

The Ultimate On-Site Machine

# AIR VANTAGE 600X PLUS

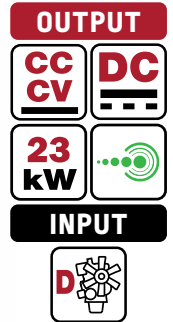


**LINCOLN**<sup>®</sup>  
**ELECTRIC**



# ENGINE DRIVEN WELDER / GENERATOR

## AIR VANTAGE® 600X PLUS



**50Hz POWER**  
**415V / 32A (x1)**  
**240V / 15A (x2)**

## The Ultimate On-Site Machine

### POWERFUL

When the job calls for structural steel welding and other rugged outdoor work, you need an engine-driven welder that covers all your process needs.

- 600A 40% – 575A 60% - 525 100% Duty Cycle @ 40°C with 100psi/60cfm.
- 50Hz Auxiliary 415V (32A) & 240V (15A) x2 – Mine Site Ready.
- Equipped with a 65.7 HP, Turbocharged Deutz® Diesel Engine.
- Integrated 100psi/60cfm Full Flow, VMAC® Belt Driven Rotary Air Compressor.

### DEPENDABLE

- Field-proven ruggedness.
- Encapsulated PCB's for added protection and durability.
- Stainless Steel Paneling for easy Cleaning.

### ADVANCED

Expanded welding capabilities for stainless, aluminium, and steel as well as advanced SAW and orbital pipe modes<sup>1</sup>. Pulse welding capability for better arc control in out-of-position work and low heat input for critical welds<sup>1</sup>.

### CROSSLINC® ENABLED<sup>2</sup>.

- Change weld parameters at the arc without an additional control cable to help increase productivity, promote safety, and improve weld quality.

### Processes

SMAW (Stick), FCAW (Flux-Cored), GMAW (MIG), GMAW-P (Pulsed MIG), GTAW (TIG), CAC-A (Arc Gouging).

### Applications

Heavy Equipment Repair, Energy Utility Repair, Construction, General Fabrication Rental and Mining.

### Product Number

K4794-2

### Key Accessories

- LN-25X® Wire Feeder with K126Pro Gun (K4267-4)
- LN-25X® Wire Feeder with Magnum Gun (K4267-4M)
- Activ8X® Wire Feeder (K3519-2)
- PF-25M™ Wire Feeder (K2536-5)
- Roll frame/spill tray (K32070-4)

(1) Requires ArcLink® communications accessory.

(2) Requires CrossLinc enabled accessory.

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- New 50Hz Auxiliary with Lockable Switch.
- VRD compliant to AS60974-1, AS1674.2 and MDG 25 for CAT 3 environments.
- New Integrated Active Rotor Voltage and Current Control monitoring hardware/software.
- New Access to Engine Protection Codes for easy onsite identification via Hidden Menu
- Full Engine protection system including automatic shutdown for low oil pressure, high engine temperature or low engine alternator voltage. Also, warnings for water in fuel, fuel pressure and more.
- Digital Dash Gauge displays Oil Pressure, Water Temperature, Engine Hours, Battery Voltage and Fuel Level
- All Printed circuit boards provided a robust environmental shield installed into trays and encapsulated in epoxy.
- Simplified wire harnessing keeps connections to a minimum for greater reliability.
- Lead and harness strain reliefs on all control connections help ensure trouble-free performance.
- Circuit breaker protection on the battery ignition system provides added component protection.
- Engine camshafts are gear driven – no timing belt maintenance.
- Closed breather system to keep the engine compartment and ground clean. This system eliminates oil mist from collecting inside the engine compartment, especially on surfaces that would lower engine cooling efficiency.
- Self-bleeding engine simplifies startup if your fuel tank runs dry. Manual fuel line bleeding is usually not necessary.
- 3-year, Lincoln parts and labour warranty. (Engine is warranted separately by the manufacturer.)

