



WHV14-150-08, WHV14-250-16 and WHV14-350 -28 is a range of water cooled high power brake resistors. The resistors consist of stainless steel tube resistors with diameter 14 mm and length 2200mm(WHV14/2200) mounted in stainless (AISI 304 or AISI 316) water tanks. The electrical connections comply to protection class IP 00 to IP 65 according to customer specifications. KWX has developed thermal models for all resistor types and resistor values. By using these models we are able to calculate the temperature rises in the resistor wire for all possible load applications. We offer our assistance to our customers to find the optimum solution for any situation.

All types can be offered with thermo watch.

Construction

The WHV14-150-6 resistors are constructed as follows:

A resistor consists of a water tank mounted with a number of resistor elements. The resistors can be supplied with a number of different connections from IP00 to IP65 protection class. The resistor elements are wire wound steel tube elements with a diameter of 14mm and a length of 2200mm. Three different standard sizes belonging to this range can be supplied covering resistors from 30kW to 250 kW / unit.

Standard materials are:

Resistor elements: AISI 316L with NiCr resistor wire.

Water Tank: AISI 304

Connector Box AISI 304

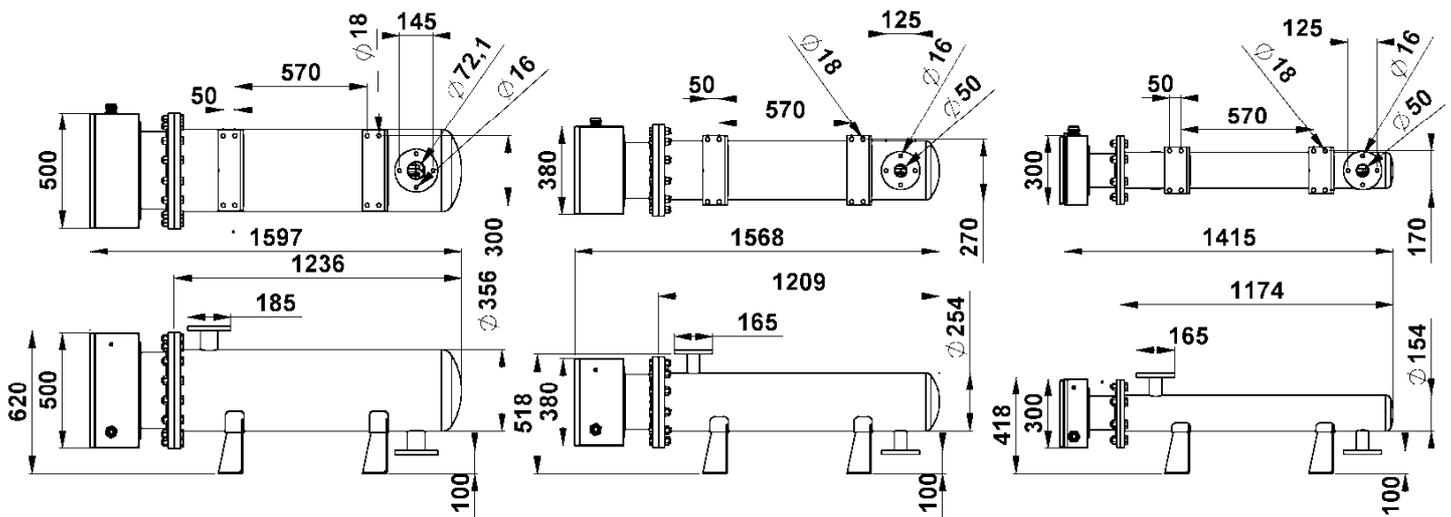
Other materials are available

Ordering Information

WHV14 - 250 14 B (T) 22R 123

- (XXX): Customer specified version
- Ohm Value (Examples: 2R2=2.2D; 22R=22 D; 220R=220D; 2K2 = 2.2 kD)
- T = Thermostat
- Connector Box: 0 IP00, D, IP20, B; IP65
- Number of elements in water tank
- (mm) of water tank
- V14: 14 mm resistor elements

