

PM500FE SERIE

TECHNICAL DOCUMENTATION

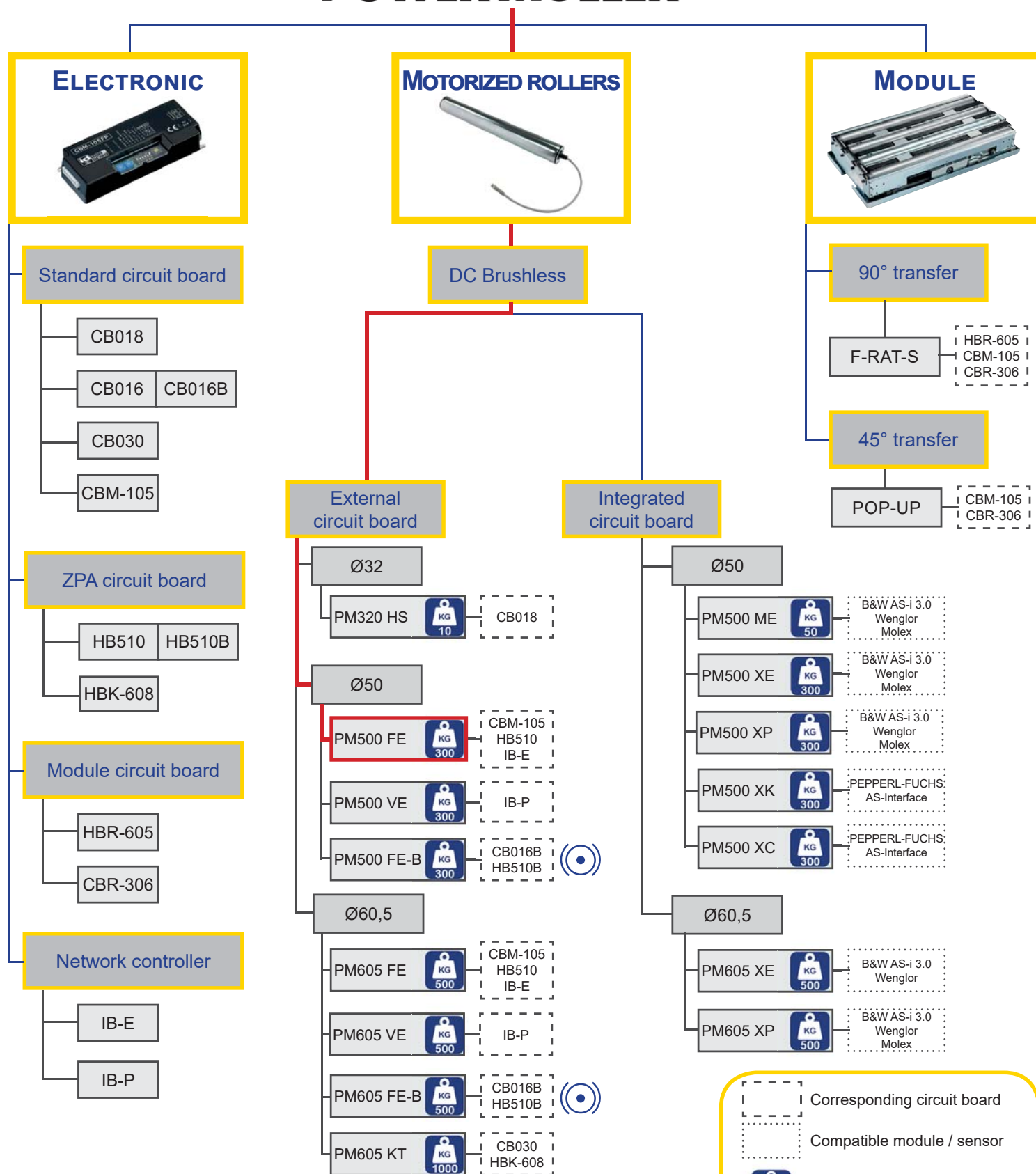
POWER MOLLER®

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1 - PRESENTATION OF THE POWER MOLLER® PRODUCT RANGE

POWER MOLLER®



-  Corresponding circuit board
-  Compatible module / sensor
-  Max load to be conveyed
-  Mechanical brake version

2 - PRESENTATION OF THE SERIES

The motorized roller PM500FE with brushless technology 24VDC, used with circuit board CBM-105 or HB510 is designed for conveying light and medium loads for order preparation, distribution, and for assembly lines. This circuit board is separated from the gear-motor in order to optimize the performance, durability of the roller and to offer diverse functions such as pulse signals, acceleration/deceleration, optional position holder... The assembly can be controlled by PLC.



General characteristics

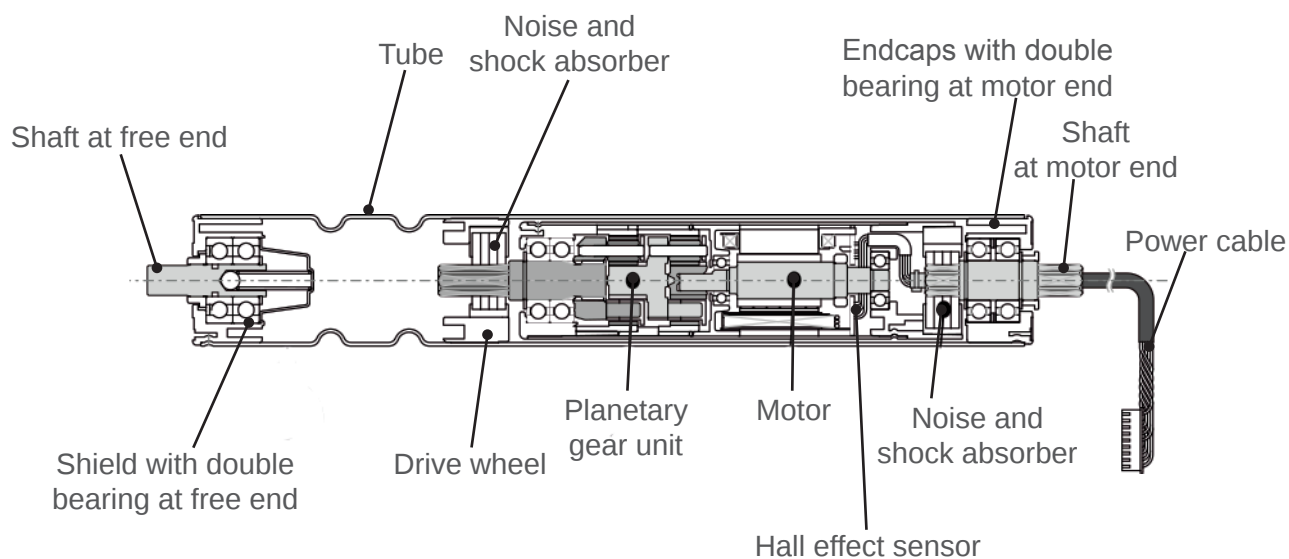
ELECTROMECHANICAL	Direct current and brushless 24 VDC		24 VDC (+ /- 10 %) – ripple ratio < 10 %			
	Isolation class		E			
	Operation at 40°C	Continuous	100%			
		Intermittent	1800 starts / hour maxi Minimum duty cycle = 1 s ON / 1 s OFF ED = ON / (ON+OFF) ≤ 50 %			
	Brake		Dynamic braking			
	Protection index		IP54 (IP65 or cold room, contact us)			
	Cable length		300 mm with JST connector - 9 pins			
	Protection		Thermal protection (>95°C for circuit board, >110°C for motor) Protection against induced voltage			
	Environment		0/+40 °C - no condensation - or corrosive or explosive atmosphere - Vibrations < 0,5 G			
	Sound level		≈ 52 dB nominal 1 metre away			
	Speed code		15	25	55	90
	Reduction ratio		1/44,90	1/26,67	1/12,64	1/7,5
	Connector		Male 9-pin JST#S9B-XH-A			
CONTROL	Circuit board functions		See the characteristics of CBM-105 (page 7) and HB510 (page 8)			



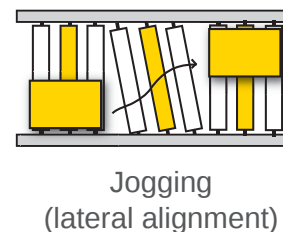
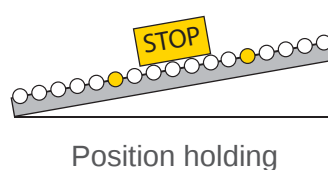
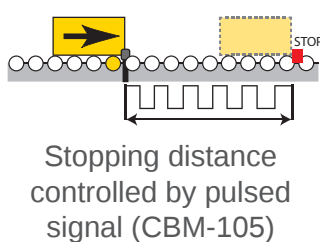
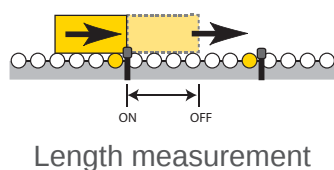
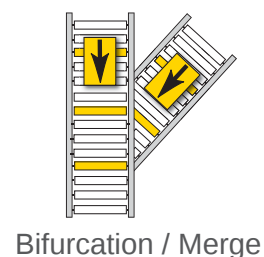
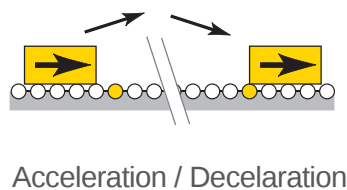
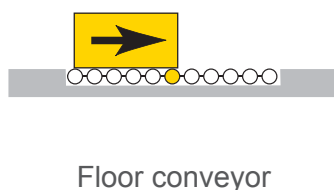
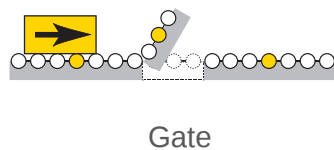
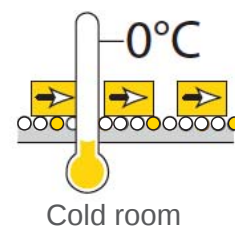
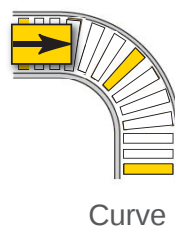
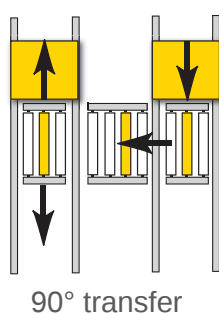
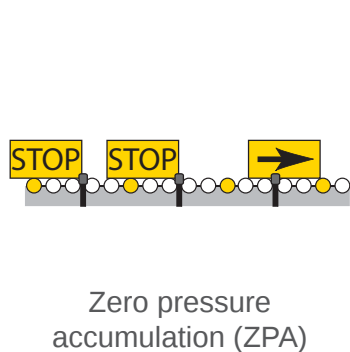
The PM500FE drive roller is designed exclusively for indoor use.

Shaft and flange motor side :	 Plain hexagonal  Threaded hexagonal	• Plain hexagonal 11.1 mm shaft or M12 threaded • Heat-treated and phosphated steel shaft • Zamac (zinc, aluminium and magnesium alloy) endcaps
Shaft and flange free side :	 Hexagonal spring loaded  Set screw	• Smooth hexagonal 11.1mm shaft with spring, 12 mm M8 threaded flat metal strip • Heat-treated and phosphated steel shaft • Zamac (zinc, aluminium and magnesium alloy) flange
Tube :	 Zinc plated steel  Stainless steel	• Tube in precision cold drawn steel, ST37-2 quality, outer diam. 50 mm • Zinc-coated or stainless steel (304L)
Pulleys :	 Ribbed  Grooves	Pulleys for : • Ribbed belts, 8 teeth, Zamac (zinc, aluminium and magnesium alloy) • Round belts, diam. 4 or 5 mm with smooth • Hexagonal shaft with spring or M8 threaded shaft
Grooves :	 Grooves	• Grooves in different positions from 33 to 300 mm from the edge of the tube • Depth 5,8mm • For round belts Ø 4 or 5 mm
Sleeve :	 Tapered  PVC	• Conical PVC sleeve (PP) for inner radius (Ri) 800 or 850 mm • Grey/black PVC sleeve thickness 2 or 3 mm (58 ShA)
Lagging :	 Polyurethane  Natural rubber / nitrile	• Polymerized polyurethane coating, thickness 3 mm, 90 ShA, grey • Natural hot vulcanized rubber coating, thickness 3 mm

Structure and description



Applications



Characteristics depending on circuit board

With CBM-105

CHARACTERISTICS			SPEED CODE 15	SPEED CODE 25	SPEED CODE 55	SPEED CODE 90
ELECTROMECHANIC	Motor		Direct current and brushless 24 VDC			
	Absorbed power (W)	nominal	25 - 67,2			28,8 - 64,8
		start-up	96			
	Tangential force (N)	nominal	133,9 - 143,9	78 - 86	42,8 - 46	20,9 - 27,9
		start-up	349,8	225	111,8	62,7
	Operation		Continuous or intermittent 1800 starts/h max. Minimum duty cycle : 1s ON / 1s OFF			
	Brake		Dynamic braking			
	Speed (m/min)	no load	2,2 - 17,4	3,7 - 29,3	7,7 - 61,7	13,0 - 104,0
		nominal	2,2 - 13,3	3,7 - 25,4	7,7 - 47,3	13,0 - 94,0
	Protection index (motorized roller)		IP54, 55, 65 (Contact us for other classes)			
CONTROL	Lenght		285 to 1200 mm	260 to 1200 mm	260 to 1200 mm	225 to 1200 mm
	Static load max.		300 - 1200 mm = 65 - 15 kg per roller			
	Input signal		Start / Stop, Direction of rotation			
	Selection of rotation direction		By dip switch (CW/CCW) or input signal			
	Speed setting		20 speeds with a rotating switch			
			20 speeds by external analog voltage of 0-10VDC			
	Acceleration / Deceleration		Adjustable with potentiometer from 0 to 2,5s			
	Servo-brake activation		ON/OFF by dip switch			
	Pulse signal output (imp./tour)		89,9	53,34	25,28	15
	Error signal out-put		Over-heating, wiring error, under-voltage, over-voltage...			
	Protection		Against polarity reversal 0/24V and power backfeed, fuse, integrated thermal protection			

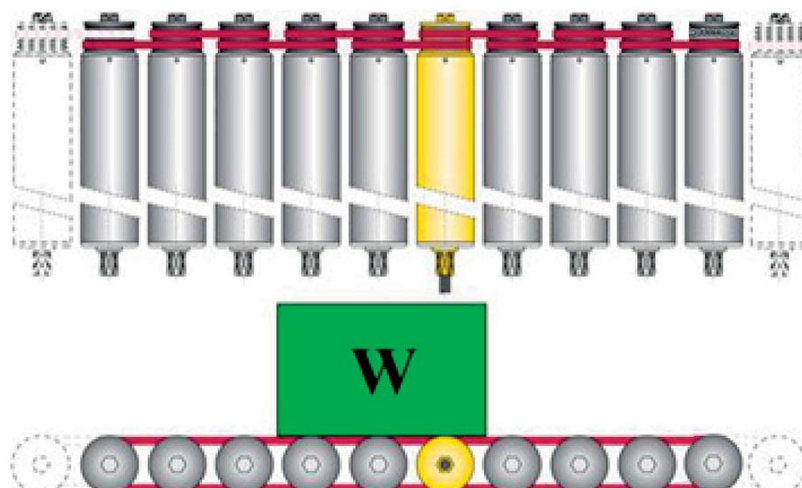
For other specifications, please contact us.