MACHINE OVERVIEW



1. Engine Safety Stop
2. Engine and Compressor Dash Gauge
3. 50/60Hz Lockable Switch
4. Weld Output Control
5. Weld Mode Setup
6. Engine Remote and Remote Connect
7. Auxillary Output Panel
8. Weld Output Panel
9. Compressed Air Outlet Valve

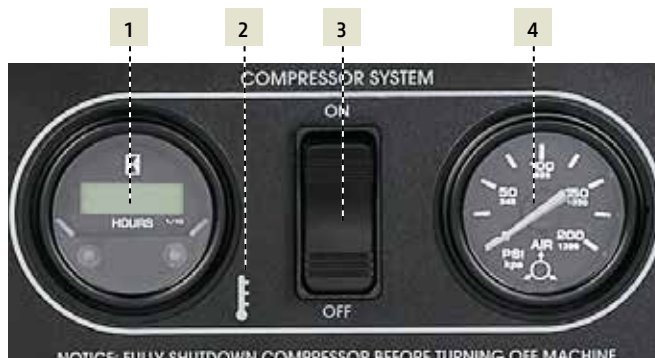
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## ENGINE AND COMPRESSOR DASH GAUGES



### ENGINE DASH GAUGE

1. Oil Pressure
2. Coolant Temperature
3. Engine Hour Meter
4. Fuel Level
5. Battery Charge



### COMPRESSOR SECTION

1. Compressor Hour Meter
2. Thermal/Warning LED Indicator
3. Compressor ON/OFF Switch
4. Compressor Air Pressure Gauge

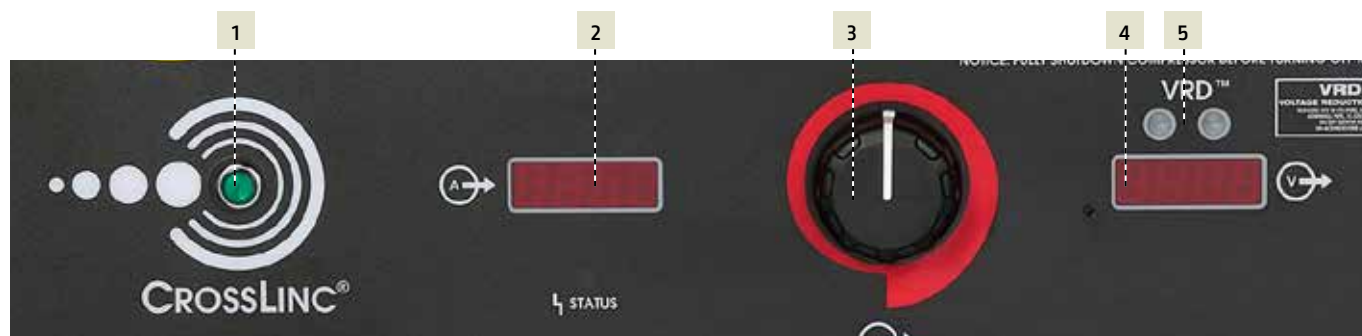
## ENGINE SAFETY STOP



## 50/60 Hz LOCKABLE ISOLATION SWITCH



## WELDING OUTPUT



### WELD SECTION

1. Crosslink Indicating LED
2. Amp Meter
3. Output Control
4. Volt Meter
5. VRD Indicator LEDs

## WELD MODE SETUP



1. Mode Selection Switch
2. Arc Control (Inductance/Pinch)
3. Weld Terminal ON/OFF Switch
4. Local/Remote Switch

