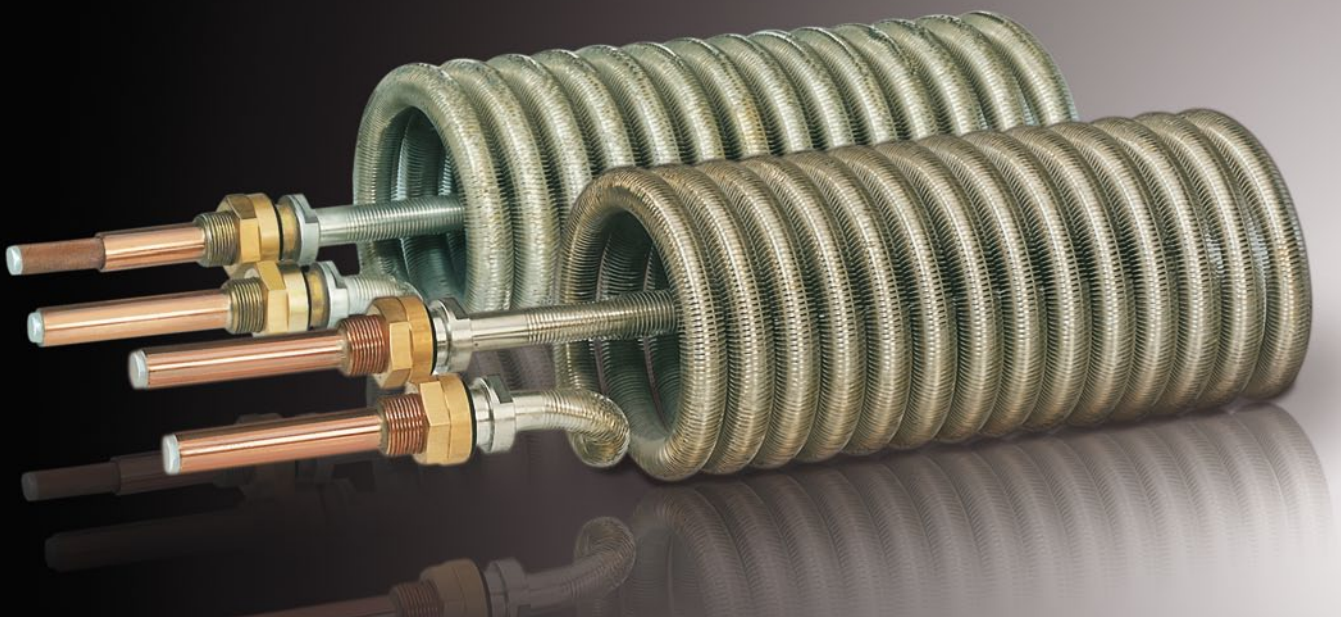


## Finned tube condensers Types WRK and WRKS

**Wieland Thermal Solutions®**  
PROVIDING EFFICIENCY



# Finned tube condensers types WRK and WRKS

Wieland-WRK and -WRKS are heat exchangers using refrigerants for the heating of drinking water and heating water. They are used, for example, as condensers in hot-water heat pumps or as desuperheaters in commercial and agricultural refrigeration systems to heat drinking and heating water. All WRK and WRKS standard sizes are available with tin-plated outside surface. On request they can be tailored to your specific requirements.

WRK and WRKS heat exchangers correspond to vessels in accordance with the Pressure Equipment Directive 97/23/EC. Our standard finned-tube condensers are pressure tested at 50 bar. They are tin plated on the water side and clean and dry on the refrigerant side (DIN 8964). They are filled with nitrogen and sealed with plastic caps.

## WRK condensers

The spirally wound condenser consists of a GEWA-D finned tube with integral fins to improve heat transfer.

## WRKS safety-tube condensers

The WRKS condenser consists of two tubes: an outer (water side) GEWA-D tube with a medium-high finned tube and an inner (refrigerant side) copper tube with a pyramid-shaped structure on the outside. The double-walled structure prevents drinking water from mixing with refrigerant in case of leakage. The channels between inner and outer tube ensure detection of the leak.

