MGR* series

SLIDE TABLE

Order example

$$\boxed{MGRA} - \boxed{60} - \boxed{55} - \boxed{N}$$

Model	Table width	Table length	Material

MGRA : Screw lock

MGRA (mm)

30	30
40	40
60	60
80	80
100	100
145	145

MGRA (mm)

30	**25~85**
40	**35~125**
60	**55~205**
80	**85~325**
100	**110~510**
145	**210~610**

— **:** Standard

MGRB : Countersink lock

MGRB

30	30
40	40
60	60
80	80
100	100
145	145

MGRB

30	**25~85**
40	**35~125**
60	**55~305**
80	**85~325**
100	**110~410**
145	**210~610**

B : Black coating

MGRC : Screw lock

MGRC

20	20
30	30
40	40

MGRC

20	**25~55**
30	**65~95**
40	**105~155**

N : Antirust
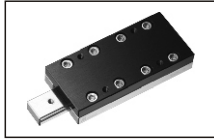
MGRM : Countersink lock
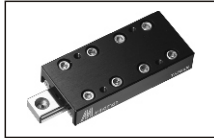
MGRM

30	30
40	40
60	60
80	80
100	100

MGRM

30	**25~85**
40	**35~185**
60	**55~205**
80	**85~405**
100	**110~510**

S : Corrosion resisting

MGRH : Countersink lock

MGRH

20	20
30	30
40	40

MGRH

20	**25~85**
30	**35~125**
40	**55~205**

MGRS : Screw lock

MGRS

20	20
30	30
40	40

MGRS

20	**25~85**
30	**35~125**
40	**55~205**
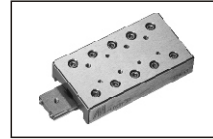
※ Length selection as specification table.

- Table in **N** series, is antirust, apply to clean room environment.
- Table in **S** series, is antirust apply to corrosion-resisting, apply to clean room environment.
- Table in **B** series, is antirust, apply to clean room environment.
- All parts are cryogenic finished to increase 30% durability (refer to O-69) .

Component material introduction

Apply to	Model	Material indication			
		Table	Rail	Retainer	Roller
Normal	**MGRA / MGRB / MGRC**	Aluminum+ anodized black	SUJ2	SUS304	SUJ2
	MGRS / MGRH / MGRM				
Antirust	**MGRA-N / MGRM-N**	S50C+Ni	SUJ2+Ni V-groove in rail, no surface finished	SUS304	SUJ2
	MGRB-N / MGRH-N				
	MGRC-N / MGRS-N				
Antirust	**MGRA-B / MGRM-B**	S50C+Phosphate	SUJ2	SUS304	SUJ2
	MGRB-B / MGRH-B				
	MGRC-B / MGRS-B				
Corrosion-resisting	**MGRA-S / MGRM-S**	SUS440C+Ni ◎ Table and rail in 1 unit in this serirs ◎ V-groove in rail, no surface finished		SUS304	SUS440
	MGRB-S / MGRH-S				
	MGRC-S / MGRS-S				

Crossed slide table

Table is composed of MINDMAN crossed roller type slide rail set, V-grooves, cross-rollers matched with assembly plane in high accuracy processing, and base; installed with limit mechanism between two ends of table, is small type of limit stroke linear motion product in high rigidity. Performance as high accuracy and low friction, apply to electric parts used in automatic installation equipment and optical gauge.
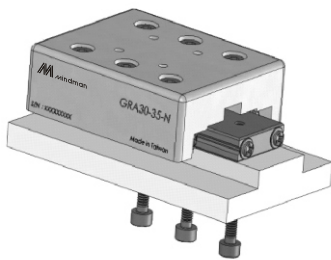
Slide table unit seclection procedure

1. Select unit width and length.
2. Select model per installation.
3. Acquire model no. from catalogs.
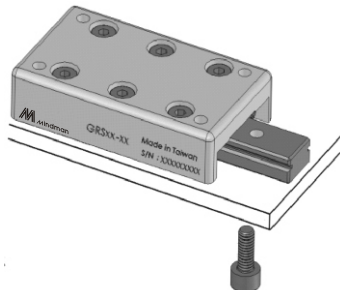4. Select standard, antirust or corrosion-resisting per environment request.

