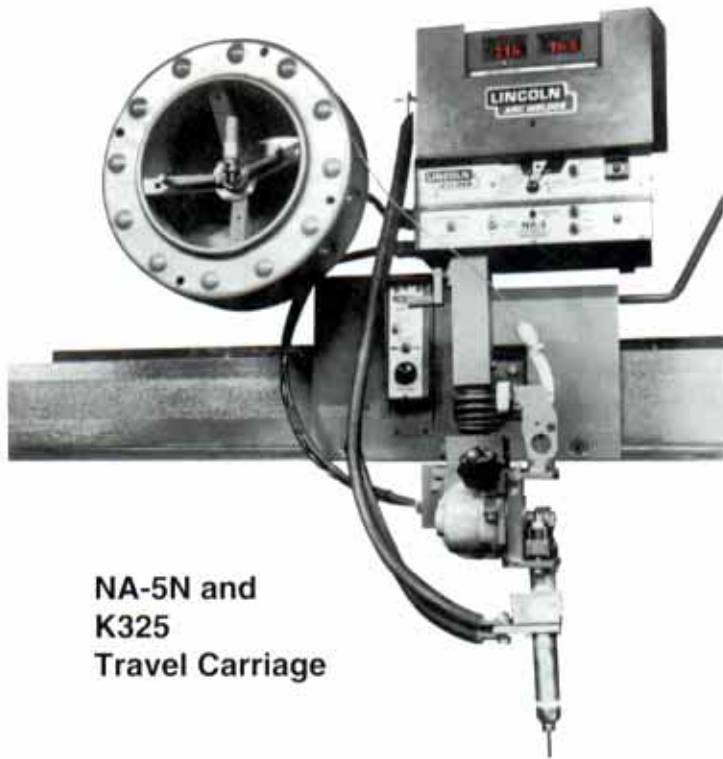




# NA-5 Automatic Welding System

Designed for Multiple Process CV Operation ... Innershield®, Submerged Arc and other Open Arc Processes. A complete automatic control which may also be used with available procedure and control interface options for remote operating versatility.

**Models: NA-5N, NA-5NF, NA-5S, NA-5SF**



NA-5N and  
K325  
Travel Carriage

## Product description

A proven concept in automatic welding — “set-it-and-forget-it” automatic welding equipment. The arc voltage and wire feed speed can be set on digital meters before the arc is struck and the procedure remains precisely set day in and day out.

