Selection Method

①Calculate the required tangential force

◆ Formula for the Required Tangential Force

Required Tangential Force (N) = 9.8 (Constant Value) x Object (kg) x Rolling Friction Coefficient

◆ Rolling Friction Coefficient Table

Wood	Metal	Cardboard	Plastic	Rubber Lining
0.02~0.05	0.01~0.02	0.05~0.1	0.02~0.04	0.1

Above values vary depending on roller pitch or condition of roller surface, etc.

Sample Calculation When carrying a cardboard box of weight 40 (kg):
From the above Rolling Friction Coefficient Table, maximum friction coefficient for cardboard is 0.10.
Required Tangential Force = **9.8 x 40(kg) x 0.10 = 39.2(N)**
* Rolling friction coefficient depends on the material of the object. Refer to the table above.

②Select the model provisionally

Provisionally select the model that matches the speed from the specification table on the next page.

Example When carrying the objects at the speed of 20m/min, MOR57–(Length)–20.

③Determine the number of required rollers

Determine the number of required rollers considering the following 2 elements.

• Motor Roller Tangential Force (Start-up or at Rated Output) • Carried Weight and Roller Allowable Static Load (Please see the standards table "Roller Strength (N)" on the next page.)

◆ Calculating the required tangential force
Carrying Capability (N) = Starting Tangential Force of the Motor Roller (N) x 0.9 (Constant Value)

◆ Determine the number of required rollers
The Number of Required Rollers = Required Tangential Force (N) / Carrying Capability (N)

Sample Calculation Required tangential force for carrying is 39.2 (N) from the sample calculation above.
For MOR57-(Length)-20:
• Carrying capability is 55 (N) (Starting Tangential Force) x 0.9 = 49.5 (N).
• The Number of Required Rollers is 39.2(N) (Required Tangential Force) / 49.5(N) (Carrying Capability) = 0.79 (pcs.)←One roller is capable

④Determine the length of the rollers

• From the size of the bottom surface (length and width) of the object

Sample Calculation **When the length of the bottom surface is 300mm and the width is 400mm:**
• The width of the object is 400mm + Margin 100mm = 500mm.

It follows that in this case, the part numbers should be **MOR57-500-20**.

Caution in Selection

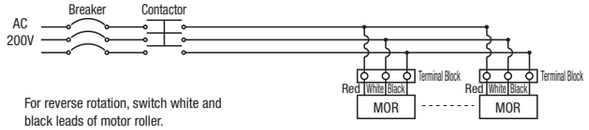
• The calculated value using carrying tangential force gives the minimum value for required tangential force needed to carry the work. Transfer capability could vary depending on roller level differences, carried object bottom surface shape (conditions), material and motor roller speed, etc. Please use more rollers depending on usage conditions and considering safety. If rated speed is important, use rated tangential force for calculation.
• When motor rollers are loaded at all times, use rated tangential force in calculating for selection.
• The object is assumed to start from on the motor rollers.

Features

- Built-in motor and gear enable space savings for driving mechanisms.
- Requires no maintenance such as lubrication.
- Use of multiple Motor Integrated Rollers prevents manufacturing line stoppage due to one roller failure.

Circuit Layout Diagram

3-Phase, 200V:



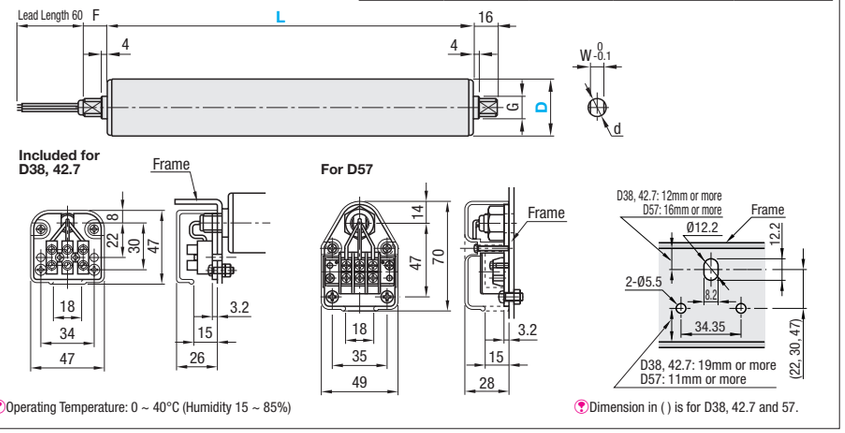
- If the motor rotates in a direction other than originally desired, switch two of the three power leads.
- Normal / reverse rotation can be changed by a switch.
- When red, white and black wires are connected in the identical manner, the rollers will all rotate in the same direction.

