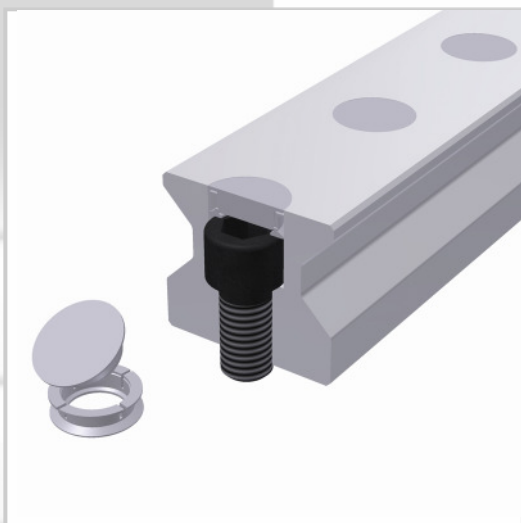


SCHNEEBERGER
LINEAR TECHNOLOGY



Installation Instructions

Steel Plugs MRZ for MONORAIL MR



Version data

Date written	Description	Author	Released by
07.12.2007	First release	JS	KG

Version	Date	Description	Released by

Notes for users

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The Installation Instructions MRZ for MONORAIL MR can be obtained free of charge from your Schneeberger Partner, or downloaded as a pdf-file from **www.schneeberger.com**.

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1 About these Installation Instructions

1.1 Function and validity

The Installation Instructions for Steel Plugs MRZ for MONORAIL MR describes the installation of MRZ steel plugs to cover the rail mounting holes on MONORAIL MR guideways using the MWH hydraulic installation tool. These instructions supplement the MONORAIL Installation Instructions and are only valid in conjunction with them.

1.2 Target audience

These Installation Instructions are intended for the fitters and service personnel who have to install steel plugs or replace them during servicing operations.

1.3 Further reading

- MONORAIL catalogue
- MONORAIL Installation Instructions
- Hydraulic cylinder operating instructions (included in scope of supply)

Catalogues and installation instructions can be obtained from SCHNEEBERGER representatives or downloaded from **www.schneeberger.com**.

2 For your safety

2.1 Authorised persons

MRZ steel plugs may only be installed by specialist personnel who have read and understood these Installation Instructions and the operating instructions for the hydraulic components.

2.2 General safety and accident prevention measures



Caution:

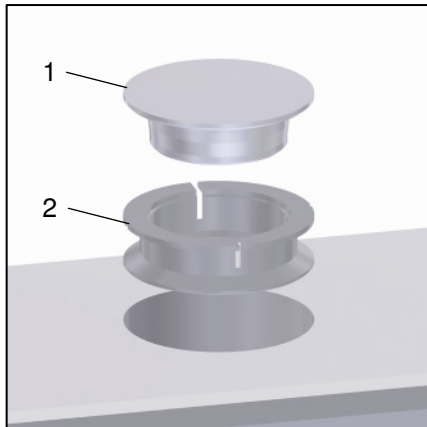
Danger of injury from sharp-edged bores in guide rails.

➔ Wear gloves

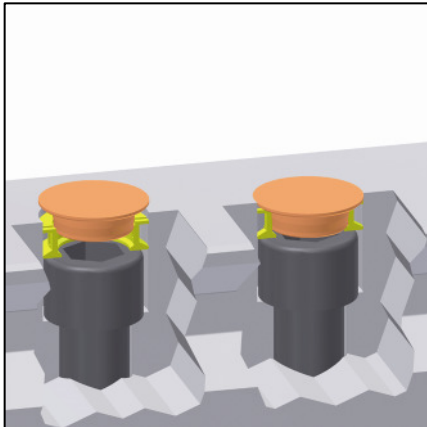
Hydraulic components

Observe the relevant manufacturer's installation, operation and maintenance instructions without fail at all times to prevent injury and damage to property when operating hydraulic components.

3 Operating principle



The two-piece MRZ steel plugs are made from stainless steel and consist of the actual plug (1) and a clamping ring (2). The latter has two raised rings around its circumference and multiple radial slots in its upper surface. When installing a plug, the clamping ring is placed, loose, on the screw head in the hole in the guide rail. The upper surface of the slightly tapered plug is a flat disc with a diameter that approximately corresponds to the bore in the rail.