## Six Benefits from LINCOLN® NA-5 Automatics

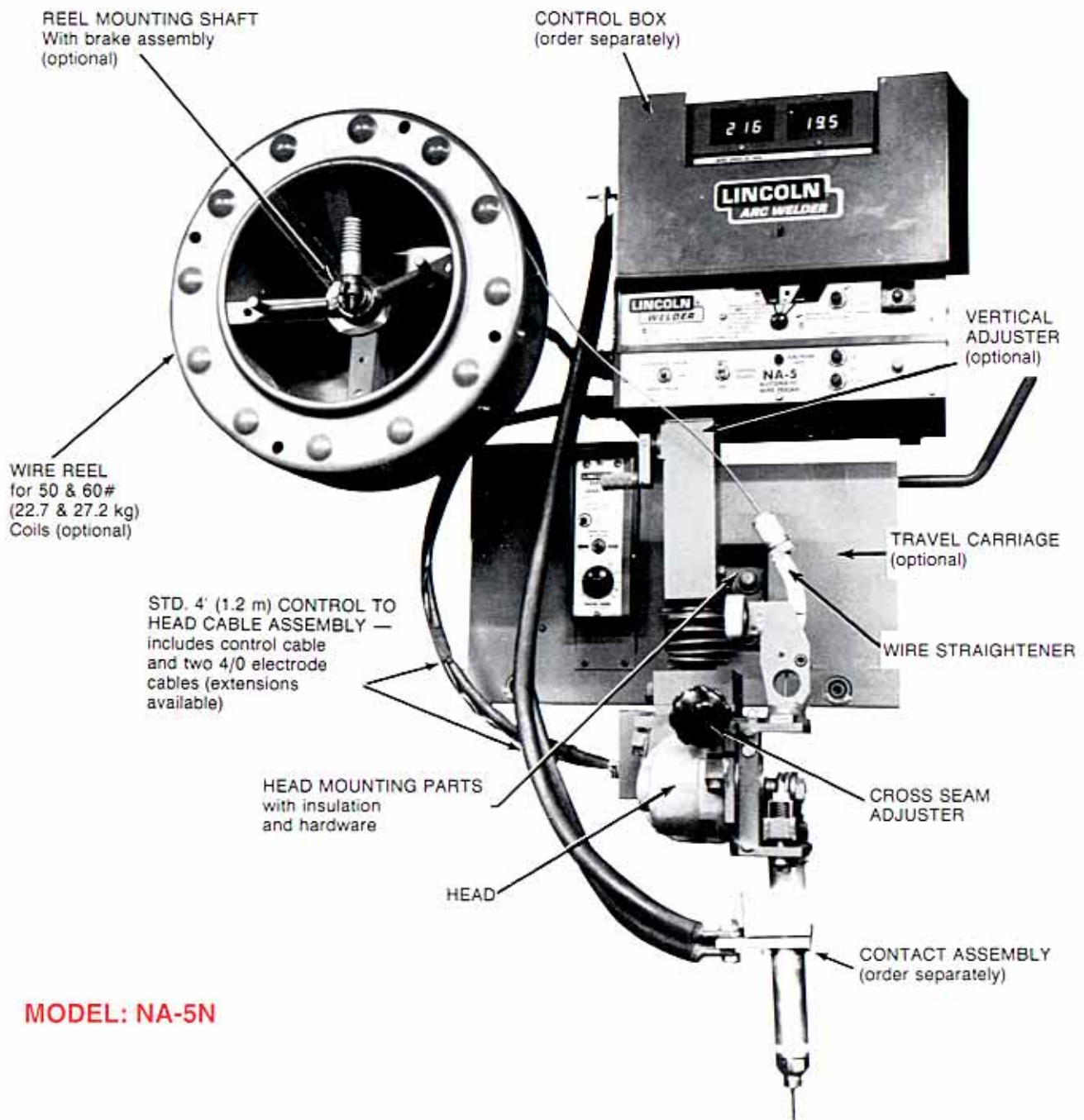
- Solid-State Controls** — Precise control of welding procedures, striking characteristics, start and stop, bead size and shape, and arc stability facilitates economical welding to the most exacting requirements.
- High Productivity** — Automatics deposit more metal at faster travel speeds than semiautomatics to increase production, eliminate bottlenecks and cut costs.
- Low Cost Repetitive Welds** — Electrode position adjustments lock tight for pushbutton production welding with consistent quality.
- Operating Versatility** — Easily adjusted for a wide range of processes, feed speeds, wire sizes, procedures and methods.
- Easy Installation** — Compact units with excellent flexibility fit into simple fixtures or the most complex automated production lines.
- Worry-Free Operation** — Solid-state controls and rugged construction minimize downtime and maintenance costs.

**FOR ROBOTICS APPLICATIONS SEE PAGE 7.**

# AVAILABLE

**NA-5N HEAD** — Includes wire feed head with straightener for cored wire (K331 A and B only) and head mounting. Also includes electrode cables from control box to wire contact assembly, and a cross seam adjuster. Does not include control box or wire reel, brake and mounting.

**NA-5NF HEAD** — Includes wire feed head with straightener for cored wire (K332A and B only). Does not include control box, wire reel, brake and mounting, cross seam adjuster, head mounting parts or electrode cable from control box to wire contact assembly.



**MODEL: NA-5N**

# MODELS

**NA-5S HEAD** — Includes wire feed head with straightener for solid wire, flux hopper with automatic valve and head mounting. Also includes electrode cables from control box to wire contact assembly, and a cross seam adjuster. Does not include control box or wire reel, brake and mounting.

**NA-5SF HEAD** — Includes wire feed head with straightener for solid wire. Does not include control box, wire reel, brake and mounting, flux hopper with automatic valve, cross seam adjuster, head mounting parts or electrode cable from control box to wire contact assembly.



Note: Second wire reel is not shown.

## MODEL: NA-5S SET-UP FOR TWINARC®

Required Power Source:  
DC Constant Voltage

## Select one of the following REQUIRED POWER SOURCES



The Idealarc® DC-400<sup>(1)</sup>, DC-600<sup>(2)</sup>, DC-655, DC-1000, or DC-1500<sup>(3)</sup> are the recommended power sources for use with the NA-5. They are solid-state SCR controlled welders which provide two modes of constant voltage output — one for submerged arc, and one for Innershield and other open arc processes. The DC-400, DC-600, and DC-655 are also suitable for stick welding.



