AUTOMATED WELDING MANIPULATORS

Available Manipulator Sizes

- 4' X 4'
- 6' X 6'
- 8' X 8'
- 10' X 10'
- 12' X 12'
- 12' X 30'
- 15' X 18'
- 20' X 20'

Benefits of Manipulators

- 360 degree mast rotation
- Speeds welding operation
- Cost efficient, easy to operate
- Eliminates the fatigue of hand operations
- Ideal for fabrication or maintenance applications
- Available as free-standing, self-supported fixture or mounted on a mobile travel carriage with track
- Controls include up/down, in/out travel switch, speed potentiometer and variable speed carriage travel
- Welding controls include current, voltage, wire speed, start/stop weld, manual cross seam adjustment, in/out adjustment of electrode and cylinder switch
- Precise x-ray quality welds free from undercut and slag inclusion
- Power source platform and all cables are optional. No special power source required.
- Complete with reliable Red-D-Arc submerged arc equipment
- Optional travel cars with track, NA3, NA4 and NA5 automatic welding heads, flux recovery systems and DC600, DC1000, AC1200 and DC1500 power sources are available with all our manipulators

Manipulators are singularly the most versatile pieces of equipment directly associated with automatic welding. They can be designed to duplicate the same procedure without variation as well as weld sequentially different procedures on the same weldment. A manipulator performs these functions on a distance and weight scale that man alone cannot achieve. It provides a consistency and accuracy by bringing the welding head to the weldment. Manipulators can be adapted to operate in pick and place application as well as plate burning, painting and air carbon arc gouging.

