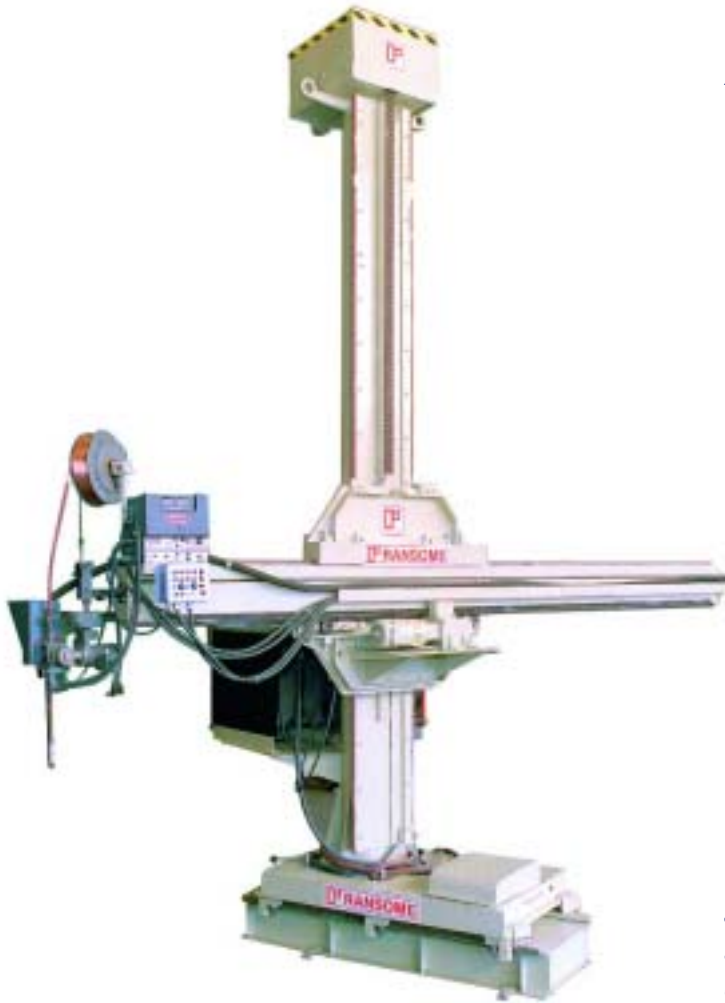


AUTOMATED WELDING MANIPULATORS



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.

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

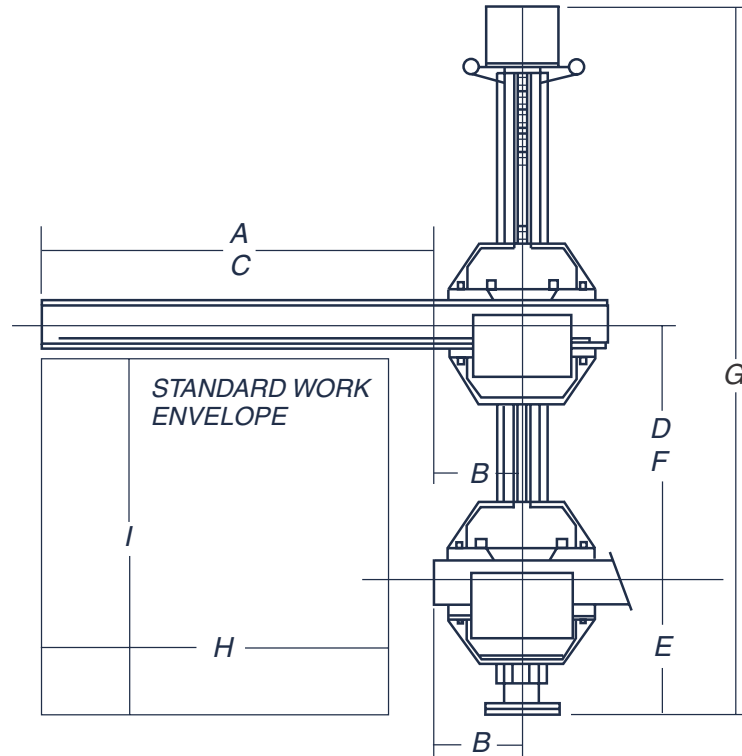
Precise x-ray quality welds free from undercut and slag inclusion

