

Proudly Australian Made

# BVR & FAQ

*Bramco Voltage Reducer*

*... The ultimate in welder  
electrical safety protection*

*Saves Lives*

*a Bramco Electronics Safety Product*



# BVR

300/400/600/800A

AC/DC  
& DC

Portable model

Comes with Stainless Steel rugged enclosure, carry handle, rubber feet, male connectors to Electrode and Work terminals on welder, female connectors to the Work and Electrode holder.

Status LED mounted on output face of BVR.



# BVR

400/600A

AC/DC  
& DC

Internal Model

Comes with Stainless Steel rugged enclosure, mounting flange, bolted connector to Work, bolted connector to Electrode terminal on welder, bolted connector to the Electrode holder.

Status LED can be mounted 1 metre away from BVR.



# BVR

## 200AAC/DC

### Portable model

Comes with Stainless Steel rugged enclosure, carry handle, rubber feet, male connectors to Electrode and Work terminals on welder, female connectors to the Electrode holder and Work.

Status LED mounted on front of BVR.



# BVR

## 200A HFDC



Piggy Back Model  
for  
Inverter Welders

## DC - HF

Portable Inverter Welder is strapped to BVR.

Stainless Steel rugged enclosure, dual welder retaining straps, rubber feet, male connectors to Work and Electrode on welder, socket connectors to the Electrode holder and Work. Status LED and connectors on front of BVR.

# BVR Operation.

- The BVR operating mode is indicated by the Status LED, positioned on the side of the BVR or on front of welding apparatus.
- Status LED is **SOLID GREEN** when the BVR is ready to strike. BVR turns on immediately the electrode resistance to work goes below 100 ohms. When welding, the Status LED will **FLASH GREEN**.
- When the welding arc ceases, the Status LED goes back to **SOLID GREEN**, ie. Safe mode, ready to strike again when required.
- An internal cooling fan may operate when the BVR requires additional cooling.
- If the internal temperature becomes too high, the Status LED will **FLASH RED**, and the BVR will shut off, stopping welding.

# Welding Safety

- Extract AS1674.2-1990 Safety in Welding Processes etc.  
Sets out requirements for the prevention of electric shock and the minimizing of associated hazards when welding.  
Gives examples of how shocks may be received and the action to take in the the event of a welder receiving an electric shock.  
Both AC and DC welding power sources need to be in sound condition, properly installed, regularly inspected, and maintained in good working order.
- Extract AS1966.2 - 1985 Rotating Welding power source.  
This standard addresses the open circuit voltage issue by directing that ....**voltage reducing apparatus** is installed which will cause the voltage to be reduced to less than 32V within 2 sec of open circuit condition.... if the voltage is above 80V.

# Welding Safety

## ■ Leading welder manufacturer says under Welding Safety:

- ◆ Insulate welder from workpiece and ground using dry insulation. Rubber mat or dry wood.
- ◆ Wear dry, hole-free gloves. (Change as necessary to keep dry.)
- ◆ Do not touch electrically "hot" parts or electrode with bare skin or wet clothing.
- ◆ If wet area and welder cannot be insulated from workpiece with dry insulation, use a semi-automatic, constant-voltage welder or stick welder with **voltage reducing device**.
- ◆ Keep electrode holder and cable insulation in good condition. Do not use if insulation is damaged or missing.