With HB510

CHARACTERISTICS			SPEED CODE 15	SPEED CODE 25	SPEED CODE 55	SPEED CODE 90
ELECTROMECHANIC	Motor		Direct current and brushless 24 VDC			
	Absorbed power (W)	nominal	29,3 - 60	28,8 - 61,9	29,3 - 60	28,8 - 61,9
		start-up	96			
	Tangential force (N)	nominal	118,6 - 127,1	67,7 - 75,0	37,9 - 40,6	21,5 - 24,0
		start-up	349,8	225,5	111,8	72,2
	Operation		Continuous or intermittent 1800 starts/h max. Minimum duty cycle : 1s ON / 1s OF			
	Brake		Dynamic braking			
	Nominal speed (m/min)	no load	4,3 - 17,4	7,3 - 29,3	15,4 - 61,7	26,0 - 104,0
		nominal	4,3 - 13,9	7,3 - 26,3	15,4 - 49,4	26,0 - 93,6
	Protection index (motor roller)		IP54, 65, cold room (<i>Contact us for other classes</i>)			
CONTROL	Lenght		285 to 1200 mm	260 to 1200 mm	260 to 1200 mm	230 to 1200 mm
	Static load max.		300 - 1200 mm = 65 - 15 kg per roller			
	Speed setting		10 speeds with a rotating switch			
			10 speeds by external analog voltage of 0-10VDC			
	Error signal in-put		Over-heating, wiring error, under-voltage, over-voltage...			
	Sensor output signal		Recovery sensor state for PLC			
	Protection		Against polarity reversal 0/24V and power backfeed, fuse, integrated thermal protection			
	Sensor timer		Timing sequence of the motorized roller depending on the sensor status of the downstream zone			
	Run holding timer		Timing sequence of the motorized roller depending on the sensor status of the zone to be left			
	Jam timer		Jam/blockage detection of the load depending on the sensor status time			
	Emergency stop		Stop of the motorized rollers of all the defined zones			
	Transfer mode		Selection of train mode or singulation mode by dip switch			
	Transfer direction and logic		Invert the direction of travel and logic for all the defined zones			
	Synchronization function		Synchronization of several motorized rollers in the same zone			
	Forced Start / Forced Stop		The forced start enables evacuating the load of the last zone The forced stop enables inserting load in a defined location			
	Speed control block area		Speed variation simultaneous and synchronized of several motorized rollers			
	Modification program		Contact us			

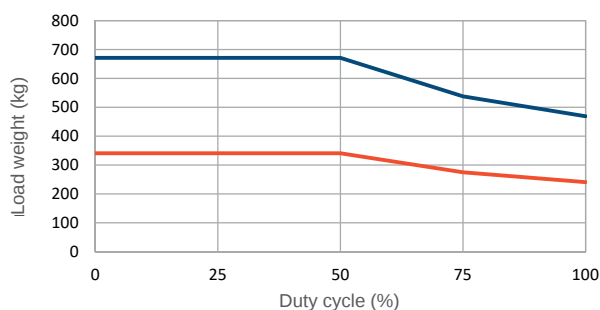
3 - TRANSFER CAPACITY

Driven by ribbed belts

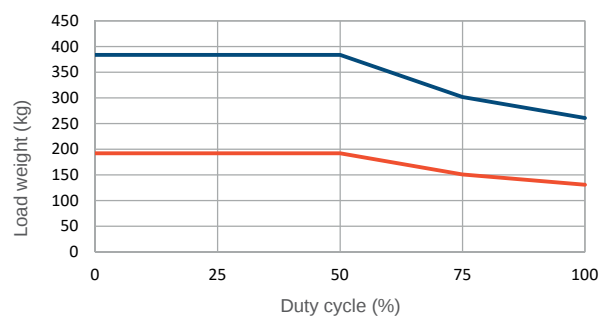


WITH CBM-105

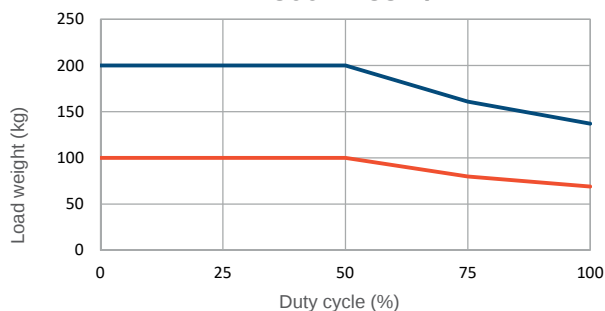
PM500FE 15m/min



PM500FE 25m/min



PM500FE 55m/min



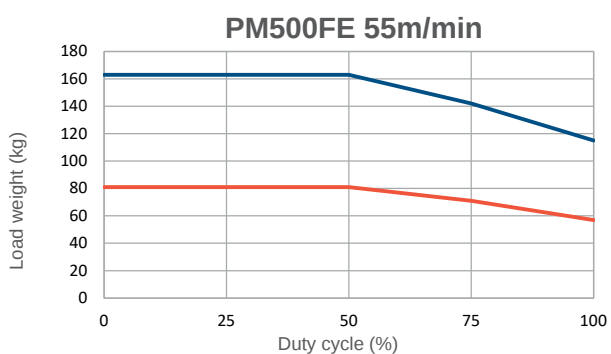
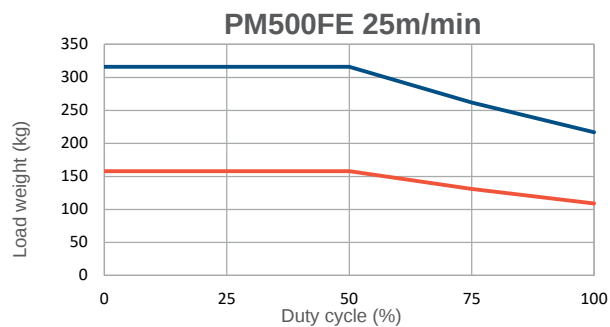
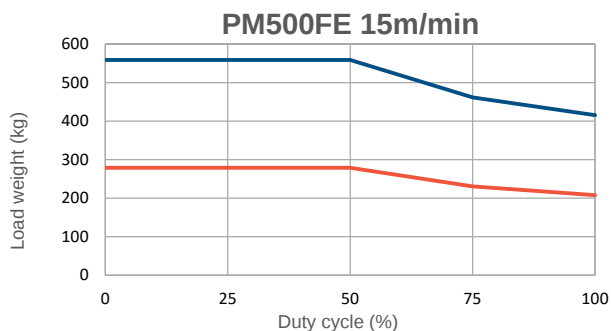
- Load to transport
 - Plastic box ($\mu = 0,03$)
 - Cardboard box ($\mu = 0,06$)
- 9 slave rollers driven by 1 motorized roller
- Ambient temperature of 30 °C



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...

Due to the maximum static load of the PM500FE which is 300 kg max, note that practically the PM500FE can't convey more than 300 kg but the above curves are giving an idea of the theorical limits of the PM500FE.

WITH HB510



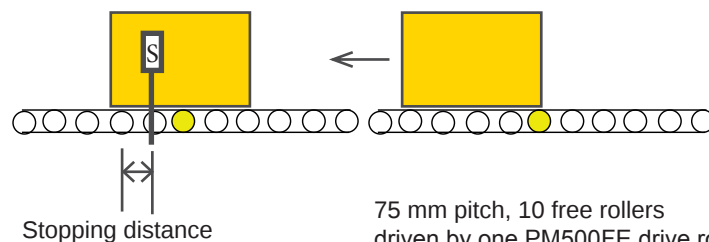
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Due to the maximum static load of the PM500FE which is 300 kg max, note that practically the PM500FE can't convey more than 300 kg but the above curves are giving an idea of the theoretical limits of the PM500FE.

Stopping distance according to the weight and type of load being conveyed

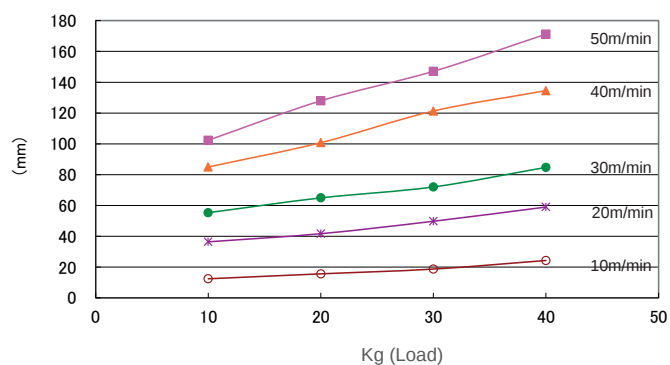


75 mm pitch, 10 free rollers
driven by one PM500FE drive roller - 55 m/min
Cardboard box : W : 380mm x L : 560 mm
Plastic box : W : 390mm x L : 590 mm

DRIVEN BY ROUND BELTS Ø5MM

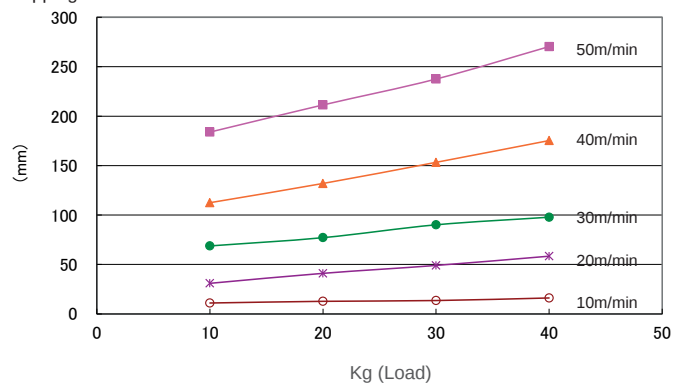
FE 55m/min - Cardboard box

Stopping distance



FE 55m/min - Plastic box

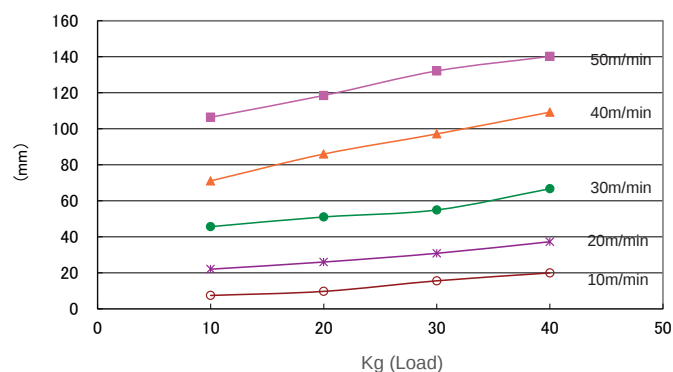
Stopping distance



DRIVEN BY RIBBED BELTS

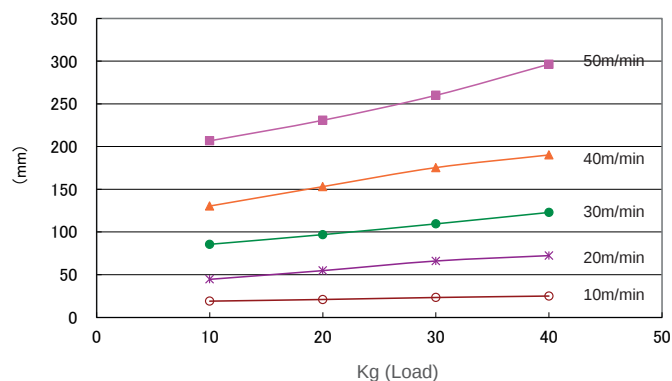
FE 55m/min - Cardboard box

Stopping distance



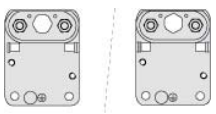
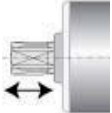
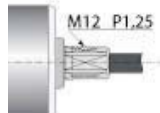
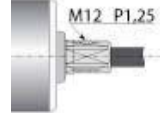
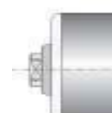
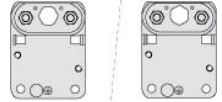
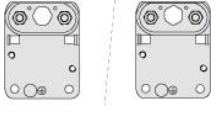
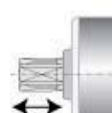
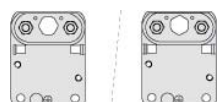
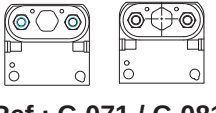
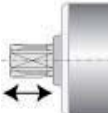
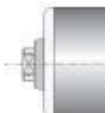
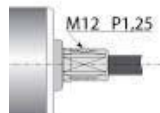
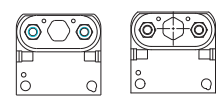
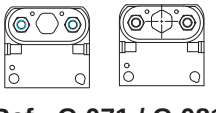
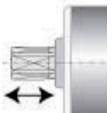
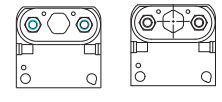
FE 55m/min - Plastic box

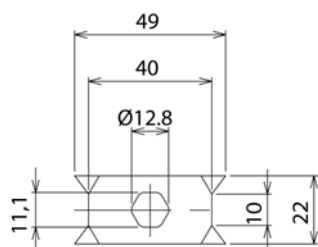
Stopping distance



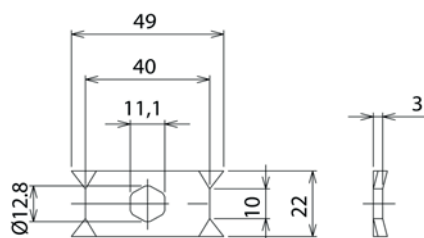
The items in this document are indicative.

4 - PRESENTATION OF THE DIFFERENT FIXING OPTIONS

FREE SIDE FIXING		MOTOR SIDE FIXING	
 Ref : A-071-G / A-081-G <i>(optional)</i>		 M12 P1,25	 Ref : P-0B1 / P-0C1 <i>(obligatory)</i>
 Screw M8 x 14 <i>(obligatory)</i>		 M12 P1,25	 Ref : P-0B1 / P-0C1 <i>(obligatory)</i>
			 Ref : A-071-G / A-081-G <i>(obligatory)</i>
 Ref : A-071-G / A-081-G <i>(optional)</i>			 Ref : A-071-G / A-081-G <i>(obligatory)</i>
 Ref : C-071 / C-081 <i>(optional)</i>		 M12 P1,25	 Ref : P-0B1 / P-0C1 <i>(obligatory)</i>
 Screw M8 x 14 <i>(obligatory)</i>		 M12 P1,25	 Ref : P-0B1 / P-0C1 <i>(obligatory)</i>
			 Ref : C-071 / C-081 <i>(optional)</i>
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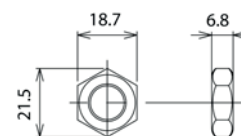


Ref. P-0B1



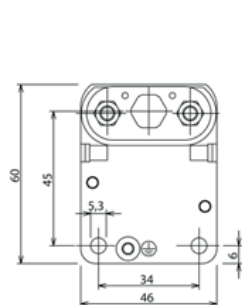
Ref. P-0C1

Ref. FEY01

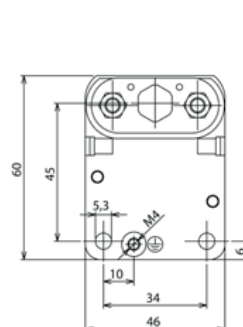
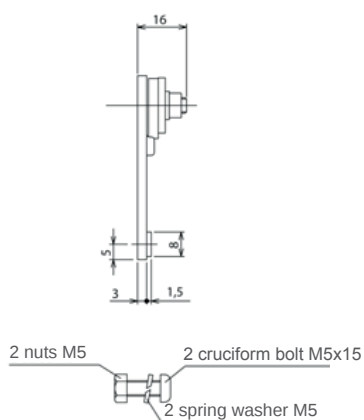


Note :

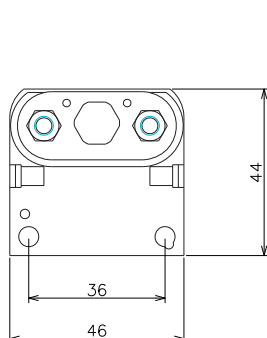
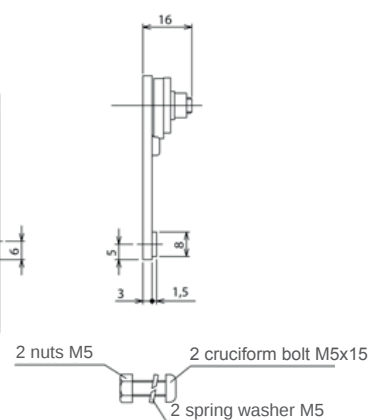
Nut ref. FEY01 should be used with the claw plate ref. P-0B1 or P-0C1.



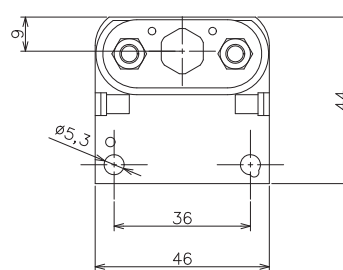
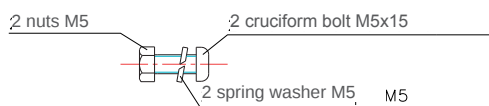
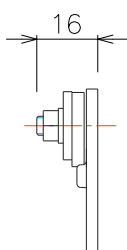
Ref. A-071-G



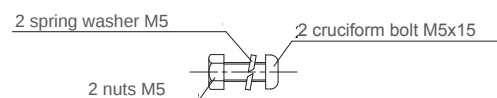
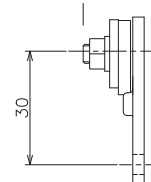
Ref. A-081-G



Ref. C-071



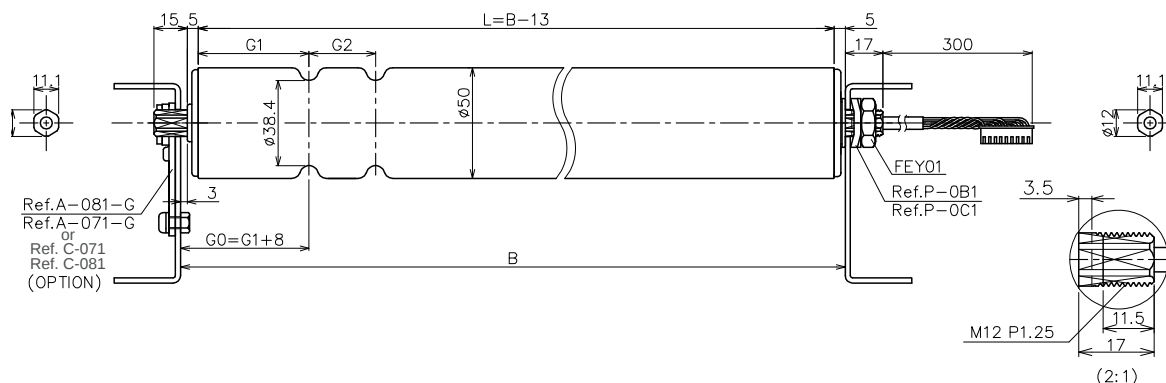
Ref. C-081



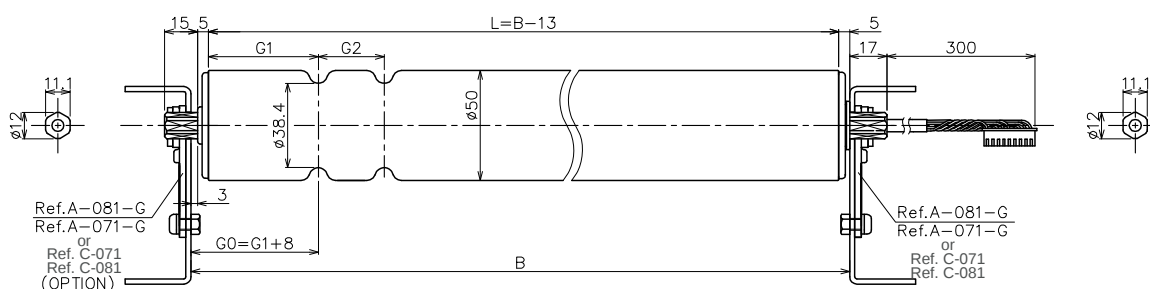
5 - DIMENSIONAL CHARACTERISTICS

Grooved tube - Hexagonal shaft with spring on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and hexagonal shaft with spring on free end



PM500FE (50E) - Hexagonal plain shaft motor side and hexagonal shaft with spring on free end



Dimensions PM500FE (50E)

STEEL TUBE

Speed code	Dimension (B)	Tube lenght (L)	Grooves for steel tube Depth = 5.8mm			
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max
15	283+G1+G2 ≤ B ≤ 1213	270+G1+G2 ≤ L ≤ 1200	≥ 41	≥ 33	≥ 22	≤ 300
25 / 55	253+G1+G2 ≤ B ≤ 1213	240+G1+G2 ≤ L ≤ 1200				
90	223+G1+G2 ≤ B ≤ 1213	210+G1+G2 ≤ L ≤ 1200				