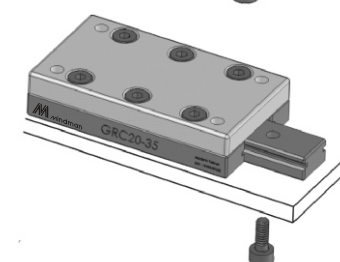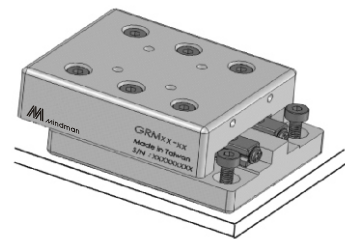## Installation selection

Screw lock

MGRA

MGRS
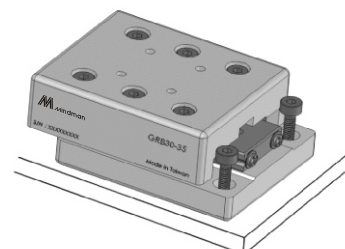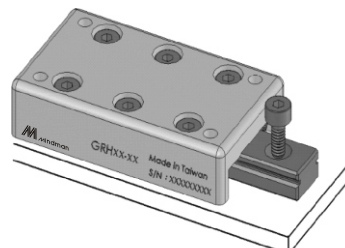

MGRC

Countersink lock

MGRM

MGRB

MGRH

Slide table property

■ High accuracy

In order to perform function of MINDMAN slide table entirely, all assembly planes of table and base are processed in precise grinding to get linear motion in high accuracy.

■ Low friction

Low friction because of non-circulation. Stable performance in whether low speed or high speed.

■ High rigidity、space saving

Besides high load capacity and high rigidity of roller guide in linear motion table space saving design is also considered at same time.

■ No demand of adjustment

Accuracy and preload be matched perfectly to use directly without heavy adjustment.

■ Easy installation

Standardized assembly holes of unit and base are easy to lock and secure with screw only to have linear motion in high accuracy.

Table accuracy description

unit: mm

| Table accuracy inspection level			Rail accuracy inspection level		
Table length	Mid delivery amplitude	Side delivery amplitude	N size tolerance	M size tolerance	Straightness
0~50	0.002	0.004			0.002
50~100	0.002	0.005			0.002
100~150	0.003	0.006			0.003
150~200	0.003	0.007			0.003
200~250	0.003	0.007			0.003
250~300	0.003	0.007	-0.015	-0.03	0.003
300~350	0.004	0.008	-0.035	-0.07	0.004
350~400	0.004	0.008			0.004
400~450	0.004	0.008			0.004
450~500	0.004	0.008			0.004
500~550	0.004	0.009			0.004
550~600	0.004	0.009			0.004
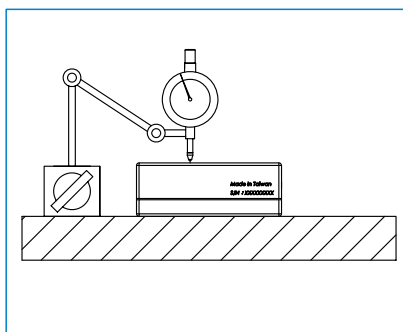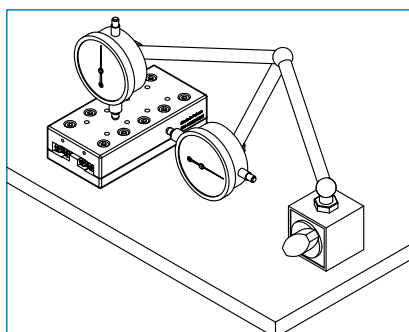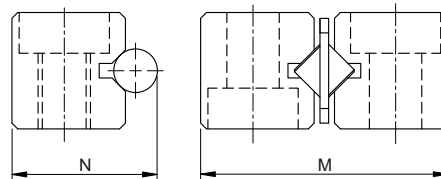
Rated life calculation of table

$$L = \left(\frac{f_T}{f_W} \cdot \frac{C}{P_C} \right)^{\frac{10}{3}} \times 100$$

L : Rated life (km)

C : Basic dynamic load (kN)

P_C : Radia load calculated value(kN)

f_T : Temperature factor

f_W : Load factor

f_T : Temperature factor

Running system in environment over 100℃, needs consideration of bad effect from high temperature, basic rated load x temperature factor as shown in Picture 1.

