

HIGH FINNED TUBES  
GEWA-H, GEWA-HB



# HIGH FINNED TUBES GEWA-H, GEWA-HB

## APPLICATIONS

GEWA-H® and GEWA-HB® high finned tubes are made of aluminium alloys or copper and copper alloys. They are mainly used in heating (gas-fired boilers, condensing boilers, flue gas condensers), in machinery and plant technology (oil coolers, mine coolers, air coolers for diesel engines), in chemical engineering (gas coolers and heaters, process coolers), in power plants (air coolers, cooling towers), and in nuclear engineering.

## PRODUCTION

The fins are obtained by roll forming the outer surface of a plain tube. This process results in an increase of strength in the finned sections, whereas the plain ends and lands remain soft.

High finned tubes require materials which can be easily cold worked such as aluminium and copper. Aluminium and aluminium alloys allow up to 13 mm in fin height, copper up to 10 mm. Soft annealing of the finned tubes is necessary if they must be suitable for bending and coiling.

If required, GEWA-HB tubes have a core tube on the inside made of a different material. In that case, the outer tube is rolled onto the core tube so as to provide for a firm bond and good thermal contact between the two tubes. The maximum operating temperature is defined in each case because of the difference in thermal expansion between the core tube and the finned tube. At operating temperatures above 250 °C a reduction in heat transfer is possible.

## PROCESSING

GEWA-H and -HB finned tubes are expanded, welded or soldered into tube plates or can be sealed with O-rings. To improve heat transfer an extended inside surface may be useful for special applications. It can be obtained through integral fins or subsequent inserts such as turbulators.

GEWA-H and -HB finned tubes resist very high mechanical and thermal stress. Certifications according to VdTÜV-Werkstoffblatt 420/3 (Cu-DHP) and VdTÜV-Werkstoffblatt 420/4 (aluminium alloys) have been obtained for manufacturing the tubes for use in plants which require monitoring.

## 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 an independent certification company. 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.



## TUBE NUMBER CODE SYSTEM

Explanation based on the example of tube No. H-0710.18125-00

H	07	10	18	125	00
GEWA-H or GEWA-HB	Number of fins per inch	Nominal fin height in mm	Nominal core-tube diameter in mm	Root wall thickness in 1/100 mm	Code number for the inner structure (00 = plain inside surface)

Length tolerances

l <sub>1</sub> (mm)	Length tolerance
< 2000	+2 mm
2000–8000	+1 ‰ (max. 5 mm)
> 8000	+0,7 ‰

Weight conversion  $G = G_{A22} \cdot f$

Material	f
K21	3.31

## SYMBOLS

d <sub>1</sub>	OD of plain end	l <sub>1</sub>	Overall tube length
d <sub>3</sub>	ID of finned section or OD of core tube	l <sub>2</sub>	Length of plain end
d <sub>4</sub>	Root diameter	l <sub>3</sub>	Length of stripped end
d <sub>5</sub>	Diameter over fins	l <sub>4</sub>	Length of the protruding core tube
d <sub>6</sub>	OD of stripped end	A <sub>1</sub>	Surface area within finned section taking into account the mean negative tolerance on fin height
s <sub>1</sub>	Wall thickness of plain end	A <sub>1</sub> /A <sub>2</sub>	Surface area ratio – outside to inside surface area within finned section – (without core tube)
s <sub>2</sub>	Root wall thickness		

## MATERIALS AND PROPERTIES

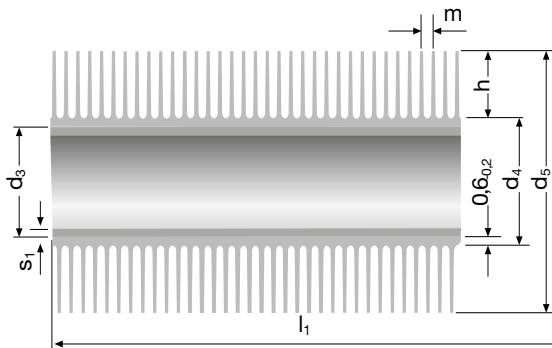
Wieland symbol		K21	A22	A05
EN symbol Composition as per		Cu-DHP, CWO24A EN 12451	EN AW-AIMgSi, EN AW 6060 EN 573-3	AI99.5, EN AW-1050A EN 573-3
Mechanical properties of the plain tube sections (reference values)	Temper (pre-material = plain tube)	R220	T4 (pressed) (EN 755-2)	H 112
	Yield strength R <sub>p0.2</sub> (N/mm <sup>2</sup> )	min. 40	min. 60	min. 20
	Tensile strength R <sub>m</sub> (N/mm <sup>2</sup> )	min. 220	min. 120	min. 60
	Elongation A <sub>5</sub> (%)	min. 40	min. 14	min. 25
Physical properties (reference values)	Density (kg/dm <sup>3</sup> )	8.94	2.70	2.70
	Melting range (°C)	1083	585–650	646–657
	Mean thermal expansion coefficient (10 <sup>-6</sup> /K)	17.7	23.4	23.5
	at temperatures (°C)	20–300	20–100	20–100
	Thermal conductivity at 20 °C (W/(mK))	> 310	200–220	210–220

