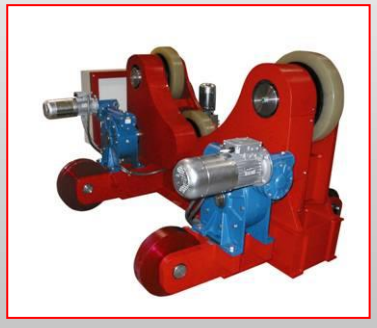
Lincoln Electric Europe

Hard Automation Equipment for Submerged Arc Welding

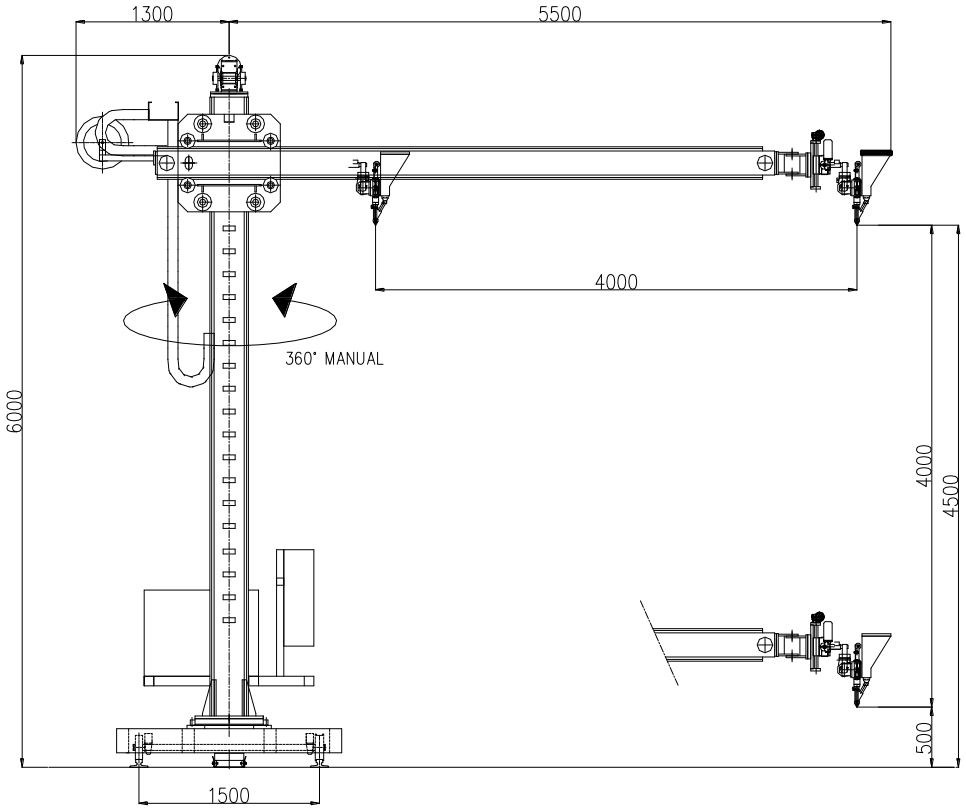


AUTOMATION DIVISION

LINCOLN® ELECTRIC

CB-M 4x4m

Column & boom for submerged arc welding process (single-arc)



Note: The above drawing is a typical example showing the standard manipulator including the options of Cross Slides, Welding Head & Nozzle.

Standard Manipulator:
Fixed base column & boom (400V-3ph+N+Gnd)

- Maximum height under the arc: 4450 mm (with standard K208 weld head mounting + K129 nozzle)
- Boom vertical stroke: 4000 mm.
- Maximum arc (boom) travel: 4000 mm.
- Overall height of installation: 6650 mm.
- Arc (boom) travel speed: 200 – 2000 mm/min.
- Boom elevation speed: 1000 mm/min.
- Digital speed indicator (cm/min), mounted in steel box near the welding head.
- Hand-held control pendant, with 3m cable and plug-in socket for connection at end of boom.
- Main control cabinet., mounted in front of the rectifier platform
- Supports for welding accessories, including equipment platform fixed to the back side of mast for mounting of DC-1000 rectifier, NA-3S control box, and K320 tank.
- Wire reel support fixed to back end of boom, prepared for mounting of two K299 reels, with insulated guide tube passing through the inside of the boom.
- Cable management system, plastic chain, steel tray, flux hopper control cable, control & power cables for welding equipment, column/boom control cables, and ½" compressed air hose.

CB-M 4x4m

Column & boom for submerged arc welding process (single-arc)

Optional Accessories

Fixed base

Fixed base level adjustment feet

Motorised traverse of base:

Motorised base

- Base travel speed: 200 – 2000 mm/min.
- Track gage (center-center): 1500 mm.
- Rail dimensions: Burback A/55

Cable management system for base traverse (10 m of traverse)

- Plastic chain, steel tray, 3 x 25 mm2 + Neutral + gnd input cables, and ½" compressed air hose.

Arc positioning:

Motorised cross-slides, with variable-speed DC motors (for single head applications)

- 200x200 mm stroke (Ø20 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, cabinet

Support for motorised slides (for single-arc and tandem-arc)

- 90º pivot support for mounting of motorised cross-slides to end of boom.

2-axis seam tracking system (must have motorised slides listed above)

- Tactile probe, probe mounting support, 60 x 60 mm manual slides (requires the use of torch extension piece S12003).
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off).
- Cable length 6 m.

Camera monitoring system

- Miniature water-proof camera (Ø30 x120 mm), with wire range focus, mounting bracket, and 15" color LCD screen.

Console for monitor

- Console with work desk, mounted to base of column & boom.

Laser guide lamp

- Miniature laser pointer (Ø12 x 60 mm) with optic cross-hair 250x250mm, laser support, and transformer (90-230V).
- Manual slide 50 mm, for positioning laser pointer.

Flux handling:

Flux recuperation for mounting on K219 hopper

- Compressed air flux recuperator, mounted on K219 flux hopper.
- Flux recuperation hose (Ø38 mm x 1 m), flux nozzle, and nozzle support.

Pneumatic flux valve for K219 hopper

- Pneumatic cylinder and valves mounted on K219 flux hopper.

Flux feeding for K320 tank

- Purge cap with dual outlets for feeding up to two hoppers, quick disconnects for compressed air supply, and inlet nozzle for K219 hopper.

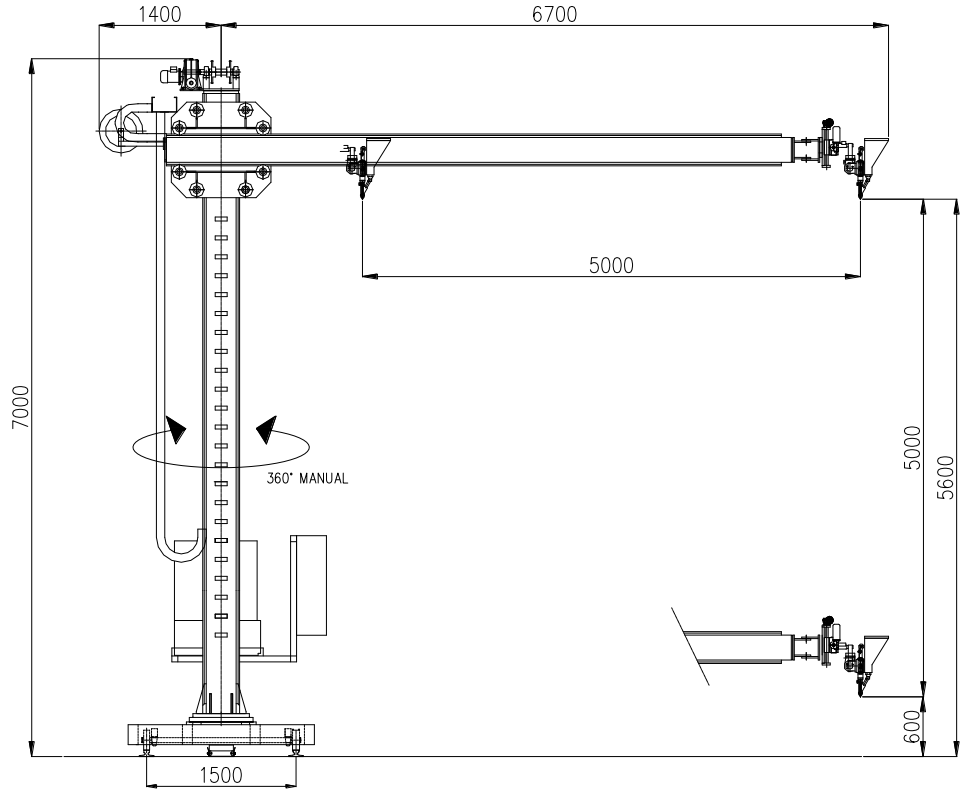
Flux feeding hose (high temperature)

- High temperature flux feeding hose (Ø25 mm). Can be used when flux is heated.