STAINLESS STEEL TUBE

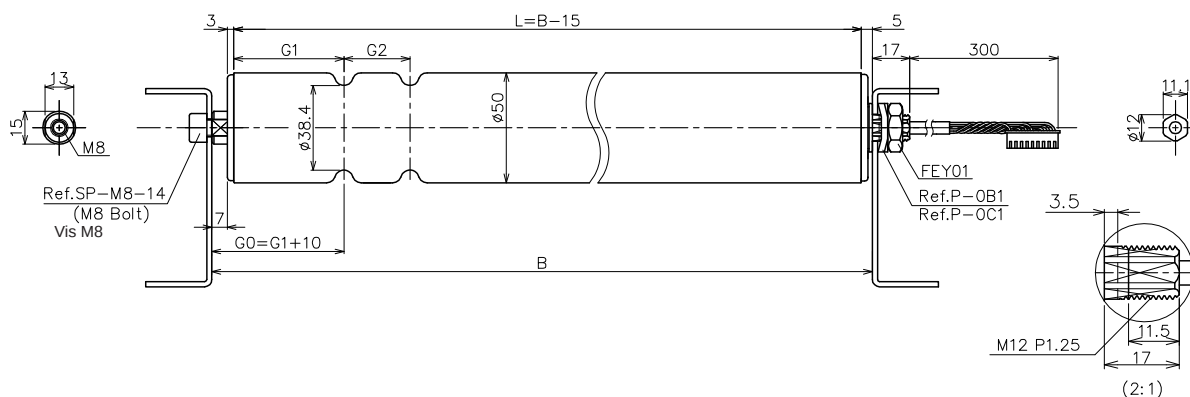
Speed code	Dimension (B)	Tube lenght (L)	Grooves for stainless steel tube Depth = 5,2mm			
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1 + G2 max
15	283+G1+G2 ≤ B ≤ 1213	270+G1+G2 ≤ L ≤ 1200	≥ 41	≥ 33	≥ 30	≤ 300
25 / 55	253+G1+G2 ≤ B ≤ 1213	240+G1+G2 ≤ L ≤ 1200				
90	223+G1+G2 ≤ B ≤ 1213	210+G1+G2 ≤ L ≤ 1200				

WEIGHT / STATIC LOAD / AXIAL FORCE

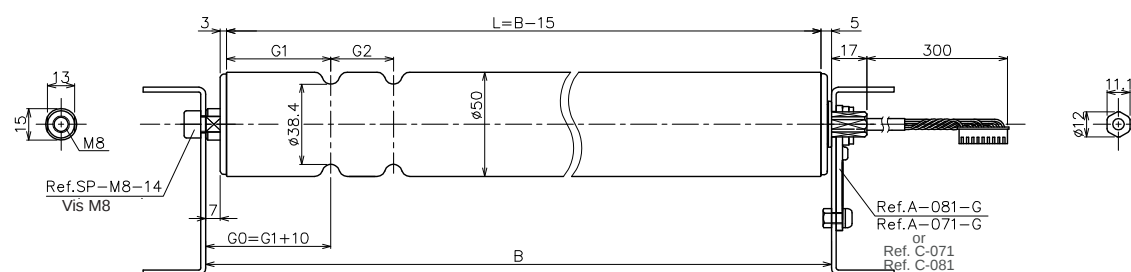
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,6	2,8	2,9	3,1	3,3	3,4	3,6	3,7	3,9	4,1
	25m/min	2,4	2,5	2,7	2,9	3,0	3,2	3,4	3,5	3,7	3,9
	55m/min	2,4	2,6	2,7	2,9	3,1	3,2	3,4	3,6	3,7	3,9
	90m/min	2,1	2,3	2,4	2,6	2,8	2,9	3,1	3,3	3,4	3,6
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

Grooved tube - M8 threaded shaft with screw on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and M8 threaded shaft with screw on free end



PM500FE (50E) - Hexagonal plain shaft motor side and M8 threaded shaft with screw on free end



Dimensions PM500FE (50E)

STEEL TUBE

Speed code	Dimension (B)	Tube lenght (L)	Grooves for steel tube Depth = 5.8mm			
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max
15	285+G1+G2 ≤ B ≤ 1215	270+G1+G2 ≤ L ≤ 1200	≥ 43	≥ 33	≥ 22	≤ 300
25 / 55	255+G1+G2 ≤ B ≤ 1215	240+G1+G2 ≤ L ≤ 1200				
90	225+G1+G2 ≤ B ≤ 1215	210+G1+G2 ≤ L ≤ 1200				

STAINLESS STEEL TUBE

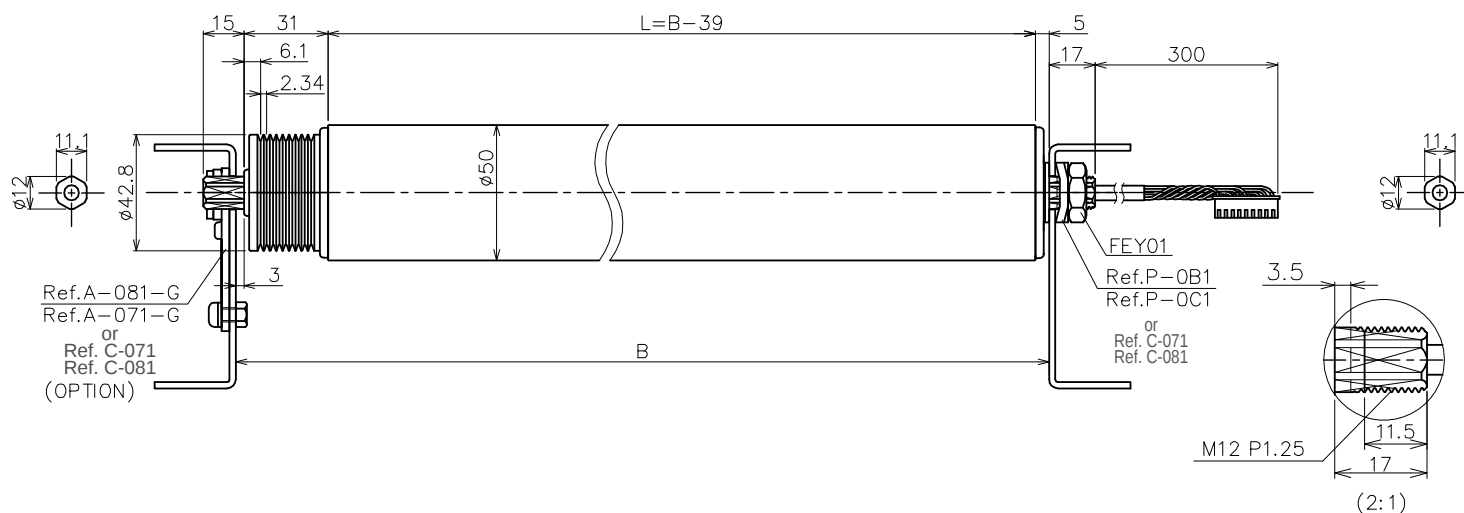
Speed code	Dimension (B)	Tube lenght (L)	Grooves for stainless steel tube Depth = 5.2mm			
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max
15	285+G1+G2 ≤ B ≤ 1215	270+G1+G2 ≤ L ≤ 1200	≥ 43	≥ 33	≥ 30	≤ 300
25 / 55	255+G1+G2 ≤ B ≤ 1215	240+G1+G2 ≤ L ≤ 1200				
90	225+G1+G2 ≤ B ≤ 1215	210+G1+G2 ≤ L ≤ 1200				

WEIGHT / STATIC LOAD / AXIAL FORCE

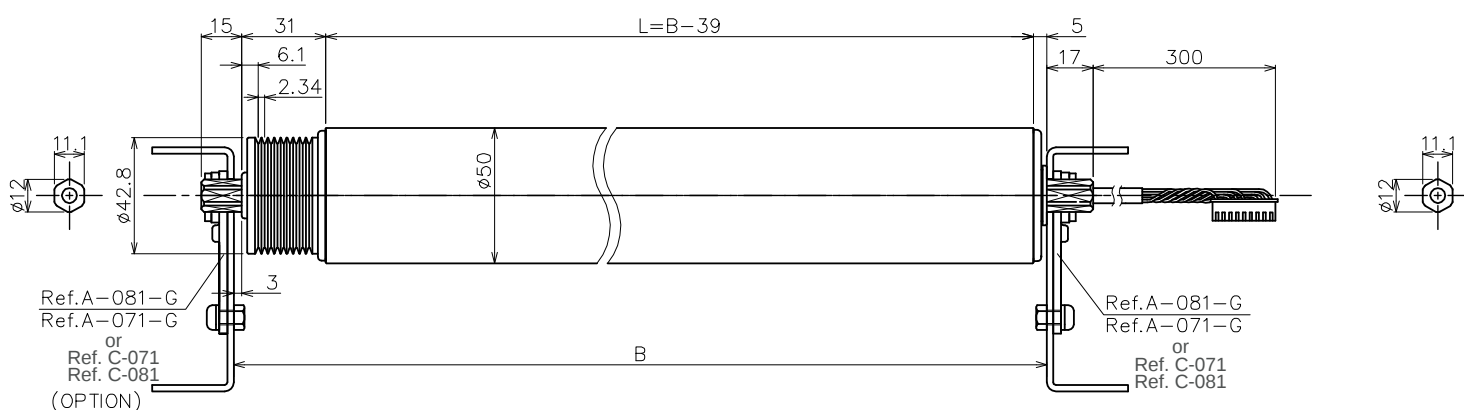
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,6	2,8	2,9	3,1	3,2	3,4	3,6	3,7	3,9	4,1
	25m/min	2,4	2,5	2,7	2,9	3,0	3,2	3,4	3,5	3,7	3,9
	55m/min	2,4	2,6	2,7	2,9	3,1	3,2	3,4	3,6	3,7	3,9
	90m/min	2,1	2,3	2,4	2,6	2,8	2,9	3,1	3,3	3,4	3,6
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

Roller with pulley for ribbed belt - Hexagonal shaft with spring on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and hexagonal shaft with spring on free end



PM500FE (50E) - Hexagonal plain shaft motor side and hexagonal shaft with spring on free end



Dimensions PM500FE (50E)

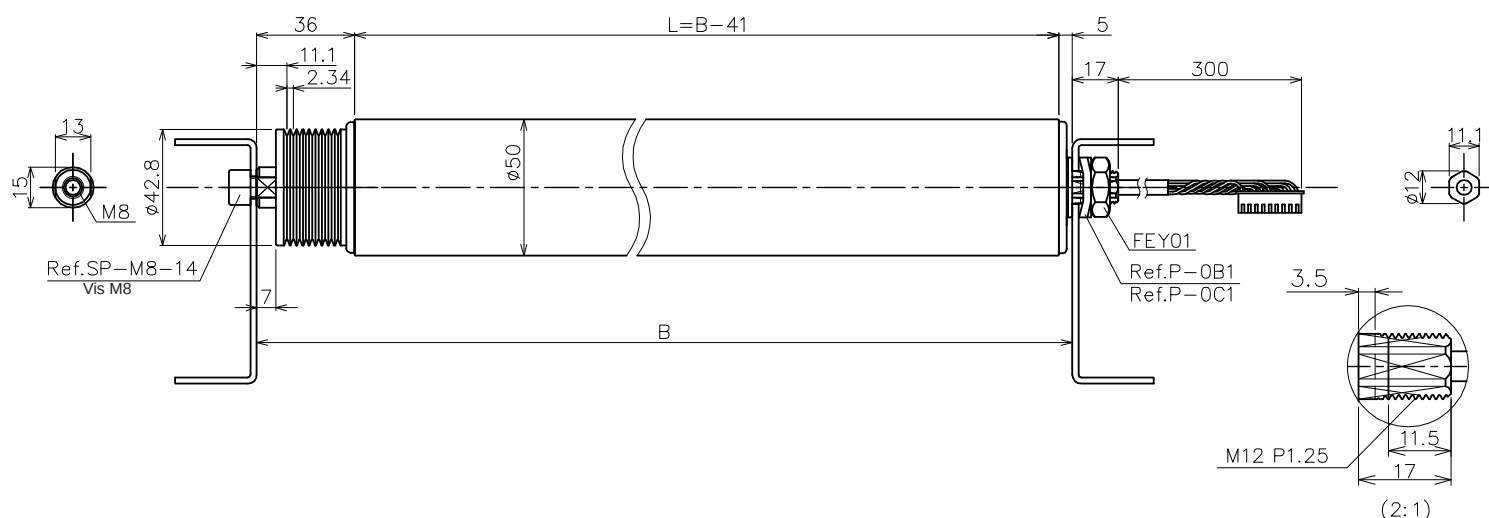
Speed code	Dimension (B)	Tube lenght (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	334 ≤ B ≤ 1239	295 ≤ L ≤ 1200
25 / 55	309 ≤ B ≤ 1239	270 ≤ L ≤ 1200
90	279 ≤ B ≤ 1239	240 ≤ L ≤ 1200

WEIGHT / STATIC LOAD / AXIAL FORCE

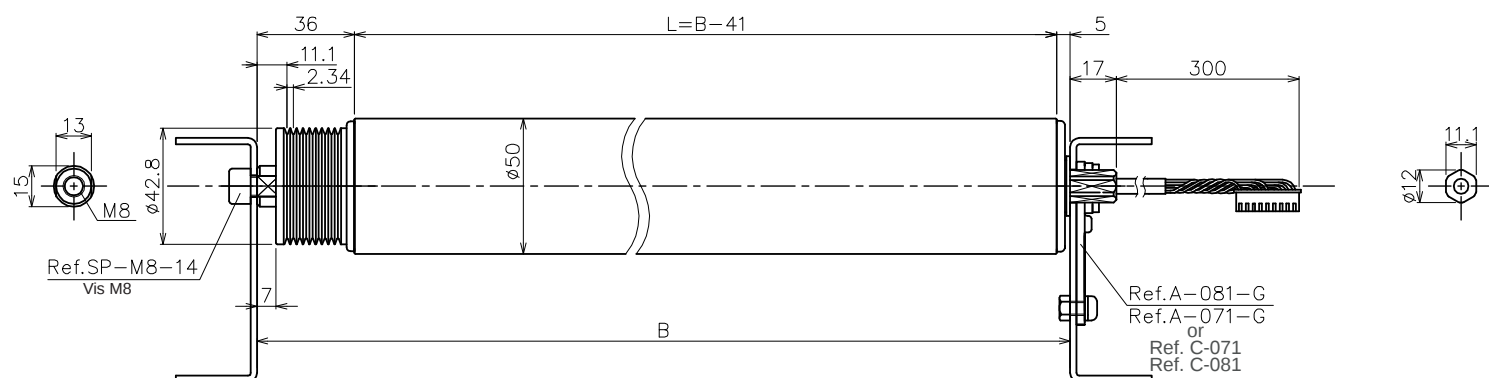
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,8	2,9	3,1	3,2	3,4	3,6	3,7	3,9	4,1	4,2
	25m/min	2,5	2,7	2,9	3,0	3,2	3,4	3,5	3,7	3,9	4,0
	55m/min	2,6	2,7	2,9	3,1	3,2	3,4	3,6	3,7	3,9	4,0
	90m/min	2,3	2,4	2,6	2,8	2,9	3,1	3,2	3,4	3,6	3,7
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

Roller with pulley for ribbed belt - M8 threaded shaft with screw on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and M8 threaded shaft with screw on free end



PM500FE (50E) - Hexagonal plain shaft motor side and M8 threaded shaft with screw on free end



Dimensions PM500FE (50E)

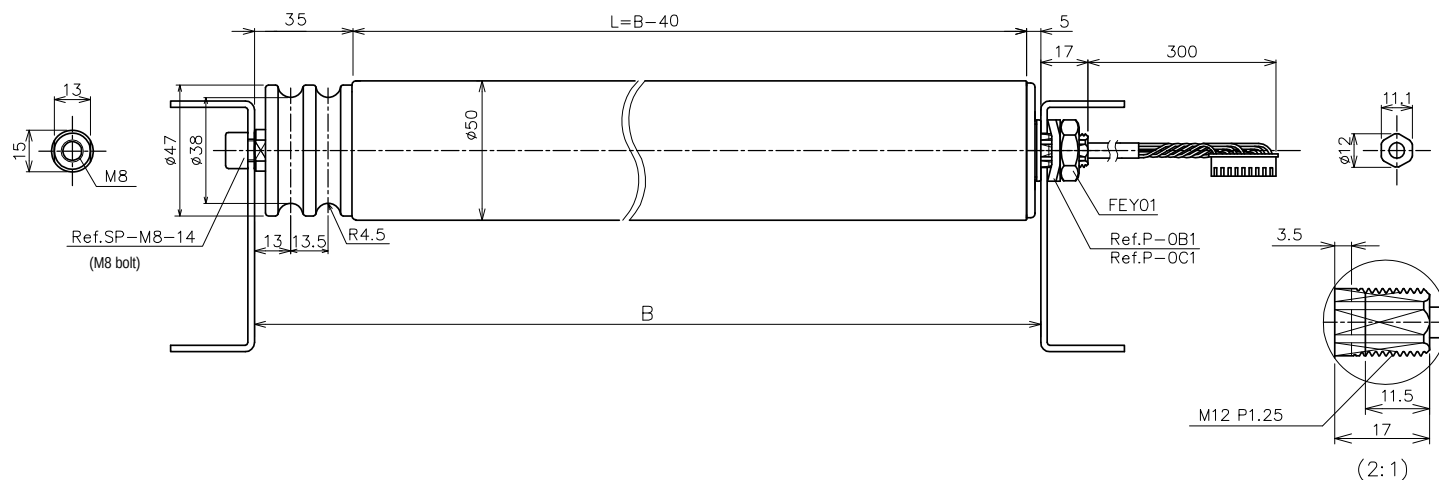
Speed code	Dimension (B)	Tube lenght (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	326 ≤ B ≤ 1241	285 ≤ L ≤ 1200
25 / 55	301 ≤ B ≤ 1241	260 ≤ L ≤ 1200
90	271 ≤ B ≤ 1241	230 ≤ L ≤ 1200

