




JOIN! Your Full Welding Solutions for Lasting Connections

# HIGH QUALITY AND PRODUCTIVITY PIPELINE ORBITAL WELDING WITH FLUX CORED WIRES

High quality pipeline girth welds with a result of outstanding material properties in combination with time and material savings and low repairing rate are nowadays key success factors for pipeline contractors. We are achieving all these requirements with our pipeRunner® orbital system. It is the perfect combination for pipeline orbital welding.

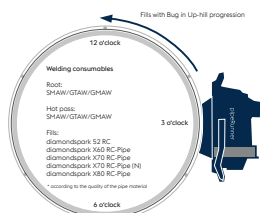
## Main benefits

- » Save 66 % Time and 45% Material (on an API 5 XL X70 pipe O.D. 36" W.T. 15 mm)
- » Higher productivity
- » Reduced downtime
- » Fine-tuned aiming to minimize NDT indications & achieve 0% repairing rate
- » Easy and fast set up
- » Light weight design only 14 kg (without wire spool)

| Product features  | User benefits   |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
|---|---|-------------------------|-------------|-------------------|--------------|----------------|--------------|-------------------|---------------|----------------|--------------|-------------------|--------------|
| TERRA 400 PRM Pipeline Version  |   |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
|  <p>Remote Control RC 100 MP</p> | <table border="1" data-bbox="411 1285 1086 1496"> <tr> <td><b>Adjustment range</b></td> <td>3 A - 400 A</td> </tr> <tr> <td><b>Duty cycle</b></td> <td>50 % - 400 A</td> </tr> <tr> <td><b>MIG-MAG</b></td> <td>60 % - 360 A</td> </tr> <tr> <td><b>10min/40°C</b></td> <td>100 % - 340 A</td> </tr> <tr> <td><b>MIG/MAG</b></td> <td>80 % - 400 A</td> </tr> <tr> <td><b>10MIN/25°C</b></td> <td>100% - 360 A</td> </tr> </table> <p>A robust and reliable three phase new generation multiprocess inverter power source.</p> <ul style="list-style-type: none"> <li>» In order to suit the needs for orbital pipeline welding and also perform root and hot pass by manual or semi-automatic welding the Terra 400 PRM is equipped with a special display to manage all the welding processes and the special remote control RC 100 MP specifically designed for pipeline jobsites.</li> <li>» High power at 100% of duty cycle ideal for heavy duty services</li> <li>» High temperature, shockproof, abrasion resistant plastic case</li> <li>» Excellent performance with long power supply extension cables up to 30m</li> <li>» Robust aluminium case and protected rollbar</li> </ul> | <b>Adjustment range</b> | 3 A - 400 A | <b>Duty cycle</b> | 50 % - 400 A | <b>MIG-MAG</b> | 60 % - 360 A | <b>10min/40°C</b> | 100 % - 340 A | <b>MIG/MAG</b> | 80 % - 400 A | <b>10MIN/25°C</b> | 100% - 360 A |
| <b>Adjustment range</b>   | 3 A - 400 A   |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
| <b>Duty cycle</b>   | 50 % - 400 A  |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
| <b>MIG-MAG</b>  | 60 % - 360 A  |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
| <b>10min/40°C</b>   | 100 % - 340 A   |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
| <b>MIG/MAG</b>  | 80 % - 400 A  |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
| <b>10MIN/25°C</b>   | 100% - 360 A  |                         |             |                   |              |                |              |                   |               |                |              |                   |              |
|   | <ul style="list-style-type: none"> <li>» Multiprocess machine</li> <li>» GMAW/FCAW with pipeRunner®</li> <li>» SMAW</li> <li>» TIG-Lift</li> <li>» The machine is ideal for the pipeline job with root and hot pass with stick electrodes and fills and caps with our orbital welding system</li> <li>» Comprehensive display on the equipment body</li> <li>» User friendly handling, large controller</li> <li>» Magnet to apply on metallic surfaces</li> </ul>  |                         |             |                   |              |                |              |                   |               |                |              |                   |              |

| Product features  | User benefits  |  |
|---|--|--|
| <b>pipeRunner® the new orbital welding system</b>                                 |  |  |
|  | <ul style="list-style-type: none"> <li>» pipeRunner® is a state-of-art programmable mechanized MIG/MAG orbital system designed for pipeline and process piping girth welds.</li> <li>» Designed for vertical up FCAW welding but also enabled for vertical down with GMAW</li> <li>» One device for CW clockwise and CCW counter clockwise</li> <li>» Easy to operate: Easy and comprehensive remote control with all functions in one hand <ul style="list-style-type: none"> <li>» Welding programs</li> <li>» Torch movements</li> <li>» Oscillation width</li> <li>» Wire speed</li> <li>» Travel speed</li> <li>» Testing functions</li> </ul> </li> <li>» Easy to program: <ul style="list-style-type: none"> <li>» Software is already included and can work on any PC, heavy duty tablet is optional</li> <li>» Up to 11 different passes can be programmed</li> </ul> </li> <li>» Technical Details <ul style="list-style-type: none"> <li>» Horizontal torch movement: 65 mm (2.56 inch)</li> <li>» Vertical torch movement: 30 mm</li> <li>» Oscillating width: 0-60 mm (0-2.36 inch)</li> <li>» Torch head inclination: <math>\pm 25^\circ</math></li> <li>» Oscillation speed: 0-350 cm/min (0-63 inch/min)</li> <li>» Travel speed: 0-1.6 m/min (0-63 inch/min)</li> <li>» Wire diameter: 1.0 - 1.6 mm</li> <li>» Oscillation weld time: Individually adjustable</li> <li>» Weight: 14 kg w/o spool</li> <li>» Dimensions: 480x400x260 mm (19x16x10 inch)</li> <li>» Max. wire feed speed: 19 m/min (75 inch/min)</li> <li>» Max. welding current: 300A/100% (CO<sub>2</sub>)</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>» One of the lightest bugs on the market with only 14 kg (without spool)</li> <li>» Optimized distribution of the weight and center of mass makes the unit particularly easy to handle</li> <li>» User friendly and easy to learn how to program and work which is ideal for pipeline contractors who work manual and want to include automatic welding with relatively small investment</li> <li>» Max. accuracy (movement and wire feeding precision) for high quality weld joints</li> </ul> |