Note: See section "Motorised Cross-Slides"

CB-H 5x5m

Column & boom for submerged arc welding process (single-arc or tandem-arc)



Note: The above drawing is a typical example showing the standard manipulator including the options of Cross Slides, Welding Head & Nozzle.

Standard Manipulator:
Fixed base column & boom (400V-3ph+N+Gnd)

- Maximum height under the arc: 5600 mm (with standard K208 weld head mounting + K129 nozzle).
- Boom vertical stroke: 5000 mm
- Maximum arc (boom) stroke: 5000 mm.
- Overall height of installation: 7600 mm.
- Arc (boom) travel speed: 200 – 2000 mm/min.
- Boom elevation speed: 1000 mm/min.
- Digital speed indicator (cm/min), mounted in steel box near the welding head.
- Hand-held control pendant, with 3m cable and plug-in socket for connection at end of boom.
- Main control cabinet mounted in front of the rectifier platform.
- Supports for welding accessories, including equipment platform fixed to the back side of mast for mounting of DC-1000 rectifier, NA-3S control box, and K320 tank.
- Wire reel support fixed to back end of boom, prepared for mounting of two K299 reels, with insulated guide tube passing through the inside of the boom + support for two wire reel bolted in front of the boom.
- Cable management system, plastic chain, steel tray, 2 x 95 mm2 weld cables,9 x 1.5 mm2 weld control cable, flux hopper control cable, column/boom control cables, and ½" compressed air hose.

CB-H 5x5m

Column & boom for submerged arc welding process (single-arc)

Optional Accessories

Motorised traverse of base:

Motorised base

- Base travel speed: 200 – 2000 mm/min.
- Track gage (center-center): 1500 mm.
- Rail dimensions: Burback A/55

Cable management system for base traverse (10 m of traverse)

- Plastic chain, steel tray, 3 x 25 mm2 + gnd input cables, and ½" compressed air hose **(only single arc).**

Arc positioning:

Motorised cross-slides, with variable-speed DC motors (for single head applications)

- 200x200 mm stroke (Ø20 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, electric cabinet

Support for motorised slides (for single-arc and tandem-arc)

- 90º pivot support for mounting of motorised cross-slides to end of boom.

2-axis seam tracking system (must have motorised slides listed above)

- Tactile probe, probe mounting support, 60 x 60 mm manual slides (requires the use of torch extension piece S12003).
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off).
- Kit of various diameter balls

Camera monitoring system

- Miniature water-proof camera (Ø30 x120 mm), with wire range focus, mounting bracket, and 15" color LCD screen.

Console for monitor

- Console with work desk, mounted to base of column & boom.

Laser guide lamp

- Miniature laser pointer (Ø12 x 60 mm) with optic cross-hair 250x250mm, laser support, and transformer (90-230V).
- Manual slide 50 mm, for positioning laser pointer.

Tandem arc support bracket

Flux handling:

Flux recuperation for mounting on K219 hopper

- Compressed air flux recuperator, mounted on K219 flux hopper.
- Filter tank with bag + hose 4 m away from the hopper
- Flux recuperation hose (Ø38 mm x 1 m), flux nozzle, and nozzle support.

Pneumatic flux valve for K219 hopper

- Pneumatic cylinder and valves mounted on K219 flux hopper.

Flux feeding for K320 tank

- Purge cap with dual outlets for feeding up to two hoppers, quick disconnects for compressed air supply, and inlet nozzle for K219 hopper.

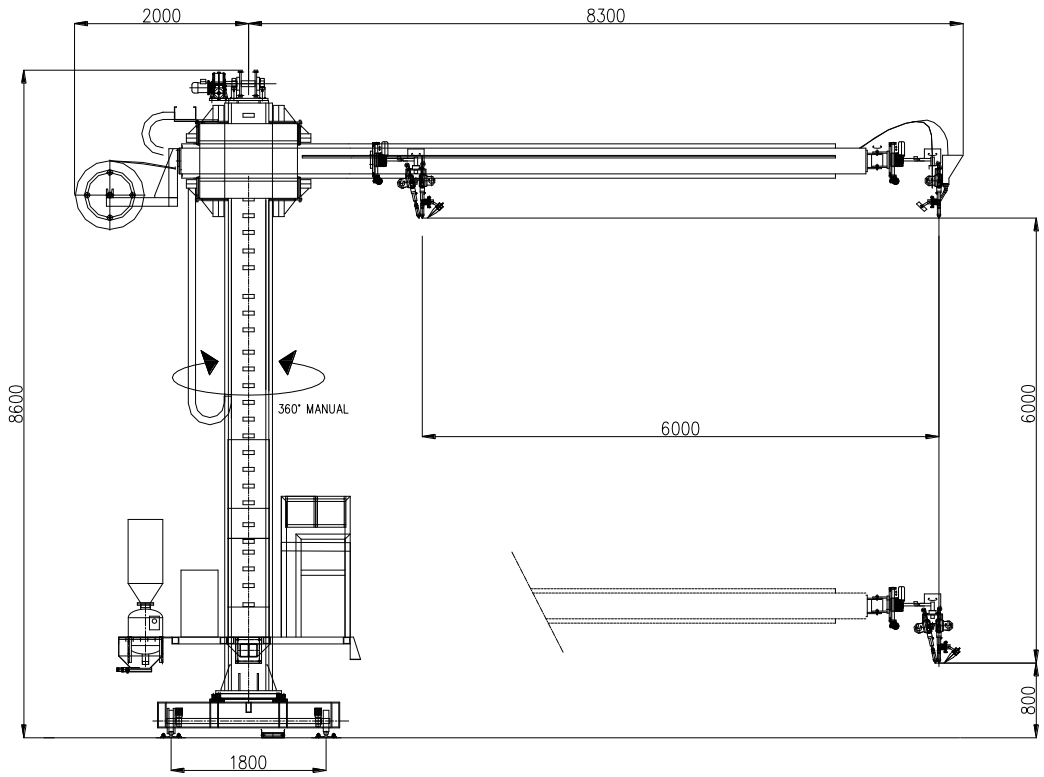
Flux feeding hose (high temperature)

- High temperature flux feeding hose (Ø25 mm). Can be used when flux is heated.

Note: See section "Motorised Cross-Slides"

CB-R 6x6m

Column & boom for submerged arc welding process (single-arc or tandem-arc)



Note: The above drawing is a typical example showing the standard manipulator including the options of Cross Slides, Welding Head & Nozzle.

Standard Manipulator:
Fixed base column & boom (400V-3ph+N+Gnd)

- Maximum height under the arc: 6800 mm (with standard K208 weld head mounting + K129 nozzle).
- Boom vertical stroke: 6000 mm
- Maximum arc (boom) stroke: 6000 mm.
- Overall height of installation: 9200 mm.
- Arc (boom) travel speed: 200 – 2000 mm/min.
- Boom elevation speed: 1000 mm/min.
- Digital speed indicator (cm/min), mounted in steel box near the welding head.
- Hand-held control pendant, with 3m cable and plug-in socket for connection at end of boom.
- Main control cabinet mounted in front of the rectifier platform
- Supports for welding accessories, including equipment platform fixed to the back side of mast for mounting of DC-1000 rectifier, NA-3S control box, and K320 tank.
- Wire reel support fixed to back end of boom, prepared for mounting of two K299 reels, with insulated guide tube passing through the inside of the boom. + support for two wire reel bolted in front of the boom
- Cable management system, plastic chain, steel tray, 2 x 95 mm2 weld cables, 9 x1.5 mm2 weld control cable, flux hopper control cable, column/boom control cables, and ½" compressed air hose.

