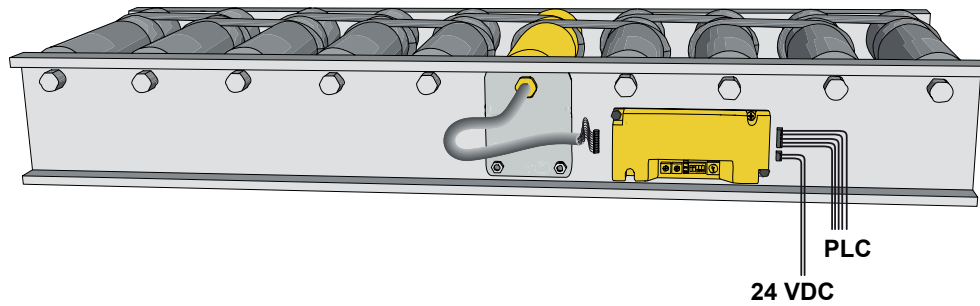
Frame's drilling ø10,4mm



Reference	Screw
	SP-M10-14

▶ 9 - WIRING

■ With CB030P circuit board



The circuit board controls and protects the brushless motorized roller.
1 circuit board = 1 motor

10 - ACCESSORIES

Ribbed belt

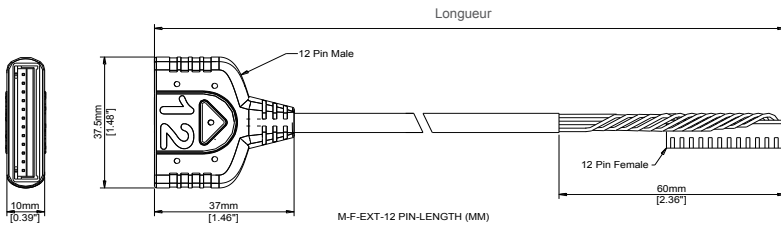


Pitch between the rollers (mm) For pulley Ø56mm	Number of teeth	
	4	6
	Load to be conveyed ≤400 Kg	Load to be conveyed ≤1000 Kg
56-57	Ref. 4PJ290-56	Ref. 6PJ290-56
58-59	Ref. 4PJ288-56	Ref. 6PJ288-56
60-63	Ref. 4PJ302-56	Ref. 6PJ302-56
67-70	Ref. 4PJ314-56	Ref. 6PJ314-56
71-74	Ref. 4PJ316-56	Ref. 6PJ316-56
77-80	Ref. 4PJ336-56	Ref. 6PJ336-56
83-87	Ref. 4PJ346-56	Ref. 6PJ346-56
94-99	Ref. 4PJ372-56	Ref. 6PJ372-56
100-101	Ref. 4PJ376-56	Ref. 6PJ376-56
103-107	Ref. 4PJ388-56	Ref. 6PJ388-56
109-114	Ref. 4PJ416-56	Ref. 6PJ416-56
122-127	Ref. 4PJ435-56	Ref. 6PJ435-56
130-135	Ref. 4PJ442-56	Ref. 6PJ442-56
136-141	Ref. 4PJ456-56	Ref. 6PJ456-56
150-156	Ref. 4PJ486-56	Ref. 6PJ486-56
175-182	Ref. 4PJ536-56	Ref. 6PJ536-56
188-195	Ref. 4PJ570-56	Ref. 6PJ570-56
234-238	Ref. 4PJ636-56	Ref. 6PJ636-56
285-289	Ref. 4PJ746-56	Ref. 6PJ746-56

The value of the load to be conveyed is given for information only. It is depending on the material and of the stiffness of the load in contact with the rollers of the conveyor.