#### ROOT AND HOT MANUAL - FILLS AND CAPS MECHANIZED



Get the perfect results with our Böhler Welding consumables. Manually welding the root and hot pass with SMAW/GTAW and GMAW afterwards the fills and cap layers mechanically with our pipeRunner® and diamondspark flux cored wires for pipeline welding.

Welding sequence for pipe grade API 5L X70




- » Diameter: 910 mm (36")
- » Wall thickness: 15,0 mm
- » Root pass: Böhler FOX CEL (E6010)
- » Hot pass: Böhler FOX CEL 80-P (E8010-P1)
- » Fill layers and cap layer: diamondspark X70 RC-Pipe (E91T1-K2M-JH4)

- » Easy slag removal
- » High productivity
- » Perfect bead shape
- » 0 indication at NDT
- » High repetitively and guaranty that the established WPS is always fulfilled
- » Saving compared with full cellulose SMAW procedure for this specific pipe and grade:
  - » Arc time: 51%
  - » Total time including line up: 66%
  - » Materials saving in weight: 46%

#### Clad Pipeline Applications



pipeRunner® has been used in clad and high alloyed pipeline applications. Alloy 625 Clad pipes have been successfully welded with pipeRunner® and our all positional alloy 625 flux cored wire FOXcore 625-T1. Moreover, stainless steel 304L pipes have been welded with our flux cored wire FOXcore 308L-T1. pipeRunner® is definitely an optimal solution also for high-alloyed pipeworks and clad pipes.

| Product features  | User benefits   |  |
|---|---|--|
| <b>diamondspark FCAW Portfolio for Pipeline Welding</b>   |   |  |
|  <p data-bbox="119 510 375 555">diamondspark FCAW Portfolio for Pipeline Welding</p> | <ul style="list-style-type: none"> <li>» Our diamondspark seamless flux cored wires are the perfect combination with our welding equipment TERRA 400 PRM and pipeRunner® for orbital pipeline welding. Our seamless design allows a low content of diffusible hydrogen, no moisture pick up in storage and handling and therefore a low risk of hydrogen delayed cracking and wormholes.</li> <li>» Our diamondspark X RC Pipe product range is copper coated with excellent current transfer and less contact tip wear. Our flux cored wires are known for great feedability with increased arc time and no wire break. The special recipe optimized for pipeline welding also guarantees thick slag to support the weld pool in uphill progression and easy slag detachability</li> <li>» Pipeline dedicated formulas further improve the weld metal mechanical properties, keeping high toughness also when applying high productivity welding procedures. diamondspark X RC Pipe are also suitable for sour service and NACE compliant up to the X70 grade (in this latter case with diamondspark X70 RC-Pipe (N))</li> </ul> | <ul style="list-style-type: none"> <li>» NDT indications minimized</li> <li>» Mechanical properties achieved in demanding conditions</li> <li>» Downtime and post-processing work reduction</li> </ul> |
| <b>Personal protection &amp; Accessories</b>  |   |  |
|    | <ul style="list-style-type: none"> <li>» Helmets such as Guardian 62 Complete and Guardian 62F Air Complete, gloves, glasses and clothes are ideal for the pipeline jobsite. Additionally weldCare also provides a full range of electrode holders and ground clamps</li> <li>» Light weight products with robust headgear, soft sweatbands and highest ADF clarity with true color technology</li> </ul>   | <ul style="list-style-type: none"> <li>» Suitable for a wide range of welding and grinding applications</li> <li>» High quality</li> <li>» Durable</li> <li>» Comfortable</li> </ul>                   |
| <b>Weldtech Application Services</b>  |   |  |
|   | <ul style="list-style-type: none"> <li>» For voestalpine Böhler Welding, being a Full Welding Solutions provider means acting as a partner for pipeline contractors through the weldTECH Application Services, which include a team of welding engineers experienced in pipeline construction.</li> </ul>   | <ul style="list-style-type: none"> <li>» Support for testing, qualification and problem solving</li> </ul>   |

## Typical applications

- » On and Offshore Pipelines
- » Process Piping

## Product Range diamondspark X.. RC Pipe for Pipeline Welding

| PRODUCT NAME                 | EN CLASSIFICATION        | AWS CLASSIFICATION  |
|------------------------------|--------------------------|---------------------|
| diamondspark 52 RC           | T 49 5 T1-1M21A-H5       | E71T1-M21A4-CS1-DH4 |
| diamondspark X60 RC-Pipe     | T50 6 1Ni P M21 1 H5     | E81T1-Ni1M-JH4      |
| diamondspark X70 RC-Pipe     | T55 5 Mn1,5 P M21 1 H5   | E91T1-K2M-JH4       |
| diamondspark X70 RC-Pipe (N) | T55 6 Z p M21 1 H5       | E91T1-GM-JH4        |
| diamondspark X80 RC-Pipe     | T62 4 Mn1.5Ni P M21 1 H5 | E101T1-K2M-JH4      |