

# NA-3S & NA-4 Controls and Heads

## Processes

Flux-Cored, Submerged Arc

## Product Number

K210-2 NA-3S Controller  
K388-2 NA-4 Controller  
K208A NA-3S/NA-4 Head  
K209A NA-3SF/NA-4F Head

See Page 4 for additional models and complete specs

## AC Input Power

115/1/50/60

## Wire Size Range (Varies by Model)

.035 - 7/32 in (0.9 - 5.6 mm)

## Wire Feed Speed Range

NA-3S: 25 - 650 ipm (0.6 - 16.5 m/min)  
NA-4: Subject to arc voltage used

## Net Weight/Dimensions (H x W x D)

NA-3S:

44 lbs. (20 kg)

11.0 x 13.5 x 12.3 in.  
(279 x 343 x 312 mm)

NA-4:

35 lbs. (16 kg)

11.0 x 13.5 x 9.70 in.  
(279 x 343 x 246 mm)

## Automatic Welding Systems

Improve productivity with the NA-3S or NA-4 automatic wire feeders. These systems have been specially designed to deposit more weld metal at fast travel speeds which eliminates bottlenecks and cuts costs.

### FEATURES

- ▶ **Operating Versatility** - Easily adapt to a wide range of wire feed speeds and wire sizes.
- ▶ **Compact Units With Excellent Flexibility** - Fit into simple fixtures or the most complex automated production lines.
- ▶ **Rugged Construction** - Minimize downtime and maintenance costs.

### RECOMMENDED LINCOLN ELECTRIC POWER SOURCES

- ▶ **NA-3S**  
Idealarc® DC-600, DC-655,  
DC-1000 and DC-1500
- ▶ **NA-4**  
Idealarc® AC-1200



K209A  
NA-3SF/NA-4F Head



K210-2  
NA-3S



K208A  
NA-3S/NA-4 Head



K388-2  
NA-4

### WHAT'S REQUIRED

- ▶ Nozzle Assembly
- ▶ Control Cable
- ▶ Weld Power Cable
- ▶ Power Source
- ▶ Wire Reel(s) and mounting

### WHAT'S INCLUDED

- ▶ 10 ft. (3.1 m) Control Cable
- ▶ Specific Drive Roll Kit with Each Head

### INPUT



### OUTPUT

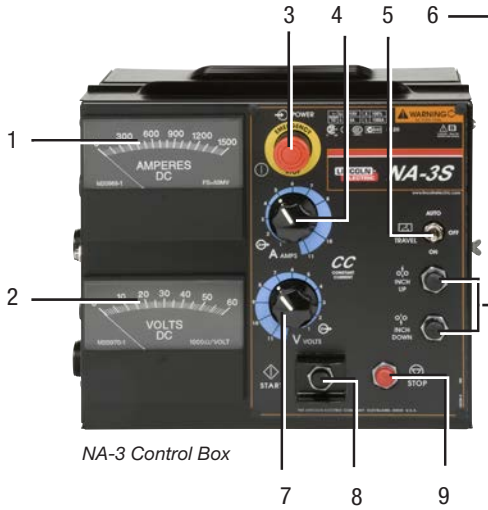


Two Year Extended  
Warranty Available in  
the U.S.A. and Canada

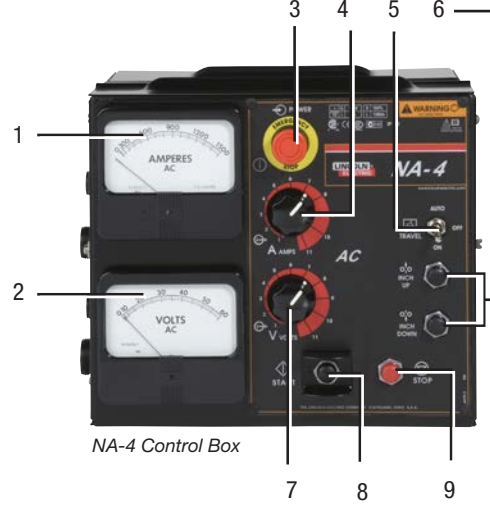
## A CLOSER LOOK

1. Ammeter – Indicates current only while welding.
2. Voltmeter – Indicates welding voltage only while welding.
3. Power – Turns wire feeder input power on and off.
4. Current Control – On NA-3S, adjusts wire feed speed to control welding current. On NA-4, adjusts welding current by controlling power source output.