Dimensions



V14-350-28-BT XXR XXX

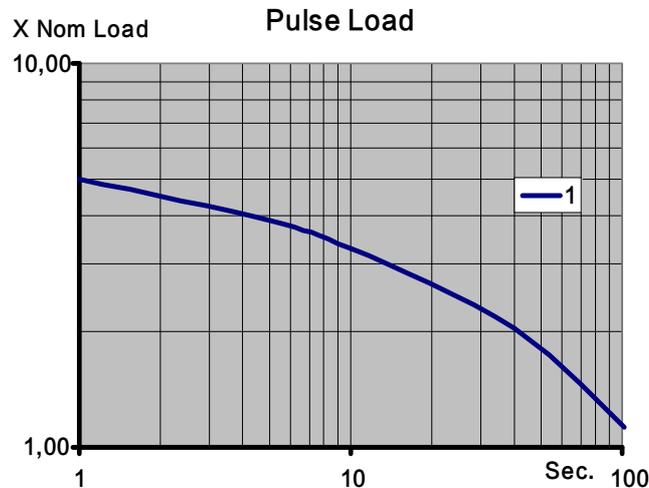
V14-250-16-BT XXR XXX

V14-150-08-BT XXR XXX

Type	V14-350-28-BT XXR XXX	V14-250-16-BT XXR XXX	V14-150-08-BT XXR XXX
Weight (Empty)	210 Kg	140 Kg	110 Kg
Weight incl. water	310Kg	190 Kg	130 Kg
Heat capacity of water (no flow)kJ/K	418 kJ/K	209 kJ/K	85kJ/K
Min. Water flow @ PN (Max conf.) GT = 30 K	130 l/min	70 l/min	35 l/min
Pressure los @ X l/min			
Water connection	DN 65	DN50	DN50

Derating Curve

The curves show the pulse load ability compared to the nominal load for the resistors under the following conditions: The load is a periodic pulse load with a constant period time of 120 sec and a pulse width from one second to 40 sec . The elements are 40 OHM elements.



For further optimization KWX offers individual thermal electric circuit models for all types and ohm values. With these models the temperature of the resistor wire during any pulse load conditions can be simulated with a standard soft ware like P-Spice. Alternatively KWX offers to make thermal simulation for our customers

Applications And Ratings

Type WHV14-150 Type WHV14-250 Type WHV14-350	PN kW @40C	Pulse Load in 5s each 120 s. P5/120W @40C	Pulse Load in 10s each 120 s. P10/120 kW @40C	Pulse Load in 40 s each 120 s P40/120 kW @40C	TimeConst. sec.(Element, Steadystate)	R 10% Elements in parallel
WHV14-150-05	44	190	145	90	18	2-30
WHV14-150-06	52	225	170	110	18	1.6-25
WHV14-150-07	62	260	200	130	18	1.45-21
WHV14-150-08	70	300	230	145	18	1.25-18
WHV14-250-10	88	380	290	180	18	1-15
WHV14-250-12	105	450	340	215	18	0.84-12.5
WHV14-250-14	123	530	400	250	18	0.72-10.5
WHV14-250-16	140	600	460	280	18	0.62-9.3
WHV14-350-18	158	670	520	320	18	0.55-8.3
WHV14-350-20	176	740	570	350	18	0.5-7.5
WHV14-350-22	193	810	620	380	18	0.45-6.8
WHV14-350-24	210	880	680	420	18	0.42-6.2
WHV14-350-26	230	950	730	450	18	0.38-5.7
WHV14-350-28	250	1000	780	490	18	0.36-5.3

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

Performance

Temperature Coefficient:	<100ppm
Max resistor wire temperature:	1000 C
Dielectric strength:	2500VAC 1 minute
Working Voltage:	690VAC; 1100VDC
Isolation Resistance:	> 2 M
Overload: x in 10 sec;	x in 1 s
Environmental:	0°C ~ 60°C
Thermo watch:	58C-110C; 20A @240VAC
Cooling (standard)	Freshwater
Working pressure	6 Bar
Test pressure	10 Bar