WEIGHT / STATIC LOAD / AXIAL FORCE

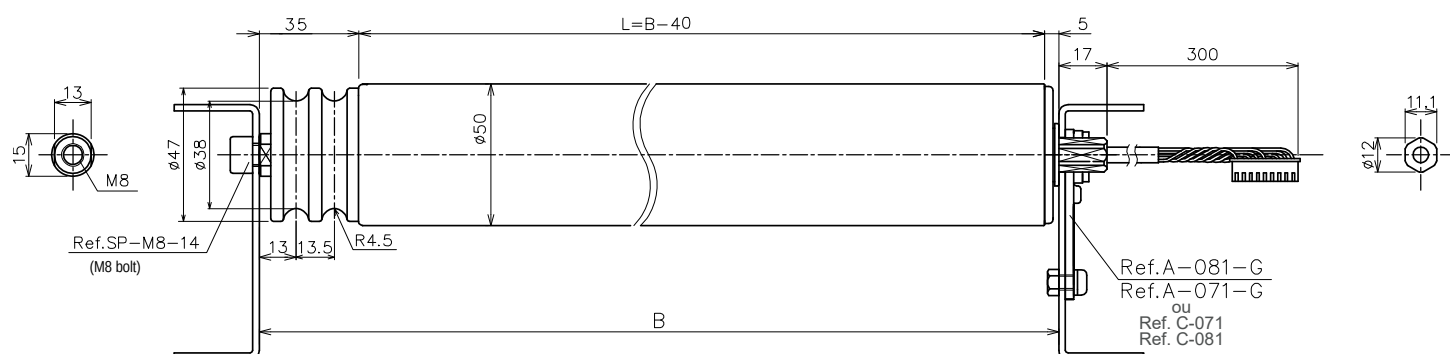
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,7	2,8	3,0	3,2	3,3	3,5	3,7	3,8	4,0	4,2
	25m/min	2,5	2,6	2,8	3,0	3,1	3,3	3,5	3,6	3,8	3,9
	55m/min	2,5	2,7	2,8	3,0	3,2	3,3	3,5	3,7	3,8	4,0
	90m/min	2,2	2,4	2,5	2,7	2,8	3,0	3,2	3,3	3,5	3,7
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

Roller with pulley for round belt - M8 threaded shaft with screw on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and M8 threaded shaft with screw on free end



PM500FE (50E) - Hexagonal plain shaft motor side and M8 threaded shaft with screw on free end



Dimensions PM500FE (50E)

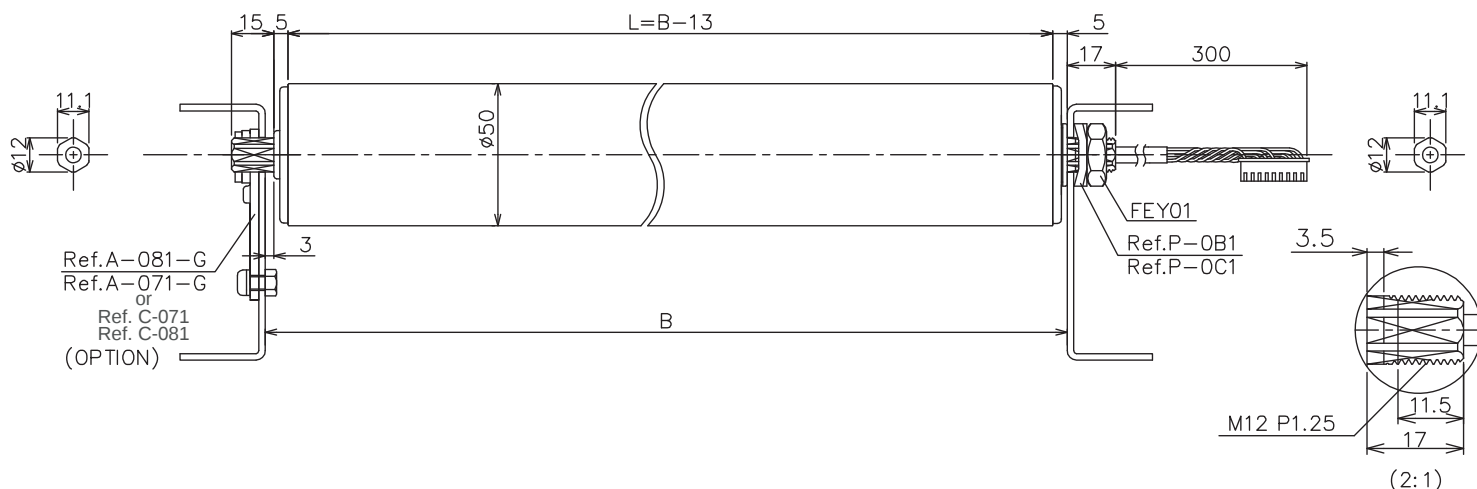
Speed code	Dimension (B)	Tube lenght (L)
	mini ≤ B ≤ max	mini ≤ L ≤ max
15	345 ≤ B ≤ 1243	305 ≤ L ≤ 1200
25 / 55	325 ≤ B ≤ 1243	285 ≤ L ≤ 1200
90	305 ≤ B ≤ 1243	265 ≤ L ≤ 1200

WEIGHT / STATIC LOAD / AXIAL FORCE

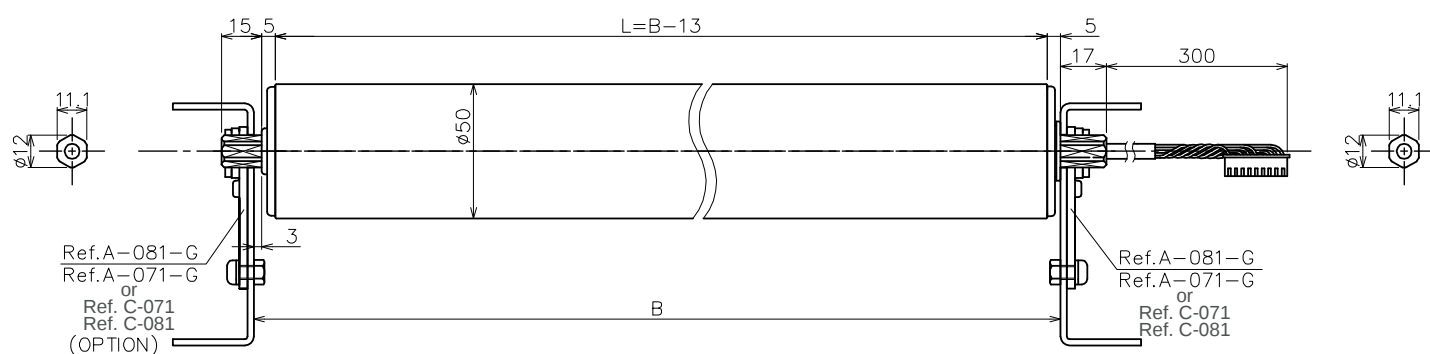
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,8	2,9	3,1	3,2	3,4	3,6	3,7	3,9	4,1	4,2
	25m/min	2,5	2,7	2,9	3,0	3,2	3,4	3,5	3,7	3,9	4,0
	55m/min	2,6	2,7	2,9	3,1	3,2	3,4	3,6	3,7	3,9	4,0
	90m/min	2,3	2,4	2,6	2,8	2,9	3,1	3,2	3,4	3,6	3,7
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

Roller without drive - Hexagonal shaft with spring on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and hexagonal shaft with spring on free end



PM500FE (50E) - Hexagonal plain shaft motor side and hexagonal shaft with spring on free end



Dimensions PM500FE (50E)

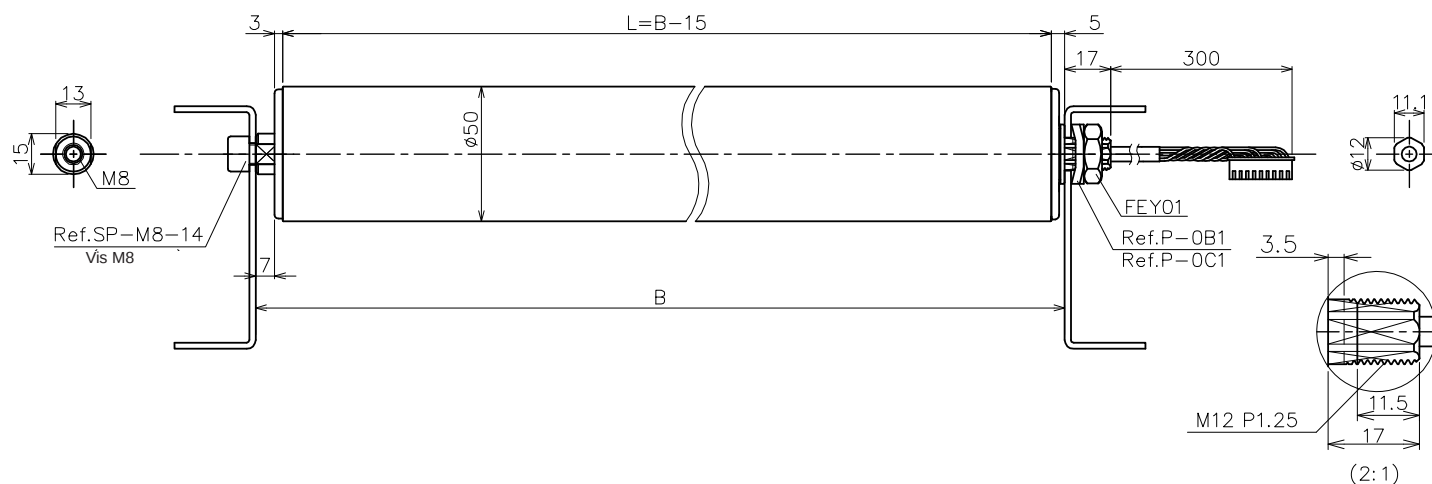
Speed code	Dimension (B) mini $\leq B \leq$ max	Tube lenght (L) mini $\leq L \leq$ max
15	$308 \leq B \leq 1213$	$295 \leq L \leq 1200$
25 / 55	$283 \leq B \leq 1213$	$270 \leq L \leq 1200$
90	$253 \leq B \leq 1213$	$240 \leq L \leq 1200$

WEIGHT / STATIC LOAD / AXIAL FORCE

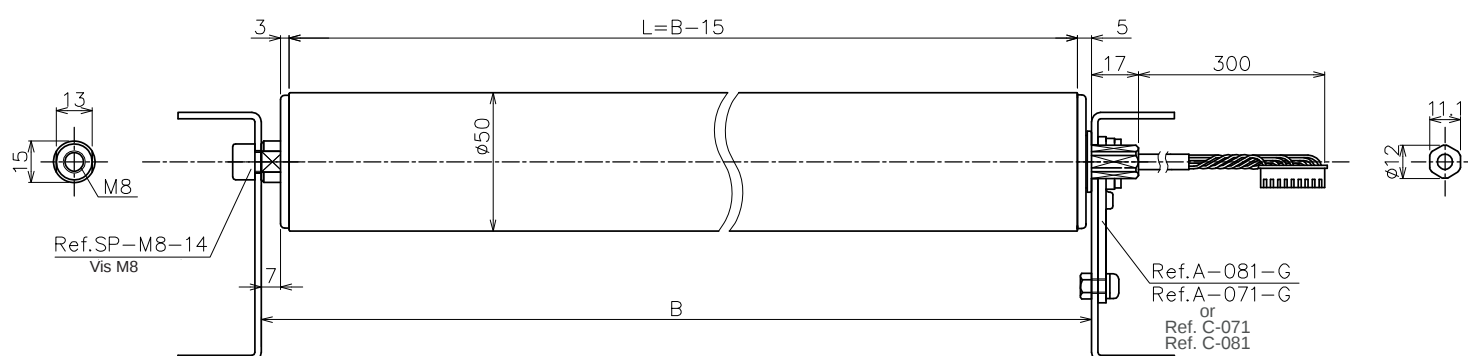
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,6	2,8	2,9	3,1	3,3	3,4	3,6	3,7	3,9	4,1
	25m/min	2,4	2,5	2,7	2,9	3,0	3,2	3,4	3,5	3,7	3,9
	55m/min	2,4	2,6	2,7	2,9	3,1	3,2	3,4	3,6	3,7	3,9
	90m/min	2,1	2,3	2,4	2,6	2,8	2,9	3,1	3,3	3,4	3,6
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

Roller without drive - M8 threaded shaft with screw on free end

PM500FE (50E) - Hexagonal threaded shaft motor side and M8 threaded shaft with screw on free end



PM500FE (50E) - Hexagonal plain shaft motor side and M8 threaded shaft with screw on free end



Dimensions PM500FE (50E)

Speed code	Dimension (B)	Tube lenght (L)
	mini ≤ B ≤ max	
15	300 ≤ B ≤ 1215	285 ≤ L ≤ 1200
25 / 55	275 ≤ B ≤ 1215	260 ≤ L ≤ 1200
90	245 ≤ B ≤ 1215	230 ≤ L ≤ 1200

WEIGHT / STATIC LOAD / AXIAL FORCE

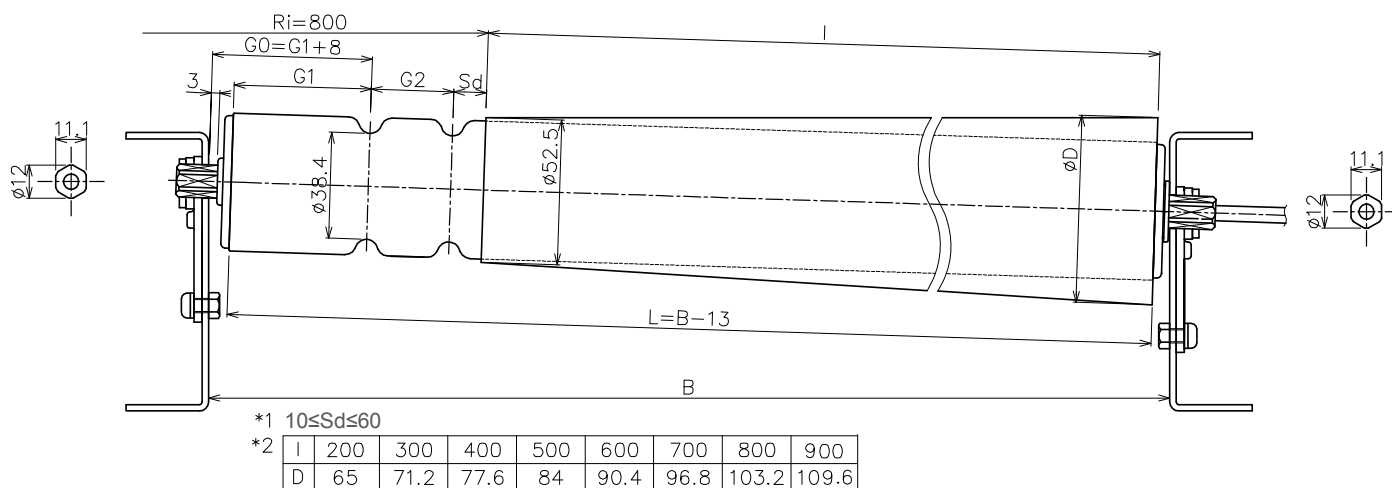
Tube length		300	400	500	600	700	800	900	1000	1100	1200
Weight (Kg)	15 m/min	2,6	2,8	2,9	3,1	3,2	3,4	3,6	3,7	3,9	4,1
	25m/min	2,4	2,5	2,7	2,9	3,0	3,2	3,4	3,5	3,7	3,9
	55m/min	2,4	2,6	2,7	2,9	3,1	3,2	3,4	3,6	3,7	3,9
	90m/min	2,1	2,3	2,4	2,6	2,8	2,9	3,1	3,3	3,4	3,6
Static load max (kg)		65	55	45	35	30	25	20	20	15	15
Axial force max (N)		290									

6 - DIMENSIONAL CHARACTERISTICS - CURVE

Conical roller with grooved tube - Ri = 800mm

PM500FE (50E)

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



Dimensions PM500FE (50E) - Inner radius of curvature (Ri) : 800 mm

STEEL TUBE

Speed code	Dimension (B)	Tube lenght (L)	Grooves for steel tube Depth = 5.8mm				Tapered sleeve length (l)
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max	
15	283+G1+G2 ≤ B ≤ 1213	270+G1+G2 ≤ L ≤ 1200					
25/55	253+G1+G2 ≤ B ≤ 1213	240+G1+G2 ≤ L ≤ 1200	≥ 41	≥ 33	≥ 22	≤ 300	200, 300, 400, 500, 600, 700, 800, 900
90	223+G1+G2 ≤ B ≤ 1213	210+G1+G2 ≤ L ≤ 1200					

STAINLESS STEEL TUBE

Speed code	Dimension (B)	Tube lenght (L)	Grooves for stainless steel tube Depth = 5.2mm				Tapered sleeve length (l)
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max	
15	283+G1+G2 ≤ B ≤ 1213	270+G1+G2 ≤ L ≤ 1200					
25/55	253+G1+G2 ≤ B ≤ 1213	240+G1+G2 ≤ L ≤ 1200	≥ 41	≥ 33	≥ 30	≤ 300	200, 300, 400, 500, 600, 700, 800, 900
90	223+G1+G2 ≤ B ≤ 1213	210+G1+G2 ≤ L ≤ 1200					