5. Travel – Set to “Off” for no travel; “On” for travel without welding; “Auto” for welding operations.
6. Inch Up and Inch Down – Press to inch electrode at the speed set by “Inch Speed” control on inner panel.
7. Voltage Control – Adjusts arc volts.
8. Start – Pushbutton begins welding cycle.
9. Stop – Pushbutton initiates stopping cycle.



NA-3 Control Box



NA-4 Control Box

### NA-3S

Delivers arc sensing or constant wire feed speed control with hot or cold starting for use with either constant current or constant voltage DC power sources.

Applications Include:

- Single and multiple electrode submerged arc.
- Self-shielded and gas-shielded flux-cored welding.

### NA-4

Delivers arc sensing control with hot or cold starting for use with constant current AC power sources for submerged arc welding.

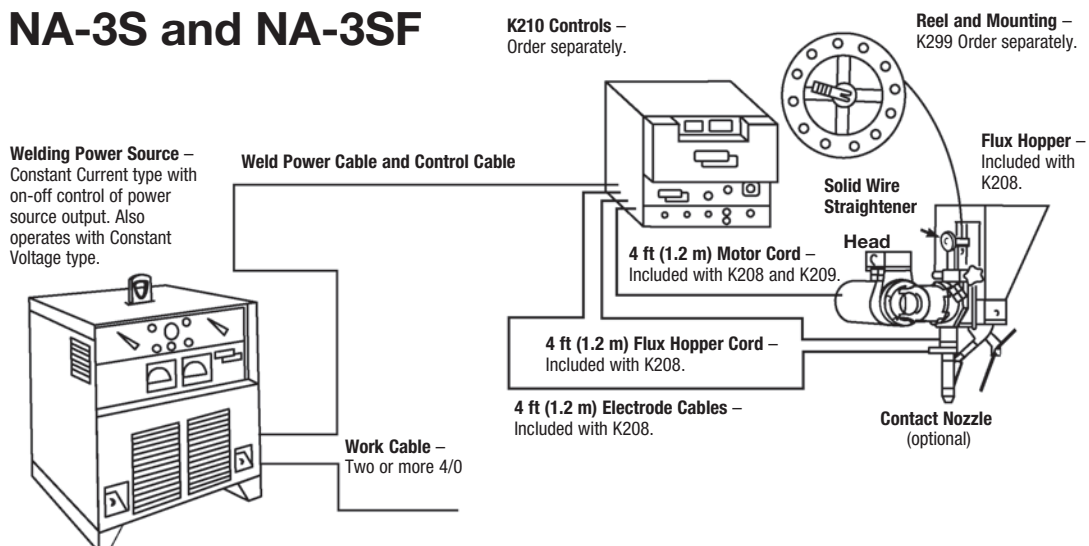
Applications Include:

- AC-AC tandem arc and AC-AC-AC triple arc systems.
- Single electrode submerged arc when arc blow limits the DC welding current and travel speeds.

## SYSTEM CONFIGURATION

**AC Input Power** required for all models is 115 (110) volts, 60 or 50 hertz of 360 volt-amperes capacity for the head and controls. An additional 250 volt-amperes is required for the Lincoln travel carriage and more may be needed for other travel mechanisms. This power is obtained from the welding power source.

### NA-3S and NA-3SF





**SINGLE ELECTRODE**

**Submerged Arc Contact Nozzle Assembly**

For 5/64 thru 3/16 in. (2.0 thru 4.8 mm) electrode at currents generally below 600 amps. Outer flux cone gives full flux coverage with minimum consumption.

**Order K231-1**



**Innershield® Positive Contact Nozzle Assembly**

For welding with Innershield® flux-cored wire at high currents. Optional water cooling attachment (T12928) recommended for currents over 600 amps.

**Order**

**K148A** for 3/32-1/8 in. (2.4-3.2 mm) wire

**K148B** for 5/32-3/16 in. (4.0-4.8 mm) wire



**Concentric Flux Cone Assembly**

For use with K148, K148 with a K149, or K129 nozzles. Gives concentric flux coverage around the electrode.