Red-D-Arc rents and leases manipulators in a variety of sizes and ranges that can duplicate the functions of a highly skilled welder... only better and with more consistency. Each manipulator can be customized for specific applications like simple straight line or circumferential welding. The ram ends can be outfitted with small I.D. single or multiple arc automatic welding heads for long seam and circumferential welding. Custom designs are available for long reach and heavy loads. All manipulators are available as pedestal mounted motorized or fixed boom machines and can be mounted on a free standing base or motorized travel carriage for mobility.
<table>
<thead>
<tr>
<th>MODEL M-66</th>
<th>66</th>
<th>99</th>
<th>1212</th>
<th>1212RF</th>
<th>SHD</th>
<th>XHD</th>
<th>XXHD</th>
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</thead>
<tbody>
<tr>
<td>1 Ram Construction</td>
<td>BOX</td>
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<tr>
<td>2 Ram Ways</td>
<td>SQUARE</td>
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<tr>
<td>3 Ram Drive</td>
<td>MANUAL</td>
<td>POWERED</td>
<td>POWERED</td>
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<tr>
<td>4 Ram Drive Type</td>
<td>Rack/Pinion</td>
<td>Rack/Pinion</td>
<td>Rack/Pinion</td>
<td>Rack/Pinion</td>
<td>Rack/Pinion</td>
<td>Rack/Pinion</td>
<td>Rack &amp; Pinion</td>
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<tr>
<td>5 Ram Drive (horsepower)</td>
<td>MANUAL</td>
<td>1/3</td>
<td>1/2</td>
<td>3/4</td>
<td>3/4</td>
<td>1</td>
<td>1 1/2</td>
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<tr>
<td>6 Speed Range (in/minute)</td>
<td>OPTIONAL</td>
<td>3.7-150</td>
<td>3.7-150</td>
<td>3.35-134</td>
<td>3.35-134</td>
<td>3.35-134</td>
<td>3.35-136</td>
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<tr>
<td>7 Remote Speed Control</td>
<td>OPTIONAL</td>
<td>STANDARD</td>
<td>STANDARD</td>
<td>STANDARD</td>
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<td>STANDARD</td>
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<tr>
<td>(A) 8 Standard Ram Travel</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>9&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>14&quot;</td>
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<tr>
<td>(B) 9 Minimum Ram Distance</td>
<td>18 5/8&quot;</td>
<td>23 15/16&quot;</td>
<td>28 1/2&quot;</td>
<td>39 1/2&quot;</td>
<td>39 1/2&quot;</td>
<td>45&quot;</td>
<td>53&quot;</td>
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<tr>
<td>(C) 10 Maximum Ram Travel</td>
<td>9&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>14&quot;</td>
<td>14&quot;</td>
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<tr>
<td>11 Ram Load, each end (lbs)</td>
<td>200</td>
<td>250</td>
<td>500</td>
<td>750</td>
<td>750</td>
<td>1000</td>
<td>1500</td>
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<tr>
<td>12 Total Ram Load (lbs)</td>
<td>400</td>
<td>500</td>
<td>1000</td>
<td>1500</td>
<td>1500</td>
<td>2500</td>
<td>4000</td>
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<tr>
<td>13 Mast Construction</td>
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<td>TUBULAR</td>
<td>TUBULAR</td>
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<td>14 Mast Ways</td>
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<td>15 Replaceable Ways</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>16 Mast Rotation (degrees)</td>
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<td>360</td>
<td>360</td>
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<tr>
<td>17 Mast Keeper Plates</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>18 Pawl Anti-Fall Device</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>19 Lift Type</td>
<td>Cable</td>
<td>Roller Chain</td>
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<td>Roller Chain</td>
<td>Roller Chain</td>
<td>Roller Chain</td>
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<tr>
<td>20 Lift Drive (horsepower)</td>
<td>Manual</td>
<td>1/3</td>
<td>1/2</td>
<td>3/4</td>
<td>1</td>
<td>1 1/2</td>
<td>5</td>
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<tr>
<td>21 Lift Reducer Type</td>
<td>Ratchet Lock</td>
<td>Self Locking</td>
<td>Self Locking</td>
<td>Self Locking</td>
<td>Self Locking</td>
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<tr>
<td>22 Lift Speed (in/minute)</td>
<td>Manual</td>
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<td>40</td>
<td>38</td>
<td>38</td>
<td>41</td>
<td>35</td>
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<tr>
<td>(D) 23 Standard Lift Travel</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>9&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>15&quot;</td>
<td>14&quot;</td>
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<tr>
<td>(E) 24 Ram Distance from Floor</td>
<td>18 5/8&quot;</td>
<td>23 5/16&quot;</td>
<td>28 1/2&quot;</td>
<td>39 1/2&quot;</td>
<td>39 1/2&quot;</td>
<td>45&quot;</td>
<td>53&quot;</td>
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<tr>
<td>(F) 25 Maximum Lift Travel</td>
<td>10&quot; - 5 5/8&quot;</td>
<td>10&quot; - 7 7/16&quot;</td>
<td>14&quot; - 4 1/2&quot;</td>
<td>19&quot; - 5 1/2&quot;</td>
<td>19&quot; - 5 1/2&quot;</td>
<td>22&quot; - 9 3/4&quot;</td>
<td>23&quot; - 9 3/4&quot;</td>
</tr>
<tr>
<td>(G) 26 Machine Height</td>
<td>10&quot; - 7 7/16&quot;</td>
<td>14&quot; - 4 1/2&quot;</td>
<td>19&quot; - 5 1/2&quot;</td>
<td>22&quot; - 9 3/4&quot;</td>
<td>23&quot; - 9 3/4&quot;</td>
<td>34&quot; - 1 3/4&quot;</td>
<td></td>
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<tr>
<td>(H,J) 27 WorkEnvelope</td>
<td>6&quot; x 7&quot;-3 1/4&quot;</td>
<td>6&quot; x 7&quot;-8&quot;</td>
<td>9&quot; x 10&quot;-11 1/2&quot;</td>
<td>12&quot; x 14&quot;-8&quot;</td>
<td>12&quot; x 14&quot;-8&quot;</td>
<td>14&quot; x 18&quot;-1&quot;</td>
<td>14&quot; x 17&quot;-6&quot;</td>
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<tr>
<td>29 Shipping Weight</td>
<td>2,100 lb</td>
<td>3,000 lb</td>
<td>4,000 lb</td>
<td>8,500 lb</td>
<td>8,500 lb</td>
<td>9,100 lb</td>
<td>12,000 lb</td>
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</tbody>
</table>

**DIMENSIONS:**
- **A** Height
- **B** Width
- **C** Depth
- **D** Lift Height
- **E** Lift Width
- **F** Lift Depth
- **G** Mast Height