The Idealarc CV-400<sup>(4)</sup> and CV-655 can be used with the NA-5. However, the CV-400 diode option is required to utilize the cold starting and sensing features of the NA-5 (Order K1346-14). The CV-400 is a constant voltage DC arc welding power source.

## TRANSFORMERS/RECTIFIERS

Model	Type (60 Hz)	Current (Amps)	Arc Volts	Duty Cycle	Current Range (Amps)	Required Power System	Bulletin Number	Model	Type (60 Hz)	Current (Amps)	Arc Volts	Duty Cycle	Current Range (Amps)	Required Power System	Bulletin Number
DC-400 <sup>(1)</sup>	K1308	400DC	40	100%	60-500	3 Phase	E5.20	DC-1500 <sup>(3)</sup>	K1275	1500DC	60	100%	200-1500	3 Phase	E5.60
DC-600 <sup>(2)</sup>	K1288	600DC	44	100%	70-850	3 Phase	E5.40	CV-400 <sup>(4)</sup>	K1346	400DC	36	100%	60-500	3 Phase	E4.30
DC-655	K1609	600DC	44	100%	50-815DC	3 Phase	E5.46	CV-655	K1480	650DC	44	100%	70-815DC	3 Phase	E4.40
DC-1000	K1298	1000DC	50	100%	150-1300	3 Phase	E5.50								

<sup>(1)</sup> The K826 Diode Kit for the DC-400 is required to permit full use of all the NA-5 features.

<sup>(2)</sup> When DC-60's are used, current models (codes 8288 and up) are preferred for optimum performance (Bulletin E5.40).

<sup>(3)</sup> DC-1500's (Bulletin E5.60) below code 8294 are not suitable for use with the NA-5.

<sup>(4)</sup> Diode option required to utilize the cold starting and sensing features of the NA-5.

# ADVANTAGES AND FEATURES

**Convenient Operator Controls** located in one place for efficiency.

- Control power switch turns wire feeder input power on and off. Also serves as an emergency stop switch. ①
- Inch pushbuttons feed electrode up and down when not welding. ②
- Start and stop pushbuttons control welding cycles. ③
- Controls for presetting of wire feed speed and voltage prior to and during welding. These controls eliminate returning to the power source for routine procedure changes. ④⑤⑥⑦
- Digital display of both wire feed speed and voltage on separate meters. ⑧
- Means for having the meters read either the preset values or the actual values. ⑨
- Switch to allow presetting the different sets of controls using one set of meters (function lights to indicate which set of controls are functioning). ⑩
- Timer control for burnback and/or wire retract time. ⑪
- Travel switch controls the travel mechanism for automatic starting and stopping when welding, travel without welding during setup and travel off. ⑫
- Lockable cover over procedure setting controls.
- Pilot light to show when the electrode is "hot". ⑬

**Controls of Unparalleled Versatility** adjusts procedures and travel sequence for best arc striking, welding and crater filling for all suitable processes and applications.