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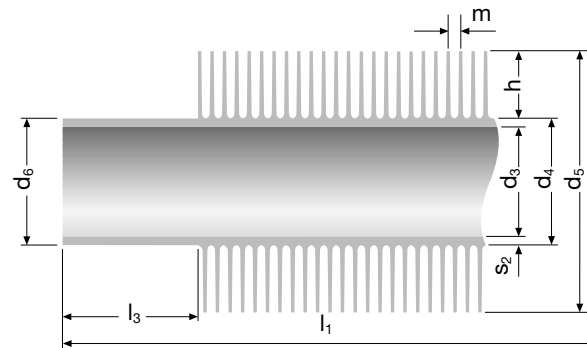
## AVAILABLE VERSIONS

- A Tube finned throughout, standard version, GEWA-H and GEWA-HB
- B Monometallic tube with stripped ends, GEWA-H
- C Bimetallic tube with stripped ends, GEWA-HB
- D Tube with plain ends (special version), GEWA-H

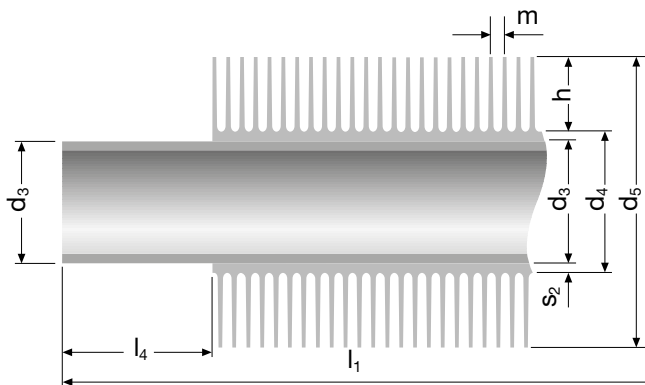
Version A (GEWA-H and GEWA-HB)



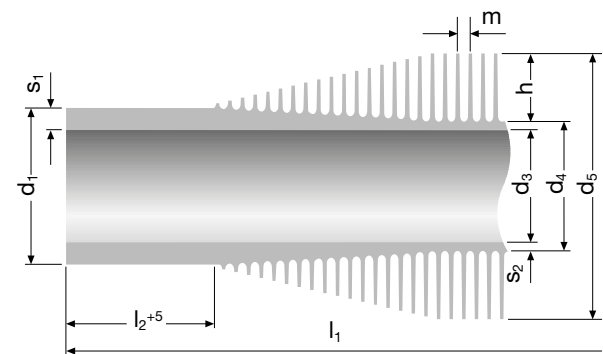
Version B (GEWA-H)



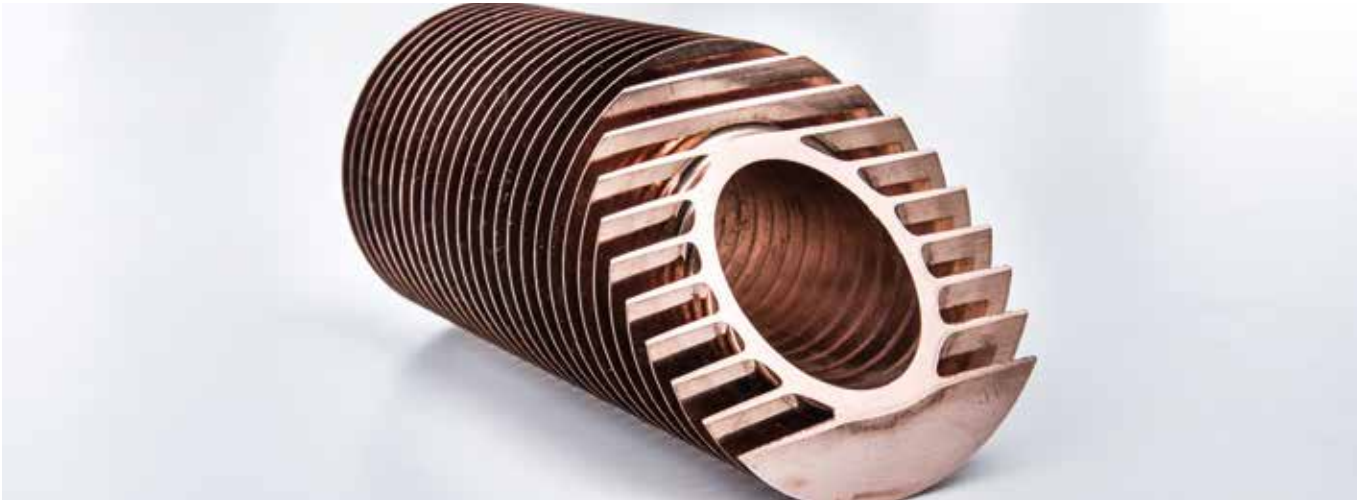
Version C (GEWA-HB)