- Double 90 kg spools support at the end of Boom (optional)

CB-R 6x6m

Column & boom for submerged arc welding process (single-arc or tandem-arc)

Optional Accessories

Motorised traverse of base:

Motorised base

- Base travel speed: 200 – 2000 mm/min.
- Track gage (center-center): 1800 mm.
- Rail dimensions: Burback A/55

Cable management system for base traverse (10 m of traverse) Single Arc

- Plastic chain, steel tray, 3 x 25 mm2 + Neutral + gnd input cables, and ½" compressed air hose.

Cable management system for base traverse (10 m of traverse) Tandem Arc

- Plastic chain, steel tray, 6 x 25 mm2 + 1Neutral +2 gnd input cables, and ½" compressed air hose.

Arc positioning:

Motorised cross-slides, with variable-speed DC motors (for single head applications)

- 200x200 mm stroke (Ø20 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, electric cabinet.

Motorised cross-slides, with variable-speed DC motors (for single head applications)

- 300x200 mm stroke (Ø30 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, electric cabinet.

Support for motorised slides (for single-arc and tandem-arc)

- 90º pivot support for mounting of motorised cross-slides to end of boom.

2-axis seam tracking system (must have motorised slides listed above)

- Tactile probe, probe mounting support, 60 x 60 mm manual slides (requires the use of torch extension piece S12003).
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off).

Camera monitoring system

- Miniature water-proof camera (Ø30 x120 mm), with wire range focus, mounting bracket, and 15" color LCD screen.

Console for monitor

- Swiveling console with work desk, mounted to base of column & boom.

Laser guide lamp

- Miniature laser pointer (Ø12 x 60 mm) with optic cross-hair 250x250mm, laser support, and transformer (90-230V).
- Manual slide 50 mm, for positioning laser pointer.

Flux handling:

Flux recuperation for mounting on K219 hopper

- Compressed air flux recuperator, mounted on K219 flux hopper.
- Flux recuperation hose (Ø38 mm x 1 m), flux nozzle, and nozzle support.

Pneumatic flux valve for K219 hopper

- Pneumatic cylinder and valves mounted on K219 flux hopper.

Flux feeding for K320 tank

- Purge cap with dual outlets for feeding up to two hoppers, quick disconnects for compressed air supply and inlet nozzle for K219.

Flux feeding hose (high temperature)

- High temperature flux feeding hose (Ø25 mm). Can be used when flux is heated.

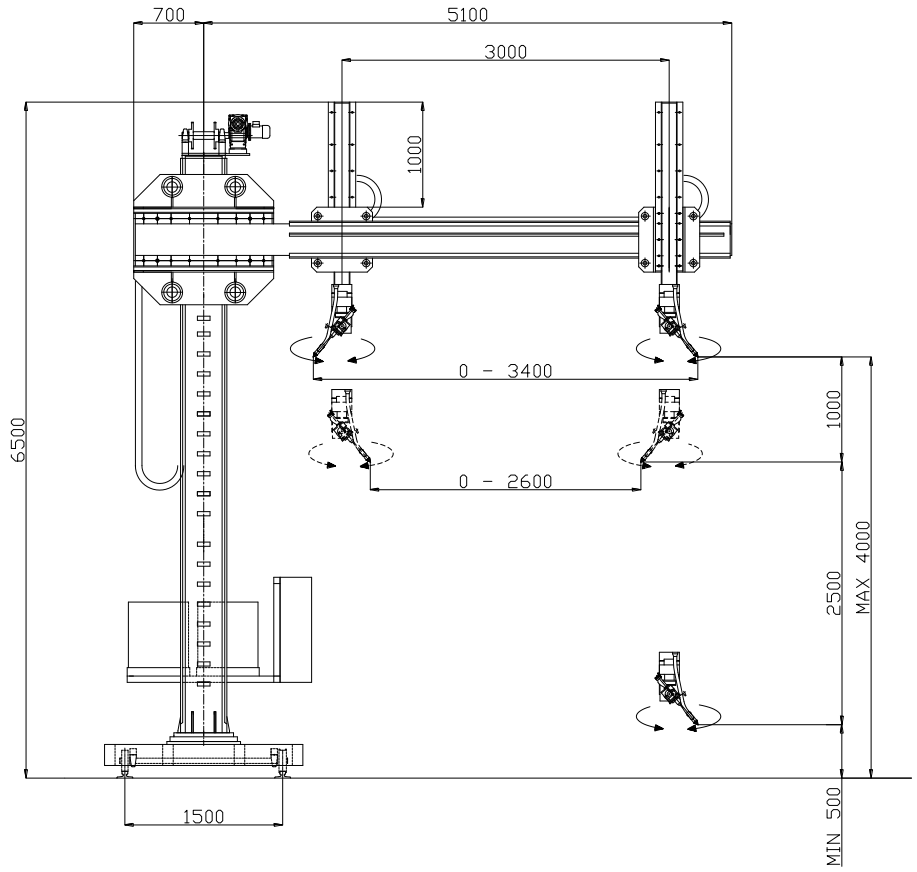
Flux recovery hose (high temperature)

- High temperature flux feeding hose (Ø38 mm). Can be used when flux is heated.

Note: See section "Motorised Cross-Slides"

CB-HH-2C/A 4x3m

Column & boom for submerged arc welding process (2 x single-arc)



Manipulator:

Motorised base column & boom manipulator, with motorised carriages (400V-3ph+N+Gnd)

- Maximum height under the arc(s): 4000 mm (with standard K208 weld head mounting + K129 nozzle).
- Maximum carriage travel: 3000 mm.
- Manual elevation of arms(s) 1000 mm
- Distance between arcs: 000 - 2600 mm (torches facing inwards).
  000 - 3000 mm (torches facing outwards).
- Carriage travel speed: 100 – 2000 mm/min.
- Base travel speed: 200 – 2000 mm/min.
  3500 mm/min (not welding).
- Boom elevation speed: 1000 mm/min.
- Overall height of installation: 6500 mm.
- Track gage (center-center): 1500 mm.
- Rail type/dimensions: Burback A55.
- Digital speed indicator (cm/min), mounted in steel box.
- Duplicated hand-held control pendants (80 x 210 mm) for controlling all functions from either motorised carriage.
- Main control cabinet.
- Supports for welding accessories , including equipment platform fixed to the back side of mast for mounting of (2) DC- 1000 rectifier, (2) NA-3S control box, and (1) K320 tank. Wire reel are mounted to motorise.

CB-HH-2C/A 4x3m

Column & boom for submerged arc welding process (2 x single-arc)

Optional Accessories

Arc positioning (for single arc):

Motorised slide (vertical axis), with variable-speed DC motor

- 200 mm stroke (Ø20 mm shaft), 0 - 300 mm speed adjustment, on-off joystick control (interconnected with motorised carriage for corrections in the horizontal axis), and cabinet with one EP-2 board.

2-axis seam tracking system (using carriage for the horizontal axis)

- Tactile probe, probe mounting support, 60 x 60 mm manual slides.
- Additional EP-2 mounted in main cabinet.
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off).

Camera monitoring system

- Miniature water-proof camera (Ø30 x120 mm), with wire range focus, mounting bracket, and 15" color LCD screen.

Flux handling (for single arc):

Flux recuperation for mounting on K219 hopper

- Compressed air flux recuperator, mounted on K219 flux hopper.
- Flux recuperation hose (Ø38 mm x 1 m), flux nozzle, and nozzle support.

Pneumatic flux valve for K219 hopper

- Pneumatic cylinder and valves mounted on K219 flux hopper.

Flux feeding for K320 tank

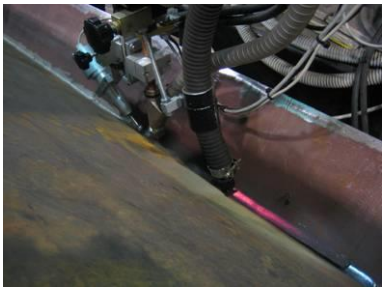
- Purge cap with dual outlets for feeding up to two hoppers, quick disconnects for compressed air supply and inlet nozzle for K219.

Flux feeding hose (high temperature)

- High temperature flux feeding hose (Ø25 mm). Can be used when flux is heated.

Flux recovery hose (high temperature)

- High temperature flux feeding hose (Ø38 mm). Can be used when flux is heated.