Temperatur factor (fT)

Temperature in rail. surface(℃)
Pic 1 temperature factor(fT)
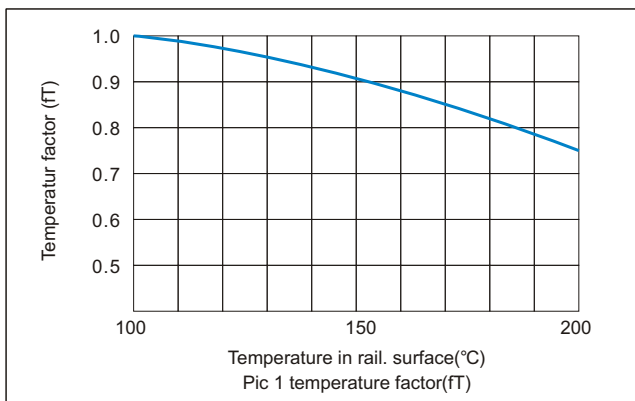
f_W : Load factor

Machine running back and forth usually is accompanied with vibration or shock, especially vibration happened in high speed running or shock caused by running stop frequently, but not easy to calculate all of them correctly. when actual load could not be calculated, or in case of large effect from speed, vibration, please use basic rated load(C) to divide relative experienced load factors as list below.

Load factor(fw)

| Vibration/Shock	Speed (v)	fw
Tiny	Dead slow $V \leqq 0.25m/s$	1~1.2
Small	Slow $0.25 < V \leqq 1m/s$	1.2~1.5

Working life hours (L_h)

After acquirement of rated life(L), use formula as below to calculate working life hours, if stroke length and travel times per minute are constant.

$$L_h = \frac{L \times 10^6}{2 \times e_s \times n_1 \times 60}$$

L_h : Working life hours (h)

e_s : Stroke length (mm)

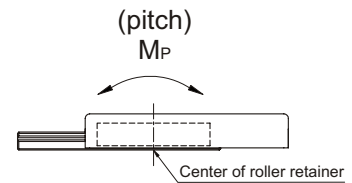n_1 : Travel times per minute (min)

Torque M_R

Single static load rating C_o	center distance between two rows L_R
B for ball quantity in one row	**R** for Roller quantity in one row
Ball	Roller
$M_R = B*\cos\frac{\pi}{4}*C_o*L_R$	$M_R = \frac{R}{2}*C_o*L_R$

(ro11)
M_R
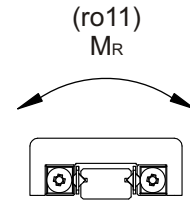
Torque M_P

Ball pitch P Ball quantity=B	
Roller pitch P Roller auantity=R	
Ball	Roller
$M_P = Fd \div Sf * 2^{\frac{7}{9}}*C_o*\cos\frac{\pi}{4}*P*\frac{2B^2-B}{6}$	$M_P = \frac{1}{2}*(\frac{R^2}{2})*C_o*P$

(pitch)
M_P

Center of roller retainer

Torque M_y

Ball	Roller
$M_y = Fd \div Sf * 2^{\frac{7}{9}}*C_o*\cos\frac{\pi}{4}*P*\frac{2B^2-B}{6}$	$M_y = \frac{1}{2}*(R^2-R)*C_o*P$

(yaw)
M_Y

Center of roller retainer
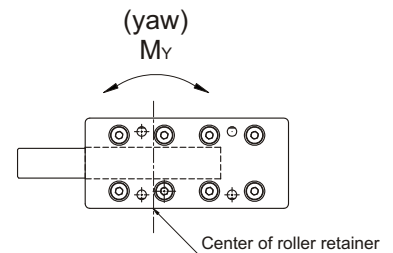
Sf: Safety factor

Operation remark

■ Please operate carefully

In case of carelessness of falling off slide table or having unusual collision and extrusion, may cause surface dent on V-grooves and rollers to result in running in non-smooth, and bad effect to accuracy. Therefore please operate operate with care particularly.

■ Anti-dust

If dust, impurities mixed with components inside Slide table, may cause decrease of accuracy or life hours.
Please set outer dust cover to protect table used in bad environment.

■ Lubrication

Slide table filled with lithium soap lubricant before inspection, could be used directly as acquirement. subsequently add lubricant in same series as condition.
◎ **Relative request of lubricant fit (refer to O-70)** .

■ Deviation of roller retainer

Slide table running in high speeding, off-center load or vibration conditions, may cause retainer deviation.
it's normally recommended to use in speed below 30m/min
in addition, suggested solution to deviation of roller retainer is couple times of movement in full stroke to center roller retainer while running.

■ Screw adjustment

Slide table, proofread in best accuracy and preloaded in perfect condition.
No disassemble arbitrarily lock screw of adjust screw and rail.