



CORROSION CONTROL

METHOD STATEMENT

PINBRAZING

GENERAL

| Revision | Date | Prepared By | Approved By |
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Method Statement Pinbrazing

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1 INTRODUCTION

This Method Statement covers general pinbrazing procedures.

2 REFERENCE DOCUMENTS

2.1 Specifications

As required

2.2 Drawings

As required.

3 RESPONSIBLE PERSONS

Pinbrazing activities shall be carried out by suitably experienced and trained personnel.

All staff undertaking pinbrazing for any form of attachment should have attended an approved course in the pinbrazing technique and hold a current certificate of competency.

Service Technicians will respond to the appropriate Project Engineer.

Project engineers report to the Manager, Engineering Services

4 TEST EQUIPMENT

4.1 Calibration

Any test meters utilised shall be calibrated to National or International measurement standards.

4.2 Equipment List

Pinbrazing set comprising brazing gun, battery box /electronic unit, leads, grinder and charger
Handtools.



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5 PROCEDURES

Reference should be made to the manual for the equipment being used for procedures specific to that equipment.

5.1 *Location of Connections*

- i) If required, mark the desired position of the bonds on the steel. Do not use any oil based marker e.g. spray paint, as this will contaminate the grinding burr.

5.2 *Preparation of the Surface*

- i) If necessary degrease the area of the pin braze and adjacent earth connection before grinding.
- ii) Scrape and clean the steel and grind an area for the earth clamp and braze.
- iii) Using a suitable grinder, clean the surface to a bright finish. All pits and marks must be removed.
- iv) To prevent the steel surface re-oxidising, brazing must take place as soon as possible after grinding, i.e. not more than 5 minutes delay.

5.3 *Pinbrazing*

- i) Attach the magnetic earth lead attachment to the cleaned surface.
- ii) Insert the correct pin and ferrule.
- iii) Adjust the pinbrazing gun.
- iv) Locate the brazing pin on the steel at the required location.
- v) Apply sustained pressure on the brazing gun so that full contact is made between the ferrule and the bond attachment (or the steel surface when using threaded pins).
- vi) Hold the brazing gun firmly and close the circuit by squeezing the trigger. Avoid looking at the actual braze.
- vii) Keep the trigger depressed until the braze is completed.
- viii) After about 2 seconds the fuse wire should rupture and the braze will be complete.
- ix) In the event of a fuse not rupturing after the normal time, withdraw the brazing gun completely from the work keeping the trigger depressed.
- x) After the fuse has ruptured, hold the brazing gun in place for a further 3 seconds to allow the braze to set.
- xi) Remove the brazing gun by pulling straight off in line with the pin.
- xii) If the ferrule has remained in the tool break out by levering against a suitable edge. Take care not to touch the ferrule since it may be hot.



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- xiii) Hold the brazing gun in a vertical position, and then depress the ejector button to expel the remaining fuse wire. Catch the wire in your hand to ensure it has been ejected.

5.4 Testing A Completed Bond

- i) Test threaded pins with a torque device. For an M8 pin the torque device should be set to 10 Nm, the threads will fail at 25 Nm so do not use excessive force.
- ii) Test direct braze pins by carefully breaking off the shank of the plain pin with a hammer. Take care not to damage the lug. After breaking off the shank the broken surface should be level or thereabouts with the outer surface of the lug. Ensure the lug is complete in all aspects.

Warning: - Repeated bond attempts must not be made at the same position as this may cause structural/metallurgical damage to the base steel.



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6 HEALTH AND SAFETY

6.1 General

It is the intention of BAC that all test and inspection procedures are carried out in a safe manner in accordance with the Health and Safety At Work Act and any other relevant legislation.

If required by the Client, BAC personnel will attend any Site Safety Induction Courses before carrying out work on site.

6.2 Safety Handbook

It is the responsibility of all BAC personnel to be familiar with the latest revision of the Company's Safety Handbook. The Safety Handbook details the responsibility of the Company and the individual regarding Safety Regulations.

6.3 Risk Assessments

6.3.1 General Hazards

i) *Site safety.*

There are various risks associated with working on any site and site regulations as laid down by the site owner/operator should be observed.

ii) *PPE*

The minimum personal protective equipment is as follows:

- Safety helmet
- Ear defenders/earplugs
- Safety footwear
- Eye protection
- Gloves
- Overalls

And any other equipment required by the site operator or deemed necessary by the task.

iii) *Manual handling.*

The battery box/electronic unit may be heavy and care should be taken when handling manually. It is generally preferable to reduce any risk by avoiding manual handling altogether. When unavoidable, correct lifting procedures should be used.

iv) *Working in excavations.*

Unless absolutely necessary, it is preferable that personnel do not enter any excavation. Excavations, regardless of depth can be dangerous and there is no "safe" working depth. If the work cannot be completed without entering the excavation then suitable safe methods of exit and egress must be provided. Any risks should be assessed and steps taken to ensure the safety of the excavation. For example, is the soil stable, is shuttering required, or can the sides of the excavation be graded?

Under no circumstances should a person working alone enter an excavation.



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There must always be someone outside the excavation to raise the alarm in case of emergency.

v) *Working in confined spaces.*

Personnel should not enter confined spaces without the authority and direct supervision of qualified personnel. Site owners/operators will have their own procedures for entry into confined spaces and these should always be followed. Always ensure the correct permit has been issued and that all correct procedures have been carried out before continuing.

Under no circumstances should a person working alone enter a confined space. There must always be someone outside the confined space to raise the alarm in case of emergency.

6.3.2 Specific Hazards

i) *Degreasing*

Chemicals used for degreasing may be hazardous and listed on the CoSHH register. Appropriate steps should be taken according to the relevant CoSHH datasheet. The application instructions and recommendations of the manufacturer should be observed.

ii) *Grinding.*

There is a risk from metal being ejected from the burr and from dust produced. Observe all necessary precautions. Wear eye protection and gloves.

iii) *Pinbrazing*

During the pinbrazing operation, heat is generated and molten metal may be released. Ensure the brazing gun is held firmly in the correct position to minimise any splatter. Appropriate eye protection, gloves and overalls should be worn.

iv) *Pinbrazing Arc*

Avoid looking at the arc when brazing. It is recommended that the operator looks away when the braze takes place.

v) *Pinbrazing Fume*

Fume is produced during the pinbrazing operation. This is not excessive, but operators should be not be subject to excessive exposure. A respirator with suitable filter can be used or a "Windy" fan used to remove fume from the area of work. If the pinbrazing is to be carried out in an enclosed area where fume can collect, then appropriate extraction should be provided.

vi) *Heat*

On completion of the braze the ferrule will remain hot. Do not touch unless wearing suitable gloves.

vii) *Pinbrazing batteries.*

Some types of batteries fitted to older machines contain acid in liquid form. There is a risk of spillage if the battery box is not kept upright. Ensure that the box is kept upright and take care when lifting or carrying the box. Refer to the relevant CoSHH datasheet.



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6.4 Control of Substances Hazardous to Health (C.o.S.H.H.)

Where applicable, substances hazardous to health shall be listed and itemised in the form of a register.

Health and Safety Data Sheets for all hazardous substances shall be kept in a file for reference.

Site personnel shall be issued with copies of Health and Safety Data Sheets relevant to their work activities.