When the plug is pressed in, the clamping ring is expanded slightly so that the rings contact the wall surface of the hole in the rail and create an interference fit between the plug and the hole. Apart from providing very firm and secure retention, this operating principle seals the rail hole and ensures that the plug sits flush with the top face of the rail for optimum performance of the carriage wipers.

4 Preparing for installation

4.1 Tools, materials and equipment required

- Commercially-available hydraulic unit
- Hydraulic installation tool, type MWH, including hydraulic cylinder MZH
- Hexagon key, 8 A/F, for assembling installation tool MWH
- Mounting rail MRM
- Lubricant
- Soft rag

4.2 Hydraulic unit

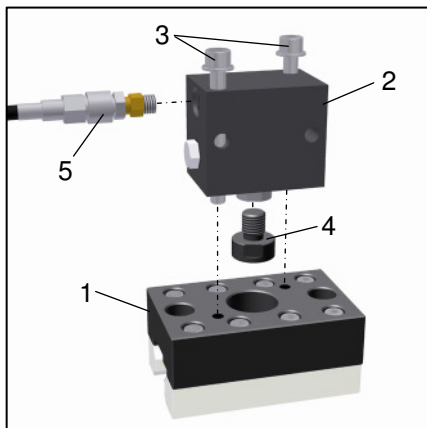


A normal, commercially-available hydraulic unit is required to supply pressure for the installation tool. As a rule, this consists of an electric motor driving a pump (1), an oil reservoir (2), a pressure regulator with a pressure gauge (3) and an operating panel (4).

Recommended performance data:

- Nominal working pressure: 250 to max. 350 bar
- Flow rate > 0.5 l/min

4.3 Installation tool MWH



For correct installation of steel plugs, the hydraulic installation tool MWH is required. This consists of a size-dependent sliding shoe with MWH punch and the universal hydraulic cylinder MZH; it must be ordered separately. The cylinder is a single-acting block cylinder with spring return.

Order code for sliding shoe: **MWH xx**
xx = size; ordering example: 1 x MWH 45

Order code for hydraulic cylinder: **MZH**
Ordering example: 1 x MZH

Assembly

Screw the punch (4) by hand into the hydraulic cylinder (2) up to the shoulder and tighten it gently. Then fasten the hydraulic cylinder to the sliding shoe (1) using the screws (3) supplied. Use a commercial quick connector (5) (not included in scope of supply) to connect the hydraulic unit to the 1/4" hydraulic thread on the cylinder.

Dimensions of the installation tool see chapter 8.2.

4.4 Preparing the rail

- Install the rail according to the MONORAIL Installation Instructions and tighten the screws securely.



Notice:

Use only screws with the long head to DIN/ISO 4762 for mounting the rails!

- Remove the carriage from the rail using mounting rail MRM if necessary.



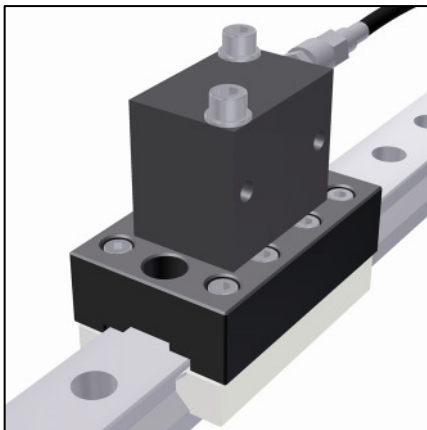
Notice:

Before moving the carriage, ensure that the corrosion protection coating applied in our works has been removed completely; see MONORAIL Installation Instructions. The corrosion protection can stick the rolling elements together, thus cause a damage on the carriage.

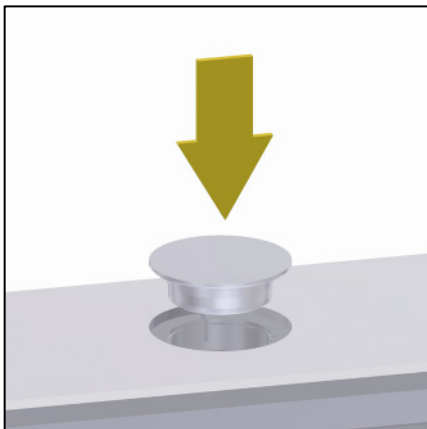
- Clean the upper surface of the rail and the mounting holes. There must be no large particles of dirt or swarf in the rail mounting holes.
- Make sure that the edges of the rail mounting holes are not damaged.
- Apply a light coating of oil to the upper surface of the rails and mounting holes if necessary.