With its double-wall and leak detection system the WRKS finned tube condenser complies with the safety regulations of many European countries for the heating of drinking water on the basis of refrigerants. The plain tube ends extend through the fittings. The refrigerant pipes are connected outside the heat exchange area.

## Materials

The finned tubes of WRK and WRKS condensers are made of Cu-DHP. Copper has proven resistance against corrosion by drinking water, especially chlorinated water. It is a hygienic material with antimicrobial properties for use in drinking water tanks. The corrosion risk of galvanised steel pipes connected downstream can be reduced by tin plating the outer surface of the finned tube condenser.

Part	Designation	Wieland symbol
Finned tube	Cu-DHP (EN 12452)	K21
Fitting	CuZn36Pb2As	Z45
O-ring	EPDM* (DIN ISO 1629)	
Hollow disk	CuZn36Pb2As	Z45
Hexagonal nut	CuZn36Pb2As	Z45

*\*Do not use grease containing mineral oil*

## Operation

Refrigerants	Max. operating pressure*	Max. operating temperature
R134a and other safety refrigerants. In addition to refrigerants, DIN 1988 allows other working fluids compatible with copper such as oils.	According to 50 bar test pressure	up to +130 °C; temporarily up to +170 °C

*\*Deviations are possible on request*

## Quality assurance

To ensure consistent product quality, Wieland-Werke AG has a sophisticated quality control system according to DIN EN ISO 9001 which has been verified and certified by the independent certification company, Bureau Veritas Quality International (BVQI). Since 30 December 2002, our test laboratories in the Central Laboratory and Development Services have been accredited to DIN EN ISO/IEC 17025 and DIN EN ISO 9001 as test and certification laboratories.

## Technical service

Our Technical Marketing experts are available at any time as contact partners to work together with your experts from the very early product planning stages in order to obtain optimum results for the manufacturing stage and for your application. The only way to find the best, most cost-effective solution is by means of comprehensive technical consultation based on computerised thermal engineering rating.

## Connection

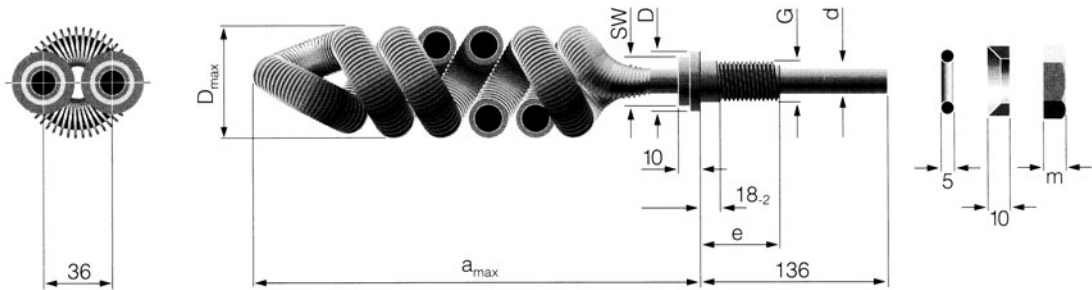
The finned-tube condenser is connected to the tank flange by an EPDM seal, hollow disk and nut. The refrigerant piping is connected by brazing (brazing inside d). The gap at the flush sawn end (refrigerant outlet) may be closed when brazing as one end with open channels is enough for safe leak detection. If necessary, the end having the outer tube set back (refrigerant inlet) may be expanded. In general, the

nominal performance given in the table is sufficient to choose the right condenser. It must however be kept in mind that the condensation performance varies as long as the tank contents is heated up, i. e. it decreases as the difference between condensation and water temperatures at the condenser ( $\Delta t$ ) decreases and increases as  $\Delta t$  increases.

