

DRILLING MACHINES

conforming to
EN13977
conforming to

Cembre Rail Drilling Machines, **LD-1P-ECO** and **LD-2E**, have been specifically designed for use in Railway applications, to provide a consistent and accurate hole, in all types of weather conditions. Due to their compact size, our drill can save considerable time by allowing direct operation in cases which would normally require removal of obstructions. Special twist drill bits can be used for hole diameters 7 to 27,5 mm on rail up to 45 mm thick. Whilst broach cutters can be used for hole diameters 13 to 40 mm on rails up to 50 mm thick. The drills are provided with a coolant system consisting of a reservoir and pump for use with suitable cooling lubricants. Connection to the rail drill is by a quick coupler. The units are lightweight and ideally suited for one man operation.

LD-1P-ECO

GENERAL FEATURES:

- **Drilling range:** Ø 7÷40 mm
- **with broach cutters:** Ø 13-40 mm, on rails up to 50 mm thick.
- **with special spiral bits:** Ø 7-27,5 mm, on rails up to 45 mm thick.
- **Engine:** 2 stroke • **Displacement:** 45,4 cc
- **Fuel:** 2% oil/petrol mixture • **Start:** by rope pull
- **Clutch:** centrifugal with automatic intervention
- **Power:** 1,4 kW @ 7500 RPM
- **Weight:** with DBG-F2 clamping device 18,9 kg



According to phase 2
European Directives and
EPA regulations



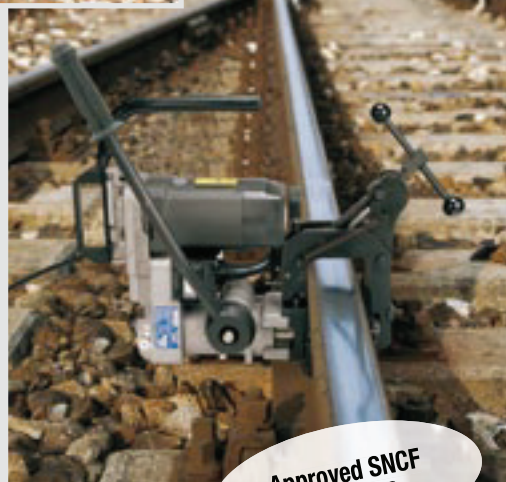
LD-2E

GENERAL FEATURES:

- **Drilling range:** Ø 7÷33 mm
- **with broach cutters:** Ø 13-33 mm, on rails up to 50 mm thick.
- **with special spiral bits:** Ø 7-22 mm, on rails up to 45 mm thick.
- **Electric single phase motor:**
 - supply voltage: 220/230 V - 50 Hz
 - power rating: 1800 W
- **Weight:** with DBG-F2 clamping device 17 kg

Also available in:

110 V - 50/60 Hz version (**LD-2E-110**)



Approved SNCF
DPI 11002

LD-41P

GENERAL FEATURES:

- **Drilling range:** Ø 7÷40 mm
- **with broach cutters:** Ø 13-40 mm, on rails up to 50 mm thick.
- **with special spiral bits:** Ø 7-27,5 mm, on rails up to 45 mm thick.
- **Engine:** 4 stroke
- **Displacement:** 35,8 cc
- **Fuel:** unleaded regular grade gasoline
- **Start:** by rope pull
- **Clutch:** centrifugal with automatic intervention
- **Power:** 1 kW @ 7000 RPM
- **Weight:** with DBG-F2 clamping device 19,5 kg



Approved SNCF
DPI 11002

LD-4EF

GENERAL FEATURES:

- **Drilling range:** Ø 7÷40 mm
- **with broach cutters:** Ø 13-40 mm, on rails up to 50 mm thick
- **with special spiral bits:** Ø 7-27,5 mm, on rails up to 45 mm thick.
- **Switchable motor speed adjustment** relative to hole diameter.
Normal speed 280 RPM recommended for holes below dia 28 mm.
Low speed 250 RPM recommended for holes dia 28 - 40 mm.
- **Single phase electric motor:**
supply voltage: 220/230 V - 50 Hz
power rating: 1800 W
- **Weight:** with DBG-F2 clamping device 17 kg



DRILLING MACHINES

LD-12B - Battery

GENERAL FEATURES:

- Direct current electric motor
- Supply voltage: 24 V DC
- Power rating: 345 W
- Weight: with DBG-F2 clamping device 17,3 kg

Drilling range: Ø 7÷19 mm

BATTERY PACK:

- BP 24-16 (24V-16Ah): 17 kg
- BP 24-10 (24V-10Ah): 11 kg
- Battery condition display
- Protection fuse
- Battery charger 24V 2A max.