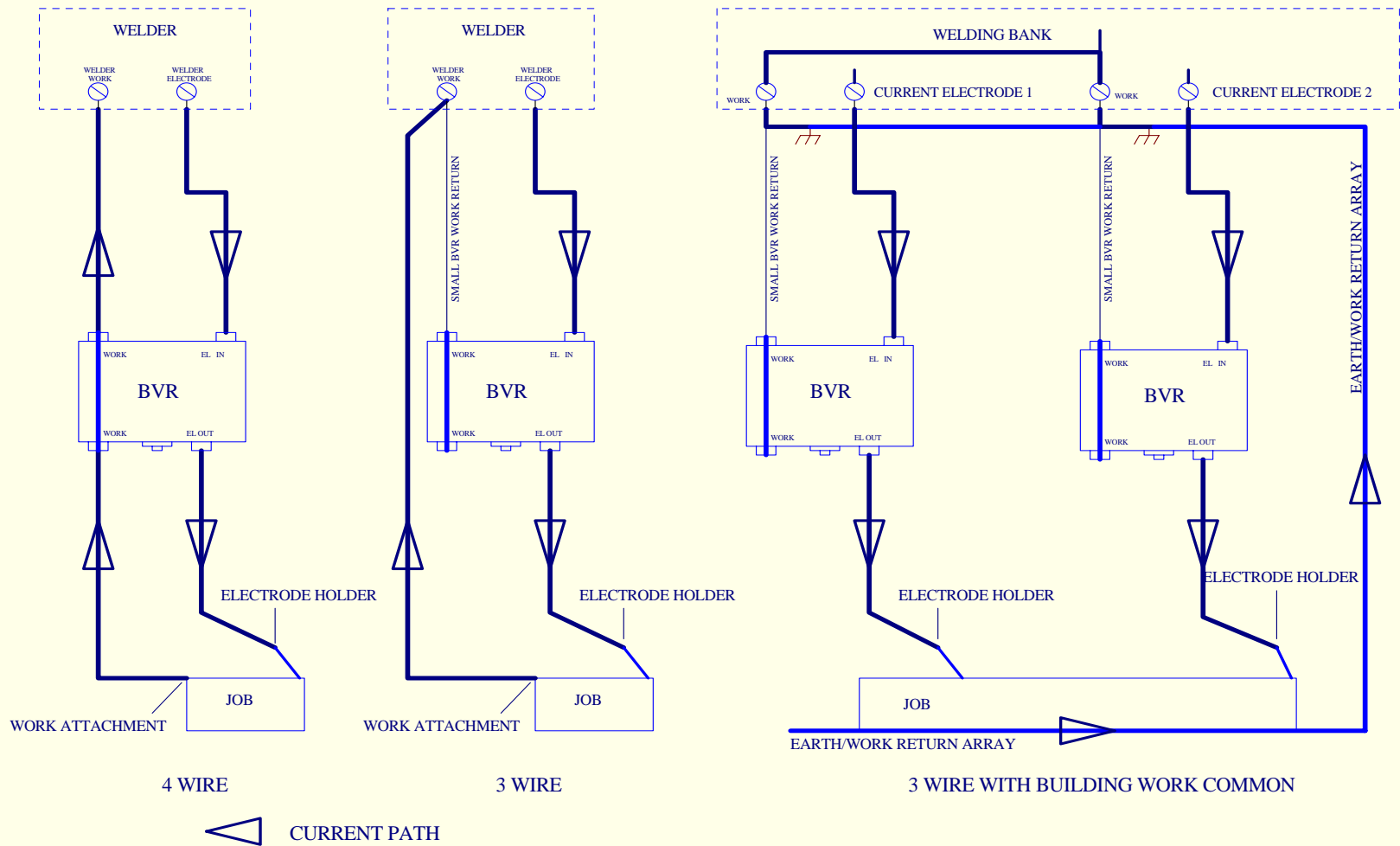
# BVR and Welding Safety

- BVR complies with AS3000, AS3100, AS3195, AS2745 requirements where applicable.
- Risk of electric shock or electrocution of the welding operators is reduced by installing a BVR on all suitable welding machines.
- BVR Output Voltage - about 6 VAC (at no load).  
*ie. Extra low voltage.*
- Strike Resistance - less than 100 ohms.  
*Well below the wet body resistance.*
- Arc Strike Time Max - 5ms.  
*Weld starting and restrike performance is exceptional.*
- Turn Off Time – 100mS typical, 200mS maximum.  
*Fast turn off delay removes window of exposure opportunity.*

# BVR and Welding Safety cont...

- **Additional Safety feature - BVR Faulty Alarm.** Should the BVR fail shorted, or the BVR output not be operator safe, the Status LED will be **SOLID RED**, and an audible alarm inside the BVR will sound - **THE BVR MUST NOT BE USED IN THIS CONDITION.**
- We recommend a regular, **Fault Test**, confirming the above inbuilt protection feature is operational.
- A **Fault Test** button is now provided.
- When pressed for 5 seconds, any time the BVR is powered but not active, should exercise the **BVR Fault Alarm** as above.