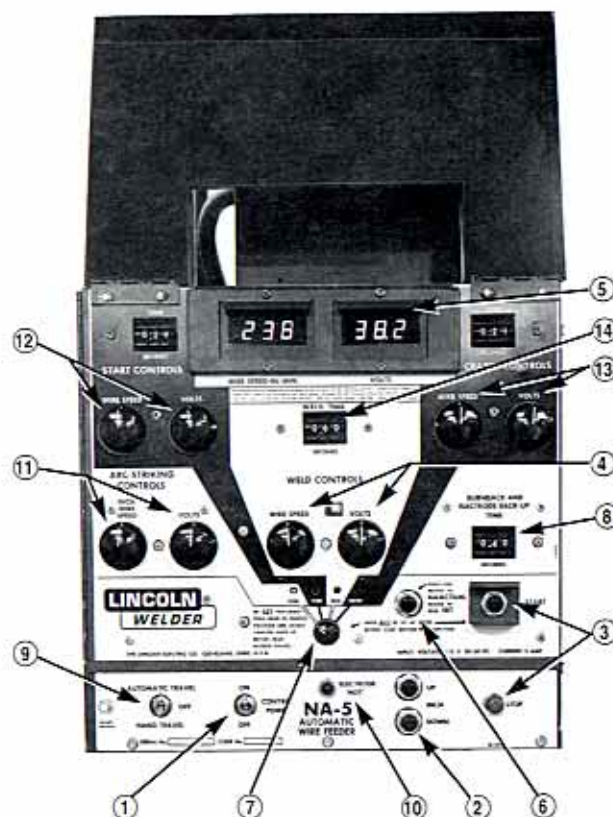
- Striking inch speed adjusts for best arc starting independently of welding wire speed. ⑭
- Striking voltage can be set for optimum arc starting. ⑮
- Arc starting by the "hot start" or "cold start" methods ("hot start" only, when using DC-400 without K826 Diode Kit or when using the CV-400, DC-655 or CV-655 without diode option).
- Travel can be selected to start either when the start button is pressed or the arc strikes.
- Optional start module (with preset feature) controls penetration, bead size or other factors for an adjustable time at the start of the weld. ⑯
- Wire feed speed and arc voltage can be "SET" before or during welding and the "ACTUAL" values can be read during welding.
- Wire feed speed and arc voltage are held virtually constant regardless of input voltage variation, feeding force, loading of the power source, ambient temperature changes or a voltage drop in the electrode or work circuit.
- Travel stops either when the stop button is pressed, when the arc stops, or at end of crater fill or burnback time (as selected by the user).
- Optional crater module (with preset feature) controls procedure for an adjustable period of time to regulate bead size or fill craters at the end of the weld. ⑰
- Adjustable delay timer controls burnback of electrode from the puddle at the end of the weld to prevent crater sticking. The circuit can be set to retract the electrode from the crater for easy fixture unloading or to remove a slag ball from the end of the electrode for better starting when using Linc-Fill™ procedures.
- Available interface options for remote control of inch-up/down, start/stop, and weld procedures.
- Optional weld timer which eliminates the need to press stop button. ⑱
- Automatic shutdown should the voltage deviate from the preset value.

**Wide Performance Range** lets you choose the best process and procedures for today's needs. Can be adapted in minutes for new processes and major procedural changes without large expense or long equipment delivery delays.

- Use open arc or submerged arc welding as desired.
- Heads available for feeding .035" (0.9 mm) thru 7/32" (5.6 mm) electrode using three gearbox ratios — 57:1, 95:1 and 142:1. Install parts to convert for different wire sizes and ratios in minutes.
- Two-position adjustable drive roll pressure develops the right force to feed all electrode types.
- Feeds wire from 50 to 60 lb (22.7 to 27.2 kg) coils or 300 to 1000 lb (136 to 453.6 kg) Speed-Feed™ reels and drums.
- Adjustable brake on reel for 50/60# (22.7/27.2 kg) coils prevents reel overrun.

**These Worry-Free, Hard-Working Wire Feeders** minimize equipment downtime and lost production. Simple routine service keeps maintenance costs low.

- Solid-state controls give trouble-free operation.
- Rugged construction needs only simple routine service for continuous performance.
- Function lights built into the printed circuit boards speed repairs.
- Plug-in components are quickly replaced.



Easy Installation into simple fixtures or fully automated systems makes the benefits of automatic welding available to large or small fabricators and rebuilders.

- Simple head mounting with versatile positioning minimizes fixture requirements and speeds installation.
- One compact box containing all controls mounts almost anywhere for maximum operating efficiency. Remote controls can be located in a fixture console with the use of available interface options.
- Power source to control box cables up to 100 ft (30 m) long plug into the control box.
- Standard 4 ft head to control leads plug into the control box. Optional head to control extension cables up to 30 ft (9 m) long plug in at both ends.
- Control requires 115 volt, 60 or 50 Hertz power available from recommended power sources.
- Hinged panel provides easy access to components inside the control box.
- Quickly reconnect stop and start sequence as desired for new applications using dip switches on the logic board. No soldering, bolted connections or taping needed.

Versatile Head Positioning adjusts quickly to new applications with different processes yet locks tight for repetitive welding.

- Adjustment of the face plate around the drive roll.
- A 360° rotational adjustment of the gearbox within its mounting saddle.
- True left and right head mounting.
- Cross seam adjuster (NA-5N and -5S only) lets the operator track along irregular joints while welding.
- Optional vertical and horizontal head adjusters make quick handcrank setups (rather than bolt-head side adjustments) where frequent job changes occur.
- Ability to drive the wire in either direction through the face plate.
- No limitation of gearbox position because of lubrication in the gearbox. In addition, the use of special gear materials as well as ball bearings result in long life and high efficiency. Gearbox and drive roll arrangement exactly the same as the field-proven NA-3.
- High efficiency spur gearbox results in a smaller head with no sacrifice in feeding ability.