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## WELD MODE SETUP



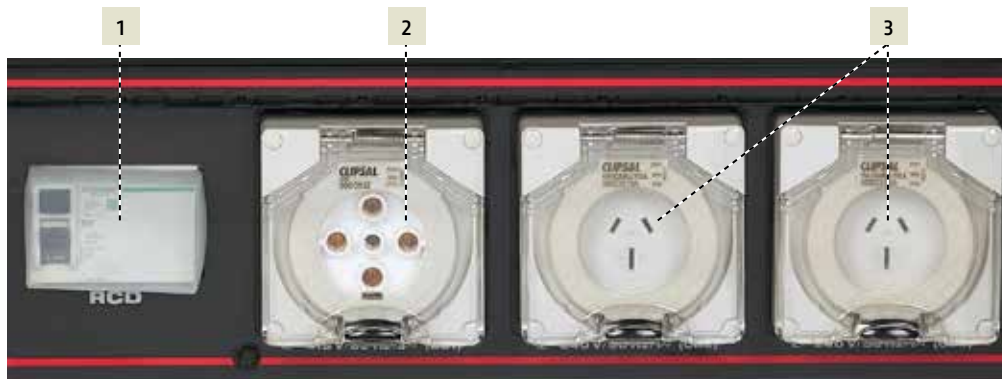
1. Polarity Switch
2. 10 amp C/B 115V Feeder
3. 10 amp C/B ArcLink Feeder
4. 10 amp C/B 42 volt Feeder
5. 20 amp C/B Battery

## ENGINE START AND REMOTE CONTROL CONNECT



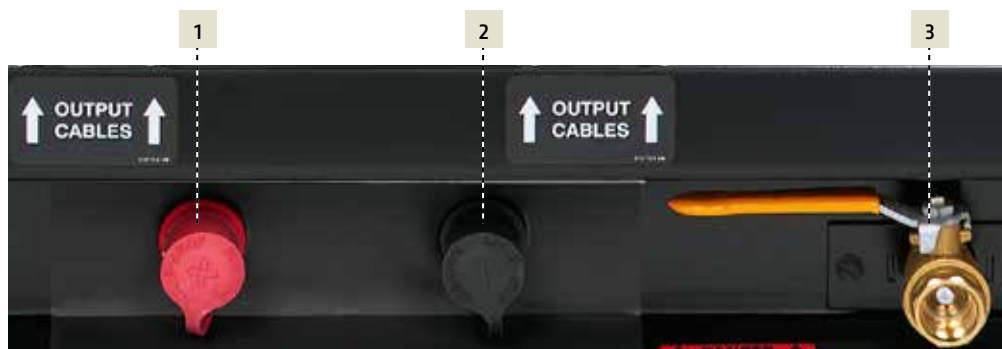
1. Starter Switch
2. Run/Idle/Stop Switch
3. 5 PIN ArcLink Connector
4. 12 PIN Remote Connector
5. 14 PIN Remote Connector
6. Wire Feed Voltage Selector Switch

## AUXILLARY POWER



1. 40A RCD
2. IP66 415V 32 AMP
3. IP66 240V 15 AMP (x2)

## JUMP START AND COMPRESSOR OUTLET

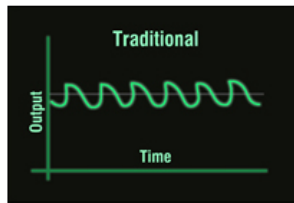


1. Positive Jumper Start Terminal
2. Negative Jumper Start Terminal
3. Compressed Air Outlet Valve

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### Chopper Technology®

- Utilizes patented and award-winning Lincoln Electric Chopper Technology to deliver a superior DC arc welding performance for all types of applications.
- High frequency switching will “chop” the output to produce a smooth and steady shape.



