Linear Guideways

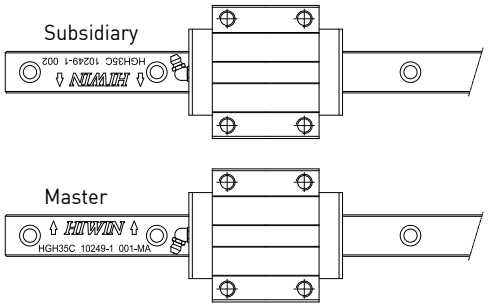
General Information

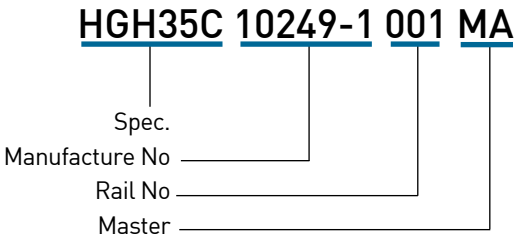
1-10 Mounting Procedures

Three installation methods are recommended based on the required running accuracy and the degree of impacts and vibrations.

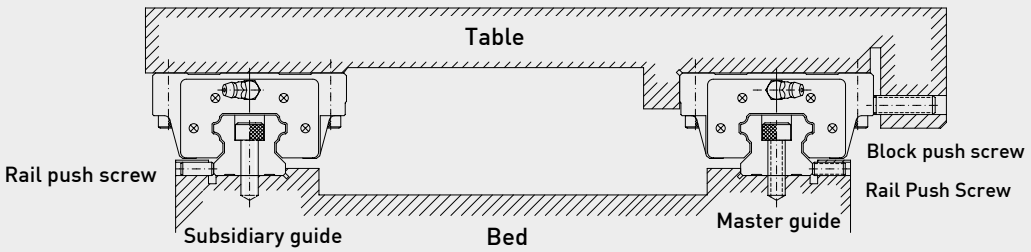
1-10-1 Master and Subsidiary Guide

For non-interchangeable type Linear Guideways, there are some differences between the master guide and subsidiary guide. The accuracy of the master guide's datum plane is better than the subsidiary's and it can be a reference side for installation. There is a mark "MA" printed on the rail, as shown in the figure below.





1-10-2 Installation to Achieve High Accuracy and Rigidity



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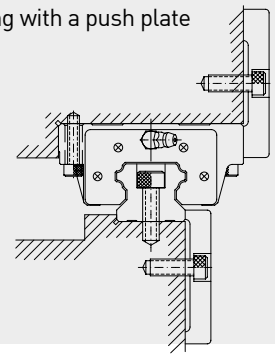
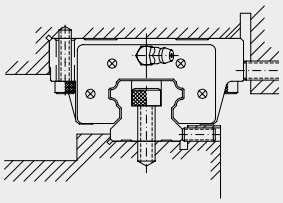
(1) Mounting methods

It is possible that the rails and the blocks will be displaced when the machine is subjected to vibrations and impacts. To eliminate these difficulties and achieve high running accuracy, the following four methods are recommended for fixing.

