IMICB22

Carry out motor vehicle body structural aluminium welding operations

Overview

This unit is about joining materials safely, correctly and effectively using aluminium welding techniques and procedures.

Performance criteria

You must be able to:

P1 use the appropriate **personal protective equipment (PPE)** when carrying out aluminium welding operations
P2 protect the vehicle and its contents effectively when carrying out aluminium welding operations
P3 prepare material surfaces and align to enable suitable join to be achieved, ensuring mating flanges are treated following manufacturers' procedures before joining
P4 select, set up and use the correct **tools and equipment** in order to correctly carry out aluminium welding operations
P5 ensure that the **tools, equipment** and **PPE** you require are in a safe working condition and are correct for the joining operation that you are to be completing
P6 set up your **equipment** to carry out aluminium welding operations checking:

P6.1 suitability of gas/filler wire and size for material to be joined
P6.2 parameters are set correctly
P6.3 consumables are correct
P6.4 feed rollers and welding tip
P6.5 test kit
P7 carry out aluminium welding operations following:

P7.1 recognised researched repair methods
P7.2 test procedures, including providing test coupons on equivalent material in accordance with recognised standards
P7.3 manufacturers' processes, methods and procedures
P7.4 your workplace procedures
P7.5 health, safety and legal requirements
P8 avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area
P9 recognise when your weld is not forming correctly and what action needs to be taken
P10 inspect and assess aluminium weld quality in accordance with industry recognised standards including:

P10.1 dye penetrate
P10.2 crack testing
P11 check integrity of the weld and record the type of weld achieved on the appropriate paper work
P12 ensure test pieces are recorded and stored
P13 dress the joint area without reducing material thickness and protect the repaired area to inhibit corrosion where applicable
P14 clean and store **PPE** and **equipment** in appropriate manner
P15 promptly report any additional faults you notice during the course of your work to the relevant person(s)
P16 promptly report any delays in completing your work to the relevant person(s)

P17 carry out aluminium welding operations within the agreed timescale
P18 complete work records accurately, in the format required and promptly pass them to the relevant person(s)

Knowledge and understanding

You need to know and understand:

K1 the health, safety and legal requirements relating to the joining of materials using aluminium welding techniques
K2 your workplace procedures for:

K2.1 the referral of problems
K2.2 reporting of delays to the completion of work
K2.3 completion of work records
K3 the work that needs to be done and the standard required
K4 the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials using aluminium welding operations
K5 the importance of selecting, using and maintaining the appropriate **PPE** when joining materials using aluminium welding operations
K6 how to find, interpret and use sources of information applicable to the joining of materials using aluminium welding operations and the implications of not fully understanding the repair methods presented
K7 how to select, check, maintain and set up all of the **tools and equipment** required to correctly join materials using aluminium welding techniques
K8 the different types of welding processes, techniques and joints used for the joining of materials when using aluminium welding operations
K9 the correct surface preparation methods to ensure a good aluminium weld is achieved and the reasons why surface preparation is important
K10 the faults and defects that can occur when carrying out aluminium welding and the common causes of these faults
K11 the need for correct alignment of materials and the methods used to achieve this
K12 the types of quality control checks that can be used to ensure correct joining of materials including:

K12.1 dye penetrate
K12.2 crack tests
K13 how to inspect and assess aluminium weld quality in accordance with industry recognised standards

K14 the different types of joint that can be used to join materials using aluminium welding, including

K14.1 lap plug
K14.2 lap seam

K14.3 butt joint
K14.4 brace joint
K14.5 fillet joint
K15 when aluminium welding techniques should be used
K16 how to ensure cross contamination does not occur and the effect of cross contamination on aluminium
K17 the implications of electro-magnetic fields and the effects on medical devices
K18 the ihazards of inhaling welding fumes

Scope/range

All of the items listed below form part of this National Occupational Standard.

1. **Personal protective equipment (PPE)** for aluminium welding operations includes:

1.1. face mask with appropriate eye protection
1.2. protective/flame retardant coveralls
1.3. protective/flame retardant gauntlets
1.4. steel toe cap boots
1.5. appropriate vehicle protection
1.6. appropriate protection for others in the workshop
1.7. appropriate fume mask

2. **Tools and equipment** are:

2.1. anti-static extraction
2.2. designated aluminium environment
2.3. designated aluminium tooling
2.4. fume extraction

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