Portable Welding Carriages and Positioners

KOIKE SANSO KOGYO CO., LTD.
Wel-handy Multi-Ⅱ series succeeds merits of conventional model such as light weight, strong traction force, and extensibility for various works. And Wel-handy Multi-Ⅱ series are renewed for higher performance.

**Wel-handy Multi-Ⅱ (Standard)**

- **7 kg body weight of high portability, magnet adsorption, and 4 wheels drive provide running stability (constant speed).**

- **Built-in Permanent Magnet**

  By turning down the lever on side of machine, built-in magnet is attracted to the steel plate, it demonstrates the high traction pulling the torch lead.

- **Aluminum Die-cast Body**

  The aluminum die-cast molded body provide its light-weight and sturdy. (Net Weight 7kg by Standard Specification)

- **Torch Slide unit**

  Each 45mm of adjustment has been ensured in back and forth, up and down. Smooth operability, it can be fine adjusted the torch position even during welding.

- **Guide Roller Arm**

  No need to install a rail. Guide Roller Arm will trace the surface of vertical plate. Besides standard type shown in the picture, other types of Guide Roller Arm are also available as option for various different applications.

**Standard type Controller**

- High performance microcomputer controller.

- User-friendly digital display of traverse speed (mm/min). Easy welding parameter setting for unskilled welder.

- Encoder ensures Constant Speed control.

- Fine adjustment of carriage start position is possible. By simply pressing limit switch, carriage moves at low speed for your quick and easy setup to start point. (Patent Pending)

- Wide traverse speed range. (50 ~ 1,500 mm/min)
More lineup for high-end models with “Tack” and “Weaving” features

- **Wel-handy Multi-Ⅱ (Tack)**
  - Automate Tack welding application at high-speed

- **Wel-handy Multi-Ⅱ (Weaving)**
  - Longer welding leg with Torch weaving motion

Image of Welding Bead

Tack welding is made by repeating welding and dry-run traverse alternatively. Automatically switched to maximum speed during dry-run traverse to improve work efficiency.

Image of Welding Bead

Longer welding leg can be achieved by torch weaving motion. Strong magnet enables vertical position welding application; such as vertical up welding.

- **Tack and Weaving Controller**

  - High performance microcomputer controller.

  - Switch unit with click feeling enables operate with leather gloves kept. No need to take off leather gloves.

  - Capable of tack and weaving parameter editing in the middle of carriage operation.

  - Tack welding interval (weld/dry-run part) is temporarily adjustable by switching Arc ON/OFF.

  - Crater treatment at the end point of weld bead can be made by both carriage reverse run and welding machine control.

  - Fine adjustment of carriage position at start point is possible. By pressing limit switch, carriage moves at low speed.

  - Wide traverse speed range. (50~1500 mm/min)

* Please use weaving unit "WU-3R" with module expansion connector when using operation pendant together with weaving unit.
In conventional automation of Tack welding, timer is popularly used to control arc ON/ OFF, which contains following problems.

**Problem 1** It’s hard to recognize welding length.

\[ L = V \times T \]

By timer control, weld bead length (L) is calculated by: “Traverse Velocity (V)” \(\times\) “Arc ON Time (T)”.

If traverse speed is changed, weld bead length also changes. Calculation is required to recognize welding length. Therefore, it’s hard to adjust the welding length.

**Problem 2** Crater treatment is not available.

Crater at the end of welding point has risk of weld crack; therefore, crater must be filled up by Crater treatment.

To do crater treatment, complicated control such as ON/ OFF of torch switch and carriage reverse drive are required. Therefore, it’s hard to do crater treatment by analog circuit.

**Wel-handy Multi-Ⅱ Tack can solve it!**

- **Motor with encoder**
  Drive distance is automatically calculated by motor rotation. Tack weld is available by simply inputting weld length and dry-run length only.

- **High performance controller**
  Microcomputer control allows detail parameter setting for crater treatment; such as speed and distance of carriage reverse drive. All parameter settings are indicated in Digital Display Panel for easy welding quality control.

Crater treatment process is fully automated by inputting detail parameter setting; such as crater welding current and carriage reverse drive.
Application example for Wel-handly Multi-Ⅱ Weaving

Weaving function to wave a torch can not only make leg length wider but also manage following works.

Method 1 | Butt-weld for bevel edge plates
Method 2 | Vertical-up fillet welding

With weaving function, wider welding bead can be filled in bevel groove. (Guide plate need to be prepared separately.)

