IBELL VRM200-22

iBELL VORMIR VRM200-22 Inverter Welding Machine User Manual

Model: VRM200-22 | Brand: IBELL

1. Introduction

This user manual provides essential information for the safe and effective operation, setup, and maintenance of your iBELL VORMIR VRM200-22 Inverter Welding Machine. This versatile machine supports multiple welding processes including MMA (Stick), MIG, MAG, and LIFT TIG, making it suitable for a wide range of applications. Please read this manual thoroughly before operating the machine to ensure proper usage and to prevent injury or damage.



Figure 1.1: The iBELL VORMIR VRM200-22 welding machine, shown with its included accessories such as the MIG torch, earth clamp, electrode holder, and welding wires.

2. Safety Information

Welding operations involve significant risks. Adherence to safety precautions is paramount to prevent electric shock, burns, fire, and other serious injuries. Always ensure you are working in a safe environment and using appropriate personal protective equipment (PPE).

2.1 General Safety Precautions

- Always wear appropriate personal protective equipment (PPE), including a welding helmet with proper shade, flame-resistant clothing, welding gloves, and safety shoes.
- Ensure the work area is well-ventilated to disperse welding fumes and gases.
- Keep a fire extinguisher readily available and know how to use it.
- Do not weld near flammable materials or liquids.

- Ensure all electrical connections are secure and properly grounded.
- Never touch live electrical parts or electrodes with bare hands or wet gloves.
- Disconnect power before performing any maintenance or inspection.

2.2 Electric Shock Prevention

- Inspect cables and connections for damage before each use. Replace damaged parts immediately.
- Ensure the welding machine is properly grounded.
- Avoid welding in damp or wet conditions.
- The machine features built-in VRD (Voltage Reduction Device) for enhanced safety, reducing open-circuit voltage when not welding.

2.3 Fumes and Gases

- Welding produces fumes and gases that can be hazardous to health. Use local exhaust ventilation or general ventilation to keep fumes and gases away from the breathing zone.
- If ventilation is inadequate, use an approved respirator.

3. Product Overview

The iBELL VORMIR VRM200-22 is a compact and efficient inverter welding machine designed for versatility and reliable performance. It incorporates IGBT inverter technology for stable arc and high efficiency.

3.1 Multi-Process Capability

This machine supports four primary welding processes:

- **MMA (Manual Metal Arc / Stick Welding):** Suitable for all steels, highly versatile.
- **MIG (Metal Inert Gas Welding):** Ideal for high strength structure welding.
- **MAG (Metal Active Gas Welding):** Provides precision welding for maximum durability.
- **LIFT TIG (Tungsten Inert Gas Welding):** Used for aluminum alloy, stainless steel, and plate welding. Note: A TIG lift torch is not included and must be purchased separately.



Figure 3.1: This image illustrates the four primary welding functions supported by the VRM200-22: MIG, MAG, ARC (MMA), and TIG LIFT, highlighting its versatility.



Figure 3.2: This visual guide showcases the machine's ability to perform MMA, MIG, TIG LIFT, and MAG processes.

3.2 Key Features

- **IGBT Inverter Technology:** Provides stable and efficient welding performance.
- **Portability:** Designed for easy transport and use in various locations.
- **Heat Dissipation System:** Ensures optimal operating temperature and extends machine lifespan.
- **Safety Protection:** Includes voltage compensation, thermal protection, and VRD built-in.
- **Low Noise Operation:** Contributes to a more comfortable working environment.



Figure 3.3: An illustration detailing the efficiency-enhancing features of the welding machine, including IGBT technology, portability, an effective heat dissipation system, built-in safety protection, and low noise operation.

3.3 Control Panel and Components

Familiarize yourself with the control panel and various components of the welding machine for effective operation.