**Order K285**



**Narrow Gap Deep Groove Nozzle**

Water cooled submerged arc nozzle for welding in a 5/8 in. (15.9 mm) minimum gap up to 10 in. (254 mm) deep. Includes flux delivery tube, flux hose and rackets to permit nozzle rotation, and two contact tips.

**Order K386**



**Contact Jaw Assembly**

Rugged contact jaws for maximum life at currents over 600 amps. For 1/8 in. thru 7/32 in. (3.2 thru 5.6 mm) diameter wire.

**Order K226R**



**Contact Nozzle Extension**

Linc-Fill™ attachment for K148A or K148B. Required for long stickout welding technique [2 - 5 in. (51-127 mm)].

**Order**

**K149-5/32** for 5/32 in. (4.0 mm) wire



**5 in. Nozzle Extension**

Extends the wire by 5 inches [up to 1/4 in. (6.4 mm) diameter wire]. For K231-X only.

**Order KP2721-1**



**K231 Nozzle Contact Tips**

**Order**

**Severe Duty**

**KP2082-2B1**

for 5/64 in. (2.0 mm) wire

**KP1962-3B1**

for 3/32 in. (2.4 mm) wire

**KP1962-1B1**

for 1/8 in. (3.2 mm) wire

**KP1962-4B1**

for 5/32 in. (4.0 mm) wire

**KP1962-2B1**

for 3/16 in. (4.8 mm) wire

**KP1962-5B1**

for 7/32 in. (5.6 mm) wire



**Extended Life**

**KP3162-3B1**

for 3/32 in. (2.4 mm) wire

**KP3162-1B1**

for 1/8 in. (3.2 mm) wire

**KP3162-4B1**

for 5/32 in. (4.0 mm) wire

**KP3162-2B1**

for 3/16 in. (4.8 mm) wire

**KP3162-5B1**

for 7/32 in. (5.6 mm) wire

**GENERAL OPTIONS**

**Start Controls P.C. Board**

Adjusts starting current and voltage on NA-3S installations and voltage only on NA-4 installations for a settable period of time as needed to control penetration, bead size or other factors.

**Order K221**



**Crater Fill Controls P.C. Board**

Adjusts ending current and voltage on NA-3S installations and voltage only on NA-4 installations for a settable period of time as needed to control bead size or fill craters.

**Order K245**



**Horizontal Head Adjuster**

Provides crank adjustment of head position. Has 2 in. (51 mm) horizontal travel.

**Order K96**



**Vertical Lift Adjuster**

Provides 4 in. (102 mm) hand crank adjustment of vertical head position. It also includes up to 3-3/4 in. (95.2 mm) in-and-out horizontal adjustment with stops that can be preset for simple repetition of the same adjustment.

**Order K29**



**TC-3 Self-Propelled High Capacity Travel Carriage**

Carries head and controls in either direction on a beam of suitable length. The TC-3 operates either automatically with the weld controls or manually. The speed range, set with a continuous, calibrated speed control without gear changes, for the available model is 5-75 ipm (0.1-1.9 m/min). Plugs into the 115 (110) volt AC, 60 or 50 hertz travel receptacle of the Automatic Control Box.

**Order K325HCS**



**Mounting Kit**

For mounting control box to the TC-3 Travel Carriage.

**Order T14469**

**Flux Hopper Kit**

For submerged arc welding. Includes electric flux valve.

**Order K219**



**Wire Reel Assembly**

Includes wire reel for 50-60 lb. (22.7-27.2 kg) coils, wire reel mounting and brake.

**Order K299**



**Solid State Spreadarc**

Oscillate the head across the line of travel. For hardfacing build-up using a Twinarc® or single arc nozzle. Calibrated dwell time and oscillation speed controls permit the Spreadarc to cover large areas quickly with smooth beads of minimum admixture. Flux-cored electrode, open arc and submerged arc procedures can be used.

**Order K278-1**



**TWINARC®**

**Tiny Twinarc® Contact Assemblies**

Feeds two electrodes for high speed submerged arc welds. Includes contact nozzle, wire guides, drive rolls and guides, and a second wire reel and mounting bracket.