# BVR Installation - Recommended



RECOMMENDED FOR BVR400/600/1000A AC/DC INSTALLATIONS

# BVR Installation - AC Welder

- For an AC welder: 3 connections are required (minimum).
- Connect the Electrode terminal on the welder to the Welder Electrode terminal of the BVR.
- Connect the Work terminal on the welder to the Work terminal on the BVR.
- Connect the welding hand piece to the Electrode terminal on the BVR.

# BVR Installation - DC Welder

- For a DC welder: 3 connections are required (minimum).
- Connect the Pos terminal on the welder to the Welder Electrode (Pos) terminal of the BVR. BVR will not operate if negative.
- Connect the Neg terminal on the welder to the Work (Neg) terminal on the BVR.
- Connect the welding handpiece to the Electrode (Pos) output terminal on the BVR.
- Connect the Work lead to the To Work terminal on the BVR.
- To Reverse the welding polarity, interchange connections on the BVR output.

# BVR Installation - AC/DC Welder

- For a welder with AC/DC output option. 3 Connections are required (minimum).
- Connect the Pos terminal on the welder to the Welder Electrode (Pos) terminal of the BVR.
- Note: BVR will not operate if Welder electrode is negative.
- Connect the Neg terminal on the welder to the Work (Neg) terminal on the BVR.
- Connect the welding handpiece to the Electrode Pos DC output connector of the BVR.
- To Reverse the welding polarity, interchange welding lead connections on the BVR output.

# BVR Specifications

- Input Voltage - 45 to 90VAC, 40 to 120VDC.
- Output Voltage - about 6 VAC (at no load).
- Strike Resistance - less than 100 ohms typically.
- Arc Strike Time Max - 5ms.
- Turn Off Time – 100mS typical, 200mS maximum.
- Operation - AC/DC (low frequency), DC only, DC High Frequency, other models available.
- Current Rating - models 200A, 300A, 400A, 600A, 800A
  - ◆ 1000A DC, 1500A DC, 2000A DC models available 2006
- Duty Cycle - 100% @ 40degC mounted vertically.

Continued .....

# BVR Specifications Continued.

- Status LED - Solid State bicolour LED, 40mm (diameter) bezel mounted on BVR, option to mount this display up to 1m from BVR for machine front panel indication.
- Enclosure - Stainless Steel, Rated IP53, when mounted horizontal.
- Dimensions:
  - BVR200 - 370mmL x 130mmH x 140mmW.
  - BVR300/400/600/800 - 370mmL x 180mmH x 195mmW (including mounting flange).
  - BVR1000/1500/2000 - 400mmL x 220mmH x 320mmW.
- Weight - BVR200 - 5kgs, BVR300/400/600/800 - 9kgs  
BVR1000/1500/2000 - 21kgs.

# BVR Sales and Service

- Bramco Electronics BVR Distributors
  - R&D Technology NSW
  - R&D Technology QLD
  - CIE North QLD and NT
  - Pacific Automation
  - Bramco South Africa
  - Bradford Stuart Industries USA
- 
- And Authorised Installers

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# BVR FAQ

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# FAQ

Q1. Will fitting a Bramco BVR eliminate the need for normal precautions?

A. NO. But the risk of electric shock or electrocution on welding operators is significantly reduced by installing a BVR on all suitable welding machines.

# FAQ

Q2. What makes the BVR operator safe for welding in confined spaces?

A. Low electrode voltage.... The BVR reduces the electrode voltage output to about 6 volts when not welding. On striking the electrode to the work, ie, when the resistance falls below 100 ohms, full voltage is available for welding in less than 5 milliseconds. The BVR output recovers to the safe working mode the moment (100mS typical, 200 mS maximum) the electrode is lifted from the work.

# FAQ

Q3. How do I know the BVR unit is safe to use?

A. Extra Safety.... The BVR has an additional inbuilt safety feature, **Fault Alarm**. Should the BVR fail shorted, or the BVR output not be operator safe, ie, leaky, the **Status LED** will be **SOLID RED**, and an **Audible Alarm** inside the BVR will sound.

A **Fault Test** button is now provided.

When pressed for 5 seconds any time the BVR is not active, should exercise the **Fault Alarm** as above.

# FAQ

Q4. We do a lot of tack welding. Will this cause a problem?

A. NO. Weld start delay is under 5 milliseconds. Turn-off is a fast 100 mS typical, 200mS maximum.

Weld starting and restrike performance is exceptional.

# FAQ

Q5. Can we use the BVR on both AC and DC welding machines?