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

AUTOMATED WELDING MANIPULATORS



	MODEL	M-66	66	99	1212	1212RF	SHD	XHD	XXHD
1	Ram Construction	BOX	BOX	BOX	BOX	BOX	BOX	BOX	BOX
2	Ram Ways	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
3	Ram Drive	MANUAL	POWERED	POWERED	POWERED	POWERED	POWERED	POWERED	POWERED
4	Ram Drive Type	Rack/Pinion	Rack/Pinion	Rack/Pinion	Rack/Pinion	Rack/Pinion	Rack/Pinion	Rack/Pinion	Rack & Pinion
5	Ram Drive (horsepower)	MANUAL	1/3	1/2	3/4	3/4	1	1 1/2	3
6	Speed Range (in/minute)	OPTIONAL	3.7-150	3.7-150	3.35-134	3.35-134	3.35-134	3.35-136	2.7-108
7	Remote Speed Control	OPTIONAL	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD
(A) 8	Standard Ram Travel	6'	6'	9'	12'	12'	14'	14'	15'
(B) 9	Minimum Ram Distance	18 5/8"	23 15/16"	28 1/2"	39 1/2"	39 1/2"	45"	53"	56 3/4"
(C) 10	Maximum Ram Travel	9'	10'	10'	18'	18'	20'	25'	25'
11	Ram Load, each end (lbs)	200	250	500	750	750	1000	1500	2000
12	Total Ram Load (lbs)	400	500	1000	1500	1500	2500	4000	5000
13	Mast Construction	TUBULAR	TUBULAR	TUBULAR	TUBULAR	TUBULAR	BOX	BOX	BOX
14	Mast Ways	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
15	Replaceable Ways	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	Mast Rotation (degrees)	360	360	360	360	360	360	360	360
17	Mast Keeper Plates	NR	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	Pawl Anti-Fall Device	NR	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	Lift Type	Cable	Roller Chain	Roller Chain	Roller Chain	Roller Chain	Roller Chain	Roller Chain	RollerChain
20	Lift Drive (horsepower)	Manual	1/3	1/2	3/4	1	1 1/2	5	7 1/2
21	Lift Reducer Type	Ratchet Lock	Self Locking	Self Locking	Self Locking	Self Locking	Self Locking	Self Locking	Self Locking
22	Lift Speed (in/minute)	Manual	40	40	38	38	41	35	53
(D) 23	Standard Lift Travel	6'	6'	9'	12'	12'	15'	14'	20'
(E) 24	Ram Distance from Floor	18 5/8"	23 5/16"	28 1/2"	39 1/2"	39 1/2"	45"	53"	56 3/4"
(F) 25	Maximum Lift Travel	10'	10'	10'	16'	16'	20'	25'	30'
(G) 26	Machine Height	10' - 5 5/8"	10' - 7 7/16"	14' - 4 1/2"	19' - 5 1/2"	19' - 5 1/2"	22' - 9 3/4"	23' - 9 3/4"	34' - 1 3/4"
(H,I) 27	Work Envelope	6' x 7'-3 1/4"	6' x 7'-8"	9' x 10'-11 1/2"	12' x 14'-8"	12' x 14'-8"	14' x 18'-1"	14' x 17'-6"	15' x 23'-9 1/4"
28	Controls	Manual	Remote	Remote	Remote	Remote	Remote	Remote	Remote
29	Shipping Weight	2,100 lb	3,000 lb	4,000 lb	8,500 lb	9,100 lb	12,000 lb	22,000 lb	40,000 lb

MANIPULATOR SET-UP PROCEDURE

Not all manipulators operate in the same manner; therefore, a specific set-up procedure can not 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:
