

Lincoln Electric Europe



Column & Boom *Welding Manipulator*

Elevating Boom with Horizontal Travel



Fully Integrated Welding Installations

COLUMN & BOOM MANIUIPLATOR

(Robust and Heavy Duty Design Concept)

Range of Manipulators



***Various machine strokes designed for a variety of loading capacities.
(Single-arc, Twin-arc, Tandem-Arc, and Triple-Arc applications)***

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Technical Specifications

	<i>CBL</i>	<i>CBM</i>	<i>CBH</i>	<i>CBHH</i>	<i>CBR</i>
Vertical boom stroke:	3000 mm	4000 mm	5000 mm	6000 mm	7000 mm
Horizontal boom stroke:	2000 mm	4000 mm	5000 mm	6000 mm	7000 mm
Rotation of mast:	360° (manual)				
Boom travel speed:	200-2000 mm/min				
Boom elevation speed:	1000 mm/min				
Base traverse speed:	200-2000 mm/min				
Overall C&B: <i>(FIXED BASE)</i>	4670 mm	6000 mm	7220 mm	8570 mm	9570 mm
Height <i>(MOTORIZED BASE)</i>	4700 mm	6080 mm	7300 mm	8600 mm	9600 mm

The vertical and horizontal boom strokes listed above are the maximum lengths permissible for any particular model C&B. Manipulators with other strokes may be supplied upon request.

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Application Chart



	<i>CBL</i>	<i>CBM</i>	<i>CBH</i>	<i>CBHH</i>	<i>CBR</i>
<i>SINGLE-HEAD CONFIGURATIONS:</i>					
Single-Arc	✓	✓	✓	✓	✓
Twin-Arc	✓	✓	✓	✓	✓
<i>MULTI-HEAD CONFIGURATIONS:</i>					
Tandem-Arc	×	×	✓	✓	✓
Triple-Arc	×	×	✓	✓	✓

✓ *Best Choice*

✓ *Possible*

× *Not Recommended*

COLUMN & BOOM MANIPULATOR

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CBL, CBM, CBH and CBHH Models

Elevation Saddle Design:

- Four V-grooved rollers provide a stable boom support, minimizing deflection.
- Four additional V-grooved rollers ride the vertical guide-ways on the mast.

Machines Guide-ways:

- Two guide-ways, one on the upper face of the boom, and one on the lower face, are machined for straightness after welding to guaranty vibration-free motion.

Very nicely designed V-groove roller and guide-way system.



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CBR Model

Elevation Saddle Design:

- Eight over-sized rollers provide a stable boom support, minimizing deflection and torsion.
- Flat wheel surface makes uniform contact, reducing wear of the guide-ways.
- Eight additional plane rollers ride the vertical guide-ways on the mast.

Machines Guide-ways:

- Four guide-ways situated on the vertices of the boom, and machined for straightness after welding, guaranty vibration-free motion.

***Absolutely and positively
the "best designed" manipulator.***



COLUMN & BOOM MANIPULATOR

(Robust and Heavy Duty Design Concept)

Standard Design Features (all models)



Motorized (or stationary) Base:

- Wide wheel base gives added machine stability.
- All steel fabricated base adapts better to uneven rails.
- Two plane wheels and two double-flanged wheels allow for “waviness” of rails.
- Track locks provide extra safety should an object collide with the manipulator.

Column Rotation:

- Large cross-roll bearing allows for easy rotation of the mast that can be locked into position.



COLUMN & BOOM MANIPULATOR

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Standard Design Features (all models)

Anti-fall Safety Mechanism:

- Dual lifting chains give an added safety factor for boom elevation. (One chain is sufficient to bear the load of the boom.)
- In case of accidental failure of the lifting chains a fail-safe mechanism engages and locks the saddle into place.
- Solid steel blocks are welded along the length of the mast, providing positive stops for the safety latch to engage against.

Safety is our first concern in our manipulator design.



COLUMN & BOOM MANIPULATOR

(Robust and Heavy Duty Design Concept)

CBR equipped with operator chair

Operator Chair (CBR model only):

- Allows the operator to located close to the welding controls and welding area.

IMPORTANT NOTICE

THIS OPTION IS NOT AVAILABLE WITHIN THE EUROPEAN COMMUNITY DUE TO THE FACT THAT "CE" NORMS DO NOT PERMIT SUCH CONFIGURATION.



COLUMN & BOOM MANIPULATOR

(Robust and Heavy Duty Design Concept)

CBR with operator on board

SPECIAL VERSION

Elevator and Work Platform:

- Operator platform travels along the boom allowing the welder to safely access the welding process.
- Hydraulic elevator lifts the operator so he reach the operator platform.
- A series of built-in safeguards ensure that the operator follows safety procedures when boarding/unboarding the manipulator.
- Extra-wide manipulator base for additional stability.

In compliance with CE regulations.