**BATTERY PACK
BP 24-16**



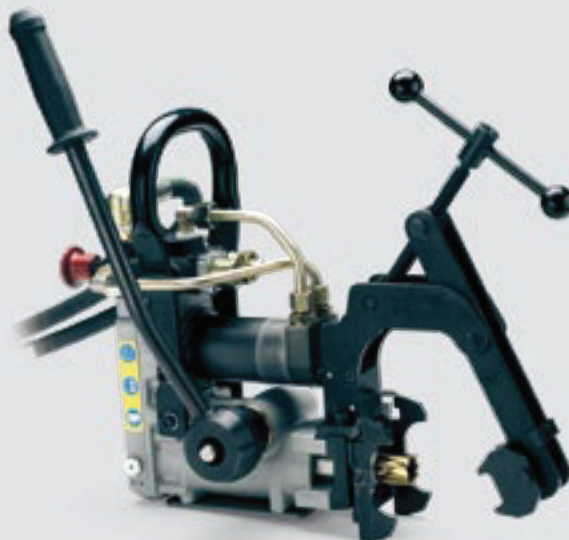
**BATTERY PACK
BP 24-10**

LD-8H - Hydraulic

GENERAL FEATURES:

- Engine: hydraulic
- Oil input flow: 5 gpm
- Oil input pressure: 2,000 psi
- Power: 2 kW
- Weight: with DBG-Y clamping device 20 kg

Drilling range: Ø 7÷38 mm

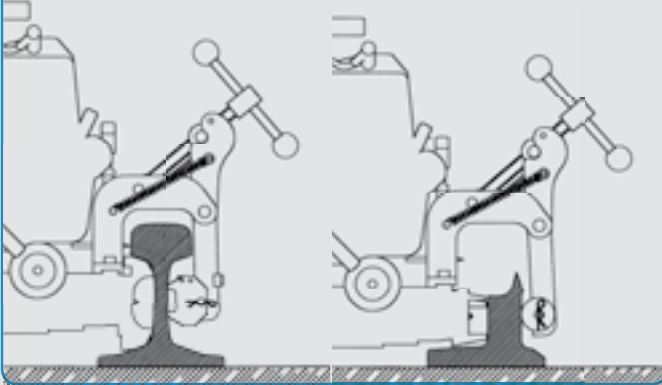


TYPICAL MOUNTING OF DRILLING MACHINES

Typical fixing situations:

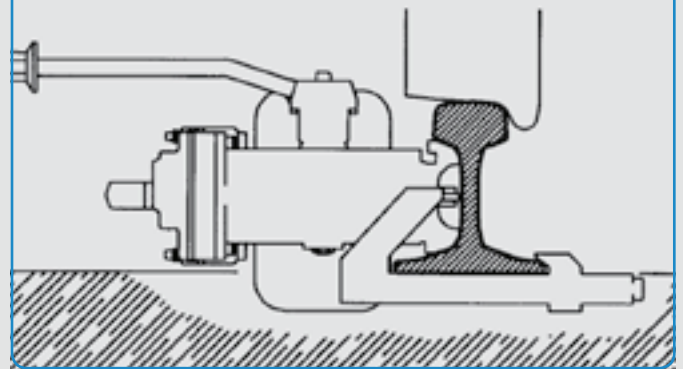
On the Rail Web

This system is ideally suited to working when the track is under possession or if not under possession when adequate train sighting provision is in place, however removal from the rail can be quickly achieved if so required. Using this arrangement, a hole can be drilled in close proximity to a sleeper.



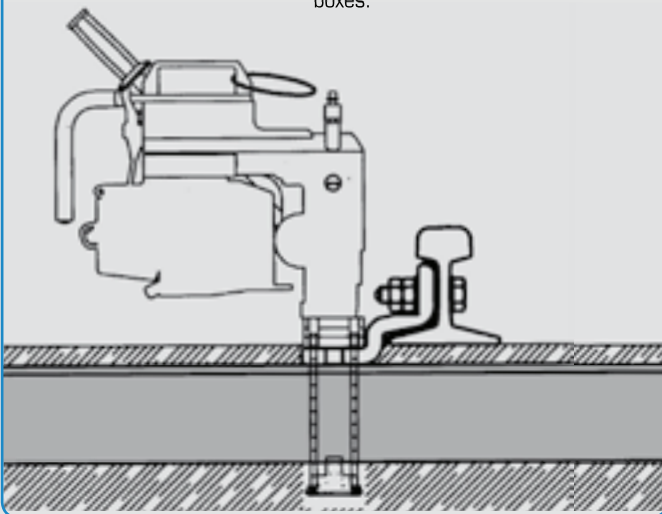
To the Rail Flange

In this situation the drill slides under the rail and can therefore be left in position during the passage of a train. Work can be carried out either side of the four foot zone. (except model LD-41P)



For Vertical drilling

This method of fixing enables vertical drilling for the assembly of attachments to spring tongues and branch plates to switchgear boxes.



