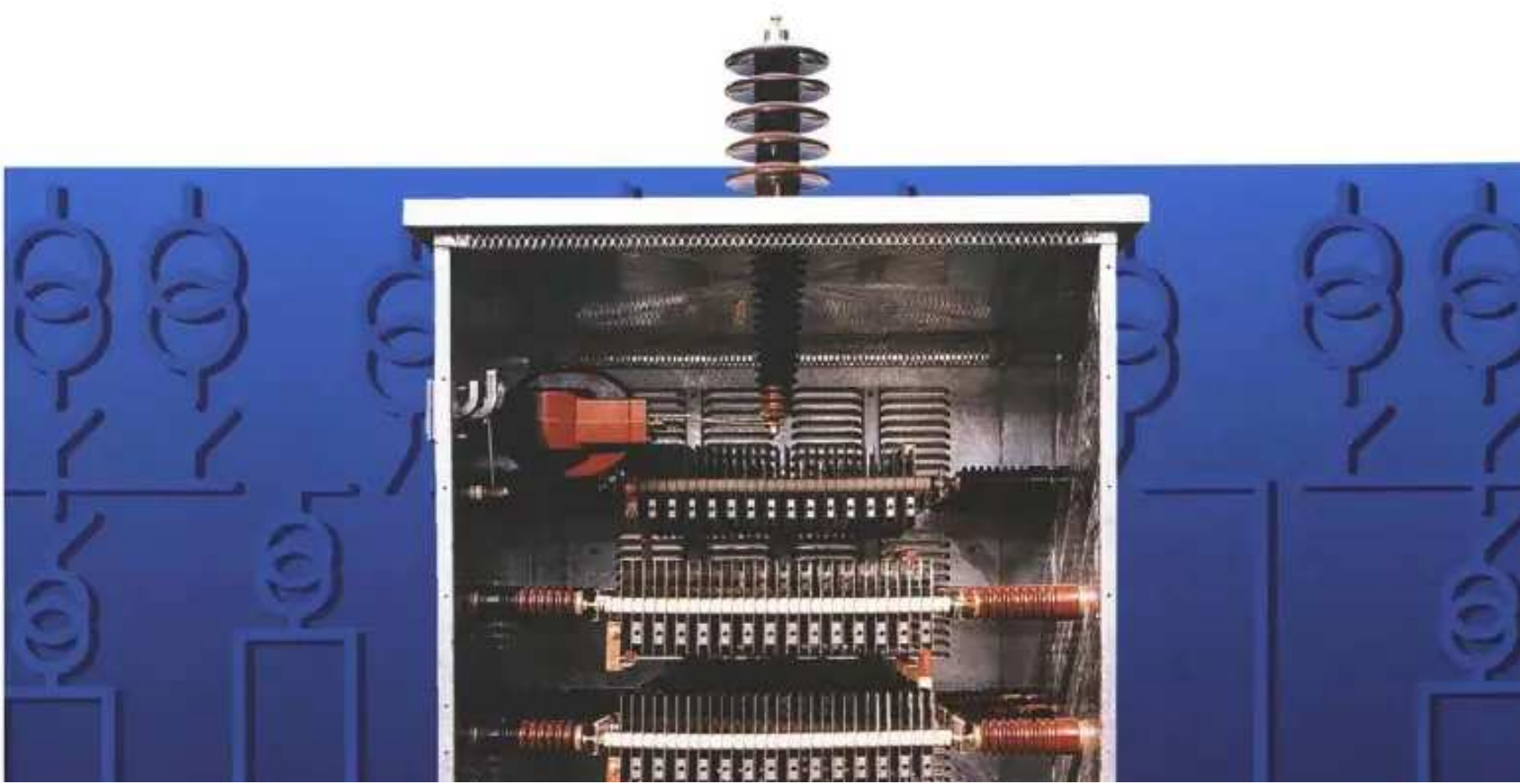


METAL DEPLOYE RESISTOR

Neutral Earthing Resistors

Operating Instructions



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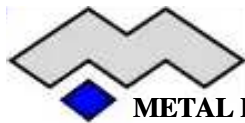
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INSTALLATION

I CHECKING FOR TRANSPORTATION DAMAGE.

Carefully unpack the resistor

Thoroughly inspect the resistor, including any spare parts, for shipping damage

II FRAME ASSEMBLY

Use the lifting lugs provided on the resistor roof to handle the resistor². Do not handle the resistor unless the louvered¹ side panels are mounted and secured.

After referring to the layout drawing, mount the resistor frame on anchor bolts. Securely tighten anchor bolts nuts.

The Equipment must be installed on a flat surface, which shall not be subjected to vibrations.

A minimum air gap of 200mm (8.5 inches) must be maintained between the resistor enclosure and any adjacent structure.

This gap is necessary to insure adequate ventilation of the resistor.

III VISUAL INSPECTION OF THE RESISTOR

Remove the front and rear louvered¹ panels.

Remove the red packing wedges (if applicable).

Check the active parts of the resistor to insure that they are free of any foreign object.

Check all internal insulators for evidence of any conductive material. If the insulators are contaminated refer to Chapter « Maintenance Instructions », Section III.1 « Cleaning ». Any broken insulator must be replaced.

Check all bolted connection for proper torque (Refer to the attached Torque Table)

COMMISSIONING

I ELECTRICAL TESTING

I.1 MEASURING THE COLD RESISTANCE VALUE :

Refer to the « Final Test Certificate » for the proper resistive value.

The measured cold resistive value should not exceed that recorded on the « Final Test Certificate » by more than 2%.

The measurement should be done with a 4 wires apparatus having appropriate accuracy class.

If the ambient temperature exceeds 20°C, the following temperature correction formula must be used:

$$R_T = R_{20^\circ\text{C}} (1 + \alpha \cdot (T - 20))$$

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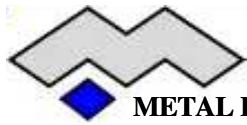
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METAL DEPLOYE RESISTOR



II RESISTOR CONNECTIONS

Check high voltage and low voltage connections for proper torque. (Refer to the attached Torque Table)
Securely ground the resistor frame using the grounding studs located on the resistor frame.

III FINAL OBSERVATION

The resistor is ready to operate.
It shall not be operated until Installation and Security Local Conditions are respected.
Note that during the first energisation, some safe smoke may exhaust from the resistor. This will not affect the resistor.

MAINTENANCE

I SAFETY OPERATIONS

Before starting any maintenance operations, make sure that according to local safety rules and regulations, the resistor cannot be energised. It is necessary to wait for 30 minutes after power cut off to allow the resistor active parts and the frame to cool.

II RATE OF MAINTENANCE OPERATIONS

The resistor can operate with little maintenance: approx. once a year on each frame under normal environment, but with a higher frequency under severe pollution conditions or vibrations.
In order to determine the normal rate of maintenance operations, they should be carried on a more frequent basis during the first year: approx. every 3 months on few frames.

III OPERATIONS

III.1 CLEANING

Under normal pollution conditions, remove one front and one rear panel and check the cleanness of internal insulators, bushings and internal supports. They must be wiped off, using a duster and a rapidly evaporating thinner (not water!). Any contamination must be immediately removed. Identify and replace the cracked or broken insulators and bushings.

It is recommended to blow (air) the active parts of the resistor and their own insulating ceramic rings. Check that the air inlet and outlet of the frame are not clogged (a big foreign body should be removed by hand).

A special care must be taken concerning ceramic rings cleaning at the end of the banks which are easily reachable and have to withstand a higher voltage than the other rings.

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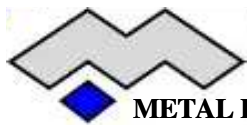
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METAL DEPLOYE RESISTOR



ACCESSORIES

I CURRENT TRANSFORMER(S)

When connecting the Resistor's Terminals, Connect the terminals S_1 & S_2 of the Current Transformer secondary side to the appropriate Control Panel's Terminals.

Do not forget to ground one of the two (2) terminals (usually S_2)

II DISCONNECTORS

II.1 DISCONNECTORS INSTALLED INSIDE THE RESISTOR

II.1.1 ELECTRICAL CHECK

Insulation Resistance under 500Vdc. Must exceed $50M\Omega$

Operate the switch one or twice and check the auxiliary contacts (where appropriate) to insure good operation

II.1.2 TERMINALS CONNECTIONS

Connect the auxiliary contacts (where appropriate)

II.2 DISCONNECTOR(S) CABINET(S) (INDEPENDENT CABINET)

II.2.1 INSTALLATION

Proceed as for the Neutral Earthing Resistor

II.2.2 ELECTRICAL CHECK

Insulation Resistance under 500Vdc. Must exceed $50M\Omega$

Operate the switch one or twice and check the auxiliary contacts (where appropriate) to insure good operation

II.2.3 TERMINALS CONNECTIONS

Connect the auxiliary contacts (where appropriate)

After Referring to the Layout Drawing and to the Principle Diagram, Connect HV & LV Terminals.

II.3 CAUTION

In case of « Off-Load Disconnecter », DO NOT OPERATE IT ON LOAD

In case of Spring Loaded Mechanism Operated Disconnecter, a great attention must be paid to possible injuries caused by the Operation of the Mechanism when the Protection Panels are removed

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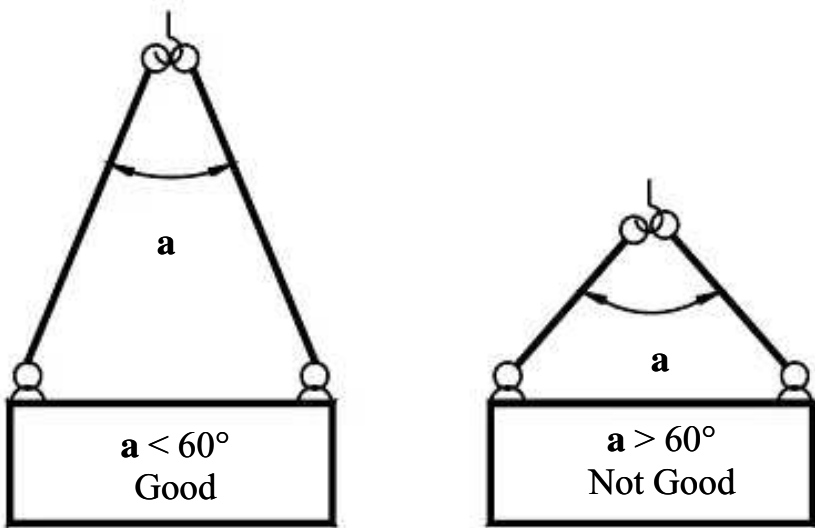
TIGHTENING TORQUE TABLE

BOLT Diameter (mm)	TORQUE (daN.m) steel class 6.6	TORQUE (daN.m) Stainless steel class A2-70
6	0,28	0,40
8	0,66	0,90
10	1,30	1,80
12	2,30	3,30
16	5,50	8,40

These torques will result in tensile stress in bolts equal to 3/4 of yield strength, if the bolts are fitted with washers and if the bolts are not damaged.

HANDLING

For Equipment weighting less than 500kG, rope lashings can be used but take care of the angle. It shall not overpass 60°



For Equipment weighting more than 500kG, A lifting Beam must be used.

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