COLUMN & BOOM MANIPULATOR

(Robust and Heavy Duty Design Concept)

Operator Controls



Hand-held Pendant:

- Small and compact control pendant with protected cable and plug-in socket.
- Incorporates all manipulator and seam tracking functions, on/off laser pointer and flux recuperator, plus up/down wire inch, and start/stop weld.
- Illuminating color coded push-buttons with universal symbols.
- Enclosed aluminum box and silicone sealed push-buttons prevent dust from getting inside and fowling the components.

A perfectly user-friendly control interface allows the operator to work comfortably.



COLUMN & BOOM MANIPULATOR

(Robust and Heavy Duty Design Concept)

Operator Controls



Operator Console:

- All functions in the hand-pendant can be duplicated in a console mounted at the base of the manipulator.
- A recall function (one in the hand-pendant, and another on the operator console) allow operation of the installation from either work point.
- Normally fitted with a LCD color screen for remote monitoring of the welding process, via a mini-camera mounted on the weld head.

Allows the operator to work in safe location at floor level.



COLUMN & BOOM MANIPULATOR

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Motorized Slides and Seam Tracking



Torch Positioning:

- Motorized cross-slides facilitate the operator's job of proper weld torch placement. *A laser pointer provides a guide ahead of the torch.*
- Can be fitted with a 2-axis electronic tactile probe enabling automatic tracking of the joint in the horizontal (joint placement) and/or the vertical axis (stickout regulation).

The assembly can be pivoted 90° for orientating the slides to make longitudinal and circular welds.

The boom may also be used for fine corrective movements, via the joystick control. This unique feature eliminates the offset distance from the torch to the boom centerline thus allowing to reach inside smaller diameters.



COLUMN & BOOM MANIPULATOR

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Flux Recuperator

Flux Management:

- A pneumatic flux recuperator (venturi type) that mounts directly on to the hopper recycles the un-fused flux and separates out the undesired fine particles.
- A pressurized flux tank can be used for a continuous supply of new flux to the hopper.
- An automatic flux valve with pneumatic cylinder that opens/closes with the welding cycle feeds flux from the hopper to the weld torch.

A simple, compact, and reliable solution.



COLUMN & BOOM MANIPULATOR

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Flux Tank and Heater



Flux Management (cont):

- A pressurized flux tank that can be mounted at the base (for easy refilling), providing a continuous supply of new flux to the hopper.
- A flux heater can be mounted on top of the flux tank for simple but effective heating and transfer of the flux.
- A high-vacuum turbine with automatic filter cleaning when used in place of the pneumatic recuperator can extract flux to the heater.
- A magnetic particle separator can be incorporated inside the heater in order to remove mill scale from the recycled flux.

Maintains a dry and clean flux supply.



COLUMN & BOOM MANIPULATOR

(Robust and Heavy Duty Design Concept)

Wire Packaging

Wire Reel Coils:

- Standard 25 Kg coils for easy handling.
- Large 100 Kg coil for fewer wire changes.
- The powerful wire feed heads have no problem pulling the wire through the length of the wire liners.

	<i>CBL</i>	<i>CBM, CBH, CBHH</i>	<i>CBR</i>
25 Kg coils	(2) back end	(2) back or front of boom	(2) back and (2) front
100 Kg coils			(2) back end of boom

Choose the coil size that best fits your application.



WELDING EQUIPMENT

(New Welding Technology)

Powersource



Powerwave AC/DC-1000 SD Inverter:

- Inverter powersource with 1000A / 44V continuous (100% duty cycle) output.
- Any welding polarity (DC+, DC-, AC) and arc mode (CV, CC) in a single powersource.
- Unique AC Square Wave technology welding allows greater control over every aspect of the weld.
- Appropriate for all Single-Arc, Twin-Arc, and Multiple-Arc (without limit) submerged arc applications.
- Very energy efficient.

A technology possessed only by Lincoln.



WELDING EQUIPMENT

(New Welding Technology)

Weld Controller



MAXsa-10 Welding Controls:

- Simple and easy to use control panel.
- Digital display of all weld parameters (amps, volts, wire feed speed, weld program, frequency, phase shift, offset, balance, and more).
- Eight memory panel.
- Can be mounted at the tip of the boom close to the welding head, or at the operator console.

A very sophisticated technology, but made simple for the welder to operate.



WELDING EQUIPMENT

(New Welding Technology)

Wire Feeder



MAXsa-22 Weld Head:

- Powerful drive motor and knurled rollers ensure trouble-free wire feeding.
- Very low maintenance.
- Wire straightener that can be oriented at any angle to obtain a proper straightening of the coiled wire consumable .
- Multiple gear ratios available for a wide range of wire diameters and applications.



Same reliable wire feeding system known for years in the welding industry.

WELDING EQUIPMENT

(Special Applications)

Compact Welding Head



Internal Welding Head Assembly:

- Modified welding head assembly, with compact motorized slides and small profile welding torch for reaching inside of restricted spaces.
- Complete flux system with miniature flux hopper, flux feeding via a pressurized tank, and recuperation.
- Complete with mini-camera and seam tracking probe for operator assistance.



Up to Ø3.2mm wire size.

APPLICATION

(Single an Multiple Passes)

Single-Arc

One Welding Head / One Powersource:

- The most commonly used of the process of the submerged arc family.
- Applicable for welding most butt, fillet, and overlap joints.
- Simple machine configuration.
- DC or AC polarities.