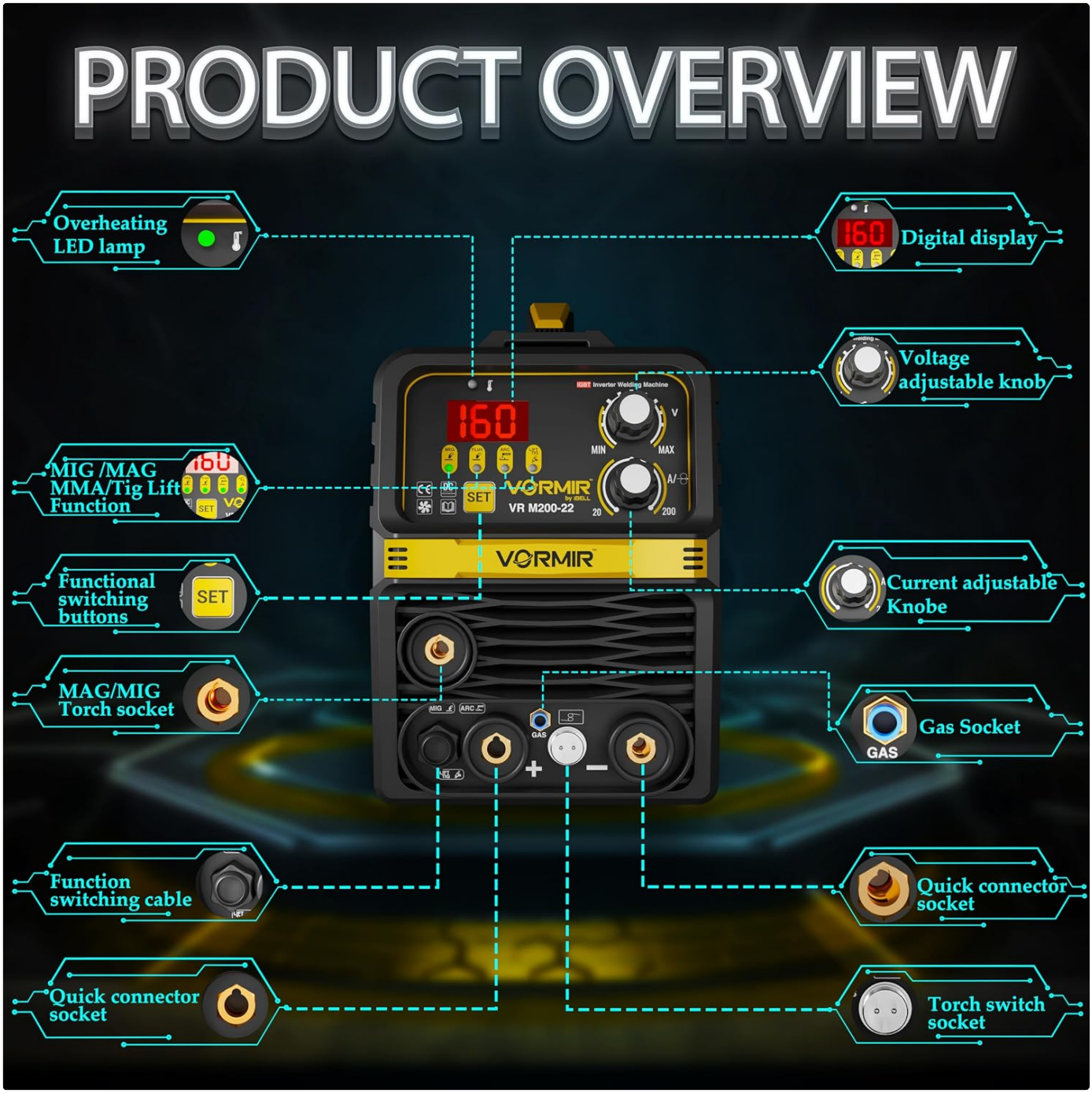


Figure 3.4: An exploded diagram providing a comprehensive overview of the VRM200-22, labeling key components such as the digital display, voltage and current adjustable knobs, functional switching buttons, torch sockets, and gas socket.



Figure 3.5: A close-up of the machine's control panel, featuring the digital display showing '160', mode indicator lights (MIG, FLUX, ARC, LIFT TIG), and the MIN/MAX adjustment knobs for voltage and current.

