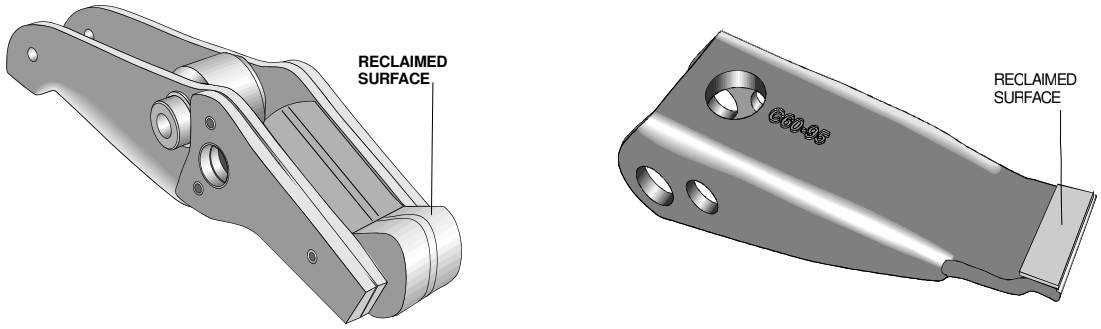
Metallisation
Thermal spray equipment and consumables

THE RECLAMATION OF PRESSED STEEL CLUTCH RELEASE LEVERS BY ARC SPRAYING

Application Data Sheet AU-DR-004



INTRODUCTION

The electric arc metal spray reclamation of clutch and many other automotive components has now become common practice.

Clutch release levers have been reclaimed by the Arcspray Process for well over 10 years on a fully commercial basis by clutch re-manufacturing specialists. In use the Clutch release lever will wear on its operative face taking it below acceptable tolerance.

By using the Metallisation Arcspray process the deposit poses a higher degree of bond strength than most other thermally sprayed deposits and the use of compressed air and electricity alone mean more economic coatings.

It is possible to rebuild the release levers face back to its original size giving savings of up to 50% of their replacement cost. The reclamation of clutch release lever for cars, tractors and commercial vehicles are all possible by using the Metallisation process.

The requirement for metalspray may be to repair any obsolete part, correct manufacturing errors or apply hard facings on to areas prone to excessive wear in use.

EQUIPMENT

Metallisation Arcspray 340 or Arcspray 140 Engineering System.

MATERIALS

Metallisation 79E Ichrome One Step Arc Wire

This specially formulated material gives excellent adhesion to ferrous substrates, when applied by the Arcspray Process. Ideally suited as a one step coating where very thin machinable or feather-edge deposits are required.

The low shrink properties of 79E allow heavy deposits to be applied even on flat surfaces.

Cleaning

(a) Steam clean if equipment available

(b) Degrease by solvent vapour if equipment available

Preliminary Inspection

Check for cracks or faults taking lever below the manufacturers recommended operating tolerances.

Note: Metalsprayed deposits do not impart any strength to the base material

Preparation

(a) Preliminary Machining

Grinding or linishing may be used to remove any major scoring on level tips, blending in to form a uniform and concentric base.

(b) Masking

Mask surfaces adjacent to area requiring treatment with a heavy duty masking tape.

Thoroughly inspect for contamination prior to blasting.

Blasting

Thoroughly blast area to be metalsprayed with clean n° 30-36 Grade Aluminium Oxide Grit.

Application of Sprayed Coating

Masking

(a) Apply sprayshield masking fluid using a small brush to all areas adjacent to the area being sprayed. Ensure fluid is not applied to area being metalsprayed. (Small amounts of masking fluid on area to be sprayed can be removed with emery cloth)

(b) Check thoroughly that area to be sprayed is free from contamination

(c) **IMPORTANT** Areas to be sprayed should not come into contact with oil, grease, hands or any other form of contamination.

Note: Masking is not always required when spraying clutch release lever tips.

Spraying

Spraying should be as soon as possible after preparation and before any visible sign of deterioration occurs. A multiple of levers should be set in a fixture or laid in line ready for treatment.

Bond Coating and Simultaneous Spraying of 79E

(a) The Arcspray Equipment should be set up in accordance with the Metallisation Manual for the spraying of 79E Ichrome One Step Arc Wire.

(b) The area to be sprayed should be cleaned with a vacuum cleaner or a clean dry air blast to remove any loose particles of dust or grit.

(c) The first 75μm (0.003") to 100μm (0.004") should be applied at a closer range and lower air pressure to achieve a higher bond strength. Apply in one single pass.

(d) The coating should be applied evenly and at as near as possible to 90° from the surface being treated.

Spraying Parameters for Bond Coat

(i)	Material	Metallisation 79E Ichrome One Step Arc Wire
(ii)	Range	50 to 80mm
(iii)	Atomising Air Pressure	3 to 3.5 bar
(iv)	Voltage Setting	32-34V
(v)	Current	150 amps max.

NOTE: Parameters may differ in accordance with type and length of power cables and hoses being used

Main Deposit

(a) Apply 79E Final Deposit bringing the lever back up to its original size with an allowance of 200μm-250μm (0.008"- 0.010") if polishing is required after spraying.

(b) The Arc Pistol should be traversed over the component to give a minimum surface speed of 18.2 m/min (60 ft/min) throughout the spraying process ensuring total coverage and even thickness

Spraying Parameters for Main Deposit

(i)	Material	Metallisation 79E Ichrome One Step Arc Wire
(ii)	Range	150-170mm
(iii)	Atomising Air Pressure	4.5 - 5 bar
(iv)	Voltage Setting	32-34V
(v)	Current	200-350 depends on Energizer used

FINISHING

Under normal circumstances, it is possible to use the component in the as sprayed condition without any problems but for cosmetic purposes, a light polish may be required.

Note: Metallisation 79E Ichrome Arc Wire has been specially formulated giving excellent adhesion to ferrous substrates and is ideal where very thin coatings or featheredges are required.

- REFERENCE TECHNICAL BULLETIN N°S :-

2.1.9 Metallisation Wire 79E Ichrome One Step Arc Wire

5.2.2 Surface Preparation by Gritblasting

NOTE: - SEE ALSO

AU-DR-001 Reclamation of Clutch Pressure Plate Faces

AU-DR-002 Reclamation Clutch diaphragm springs

AU-DR-003 Reclamation of Pressed Steel Clutch Levers by Flame Spraying