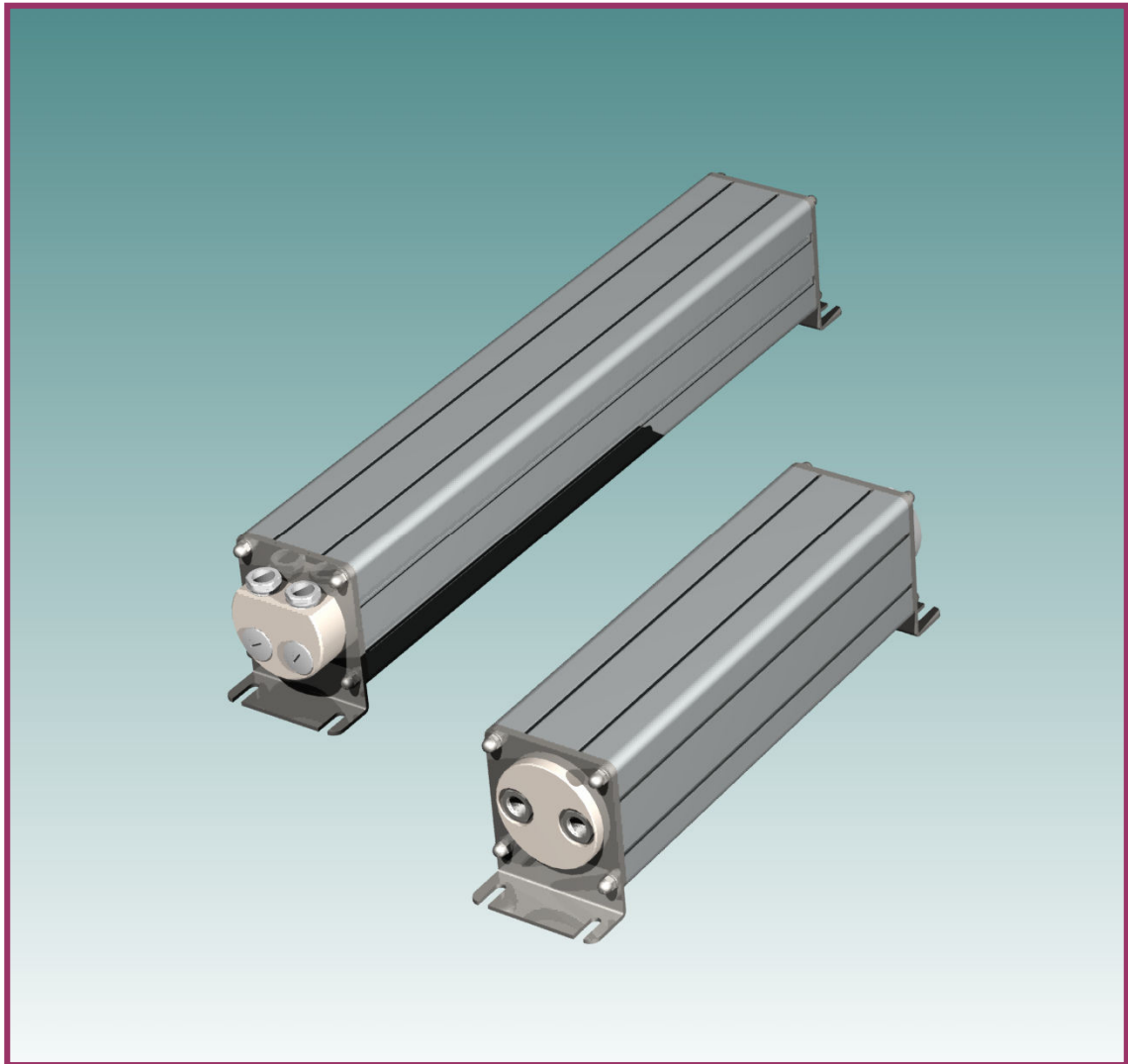


△ DELTA

WHB

Water Cooled Wirewound  
HIGH POWER HIGH VOLTAGE BRAKE RESISTORS  
Standard range: 20 kW – 100 kW (steady state)



**WHB** is a range of water cooled high power high voltage brake resistors.

The resistor elements are wirewound resistors wound on special ceramic tubes. The resistor wire is fixed by the ceramic but uncoated and directly placed in the cooling water. The construction gives an extremely high load ability compared to the size of the resistors.

The resistor elements are mounted in an Aluminum Profile with length from 370 to 800mm

The cooling media is clean water with conductivity < 5  $\mu$ S/cm. The dielectric strength is 20 kV.