5 Installation

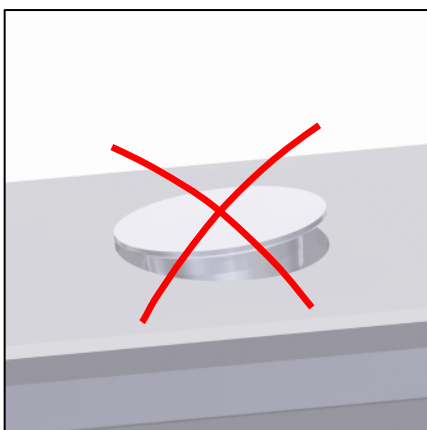
5.1 Pressing the plugs in



Slide the installation tool on to the rail. To do this, we recommend using the mounting rail MRM.

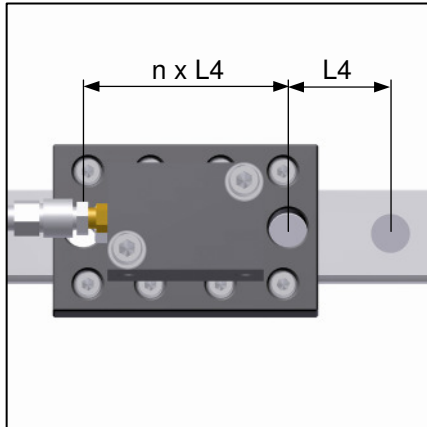


Place the clamping ring in a rail mounting hole with its slotted end upwards. Position the plug on the clamping ring with its tapered end downwards.



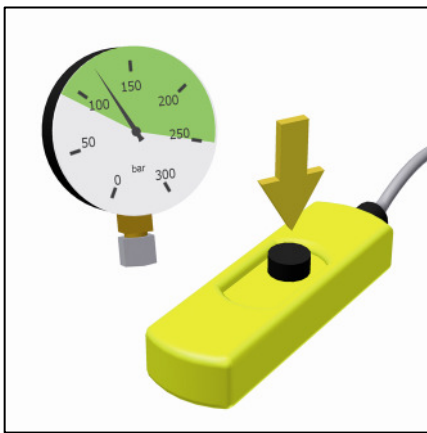
Ensure that the face of the plug is plane parallel to the upper surface of the rail.

Please note: The clamping ring has a small step at the top on its inside so that the plug can be aligned with the ring by pressing it gently.



Slide the installation tool over the plug and position it centrally. The pressing position is reached when the two external inspection holes, or the cut-outs in the tool (MWH 25 – 65), are precisely over a rail mounting hole. Depending on the size, the inspection holes may be one or two pitches (L4) from the installation position. Please note:

For installing the plug at the extreme end of the rail, the installation tool can be positioned so that it partly overhangs the rail end.



Switch on the hydraulic unit and set the desired pressure on the pressure regulator.

The required pressure can change depending on the size and due to manufacturing tolerances. Depending on the size, we recommend a pressure between 100 and 200 bar. Occasionally, a higher pressure, up to ca. 250 bar, may be necessary. Start with a low pressure and increase in steps according to the installation results.

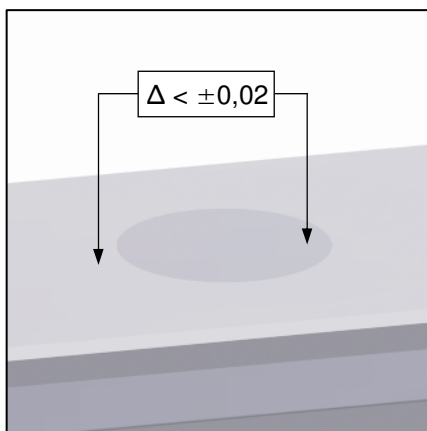


Caution:

The permissible operating pressure of the hydraulic cylinder is 350 bar. This pressure must never be exceeded.

Operate the hydraulic cylinder from the control panel until a “click” can be clearly heard. Then release the operating button immediately so that the cylinder returns to its original position. Push the installation tool to one side. The plug is now pressed into place and flush with the upper surface of the rail.

