



Service Bulletin



10/04/2020

BULLETIN # 264

ALL WIA/MILLER WELDING MACHINES

POWER SUPPLY WIRING AND PLUG COMPLIANCE

CAUTION: The following information is intended for use by qualified service personnel. When the unit is energised LETHAL VOLTAGES are present on the electrical and electronic components. It is not intended that persons without suitable training and knowledge attempt to perform service tasks on the components of welding equipment.

Introduction

This service bulletin provides rationale behind the rating of supply plugs and supply cable to WIA Welding Machines. This statement can be used to clarify wiring compliance in situations where different interpretations of what may be applicable have led to confusion regarding compliance.

Definitions

Welding machines are not an electrical appliance that operates continuously.

During period of no welding the machine will be in a standby state where minimal power is used to support control circuits and (possibly) a fan.

During welding the weld output is variable, therefore the input power and hence, current will also be variable.

Welding machines are designed and rated to operate at a maximum output current at a specific Duty cycle, as well as an output current that the machine can operate at 100% of the time, (even though this is unlikely). The duty cycle of a machine will control use at an over rated input current for a shortened period of time. Allowing a machine to operate at maximum output, for a specified period of time without damage to the machine, or associated building wiring.

Operating within duty cycle times allows for plugs and connections to comply with the requirements as if operating with Rated Primary Current (I_{eff}).

In order for the fault detection system to be correct, the supporting building wiring must be appropriately rated to I_{eff}. This ensures the safety of the machinery and all associated wiring in case of any fault.

The information provided in this sheet is accurate and reliable, however no warranty of accuracy or reliability is given and no responsibility arising in any other ways by errors or omissions is accepted.



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Example 1 Weldmatic 350i (CP139);

The Weldmatic 350i (CP139-2) is supplied with a supply cable of 2.5mm² and a 32A three phase plug.

The machine is manufactured to AS60974.1-2006 Arc welding equipment, Part 1 Welding power sources. Clause 10.8 requires supply cable to be heavy duty and dimensioned in accordance with the Maximum Effective supply current. I_{eff}

The name plate specification for the Weldmatic 350i states $I_{eff} = 19.4A$
Duty cycle (10 minute cycle) at this rating is 271A output at 100% or 350A output at 60%.

Guidance on conductor size can be found in
ASNZS3100 Approval and test Specification – General requirements for Electrical equipment;
Table 4.4

For rated current $> 16A$ & < 25 nominal cross section area 2.5mm²

Since $I_{eff} = 19.4A$ is $< 25A$ then supply cable is adequately rated at 2.5mm²
Clause 4.4.1 (d) requires plug to “be of appropriate current rating”

Since the 32A plug is rated higher than $I_{eff} = 19.4A$ it is compliant.
The 32A plug is also compliant with AS/NZS 3123.

Example 2 Weldarc 140i (MC104);

The Weldarc 140i (MC104) is fitted with a 10A single phase plug and a 1.5mm² cable.

The machine is manufactured to AS60974.1-2006 Arc welding equipment, Part 1 Welding power sources. Clause 10.8 requires supply cable to be heavy duty and dimensioned in accordance with the Maximum Effective supply current. I_{eff}

Rated Primary Current (I_{eff}) is 10A. The duty cycle at I_{eff} is 62A output at 100% or 140A output at 20%.

Since $I_{eff} = 10A$ is $< 20A$ then supply cable is adequately rated at 1.5mm²
Clause 4.4.1 (d) requires plug to “be of appropriate current rating”

Since the 10A plug is rated at $I_{eff} = 10A$, it is compliant.
The 10A plug is also compliant with AS/NZS 3123.

Any further questions should be directed to wiaservice@welding.com.au

Affected serial numbers:

All WIA and Miller machines purchased through WIA and authorised distributors. Imported or second owner purchased machines cannot be endorsed by WIA technical support.

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