## OPTIONAL CONTACT ASSEMBLIES

### Single Electrode



#### Innershield® and Submerged Arc

- K148 — For .062 thru 3/16" (1.6 thru 4.8 mm) wire at high currents. Optional water cooling attachment (T12928) recommended when Innershield welding over 600 amps.
- K149 — Linc-Fill™ Long Stickout [2-5" (51-127 mm)] Extension.



#### Submerged Arc

- K231 — For 5/64 thru 7/32" (2.0 thru 5.6 mm) electrodes at currents generally below 600 amps. Outer flux cone gives full flux coverage with minimum consumption.

#### Submerged Arc

- K233 — For .035 thru 3/32" (0.9 thru 2.4 mm) solid wire at currents under 600 amps.



#### Submerged Arc

- K226R [1/8 thru 7/32" (3.2 thru 5.6 mm) wire].
- K226T — [3/32 or 1/8" (2.4 or 3.2 mm) wire]. Rugged contact jaws for maximum life at currents over 600 amps.

#### Submerged Arc

- K285 Concentric Flux Cone — For use with K148, K148 with a K149, or K129 nozzles. Gives concentric flux coverage around the electrode.



#### Submerged Arc

- K386 Narrow Gap Deep Groove Nozzle — Water cooled submerged arc nozzle for welding in a 5/8" (15.9 mm) minimum gap up to 10" (254.0 mm) deep. Includes flux delivery tube, flux hose and rackets to permit nozzle rotation, and two contact tips (E9.110).

- K405 Automatic Innershield Nozzle — A slender nozzle with offset for more positive contact of wire to tip. Features "quick-change" threadless contact tip. For 3/32" (2.4 mm) or smaller wire sizes (E818).

Twinarc kits include contact nozzle, wire guides, wire feed rolls and guides, and a second wire reel and mounting bracket.

### TWINARC®

#### Tiny Twinarc Wire Straightener

- K281 — Straightens wire diameters .045 thru 3/32" (1.2 thru 2.4 mm). Particularly valuable on longer electrical stickout procedures.

#### Large Wire Twinarc

- K225 — Feeds two 5/64, 3/32 or 1/8" (2.0, 2.4 or 3.2 mm) wires for submerged arc welding on "Fast-Fill" joints or hardfacing beads.



#### Tiny Twinarc

- K129 — Feeds two .045, 1/16, 5/64 or 3/32" (1.2, 1.6, 2.0 or 2.4 mm) electrodes for high speed submerged arc welds on 14 gauge (1.89 mm) to heavy plate.



#### Innershield Twinarc

- K239 — Feeds two 3/32" (2.4 mm) Innershield wires for high speed welds on 12 gauge (2.65 mm) and thicker steel. Includes water cooling tubes. Particularly suited for roundabout fillet and lap welds when one member is thicker than 1/4" (6.3 mm).

## OPTIONAL FEATURES

- **Horizontal Head Adjuster (K96)** — Provides crank adjustment of head position. Has 2" (51 mm) horizontal travel.
- **Vertical Lift Adjuster (K29)** — Provides 4" (102 mm) hand crank adjustment of vertical head position. It also includes up to 3-3/4" (95.2 mm) in-and-out horizontal adjustment with stops that can be preset for simple repetition of the same adjustment.
- **Solid-State Spreadarc™ (K278)** — Oscillates 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.



- **TC-3 Self-Propelled Travel Carriage** — Carries head and controls in either direction on a beam of suitable length. It operates either automatically with the weld controls or manually. The speed ranges, set with a continuous, calibrated speed control without gear changes, for the two available models are (S) 5-75 ipm (0.1-1.9 m/min) and (F) 15-270 ipm (0.4-6.9 m/min). Plugs into the 115 (110) volt AC, 60 or 50 hertz travel receptacle of the Automatic Control Box.

**Order Standard Carriage (K325)** — For single electrode and Twinarc (2 wires fed thru 1 head) installations.

**Order High Capacity Carriage (K325HC)** — For tandem arc (2 or 3 heads) and Twinarc-tandem arc (up to 4 wires) installations.

