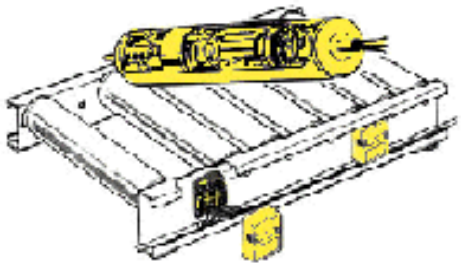
Selection criteria



HOW TO SELECT A POWER MOLLER:

Every Power Moller is custom made to satisfy your specific technical requirements.
This is why the following elements must be clearly stated to make sure you will have the right Power Moller:
1) Roller diameter:

2) Roller length:
These elements should be determined, considering load characteristics like dimensions (L x W x H), weight, material and bottom flatness, and conveyor specifications like between frame dimensions (B), roller pitch, etc.

3) Need of lagging on the roller? Lagging size and rubber material

4) Duty cycle: continuous or intermittent (timing of On and Off per cycle)

5) Is the motor subject to be stalled/accumulated? YES/NO Need of brake option for precise stopping and positioning of the load?

6) Transfer speed

7) Operating voltage: DC or AC (1phase or 3phase at what voltage)

8) Any options: Review carefully the operating environment; temperature, humidity, dust, water, oil, etc or clean room.

These are the elements to precisely determine the right Power Moller designation, which can, of course, be assisted by ITOH DENKI.

The next thing you do is to determine the number of the Power Moller needed to secure the proper transfer by checking the load weight and its bottom material in light of the following two technical points:

1) Tangential force
2) Static Load Limit

1) Tangential Force

Required power to transfer an article on the roller conveyor is expressed by tangential force (N), which takes into the account of the weight and bottom material of the article to be transferred, provided the bottom is completely flat.

The required tangential force (F) to transfer an article is obtained by the formula

$F=9.8\mu W$:

μ = Coefficient of rolling friction in accordance with the material of the article bottom (See the below table)
W= Weight of the article

Coefficient of Rolling Friction

Metal	Plastic	Wood	Corrugated Cardboard	Rubber
0.01-0.02	0.02-0.04	0.02-0.05	0.05-0.1	0.2

2) Static Load Limit

Each Power Moller has static load limit as per shown in the **Design Criteria**. Therefore, the load applied to the Power Moller must not exceed the static load limit. If an article is received by a Power Moller together with some free rollers, the applied load is evenly splitted, provided the level of all the rollers are well adjusted.

3) Determine the Number of Power Moller

Firstly, check whether the load applied to the Power Moller is less the static load limit by checking the number of the rollers to receive the load depending on the roller pitch.

Then, determine the number of Power Moller units required to transfer the article by splitting the Required Tangential Force (F) by the tangential force (f) of the specific Power Moller you have in mind. Tangential force (f) of each Power Moller can be found in the Operating Characteristics chart respectively.

Then, you will know the number of Power Moller and free rollers that should constantly be placed beneath the article to be transferred.

Example:

Suppose a conveyor built with 57mm diam. x 1000mm long idler rollers at a pitch of 100mm. What Power Moller model is suitable for how many to transfer a plastic pallet of 300kg and 900mm long at approximately 10m/min. with 3phase 220V 50Hz?

1) Model: PM570AS-10-1000-3-220 is basically selected by the above technical information.

2) Static load: The 300kg load is applied to 9 rollers, thus, the static load per roller is 33.3kg. The static load limit of the above model is 50kg (See the chart of Static Load Limit) thus it can sufficiently support the load.

3) Required tangential force: F=9.8mW: =9.8 x 300kg x 0.03 = 88.2N. The tangential force (f) of the above model is 58.6N (see the table Operating Characteristics) Thus, minimum 2 units of the above model should be employed to motorise the conveyor.

CAUTION:

1) The mentioned calculation of the tangential force and the static load are based on the conditions that the article bottom is perfectly flat and the all the rollers in the conveyor are in perfect horizontal level. Otherwise, it is recommended to have sufficient safety margin on these figures, because the article would not be transferred unless it is properly contacted by the Power Moller(s).

2) The mentioned calculation of the tangential force is NOT APPLICABLE, in case the Power Moller has grooves or V belt pulley is to slave the free rollers by O-rings. Please refer to the graph below

3) Please note if the Power Moller has lagging, the peripheral velocity is increased and the tangential force is diminished for the increased proportion of the diameter.