Additional controls (for single arc):

Remote control pendant for NA-3S

- Hand pendant (80 x 210 mm) with 3m cable and plug-in socket (see drawing for description of functions).

Digital meters for NA-3S

- Digital ammeter and voltmeters mounted in steel box, along with base speed indicator (80 x 210 mm).

Cables:

Cable management system for one carriage movements

- Plastic chain, steel tray, (2) 2 x 95 mm2 weld cables, (2) 5 x 1.5 mm2 motor control cable, (two) 3 x 1.5 mm2 flux hopper control cable, column/boom control cables, and ½" compressed air hoses.

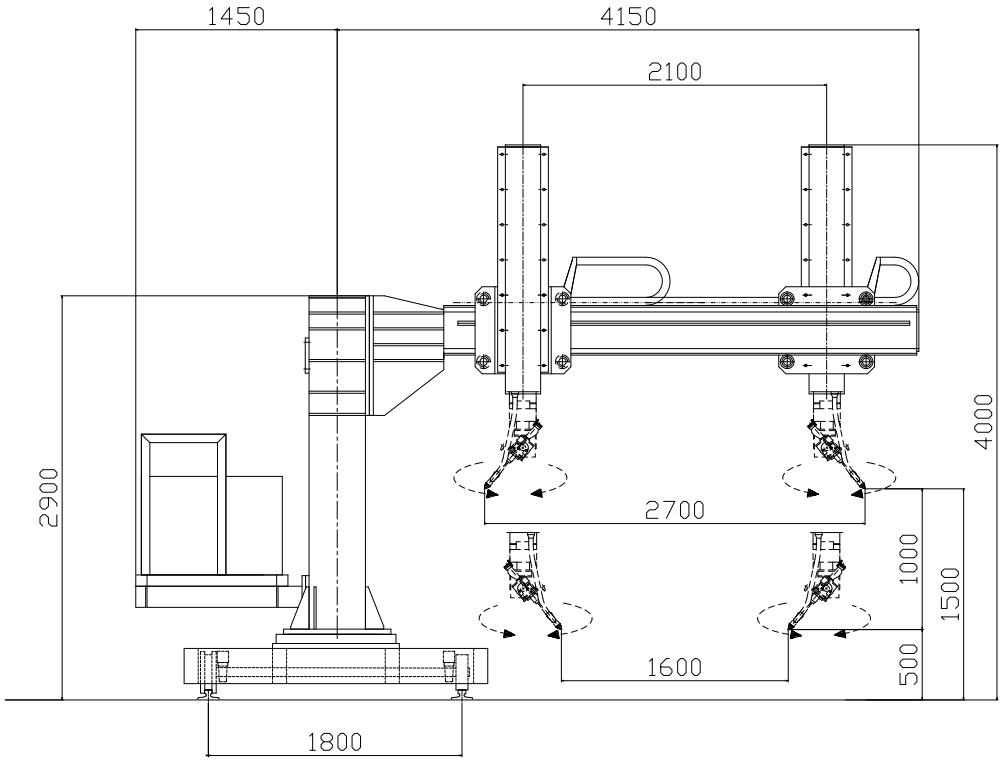
Cable management system for base traverse (10 m)

- Plastic chain, steel tray, (two) 3 x 25 mm2 + Neutral + gnd input cables, and ½" compressed air hose.

Note: See section "Motorised Cross-Slides"

FCB-HH-2C/A 1.5x2m

Column & boom for submerged arc welding process (2 x single-arc)



Manipulator:
Motorised base column & boom manipulator, with motorised carriages (400V-3ph+N+Gnd)

- Maximum height under the arc(s): 1500 mm (with standard K208 weld head mounting + K129 nozzle).
- Maximum carriage travel: 2150 mm.
- Manual elevation of arms(s) 600 mm
- Distance between arcs: 000 - 1600 mm (torches facing inwards).
  000 - 2700 mm (torches facing outwards).
- Carriage travel speed: 100 – 2000 mm/min.
- Base travel speed: 200 – 2000 mm/min.
  3500 mm/min (not welding).
- Overall height of installation: 4000 mm.
- Track gage (center-center): 1800 mm.
- Rail type/dimensions: Burback A55
- Digital speed indicator (cm/min), mounted in steel box.
- Duplicated hand-held control pendants for controlling all functions from either motorised carriage.
- Main control cabinet.
- Supports for welding accessories, including equipment platform fixed to the back side of mast for mounting of (2) DC- 1000 rectifier, (2) NA-3S control box, and (1) K320 tank. Wire reel are mounted to motorise.

FCB-HH-2C/A 1.5x2m

Column & boom for submerged arc welding process (2 x single-arc)

Optional Accessories

Arc positioning (for single arc):

Motorised slide (vertical axis), with variable-speed DC motor

- 200 mm stroke (Ø20 mm shaft), 0 - 300 mm speed adjustment, on-off joystick control (interconnected with motorised carriage for corrections in the horizontal axis), and cabinet with one EP-2 board.

2-axis seam tracking system (using carriage for the horizontal axis)

- Tactile probe, probe mounting support, 60 x 60 mm manual slides.
- Additional EP-2 mounted in main cabinet.
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off).

Camera monitoring system

- Miniature water-proof camera (Ø30 x120 mm), with wire range focus, mounting bracket, and 15" color LCD screen.

Flux handling (for single arc):

Flux recuperation for mounting on K219 hopper

- Compressed air flux recuperator, mounted on K219 flux hopper.
- Flux recuperation hose (Ø38 mm x 1 m), flux nozzle, and nozzle support.

Pneumatic flux valve for K219 hopper

- Pneumatic cylinder and valves mounted on K219 flux hopper.

Flux feeding for K320 tank

- Purge cap with dual outlets for feeding up to two hoppers, quick disconnects for compressed air supply, and inlet nozzle for K219 hopper.

Flux feeding hose (high temperature)

- High temperature flux feeding hose (Ø25 mm). Can be used when flux is heated.

Flux recovery hose (high temperature)

- High temperature flux feeding hose (Ø38 mm). Can be used when flux is heated.

Additional controls (for single arc):

Remote control pendant for NA-3S

- Hand pendant (80 x 210 mm) with 3m cable and plug-in socket (see drawing for description of functions).

Digital meters for NA-3S

- Digital ammeter and voltmeters mounted in steel box, along with base speed indicator (80 x 210 mm).

Cables:

Cable management system for **one** carriage movements

- Plastic chain, steel tray, (2) 2 x 95 mm2 weld cables, (2) 5 x 1.5 mm2 motor control cable, (two) 3 x 1.5 mm2 flux hopper control cable, column/boom control cables, and ½" compressed air hoses.

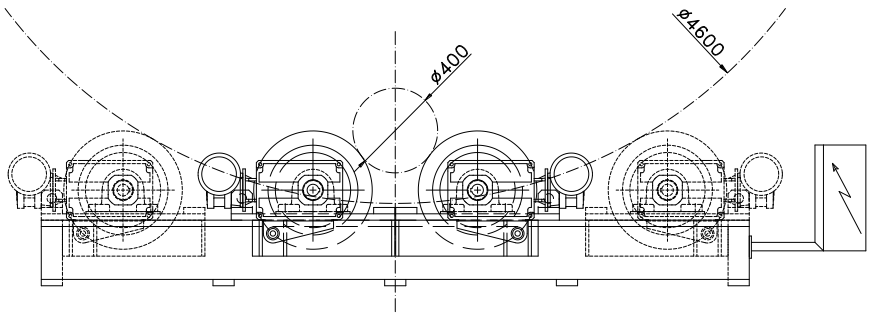
Cable management system for base traverse (10 m)

- Plastic chain, steel tray, (two) 3 x 25 mm2 + Neutral + gnd input cables, and ½" compressed air hose.

Note: See section "Motorised Cross-Slides"

MAR

Manual-alignment rotators (pair)



Rotator MAR-30 shown above

MAR-10 manually-aligned rotators (230V/1ph/50Hz)

- Maximum capacity: 10.000 Kg
- Vessel diameter range: 250 – 4500 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Wheel size: Ø381 x 80 mm (polyurethane)
- Nº wheels with transmission: 1
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant, with 8m cable and plug-in socket.