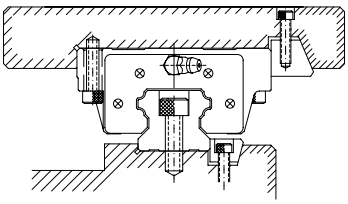
Mounting with a push plate



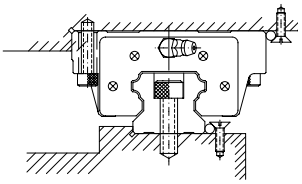
Mounting with push screws



Mounting with taper gib

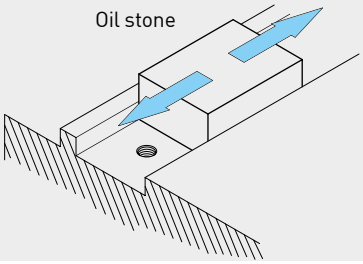


Mounting with needle roller

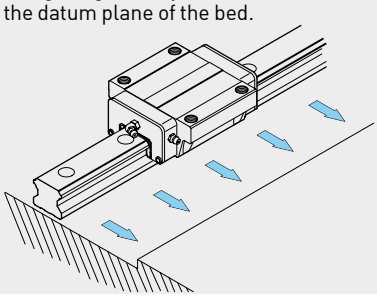


(2) Procedure of rail installation

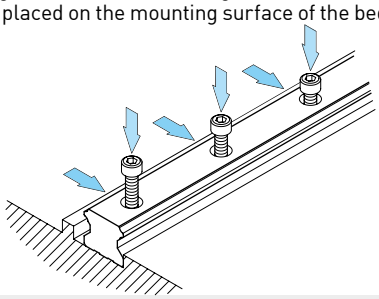
1 Before starting, remove all dirt from the mounting surface of the machine.



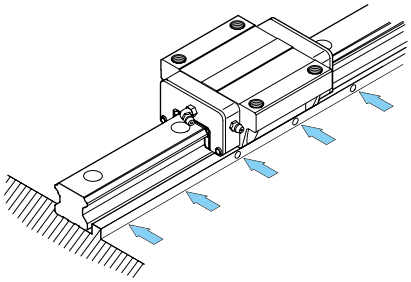
2 Place the linear guideway gently on the bed. Bring the guideway into close contact with the datum plane of the bed.



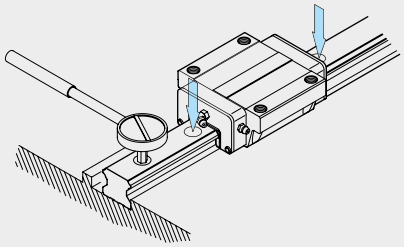
3 Check for correct thread engagement when inserting a bolt into the mounting hole while the rail is being placed on the mounting surface of the bed.



4 Tighten the push screws sequentially to ensure close contact between the rail and the side datum plane.



5 Tighten the mounting bolts with a torque wrench to the specified torque.



6 Install the remaining linear guideway in the same way.

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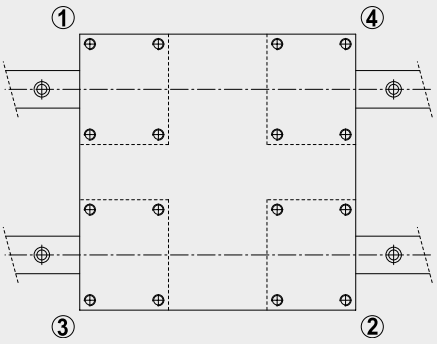
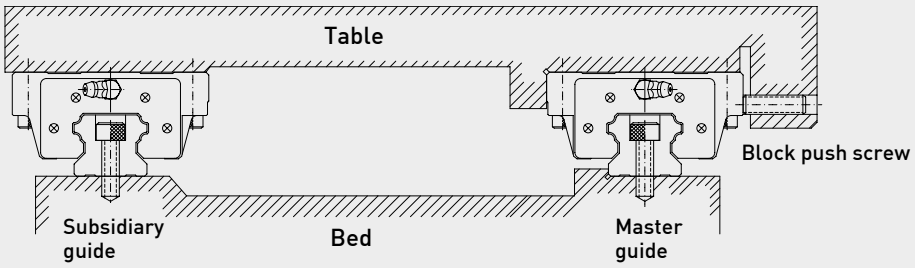
(3) Procedure of block installation



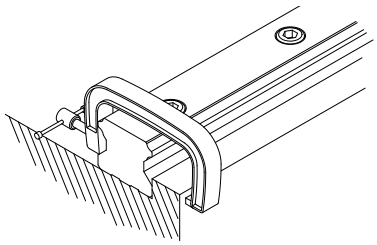
- Place the table gently on the blocks. Next, tighten the block mounting bolts temporarily.
- Push the blocks against the datum plane of the table and position the table by tightening the push screws.
- The table can be fixed uniformly by tightening the mounting bolts on master guide side and subsidiary side in 1 to 4 sequences.

1-10-3 Installation of the Master Guide without Push Screws

To ensure parallelism between the subsidiary guide and the master guide without push screws, the following rail installation methods are recommended. The block installation is the same as mentioned previously.