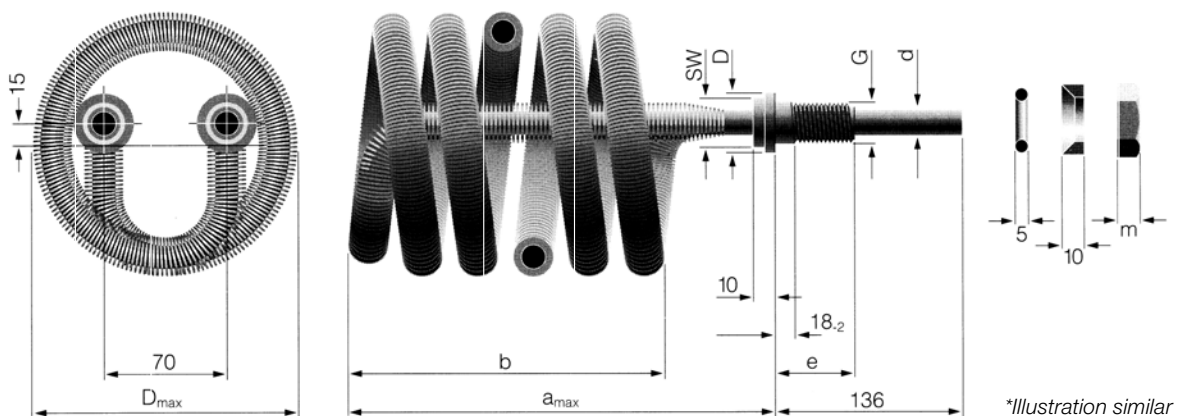
## WRK condenser

### Sizes, weights, selection (standard types)

Size  
WRK\* 4



Size\*  
WRK 9  
to  
WRK 23



Model	Max. condensation performance Q (kW)**	Outer surface area (m <sup>2</sup> )	Finned tube PYRAMID/GEWA-D Tube No.	Tube length (mm)	Volume refrigerant side (litres)	Dimensions (mm)								Approx. weight (kg)	
						$D_{max}$	$a_{max}$	$b^{***}$	$d$	$e$	$m$	G	SW		D
WRK 4	3	0.4	D-1135.12100-16	2450	0.2	63	410	-	15	62	8	1/2"	24	30	2.0
WRK 9	6	0.9	D-1135.12100-16	4800	0.4	140	350	295	15	62	8	1/2"	24	30	3.5
WRK 13	8.5	1.3	D-1135.14100-16	6000	0.7	147	410	330	18	62	10	3/4"	27	35	5.3
WRK 18	12.5	1.5	D-1135.18100-16	6950	1.5	170	440	360	22	65	11	1"	35	45	7.5
WRK 23	16	2.3	D-1135.18100-16	8750	1.9	170	540	460	22	65	11	1"	35	45	9.3

\*\*Refrigerant R134a and  $\Delta t = 25$  K; \*\*\*Approximate dimensions

# WRKS condenser

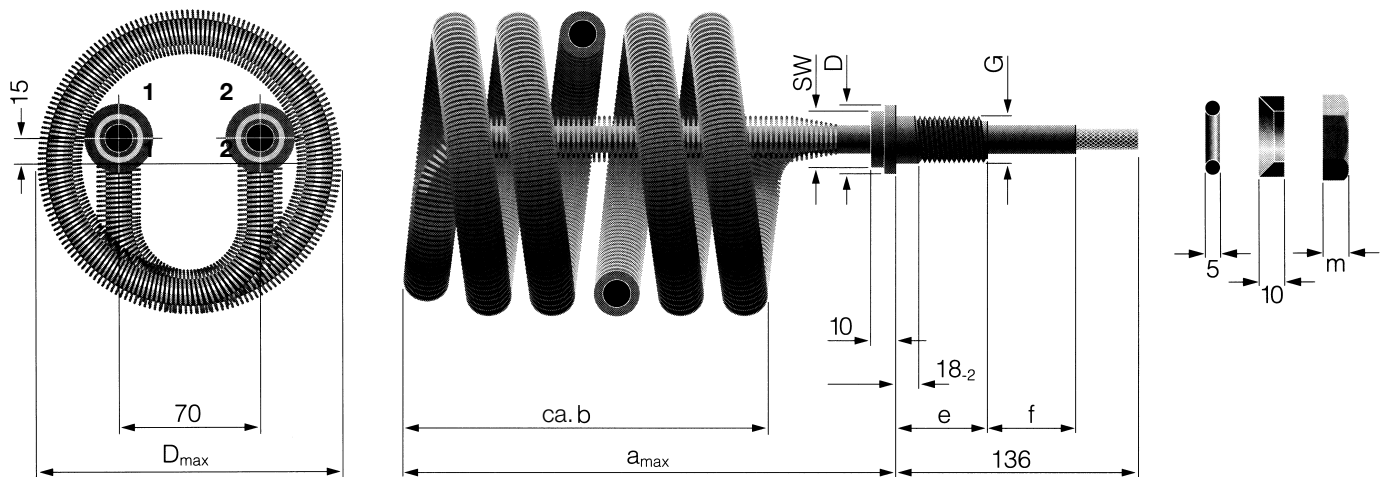
## Sizes, weights, selection (standard type\*)