Only skilled welder can make vertical-up fillet welding. Weaving function automates it with use of flux-cored welding wire.

Problem in conventional method

By adding weaving unit to standard welding carriage, a lot more parameters are required for setting, which contains following problems in the conventional method.

- Low workability, and operability.
- Difficult to operate tiny size of switches. Either enlarge operation panel or minimize switches is required to place number of switches for each parameter.
- Analog volume dial switches are not precise. Digital parameter data cannot be recorded either.

Wel-handly Multi-Ⅱ Weaving can solve it!

High performance controller

- User-friendly controller layout design with larger size switches for easy operation even with leather groves.
- Easy parameter control with Digital Display Panel for carriage speed, traverse direction, and any other weaving parameters.

① By selecting a type of parameter from this knob, current setting figure will be indicated on the Digital Display Panel at the left.

② The parameter selected on the above process ① can be edited by this knob. Parameter can be edited even in the middle of welding process.
## Main Specification

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Wel-handly Multi-Ⅱ (Standard)</th>
<th>Wel-handly Multi-Ⅱ (Tack)</th>
<th>Wel-handly Multi-Ⅱ (Weaving)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Number</td>
<td>Pending</td>
<td>Pending</td>
<td>Pending</td>
</tr>
<tr>
<td>Machine Weight</td>
<td>Standard Magnet Model: 6.9 kg</td>
<td>Standard Magnet Model: 6.9 kg</td>
<td>Strong Magnet Model: 9.8 kg</td>
</tr>
<tr>
<td></td>
<td>Strong Magnet Model: 7.5 kg</td>
<td>Strong Magnet Model: 7.5 kg</td>
<td></td>
</tr>
<tr>
<td>Machine Dimension</td>
<td>See Figure 1.</td>
<td>See Figure 2.</td>
<td></td>
</tr>
<tr>
<td>Traction Force</td>
<td>16 kg</td>
<td>12 kg</td>
<td></td>
</tr>
<tr>
<td>Gap (F. L. ~ Base Board)</td>
<td>6 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnet Up and Down Mechanism</td>
<td>Magnet Lever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving Method</td>
<td>4-Wheel Driving Rubber Roller (Chain Transmission)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnet-type</td>
<td>Permanent Magnet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traverse Speed</td>
<td>50 ~ 1,500 mm/min</td>
<td></td>
<td></td>
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<tr>
<td>Tracing Method</td>
<td>Guide Roller (being pushed against Vertical plates)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Torch Adjust Range</td>
<td>40° ~ 55°</td>
<td>45 mm</td>
<td>45 mm</td>
</tr>
<tr>
<td>Torch Angle</td>
<td></td>
<td></td>
<td>5° Angle at both Forward / Backward</td>
</tr>
<tr>
<td>Up and Down</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Forward and Backward</td>
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<td></td>
<td></td>
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<tr>
<td>Forward / Backward Angle</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Automatic Stop Function</td>
<td>Limit Switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine Adjustment of Carriage Position</td>
<td>Included</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Welded Portion</td>
<td>Approximately 270 mm</td>
<td>Approximately 305 mm</td>
<td></td>
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<tr>
<td></td>
<td>(in total at both Start and End point)</td>
<td>(in total at both Start and End point)</td>
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<tr>
<td>Power Cable</td>
<td>Y-Branch Cable (Power and Signal cable Integrated)</td>
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<tr>
<td></td>
<td>Carriage ~ Branch: 6 m,</td>
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<td></td>
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<tr>
<td></td>
<td>Branch ~ Power: 10 m,</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Branch ~ Wire Feeder: 0.5 m (with matching Panasonic-type Connector)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>※ Please consult when using welding machine other than Panasonic.</td>
<td></td>
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</tr>
<tr>
<td>Welding Torch</td>
<td>Straight WHM (C) - 350S &amp; 500S</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curved 350A &amp; 500A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Torch Hold Diameter</td>
<td>Straight Torch Holder: φ20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curved Torch Holder: φ16–20 mm Diameter</td>
<td></td>
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<tr>
<td>Motor</td>
<td>DC Motor with Encoder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Power</td>
<td>AC 100 ~ 240V, 50/60Hz</td>
<td></td>
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</tbody>
</table>
■ External Dimension

Figure 1. Wel-handy Multi-Ⅱ / Wel-handy Multi-Ⅱ Tack

Figure 2. Wel-handy Multi-Ⅱ Weaving
■ Other Options

Twin Torch Kit

**Clearance of Max. 500 mm height Vertical Plate**

By placing 2 torches face to face, fillet welding at both sides of vertical plate becomes possible with 1 set of carriage.