**Order**

**K129-1/16**

for 1/16 in. (1.6 mm) wire

**K129-5/64**

for 5/64 in. (2.0 mm) wire

**K129-3/32**

for 3/32 in. (2.4 mm) wire



**Large Wire Twinarc®**

Feeds two 5/64, 3/32, or 1/8 in. (2.0, 2.4, or 3.2 mm) electrodes for high speed submerged arc welding on "Fast Fill" joints or hardfacing beads.

**Order K225**



**Tiny Twinarc® Wire Straightener**

Straightens wire diameters .045 in. thru 3/32 in. (1.2 thru 2.4 mm). Particularly valuable on longer electrical stickout procedures.

**Order K281**



**TANDEM ARC**

**Tandem Arc Framework**

Provides mountings with desired positioning adjustments for two standard Automatic Wire Feed Heads. Includes insulation and hardware to permit direct mounting to a high capacity TC-3 Carriage, or to the user's gantry or fixture for either direction of travel.

**Order K387**



**Tandem Arc Wire Reels**

For mounting two wire reels on TC-3 Travel Carriage.

**Order K390**



**Flux Hopper for Tandem Arc**

Flux Hopper for K387 mountings.

**Order K389**

## RECOMMENDED ACCESSORIES

### WELD POWER CABLES

Product Number	Description
K2163-35	Lug to Lug, 4/0, 35 ft. (10.7 m) (Two cables per package)
K2163-60	Lug to Lug, 4/0, 60 ft. (18.3 m) (Two cables per package)
K1842-110	Lug to Lug, 4/0, 600A, 60% duty cycle, 110 ft. (33.5 m)



K1797-L Control Cable Extension.



K1798 Control Cable Adapter.

### DRIVE ROLL/GUIDE TUBE KITS

Wire Size in. (mm)	Product Number
3/32 – 7/32 (2.4 – 5.6) 1/16, 5/64, 3/32 (1.6, 2.0, 2.4)	KP1899-1 KP1899-2
.035, .045, .052 (0.9, 1.1, 1.3) .045 – .052 Cored (1.1 – 1.3)	KP1899-3 KP1899-4

### CONTROL CABLE, EXTENSIONS AND ADAPTERS

Product Number	Description
K1820-10	Control Cable Female 9 pin to Male 14 pin, 10 ft. (3.1 m)
K1797-10*	Control Cable Extension, Male 14 pin to female 14 pin, 10 ft. (3.1 m)
K1797-25*	Control Cable Extension, Male 14 pin to female 14 pin, 25 ft. (7.6 m)
K1797-50*	Control Cable Extension, Male 14 pin to female 14 pin, 50 ft. (15.2 m)
K1798	Control Cable Adapter Female 14 pin to terminal strip

\* Requires K1820-10

### PRODUCT SPECIFICATIONS

Product Number	Description	Wire Feed Speed Range ipm (m/min)	Wire Size Range in. (mm)	Gear Ratio
K210-2	NA-3S Controller	25-650 (0.6-16.5)	.035 – 7/32 (0.9-5.6)	--
K388-2	NA-4 Controller	Subject to arc voltage used	.035 – 7/32 (0.9-5.6)	--
K208A	NA-3S / NA-4 Head	Subject to arc voltage used	3/32 – 7/32 (2.4-5.6)	142:1
K208B	NA-3S / NA-4 Head	Subject to arc voltage used	.035 – 3/32 (0.9-2.4)	95:1
K209A	NA-3SF / NA-4F Head	Subject to arc voltage used	3/32 – 7/32 (2.4-5.6)	142:1
K209B	NA-3SF / NA-4F Head	Subject to arc voltage used	.035 – 3/32 (0.9-2.4)	95:1

"F" suffix indicates model for machinery and fixture builders. The following parts are excluded: head mounting, electrode cables, cross seam adjuster, flux hopper and pointer.

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always use Lincoln Electric consumables. Visit [www.lincolnelectric.com](http://www.lincolnelectric.com) for more details.**

**Manufactured at a facility with certified ISO Quality and Environmental Management Systems.**

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