Extension cables

For PM605KT and CB030P - Male / Female - 12 pins



Length	Extension cable reference
1200mm	ACE-CBM-G1200
2700mm	ACE-CBM-G2700

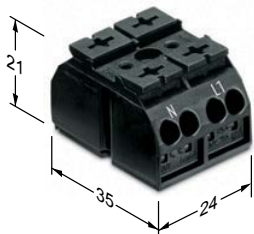
24VDC power supply



Reference	Input	Output	Power	Start-up boost
CT-10-241	380~480V 3 ph	24V-10A	240W	120%
QT-20-241		24V-20A	480W	150%
QT-40-241		24V-40A	960W	150%

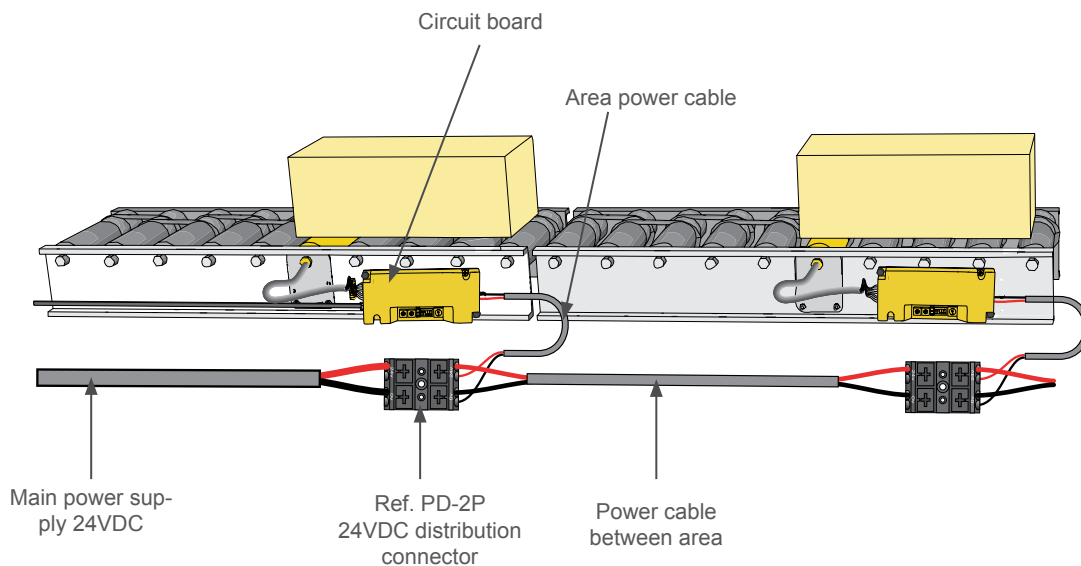
- Very weak inrush current.
- Accepts excess current of 120 to 150% at startup (according to model)

24VDC distribution connector



- 32A max
- 2 pole with marking «24V / OV»
- 4 connector by pole
- Cable 0.5 - 4.00mm (AWG.....)
- Fixing with M3 bolt or screw

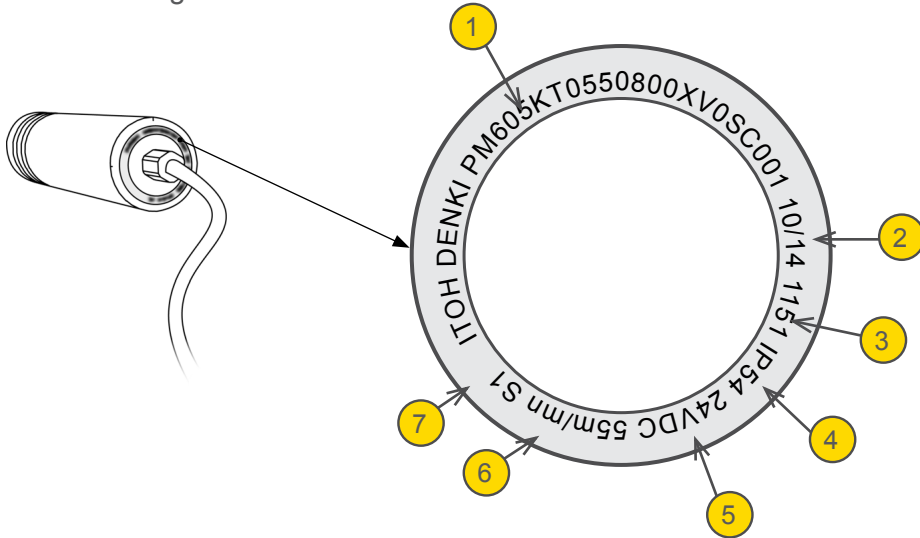
Reference	Connector
	PD-2P



11 - PRODUCT IDENTIFICATION

Round label

Power Moller® rollers come with a round label affixed to the endcaps at the motor end. The following information are shown on the label :