Version D (GEWA-H)



## GEWA-H



The following is a choice of standardized tube sizes of our GEWA-H monometallic tube. Other sizes and materials are available on request.

GEWA-H	7 Fins/Inch		Fin pitch $m = 3.6$ mm Fin height $h = 10$ mm				Mean fin thickness $\delta_R \approx 0.65$ mm Production length max. 12 m			
Tube No.	Materials		Finned section						Approx. weight	
	K21	A22	$d_3$ (mm)	$d_4$ (mm)	$d_5$ (mm)	$s_2$ (mm)	$A_1$ (m <sup>2</sup> /m)	$A_1/A_2$ (-)	$G_{A22}$ (kg/m)	
H-0710.18125-00	•	•	16.00	18.50	$38.50 \pm 0.5$	1.25	0.53	10.56	0.60	
H-0710.20125-00	•	•	18.00	20.50	$40.50 \pm 0.6$	1.25	0.57	10.10	0.65	
H-0710.25125-00	•	•	22.50	25.00	$45.00 \pm 0.6$	1.25	0.66	9.32	0.76	
H-0710.25150-00	•	•	22.00	25.00	$45.00 \pm 0.6$	1.50	0.66	9.53	0.81	
H-0710.27125-00	•	•	25.00	27.50	$47.50 \pm 0.7$	1.25	0.71	9.01	0.83	
H-0710.27150-00	•	•	24.50	27.50	$47.50 \pm 0.7$	1.50	0.71	9.20	0.88	
H-0710.35150-00	•	•	32.00	35.00	$55.00 \pm 0.8$	1.50	0.86	8.51	1.08	
H-0710.35175-00	•	•	31.50	35.00	$55.00 \pm 0.8$	1.75	0.86	8.64	1.15	

GEWA-H	8 Fins/Inch		Fin pitch $m = 3.2$ mm Fin height $h = 10$ mm				Mean fin thickness $\delta_R \approx 0.60$ mm Production length max. 12 m			
Tube No.	Materials		Finned section						Approx. weight	
	K21	A22	$d_3$ (mm)	$d_4$ (mm)	$d_5$ (mm)	$s_2$ (mm)	$A_1$ (m <sup>2</sup> /m)	$A_1/A_2$ (-)	$G_{A22}$ (kg/m)	
H-0810.18125-00	•	•	16.00	18.50	$38.50 \pm 0.5$	1.25	0.60	11.85	0.62	
H-0810.20125-00	•	•	18.00	20.50	$40.50 \pm 0.6$	1.25	0.64	11.31	0.67	
H-0810.25125-00	•	•	22.50	25.00	$45.00 \pm 0.6$	1.25	0.74	10.44	0.79	
H-0810.25150-00	•	•	22.00	25.00	$45.00 \pm 0.6$	1.50	0.74	10.68	0.83	
H-0810.27125-00	•	•	25.00	27.50	$47.50 \pm 0.7$	1.25	0.79	10.09	0.85	
H-0810.27150-00	•	•	24.50	27.50	$47.50 \pm 0.7$	1.50	0.79	10.30	0.90	
H-0810.35150-00	•	•	32.00	35.00	$55.00 \pm 0.8$	1.50	0.96	9.52	1.11	
H-0810.35175-00	•	•	31.50	35.00	$55.00 \pm 0.8$	1.75	0.96	9.67	1.18	