Order a T14469 Mounting Kit if the NA-5 control box is to be mounted on the carriage.



- **Magnetic Separator (K58)** — Removes magnetic particles from recirculated submerged arc fluxes to reduce porosity caused by a build-up of mill scale.
- **K310 Screen** — Removes large particles from recirculated submerged arc fluxes. Designed to fit the top of either the standard fill funnel of a continuous flux feed system or a K58 magnetic separator. The unit has a steel screen with .065 to .075" (1.7 to 1.9 mm) openings and an air vibrator attached to the frame. The vibrator can be used with air line pressures ranging from 20 thru 100 psi (137.9 thru 689.4 kpa).



- **High Frequency Unit (K238)** — Supplies high frequency power to the welding leads for more positive starting on difficult applications. Operates on 115 (110) volt 50 or 60 hertz. Handles up to 750 amps welding current. Cannot be used with Linc-Fill Starting Relay option or Spreadarc. Requires special head, flux hopper and wire reel insulation.
- **Solenoid Assembly (K223)** — Valve to automatically control water flow when using K239 or cooling attachment on K148 contact assemblies. Can also be used to control gas.



- **Flux Hopper (K219)** — With electric flux valve for submerged arc welding. (Standard on NA-5S.)
- **Flux Control Kit (S16300-12)** — Provides mechanical control of the flux flow rate.
- **Wire Reel Assembly (K299)** — Includes wire reel for 50-60 lb (22.7-27.2 kg) coils, wire reel mounting and brake. Available with or without high frequency mounting insulation (HF).

# OPTIONAL FEATURES FOR THE NA-5

- **STARTING OR CRATER MODULE — K334:**

Permits additional settings of wire feed speed and voltage for an adjustable period of time (10 seconds max.). Can be used for either a starting procedure or a crater fill procedure. If both are required, two assemblies must be ordered.

- **REMOTE INTERFACE MODULE — K336:**

Permits remote operation of the NA-5 Inch Up, Inch Down, Start and Stop functions by either of the following user-supplied external signals and provides electrical isolation of the NA-5 control circuitry from these signals:

**SWITCHES** — Momentary closure of contacts rated for 24 volts, 5 milliamperes, DC.

**24 VOLT SIGNALS** — Momentary application of a 24 volt  $\pm 10\%$  AC or DC signal capable of 5 milliamperes steady state (.15 amp peak capacitive in rush) per input.

This module can be used with all codes of NA-5 Controls and replaces the earlier K336 Remote Pushbutton Interface Module, which provided only for external switch closure signals.

- **WELD TIMER MODULE — K337:**

Available in choice of 10 second (K337-10) and 100 second (K337-100) units. Permits setting of weld time for an adjustable period of time. Eliminates need to press stop button. The timer units are adjustable over the following ranges:

K337-10	0.00 — 9.99 seconds
K337-100	00.0 — 99.9 seconds

- **MULTI-PROCEDURE KIT (K349):**

Designed to mount and connect to NA-5 controls above code 8300 only. Provides three additional Weld Mode procedure settings of wire feed speed and voltage, allowing the choice of four NA-5 Weld Mode procedures selectable by the kit's panel switch or customer-furnished remote switch or 24 volt signals.



- **ANALOG INTERFACE PROCEDURE CONTROL — K373:**

The Analog Interface Procedure Control is an optional control box designed to mount and connect to NA-5 automatic controls (above Code 8300) and the NA-5R. The control provides circuit isolated interface for remote, user-provided, 0 to 10 volt DC analog signal levels to linearly set the NA-5 Weld Mode procedures between 0 and 100% of the rated range of wire feed speed and arc voltage. The kit also provides  $\pm 5\%$  procedure override controls under a lockable security panel, and a selector switch to permit the choice of procedure setting control using remote analog signals or the standard NA-5 Weld Mode controls.

- **CONTROL TO HEAD EXTENSION CABLE ASSEMBLY (K335 or K338):**

The standard head is equipped with cables which permit the head to be mounted up to four feet from the controls. "F" models, however, do not include electrode cables.

When the head is mounted further away from the control, extension cable assemblies must be purchased. The K335, for the NA-5S head, includes motor, tachometer and flux valve lead extensions with polarized plugs and electrode cables.

