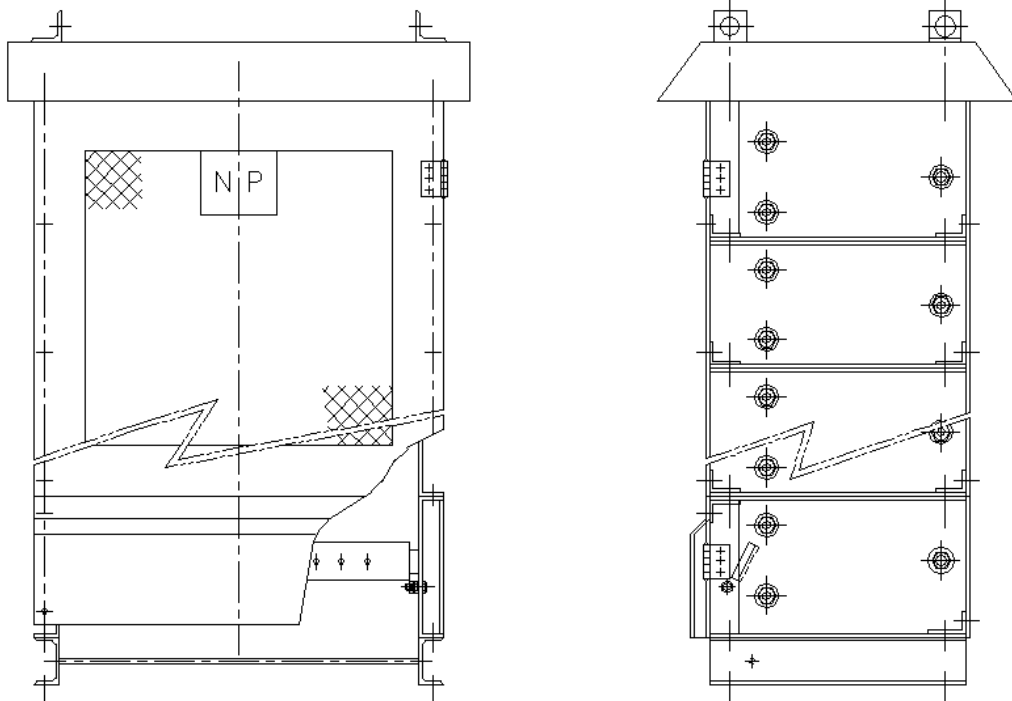


DYNAMIC BRAKING RESISTOR & CRANE RESISTOR

MODAL : VW-GRID TYPE



- Thank you for using our products.
- You should use products after reading this instruction manual before you use them.
- You should keep this manual preciously and use this when you have questions.
- If you change or modify products, that isn't our range to guarantee the performance and we aren't responsible for it at all.

INSTRUCTION MANUAL

FILE NO.: HM-CRR-02

REV. NO: 0

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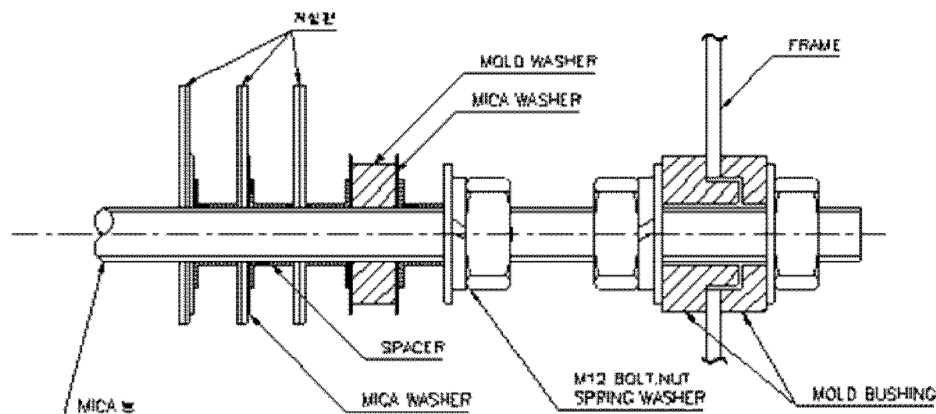
1. Application

In case that motors in cranes and traction machines are rotated by the load, instruction generators return the energy of electric motors and the load as those rotate more than synchronous speed. Then, It aims to waste the energy with braking resisters to heat and to improve the ability to reduce the speed.

2. Structure and feature of the resistor element

VW-GRID type resistors made of steel plates are small, light, excellent in mechanical strength and rustless and are used for cranes, cars, ships and so on.