(1) Installation of the rail on the subsidiary guide side



- **Using a vice**
  Place the rail into the mounting plane of the bed. Tighten the mounting bolts temporarily; then use a vice to push the rail against the side datum plane of the bed. Tighten the mounting bolts in sequence to the specified torque.

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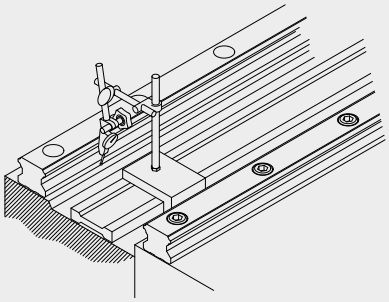
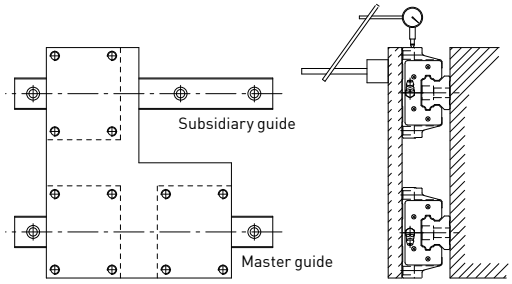
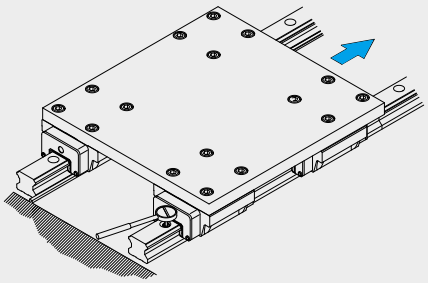
(2) Installation of the rail on the subsidiary guide side



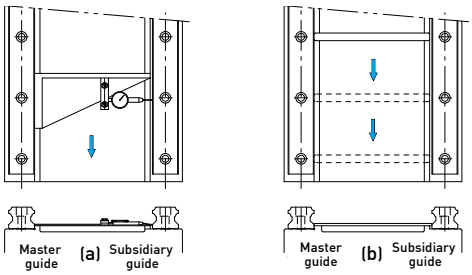
- **Method with use of a straight edge**
  Set a straight edge between the rails parallel to the side datum plane of the rail on the master guide side by using a dial gauge. Use the dial gauge to obtain the straight alignment of the rail on the subsidiary guide side. When the rail on the subsidiary guide side is parallel to the master side, tighten the mounting bolts in sequence from one end of the rail to the other.



- **Method with use of a table**
  Fix two blocks on the master guide side to the table. Temporarily fix the rail and one block on the subsidiary guide side to the bed and the table. Fix a dial gauge stand on the table surface and bring it into contact with the side of the block on the subsidiary guide side. Move the table from one end of the rail to the other. While aligning the rail on the subsidiary side parallel to the rail on the master guide side, tighten the bolts in sequence.



- **Method following the master guide side**
  When a rail on the master guide side is correctly tightened, fix both blocks on the master guide side and one of the two blocks on the subsidiary guide side completely to the table.
  When moving the table from one end of the rail, tighten the mounting bolts on the subsidiary guide side completely.



- **Method with use of a jig**
  Use a special jig to ensure the rail position on the subsidiary guide side. Tighten the mounting bolts to the specified torque in sequence.