- Clearance of Vertical Plate Height: up to 500 mm.
- Arm is made of aluminum for light weight with rigid structure.
- Zigzag tack (stitch) weld is also capable by combination use with Wel-handy Multi-Ⅱ Tack.

※ Twin Torch Kit is available only for strong magnet type of Wel-handy-Multi, Wel-handy-MultiⅡ, Wel-handy-MultiⅡ Tack. (Standard magnet type is not available due to the risk of fall down.)

Special twin torch box enables interlocking with two welding machines.
Wel-handy Multi- II

Guide Rail (Butt-Weld)
Stock No. 61002282

- Butt-Welding with Wel-handy Multi
  Simple Guide Rail with Magnet attached at both Ends. Enables Butt-Welding by Fillet-Welding Carriage; Wel-handy Series.
  Combination use with weaving unit also enables butt-weld on Y-bevel plates joint.
  Guide Rail length: 2M

Guide roller (Various types)

- Replaceable guide roller
  Stock No. 61006608
  Roller itself can be replaced from this guide roller arm after worn-out. Suitable to heavy duty environment like shipyards.

- Sword shape Guide Roller
  Stock No. 61006609
  By sword shape Roller, height to trace on vertical plate can be as low as FL+15mm.

- Edge Trace Guide Roller
  Stock No. 61004332
  The roller traces the edge surface of bottom plate. Welding can be made without vertical plate to trace.
  As another application with Edge Trace Guide roller, welding can be made at corner of column pipe.
Special Model: Rail Traverse Type

Utilizing the same 1-D Rail (straight rail) for KOIKE’s popular gas cutting machine "IK-72T", a different model of rail-traverse type welding carriage is newly added to KOIKE’s lineup. The same High performance Controller as Wel-handly Multi- II series is equipped.

- 1-D Rail for IK-72T (1.5m)
  Light-weight aluminum rail with permanent magnet allows wide variety of welding position; horizontal downward, vertical, and sideway.
  
  **NOTE:** Use of other types of rail; such as 2-D and 3-D is NOT covered by warranty, due to its heavier carriage weight than IK-72T, which has a risk of coming off from the curved rail and fallen down.

- Weaving Unit (Option)
  Useful for vertical-up welding.
  WU-3R Weaving Unit with Extension module connector

- Clutch Lever
  Easy carriage positioning on and removable from rail with one touch clutch ON/ OFF.

- Operation Panel
  (common use with Multi- II)
  High operability realized with the same high performance controller as Multi- II series. “Smart Zero Return” function equipped as unique feature for rail-traverse type carriage.

- Pendant-type Operation Box (Option)
  Simply connect PCR-A (Pendant-type Operation BOX) to expansion module connector of WU-3R (Weaving Unit). Easy and safe editing of welding parameter is made possible even in the middle of welding operation.

- What’s “Smart Zero Return”?
  In conventional-type, zero point is fixed to the position where mechanical limit-switch striker is attached; usually at both ends of rail edge.
  * If welding length is shorter than total rail length, carriage goes too far back.
  * The only way to change return position is to adjust the striker position every time.

  **Smart Zero Return** always return welding carriage to start position constantly.
  * Built-in drive motor encoder remembers motor RPM; the distance from welding start point to end point.
  * Smart Zero Return starts once Carriage hits the limit switch at the end of rail.

- Conventional-type Zero Return
  @Return Position
  Returned Position is fixed, regardless of Start Position.

- Smart Zero Return
  @Return Position
  Always Return to Welding Start Position wherever it is.
**WEL HANDY MINI STRONG**

Strong magnet enables not only horizontal fillet welding, but also vertical and overhead position welding. Its compact size can also be utilized in wide variety of welding environment, resulting in increased automation ratio.

- **Magnet Up/ Down Mechanism**
  Handle Integrated Type
  (Patent Pending)
  It’s troublesome to detach Magnet especially when magnet is strong. But, Wel-Handy MINI-Strong can maintain both strong magnetic force and easy detaching of magnet as you lift up Handle without operating any other levers or button.