STANDARD ACCESSORIES SUPPLIED WITH RAIL DRILLING MACHINES



DBG-F2 Over Rail Clamp (For use with rail possession)

For clamping drilling machine to rail web and track fittings
Complete with three terminations

- **TDB 1** for switch blades and confined spaces
- **TDB 6** for standard applications (bull head, flat bottom, check rails etc.)
- **TDB 3** for redrilling existing holes in rails for subsequent application of electrical connections and for additional special applications

SR 5000 Coolant unit

Coolant unit consisting of pressure vessel and hose, fitted with a manual pump and maximum pressure valve. Connection to the drilling machine is by quick coupler.

Calibrated measure (LD-1P-ECO)*

For accurate preparation of Petrol/Oil mixture.

Gear box oil

Range of tools

- 1 x spark plug key*
- 1 x 5 mm Allen key
- 1 x 6 mm Allen key
- 1 x 4 mm Allen key, with handle
- 1 x swarf brush

* Accessory only supplied with petrol engine rail drills

Socket head cap screws

4 pcs for clamping cutter or adaptor into spindle shaft
4 pcs for securing drilling template to the front plate
4 pcs for securing heavy duty drilling template to the front plate

ARE Adaptor

For the external application of the coolant. Fits directly to the SR 5000 coolant unit coupler

FOR USE WITH BROACH CUTTERS

Guide Bits

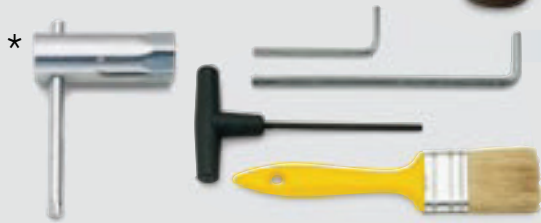
Allow the automatic control (opening and closing) of the flow of the cooling mixture during the drilling operation. Must be inserted in the rear of the cutter, before the cutter is located into the spindle.

- **PP1** (length 80 mm - Ø 7 mm)
For use with short broach cutters **A** Ø18 mm
- **PP2** (length 80 mm - Ø 8 mm)
For use with short broach cutters **A** Ø19 - 40 mm
- **PPL1** (length 100 mm - Ø 7 mm)
For use with long broach cutters **A.L** Ø17 mm
- **PPL2** (length 100 mm - Ø 8 mm)
For use with long broach cutters **A.L** Ø18 - 40 mm

FOR USE WITH SPIRAL BITS

DPE Spacer

For use with APE adaptor to activate the coolant when using spiral drill bits, diameter 9-12 mm



OPTIONAL ACCESSORIES & POSITIONING COMPONENTS FOR RAIL DRILLING MACHINES



VAL LD

- Steel carrying case for **rail drills**
- Accommodates the complete drill together with the **clamping device**, **DBSN** clamp and the **VAL-MPA** tool case
- 595 (L) x 345 (W) x 467 (H)

VAL LD-SR

- Steel carrying case for **rail drills** and **SR5000**
- Accommodates the complete drill together with the **clamping device**, **DBSN** clamp, the **VAL-MPA** tool case and **SR5000** unit
- 740 (L) x 367 (W) x 467 (H)

VAL MPA

- Suitable for storage of drilling templates cutters and accessories
- 390 (L) x 355 (W) x 52 (H)



TEMPLATES FOR POSITIONING RAIL DRILLS

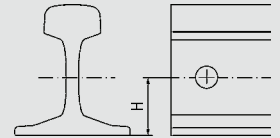
Enable the automatic positioning of the machine on the drilling axis of each specific rail.

MPAF 50 UNI for rail **UNI 50** and **S 49** type (H= 62,5 mm)

MPAF UIC 54 for rail **UIC 54** and **UIC 54E** type (H= 70 mm)

MPAF UIC 60 for rail **UIC 60** type (H= 76,3 mm)

MPAF U69 for guard rail **U 69** (UIC 33)



MPAF 35 G for girder rail **35 G / 35 GP** type (H= 59 mm)

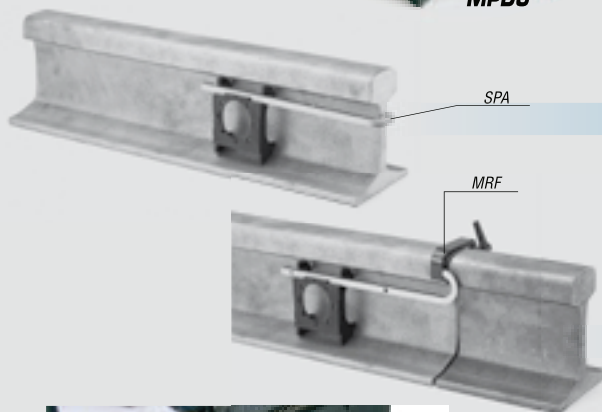
MPAF RI 60 N for girder rail **Ri 59, Ri 60** and **Ri 60N** type (H= 73 mm)

MPAF NP 4 AM for girder rail **NP 4** and **NP4aM** type (H= 73 mm)

NOTE: This is a list for reference only. Please contact Cembre for other types of rail.