GEWA-H		8 Fins/Inch		Fin pitch m = 3.2 mm Fin height h = 13 mm			Mean fin thickness $\delta_R \approx 0.60$ mm Production length max. 12 m		
Tube No.	Materials		Finned section						Approx. weight
	K21	A22	d <sub>3</sub> (mm)	d <sub>4</sub> (mm)	d <sub>5</sub> (mm)	s <sub>2</sub> (mm)	A <sub>1</sub> (m <sup>2</sup> /m)	A <sub>1</sub> /A <sub>2</sub> (-)	G <sub>A22</sub> (kg/m)
H-0813.18125-00		•	16.00	18.50	44.50 ± 0.5	1.25	0.84	16.62	0.74
H-0813.20125-00		•	18.00	20.50	46.50 ± 0.6	1.25	0.89	15.76	0.79
H-0813.25125-00		•	22.50	25.00	51.00 ± 0.6	1.25	1.02	14.38	0.92
H-0813.25150-00		•	22.00	25.00	51.00 ± 0.6	1.50	1.02	14.70	0.97
H-0813.27125-00		•	25.00	27.50	53.50 ± 0.7	1.25	1.09	13.82	0.99
H-0813.27150-00		•	24.50	27.50	53.50 ± 0.7	1.50	1.09	14.10	1.05
H-0813.35150-00		•	32.00	35.00	61.00 ± 0.8	1.50	1.29	12.87	1.27
H-0813.35175-00		•	31.50	35.00	61.00 ± 0.8	1.75	1.29	13.08	1.34

GEWA-H		9 Fins/Inch		Fin pitch m = 2.8 mm Fin height h = 8 mm			Mean fin thickness $\delta_R \approx 0.60$ mm Production length max. 12 m		
Tube No.	Materials		Finned section						Approx. weight
	K21	A22	d <sub>3</sub> (mm)	d <sub>4</sub> (mm)	d <sub>5</sub> (mm)	s <sub>2</sub> (mm)	A <sub>1</sub> (m <sup>2</sup> /m)	A <sub>1</sub> /A <sub>2</sub> (-)	G <sub>K21</sub> (kg/m)
H-0908.18125-00	•		16.00	18.50	34.50 ± 0.5	1.25	0.52	10.32	1.91
H-0908.20125-00	•		18.00	20.50	36.50 ± 0.6	1.25	0.56	9.90	2.08
H-0908.25125-00	•		22.50	25.00	41.00 ± 0.6	1.25	0.65	9.21	2.46
H-0908.25150-00	•		22.00	25.00	41.00 ± 0.6	1.50	0.65	9.42	2.61
H-0908.27125-00	•		25.00	27.50	43.50 ± 0.7	1.25	0.70	8.94	2.67
H-0908.35150-00	•		32.00	35.00	51.00 ± 0.8	1.50	0.85	8.50	3.52

GEWA-H		9 Fins/Inch		Fin pitch m = 2.8 mm Fin height h = 10 mm			Mean fin thickness $\delta_R \approx 0.55$ mm Production length max. 12 m		
Tube No.	Materials		Finned section						Approx. weight
	K21	A22	d <sub>3</sub> (mm)	d <sub>4</sub> (mm)	d <sub>5</sub> (mm)	s <sub>2</sub> (mm)	A <sub>1</sub> (m <sup>2</sup> /m)	A <sub>1</sub> /A <sub>2</sub> (-)	G <sub>A22</sub> (kg/m)
H-0910.18125-00		•	16.00	18.50	38.50 ± 0.5	1.25	0.70	13.87	0.70
H-0910.20125-00		•	18.00	20.50	40.50 ± 0.6	1.25	0.75	13.22	0.76
H-0910.25125-00		•	22.50	25.00	45.00 ± 0.6	1.25	0.86	12.19	0.89
H-0910.25150-00		•	22.00	25.00	45.00 ± 0.6	1.50	0.86	12.47	0.93
H-0910.27125-00		•	25.00	27.50	47.50 ± 0.7	1.25	0.93	11.78	0.96
H-0910.35150-00		•	32.00	35.00	55.00 ± 0.8	1.50	1.12	11.10	1.24

GEWA-H		9 Fins/Inch		Fin pitch m = 2.8 mm Fin height h = 13 mm			Mean fin thickness $\delta_R \approx 0.60$ mm Production length max. 12 m		
Tube No.	Materials		Finned section						Approx. weight
	K21	A22	d <sub>3</sub> (mm)	d <sub>4</sub> (mm)	d <sub>5</sub> (mm)	s <sub>2</sub> (mm)	A <sub>1</sub> (m <sup>2</sup> /m)	A <sub>1</sub> /A <sub>2</sub> (-)	G <sub>A22</sub> (kg/m)
H-0913.20125-00		•	18.00	20.50	46.50 ± 0.6	1.25	1.04	18.47	0.93
H-0913.25125-00		•	22.50	25.00	51.00 ± 0.6	1.25	1.19	16.83	1.07
H-0913.27150-00		•	24.50	27.50	53.50 ± 0.7	1.50	1.27	16.51	1.20
H-0913.35175-00		•	31.50	35.00	61.00 ± 0.8	1.75	1.51	15.28	1.53



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For further information please contact

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