



**PARATONER TOPRAKLAMA
İNŞAAT VE SAN. TİC. LTD. ŞTİ.**

Exothermic Welding Inspection Manual



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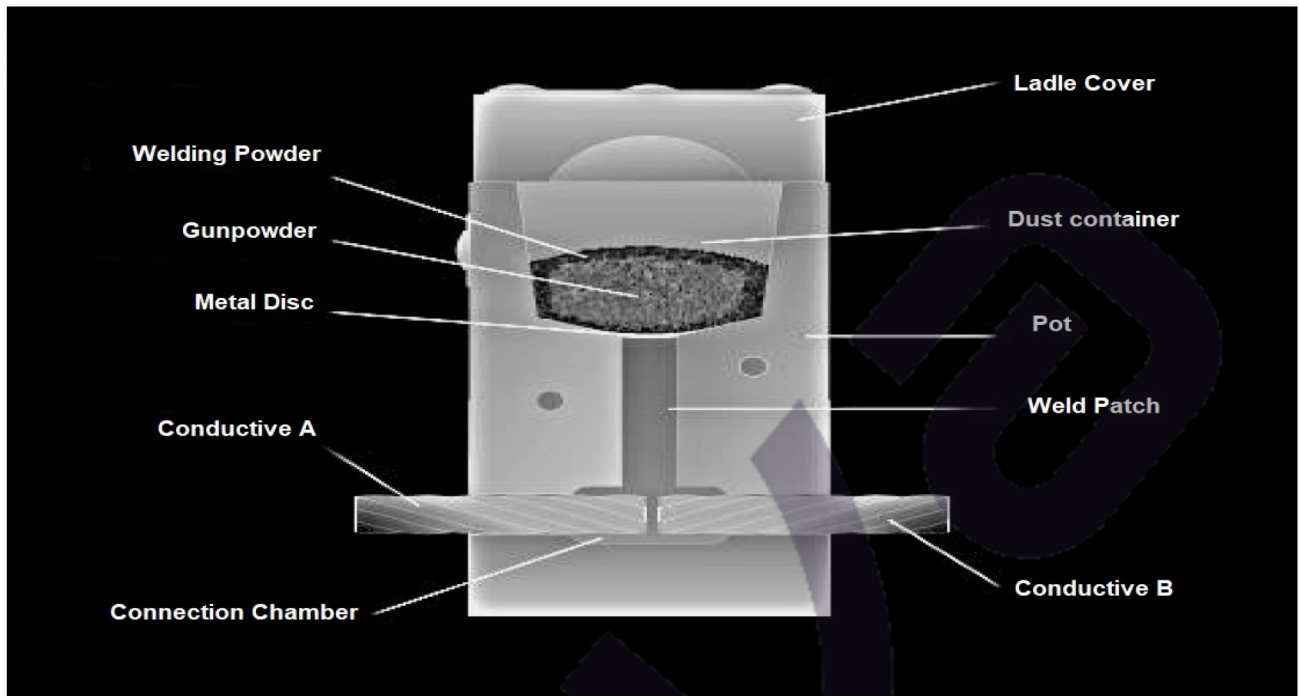
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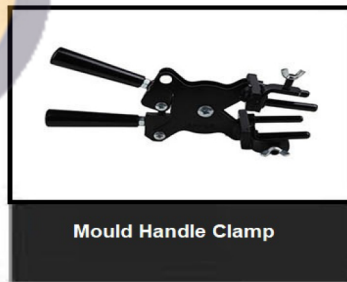
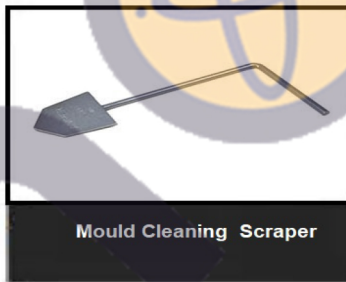
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EXOTHERMIC WELDING

