

RECTIFIER UNITS FOR 24V D.C. 10000amps ELECTROPLATING AND ANODISING



These Rectifier units are suitable for all electro deposition processes within their rating. The widest applications in the field require maximum voltage of 8V, 12V and 20V D.C. at various current capacities as per requirement. A range of current ratings from 100 amps to 10000 amps is covered in our regular manufacture. Our standard sizes are listed in the price list issued separately.

BRIEF SPECIFICATION :

Input Voltage	:	360 to 440V A.C. 3 Phase 50 Hz
Out Voltage	:	Continuously variable from zero to the full rated D.C. voltage
Output Current	:	Rated maximum D.C. Current/
Efficiency	:	Not less than 75%
Temperature Rise	:	Less than 45°C above ambient at the top of the oil
Class of Insulation	:	'A'

A. C. Input :

'AE' Electroplating Rectifier units are designed for three phase, 50Hz. AC input supply and are suitable for operation at any voltage between 360 to 440 volts. Thus, it covers a wider range to cater for mains voltage fluctuations. The input to the unit is to be connected through a switchfuse unit of proper rating, which is not included in the scope of the supply and has to be procured separately.

D. C. Input :

The D. C. output is continuously and steplessly variable from zero to the full rated voltage for any input voltage between 360 to 440 volts and for any load between zero to its rated full load. The ripple content in the output is very low (approximately 5%) and as such these units are very much suitable for all special processes such as chrome plating or hard chrome plating where low ripple content is necessary.

Circuit and Components :

The circuit employed in this rectifier units is simple and universal. Supply is given to Dimmerstat continuously variable voltage auto transformer, which in turn supplies a variable voltage to the primary of a three phase double wound Delta / Double star connected transformer through H. R. C. fuses. The secondary of the transformer is connected to Hexa-phase connected rectifier using Silicon Diodes. The output is obtained from the rectifier and the star points of the transformer through an interphase transformer. Moving Coil voltmeter and ammeter with shunt are provided to measure the output voltage and output current.

a) Dimmerstat :

Output is an important factor in Electrodeposition processes. 'AE' provide a stepless and continuous variation of output voltage, which is a far superior method to other methods of control like resistance boards, tap switches etc. The stepless variation is achieved with the help of 'Dimmerstat' which is Registered Trade name for Continuously Variable Voltage Auto Transformer manufactured by 'AE'. Unlike other methods of output control, Dimmerstat provides a stepless, on-load and without break variation of output Voltage, without any loss of power. It being one of our own standard product, availability of spares or replacement is guaranteed, although the necessity is very rare.

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- b) H.R.C. Fuses :**
Overloading or short circuiting is not a rare occasion in Electrode position processes. Special High Rupturing Capacity (H.R.C.) fuses are therefore provided on the primary of the Main transformer. These fuses will blow only when there is overload or short circuit on the output or if there is an internal short circuit and in such cases they should be replaced by H.R.C. fuses of the same rating only.
- c) Double Wound Transformer:**
This is of conventional design and conforms to standard specifications of BS : 171 or IS : 2026 as regards the temperature rise and insulation are concerned. The primary is delta connected and secondary has two star connected windings.
- d) Interphase Transformer :**
Connected between two star points of the secondary of the Main transformer, the Interphase transformer improves commutation thereby increasing the rating of the Rectifier.
- e) Rectifier :**
This is made up of sturdy liberally rated Silicon diodes and are arranged in a six phase circuit. The diodes are mounted on cooling fans so as to dissipate the heat thereby increasing the rating of the diode. Depending upon the output current rating, necessary number of diodes are connected in parallel.
- f) Metering :**
A Voltmeter and an Ammeter are provided on a separate panel to indicate the output voltage and output current. The panel is mounted on one of the tanks to enable easy manipulation with the help of the Dimmerstat (see the photograph of a typical high capacity unit on the first page). The ammeter is used in conjunction with an external shunt, which is fitted inside the tank. The voltmeter, ammeter and the shunt are all manufactured by ourselves and are therefore obviously backed by 'AE's well-known after sales service. Rectifier units upto an output capacity of 12KW are provided with 4" dial moving coil flush type meters. For units of higher capacities the meters are of 6" size.



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CONSTRUCTION

The units are made in natural oil immersed construction. Any Electrode position process is always associated with acidic and corrosive fumes and dust. Any contact with these fumes and dust obviously reduces the life and reliability of the Rectifier. Oil immersed construction offers best protection to the Rectifier unit in this regard and therefore increases the life enormously. The Dimmerstat is always housed in separate tank. For rectifier units upto a maximum output capacity of 10 KW, the transformer and the rectifier are housed in one single tank. For higher capacities separate tanks for transformer and rectifier are used. For rectifier units of current rating 3000 amperes and above, the rectifier is also supplied in two tanks for better cooling. If the customer can guarantee that sufficient precaution is taken to see that corrosive fumes and dust do not come in contact with the rectifier unit, we will be pleased to make special offers for units in Air cooled or combined OIL / AIR cooled construction.

Connection :

The mains supply is to be connected to the Dimmerstat input terminals by a cable of proper size through a switch fuse unit. The cable of same size should be used for connections from Dimmerstat output to the primary of the transformer. If the transformer and rectifier are supplied in more than one tank, the aluminium busbars of proper sizes for interconnection between various tanks are supplied free with the rectifier unit. The output busbars are brought out bare, to which the output connections should be made by busbars of proper size.

Note :

The Units can also be supplied for remote control or automatic control of output. For remote control, a separate control panel can be provided to operate the motor of the Dimmerstat by means of push buttons, & to indicate the output voltage and current. In case of automatic control the customers are requested to specify the mode of control, whether the requirement is for automatic constant voltage or automatic constant current. These will be at an extra cost which will be quoted against specific requirements. Units of ratings beyond our standard specifications, such as input voltage range, maximum output voltage and current or with overload requirements of short duration can also be quoted against specific enquiries.

Guarantee:

All rectifier units are guaranteed against manufacturing defects, bad workmanship or faulty material for a period of 12 months from the date of dispatch. Whether within the guarantee period or beyond, they are always backed by excellent 'AE' after sales service facilities available at our works or at the branch offices.