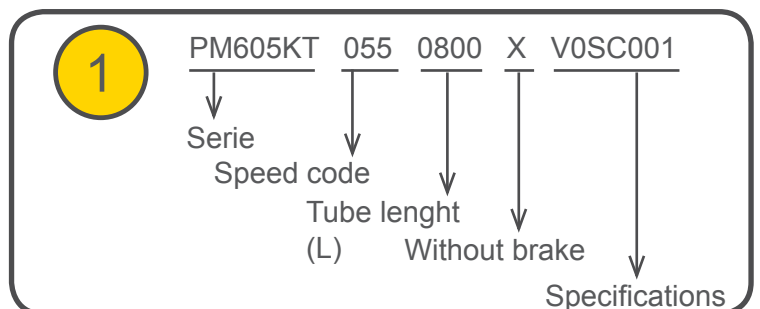
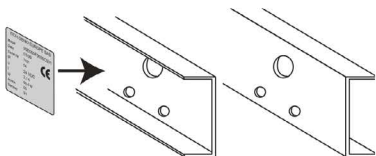
- 1 Product reference number
- 2 Month and year of manufacture
- 3 Serial number
- 4 Protection index
- 5 Power supply
- 6 Speed
- 7 Operation

Square label

Power Moller® rollers come with a square self-adhesive label that must be affixed to the conveyor, to facilitate any future maintenance. The following information are shown on the label :



- 1 Product reference number
- 2 Month and year of manufacture
- 3 Serial number
- 4 Protection index
- 5 Power supply
- 6 Nominal intensity
- 7 Absorbed power
- 8 Speed
- 7 Operation



Operation

- Standard (controlled by a PLC, no accumulation with pressure)
- Accumulation without pressure (ZPA) with our HBK-608 circuit board
- Accumulation with pressure (Warning: contact our technical service department for approval)
- Other.....

Environment

- Humidity Yes ($\geq 90\%$) No (standard case, $< 90\%$)
- Projection of liquid Yes. What liquid :..... No
- Dust Yes No (standard case)
- Temperature Between 0°C et 40°C Cold room. $T^{\circ} =$ Other $T^{\circ} :$
- Other.....

Motorized roller

- Serie : Standard without mechanical brake With mechanical brake
- Protection : IP54 IP65 Other.....
- Speed code : 15m/min 25m/min 55m/min 90m/min Other:.....
- Tube : Zinc-coated steel Stainless steel Other.....
- Coating : Without PVC sleeve 3mm PVC sleeve 2mm
 PU Natural rubber Other :.....
 Tapered sleeve
 Ri 800mm
 Ri 850mm
 Other :.....
- Drive : Direct (no transmission)
 By ribbed belt
 By rounded belt
 Grooves on tube : G0.....mm G1.....mm G2.....mm
 Pulley for round belt
- Cable : Standard length (300mm) Other.....

▶ ANNEX 1

INCORPORATION DECLARATION in accordance with the EC Machinery Directive 2006/42/EC, Annex II B

The manufacturer:

ITOH DENKI CO., Ltd
1146-2 Asazuma-Cho, Kasai, Hyogo 679-0180 Japan

Distributed in Europe by :

ITOH DENKI Europe SAS
490 avenue des Jourdiés - ZAE les Jourdiés - BP 323
74807 St Pierre en Faucigny Cedex - France

hereby declares that the product series :

PM605KT MOTORIZED ROLLER

is an incomplete machine as defined in the EC Machinery Directive and therefore does not fully meet the requirements of this Directive. Commissioning is prohibited until the whole machine/system in which it is incorporated is declared to be in compliance with the EC Machinery Directive

The health and safety requirements of Annex I have been applied. The special technical documents in accordance with Annex VII have been drawn up (and, if appropriate, submitted to the competent authorities).

Person authorized to compile the technical documentation :

ITOH DENKI CO., Ltd
Toshiyuki TACHIBANA
1146-2 Asazuma-Cho, Kasai, Hyogo 679-0180 Japan

EC Directives applied :

- Machinery Directive 2006/42/EC
- European EMC Directive 2004/108/EC
- European RoHS Directive 2011/65/EU

Saint Pierre en Faucigny, 20 November 2013

K. TAMURA, Managing Director



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