ADDITIONNAL WEIGHT

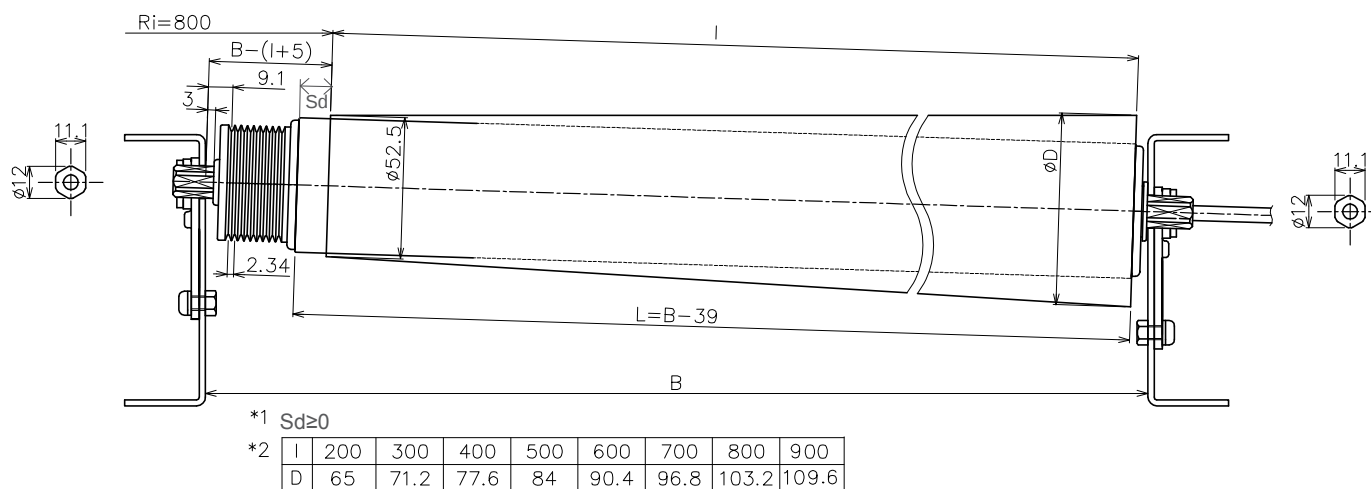
Sleeve length (mm)	200	300	400	500	600	700	800	900
Additional weight (kg)	0,1	0,2	0,3	0,4	0,5	0,6	0,8	0,9
Max load to be convoyed (kg)	50							

⚠ For a single groove G2=0

Conical roller with pulley for ribbed belt - Ri = 800mm

PM500FE (50E)

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



Dimensions PM500FE (50E) - Inner radius of curvature (Ri) : 800 mm

Speed code	Dimension (B) mini ≤ B ≤ max	Tube lenght (L) mini ≤ L ≤ max	Tapered sleeve length (l)
15	334 ≤ B ≤ 1213	295 ≤ L ≤ 1200	200, 300, 400, 500, 600, 700, 800, 900
25 / 55	309 ≤ B ≤ 1213	270 ≤ L ≤ 1200	
90	279 ≤ B ≤ 1213	240 ≤ L ≤ 1200	

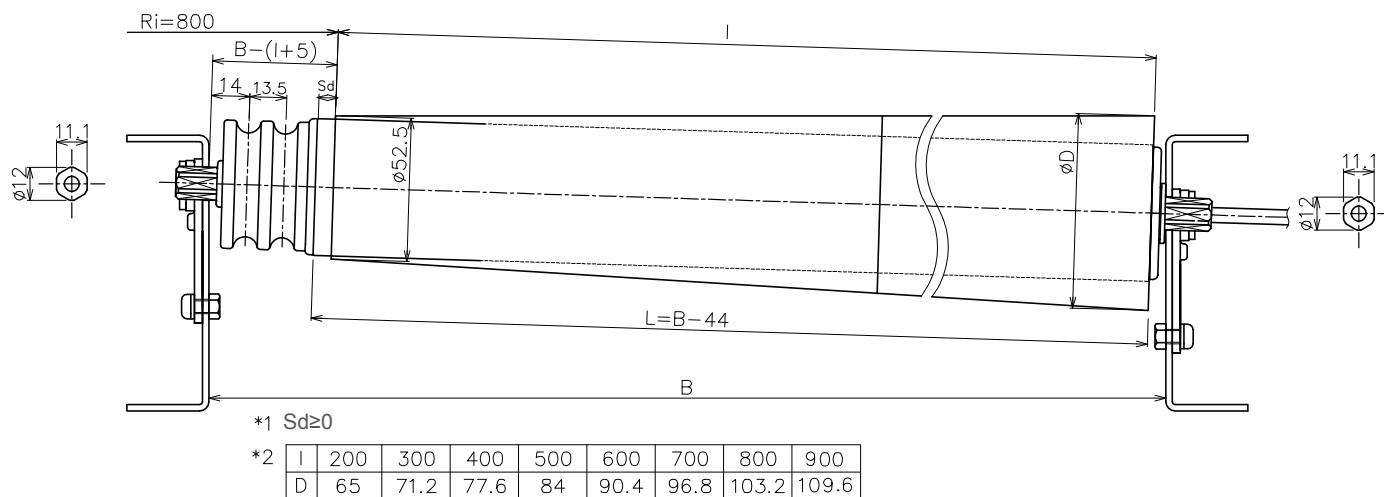
ADDITIONNAL WEIGHT

Sleeve length	200	300	400	500	600	700	800	900
Additional weight (kg)	0,1	0,2	0,3	0,4	0,5	0,6	0,8	0,9
Max load to be conveyed (kg)	50							

Conical roller with pulley for round belt - Ri = 800mm

PM500FE (50E)

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



Dimensions PM500FE (50E) - Inner radius of curvature (Ri) : 800 mm

Speed code	Dimension (B)	Tube lenght (L)	Tapered sleeve length
	mini ≤ B ≤ max		
15	339 ≤ B ≤ 1244	295 ≤ L ≤ 1200	200, 300, 400, 500, 600, 700, 800, 900
25 / 55	314 ≤ B ≤ 1244	270 ≤ L ≤ 1200	
90	284 ≤ B ≤ 1244	240 ≤ L ≤ 1200	

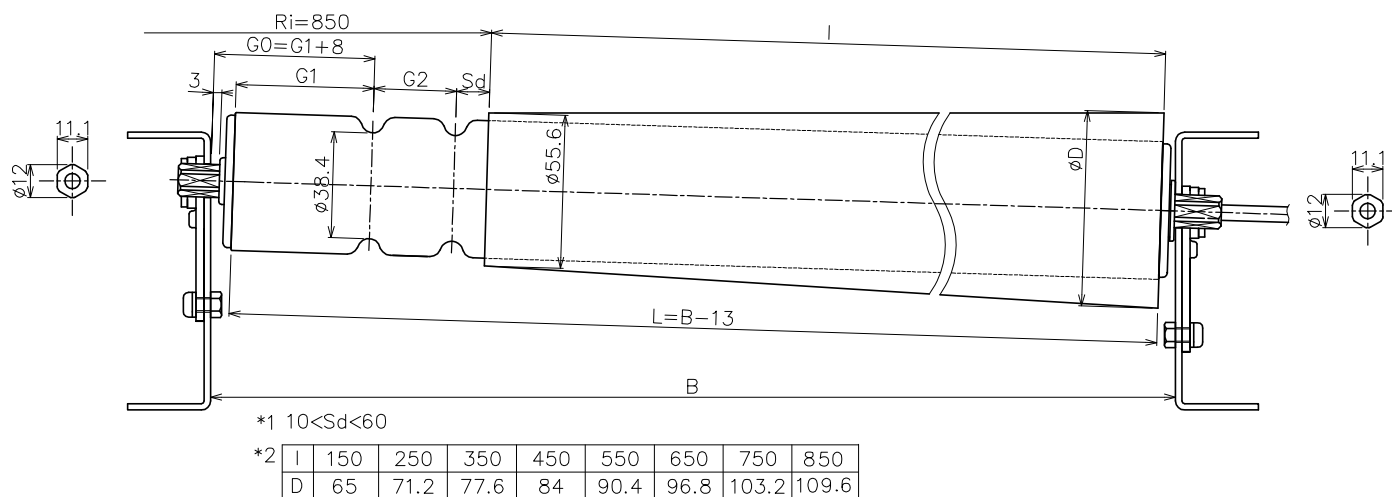
ADDITIONNAL WEIGHT

Sleeve length	200	300	400	500	600	700	800	900
Additional weight (kg)	0,1	0,2	0,3	0,4	0,5	0,6	0,8	0,9
Max load to be conveyed (kg)	50							

Conical roller with grooved tube - Ri = 850mm

PM500FE (50E)

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



Dimensions PM500FE (50E) - Inner radius of curvature (Ri) : 850 mm

STEEL TUBE

Speed code	Dimension (B)	Tube length (L)	Grooves for steel tube Depth = 5.8mm				Tapered sleeve length
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max	
15	283+G1+G2 ≤ B ≤ 1213	270+G1+G2 ≤ L ≤ 1200					150, 250, 350, 450, 550, 650, 750, 850
25/55	253+G1+G2 ≤ B ≤ 1213	240+G1+G2 ≤ L ≤ 1200	≥ 41	≥ 33	≥ 22	≤ 300	
90	223+G1+G2 ≤ B ≤ 1213	210+G1+G2 ≤ L ≤ 1200					

STAINLESS STEEL TUBE

Speed code	Dimension (B)	Tube length (L)	Grooves for stainless steel tube Depth = 5.2mm				Tapered sleeve length
	mini ≤ B ≤ max	mini ≤ L ≤ max	G0 mini	G1 mini	G2 mini	G1+G2 max	
15	283+G1+G2 ≤ B ≤ 1213	270+G1+G2 ≤ L ≤ 1200					150, 250, 350, 450, 550, 650, 750, 850
25/55	253+G1+G2 ≤ B ≤ 1213	240+G1+G2 ≤ L ≤ 1200	≥ 41	≥ 33	≥ 30	≤ 300	
90	223+G1+G2 ≤ B ≤ 1213	210+G1+G2 ≤ L ≤ 1200					

ADDITIONNAL WEIGHT

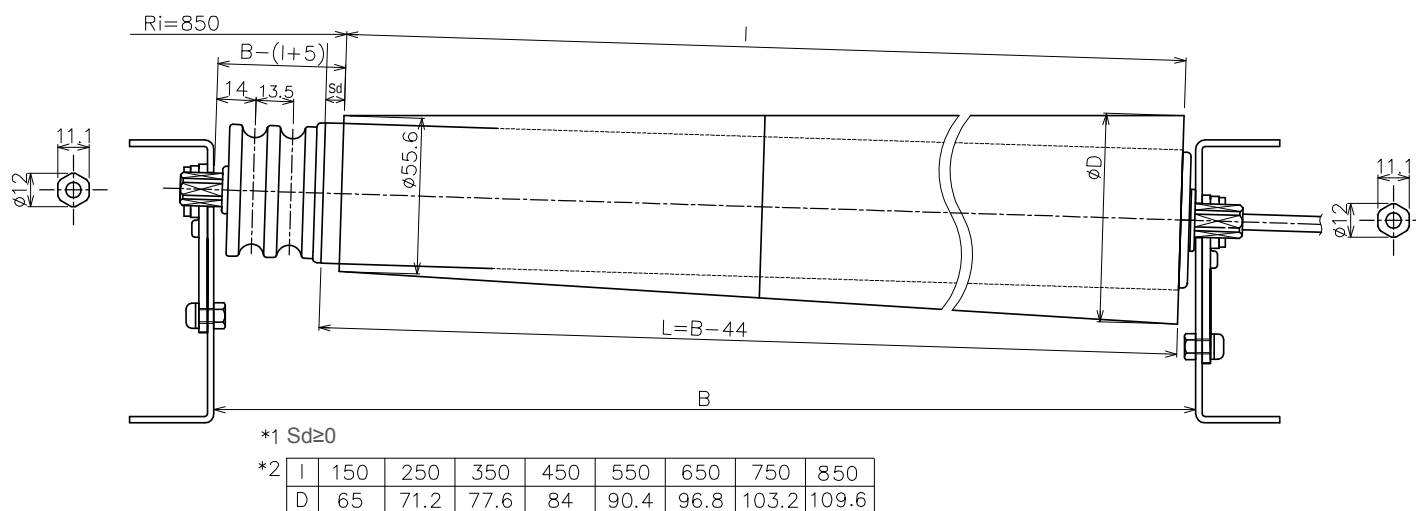
Sleeve length	150	250	350	450	550	650	750	850
Additional weight (kg)	0,1	0,2	0,2	0,3	0,5	0,6	0,7	0,9
Max load to be conveyed (kg)	50							

For a single groove G2=0

Conical roller with pulley for round belt - Ri = 850mm

PM500FE (50E)

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



Dimensions PM500FE (50E) - Inner radius of curvature (Ri) : 850 mm

Speed code	Dimension (B) mini ≤ B ≤ max	Tube lenght (L) mini ≤ L ≤ max	Tapered sleeve length
15	339 ≤ B ≤ 1244	295 ≤ L ≤ 1200	150, 250, 350, 450, 550, 650, 750, 850
25 / 55	314 ≤ B ≤ 1244	270 ≤ L ≤ 1200	
90	284 ≤ B ≤ 1244	240 ≤ L ≤ 1200	

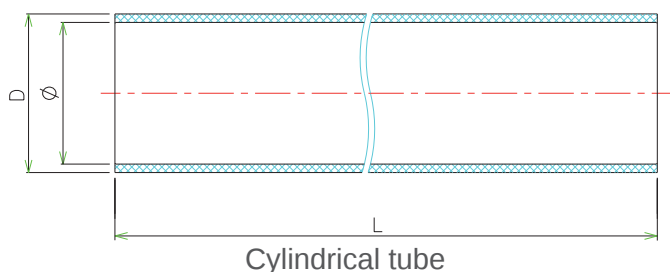
ADDITIONNAL WEIGHT

Sleeve length	150	250	350	450	550	650	750	850
Additional weight (kg)	0,1	0,2	0,2	0,3	0,5	0,6	0,7	0,9
Max load to be conveyed (kg)	50							

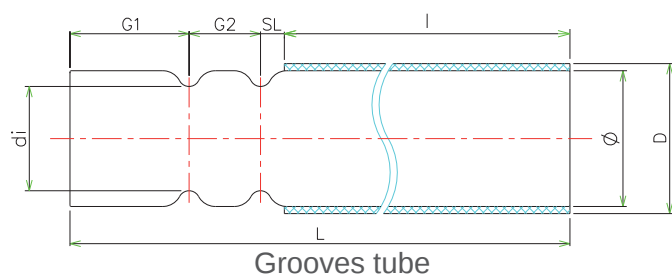
7 - DIMENSIONAL CHARACTERISTICS - MISCELLANEOUS

PVC sleeve

For conveying a fragile load or to lower the sound level.
Sleeved by compressed air



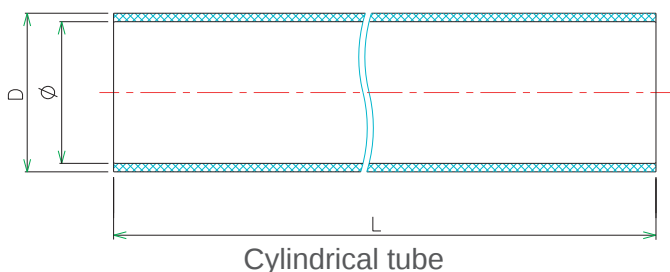
Thickness (mm)	L (mm)	Ø (mm)	D (mm)	Hardness
2	≤1200	50	54	~58 shore A
3			56	



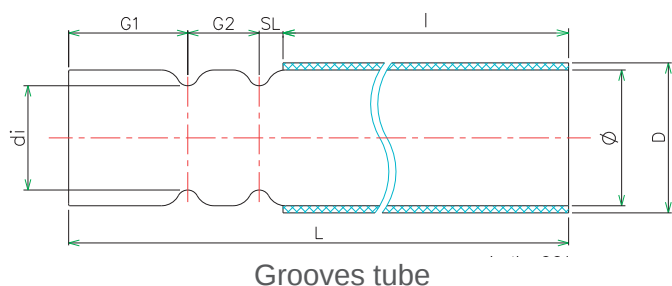
Thickness (mm)	L (mm)	Ø (mm)	D (mm)	SL (mm)
2	≤1200	50	54	10
3			56	

Coated in natural rubber, nitrile rubber and polyurethane

Material	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	3
Nitrile rubber	Exceptional resistance in the presence of hydrocarbon, oil and grease.		
Polyurethane	High resistance to abrasion, tearing and oil.	90	



L (mm)	Ø (mm)	D (mm)
≤1000	50	56

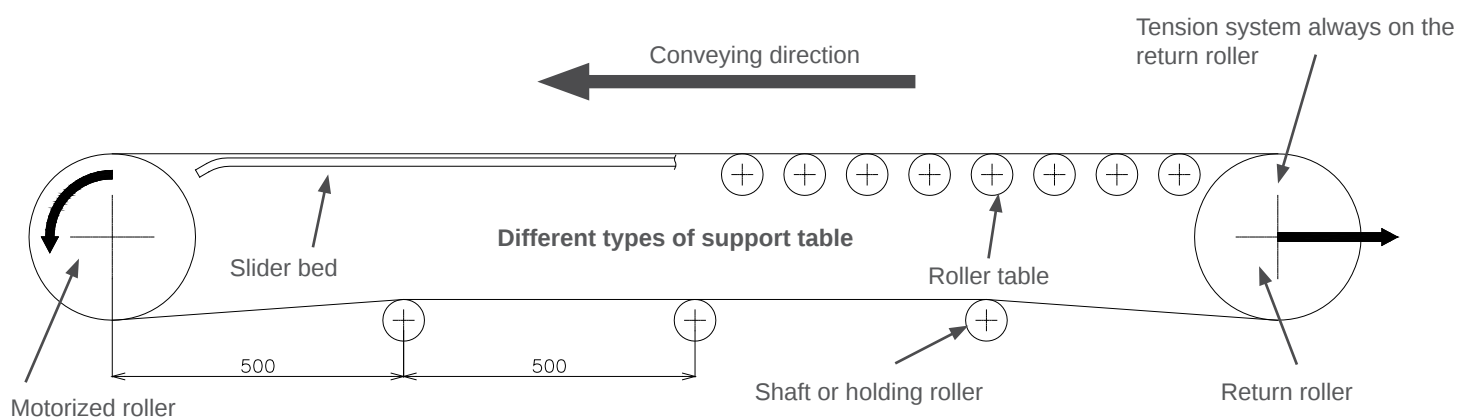


L (mm)	Ø (mm)	D (mm)	SL (mm)
≤1000	50	56	10

8 - BELT CONVEYOR APPLICATION

Condition of use and recommendation

The PM500FE motorized roller allows to create a conveyor with very small dimensions to convey light loads, provided that the hereafter conditions are followed :



- Belt thickness recommended $\leq 1\text{mm}$
- Belt weight $\leq 1,4\text{kg/m}^2$
- Belt tension to be applied: $10\text{N} \leq T \leq 200\text{N}$

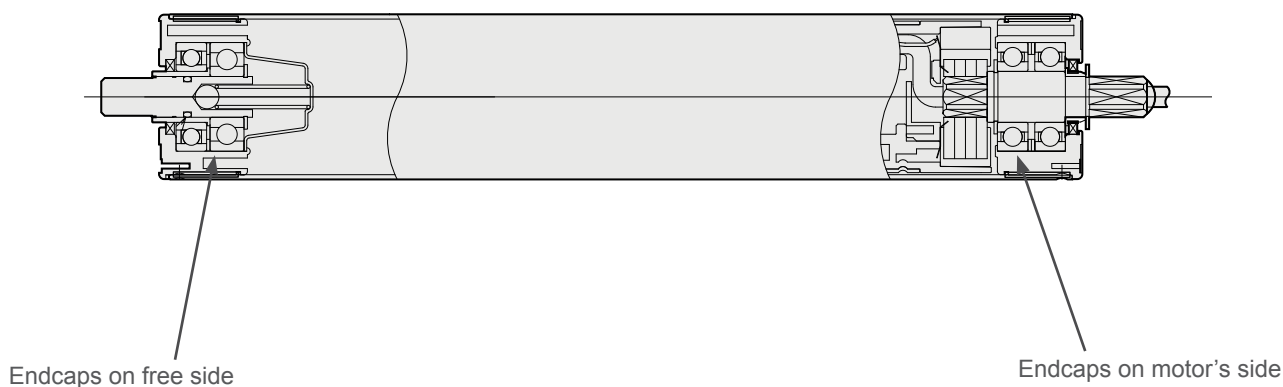
$$T = (\text{Weight of total load on the conveyor} + \text{Weight of belt}) \times \mu \times 1,25 \times 9,81$$

μ = Coefficient of friction between support table and belt ($0,2 \leq \mu \leq 0,5$)

- Conveyor max dimensions :
 - Length (L) $\leq 2000\text{mm}$ (depending on speed code)
 - Width (W) $\leq 800\text{mm}$ (depending on speed code)
- Mount the motorized roller downstream of the conveying direction and the return roller upstream.