MAR-20 manually-aligned rotators (230V/1ph/50Hz)

- Maximum capacity: 20.000 Kg
- Vessel diameter range: 300 – 4600 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Wheel size: Ø381 x 160 mm (polyurethane)
- Nº wheels with transmission: 2
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant, with 8m cable and plug-in socket.
-

MAR-30 manually-aligned rotators (400V/3ph/50Hz)

- Maximum capacity: 30.000 Kg
- Vessel diameter range: 400 - 4600 mm.
- Peripheral turning speed: 150 - 1500 mm/min.
- Wheel size: Ø460 x 150 mm (polyurethane)
- Nº wheels with transmission: 2
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant, with 8m cable and plug-in socket.

MAR-50 manually-aligned rotators (400V/3ph/50Hz)

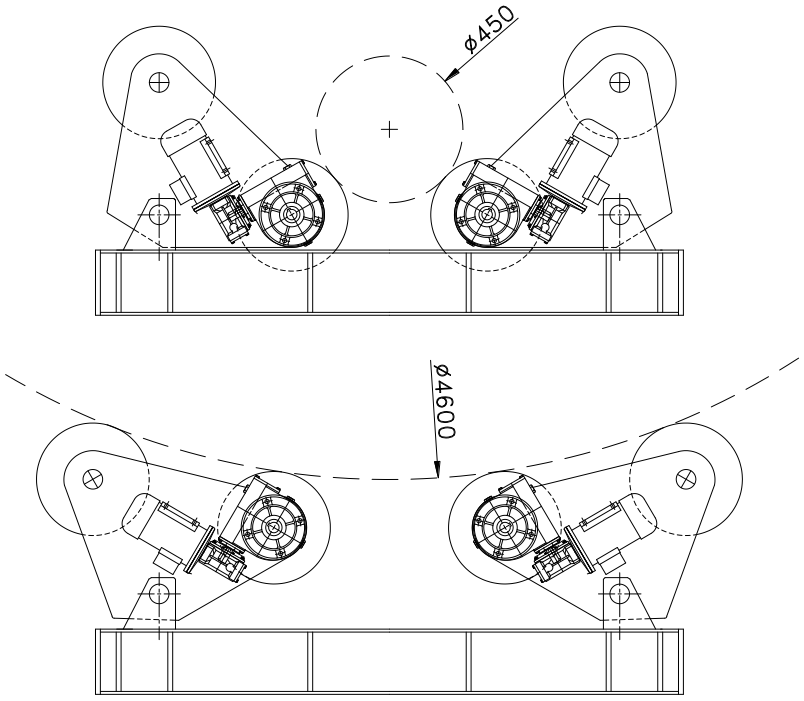
- Maximum capacity: 50.000 Kg
- Vessel diameter range: 520 - 5200 mm.
- Peripheral turning speed: 150 - 1500 mm/min.
- Wheel size: Ø560 x 200 mm (polyurethane)
- Nº wheels with transmission: 2
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant, with 8m cable and plug-in socket.

MAR-100 manually-aligned rotators (400V/3ph/50Hz)

- Maximum capacity: 100.000 Kg
- Vessel diameter range: 450 - 6000 mm.
- Peripheral turning speed: 150 - 1500 mm/min.
- Wheel size: Ø560 x 412 mm (polyurethane)
- Nº wheels with transmission: 2
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant, with 8m cable and plug-in socket.

AAR

Auto-alignment rotators (pair)



Rotator AAR-10 shown above

AAR-10 auto-aligning rotators (400VAC 3PH+GND)

- Maximum capacity: 10.000 Kg
- Vessel diameter range: 450 - 4600 mm.
- Peripheral turning speed: 150 - 1500 mm/min.
- Wheel size: Ø380 x 130 mm (polyurethane).
- Nº wheels with transmission: 2 (lower ones only).
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

AAR-20 auto-aligning rotators (400VAC 3PH+GND)

- Maximum capacity: 20.000 Kg
- Vessel diameter range: 450 – 5200 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Wheel size: Ø380 x 180 mm (polyurethane).
- Nº wheels with transmission: 2 (lower ones only).
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

AAR-30 auto-aligning rotators (400VAC 3PH+GND)

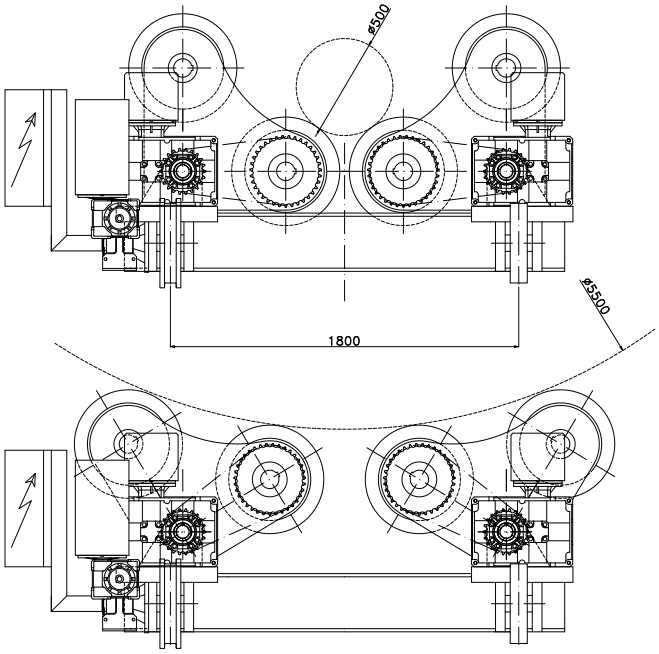
- Maximum capacity: 30.000 Kg
- Vessel diameter range: 450 – 5200 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Wheel size: Ø460 x 130 mm (polyurethane).
- Nº wheels with transmission: 2 (when clutch is engaged).
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

AAR-60 auto-aligning rotators (400VAC 3PH+GND)

- Maximum capacity: 60.000 Kg
- Vessel diameter range: 500 – 5500 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Wheel size: Ø560 x 130 mm (polyurethane).
- Nº wheels with transmission: 2 (when clutch is engaged).
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

AAR - MB

Auto-alignment rotators, motorized base (pair)



Rotator AAR/MB -60 shown above

AAR-30/MB auto-aligning rotators (400VAC 3PH+GND)

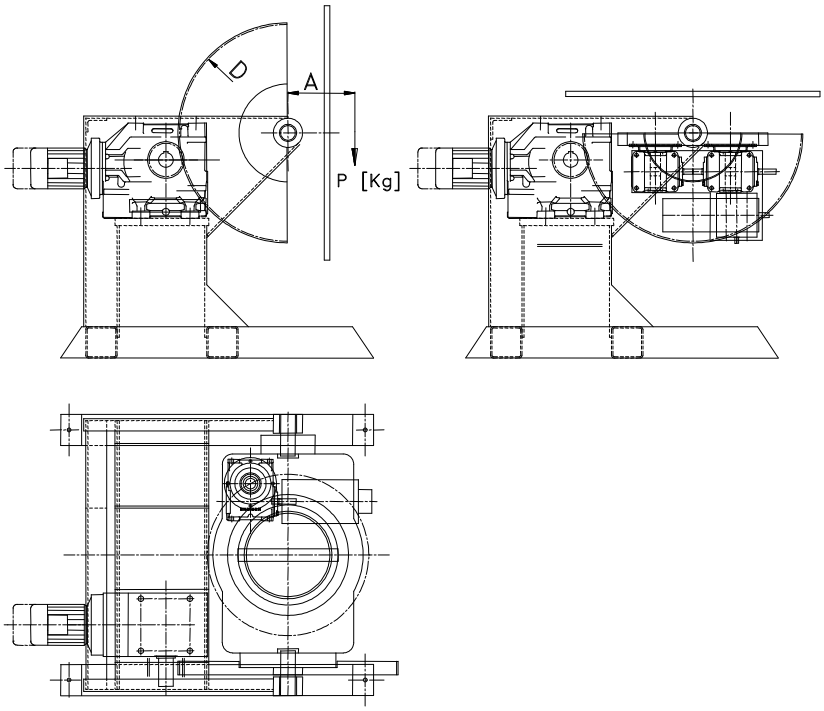
- Maximum capacity: 30.000 Kg
- Vessel diameter range: 450 – 5200 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Traversing speed range: 400 – 4000 mm/min.
- Wheel size: Ø460 x 130 mm (polyurethane).
- Nº wheels with transmission: 2
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 10m cable and plug-in socket.