The K338, for the NA-5N, NF and SF heads, is the same as the K335 without the flux valve lead extension. Both extension assemblies are available in standard lengths up to 30 feet (9 m).

- **WIRE SIZE CONVERSION KITS:**

To convert wire feeder for different sized electrodes. Includes drive rolls and guide tubes. Four kits are available.

Gearbox	Wire Size	Kit No.
142:1	3/32 – 7/32" (2.4 – 5.6 mm)	T13724A
	1/16 – 3/32" (1.6 – 2.4 mm)	T13724B
95:1	3/32 – 5/32" (2.4 – 4.0 mm)	T13724A
	1/16 – 3/32" (1.6 – 2.4 mm)	T13724B
57:1	1/16 – 3/32" (1.6 – 2.4 mm)	T13724B
	.035 – .052" (0.9 – 1.3 mm)	T13724C
	.045 – .052" (1.2 – 1.3 mm) Cored	T13724D

To have proper wire speed calibration, the above combinations must be used.

**WIRE CONTACT ASSEMBLIES: (See page 5 for Details)**

## NA-5R REMOTE CONTROLLED AUTOMATIC WELDING SYSTEM

The NA-5R is a versatile automatic welding system ideally suited for remote control interface to automated or programmable controllers and computer controlled welding robots. (E9.40)

This new system combines the accuracy and reliability of the NA-5 automatic control, the maneuverability of a gun cable wire feed unit, and the process control versatility to "communicate" with remote control equipment through electrically isolated input and output signals.

(Contact your Lincoln Technical Representative for complete details.)

### Optional NA-5R Wire Drives

Standard NA-5R wire drives can be used with the NA-5 controls if the L6733 Speedmeter P.C. board is installed to replace the standard NA-5 Speedmeter P.C. board.

### NA-5R Wire Drives

Model	Type <sup>(1)</sup>	WIRE SIZES in. (mm)		Gear Ratio	Rated ipm (m/min)
		Solid	Cored		
Standard	K371	.030-3/32 (0.8-2.4)	.062-.120 (1.6-3.0)	72:1	50-600 (1.3-15.2)
HI-SPEED	K372	.030-1/16 (0.8-1.6)	—	45:1	80-978 (2.0-24.8)

<sup>(1)</sup> Specify wire size. KP502 or KP503 wire size conversion kits for other sizes are available.

# REQUIRED EQUIPMENT

**AC Input Power** required for all models is 115 (110) volts, 60 or 50 hertz of 350 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 Lincoln power source.

## NA-5N and NA-5NF

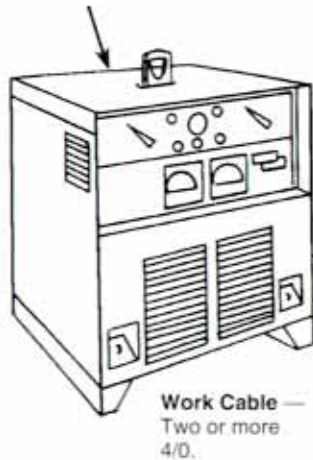
**DC Power Source** — Constant Voltage Type with on-off control of power source output (see page 3).

**K215 Input Cable** (Specify Length) — Includes two 4/0 electrode cables and the multi-conductor control cable.

**Controls** — K356. Order separately.

**Reel and Mounting** — K299. Order separately.

**Cored Wire Straightener<sup>(1)</sup> or Spring Guide<sup>(2)</sup>**



**Work Cable** — Two or more 4/0.

**K338 Extension** — Motor cord and electrode cables. Optional when more than 4' (1.2 m) is required. Specify distance from head to controls [30' (9.1 m) is maximum length available].

**4' (1.2 m) Motor Cord** — Included with K331 and K332

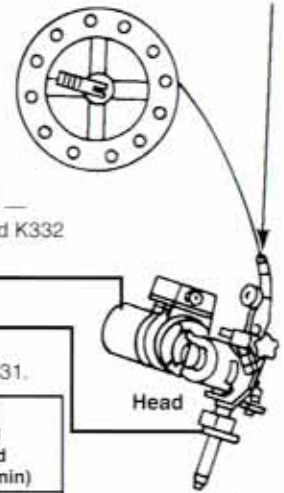
**4' (1.2 m) Electrode Cables** — Included with K331.