- **Digital Display:** Shows current welding parameters.
- **Voltage Adjustable Knob:** Adjusts welding voltage.
- **Current Adjustable Knob:** Adjusts welding current.
- **Functional Switching Buttons:** Selects welding mode (MIG, FLUX, ARC, LIFT TIG).
- **MAG/MIG Torch Socket:** Connection point for the MIG/MAG torch.
- **Gas Socket:** For connecting gas cylinder (for MIG/MAG with shielding gas).
- **Quick Connector Sockets:** For connecting earth cable and electrode cable.
- **Torch Switch Socket:** For connecting the torch trigger.
- **Overheating LED Lamp:** Indicates when the machine is overheating and thermal protection is active.

4. Setup

Proper setup is crucial for safe and effective welding. Follow these steps carefully.

4.1 Unpacking and Inspection

- Carefully unpack the welding machine and all accessories.
- Inspect for any visible damage that may have occurred during shipping. Do not operate if damaged.
- Verify all included components are present: MAG Torch, Nozzles, flux core wire, MIG solid wire, earth cable, electrode cable.

4.2 Power Connection

- Ensure the power supply matches the machine's requirements: 220V ±15%, 50/60Hz.
- Connect the machine to a suitable 30A power socket.
- Ensure the power outlet is properly grounded.

4.3 Connecting Welding Cables

- **Earth Cable:** Connect the earth clamp to the workpiece. Ensure a clean, bare metal contact for good conductivity. Plug the earth cable into the appropriate quick connector socket on the machine.
- **Electrode Cable (for MMA):** Connect the electrode holder to the electrode cable. Plug the electrode cable into the appropriate quick connector socket on the machine.

4.4 Wire Feeder Setup (for MIG/MAG)

- Open the wire compartment cover.
- Place the wire spool onto the spool holder, ensuring it rotates freely. The machine supports 1KG max wire loading.
- Thread the welding wire through the wire feeder mechanism, ensuring it is properly seated in the drive rollers.
- Close the wire compartment cover.
- The machine is compatible with flux core and solid wire (0.8 / 0.9 / 1.0 mm).



Figure 4.1: A detailed view of the internal wire feeding mechanism, demonstrating how the welding wire spool is loaded and secured with the spool lock, spring, and spool spacer for consistent wire delivery.



Figure 4.2: A view of the machine's wire compartment, illustrating the compatibility with 1.6-3.2mm usable electrodes, 0.8-1.0mm flux core wire, and 0.8-1.0mm solid wire.

4.5 Gas Connection (for MIG/MAG with shielding gas)

- If using shielding gas, connect the gas hose from the regulator on your gas cylinder to the gas socket on the machine.
- Ensure all gas connections are tight to prevent leaks.

5. Operating Instructions

Once the machine is set up, you can begin welding. Always refer to the control panel for current settings.

5.1 Powering On

- Turn on the main power switch located on the rear of the machine.
- The digital display will illuminate, and the fan will start.

5.2 Selecting Welding Mode

- Press the "SET" or functional switching button on the control panel to cycle through the available welding modes: MIG, FLUX (for flux core wire), ARC (MMA), and LIFT TIG.
- The corresponding indicator light will illuminate for the selected mode.

5.3 Adjusting Welding Parameters

- Use the **Voltage Adjustable Knob** and **Current Adjustable Knob** to set the desired welding parameters. The digital display will show the current settings.
- Refer to welding charts or practice on scrap material to find optimal settings for your specific application and material thickness.
- For MIG/MAG welding, wire feed speed is typically synchronized with current settings.

5.4 Welding Operation

- Ensure proper grounding of the workpiece.
- Position yourself safely and comfortably.
- Initiate the arc according to the chosen welding process (e.g., scratch start for LIFT TIG, trigger pull for MIG/MAG, touch and lift for MMA).
- Maintain a consistent travel speed and arc length for quality welds.