AAR-60/MB auto-aligning rotators (400VAC 3PH+GND)

- Maximum capacity: 60.000 Kg
- Vessel diameter range: 500 – 5500 mm.
- Peripheral turning speed: 150 – 1500 mm/min.
- Traversing speed range: 400 – 4000 mm/min.
- Wheel size: Ø560 x 130 mm (polyurethane).
- Nº wheels with transmission: 2
- Digital speed indicator (cm/min), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 10m cable and plug-in socket.

TP

Tilting positioners prepared for submerged weld process



Positioner TP-2 shown above

TP-1 tilting positioner (230V-1ph)

- Maximum capacity: 1.000 Kg (150 mm center of gravity)
- Rotation speed: 0.1 - 1 rpm.
- Tilting speed: 30 sec / 135º.
- Table diameter: 1000 mm.
- Earthling capacity 1000 A.
- Digital speed indicator (rpm), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

TP-2 tilting positioner (400V-3ph)

- Maximum capacity: 2.000 Kg (150 mm center of gravity)
- Rotation speed: 0.1 - 1 rpm.
- Tilting speed: 40 sec / 135º.
- Table diameter: 1070 mm.
- Earthling capacity 1000 A.
- Digital speed indicator (rpm), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

TP-3 tilting positioner (400V-3ph)

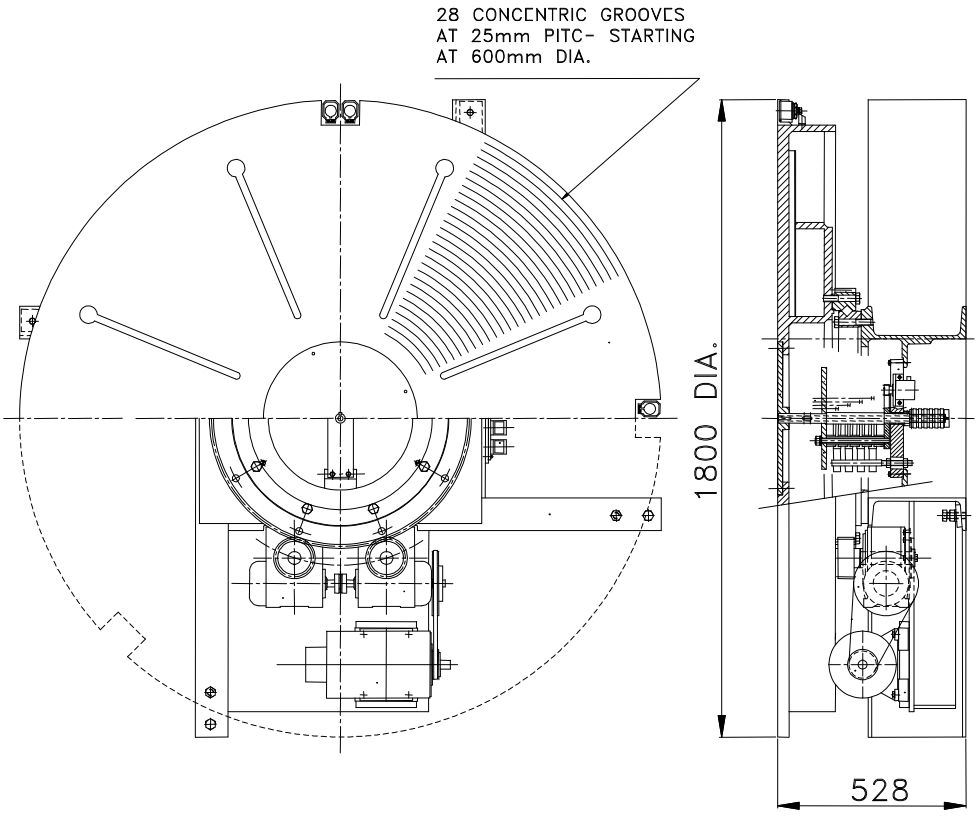
- Maximum capacity: 3.000 Kg (150 mm center of gravity)
- Rotation speed: 0.1 - 1 rpm.
- Tilting speed: 40 sec / 135º.
- Table diameter: 1220 mm.
- Earthling capacity 1000 A.
- Digital speed indicator (rpm), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

TP-5 tilting positioner (400V-3ph)

- Maximum capacity: 5.000 Kg (300 mm center of gravity)
- Rotation speed: 0.1 - 1 rpm.
- Tilting speed: 60 sec / 135º.
- Table diameter: 1500 mm.
- Earthling capacity 1000 A.
- Digital speed indicator (rpm), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

TTP

Turnable positioners prepared for submerged weld process



Positioner TTP-10 shown above

TTP-5 turntable positioner (230V-1ph)

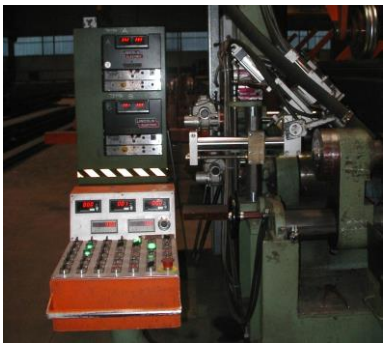
- Maximum capacity: 5.000 Kg.
- Rotation speed: 0.1 - 1.0 rpm.
- Table diameter: 1800 mm.
- Earthling capacity 1000 A.
- Digital speed indicator (rpm), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

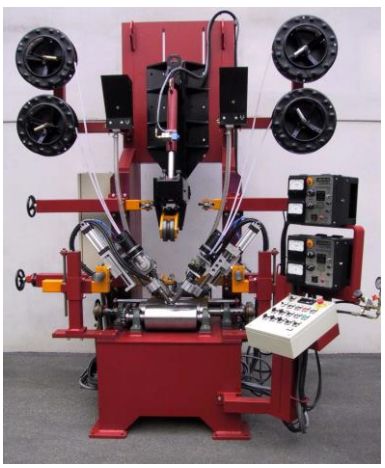
TTP-10 turntable positioner (230V-1ph)

- Maximum capacity: 10.000 Kg.
- Rotation speed: 0.1 - 1.0 rpm.
- Table diameter: 1800 mm.
- Earthling capacity 1000 A.
- Digital speed indicator (rpm), mounted in control cabinet.
- Hand-held control pendant (150 x 210 x 65 mm), with 4m cable and plug-in socket.

BWL / BWM / BWN

High productivity lines for beam longitudinal welding

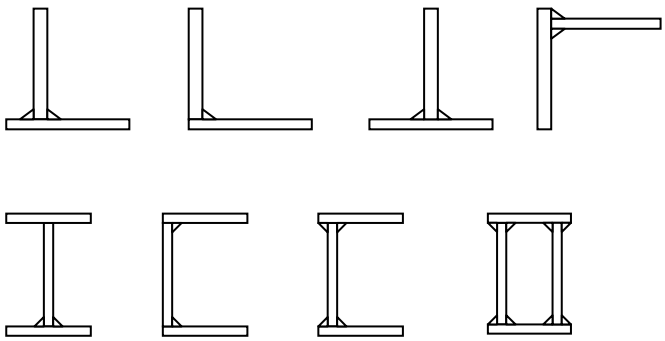




Beam welding lines:

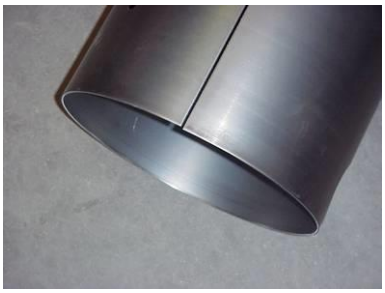
Model	Total dimension		Thickness	
	Flange	Web	Flange	Web
BWL 700 / 2000	80 - 700 mm	200 - 2000 mm	6 - 50 mm	6 - 30 mm
BWL 700 / 2500	80 - 700 mm	200 - 2500 mm	6 - 50 mm	6 - 30 mm
BWL 700 / 3000	80 - 700 mm	200 - 3000 mm	6 - 50 mm	6 - 30 mm
BWL 1000 / 2000	80 - 1000 mm	200 - 2000 mm	6 - 50 mm	6 - 30 mm
BWL 1000 / 2500	80 - 1000 mm	200 - 2500 mm	6 - 50 mm	6 - 30 mm
BWL 1000 / 3000	80 - 1000 mm	200 - 3000 mm	6 - 50 mm	6 - 30 mm
BWL 1250 / 2000	80 - 1250 mm	200 - 2000 mm	6 - 50 mm	6 - 30 mm
BWL 1250 / 2500	80 - 1250 mm	200 - 2500 mm	6 - 50 mm	6 - 30 mm
BWL 1250 / 3000	80 - 1250 mm	200 - 3000 mm	6 - 50 mm	6 - 30 mm
BWM 1500 / 3300	80 - 1500 mm	200 - 3300 mm	6 - 50 mm	5 - 30 mm
BWN-N 500 / 1000	80 - 500 mm	200 - 1000 mm	6 - 25 mm	5 - 20 mm

Possible types of beams:



BSL-1000

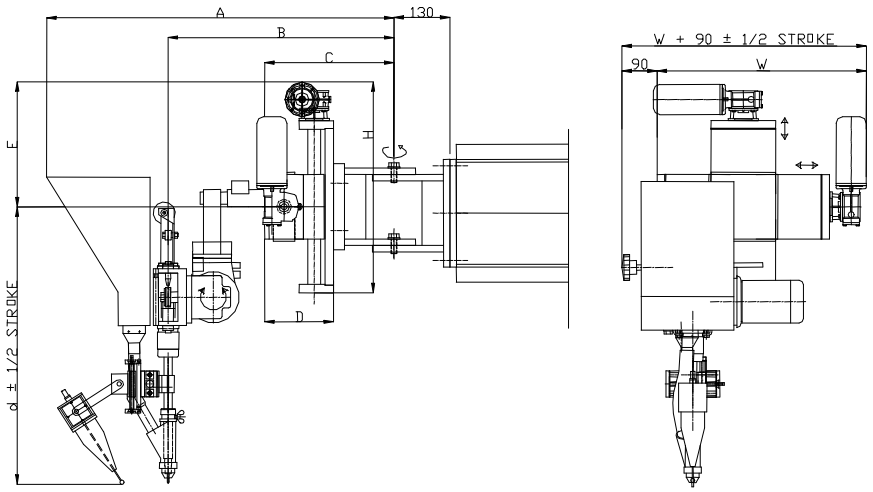
Welding bench for pipes



Welding bench

- Length of element: 1.000 mm
- Diameter of element: 250-600 mm
- Thickness: 1-5 mm
- Pressure: 6-25 bar
- Speed of carriage: 200-4000 mm

Motorised Cross-Slides Seam Tracking



GUIDE ØBARS	STROKE	H	W	D	Wgt SLIDES	A	B	C	d	E
20	150X150	450	450	160	Kg 32	810	528	300	655	285
20	200X200	500	500	160	Kg 34,5	810	528	300	655	310
30	200X200	500	500	190	Kg 40	840	558	330	655	310
30	250X250	550	550	190	Kg 44,5	840	558	330	655	335
30	300X300	600	600	190	Kg 49,5	840	558	330	655	360

Motorised cross-slides with Ø20 mm guide shafts with variable-speed DC motors
(for single-arc and twin-arc applications):

- 150x150 mm stroke (Ø20 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, cabinet with one EP-2 board.
- 200x200 mm stroke (Ø20 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, cabinet with one EP-2 board.

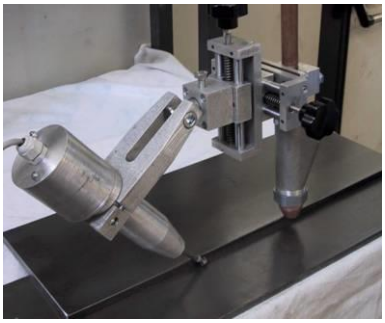
Motorised cross-slides with Ø30 mm guide shafts with variable-speed DC motors
(for tandem-arc applications):

- 200x200 mm stroke (Ø30 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, cabinet with one EP-2 board.
- 250x250 mm stroke (Ø30 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, cabinet with one EP-2 board.
- 300x300 mm stroke (Ø30 mm shafts), 0 - 300 mm speed adjustment, on-off joystick control, cabinet with one EP-2 board.

Support for motorised cross slides

- 90° pivot support (for Single and Tandem arc)

Tactile seam tracking:



1-axis seam tracking system (must have motorised slides)

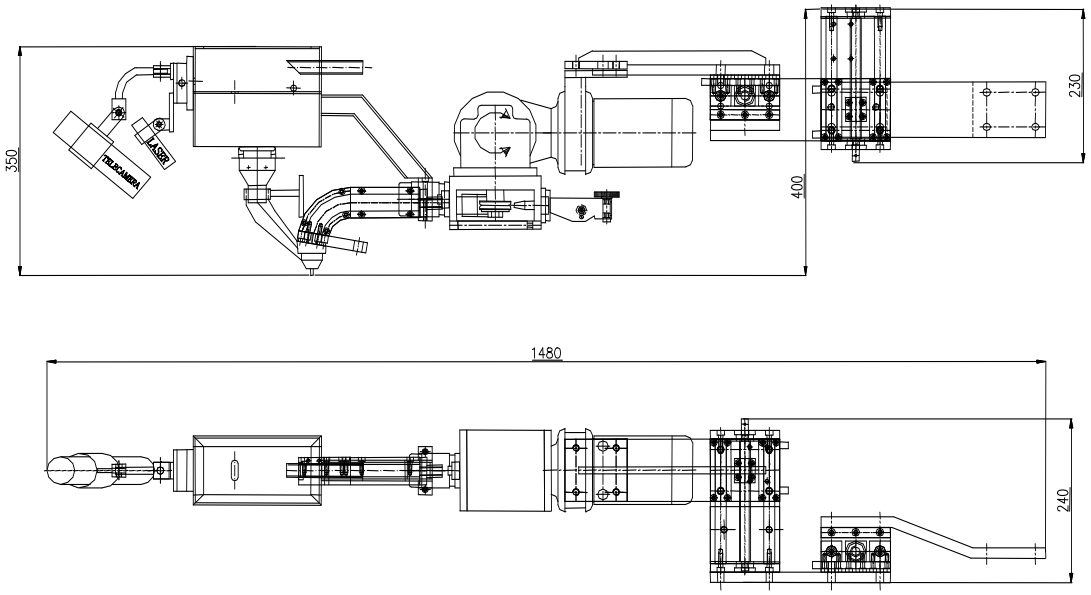
- Tactile probe, probe mounting support, 60 x 60 mm manual slides (requires the use of torch extension piece S12003).
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off), using EP-2 board of cross-slides.

2-axis seam tracking system (must have motorised slides)

- Tactile probe, probe mounting support, 60 x 60 mm manual slides (requires the use of torch extension piece S12003).
- Additional EP-2 mounted in cabinet.
- Controls for tracking modes (automatic-manual) and pre-charges (left-right-off).