Part Identification / Tools and Accessories



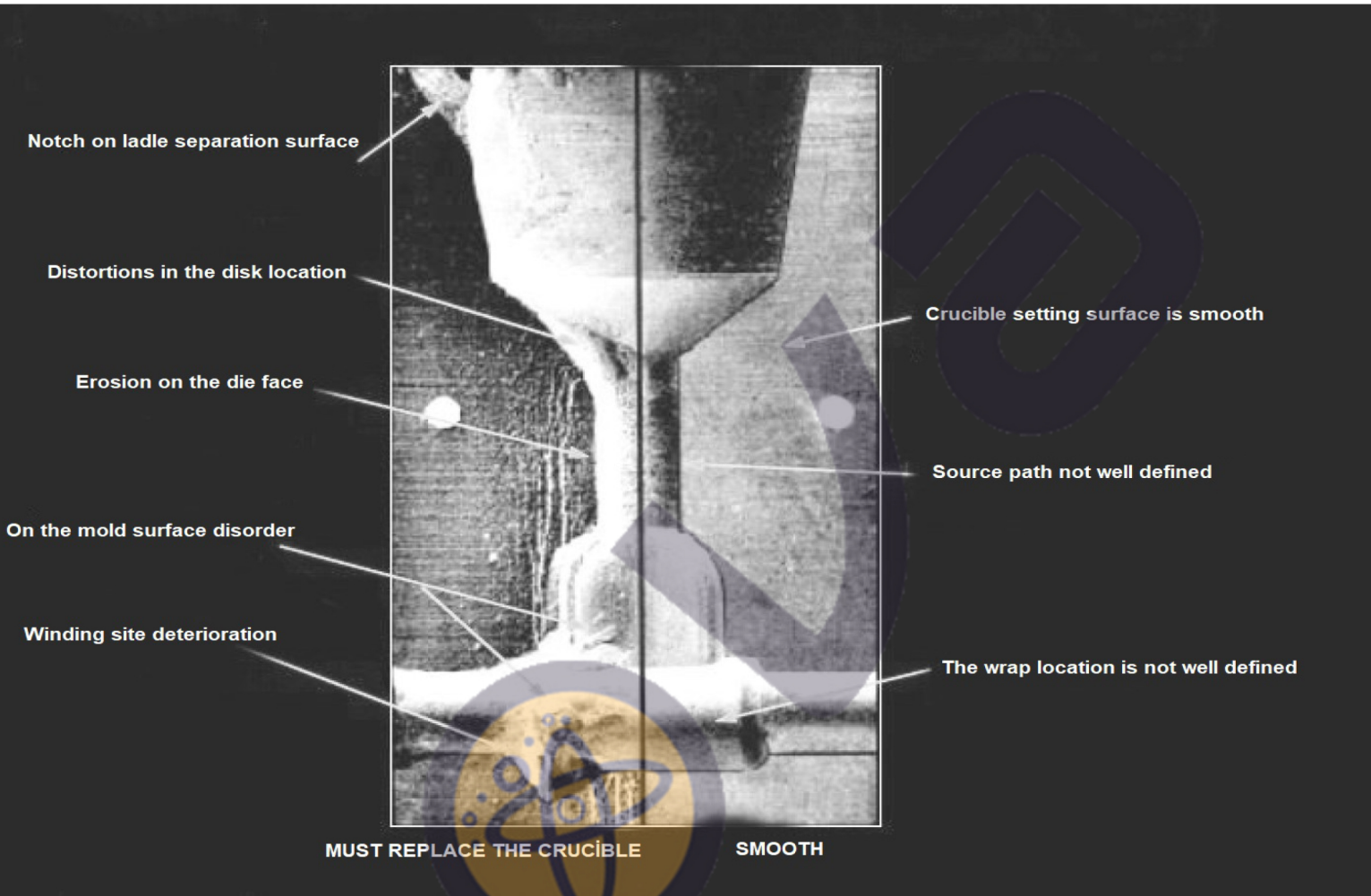
Exothermic welding crucible; crucible cover, starting material, welding powder, crucible, metal disc, crucible, The welding path consists of conductor A, conductor B and crucible cavity. Gloves, eye protection, crucible cleaning brush, crucible scraper, electronic crucible lighter or classic crucible lighter, welding crucible and Welding powder is one of the general tools and accessories used for thermowelding.



Exothermic Welding Crucible Inspection

The crucible is built to tolerate an average of 50 connections. This is during the welding process. can be changed according to the care received.

The crucible should be checked regularly. Whether a crucible needs to be replaced check the following items to determine:



Cable Release

- Securely without moving the conductor, as a loose connection will cause leakage. should sit.
- There should be no chipping or wear.

Welding Space

- The winding place must be produced correctly.
- There should be no notches or holes on the surface.

Weld Path

- The welding path must be produced in sufficient diameter and length.

Disc Chamber

- The disc must be properly seated.
- The disk should not be faulty or fragmented.

Ladle Inner Surface

- The separating face should always be cleaned properly. Soft crucible brush for cleaning should be used. Using a wire brush to clean the crucible will cause wear and damage the crucible. destroys it before its time.
- There should be no degradation on the parting face.