This resistor is composed of insulation and space between resistor element, resistance pipes between supporting bolts, insulation washers between the supporting bolt and the frame in resistor element (Refer to picture 1)



(Picture 1. Stacking structure)

3. Structure and measurement of the case

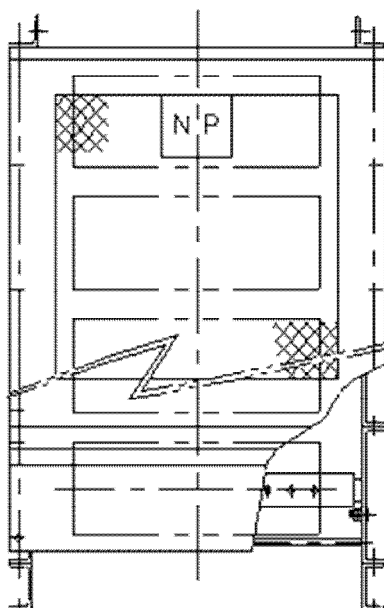
A) Inside type of a house

As it is a reticulum type with expended metals of 1.6^t in the upper, front and back parts, the base panel in the lower part, the frame of 2.3^t and the terminal cover of 1.6, it endures impact from the outside easily and the ventilation is excellent.(Refer to picture 2)

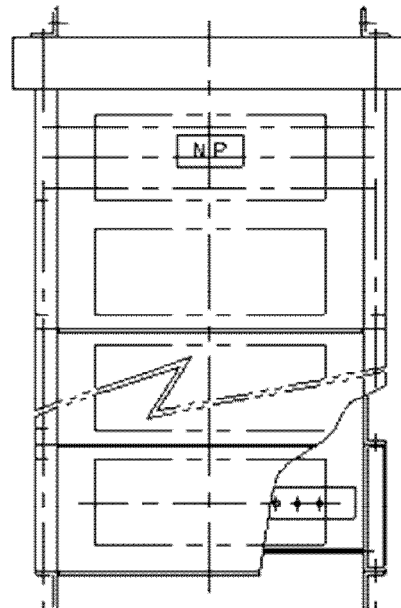
B) Outside type of a house

It is a type with steel covers of 1.6^t in the upper, front and back parts, the base panel and the frame of 2.3^t in the lower part and stainless steel bolts in the places exposed to the outside to prevent rust. And it prevents resistance elements from rain setting covers.

ㄷ) The cooling system with the resistor is the structure to ventilate air up and down.(Refer to picture 2)



(In-Door Type)



(Out-Door Type)

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4. General structure

- A) The resistor element is a VW-GRID type made of stainless steel plates after being pressed and punched.
- B) VW-GRID type(hereinafter GRID) is easy to control the resistance level as holes are made in each resistor element. The contact resistance was also removed as argon welding was used.
- C) Wings must be crossed by resistor element and the distance of resistance and the insulation distance of resistor element must be enough to cool the machine. Resistor element must be set up and down as resistor element increase due to the heat and those must not be short or twisted.
- C) The terminal part of the resistor element must be big(2.5 times) to prevent the heat of insulation parts even when the heat happens due to the rise of temperature and to prevent the loss due to the excessive current.
- D) Supporting bolts for assembling in resistor element must be M12 bolt and the frame must be the steel plate of 2.3^t to endure mechanical impact and vibration
- E) Insulation is composed of supporting bolts and mica tubes being strong against moisture for the 1st insulation and resin mold washers between supporting bolts and the frame must be used to make the 2nd insulation between element and the earth.
- F) The spacer pipes of keeping the distance between GRIDs and supporting bolts must be plated with zinc to endure high temperature.

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5. Method of maintenance

1). Matters that should be inspected before fixing

- A) You should check the damage of parts or similar things caused by impact during the transportation.
- B) You should check the release of bolts on the both ends of commutator parts
(Fixing TORQUE 350 kg-cm)
- C) You should check the relaxation of bare copper connected to the terminal.
(Fixing TORQUE M8 : 150 kg-cm)
- D) You should check the abnormality measuring the insulation resistance.
- E) You should check whether the use of the motor and the resistor are same.

2) Matters that should be inspected while fixing

- A) You should check the terminal number of the resistor which will be set.
- B) You should check whether the hole of the pressing terminal and the bolt of the terminal are same while you connect the cable.
- C) You shouldn't fix the terminal bolt with too much strength when you fix the pressing terminal.
- D) You should check the insulation distance after finishing the connection of the cable.

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3). Matters that should be checked regularly

- A) You should check the terminal part regularly.
- B) You should check the heat or the change of the resistor element or the conductor.
- C) You should check whether there is the insulation resistance or not.
- D) You should check whether there are foreign substances between sides.

4). Matters that require attention

- A) You don't have to turn off the resistor as foreign substances burn and make smoke due to the increase of the temperature of the resistor when you inject electricity into it.
- B) Smoke doesn't happen again after foreign substances burn out at first.
- C) You shouldn't set up any equipment vulnerable to heat near the resistor as the resistor emits a lot of heat.
- D) You should set up the resistor at the place where ventilation is excellent.
- E) You shouldn't use it controlling the resistance level after it is made if possible.
- F) You should connect commons between boxes in case that boxes get separated because of the big capacity of the motor