



The WHHDN style resistors are high power, high voltage brake resistors, mainly used on board of vessels as brake resistor for high voltage drive systems. The WHHDN resistors need to be cooled with fresh water or a mixture of water and glycol. Depending on the needed water flow suitable water connections are used. In principle, any water connection the customer prefers can be fitted on the resistor. The maximum working pressure is 6 bar and the resistors are tested at 12 bar. Inside the water tank ‘turbulators’ make sure all water will be in good contact with the tubes to get optimum cooling. The pressure drop is still very low and mainly determined by the water connection flanges.

The WHHDN style resistors are build up from a stainless steel tank where a number of steel tubes are fitted. The inside of the steel tubes are insulated with mica, providing a very high dielectric strength. Standard insulation voltage is 16kV.

The connection box has an ingress protection degree of IP66. The high voltage terminals are common used terminals. However, if special terminals are required, this can also be arranged.

It is possible to connect the resistor elements in any topology that is needed. This can be a star or delta configuration or a set up for a test bank load.

## Construction

The high voltage resistors, series WHHDN have a high internal electrical insulation. This is accomplished by using large diameter steel tubes with mica insulation. By this, insulation voltage levels of 10kv up to 30kv are possible. The resistor elements can be arranged in groups to build up a load bank, a three phase circuit or any other topology.

WHHDN are ideally suited for high power loads, high voltage, in harsh conditions like on board of vessels where vibration and salt air are present. They are robust, easy to install and require a minimum of maintenance.

The resistors have adjustable mounting feet, making it easy to install them. Normally, the resistors are mounted horizontally but it is possible to produce a vertical construction. In case of vertical mounting, the outlet water connection is at the top side, allowing air bubbles to go out of the resistor.

Depending on the flow of water, the water connection size is determined. Water connections according customer specifications are very well possible.

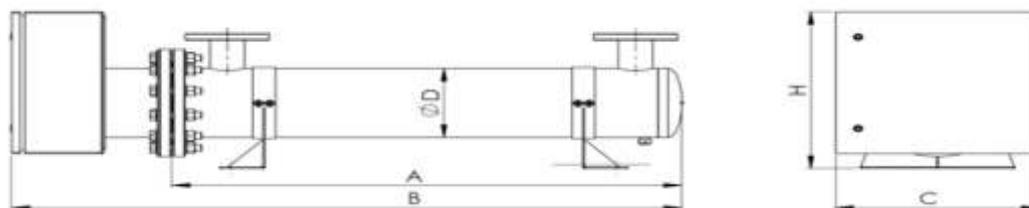
## Ordering Information

Example:

WHHDN	20	J	10R0
(1)	(2)	(3)	(4)
Series Name	Power pn[KW]	Tolerance	Resistance

- (1)Type: WHHDN SERIES
- (2)power pn [kw] :200=50 - 70 kw、 250=80 - 120 kw、 300=130 -150kw、 400=160 - 200kw
- (3)Tolerance: J= ± 5%
- (4)Resistance Value:10R0=10R、 R10=0.1Ω、 47R0=47Ω

## Dimensions



Type	A [mm]	B [mm]	C [mm]	H [mm]
WHHDN 200	1125	A+350	450	500
WHHDN 250	1130	A+435	600	700
WHHDN 300	1135	A+435	600	730
WHHDN 400	1205	A+360	600	745

## Applications And Ratings

Type	Ohm value [ $\Omega$ ] $\pm 5\%$	Power P <sub>n</sub> [kW]	Limit element voltage	Weight [kg]
WHHDN 200	1-60	50 - 70	6.000	36-70
WHHDN 250	2-40	80-120	6.000	110-140
WHHDN 300	1-30	130-150	6.000	170-220
WHHDN 400	1-20	160-200	6.000	420

## Performance

Insulation resistance	all types	$\geq 1.000 \text{ M}\Omega @ 5.0000 \text{ VDC}$
Dielectric strength		16.000 VAC @ 50Hz 1 min
Protection degree		Ip66
Working pressure	type 200 / 250	8bar
	type 300 / 400	6 bar
Cooling		Water/Water-glycol