MPAU for other kinds of rails or for special applications (positioning not automatic).

MPDU for other kinds of rails (adjustable positioning).



POSITIONING CONNECTING PLATES

To be located in conjunction with the MPAF positioning templates for a centre-to-centre distance, established in the Railway board standards.



MRF CLAMP

Applied as a reference to the head of rails, in conjunction with the positioning connecting plates.



SPA/2-HSB

Suitable to adjust the drilling height to be used in combination with **MPAU** template.

OPTIONAL POSITIONING COMPONENTS FOR RAIL DRILLING MACHINES

DBSN* UNDER RAIL CLAMP (FOR USE WITH NON RAIL POSSESSION)

- For clamping of drilling machine to flange
- Can remain in position while trains pass over

* No for LD-41P



DBC GUARD RAIL CLAMP

- For clamping of drilling machine to guard rail type U69 (UIC33)
- To be used in combination with MD 1 template

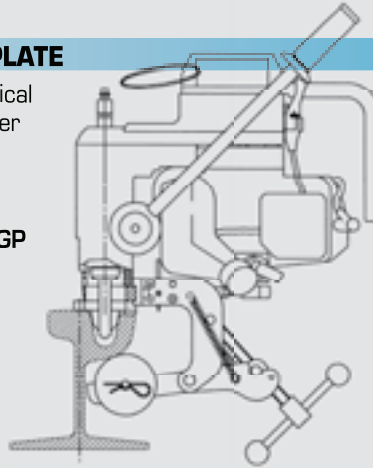


VERTICAL POSITIONING TEMPLATE

This template allows the correct vertical positioning to drill girder rails for water discharge

MPAS Ri60N for rail **Ri60N**

MPAS 35G-GP for rail **35G** and **35GP**



CONDUCTOR RAIL TEMPLATES

MPAF 106LB for 106lb conductor rail (H= 52,2 mm), use over rail clamp **DBG-LF2**

MPAF 150LB for 150lb conductor rail (H= 64 mm), use over rail clamp **DBG-LF2**



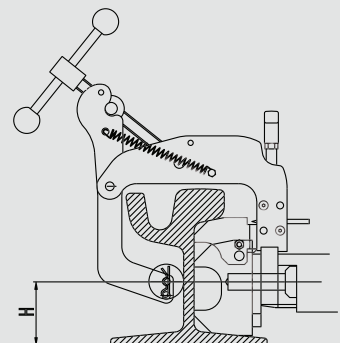
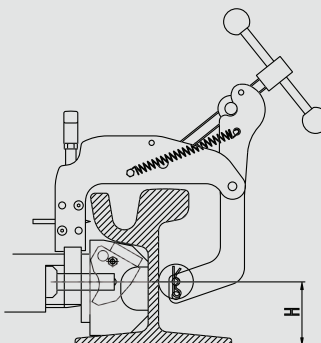
CHECK RAIL TEMPLATES

MPAF UIC33 for rail **UIC33** type (H= 35 mm), use over rail clamp **DBG-UIC33**
Drill template for holes at 35 mm from top of rail.

NOTE: to be used with **SPACER UIC33**

DBG-LF2 DEVICE FOR CLAMPING THE DRILL TO GIRDER RAILS

Use the DBG-LF2 device in place of the DBG-F2 supplied with the drilling machine, for positioning the machine on girder rails.



OPTIONAL POSITIONING COMPONENTS FOR RAIL DRILLING MACHINES



POSITIONING TEMPLATES FOR AXLE COUNTER GAUGE LOCATION HOLES

MSPAF ACG UIC60	for rail UIC60 type (H=68mm) Ø 13mm @ 148mm centres, use over rail clamp DBG-F2
MSPAF ACG BS113A	for rail BS113A type (H=65mm) Ø 13mm @ 148mm centres, use over rail clamp DBG-F2
MSPAF ACG BS95R BH	for rail BS95R bh type (H=65mm) Ø 13mm @ 148mm centres, use over rail clamp DBG-F2
MSPAF ACG BS80A	for rail BS80A type (H=56mm) Ø13mm @ 148mm centres, use over rail clamp DBG-F2
MSPAF ACG 109LB	for 109lb FG rail (H=56mm) Ø13mm @ 148mm centres
MSPAF ACG 98LB	for 98lb FG rail (H=60mm) Ø13mm @ 148mm centres

MRF SR-SFA

MRF SR-SF

SR-SKI
Support

SR...
Templates KIT

DBG-F2 or DBG

MRF SR-SFA

SR-SKI

DPE

APE 130

PE 130

POSITIONING JIG MRF SR-SFA and MRF SR-SF

MRF SR-SFA

The **MRF SR-SFA** positioning jig is suitable for drilling the following hole centres in axle counter applications:

- 2 holes with centres of 145 mm;
- 2 holes with centres of 270 mm;
- 3 holes with centres of 148 mm.