Model	Max. con- densation performance Q (kW)**	Outer sur- face area (m <sup>2</sup> )	Finned tube PYRAMID/ GEWA-D Tube No.	Tube length (mm)	Volume refri- gerant side (litres)	Dimensions (mm)											Aprox. weight (kg)
						D <sub>max</sub>	a <sub>max</sub>	b***	d	e	f	m	G	SW	D		
WRKS 9	3.0	0.84	D-1132.12078-92	4800	0.3	140	350	295	9.0	62	34	8	½"	24	30	4.7	
WRKS 13	5.5	1.25	D-1132.15080-92	6000	0.7	147	410	330	12.0	62	34	10	¾"	27	35	7.5	
WRKS 18	7.5	1.82	D-1135.18100-92	6950	1.1	170	440	360	14.3	65	34	11	1"	35	45	10.4	
WRKS 23	10.0	2.32	D-1135.18100-92	8750	1.4	170	540	460	14.3	65	34	11	1"	35	45	12.9	

\*Available from stock, special type possible on request; \*\*Refrigerant R134a and  $\Delta t = 25\text{ K}$ ; \*\*\*Approximate dimensions

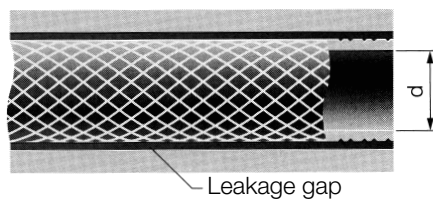
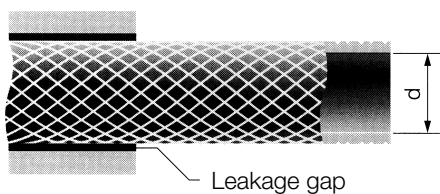
In general, the nominal performance given in the table is sufficient to choose the right condenser. It must however be kept in mind that the condensation performance varies as long

as the tank contents is heated up, i. e. it decreases as the difference between condensation and water temperatures at the condenser ( $\Delta t$ ) decreases and increases as  $\Delta t$  increases.



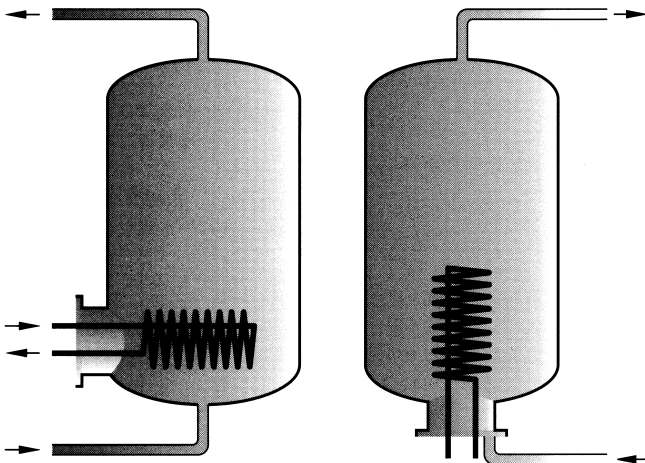
1 End receiving the refrigerant feed line