**STANDARD WORK ENVELOPE:**

- **A** Height
- **B** Width
- **C** Depth
- **D** Lift Height
- **E** Lift Width
- **F** Lift Depth
- **G** Mast Height

**MATERIALS:**
- **A** Steel
- **B** Aluminum
- **C** Stainless Steel

**FINISHES:**
- **A** Powder Coating
- **B** Epoxy
- **C** Ceramic

**OPTIONS:**
- Remote Control
- Floating Base
- Automatic Line Shortener

**SPECIAL FEATURES:**
- Durable Construction
- High Efficiency
- Long Lifespan

**APPLICATIONS:**
- Industrial Automation
- Robotics
- Manufacturing

**CONTACT:**
Red-D-Arc
Welder Rentals
www.red-arc.com

**NOTES:**
- Dimensions are approximate and subject to change.
- Specifications and features may vary by model.
- Contact manufacturer for detailed information.
MANIPULATOR SET-UP PROCEDURE

Not all manipulators operate in the same manner; therefore, a specific set-up procedure cannot be used. This is a general guideline for erecting the mast and installing the horizontal ram or manipulator arm.

1) Inspect the mast and electrical components for damage during shipping.

2) Make sure the manipulator is lying down in a clear area, free of anything that may get damaged. Using an overhead crane, secure the crane hook to the lifting lugs at the top of the manipulator.

3) If the manipulator has caster wheels at the base, place the base on blocks of wood to prevent the base from rolling during lifting.

4) Secure a tether line near the top of the manipulator and the opposite end to a heavy object such as a lift truck. This is to prevent the mast from falling forward once the mast reaches its pivot point during lifting. Raising the manipulator mast is a dangerous operation, so make sure all safety precautions are observed.

5) Once the mast is standing upright, power must be supplied to the control box to assist in the installation of the manipulator horizontal ram.

6) Once power has been applied and the controller has been tested, remove all guards and limit switches from the end that the horizontal ram is to be inserted into. The horizontal ram should only go in one way, so be sure to note the direction of the ram in advance.

7) Measure the approximate center point of the ram and lift at the mid-point using an appropriate nylon sling or choker. Avoid using a metal choker or chain, as they tend to slip easier.

8) In some cases, the cam roller bearings that guide the horizontal ram have to be loosened off before the ram can be installed. In most cases loosening a setscrew or bolt, then turning the bearing on a cam does this.

9) Place the horizontal ram in a level and parallel position in front of the opening of the carriage and start the controller on a slow speed and in the same direction as the ram placement.

10) Feed the ram into the carriage so that the drive mechanism draws the ram all the way in. Be sure all of the guide wheels are in contact with the ways on the ram before removing the crane from the ram.

11) Replace all guards and limit switch arms. Reset guide wheels so that all ways are touching, but not tight.

12) Travel the ram to each end, to ensure the limit switches are working properly.

13) Travel the carriage to the top and bottom of the mast, to ensure the limit switches are working properly.

14) Be sure the maximum weight capacity is observed when mounting welding equipment to the end of the ram. Too much weight can cause the manipulator to fall when fully extended.
Manipulator Questionnaire

1. Total load weight on head end of boom __________________________ lbs.
2. Total load weight on other end of boom __________________________ lbs.
3. Reach: Minimum: ____________ inches Maximum: ____________ inches
4. Lift: Minimum: ____________ inches Maximum: ____________ inches
   (Measured from center line of mast)
   Constant speed ________________ IPM
5. Base: Stationary/car mount ________ Portable ______________
6. Kingpin (Mast Rotation): None/fixed ________ Constant speed ______________ IPM
   Variable Speed _________ to _____________ IPM
7. Travel Car: None _____ Manual _______ Constant speed _________ IPM
   Variable _________ to ____________ IPM
8. Voltage required _______ volts _______ phase _____ hertz ______
9. Track: Total Length __________ feet Car travel ______________ feet

Company: ____________________________________________ Phone: ______________________
Address: _____________________________________________ Fax: ______________________
Province/Postal Code/State/Zip __________________________________________________________
Contact Name: _______________________________________________________________________

Comments – Equipment Mounting
_____________________________________________________________________________________
_____________________________________________________________________________________

Make and Model Selected:
_____________________________________________________________________________________
_____________________________________________________________________________________