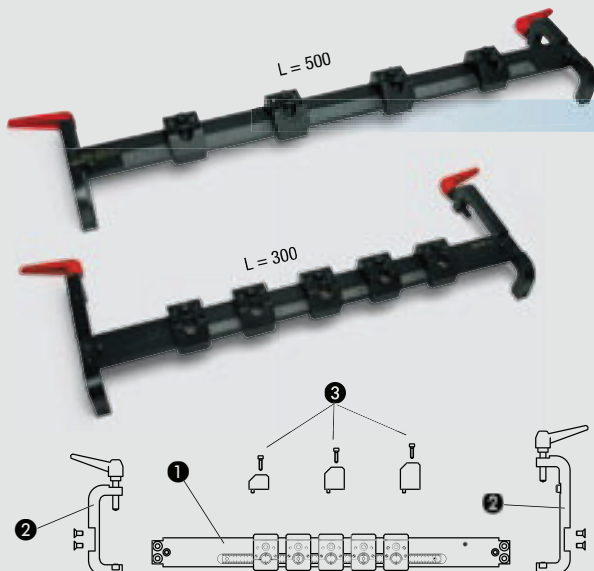
MRF SR-SF

The **MRF SR-SF** positioning jig is suitable for drilling the following hole centres in axle counter applications:

- 2 holes with centres of 145 mm;
- 2 holes with centres of 270 mm.

Rail Type	Templates Kit Type	Drilling Height (mm)
UIC60	SR-UIC60-74	74
UIC60	SR-UIC60-81	81
UIC60	SR-UIC60-85	85
UIC60	SR-UIC60-85,5	85,5
UIC54	SR-UIC54-71,5	71,5
UIC54	SR-UIC54-72,5	72,5
UIC54	SR-UIC54-74,5	74,5
BS95RBH	SR-BS95RBH-58,5	58,5
BS113A	SR-BS113A-72,25	72,25

SR... templates Kit have to be used with the support plate SR-SKI which must be order separately.



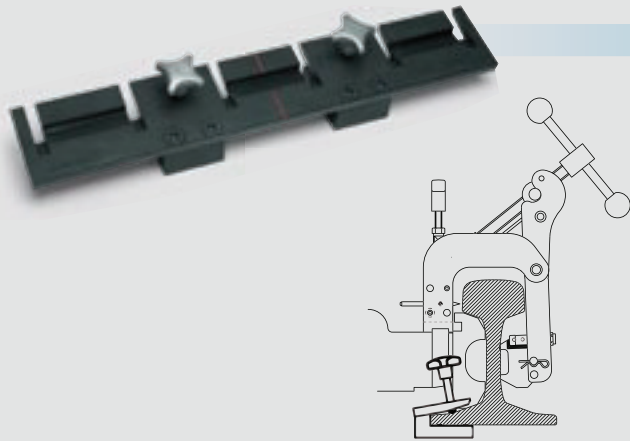
POSITIONING JIG MRF-U300S and MRF-U500S

Rail positioning gauges for different distances.

The assembly of the various components of the system allows solving a large number of needs for drilling at different interaxe distances.

Type	Description
MRF-U300-S	① Positioner with graduated scale 300 mm
MRF-U500-S	① Positioner with graduated scale 500 mm
CAV MRFU	② Couple of rail traditional clamps
CAVY MRFU	② Couple of clamps for girder or "Y" rails
BH 200-MRFU	③ Extension blocks h = 20 mm
BH 305-MRFU	③ Extension blocks h = 30,5 mm
BH 365-MRFU	③ Extension blocks h = 36,5 mm