2 End receiving the refrigerant discharge line



## Assembly instructions

As a rule, the finned tube condenser is placed into the bottom part of the hot water tank. Its position may be horizontal (Fig. 1) or vertical (Fig. 2). The seal against the tank flange is generally placed on the outside (Fig. 3), sometimes on the inside (Fig. 4). For flanges less than 8 mm in thickness, a spacer (not supplied by Wieland) must be added between hollow disk and nut (Fig.5). When fixing the nut, it is necessary to counterhold at the fitting flats. To avoid vibration failure, the finned tube condenser should be braced in the tank not only for transportation but also in operation. Connected refrigerant pipes should fully absorb vibrations. A muffler should be mounted where the refrigerant vapour enters, in accordance with the manufacturer's recommendations.



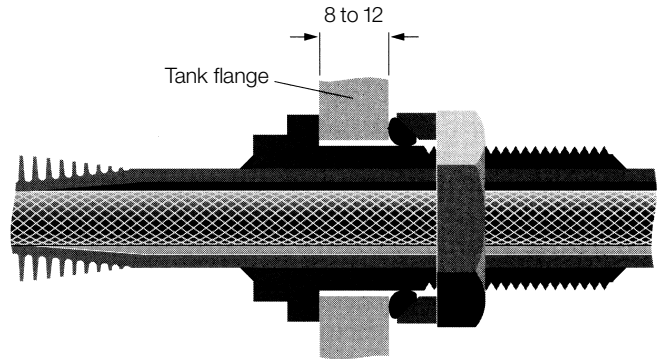
**Fig. 1**  
Vertical position

**Fig. 2**  
Horizontal position

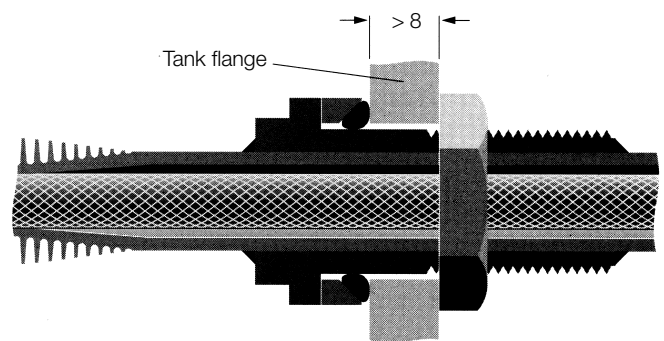
## Accessories

Defective coating of the tank may lead to corrosion of the tank if there is no electric insulation between tank, piping and heat exchanger. For this purpose, we are offering various sets of insulating elements available upon request. For details, please refer to a special leaflet available upon request. The electric insulation of the condenser against the refrigerant pipes is to be provided for by the manufacturer or the installer.

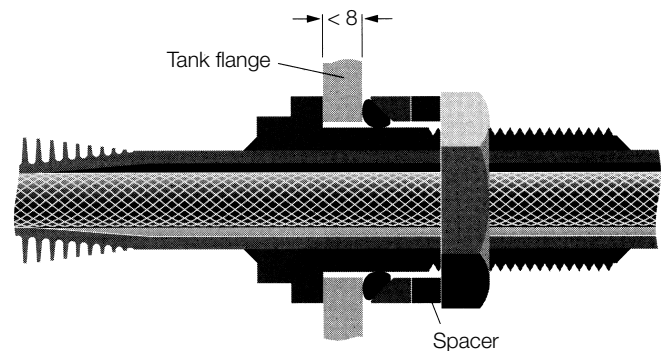
**Fig. 3**  
Seal outside  
Flange 8 to 12 mm thick



**Fig. 4**  
Seal inside  
Flange over 8 mm thick



**Fig. 5**  
Seal outside  
Flange under 8 mm thick





**Wieland-Werke AG**

**[www.wieland-thermalsolutions.com](http://www.wieland-thermalsolutions.com)**

**Tube Division**

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