A very versatile welding process.

APPLICATION
(Faster Travel Speed)

Twin-Arc



One Head (two wires) / One Powersource:

- Twin wires, normally of the smaller diameters, sharing a common current, voltage, and polarity.
- Deposition rates of 30-40% more when compared to single-arc.
- Very suitable for welding fillet and overlap joints at faster travel speeds.
- DC or AC polarities.



Easy to upgrade from Single to Twin-arc.

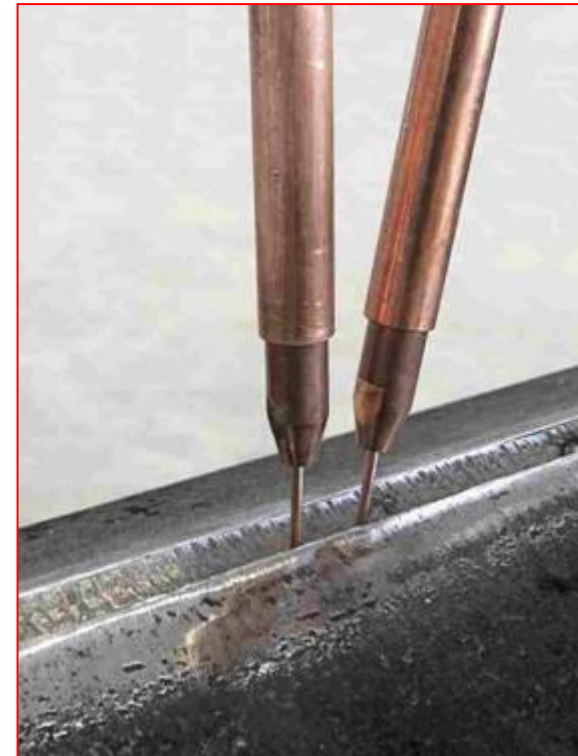
APPLICATION

(Fewer Passes)

Tandem-Arc

Two Welding Heads / Two Powersources:

- Deposition rates of 40-100% more when compared to single-arc.
- Mainly used for filling a joint in fewer passes.
- Lead arc largely determines the penetration. Trail arc determines the bead shape, with some influence on penetration.
- DC-AC and AC-AC are the most common polarity combinations.



A surprisingly simple process to use.

APPLICATION

(Fewest Passes)

Triple-Arc

Three Welding Heads / Three Powersources:

- Highest deposition rates possible (75-200% more compared to single-arc).
- Mainly used for filling a joint in few passes.
- Lead arc mainly responsible for the penetration. Second arc fills the joint. Third arc determine the bead shape.
- DC-AC-AC and AC-AC-AC are the most common polarity combinations.

Excellent process choice for very thick materials.



CONSUMABLES
(New Welding Technology)

Fluxes and Wires



Agglomerated Flux and Wire Combinations:

- Wide range of fluxes and wires designed to produce weld deposits with a variety of mechanical properties for mild steel, low alloy, and stainless steels.
- Neutral fluxes for multi-pass applications.
- Active fluxes for single-pass applications.
- Alloyed fluxes for low alloyed steels and hard facing applications.

Lincoln consumables are formulated to obtain specific properties that are beneficial to the application (fast weld speeds, narrow grooved joints, dirty steel surface, etc.).



PERIPHERAL EQUIPMENT

(Quality Positioning Equipment)

MAR and AAR



Manual and Auto-Aligning Rotators:

- Stationary and motorized base versions.
- Sturdy steel construction designed to withstand typical shop conditions giving long life performance.
- Dual synchronized motors with tacho feedback result in a very precise rotation speed and produce more total torque for turning the vessel.
- High-efficiency, gear boxes transmit more of the motor's power to the rotator wheels.

Rotators giving good performance are the most cost effective alternative.

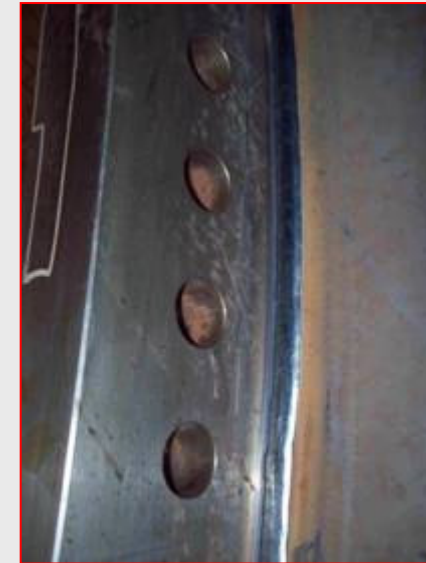


How does the end-user benefit?
(Quality and Productivity, at Optimized Welding Costs)

Proven Results



“Picture-perfect” and sound, X-ray quality welds:



The Total Package: *The manipulator, the welding process, the equipment*
Approach *the consumables, and the technical support.*

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Proven Results



“THE WELDING EXPERTS”

Lincoln Electric Europe



“THE WELDING EXPERTS”