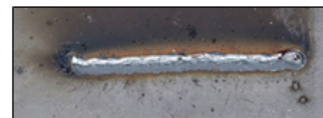
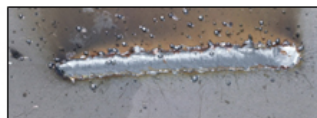
Traditional weld control is more variable around the desired output



Extremely fast response for tighter output control

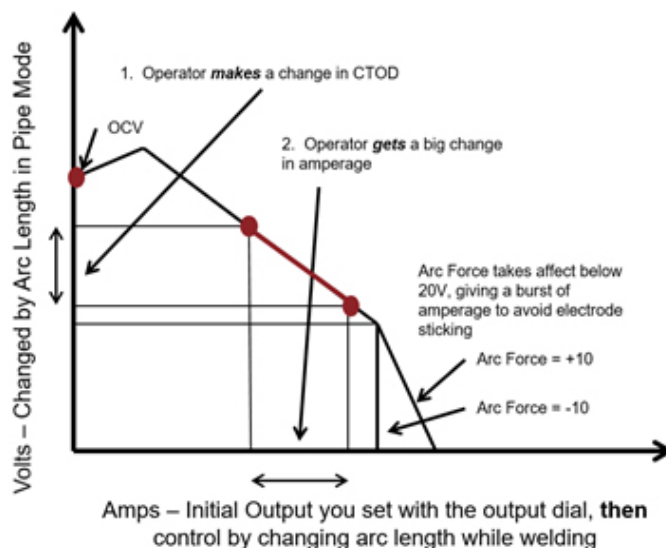
### Benefits include:

- Easy arc starting
- Smooth arc action
- Low spatter levels
- Excellent bead appearance



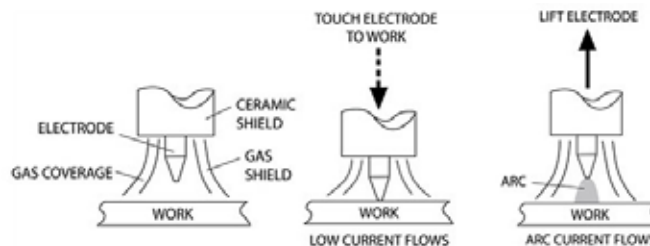
### Downhill Pipe

- A specialized weld mode for pipe welding. It offers a sloped volt-amp curve, which allows operators to vary arc length to change amperage.
- Operators can decrease arc length for increased penetration for narrow sections of pipe or increase arc length to better fill wide sections.
- A sloped volt-amp curve offers greater control to manipulate the weld puddle to account for variation in pipe.
- The mode also features Arc Force to help prevent the electrode from sticking.



### Touch Start TIG

- This mode allows for easy arc starting that avoids tungsten contamination and the need for high-frequency equipment.
- A DC TIG mode which uses a very low voltage to sense when the tip of the tungsten electrode is touched to the work piece.
- When the tungsten is then raised from the work piece, the circuit senses a change in voltage and initiates the appropriate welding current and voltage.



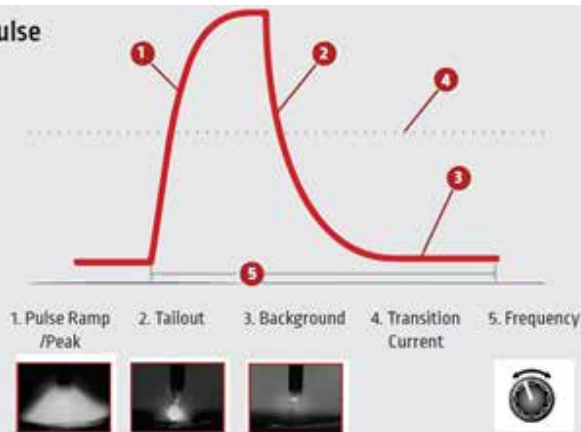
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Pulse is a non-contact transfer method between the electrode and the weld puddle. This means that at no time does the electrode ever touch the puddle. This is accomplished through high-speed manipulation of the electrical output of the welding machine. It is designed to be a spatterless process that will run at a lower heat input than spray or globular transfer methods.