A. YES. The BVR model AC/DC has a universal input that will operate on either AC or DC machines. On DC input, polarity must be positive on electrode input to operate. No operation if reversed.

Welding output reversal by interchanging of the output plugs.

A DC only model is also available for rectified mains welding sources and diesel DC generator welders.

# FAQ

Q6. Can we use BVR on machines without contactors, such as diesel powered welders?

A. YES. BVR must see less than 100 ohms electrode to work, to turn on. A DC model is available with bolted connectors, no handle or feet. This more compact model has the STATUS LED available with a flexible lead to allow it to be mounted on the welder front panel, if the BVR is fitted internally.

# FAQ

Q7. Can we use the BVR on machines that have high frequency starting?

A. NO. High frequency will damage the BVR electronics.

# FAQ

Q8. Can we use BVR with inverter welders?

A. YES on some models. NO on others.

We have a specific model, -HF, optimised for inverter welders.

**DO NOT use standard BVR's on inverter welders.**

Contact the factory for advice on BVR/welder compatibility.

# FAQ

Q9. Can we use BVR200/300HFDC model on DC welders?

A. YES. On both rectifier (ie. mains powered) and generator welding outputs.

The HFDC model auto detects the input voltage, DC to low frequency or high frequency, and selects a suitable operating mode.

The welder must be constant current enabled. If the welder is arranged for constant voltage operation then the Fault Alarm may be activated during normal welding.

# FAQ

Q10. Can the BVR's be used on welders with a constant voltage output?

A. NO. The welder must be constant current enabled. If the welder is arranged for constant voltage operation then the Fault Alarm may be activated during normal welding.

# FAQ

Q11. Use of BVR's on MIG and TIG welders?

A. NO.

MIG and TIG welders and external MIG wire feed units have an internal line contactor, controlled by the hand piece trigger that isolates the welding handpiece and weld wire from the source unless the trigger is pulled.

A further issue with MIG is that the wire feed control and gas flow gear are powered from the welding source and cause large voltages to be superimposed on the welder output while welding. Little attention has been paid to the suppression of these transients which by our experience, will cause damage to the BVR control electronics.

# FAQ

Q12. When using the BVR, what is the 2 colour indicator for?

A. The BVR operating mode is indicated by the Status LED, positioned on the side of the BVR.

Status LED is **SOLID GREEN** when the BVR is ready to strike. BVR turns on immediately the electrode resistance goes below 100 ohms.

When welding, the Status LED will **FLASH GREEN**.

When the arc ceases, the Status LED goes back to **SOLID GREEN**, ie. Safe mode, ready to strike again when required. See Q3 for Fault Alarm description.

# FAQ

Q13. What BVR models are available?

A. Portable: BVR200AC/DC, BVR300A DC,  
BVR400AC/DC, BVR600AC/DC,  
BVR800A DC.

Inverter: BVR200HFDC.

Internal: BVR400DC, BVR600DC.

Due for release late 2004: BVR1000A DC,  
BVR1500A DC,  
BVR2000A DC.

# FAQ

Q14. What is the BVR thermal rating?

A. The BVR uses generous power electronics, large heatsink and fan assisted cooling controlled by a thermostat to achieve a continuous rating up to 40deg C. A high temperature protective shutdown is activated if the BVR is gets too hot.

# FAQ

Q15. How is the BVR packaged?

A. The BVR enclosure is rugged stainless steel, with carry handle and rubber feet.

Male connectors to Electrode and Work terminals on welder, female connectors to Work and Electrode holder. Connectors are bayonet parallel style 1/4 turn action.

DC version is supplied with M10 bolted connections.

# FAQ

Q16. Can the BVR be used for air arc gouging?

A. YES. On both rectifier (ie. Mains powered) and generator welding outputs.

The welder must be constant current enabled. If the welder is arranged for constant voltage operation then the **Fault Alarm** may be activated during air arc gouging.

# FAQ

Q17

. What are the recommended connection arrangements for the BVR?

A. See BVR Installation - Recommended methods including 3 and 4 wire schemes.

# FAQ

Q18

. How does the BVR compare with other VRD's?

A. Compare the BVR features.

No other product offers the form and function of the BVR.

The safety monitor **FAULT ALARM** with built-in TEST button is unique.

Talk to BVR users.

Arrange a demo test of a BVR and judge for yourself.

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