Conveyor Rollers with a built-in motor and a reducer.

RoHS10

MOR

	Rollers		Surface Treatment	Terminal Cover
	38Ø	42.7, 57Ø	Rollers	
Material	STKM11	STKM12	Trivalent Bright Chromate Plating	Plastic



Operating Temperature: 0 ~ 40°C (Humidity 15 ~ 85%)

Dimension in ( ) is for D38, 42.7 and 57.

Part Number		L election	Nominal Speed	Unit Price		
Type	D			L300	L400	L500
MOR	38	300 400 500	10 15 20			
	42.7					
	57					

For orders larger than indicated quantity, please request a quotation.

D	Nominal Velocity	Power Supply	Rated Current (A) (50Hz/60Hz)	d	G	W	F	Speed (m/min) 50Hz	Speed (m/min) 60Hz	Tangential Force (N) 50Hz Rating	Tangential Force (N) 50Hz Starting	Tangential Force (N) 60Hz Rating	Tangential Force (N) 60Hz Starting	Torque (N·cm) 50Hz Rating	Torque (N·cm) 50Hz Starting	Torque (N·cm) 60Hz Rating	Torque (N·cm) 60Hz Starting	Roller Strength (N) L300	Roller Strength (N) L400	Roller Strength (N) L500
38	10	Three-Phase 200V 50/60Hz Input 16/12W	0.055/0.050	12	18	8	16	10.4	13.1	16.7	37.3	12.4	31.3	31.8	70.9	23.6	59.6	343	294	294
	15							14.2	16.1	12.3	39.6	9.2	30.9	23.3	75.3	17.5	58.7			
	20							22.2	25.2	7.8	25.3	5.8	19.7	14.9	48.0	11.1	37.4			
42.7	10	Three-Phase 200V 50/60Hz Input 15/14W	0.056/0.051					12.1	13.5	14.2	30.7	14.2	23.4	30.3	65.5	30.3	50.1	490	441	392
	15							17.9	19.9	9.6	20.8	9.6	15.9	20.5	44.4	20.5	33.9			
	20							24.4	27.2	7.0	15.2	7.0	11.6	15.0	32.5	15.0	24.8			
57	10	Three-Phase 200V 50/60Hz Input 33/27W	0.120/0.100		15		23	11.2	13.3	44.5	83.1	37.0	78.4	126.8	236.8	105.4	223.4	980	980	784
	15							12.4	14.8	40.2	75.1	33.5	67.6	114.5	214.0	95.4	192.6			
	20							17.0	20.2	29.4	55.0	24.5	49.5	83.7	156.7	69.8	141.0			

kgf=Nx0.101972

Voltage fluctuation is allowed up to ±3% for 50Hz. (Up to ±5% allowed for 60Hz)
In case 50Hz is applied at ±5% of voltage variation, the torque value becomes approx. 40% lower than the values shown in the table above.
Indicated speed applies for rated power. Also rotational velocity and torque change when load is light or excessive.
Roller strengths may vary depending on applied shock loads, load weights, materials. Be sure to provide ample margin. (Recommendations: 1/2 ~ 1/3 of the chart values)

Ordering Example

Part Number	-	L	-	Nominal Velocity
MOR38	-	300	-	10

Example