Head Model	Type	Wire Sizes in. (mm)		Gear Ratio	Wire Feed Speed ipm (m/min)
		Solid	Flux Cored		
NA-5N	K331A <sup>(1)</sup>	3/32-1/8 (2.4-3.2)	3/32-5/32 (2.4-4.0)	95:1	22-425 (0.6-10.8)
NA-5N	K331B <sup>(1)</sup>	1/16-3/32 (1.6-2.4)	1/16-3/32 (1.6-2.4) <sup>(2)</sup>	57:1	38-760 (1.0-19.3)
NA-5N	K331C <sup>(2)</sup>	.035-.052 (0.9-1.3)	—	57:1	40-775 (1.0-19.7)
NA-5NF	K332A <sup>(1)</sup>	3/32-1/8 (2.4-3.2)	3/32-5/32 (2.4-4.0)	95:1	22-425 (0.6-10.8)
NA-5NF	K332B <sup>(1)</sup>	1/16-3/32 (1.6-2.4)	1/16-3/32 (1.6-2.4) <sup>(2)</sup>	57:1	38-760 (1.0-19.3)
NA-5NF	K332C <sup>(2)</sup>	.035-.052 (0.9-1.3)	—	57:1	40-775 (1.0-19.7)

<sup>(1)</sup> Includes Flux Cored wire Straightener.

<sup>(2)</sup> Includes Small Wire Spring Guide.

<sup>(2)</sup> Order T13724D Drive Roll Kit for .045-.052" (1.2-1.3 mm) Cored Wire



**Contact Nozzle** (optional)

## NA-5S and NA-5SF

For Submerged Arc Welding

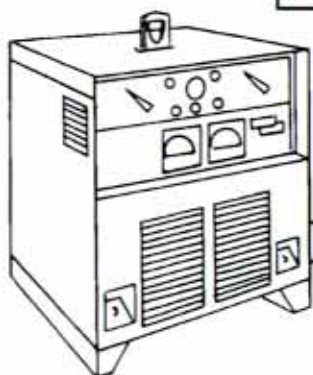
**DC Power Source** — Constant Voltage type with on-off control of power source output (see page 3).

**K215 Input Cable** (Specify Length) — Includes two 4/0 electrode cables and the multi-conductor control cable.

**Controls** — K356. Order separately.

**Reel and Mounting** — K299. Order separately.

**Flux Hopper** — Included with K346.



**Work Cable** — two or more 4/0

**K335 Extension** — Motor, Flux hopper and Electrode cables. Optional when more than 4' (1.2 m) is required. Specify distance from head to controls.<sup>(1)</sup>

**4' (1.2 m) Motor Cord** — Included with K346 and K347.

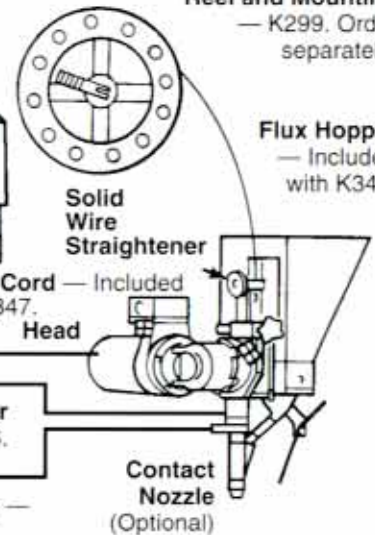
**4' (1.2 m) Flux Hopper Cord** — Included with K346.

**4' (1.2 m) Electrode Cables** — Included with K346.

Head Model	Head Type	Wire Size in. (mm)	Gear Ratio	Feed Speed Range ipm (m/min)	Max. Solid Wire Size <sup>(2)</sup> in. (mm)
NA-5S	K346A	3/32-7/32 (2.4-5.6)	142:1	15-290 (0.4-7.4)	7/32 (5.6)
NA-5S	K346B	1/16-3/32 (1.6-2.4)	95:1	22-425 (0.6-10.8)	1/8 (3.2)
NA-5SF	K347A	3/32-7/32 (2.4-5.6)	142:1	15-290 (0.4-7.4)	7/32 (5.6)
NA-5SF	K347B	1/16-3/32 (1.6-2.4)	95:1	22-425 (0.6-10.8)	1/8 (3.2)

<sup>(1)</sup> For the K347 Head, order the K338 extension (see NA-5N, above).

<sup>(2)</sup> For gear ratios shown.



**Contact Nozzle** (Optional)

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