Guide Rollers

Flat / Flanged Type

**Guide Rollers –
Flat / Flanged Type**

RoHS 10

	Type			Main Body	Surface	Material	
	Flat Outer Race	Double Flanged	Tapered	Material	Treatment	Retaining Ring	Bearing
	FTMRN	HMRN	TMRN		—	Spring Steel	
	FTMRB	—	—	1045 Carbon Steel or Equivalent	Black Oxide		
	FTMRG	—	—		Electroless Nickel Plating		Steel
	FTMRA	HMRA	—	Aluminum Alloy	Clear Anodize	Stainless Steel	
	FTMRP	HMRP	—	Polyacetal	—		

Bearing Accuracy JIS B1514 Class 0
① Bearings are press-fitted.

6.3 / (1.6 /)

Flat Outer Race **Double Flanged** **Tapered**

1.6 / 1.6 / 1.6 /

① For detailed bearing dimensions, see **P.1018–1019, 1028–1029.**

Part Number			Double Flanged		Tapered							
Type		D	V Groove Width	F 0.5mm Increment	Z 0.5mm Increment	d	P	dh	T	S	B	Bearing Used
Flat Outer Race FTMRN FTMRB FTMRG FTMRA FTMRP	**Double Flanged** HMRN HMRA HMRP	**Tapered Type** TMRN	15	4	0.5–2.0	—	3	10	8	9	2.5	4	623ZZ
			20				4	13	11	10		5	624ZZ
			30				5	16	13				625ZZ
			(30)	—	—		6	19	16	12	3	6	626ZZ
			*20	5	0.5–2.0	0.5–3.0	4	13	11	10	2.5	5	624ZZ
			30				5	16	13				625ZZ
			40			—	6	19	16	11		6	626ZZ
			(40)	—	—		8	24	21	14	3	8	628ZZ
			*30	6	0.5–2.0	0.5–3.0	5	16	13	10	2.5	5	625ZZ
			40				6	19	16	11		6	626ZZ
			50			—	8	24	21	14	3	8	628ZZ
			(50)	—	—		10	26	23				6000ZZ
			*40	8	0.5–2.0	0.5–3.0	6	19	16	11	2.5	6	626ZZ
			*50				8	24	21	14	3	8	628ZZ
			*(60)				10	26	23				6000ZZ
			(100)	—	—	—	12	28	25	16	4		6001ZZ

① Flat Type are available in ( ) sizes only.
① Tapered Type are available in * marked sizes only.

Part Number Example

Part Number	-	V Groove Width	-	F	-	Z

FTMRN40
HMRA30 - 4 - F0.5
TMRN20 - Z3.0

Application Example

Suitable for use with channel steel.
EX.) Guides for elevators, etc.

D	V Groove Width	Available Types						
		Flat Outer Race			Double Flanged			Tapered Type
		FTMRN FTMRB FTMRG	FTMRA	FTMRP	HMRN	HMRA	HMRP	TMRN
15	4	—	—	—	●	●	●	
20		—	—	—	●	●	●	
30		●	●	●	●	●	●	—
20	5	—	—	—	●	●	●	●
30		—	—	—	●	●	●	—
40		●	●	●	●	●	●	—
30	6	—	—	—	●	●	●	●
40		—	—	—	●	●	●	—
50		●	●	●	●	●	●	—
40	8	—	—	—	●	●	●	●
50		—	—	—	●	●	●	—
60		●	●	●	●	●	●	—
100		●	●	●	—	—	—	—

Motor Rollers

Guide

Selection Method

(1) Calculate 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 Chart

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

① Above values vary by roller pitch or condition of roller surface, etc.

Sample Calculation When carrying a cardboard box of weight 40 (kg)

– From the above chart of Rolling Friction Coefficient, 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.

(2) Select the Model Provisionally

Select the model that matches the caring speed from the specification table on the right page.

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

(3) Determine the Number of Required Rollers

Determine the number of required rollers considering the following two 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 right)

– Calculate 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.

When 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)…1 roller is required to carry.

(4) Determine the Length of the Rollers

Determine 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 300 mm and the width is 400 mm

– The width of the object is 400 mm + Margin 100 mm = 500 mm
It follows that in this case, the part numbers should be **MOR57-500-20**
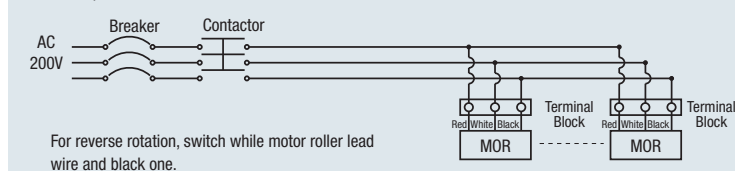
Caution in Selection

– 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) and material, 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 enables space savings for driving mechanisms.
– Requires no maintenance such as lubrication.
– With multiple motor rollers used depending on transfer load size, one of the rollers in trouble does not result in production line shutdown.

Circuit Layout Diagram

3 Phase, 200V

AC 200V — Breaker — Contactor

Red White Black Terminal Block Red White Black Terminal Block
MOR - - - - - - MOR

For reverse rotation, switch while motor roller lead wire and black one.

– For reverse rotation, switch white motor roller lead wire and black one.
– Normal / reverse rotation can be changed by switch.
– When red, white and black wires are connected in the identical manner, the rollers will rotate in the same direction.