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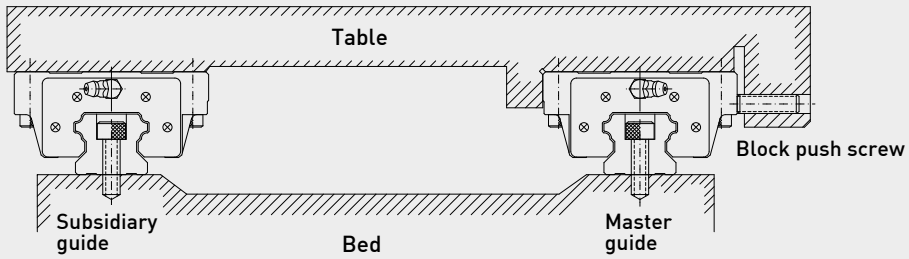
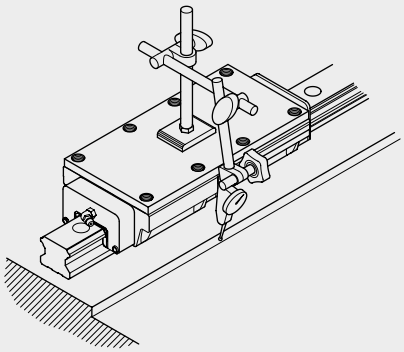
1-10-4 When There Is No Side Surface of The Bed On The Master Guide Side

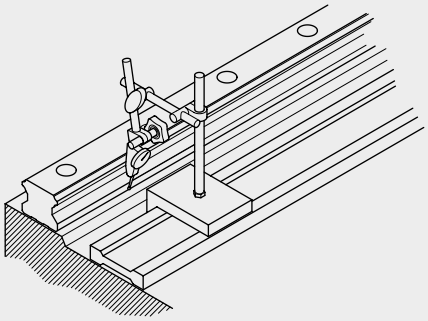
To ensure parallelism between the subsidiary guide and the master guide when there is no side surface, the following rail installation method is recommended. The installation of the blocks is the same as mentioned previously.



(1) Installation of the rail on the master guide side



- **Using a provisional datum plane**
  Two blocks are fixed in close contact by the measuring plate. A datum plane provided on the bed is used for straight alignment of the rail from one end to the other. Move the blocks and tighten the mounting bolts to the specified torque in sequence.



- **Method with use of a straight edge**
  Use a dial gauge and a straight edge to confirm the straightness of the side datum plane of the rail from one end to the other. Make sure the mounting bolts are tightened securely in sequence.

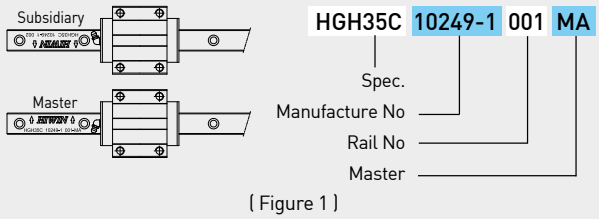
(2) Installation of the rail on the subsidiary guide side

The method of installation for the rail on the subsidiary guide side is the same as the case without push screws.

1-10-5 Linear Guideway Mounting Instructions

1. HIWIN guideways are supplied with a coating of anti-corrosion oil before being shipped. Please clean the oil before moving or running the blocks.

2. Recognition of master and subsidiary rails: For non-interchangeable type linear guideways, there are some differences between the master rail and subsidiary rail. The accuracy of the master rail's datum plane is better than the subsidiary's and it can be a reference side for installation. There is a mark "MA" printed on the rail. Check for the correct order before starting the installation. The rail number of master is an odd number and the rail number of subsidiary is an even number. Please install the rails according to the indication and carry on the installation according to the order for multi-rails installment (e. g.: 001 pairs 002 ; 003 pairs 004 etc.)



(Figure 1)

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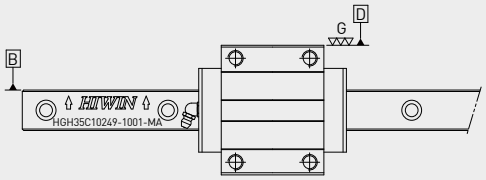
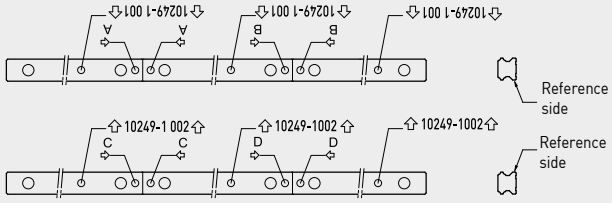
3. Recognition of datum plane: The datum plane (B) of rail is the side indicated by the arrow, which is marked on the top surface of the rail. The datum plane of block is smooth ground surface which shows as D in Figure 2.

