

RD500AS / RD200AS

For all kind rails and all kind welding methods Lightweight units for easiest handle by one man. Remote Pendant Control with easy to learn functions. Cost reduction and saving of time by the highest quality. Production-accompanying computer-aided quality assurance.

(Examples)



Standard Surfacing

RD 500AS at Crane Rail



RD 500J Joint Welder with 4 Axis



Hard Facing



Joint



Frog





RD 500AS / RD 200AS Rail Welding Systems (Overview Parts)

- For surfacing of all rail types.
- 3D Real time computing, RD 500 for up to 3 meter, RD 200 for up to 30 meter.
- Positioning by Teach-In points with easiest set-up and adjustment.
- Simplified operating system with Auto-Start by chip-card.
- Easy mounting directly at rail bottom with fast mounting clamps.
- Easiest handling by one man.

System Parts

- 1 Remote Pendant Control RD100E
- 2 Drive Unit and Weaver
- 3 Distance Support
- 4 Drive Rail, standard length 1.5 / 2 m
- 5 Weaving Arm, 40 cm
- 6 Distance Rail, 30 cm
- 7 Turn able Gun Holder
- 8 Mounting Knob Drive Unit
- 9 Mounting Knob Support
- 10 Chip-Card
- 11 USB and RS232 Port
- 12 Power Supply (42/120/230 VAC)
- 13 Arc Control (up to 500 Amps)



RD 100E (Evolution)

Remote Pendant Control for easiest handling

- Optimised operating program with 5 Teach-In-Points and maximised functionality.
- Special left/right edge filling mode.
- Automatic Lift-Off and Start/Stop dwell times.
- Automatically adjustment of XYZ-positioning with memory function.
- USB- and RS232-Port for data transfer.
- Chip-Card slot for special weld data.
- Computer-Aided Quality Management.



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Computer Aided Quality Assurance

Although the positioning is computer-controlled and all signals are digitally processed, the units quality can be proved and documented.

A predefined surface with predefined movement parameters, will be processed for 20 times and the required time of every run is saved. Even the smallest deviations in the mechanics or electronics are recognized. The whole test needs about 1 hour and runs automatically.

This diagram shows the needed time for every pass. Deviations of 2 seconds causes by mechanical load, more than 2 seconds are not tolerated.

For Hard Facing

with

Multiple Areas

Welding Methods

mт

124.9

010.6

020.1

026.1 062.5

014.0

091.0

091.0

100.1

100.1

148.1 035.0

035.0

For Standard Surfacing

For Joint Welding



30 Standard rail types selectable. Easy expandable with other type.









Worksheet Standard Surfacing

(Preparation and General, Step by Step)



I) Grinding and Cleaning

Because of earlier repairs by manual work, there are a lot of small errors at the edges and a big valley at the center of rail.

Don't be too much economical in grinding. If the earlier used wire is unknown, grinding should be done as much as needed, to receive only original ground material of rail.





II) Mounting of the Welding Unit

Installation of the unit always occurs at bottom of rail, the only angular and straight position at an old rail. For mounting of the units drive rail, fast fixing clamps are used.

Special positioning adjustment is not needed and mounting can be done at left or right side of the rail. Because of the torch-package and cable connection, the preferred position should be closer to wire feeder.



Prepare power source and wire feeder, and fix the ground cable in front of planned welding. Mount the torch with turn-able gun holder and fix it vertical to work-piece.



(... Mounting of the Welding Unit)



Best torch angle is vertical to work piece, but about 5 degrees backwards can be tolerated to get the best welding connection to rail. Also for optimisation, the ground cable should be fixed in front of welding and the welding power will find its shortest way through material.

III) Setting of Teach-In-Points



The remote pendant control RD500E shows the optimized welding program for working with up to 5 Teach-In points.

All welding parameters, which needs not to be changed (Start/Stop dwell, Lift-Off, manual speeds), will be calculated in the background and can be adjusted in Set-Up mode.

