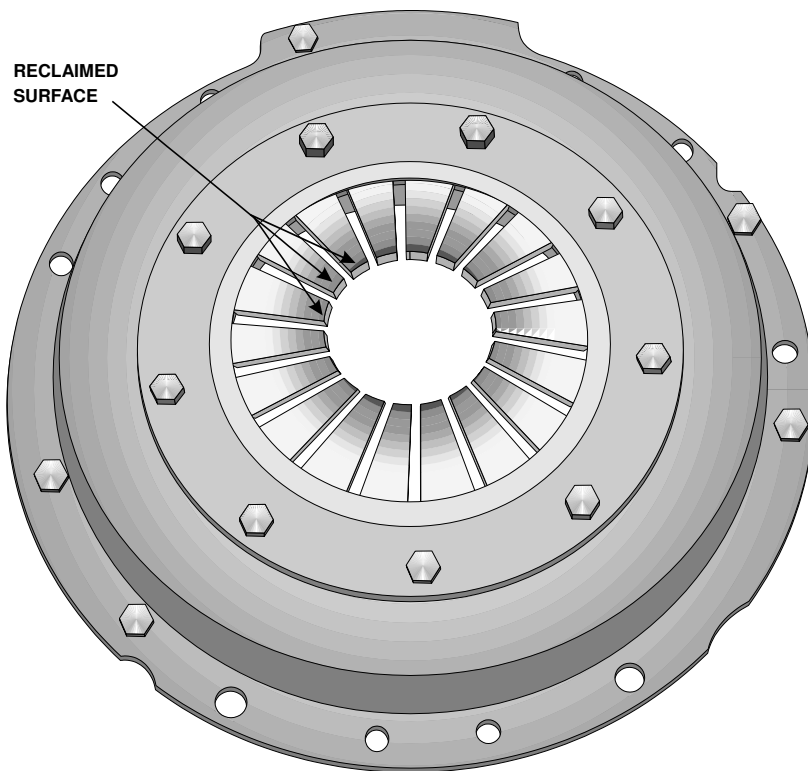


The Reclamation Of Clutch Diaphragm Springs

Application Data Sheet AU-DR-002



INTRODUCTION

During use, the clutch diaphragm spring will wear on its tip ends at the point where it comes into constant contact with the thrust bearing.

The clutch diaphragm spring in itself is not particularly an expensive item, however, the labour involved in removing the old spring from its housing then replacing it with new will push up the total cost of clutch refurbishment.

By using the Metallisation flamespray process, it is possible to apply a coating of molybdenum onto the work area of the diaphragm spring without removing it from the housing. This makes the spring reserviceable at a fraction of the replacement cost.

Metal spraying molybdenum, using the Metallisation flamespray equipment, gives the unique ability to produce a range of coatings between 250 and 800 HV. This makes it possible to hard face diaphragm springs, giving them added lubrication and valuable extended life.

Equipment

Metallisation MK61 Flamespray System

Materials

Metallisation 99E Molybdenum (Mo)

Preliminary Inspection

- a) Springs worn below final regrind tolerance should **NOT** be sprayed. Sprayed metal deposits do not impart any strength to the base material.
- b) Components should be checked dimensionally and for cracks or any other major faults.

Preparation

- a) Degreasing. Any approved industrial solvent may be used to completely remove grease or oil from the surface.
- b) Preliminary Machining. Grinding or finishing may be used to remove any major scoring on spring tips blending in to form a uniform concentric base.
- c) Mask surfaces adjacent to area requiring treatment with a heavy duty masking tape.
- d) Thoroughly inspect for contamination prior to blasting.
- e) Thoroughly blast with clean N° 30-36 Grade Aluminium Oxide Grit.

Application Of Sprayed Coating

- i. Masking.
- ii. Apply sprayshield masking fluid using a small brush to all areas adjacent to the area to be sprayed. Ensure fluid is not applied to the area being sprayed (small amounts of masking fluid on the area to be sprayed can be removed with an emery cloth).
- iii. Thoroughly check the area to be sprayed to ensure it is free from contamination.
- iv. **Important:** The area 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 diaphragm springs.

Spraying

Spraying should be done as soon as possible after preparation and before any visible sign of deterioration occurs. The diaphragm spring in its housing should be mounted on a turntable having a surface speed of not less than 18 metres/minute (60 feet per minute).

Bond Coating

A deposit of Metallisation molybdenum (99E) wire is applied to a deposit thickness of 0.05mm-0.15mm (0.002"-0.006") at a range of 75mm (5"). The spray stream should be at 90° to the surface being coated and traversed by hand to give an even coverage over the area being refurbished.

Main Deposit

Continue to spray the main deposit of molybdenum (99E), using the same spraying parameters as the bond coat, but increase spray range to 100mm-150mm (4"-6").

Complete the spraying of the main deposit traversing the spray head to give a uniform coating over spring tips.

The final deposit thickness will depend upon the condition of the spring prior to spraying and should be adjusted accordingly.

Spraying Parameters Metallisation Mark 61

Molybdenum Wire (99E)

Acetylene Pressure 1.03 bar 15 psi

Oxygen Pressure 1.9 bar 30 psi

Air Pressure 4.5 bar 65 psi

Flowmeter Pointer Settings

Gas Oxygen

5.5 2.25

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.

 Reference Technical Bulletin:

No. 2.2.4 Metallisation Wire 99E Molybdenum (Mo)

No. 1.1.8 Metallisation Type IV Flowmeters

No. 5.2.2 Surface Preparation by Gritblasting

Note: See Also

AU-DR-001 Reclamation Of Clutch Pressure Plate Faces

AU-DR-003 Reclamation of Pressed Steel Clutch Levers by Flamespray

AU-DR-004 Reclamation of Pressed Steel Clutch Levers by Arcspraying