- **Guide Roller with Vertical Slide Adjuster**
  Quick & easy adjustment of guide roller height can shorten setup time, resulting in higher production.

- **Torch Holder**
  (Compatible for both Straight & Curved-type)

- **Strong Magnet**
  Magnetic Force: 35 kg
  (Conventional type: 20 kg)
  Not only horizontal fillet welding, but also vertical and overhead position welding application is possible.

- **Vertical Position**

- **Overhead Position**

- **Over hang Welding Position**
Drive Speed Display
Digital display clearly shows carriage drive speed. **Useful for unskilled welder to set welding parameters.**

Overload Detecting Auto-Stop Function
In case carriage accidentally collide with obstacle and stopped during welding operation, Auto-Stop Function activates to stop both its drive motion and welding arc at the same time.
- Reduces risk of damaging gearbox with overload.
- Minimize the welding defect from keep welding at the same spot.

Fine Adjustment of Carriage Start Position
By simply pressing Limit Switch at either right or left side of carriage, carriage moves at low speed for your fine adjustment of carriage (torch) start position. Quick & Easy setup to start point.

**Table:**

<table>
<thead>
<tr>
<th>Model Name</th>
<th>WEL HANDY MINI STRONG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock No.</td>
<td>7.6 kg</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>Dimension (mm)</td>
<td>320(L) × 260(W) × 300(H)</td>
</tr>
<tr>
<td>Traction Force</td>
<td>16 kg</td>
</tr>
<tr>
<td>Gap (F.L. ~ Bottom plate of machine)</td>
<td>6 mm</td>
</tr>
<tr>
<td>Magnet Up/ Down Mechanism</td>
<td>Integrated with Handle</td>
</tr>
<tr>
<td>Drive Method</td>
<td>4 Wheel Drive (Hubber Wheel with Chain Transmission)</td>
</tr>
<tr>
<td>Magnet Type</td>
<td>Permanent Magnet</td>
</tr>
<tr>
<td>Traverse Speed</td>
<td>100 ~ 800 mm/min.</td>
</tr>
<tr>
<td>Tracing Method</td>
<td>Guide Roller (being pushed against vertical plate)</td>
</tr>
<tr>
<td>Applied Posture</td>
<td>Horizontal Fillet Welding</td>
</tr>
<tr>
<td>Torch Angle Adjustable Range</td>
<td>40° ~ 55°</td>
</tr>
<tr>
<td>Up/ Down</td>
<td>45 mm</td>
</tr>
<tr>
<td>Forward/ Backward</td>
<td>45 mm</td>
</tr>
<tr>
<td>Forward/ Backward Angle</td>
<td>5° at both Forward/ Backward</td>
</tr>
<tr>
<td>Automatic Stop Function</td>
<td>Limit Switch (at each side of carriage)</td>
</tr>
<tr>
<td>Included</td>
<td>About 260 mm (in total at both start/ end point)</td>
</tr>
<tr>
<td>Electrical Power Cable</td>
<td>Not included (Option)</td>
</tr>
<tr>
<td>TOKIN Corporation:</td>
<td>WHM□□□S</td>
</tr>
<tr>
<td>DAIHEN Corporation:</td>
<td>WT450PC-60D</td>
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<tr>
<td>OBARA Corporation:</td>
<td>OSA6i-6165(N)</td>
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<tr>
<td>Motor</td>
<td>350A, 500A</td>
</tr>
<tr>
<td>Input Power</td>
<td>AC100 ~ 240V, 50/60Hz</td>
</tr>
</tbody>
</table>
Ransome P-type Positioner
Lined up with 1.3ton, 2.7ton and 5.4ton load

Ransome M-type Manipulator
Lined up with 1.8m, 2.7m, and 3.6m stroke.

TR-R type Turning Roll
Lined up with 1ton~50ton load

Aronson Large Jigs
Positioner production performance: Max. 250 ton

Universal Balance Positioner
Downward posture provided instantly without power.
Lined up with 50kg, 250kg, 450kg and 900kg

Welding Fume Collector
CAF Series
Flow rate: CAF-100: 12m²/min
CAF-200: 25m²/min

Small-Sized Positioner LD-R Series

We propose various welding power and system.
Power Supply of Plasma and Submerged Welding
We Koike Sanso Kogyo offer a comprehensive line of welding system including power sources of plasma welding and submerged welding, positioners and manipulators with various peripheral devices.