**Advantages provided by pulsing machines include:**

- Wire and gas savings
- Spatter and fume reduction
- Heat reduction
- Improved productivity
- Better quality

**Pulse**



**Available Pulse Modes**

| Diameter | Steel     | Stainless | Metal Cored | Aluminium |      |
|----------|-----------|-----------|-------------|-----------|------|
|          | Argon Mix | Argon Mix | Argon Mix   | 4043      | 5336 |
| .035     | •         | •         |             |           |      |
| .040     | •         | •         |             |           |      |
| .045     | •         | •         | •           |           |      |
| 3/64     |           |           |             | •         | •    |
| .052     | •         |           | •           |           |      |
| 1/16     | •         | •         | •           | •         | •    |

**Synergic Modes**

Offers the simplicity of single knob control. The machine will automatically select the correct voltage and amperage based on the Wire Feed Speed (WFS) set by the operator.

| Diameter | Steel           |           | Stainless |         | Metal-Cored | Flux-Cored |                 | Aluminium |      |
|----------|-----------------|-----------|-----------|---------|-------------|------------|-----------------|-----------|------|
|          | CO <sub>2</sub> | Argon Mix | Argon Mix | Tri-Mix | Argon Mix   | Argon Mix  | CO <sub>2</sub> | 4043      | 5336 |
| .030     | •               | •         | •         | •       |             |            |                 |           |      |
| .035     | •               | •         | •         | •       |             |            |                 | •         | •    |
| .040     | •               | •         |           |         |             |            |                 |           |      |
| .045     | •               | •         | •         | •       | •           | •          | •               |           |      |
| 3/64     |                 |           |           |         |             |            |                 | •         | •    |
| .052     | •               | •         |           |         | •           | •          | •               |           |      |
| 1/16     |                 | •         | •         |         | •           | •          | •               | •         | •    |

SOFTWARE ENHANCED

**Optimal Arc Performance**

As a member of the Lincoln Vantage Family, the Air Vantage® 600x Plus delivers the World's Best Welding Arc, no other competitive machine in the industry can deliver these software optimised arcs. These optimised modes deliver minimal spatter & fume, stable arc starts and quality arcs across the full range of applications, whether that be TIG, Stick, Pipe or one of the many supported Wire modes. Enhanced Gouging Mode performance in both 50 & 60Hz modes is via a hybrid V/A Curve neither a CC nor CV curve, resulting in ultra-smooth material removal.

The AV600X Plus can expand also your welding capabilities with customised modes for Stainless, Aluminium, Steel and Pulse welding<sup>1</sup>. Pulsing enables better arc control in out-of-position work and can lower heat input for critical welds.

Add to this, the Synergic<sup>1</sup> settings available, offering the simplicity of single knob control. The machine will automatically select the correct voltage and amperage based on the Wire Feed Speed (WFS) set by the operator.

[1] Requires ArLink® communications accessory.

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## Industrial Deutz Diesel Engine

High performance, 4 cylinder turbocharged Deutz® 49kw TD2.9L4 diesel engine runs smooth and quiet. With Auto glowing of plugs when needed, electric Fuel Pump together with a 96 Litre Tanks offers easy starting and long shifts without requiring refueling. (Does not require ultra-Low Sulphur fuels).

A sophisticated engine controlled by its own ECU (Engine Control Unit) monitoring many sensors & controlling engine speed etc can now have its error log read onsite via the AV600X Plus Hidden Menu.



## Low maintenance, reliable operations

The Air Vantage® 600X Plus engine driven welders contain less wiring and fewer connections than many previous designs. All printed circuit boards are environmentally shielded using Lincoln Electric's engineered encapsulation and protective frame trays.

Standard stainless steel roof, side panels and engine-access door deliver excellent protection, durability and corrosion resistance from the elements.



## A SUPERIOR COMPRESSOR

### VMAC® S700162 Air Compressor

The VMAC Rotary Screw Air Compressor is belt-driven from the engine using a magnetic clutch. Includes an automatic belt tensioner for optimal compressor performance.

A pressure sensor avoids excessive clutch wear by preventing clutch engagement when high compressor back pressure exists.