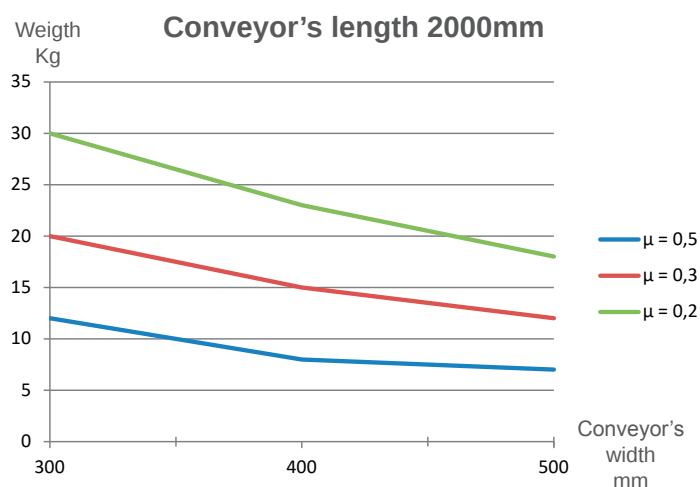
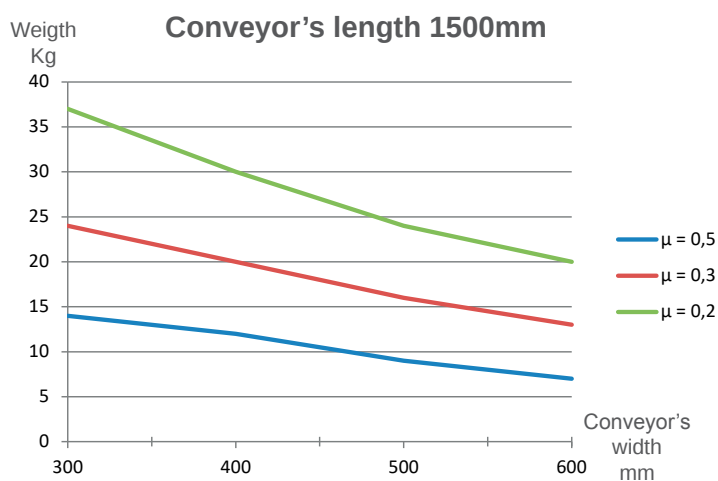
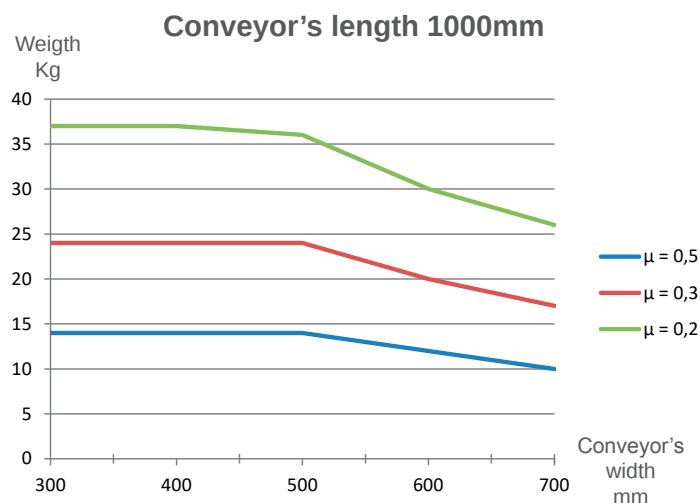
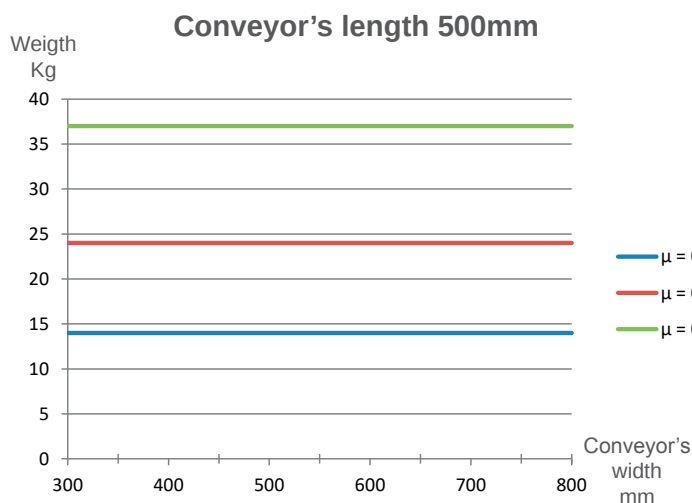
Structure

To resist to the belt tension, reinforced endcaps, with two precision ball bearings are mounted on the roller.



Transfer capacity

SPEED CODE 15



• Operation:

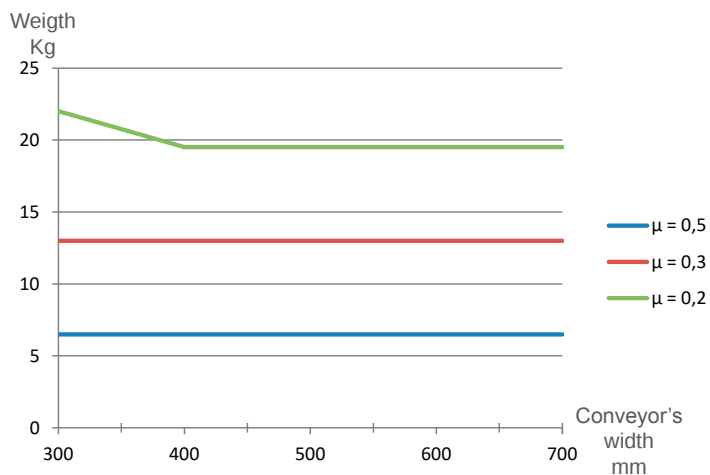
- Intermittent : Minimum duty cycle= 2s ON / 2s OFF
ED = ON/(ON+OFF) ≤ 50%
900 starts/H max
- Continuous: 100%

• Belt performance : 70%

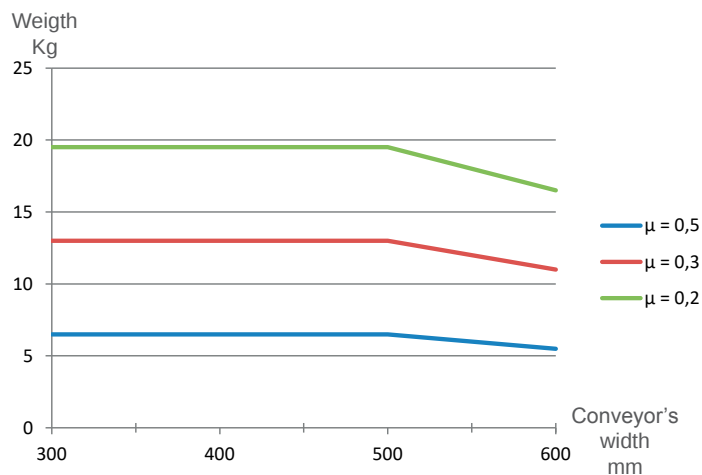
These curves are given as a guide. Transfer capacity depends on the nature and quality of the transported load, the belt tension, the quality of the bearings, the nature of the sleeves, the ambient temperature...

SPEED CODE 25

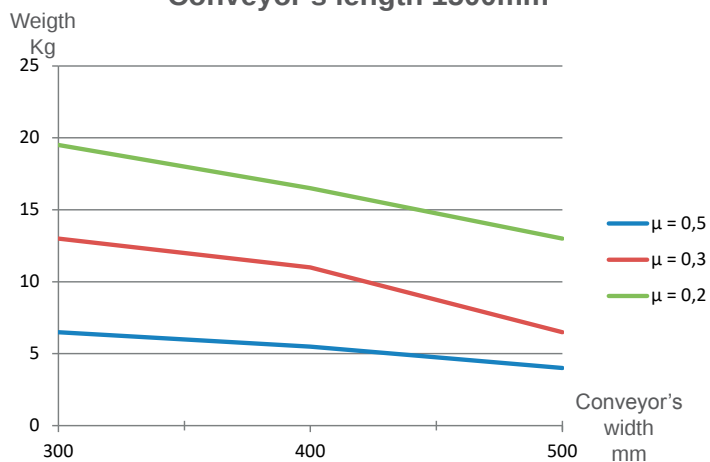
Conveyor's length 500mm



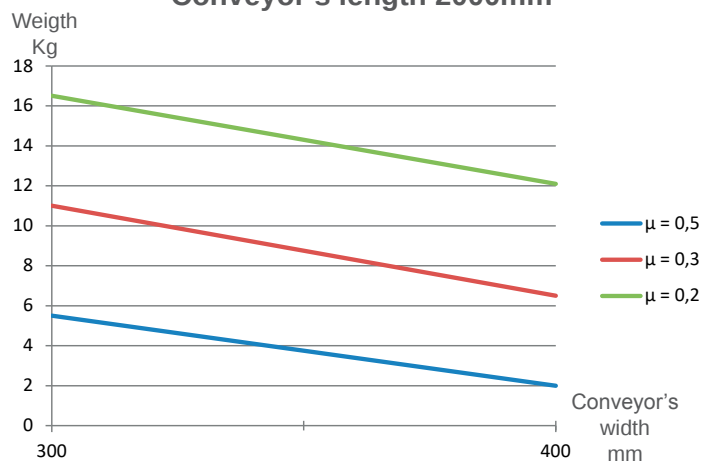
Conveyor's length 1000mm



Conveyor's length 1500mm



Conveyor's length 2000mm



• Operation:

- Intermittent :

Minimum duty cycle= 2s ON / 2s OFF
 $ED = \frac{ON}{(ON+OFF)} \leq 50\%$
 900 starts/H max

- Continuous:

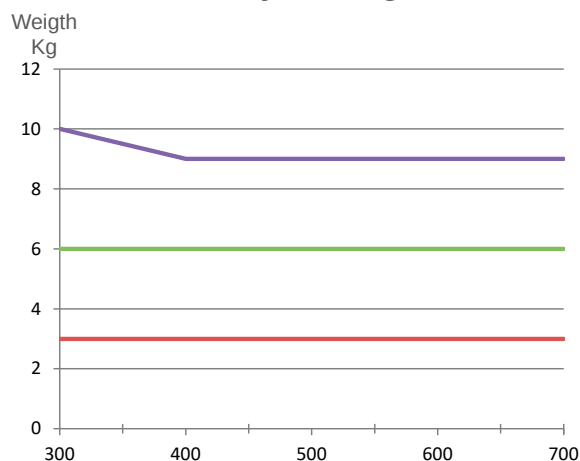
100%

• Belt performance : 70%

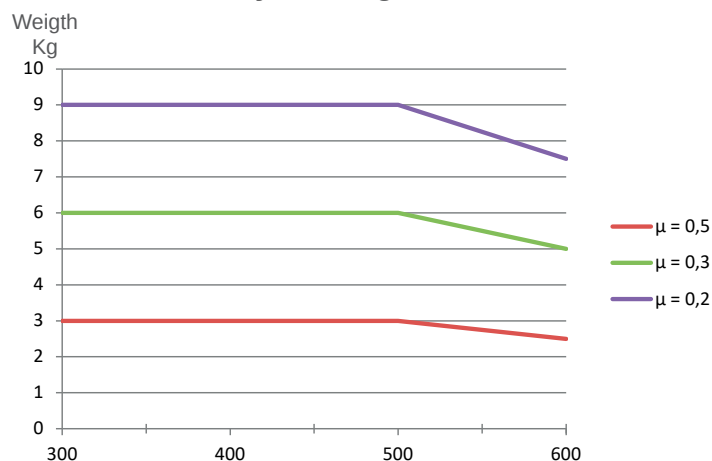
These curves are given as a guide. Transfer capacity depends on the nature and quality of the transported load, the belt tension, the quality of the bearings, the nature of the sleeves, the ambient temperature...

SPEED CODE 55

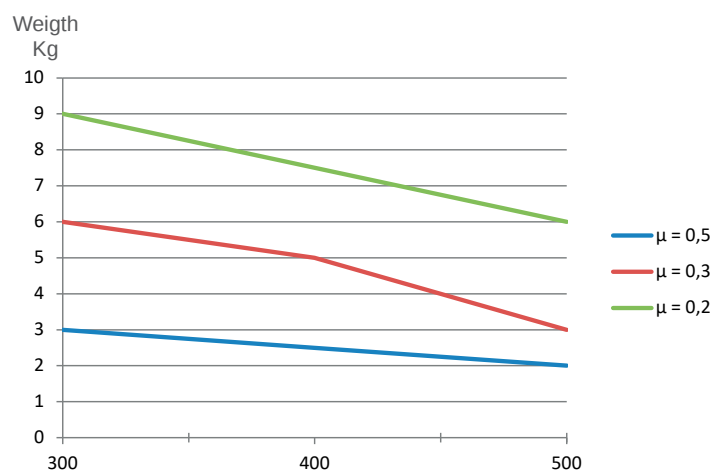
Conveyor's length 500mm



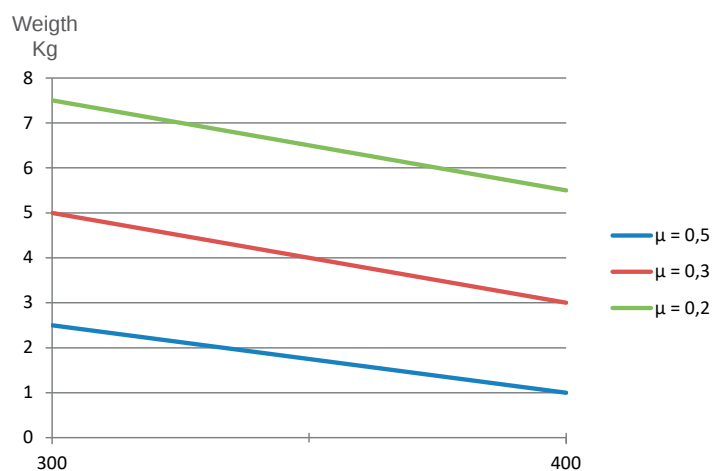
Conveyor's length 1000mm



Conveyor's length 1500mm



Conveyor's length 2000mm



• Operation:

- Intermittent : Minimum duty cycle= 2s ON / 2s OFF
ED = ON/(ON+OFF)≤50%
900 starts/H max

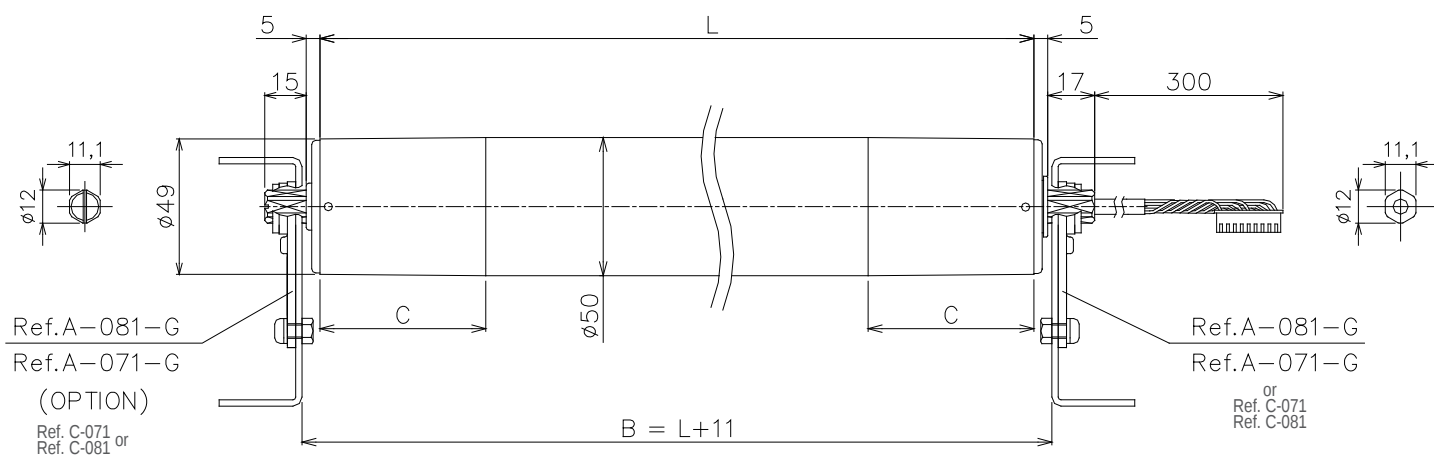
- Continuous: 100%

• Belt performance : 70%

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...