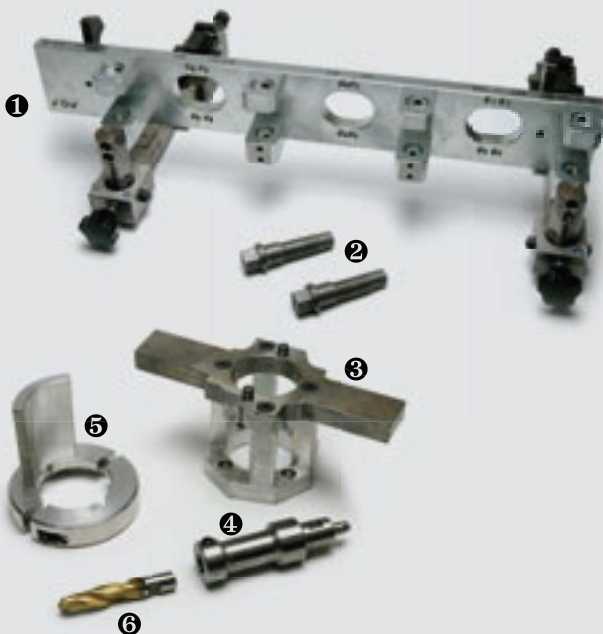
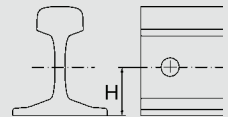
OPTIONAL POSITIONING COMPONENTS FOR RAIL DRILLING MACHINES



Positioning Jig MRFT SR-A

Positioning jig for axle counter gauge fixing holes, with hole centre distances of 148-148 mm. Rail foot clamping allows the jig to remain in place during train passage.

Rail	Template Type	Drilling Height (mm)
UIC60	MPSR UIC60-74	74
UIC60	MPSR UIC60-68	68
UIC60	MPSR UIC60-85	85
UIC54	MPSR UIC54-68	68
UIC54	MPSR UIC54-72	72
S54	MPSR S54-63	63
S54	MPSR S54-68	68
46UNI	MPSR 46UNI-64	64
50T	MPSR 50T-64	64
S49	MPSR S49-64	64
37JP	MPSR 37JP-53	53
50JP	MPSR 50JP-63	63
100LB	MPSR 100LB-RE-64	64
R65	MPSR R65-94	94



- ① - Positioning Jig MRFT DBS-SRA *
- ② - Blocking bolts *
- ③ - Drilling Machine Adapter *
- ④ - Spiral bit Adapter APED 130 L *
- ⑤ - Safety device for drill Lever *
- ⑥ - Spiral Bit

* accessories supplied with MRFT DBS-SRA

Positioning Jig MRFT DBS-SRA

The new MRFT DBS-SRA positioning jig is suitable for drilling the following hole centres in axle counter applications:

- 2 holes with centres of 145 mm;
- 2 holes with centres of 270 mm;
- 3 holes with centres of 148 mm.

MRFT DBS-SRA device may be used during train passage.

For Various rail types. Positioning jig for axle counter gauge fixing holes are the same as jig MRF SR-SFA.

To be ordered separately:

Rail	Template Kit Type	Drilling Height (mm)
S 49	KIT SR S49-62,5/3 Rail Template 3 pieces	62,5
	KIT SR S49-64/3 Rail Template 3 pieces	64
S 54	KIT SR S54-63/3 Rail Template 3 pieces	63
	KIT SR S54-67,5/3 Rail Template 3 pieces	67,5
UIC 60	KIT SR UIC60-68/3 Rail Template 3 pieces	68
	KIT SR UIC60-74/3 Rail Template 3 pieces	74
	KIT SR UIC60-85/3 Rail Template 3 pieces	85


Information: To drill with jig type MRFT DBS-SRA, 3 piece Rail Templates are required. Other types of Rail Templates are available to be ordered separately.



BROACH CUTTERS FOR RAIL DRILLING MACHINES

BROACH CUTTERS

These cutters rapidly produce high quality, accurate holes in a single pass. The automatic lubrocooling system, reduces friction and eliminates heat build up, during the drilling operation. Under normal conditions a broach cutter can drill 40-50 holes, depending on the hardness of the rail, before re-sharpening. Between 3 and 6 re-sharpening operations are possible.