The compressor can be conveniently turned on or off with an easy-to reach toggle switch located on the control panel. The full output of 28.3 litres/second (60 SCFM) is available when the engine is set to high idle mode, or 18.9 litres/second (40 SCFM) of output in low idle mode.

The air shut-off valve is easily closed for connecting and disconnecting an air hose. The valve is located in a recessed area below the control panel for convenient access and protection against accidental impact with the air check valve is integrated internally. The check valve is added to improve compressor oil stability if shut-off valve is left open during start or shutdown.

The compressor design is to automatically shut down for high temperature. An indicator light on the control panel turns on for this condition. The compressor automatically becomes operational when the temperature returns to normal.

Compressor maintenance items such as filters are easily accessed in the single-side-service engine compartment. The drain connection for the valve and compressor oil is located in the base of the engine compartment.

Recommended 500-hour maintenance intervals minimise system service frequency.

The air compressor features:

- Belt-Driven Rotary Screw
- Delivery: 60 CFM @ 100 PSI
- Volume: 1.7 m<sup>3</sup>/min @ 6.9 Bar
- Hazard Level E (per AS4343-2005)
- Design Registration Is Not Required
- Compressor Protection:
- Safety Relief Valve: 200 psi (13.8 bar)
- High Temperature Automatic Shut- down: 290 °F (143 °C)
- Clutch Protection 2 psi Switch
- Compressor Oil: 4.0L (1.1 gal)

#### Warranty:

- 3 year/3000 hours on major components
- 1 year/1,000 hours on clutch, belt tensioner, and idler roll.





### Auxiliary Operation

Use of the auxiliary power of the Air Vantage® 600X Plus requires the 50Hz Selection on the Lockable Auxiliary Switch.

### Auxiliary Power Output

- 23 kW / 32A of 3-phase Continuous Power (415V @ 50Hz)
- 7.2 kW / 2 x 15A of 1-phase Continuous Power (240V @ 50Hz)

### Auxiliary Receptacles

- 2 x 240vac 15A Single Phase Auto Switch IP66 Outlets
- 1 x 415vac 32A Three Phase (5 PIN) IP66 Outlet

### Protection

- 1 x 40A RCD Safety Switch
- 1 x C 32A Three Phase Breaker
- 2 x C 16A Single Breakers



### SIMULTANEOUS WELDING AND AUXILIARY POWER LOADS

| WELD<br>AMPS | PLUS | 1 PHASE |      | OR | 3 PHASE |      | OR | BOTH 1 AND 3 PHASE |      |
|--------------|------|---------|------|----|---------|------|----|--------------------|------|
|              |      | WATTS   | AMPS |    | WATTS   | AMPS |    | WATTS              | AMPS |
| 0            |      | 7,200   | 30   |    | 23,000  | 32   |    | 23,000             | —    |
| 100          |      | 7,200   | 30   |    | 18,000  | 25   |    | 18,000             | —    |
| 200          |      | 7,200   | 30   |    | 15,000  | 21   |    | 15,000             | —    |
| 300          |      | 7,200   | 30   |    | 10,000  | 14   |    | 10,000             | —    |
| 400          |      | 6,000   | 25   |    | 5,000   | 7    |    | 5,000              | —    |
| 475          |      | 0       | 0    |    | 0       | 0    |    | 0                  | —    |

