Joemars

# EDM

# AF SERIES OPERATIONAL MANUAL

( VER. 1.1 )

JOEMARS MACHINERY & ELECTRIC INDUSTRIAL CO. ,LTD.
NO.54, Hsin Hsing Rd., 43410 Lung Chin Hsiang,
Taichung Hsien, Taiwan, R.O.C.

TEL:(04) 6320515 . 6321555-6
FAX:886-4-6318306

# CONTENT


| | | | |
|---|---|---|---|
| CH. 1 | | How to move EDM | 1-1 |
| CH. 2 | | The history of EDM machine | 1-2 |
| CH. 3 | | The brief introduction of EDM | 3-1 |
| | 3.1 | The outline of EDM | 3-1 |
| | 3.2 | The applications of EDM machining | 3-3 |
| CH. 4 | | System instructions for AF series EDM | 4-1 |
| | 4.1 | Composition instructions of machine frame and power supply unit | 4-1 |
| | 4.2 | Cable connection between machine frame and power supply unit | 4-2 |
| | 4.3 | Machine tool and accessories | 4-4 |
| | 4.4 | Electrode holder | 4-6 |
| | 4.5 | Filteration system | 4-7 |
| | 4.6 | Switchs on P/S control panel and it`s function | 4-8 |
| | 4.7 | Machine tool control panel | 4-23 |
| | 4.8 | Operation instructions for machining | 4-25 |
| | 4.8.1 | Operation instructions for VRZ670E DRO | 4-25 |
| | 4.8.2 | Search the surface of the workpiece | 4-30 |
| | 4.8.3 | How to edit the parameter in the sparking condition number | 4-31 |
| | 4.8.4 | To view the High-Low voltage current symbol | 4-33 |
| | 4.8.5 | The machining procedure edit | 4-35 |
| | 4.8.6 | Automatic mode machining | 4-41 |
| | 4.8.7 | Manu mode machining | 4-45 |
| | 4.9 | How to re-enter the original S.C.T. | 4-46 |
| | 4.10 | Power-on after a long period of time | 4-47 |
| CH. 5 | | Flushing | 5-1 |
| | 5.1 | Injection flushing | 5-2 |
| | 5.2 | Suction flushing | 5-3 |
| | 5.3 | Side flushing | 5-4 |
| | 5.4 | Flushing by dielectric "pumping" | 5-6 |
| | 5.5 | Pulsed flushing synchronised with electrode movement | 5-6 |
| | 5.6 | Flushing techniques | 5-7 |

| | | | |
|---|---|---|---|
| CH. 6 | | The electrode meterial | 6-1 |
| | 6.1 | Metallic electrodes | 6-1 |
| | 6.2 | Electrode reduction by acid etching | 6-1 |
| | 6.3 | Copper tungsten | 6-3 |
| | 6.4 | Electrolytic copper | 6-3 |
| | 6.5 | Electrode stamping and coining | 6-3 |
| | 6.6 | Electrode manfacture by traditional machining methods | 6-3 |
| | 6.7 | Electrode manufacture by extrusion or drawing | 6-4 |
| | 6.8 | Electrode manfacture by metallization | 6-4 |
| | 6.9 | Annealing of copper electrodes | 6-4 |
| | 6.10 | Electrode manufacture in Cuw by traditional methods | 6-4 |
| | 6.11 | Advantages and disadvantages | 6-5 |
| | 6.12 | Applications | 6-5 |
| | 6.13 | Behaviour in EDM | 6-5 |
| | 6.14 | Acid reduction of copper tunstens | 6-6 |
| | 6.15 | Silver tungsten | 6-6 |
| | 6.16 | Brass | 6-7 |
| | 6.17 | Tungsten | 6-7 |
| | 6.18 | Steel | 6-7 |
| | 6.19 | Non-metallic electrodes | 6-7 |
| CH. 7 | | Dielectric | 7-1 |
| | 7.1 | Mineral oil | 7-1 |
| | 7.2 | Kerosene | 7-1 |
| CH. 8 | | The technical data | 8-1 |
| | 8.1 | Precautions and examples | 8-1 |
| | 8.2 | EDM terminology | 8-2 |
| | 8.3 | Sparking conditions for copper to steel machining | 8-3 |
| | 8.4 | Sparking conditions for graphite to steel machining ( Positive polarity ) | 8-14 |
| | 8.5 | Sparking conditions for graphite to steel machining ( Negative polarity ) | 8-21 |