Exothermic Welding Control Process

1. Dry and clean the crucible
2. Dry the conductors carefully to completely remove all oil coatings and clean it up. Any oil residue can be seen with smoke or colorless flame. humidity and water Heat the crucible and conductive surface against residues.
3. Carefully clean the conductors with a wire brush to remove all dirt, ash and oxides.
4. When welding on a steel surface:
 - All rust, paint, lime, etc. on the steel surface. residues that may interfere with the source needs to be cleaned.
 - The welding surface should be shiny clean metal.
5. Correctly place the conductors in the crucible and tighten with crucible pliers.
6. Place the metal disc with the lowered side down (in the weld path).
7. Pour the welding powder into the crucible and pour the gunpowder to the top. Do not mix gunpowder with welding powder.
8. Close the crucible lid, then weld with the lighter.
9. Wait for the welding process to complete, then open the crucible.
10. Remove slag from the welded joint.
11. Clean the crucible with a brush and make it ready for the next connection.

Reviewing Source Links

Correct control of the exothermic weld joint is at the discretion of the field personnel. Visual inspection closely examine the size, color, surface quality and porosity of the joints.

COLOR

The color of a weld joint is best seen after light wire brushing of the joint. Normally should be golden to bronze. Sometimes it can be silvery at the top. cast iron or galvanized Exothermic welding bonding to surfaces is often silvery due to alloying of metals.

SURFACE QUALITY

A thermally welded joint surface should be very smooth and free of large slag deposits.If slag deposits cover more than 20% of the surface of the WELD, after the slag has been removed, If exposed to a harness, the connection should be rejected.

POROSITY

Excess pores normally contain residual contaminants (water, oil, dirt, etc.) result The connection must be essentially non-porous. Several small pinholes on the surface of the riser may be available. The depth of the pinhole should never exceed the center of the conductor. Depth A paper clip or thin wire can be used to control it. These holes are lower than the conductor surface. If it is downloading, reject the connection.

Link Values and Photographic Guides

Exothermic welding joints can be visually inspected and can be a sign of weld quality.Visual inspection is recommended as a minimum practice.

Use the photos shown below as a guide for visual inspection. exothermic source links are normally categorized as good, acceptable, or rejected.

GOOD

Good link, just small normal with surface imperfections is the source.



ACCEPTABLE

An acceptable link worse than usual source but a well working one is the source. To fix:

- A new crucible is required.
- Welding powder should be examined and Try with a different powder.
- What are the holes that appear at the top? going so deep should be examined. Conductive there is a hole reaching its surface source should be rejected.



REJECTION

Rejected resources are excessive contains little or no filling. Reasons;

- Worn wrong equipment use of
- Wrong procedure or wrong material use



Electrical Connection Requirements

Faulty connections between conductors can often cause electrical faults. a suitable The connection must have the following properties:

- Resistant to overload conditions without melting, burning or failure.
- Maintaining electrical continuity and contact reliability.
- The electrical current conductor connector temperature must remain lower than that of the conductor.
- Comprehensive service life.

Only exothermic weld joints meet all of the above criteria orexceeds the criteria. Exothermic welding is recommended by IEEE and IEC. Safety, reliability, long It has shown to be the best choice where life and current carrying capacity are critical.

Troubleshooting Guide

#	PROBLEM	CAUSE	SOLUTION
1	Pliers locked, but the pot is not tight	Ladle pliers properly not set.	It is necessary to readjust the pliers relative to the crucible.
		Improper cable size use	Use the correct cable size. a very large cable It will keep the crucible open.
		Twisted or not rounded cable	Make sure the cables are curved or not bent. be sure.
		Dirt or slag on the crucible parting line stuck	Check the crucible parting line. dirt, slag or Make sure there are no foreign objects.
2	The connection is porous.	Moisture in conductor or crucible to be found	Dry the conductor by wiping and heating.
		The mold is sufficiently heated or heating temperature is low.	Take the crucible above 100°C or any weld metal in the crucible without a conductor You can increase the temperature by igniting it.
		Other pollutants in conductors (Oil, insulation etc.).	Use a safe solvent to wash the conductor and then dry it. If there is insulation between the strips, remove it.
3	Conductors welding do not do.	Conductors properly. not cleared.	Remove oxides with a wire brush.
		Conductors properly. not dried.	Dry the conductor
		Improper spacing	Check for spacing as required (see the crucible label and read the instructions)
		The conductors are properly inserted into the crucible. not properly placed.	Make sure the gap is centered under the weld path.be. NOTE: In some cases, the conductor must be cut and spaces should be left.

#	PROBLEM	CAUSE	SOLUTION
4	Connection with excess slag is covered. NOTE: Less slag on the surface amount is normal.	The disc is not inserted.	While carefully observing the procedure steps create a new resource.
		Disc movement	Careful when spilling weld material be.
		The disc is not seated correctly.	Insert the disc correctly
		Graphite chipped in the crucible hole	Replace the crucible.
5	Weld metalconductor leaking around	Incorrect crucible design	After the crucible is closed, around the conductor apply putty
		Excessive crucible wear	Replace with a new crucible
		Improper crucible use	Use a suitable crucible. crucible, welding the right size for the cable to be made should be.



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