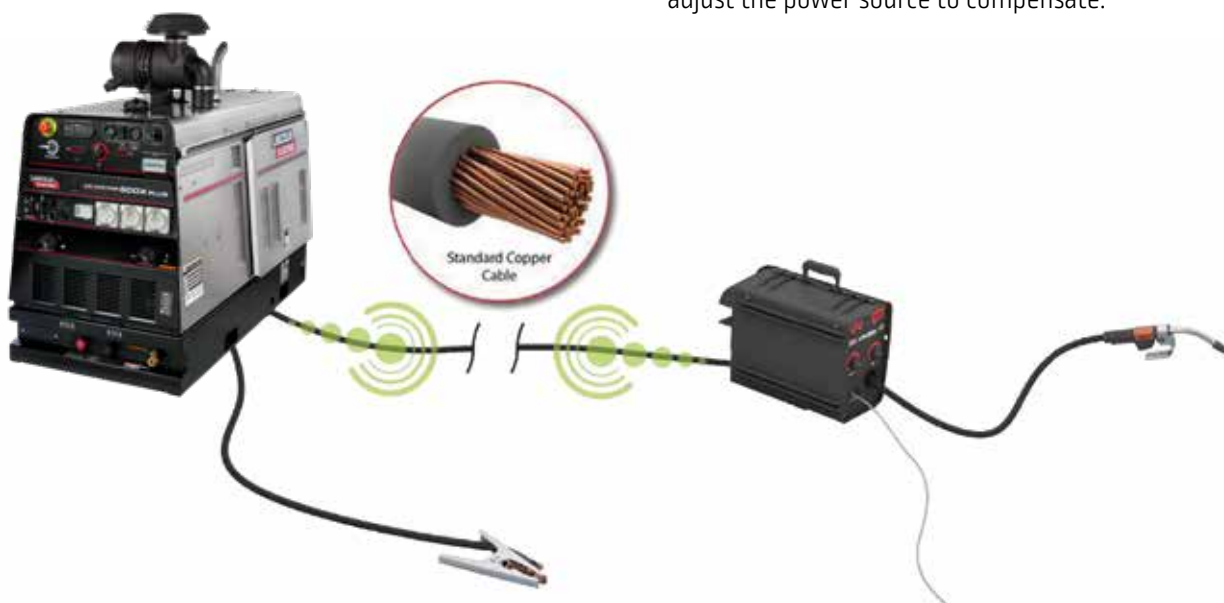


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**TVT™**  
True Voltage  
Technology™

- CrossLinc allows for amperage and voltage control at the welding arc to improve control of your operation
  - No need for an additional control cable – communication occurs directly over the weld cables:
  - Set the desired voltage on the CrossLinc wire feeder.
  - The feeder sends a signal to the CrossLinc power source.
  - The power source will change to the desired voltage.
- CrossLinc also features True Voltage Technology™ to compensate for voltage drop across the welding circuit.
  - TVT™ will measure the voltage drop and adjust the power source to compensate for the difference between the desired voltage and actual voltage at the weld.
  - Preset the wire feeder to the desired voltage.
  - Make a test weld.
  - The system will measure voltage drop and automatically adjust the power source to compensate.



### CrossLinc Benefits

- **Safety** – Help reduce the chance for injury
- Reduce jobsite clutter and hazards by removing cumbersome control cables
- Eliminate unnecessary movement of personnel across the jobsite
- Remove the need to drag heavy control cables around the site
- **Quality** – Greater operator control to meet WPS specifications
- Full voltage control at the feeder results in the correct settings for each weld
- Accurately compensate for voltage drops across long cable runs
- Eliminate unintentional machine adjustments by helpers or other operators
- **Productivity** – Work faster, reduce walking, and minimise rework
- Setup faster with fewer cable connections
- Eliminate helpers or trips to the power source to make procedure adjustments
- Minimize rework with easy settings and adjustments

### ArcLink® Communications

#### Advanced Welding Options

- Enables advanced process capability and additional operator controls via a 5-pin high-speed digital communication.
- Couple with a Power Feed® 25M to unlock advanced process welding such as pulse, synergic modes, memories, and limit controls.
- Connect an Apex® 30M with Helix® M85 for a complete orbital welding system.