Description of Symbols



Movement and adjustment of parameters will be done the same way as working with standard program. Use key INPUT 🏝 to select movement and positioning mode 🔄 and use keys 🏠, 🖶, 🗲, 🗲, 🛃 😰 to move the torch above point P0. Adjust wire Stick-Out with 30 to 35 mms and fix this point with buttons

● + ● . Continue Teach-In along the rail, to set the complete zero-line. Select point P1 with keys 🖸 + 👚, 🕹 and press 🖸 + 🗟 to activate auto-positioning movement in direction to P1. In fast mode drive, the unit will stop above P1. With keys 🗲, 🔿, drive the torch above point P5 and

fix it. The unit will automatically set the width of welding .



Two Examples

1. Bend Rail with not straight Zero-Line



With changing weaver amplitudes, smaller width at P2 and P3 can be set manually.

Select point P2, P3 with keys 🝳 + 🍸, 🖶 and press 葐 to activate INPUT mode. Move the cursor to 🖘 and adjust welding width with keys -.



IV) Preheating



For preheating, drive the unit to end of rail.

Preheating temperature depends on rail material, wire and welding power. The rail should be heated up with equally tempered scale and extensive areas. At cold weather underneath of 20 °C, this should be done carefully without creating of *hot spots* –don't be impatiently.

Smaller rail parts at switch and frog part, should be preheated with minimum needed heat. Because we always start at smallest part, it will heat up itself by work very fast.



V) Filling of Edges (...if needed)

Select point P0 and press keys \bigcirc + I to activate auto-positioning movement in direction to P0. Manually drive the unit to start-position of filling layer. Use buttons \bigcirc + I to change to edge filling mode \equiv . If point P5 is selected the unit will follow the left edge, otherwise it will follow the right edge (zero-line). The width \clubsuit of filling can be adjusted from 0 (line) up to 20 mm.



Start welding with key **I**. Welding can be stopped anytime with button **O** or **I** with dwell times and lift off.

Filling should be done as often as needed to get a solid closely flat surface. Small rolls at beginning and end of weld, will be planed from following complete layer.

If more than one filling layer is needed, the following layer should overlap the previous layer (some mm), to reduce tension of rail. -This should be foreseen at grinding time.





VI) Standard Surfacing

Use buttons \bigcirc + \swarrow to change back to standard surfacing mode 1/2. Select point P0 and press keys \bigcirc + e to activate auto-positioning movement in direction to P0. The unit will drive to position of P0 in fast mode drive.

For filling layers, you can drive to any needed position and start welding. All parameters can be changed as needed, but for less rail tension and best connection, weld direction should never be changed.

If a short filling layer is needed, welding can be stopped anytime with button 🕑 or 🔣 with dwell times and lift-off.



For the last complete layer, move the unit to P0 (\bigcirc + 1) and start welding (\bigsqcup). At end of surface, at point P4, the unit will stop automatically with dwell times and lift-off.

General Advice of Work

Welding at big parts, means very high mechanical stress for the work-piece. To make it happen, some basic rules should be noticed.



After welding, at cooling down, the material starts intensive shrinking. High mechanical power pulls at rail and generates undesirable tensions.

The figure shows power arrows at every weaver layer, to demonstrate association. The yellow arrows show tensions of earlier layer, which can be compensated by the following layer (green arrow).

The red arrows represent tensions, which can not be compensated and must be spread out along the rail.

The optimum of all welding parameters will be found out at training time. If you need to change parameters, adjustments should be done slowly and step by step.



A good welding will show a small fishbone pattern.

Therefore the cuneiform shapes, at beginning and end of welding, should be used at all last layers with amplitudes larger than 20 mm.



The length of shape should be as long as rail width, the longer the better.

The last complete layer should be welded in one pass, without interruption.

If the result looks like surface of water, the welding energy was too high and material tended to flow.

To get best connection between welding and work-piece, **never use backings or border lines** to fix welding area. Material must not drained away on rail!

If an edge-line is needed, because of turning wire while welding, this should be set after surfacing.



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