5.2 Completion of installation



After pressing in all the plugs, check that they are correctly seated. The maximum permissible difference in height between the rail and surface of a plug is ± 0.02 mm measured at the edge of the plug and the rail.

If necessary, repeat the pressing operation at a higher pressure until the correct position is reached.



Notice:

Safe installation of steel plugs is only assured when screws with the long head to DIN/ISO 4762 are used for mounting the rails. Further any inscriptions on the screw head may not be projecting the surface.

6 Removing steel plugs

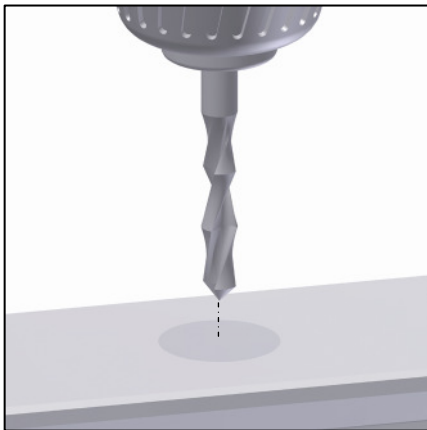
6.1 Tools required

- Electric drill
- Thread-cutting tap
- Drill
- Centre punch
- Hexagon socket screw e.g. to DIN 912 / ISO 4762
- Hexagon key

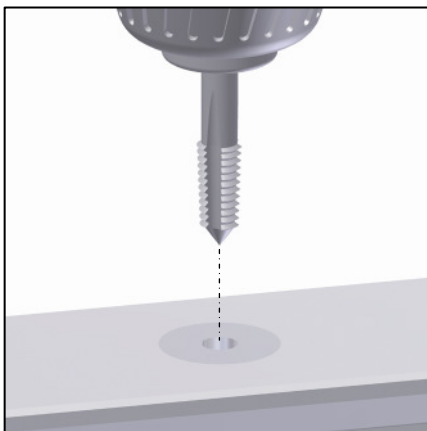
6.2 Operating principle

If they have been correctly installed, steel plugs are very securely retained in the rail holes. We therefore recommend removing them with the aid of an extraction screw. A standard hexagon socket screw can be used for this purpose. The recommended screw sizes and tapping hole diameters are given in a table in chapter 6.4.

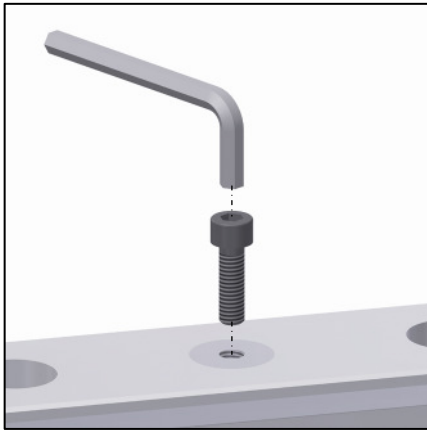
6.3 Procedure



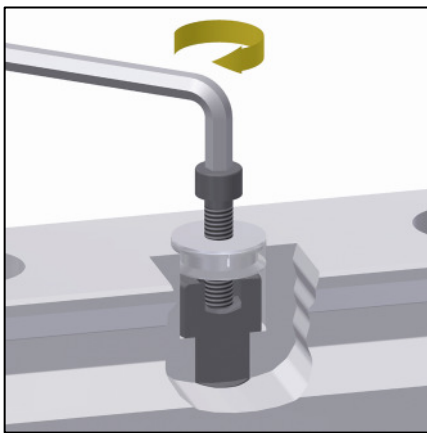
Make a centre-punch dot in the middle of the plug to be removed and drill carefully through the centre of the plug using an electric drill. Take care not to damage the rail mounting screw. The drill diameter should be the core diameter of the thread to be cut in the plug.



Use a suitable tap to cut a metric thread in the plug. Then clean any remaining swarf from the thread and hole.



Screw a hexagon socket screw into the plug by hand until the end of the screw contacts the rail mounting screw.



Turn the screw further with a suitable hexagon key. This action will draw the plug with its clamping ring upwards out of the bore, see figure on the left. Continue to turn the screw until the plug has been extracted and can be removed by hand.

Finally, make sure that neither the hole in the rail nor the mounting screw has been damaged. If necessary clean up burrs in the bore with a grinding tool and replace the mounting screw.