5.5 Duty Cycle and Thermal Protection

- The machine has a 30% duty cycle at 40°C. This means it can weld continuously for 3 minutes out of every 10-minute period at maximum output before requiring a 7-minute cool-down.
- If the machine overheats, the Overheating LED Lamp will illuminate, and the machine will temporarily stop welding to cool down. Allow it to cool before resuming operation.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your welding machine.

6.1 Daily Maintenance

- Inspect all cables and connections for cuts, abrasions, or loose fittings. Replace or repair as needed.
- Clean the welding torch nozzle and contact tip.
- Check the earth clamp for good contact surfaces.

6.2 Periodic Maintenance

- Clean the internal components of the machine using dry compressed air to remove dust and debris. Do this regularly, especially in dusty environments.
- Check the wire feeder rollers for wear and cleanliness.
- Ensure cooling fan is free from obstructions.

6.3 Storage

- Store the machine in a clean, dry, and well-ventilated area, away from direct sunlight and moisture.
- Protect the machine from extreme temperatures.

7. Troubleshooting

This section provides solutions to common issues you might encounter. For problems not listed here, contact qualified service personnel.

Problem	Possible Cause	Solution
Machine does not power on.	No power supply; loose power cable; faulty power switch.	Check power outlet and circuit breaker. Ensure power cable is securely connected.
No welding arc.	Poor earth connection; incorrect welding mode; insufficient current setting; faulty torch/electrode holder.	Ensure earth clamp has good contact. Select correct welding mode. Increase current. Inspect and replace faulty components.
Overheating LED is on.	Exceeded duty cycle; poor ventilation; blocked fan.	Allow machine to cool down. Ensure adequate ventilation. Clear any obstructions from the fan.

Problem	Possible Cause	Solution
Poor weld quality (e.g., porosity, spatter).	Incorrect parameters (voltage/current/wire speed); improper gas flow (MIG/MAG); contaminated workpiece; incorrect wire/electrode.	Adjust parameters. Check gas cylinder and flow rate. Clean workpiece. Use correct wire/electrode type and size.
Wire feeding issues (MIG/MAG).	Incorrect wire tension; worn drive rollers; clogged liner; wrong contact tip size.	Adjust wire tension. Clean/replace drive rollers. Clean/replace torch liner. Use correct contact tip for wire size.

8. Specifications

Detailed technical specifications for the iBELL VORMIR VRM200-22 Inverter Welding Machine.

Parameter	Value
Model Number	VRM200-22
Input Voltage	220V ±15%
Frequency	50/60Hz
Input Capacity	5KVA
Input Current	22.8A
No-Load Voltage	68V
Max Output - MIG	140A (35-140A)
Max Output - MAG	140A (20-140A)
Max Output - MMA	120A (20-120A)
Max Output - LIFT TIG	120A (20-120A)
Efficiency	80%
Duty Cycle (at 40°C)	30%
Power Socket	30A
Technology	IGBT Inverter
Protection Class	IP21S
Insulation Class	F
VRD	Built-in
Cooling	Fan Cooling
Usable Electrodes	1.6–3.2 mm
Flux Core Wire Compatibility	0.8 / 0.9 / 1.0 mm
Solid Wire Compatibility	0.8 / 0.9 / 1.0 mm

Parameter	Value
Max Wire Loading	1KG
Item Weight	9 kg 800 g
Product Dimensions (LxWxH)	45.5 x 31.5 x 31.5 cm
Included Components	MAG Torch, Nozzles, flux core, mig solid wire, earth cable, electrode cable



Figure 8.1: A summary of the machine's technical specifications, covering input power, input capacity, input current, no-load voltage, maximum currents for MIG, MAG, MMA, and LIFT TIG modes, and compatible electrode and wire sizes.

9. Warranty and Support

The iBELL VORMIR VRM200-22 Inverter Welding Machine comes with a **1-Year Warranty** from the date of purchase. This warranty covers manufacturing defects and ensures reliable operation under normal use conditions.
For warranty claims, technical assistance, or spare parts, please contact the authorized service center or your retailer. Keep your purchase receipt as proof of purchase.

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