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Removable slide access door to allow for easy access to the engine



Dashboard gauges to quickly check the status of the machine



Air filter handily located for rapid cleaning and replacement



Removable slide access door to allow for easy access to the engine



Oil drain valve to keep oil changes neat and efficient



Jump start terminals placed on case front for improved accessibility



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MACHINE SPECIFICATIONS

| Product Name          | Product Number | Rated Welding Output @ 40°C Current/Voltage/ Duty Cycle With Compressor Operating 100psi @ 40cfm | Output @ 40°C – Welder and Generator |  |   | Dimensions H x W x D in (mm)  | Net Weight (kg) |
|-----------------------|----------------|--|--------------------------------------|--|---|---|-----------------|
|                       |                |  | Output Range                         | Open Circuit Voltage                                       | Auxiliary Power <sup>(1)</sup>  |   |                 |
| Air Vantage 600X Plus | K4794-2        | 600A/40V/40%<br>575A/43V/60%<br>525A/40V/100%  | 30-600 Amps CC/CV<br>20-350 Amps TIG | 60 Max OCV @ 1,800 RPM<br>[<30V OCV when VRD is activated] | 2 x 240 VAC 15A <sup>(2)</sup><br>Single Phase:<br>7,200 WATTS, 50Hz.<br><br>1 x 415 VAC 32A<br>Three Phase:<br>23,000 WATTS 50Hz | Machine only<br>1,067 x 836 x 1,753<br>To top of exhaust tube:<br>1,290 | 787 [Approx.]   |

ENGINE SPECIFICATIONS

| Product Name          | Make/Model   | Description   | Speed (RPM)                       | kW @ Speed (RPM) | Displacement                          | Starting System                                     | Capacities               |
|-----------------------|--|---|-----------------------------------|------------------|---------------------------------------|---|--------------------------|
| Air Vantage 600X Plus | Turbo Charged <sup>(3)</sup><br>TD2.9L4<br>Deutz Diesel Engine | 4 Cylinder 49 kW Turbo Charged Water Cooled Diesel Engine | High Idle 1,800<br>Low Idle 1,500 | 49 @ 1,800       | 2.9 L<br>Bore x Stroke 92 mm x 110 mm | 12VDC battery and Starter with Automatic Glow Plugs | Fuel: 95 L<br>Oil: 8.5 L |

COMPRESSOR SPECIFICATIONS

| Product Name          | Compressor Model                              | Description                     | Delivery   | Maximum System Pressure              | Compressor Protection and Hazard Rating   | Capacities                              |
|-----------------------|---|---------------------------------|--|--------------------------------------|---|---|
| Air Vantage 600X Plus | VMAC <sup>®</sup> <sup>(4)</sup><br>[S700162] | Belt-Drive Rotary Screw S700162 | High Idle Mode:<br>28.3 LTR/SEC. @ 7.0 KG/CM<br>[60cfm @ 100psi] | 150psi<br>(10.5 kg/cm <sup>2</sup> ) | Safety Relief Valve 200psi (14.1 kg/cm <sup>2</sup> )<br>High Temperature Automatic Shutdown 143°C<br>Hazard Rating 'E' | Compressor Oil:<br>4.0 L <sup>(5)</sup> |

- (1) When welding, available auxiliary power will be reduced. Output voltage is within +/- 10% at all loads up to rated capacity.
- (2) Circuits cannot be wired in parallel to operate the same device.
- (3) Deutz<sup>®</sup> engine warranty is 3 years.
- (4) Warranty is 3 years/3,000 hours whichever comes first for the compressor and 1 year/1,000 hours whichever comes first for the clutch, idler roll and automatic belt tensioner.
- (5) VMAC<sup>®</sup> synthetic compressor oil recommended for best operation results, or oil approved by VMAC<sup>®</sup>.



CUSTOMER ASSISTANCE POLICY

Lincoln Electric<sup>®</sup> business is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric<sup>®</sup> 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<sup>®</sup> is not in a position to warrant or guarantee such advice and to the extent permitted by law assumes no liability, 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. The provision of information or advice does not create, expand or alter this warranty. Lincoln Electric<sup>®</sup> is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric<sup>®</sup> is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric<sup>®</sup> affect the results obtained in applying this type of fabrication methods and service requirements. Subject to Change – This information is accurate to the best of our knowledge at the time of printing.

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