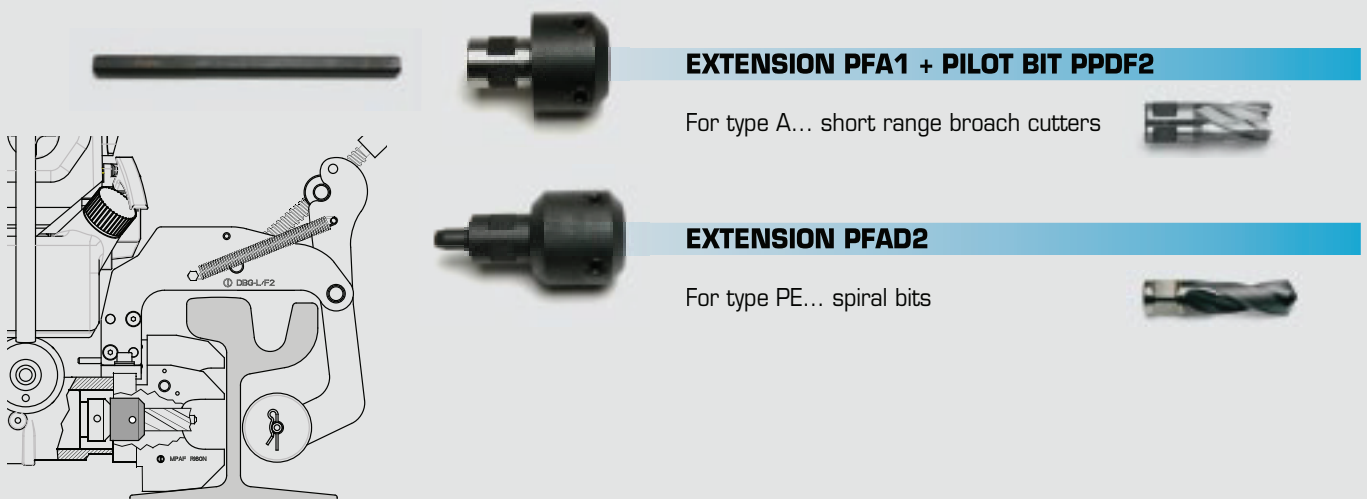


Short range		Ø mm	Long range		
Ref.	Guide bits		Ref.	Guide bits	
A 130	Ref. PP1	13			
A 135		13,5			
A 160		16	A 160L	Ref. PPL1	
A 170	Ref. PP2	17	A 170L	Ref. PPL2	
A 180		18	A 180L		
A 190		19	A 190L		
A 200		20	A 200L		
A 210		21	A 210L		
A 220		22	A 220L		
A 230		23	A 230L		
A 240		24	A 240L		
A 250		25	A 250L		
A 260		26	A 260L		
A 270		27	A 270L *		
A 280		28	A 280L		
A 290		29	A 290L *		
A 300		30	A 300L		
A 320		32	A 320L		
A 330		33			
Max drilling thickness 25 mm			Max drilling thickness 50 mm		

*contact Cembre for availability

To drill larger diameters, please contact Cembre.


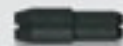


Long range broach cutters type **A...L** are required when **MPAF RI 60 N**, **MPAF I UNI** & **MPAF NP4AM** templates are used. Alternatively, it is possible to use short range type **A...** broach cutters and type **PE...** spiral bits with the following extensions:






SPIRAL BITS FOR RAIL DRILLING MACHINES

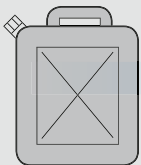
SPECIAL SPIRAL BITS

Using these bits guarantees optimum performance during the drilling operation. The semi-automatic lubrocooling system, reduces friction and eliminates heat build up during the drilling operation. As a guide, under standard conditions, a spiral bit can drill 70-100 holes, depending on the hardness of the rail, before re-sharpening. Between 5 and 10 re-sharpening operations are possible.

Ø mm	Ref.	Adapter	Spacer	Model
7	PE 70	APED 70	without DPE	
8	PE 80	APED 80		
9	PE 90	APE 90	DPE 	
9,5	PE 95	APE 95		
10	PE 100	APE 100		
12	PE 120	APE 120		
13	PE 130	APED 130		
13,5	PE 135	APED 135/165	without DPE	
14	PE 140			
16	PE 160			
17	PE 170	without adapter	DPE 	
18	PE 180			
19	PE 190			
21	PE 210			
22	PE 220			

HIGH QUALITY SPIRAL BITS

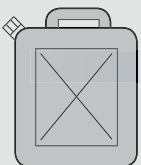
Ø mm	Ref.	Adapter	Spacer	Model
13	PE 130 AR	APED 130	without DPE	
13,5	PE 135 AR	APED 135/165		
17	PE 170 AR	without adapter	DPE 	
19	PE 190 AR			
21	PE 210 AR			
24	PE 240 AR			
27,5	PE 275 AR			



LUBROCOOLER

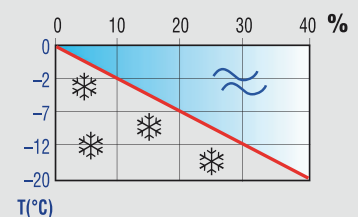
LR2 concentrate 3 litres.

This biodegradable product of vegetable origin, to be watered down in the percentage 95% water, 5% oil, will provide a white colour mixture very effective for drilling operations with no heating of the rail or the drilling machine.



ANTIFREEZE

Concentrate of 3 litres LR3 added to the lubro cooling mixture with the right percentage will maintain the lubrocooling mixture fluid (see table) in negative temperature conditions.