6.4 Recommended screw sizes

Steel plug	Screw	Ø Core hole
MRZ 25 – MRZ 35	M4	3,3
MRZ 45 – MRZ 100	M6	5

All dimensions in mm

7 Maintenance

7.1 Installation tool MWH

The installation tool MWH is, in principle, maintenance free, but, after a long period of use, the punch may exhibit signs of wear. This may result in the position tolerance for the plugs being exceeded. The punch should be inspected at regular intervals and replaced if necessary.

The punch can be purchased from SCHNEEBERGER as a spare part.

Order code for punch: **SP xx-MWH**

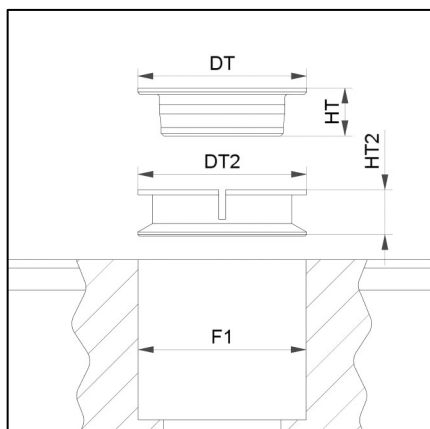
xx = size, ordering example: 1 x SP 45-MWH

7.2 Hydraulic cylinder MZH

Follow the maintenance instructions in the manufacturer's operating instructions.

8 Appendix

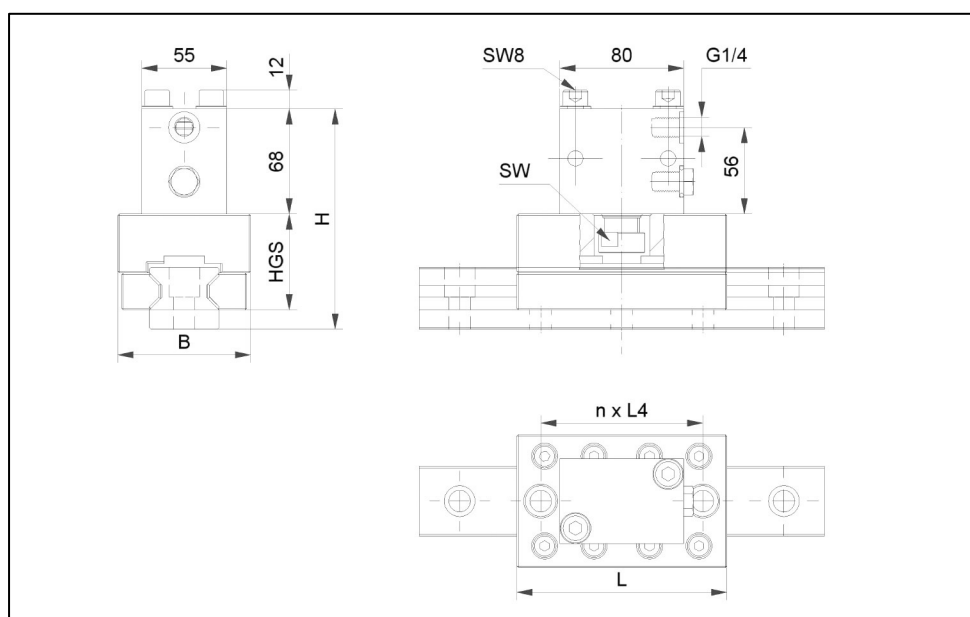
8.1 Dimensions of steel plugs



Size	Ø DT	HT	Ø DT2	HT2	Ø F1
MRZ 25	11	4,3	11	4,5	11
MRZ 35	15	8	15	7,5	15
MRZ 45	20	5,7	20	5,5	20
MRZ 55	24	6,8	24	6,5	24
MRZ 65	26	7,6	26	8,5	26
MRZ 100	39	13	39	11,5	39

All dimensions in mm

8.2 Dimensions of installation tool



Size	L	B	H	HGS	SW	n x L4
MR 25	120	55	128	52	20	120
MR 35	150	70	135,5	58	20	160
MR 45	136	86	142,5	62	27	105
MR 55	156	98	150	67	30	120
MR 65	150	118	158	72	32	150
MR 100	171	160	203	56	36	-

All dimensions in mm

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