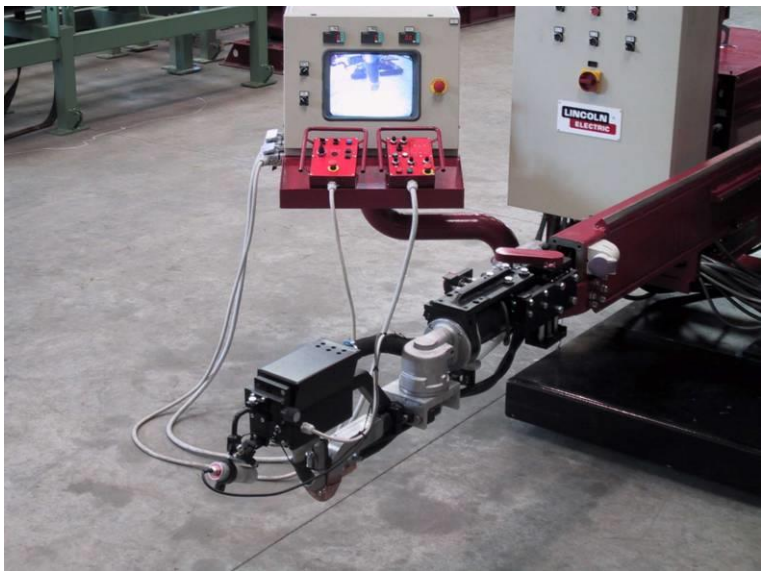
Internal Welding Head

Head assembly for internal welding



Internal welding head:

- Minimum pipe diameter: Ø 350 mm
- Maximum wire diameter: Ø3,2 mm



Welding equipment for SAW

Basic power sources and controllers

Powersources:

Rectifier technology | **Transformer technology** | **Inverter technology**

DC-655

DC-1000

DC-1500

AC-1200

PowerWave AC/DC-1000

Powersource	Machine Type	Arc Polarity	Arc Voltage Mode	Current Range	Machine Rating @ 100%	Machine Rating @ 60%	Input Voltage
DC-655	DC rectifier	DC + / DC -	CV / CC	50-815A	650A / 44V	815A / 44V	230-100/3/50-60
DC-1000	DC rectifier	DC + / DC -	CV / CC	150-1300A	1000A / 44V	1150A / 44V	230-380-440/3/50-60
DC-1500	DC rectifier	DC + / DC -	CV / CC	200-1500A	1500A / 60V	-	380-440/3/50-60 415/1/50-60
AC-1200	AC transformer	AC	CC	200-1500A	1200A / 44V	-	380/1/50-60 415/1/50-60
PowerWave AC/DC-1000	AC/DC Inverter	DC + / DC – AC ∿ / AC ⊓⊔	CV / CC	200-1000A	1000A / 44V	-	400/3/50-60

Controllers:

NA-3

NA-4

NA-5

PF-10A

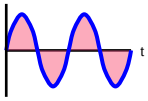
Control Box	Wire Diameters (solid)	Wire Diameters (cored)	Wire Feed Speed	Pre-setable parameters	Arc Voltage Mode	Compatible Powersources	Input Power
NA-3	Ø0.8 - 5.6 mm	Ø0.9 - 4.0 mm	0.6 -15.2 m/min	No	CV / CC	DC rectifier	115 V AC
NA-4	Ø0.8 - 5.6 mm	-	subject to arc voltage used	No	CV / CC	AC tranformer	115 V AC
NA-5	Ø0.9 - 5.6 mm	Ø1.2 - 4.0 mm	0.6 -19.7 m/min	Yes	CC	DC-rectifier	115 V AC
PF-10A	Ø1.6 - 5.6 mm	-	0.25 -7.6 m/min	Yes	CV / CC	AC/DC inverter	40 V DC

Note: for details look into Lincoln Electric Welding Equipment catalogue

Arc voltage polarities & their effect on welding

DC positive

- Deepest penetration obtainable.
- Very table arc behavior (shortest arc length).
- Smooth weld bead appearance.
- Preferred for single-head applications and as the lead arc of a multi-arc configuration when only rectifiers are available.

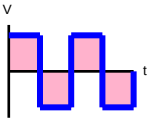


AC (sine wave)

- Medium penetration, and medium deposition rate
- Arc blow is practically eliminated.
- Used in the trail arcs of a multi-arc configuration when only transformers are available.

DC negative

- Highest deposition rate per given amperage.
- Reduced penetration profile.
- Less stable arc (longest arc length)

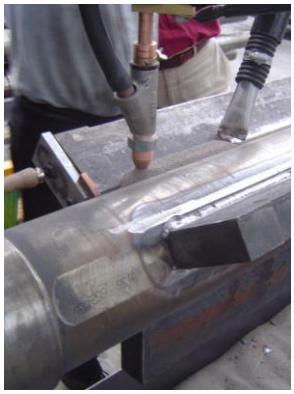


AC (square wave)

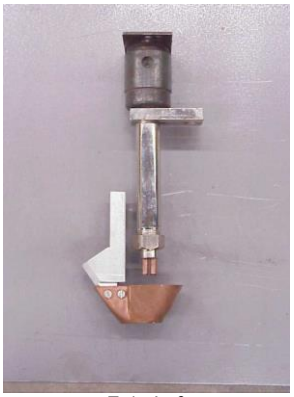
- Penetration profile and deposition rate can be varied by adjusting the of the wave shape.
- Arc blow is practically eliminated.
- Ideal for single-arc, and as the lead and trailing arcs of a multi-head configuration.

Welding head configurations

Single & Multiple

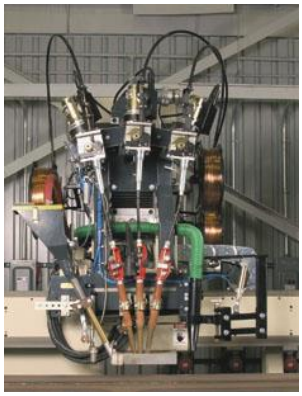


Single arc
For general applications



Twin-Arc®
for higher travel speed welding.

Tandem Arc
for obtaining higher deposition rates.
(Tandem-Twin is also possible)

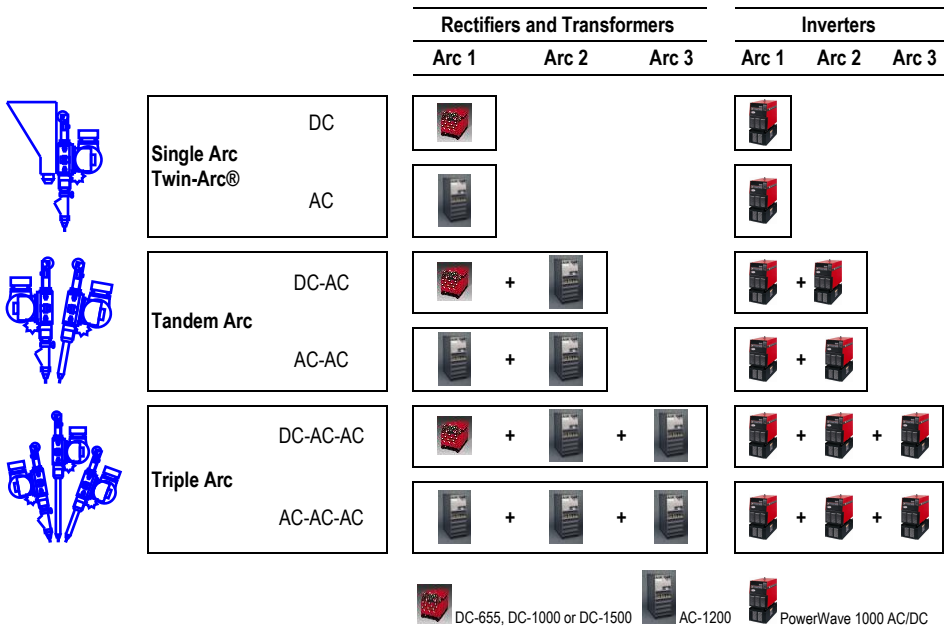


Triple Arc
for maximum deposition.

Process	General Description	Main Application
Single Arc	One consumable wire with a specific wire feed speed and voltage that carries the welding current that is applied at the torch.	The most versatile submerged arc process for a wide range of applications.
Twin-Arc®	Two wires (of the same diameter) with a common arc voltage feeding through a single weld torch at an equal rate, sharing the current between themselves.	A high-penetration/high-deposition process that is especially suited for making high-speed fillet welds, and overlap joints.
Tandem Arc	Two individual weld heads, each with their specific wire diameter, feeding speed, arc voltage, and current, placed in close proximity to each other in order to form a common weld bath. The "lead arc" determines the depth of penetration, while the "trail arc" is responsible for the bead shape.	The high deposition rates obtainable using two arcs make this a process practical alternative for filling a joint quicker in multi-pass applications, without sacrificing penetration profile or mechanical properties. It is also well suited for making single-pass welds at high travel speeds on medium thickness materials.
Triple Arc	Similar to the Tandem-Arc process, but with a third arc.	An even higher deposition-rate process mainly used on thick plate material. Can also used to obtain fast weld speeds on medium thicknesses.

Machine configurations

Single & Multiple



Notes

CUSTOMER ASSISTANCE POLICY

The business of Lincoln Electric Europe is manufacturing and selling high quality welding equipment, consumables and cutting equipment. Our challenge is to meet the needs of the customer and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice and assumes no responsibility, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

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