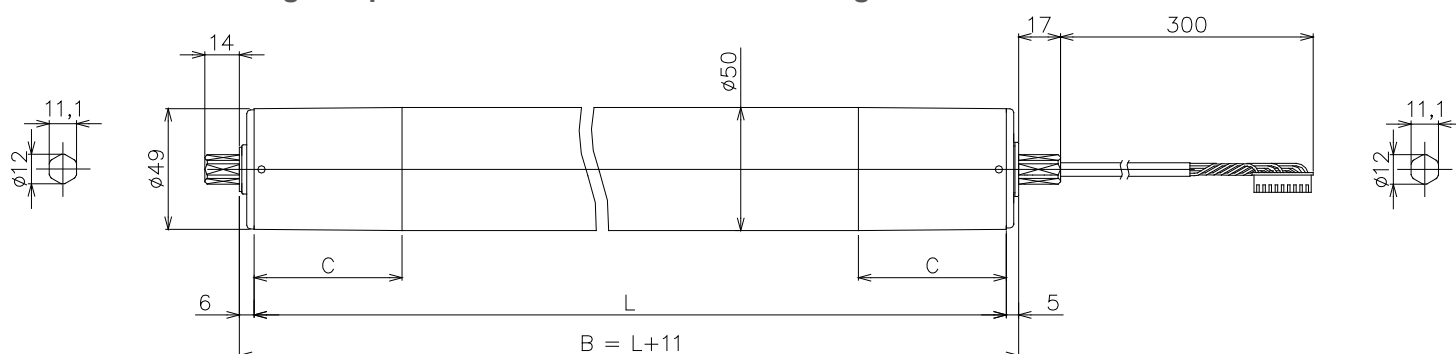
Dimensional characteristics and weight

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



Speed code	Dimension (B)	Tube length (L)
	mini ≤ B ≤ max	
15	311 ≤ B ≤ 811	300 ≤ L ≤ 800
25 / 55	286 ≤ B ≤ 811	275 ≤ L ≤ 800

Hexagonal plain shaft on motor side and hexagonal shaft fixed on free end



Speed code	Dimension (B)	Tube length (L)
	mini ≤ B ≤ max	
15	291 ≤ B ≤ 811	280 ≤ L ≤ 800
25 / 55	271 ≤ B ≤ 811	260 ≤ L ≤ 800

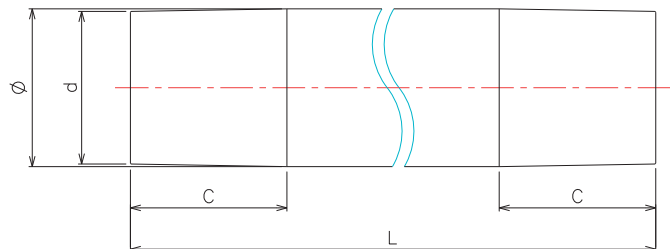
WEIGHT / STATIC LOAD / AXIAL FORCE

Tube length		300	400	500	600	700	800
Weight (Kg)	15 m/min	2,7	2,9	3,0	3,2	3,4	3,5
	25 m/min	2,5	2,7	2,8	3,0	3,2	3,3
	55 m/min	2,5	2,7	2,9	3,0	3,2	3,4
Static max load (kg)		65	55	45	35	30	25
Axial force max (N)		290					

Tube specification

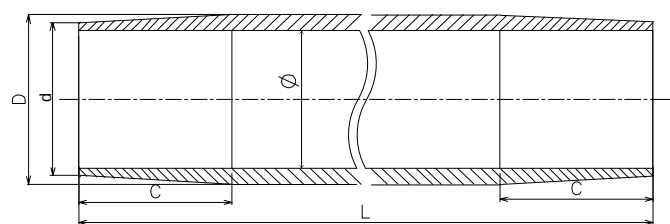
Various machining, coating and sleeves are available to insure a proper centering and a good adherence.

Tube machined crowned, zinc coated or stainless steel



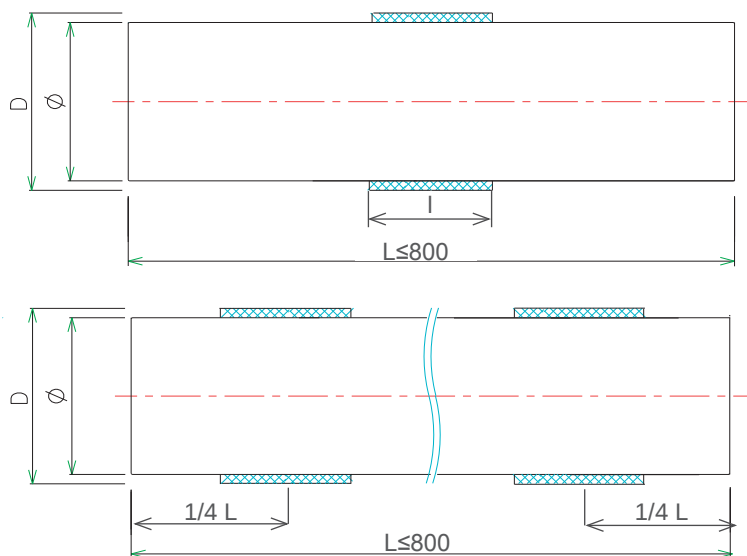
L (mm)	C (mm)	Ø (mm)	d (mm)
≤600	60	50	49
601≤800	100		

Tube machined crowned with natural rubber coating / polyurethane, in steel or stainless steel. 3mm Thickness



L (mm)	C (mm)	Ø (mm)	d (mm)	D (mm)
≤600	60	50	55	56
601≤800	100			

Tube with centering sleeve, zinc coated or stainless steel.

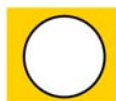


Thickness (mm)	L (mm)	Ø (mm)	D (mm)	I (mm)
1	≤800	50	52	50

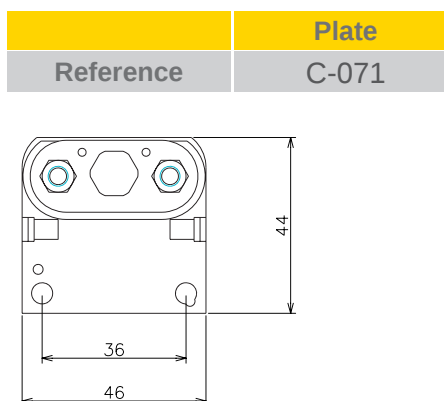
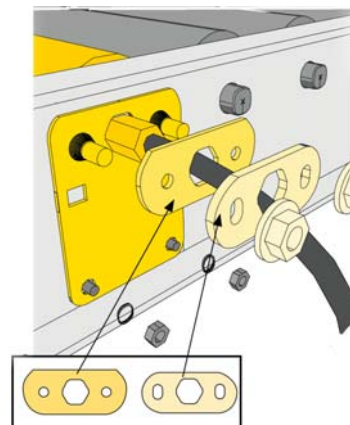
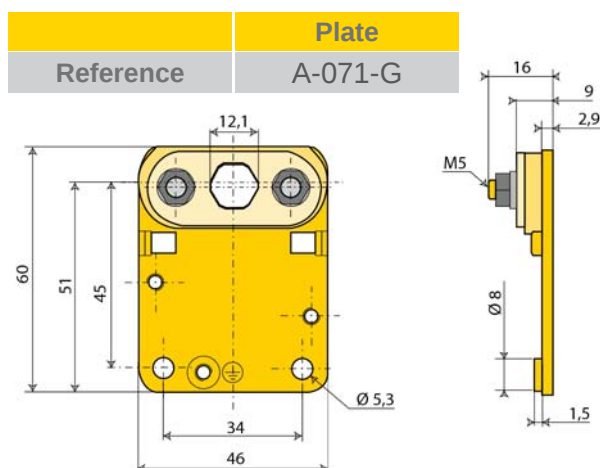
9 - MOUNTING ON THE FRAMES

Mounting plate for plain 11.1 mm hexagonal shaft - FLAT ON TOP

Conveyor with hole $\varnothing 12,1\text{mm}$

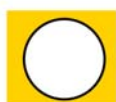


or hexagonal 11,2mm

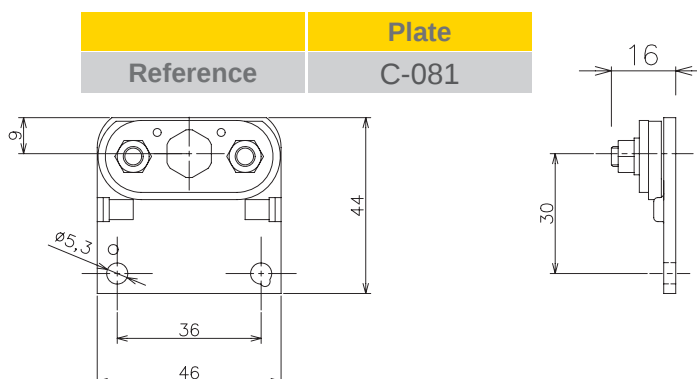
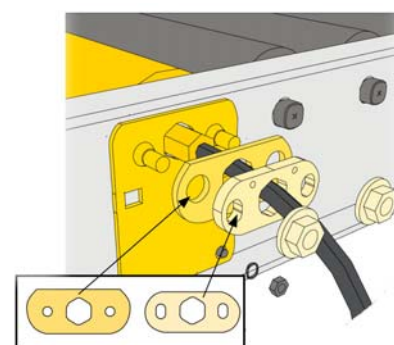
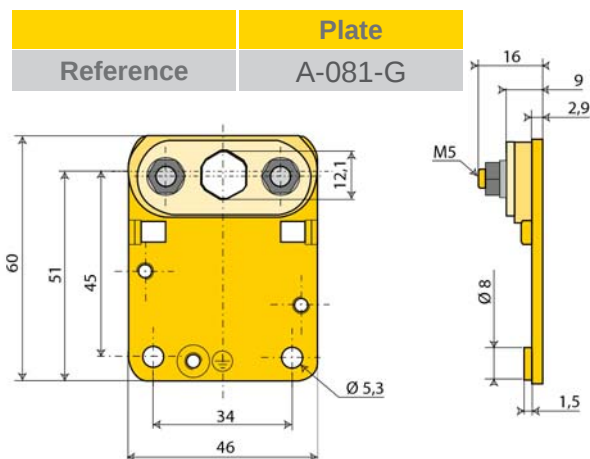


Mounting plate for plain 11.1 mm hexagonal shaft - ANGLE ON TOP

Conveyor with hole $\varnothing 12,1\text{mm}$



or hexagonal 11,2mm

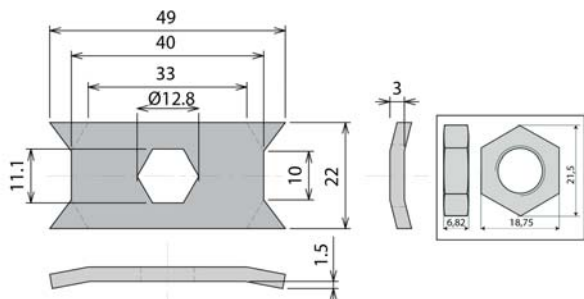


Mounting plate for threaded hexagonal shaft - FLAT ON TOP

Conveyor with hole $\varnothing 12,1\text{mm}$



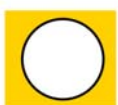
or hexagonal 11,2mm



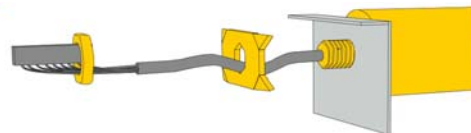
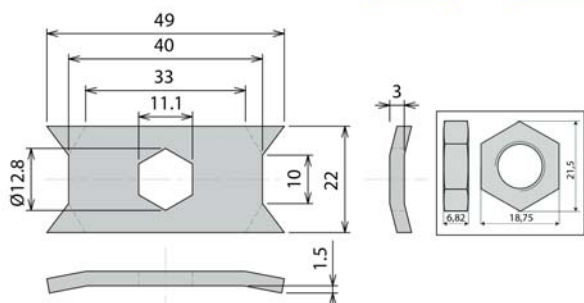
	Claw plate	Nut
Reference	P-0B1	FEY-01

Mounting plate for threaded hexagonal shaft - ANGLE ON TOP

Conveyor with hole $\varnothing 12,1\text{mm}$



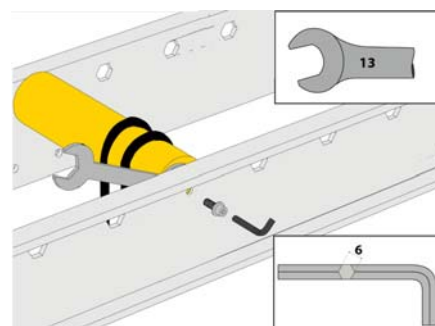
or hexagonal 11,2mm



	Claw plate	Nut
Reference	P-0C1	FEY-01

M8 threaded fixed shaft

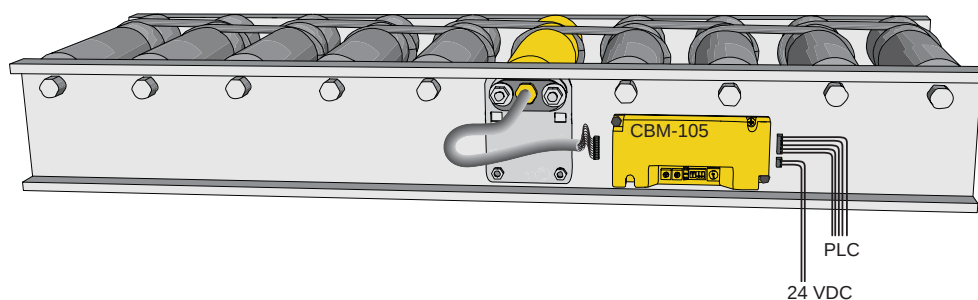
Conveyor with holes $\varnothing 8,4\text{mm}$



	Bolt
Reference	SP-M8-14

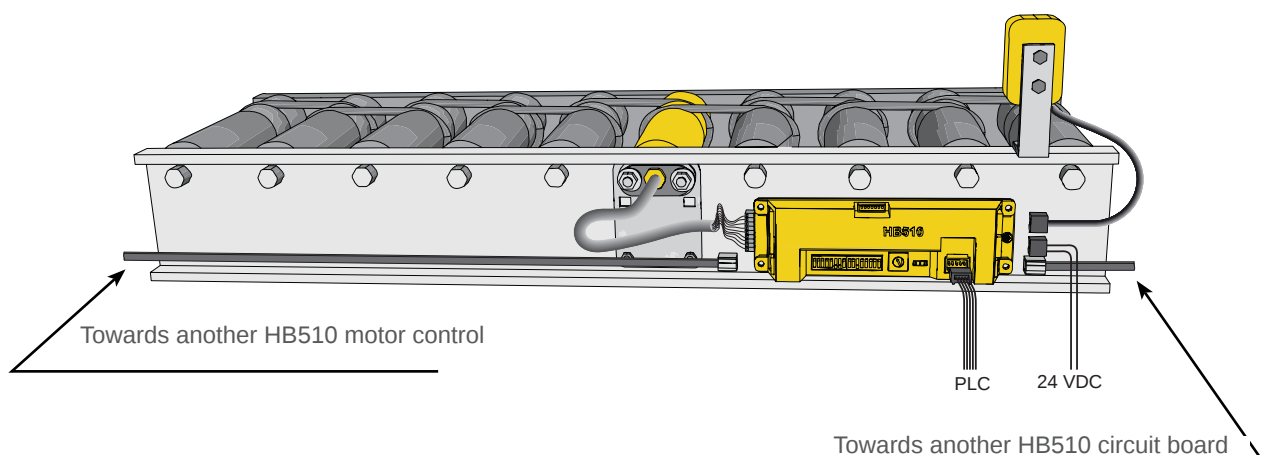
9 - WIRING

With CBM-105 circuit board

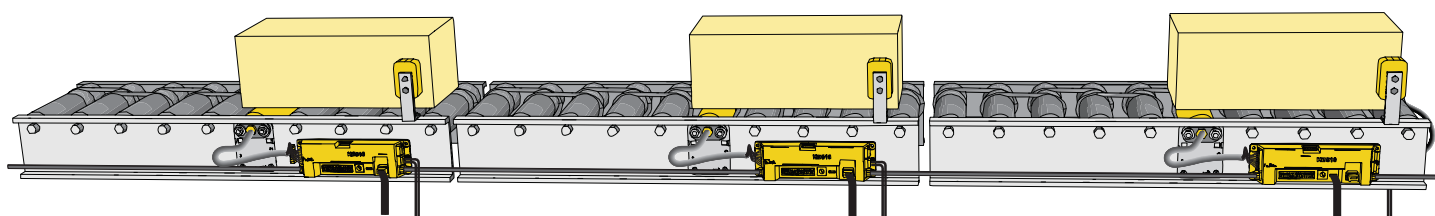


The circuit board controls and protects the brushless motorized roller.