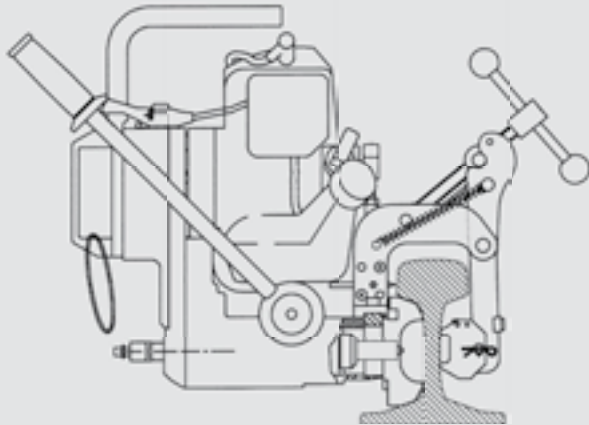


MSC SWARF COLLECTOR

For collecting metallic swarf following drilling operations.

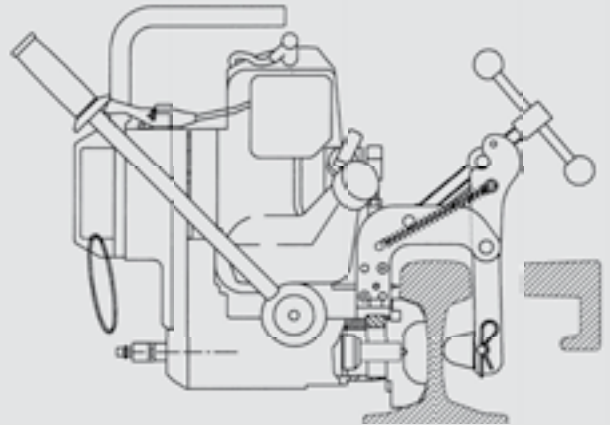
TYPICAL APPLICATIONS OF RAIL DRILLING MACHINES

ON RUNNING RAILS



STANDARD USE

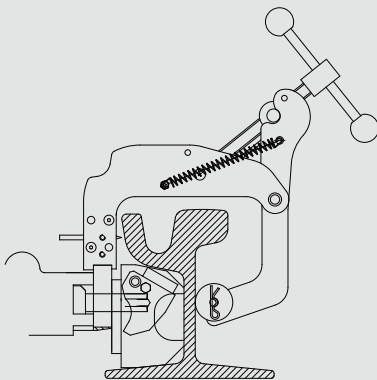
DBG-F2 over rail clamp equipped with TDB-6 termination



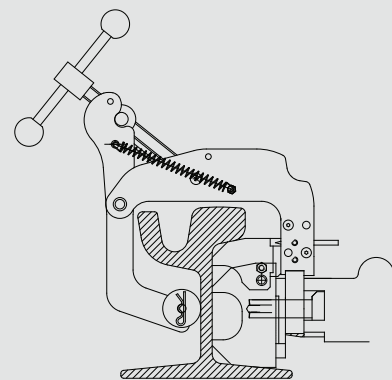
DRILLING BY THE GUARD RAIL

DBG-F2 over rail clamp equipped with TDB-3 termination

ON GIRDER RAIL (e.g. Ri 60 Np4)

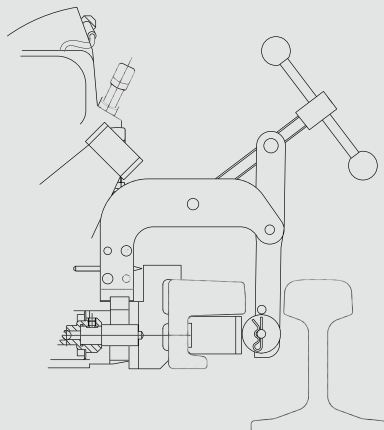


- DBG-LF2 over rail clamp
- Specific positioning template MPAF
- Use of long broach cutters A...L range



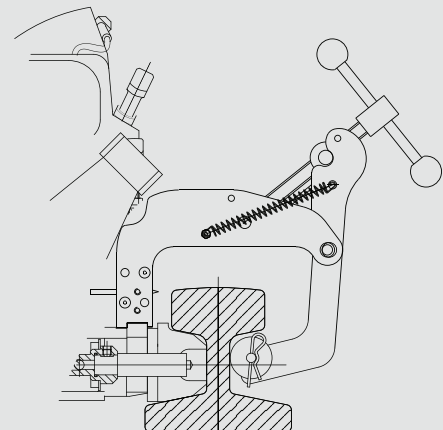
The design of the template (combination) allows positioning on both sides of the rails

ON CHECK RAIL



- DBG-UIC33 over rail clamp
- Specific positioning template MPAF-UIC33
- SPACER UIC33 spacer block
- Use of long broach cutters A...L range

ON CONDUCTOR RAIL



- DBG-LF2 over rail clamp equipped with TDB-1 termination for 150LB conductor rail drilling
- Specific positioning template MPAF-106LB or MPAF-150LB