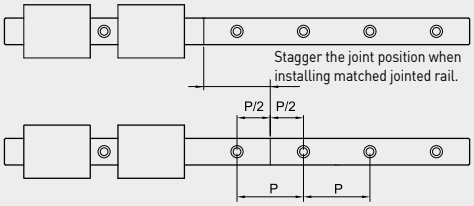


(Figure 2)

4. Butt-joint rail: Butt-joint rail should be installed by following the arrow sign and ordinal number which is marked on the surface of each rail as shown in the figure 3. To avoid accuracy problems due to discrepancies between the 2 rails such as for matched pair, butt-joint rails, the jointed positions should be staggered as shown in figure 4.

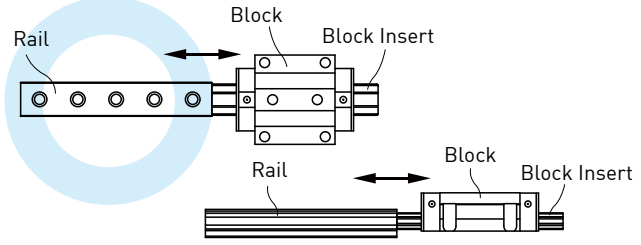


(Figure 3)



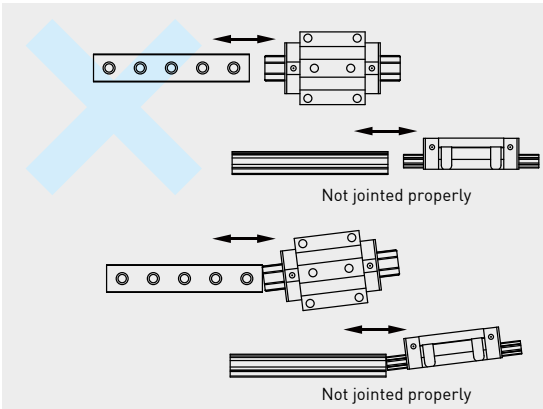
(Figure 4)

5. Do not remove blocks from rails when assembling the guideways in machines as far as possible. Please use block inserts (please see Figure 5) if it is necessary to remove/ mount block from/ onto rail.



6. Please do not randomly mix block units and rails for non interchangeable type to avoid any installation problem.

7. To ensure the straightness of rail, please tighten the mounting bolts sequentially with a torque wrench to the specified torque. (Refer to HIWIN Technical Information).



(Figure 5)

1-10-6 Linear Guideway Usage Instructions

1. Standard guideways are enclosed with high-quality lubricants (lubricant oil or lithium-soap-base grease). Please re-lubricate the blocks after assembling the guideways in machines. The same soap-base lubricants should be used.
2. The blocks are composed of various plastic parts; please avoid prolonged exposure of the plastic parts with any organic solvent when cleaning the blocks so that the product damage can be prevented.
3. Please avoid any foreign object getting into the block since this could be one of the causes for breakdown or damage.
4. Please do not disassemble the parts arbitrarily, the incautious actions of disassembly may bring the foreign objects into the block and diminish the precision of guideways.
5. When handling the guideways please hold it horizontally. The improper oblique posture of guideways will cause the blocks falling from the rail.
6. Please avoid the inappropriate falling or clash on the blocks, which will damage the function of guideways.
7. The maximum tolerant temperature of E2 type (Self lubricant kit) is in the range of -10˚C~60˚C. and for Quiet type guideways (QH, QE, QW and QR) are in the range of -10˚C~80˚C. The maximum service temperature of SE type (Metallic end cap) is 150˚C and for other standard types is 100˚C.
8. Please refer to HIWIN technical information for more detailed instructions. Please do not hesitate to contact HIWIN if there are further questions related to the application.

Note: For Quiet type guideways (QH, QE, QW and QR), please pay attention for the following instructions:
1. When assemble and disassemble the Quiet type blocks, please use the block insert as enclosed and do not take it off the block. (one block insert is equipped per block).
2. Special accessories are used in the Quiet type guideways, any impermissible adjustment on the preload is prohibited.

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