With HB510 circuit board



The circuit board controls the motorized roller and manages the zones to ensure ZPA (zero pressure accumulation)



10 - ACCESSORIES

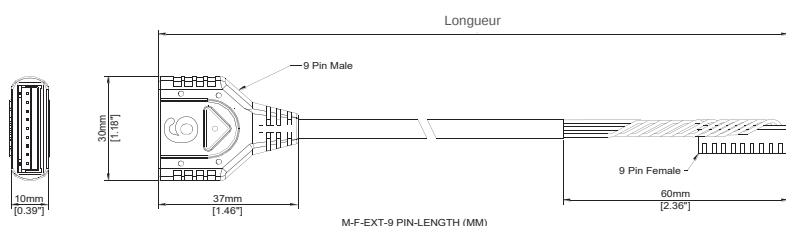
Ribbed belt



Pitch between the rollers (mm) For pulley Ø43mm	Number of teeth		
	2	3	4
	Load to be conveyed ≤200 Kg	Load to be conveyed ≤300 Kg	Load to be conveyed ≤400 Kg
53-56	Ref. 2PJ246-43	Ref. 3PJ246-43	Ref. 4PJ246-43
60-63	Ref. 2PJ256-43	Ref. 3PJ256-43	Ref. 4PJ256-43
64-65	Ref. 2PJ265-43	Ref. 3PJ265-43	Ref. 4PJ265-43
66-67	Ref. 2PJ270-43	Ref. 3PJ270-43	Ref. 4PJ270-43
71-72	Ref. 2PJ282-43	Ref. 3PJ282-43	Ref. 4PJ282-43
73-75	Ref. 2PJ286-43	Ref. 3PJ286-43	Ref. 4PJ286-43
76-78	Ref. 2PJ290-43	Ref. 3PJ290-43	Ref. 4PJ290-43
80-84	Ref. 2PJ302-43	Ref. 3PJ302-43	Ref. 4PJ302-43
87-91	Ref. 2PJ314-43	Ref. 3PJ314-43	Ref. 4PJ314-43
92-95	Ref. 2PJ316-43	Ref. 3PJ316-43	Ref. 4PJ316-43
97-101	Ref. 2PJ336-43	Ref. 3PJ336-43	Ref. 4PJ336-43
103-107	Ref. 2PJ346-43	Ref. 3PJ346-43	Ref. 4PJ346-43
115-118	Ref. 2PJ372-43	Ref. 3PJ372-43	Ref. 4PJ372-43
119-121	Ref. 2PJ376-43	Ref. 3PJ376-43	Ref. 4PJ376-43
123-128	Ref. 2PJ388-43	Ref. 3PJ388-43	Ref. 4PJ388-43
129-134	Ref. 2PJ416-43	Ref. 3PJ416-43	Ref. 4PJ416-43
142-147	Ref. 2PJ436-43	Ref. 3PJ436-43	Ref. 4PJ436-43
150-156	Ref. 2PJ442-43	Ref. 3PJ442-43	Ref. 4PJ442-43
157-161	Ref. 2PJ456-43	Ref. 3PJ456-43	Ref. 4PJ456-43
170-176	Ref. 2PJ486-43	Ref. 3PJ486-43	Ref. 4PJ486-43
196-202	Ref. 2PJ536-43	Ref. 3PJ536-43	Ref. 4PJ536-43
208-215	Ref. 2PJ570-43	Ref. 3PJ570-43	Ref. 4PJ570-43
254-258	Ref. 2PJ636-43	Ref. 3PJ636-43	Ref. 4PJ636-43
305-310	Ref. 2PJ746-43	Ref. 3PJ746-43	Ref. 4PJ746-43

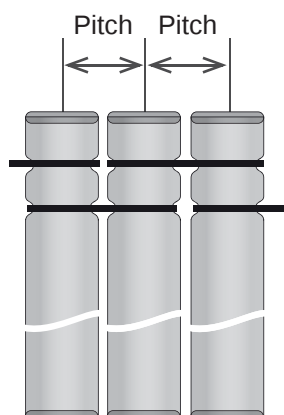
Extension cables

For PM500FE and CBM-105 / HB510 - Male / Female - 9 pins



Lenght	Part number of the extension cable
1200mm	ACE-CBM-B1200
2700mm	ACE-CBM-B2700

Rounded belts



Pitch between the rollers	Belt reference
75mm	POLYCORD-R5-256
100mm	POLYCORD-R5-302

- Belt diameter : 5mm
- Belt tension : 8%
- Material: Thermoplastic polyurethane (TPU)

 For grooves with an inner diameter of 38.4 mm



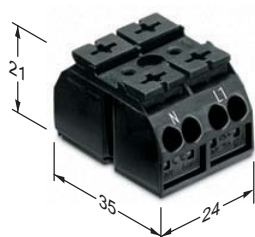
24 VDC power supply



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%

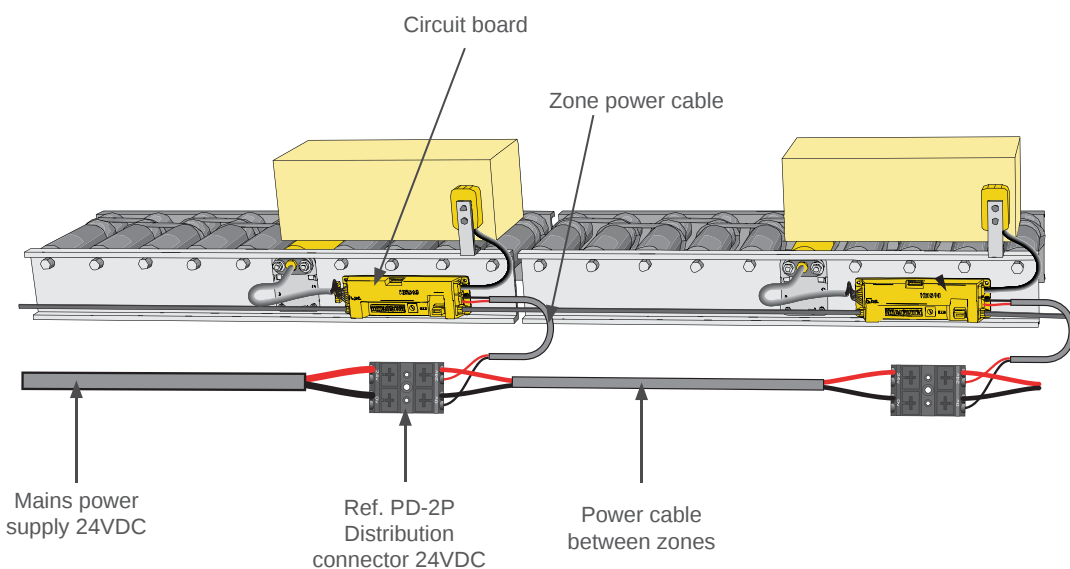
- Very weak inrush current.
- Accepts excess current of 120 to 150% at startup (according to model)

24 VDC distribution connector



- 32A max
- 2 poles with markings «24V / OV»
- 4 connectors per pole
- Cable 0.5 - 4.00mm (AWG.....)
- Fixed with M3 bolt or screw

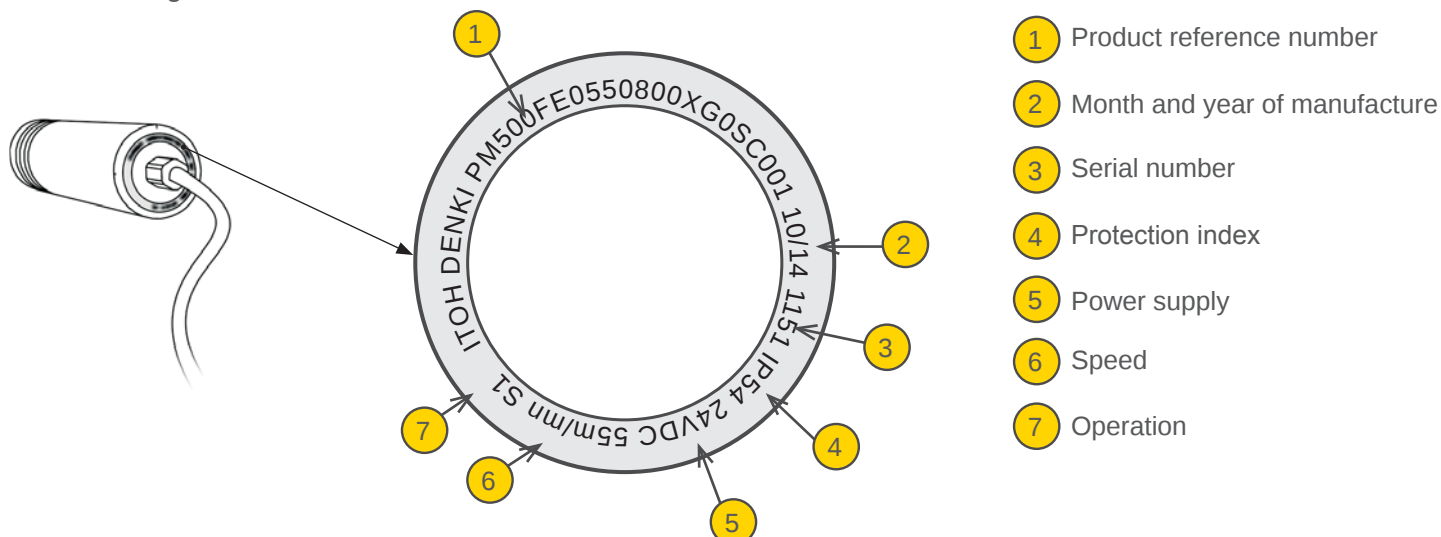
Reference	Connector
	PD-2P



11 - PRODUCT IDENTIFICATION

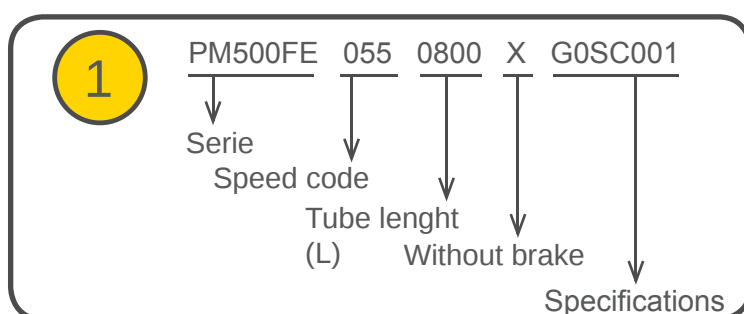
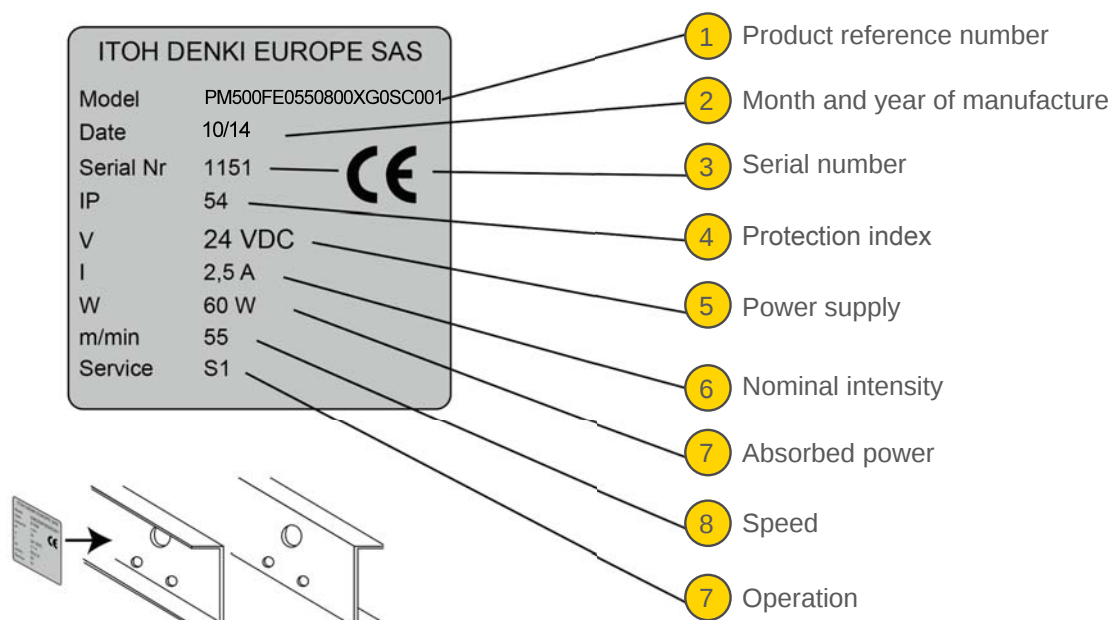
Round label

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



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 :



12 - QUOTATION - ORDER

Date :
 Company :
 Contact :
 Address :
 Postcode :
 Town / city :
 Country :
 Telephone :
 Mail :
 Type of business :

☐
QUOTATION

☐
ORDER

Conveyor

- ☐ Roller conveyor
☐ Belt conveyor
☐ Other Type :

- ☐ New equipment
☐ Replacing an ITOH DENKI product
☐ Replacing a competing product - Brand :

Conveyor length : m
 Inside frame dimension «B» : mm
 Pitch between rollers : mm (for roller conveyor)

- ☐ Straight conveyor or ☐ Curved conveyor
 Inner radius of curvature :
☐ Ri = 800 mm ☐ Ri = 850 mm
☐ Other value.....
☐ Horizontal conveyor or ☐ Sloping conveyor
 Angle of slope : ☐ Upwards ☐ Downwards
 Slope.....

Load to be conveyed

- ☐ Wood ☐ Metal ☐ Plastic ☐ Cardboard ☐ Other.....
☐ Flat surface ☐ Uneven surface
 Weight of the load.....
 Length of the load (direction of conveyance) : Width of the load:.....

Operation

- ☐ Standard (controlled by a PLC, no accumulation with pressure)
☐ Accumulation without pressure (ZPA) with our HB510 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. $T^{\circ} = \dots\dots\dots$ ☐ Other $T^{\circ} : \dots\dots\dots$
 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:

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

Distributed in Europe by :

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

hereby declares that the product series :

PM500FE 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 :

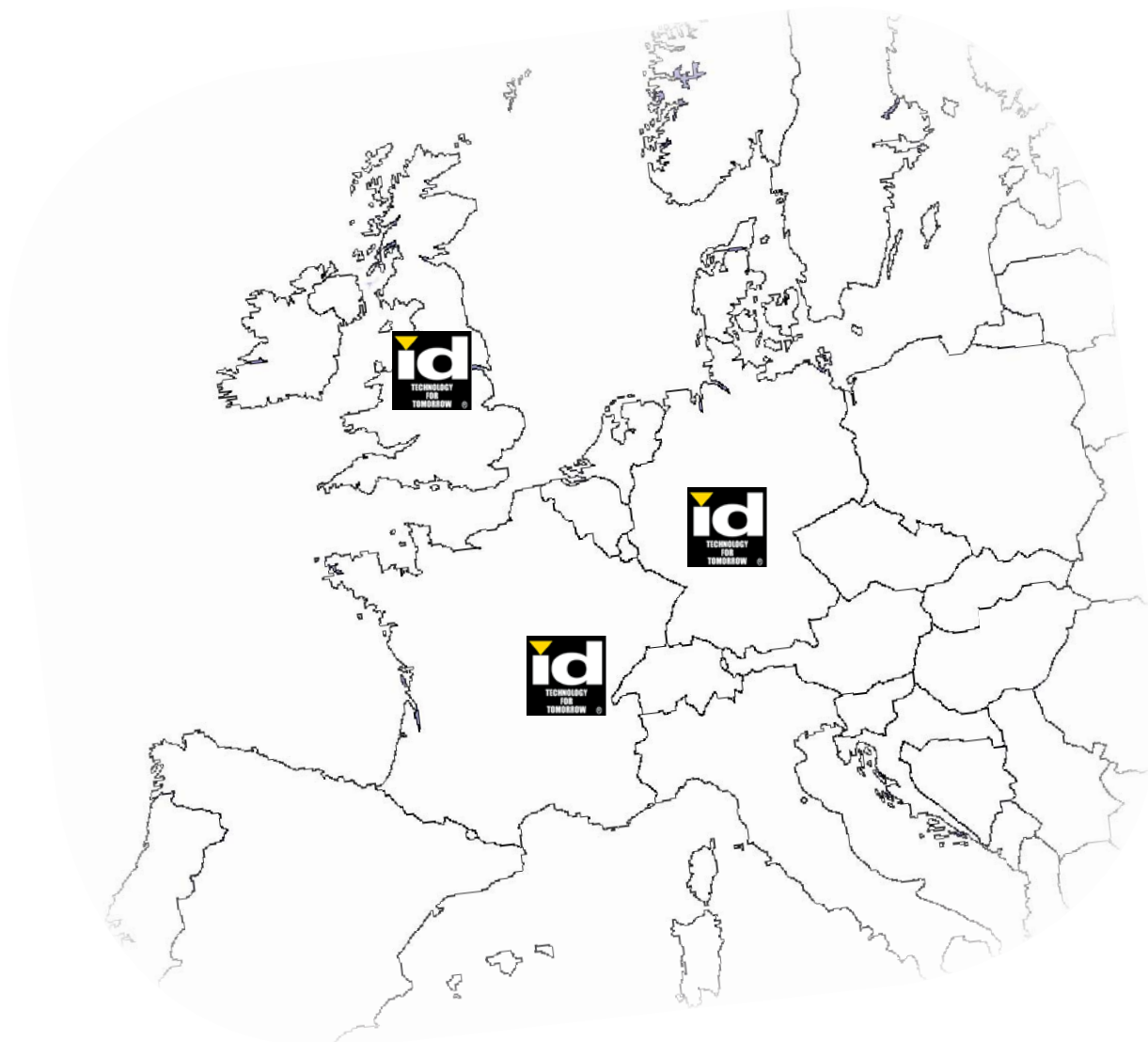
ITOHDENKI CO., Ltd
Toshiyuki TACHIBANA
1146-2 Asazuma-Cho, Kasai, Hyogo 679-0180 Japan

EC Directives applied :

- Machinery Directive 2006/42/EC
- European EMC Directive 2014/30/EC
- European RoHS Directive 2011/65/EU

Saint Pierre en Faucigny, 20 November 2013

K. TAMURA, Managing Director



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Z.A.E. les Jourdiés
74800 St Pierre en Faucigny - France
Tél. : +33 (0)4 50 03 09 99
Fax : +33 (0)4 50 03 07 60
E-mail : info@itoh-denki.com

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SUCCURSALE ITOH DENKI ALLEMAGNE

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Tel : +49 911 25 26 - 200
Fax : +49 911 25 26 - 201
E-mail : info@itoh-denki.de