The resistors are well suited as modules for very high power resistor banks of MW size



Via Parco Alto Milanese, 1  
I 21052 Busto Arsizio – Italia  
Phone: +39 0331 351  
Fax: +39  
E-Mail: [reba.backerfer@backerfer.it](mailto:reba.backerfer@backerfer.it)  
[www.backerfer.com](http://www.backerfer.com)



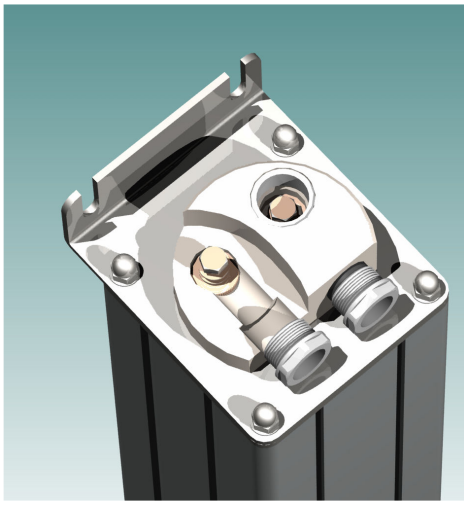
Danotherm Electric A/S Phone +45 36 73 22 22  
Naesbyvej 20 Fax +45 36 73 22 23  
DK - 2610 Roedovre E-mail: [danotherm@danotherm.dk](mailto:danotherm@danotherm.dk)  
Denmark [www.danotherm.dk](http://www.danotherm.dk)

### Construction

The WBH resistor elements are wirewound ceramic resistors. The heavy resistor wire is non-coated but fixed in the ceramic tube. With this technique the wire can be powered with 10 – 12W/cm<sup>2</sup> steady state and higher for pulse loads. The aluminium housing is double insulated with Mica tubes closest to the resistor elements and a heavy PVC tube on the inside of the aluminium profile.

### Connection

Power cables with cable shoes are connected through a M25 cable gland directly to a M8 screw. By removing the PG21 nylon covers and loosening the cable glands directly access to the M8 screws is obtained.



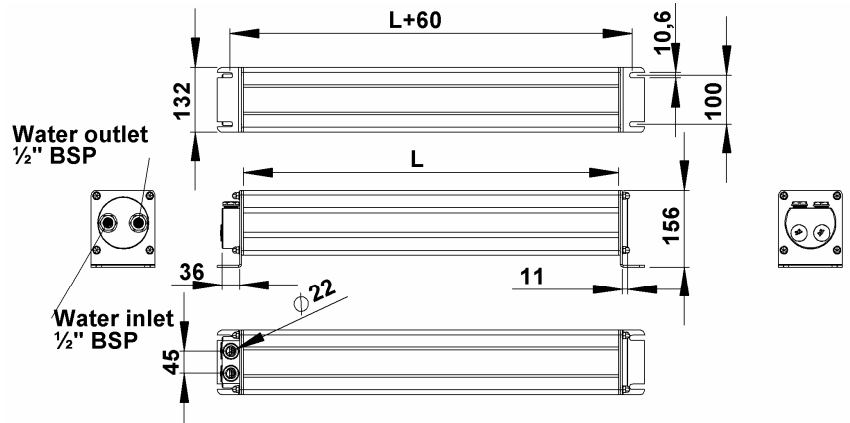
These resistors are individual made for specific load condition. All resistors in this series have the same profile which is shown on the drawing but the length will depend on the load. The resistor types in the table are examples of supplied resistors.

Please do not hesitate to require more information.

Ratings:

Type	PN
Length and POWER of resistor is optimized to th particular application These are examples:	kW @40°C
<b>WBH 450</b>	<b>20</b>
<b>WBH 775</b>	<b>50</b>
<b>WBH 790</b>	<b>100</b>
Pulse Ratings for short pulses depend on the ohmic value. (Resistors with lower resistance have more resistor wire than resistors with higher resistance). The ratings in this table refer to resistors of about 40 OHMS/element	
General Specifications	
Temperature Coefficient:	<±100ppm
Max resistor wire temperature:	
Dielectric strength:	20000VAC 1 minute
Working Voltage:	2500VAC; 3500VDC
Isolation Resistance:	> 20 MΩ
Overload:	x in 10 sec; x in 1 s
Environmental:	0 °C – 60 °C
Working pressure:	8 Bar
Test pressure:	16 Bar
Conductivity of cooling water	< 5µS/ cm <sup>2</sup>

### Mechanical Data



Type	WBH-450, 20kW	WBH-775 50kW	SV14-790 100kW
L mm	450	775	790
Weight (Empty)	12 Kg	18 Kg	19 Kg
Weight incl. water	17 Kg	26 Kg	28Kg
Heat capacity of water (no flow) kJ/K	20	34	35
Min. Water flow @ PN (Max conf.) ΔT = 30 K	12 l/min	25 l/min	50 l/min
Pressure los @ X l/min	0,5 BAR		
Water connection	1/2" BSP		

### Type identification:

**WBH 790 – 100K 0R6 123**

(XXX): Customer specified version  
 Ohm Value (Examples: 2R2=2.2Ω; 22R=22 Ω; 220R=220Ω; 2K2 = 2.2 kΩ )  
 POWER, Steady State  
 Length of resistor housing  
 Type WHB