K65

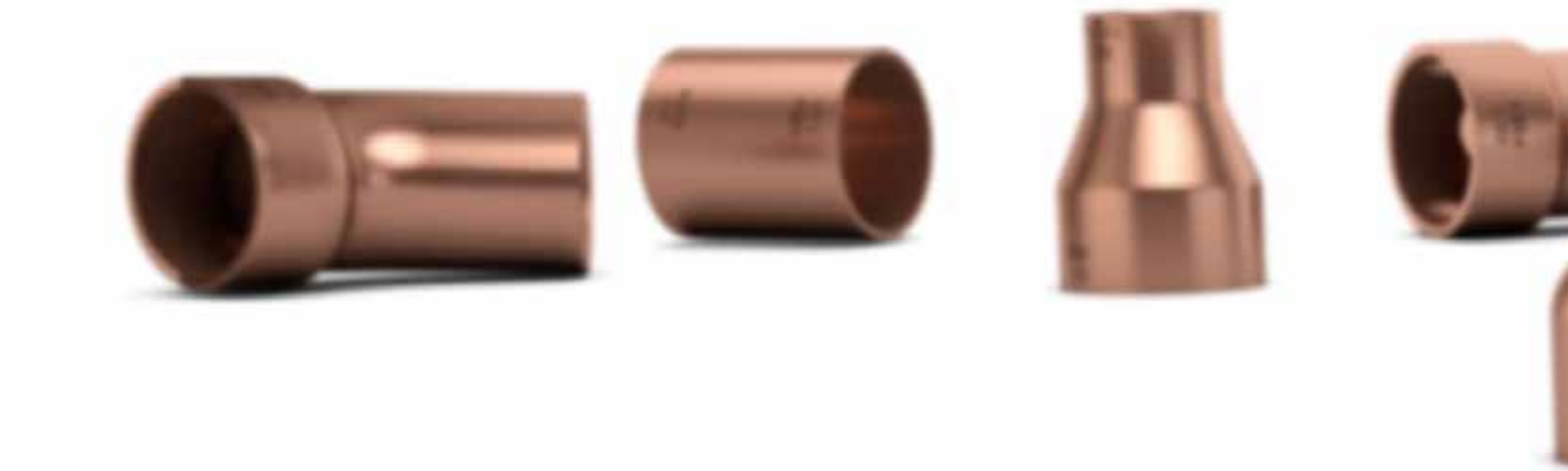
K65 Technical Brochure

3/8" to 2 1/8"

K65

Conex | Bänninger

Conex Bänninger specialises in providing fittings, valves and accessories across the globe by offering innovative and versatile solutions. Since 1909, Conex Bänninger has produced over 22 billion fittings and valves and has built its reputation for quality European manufacturing, backed by first-class customer service and unrivalled expertise. Passionate about excellence, Conex Bänninger is a byword for quality in the domestic, commercial, industrial, shipbuilding, air conditioning and refrigeration markets worldwide. Conex Bänninger is an ISO 9001 quality assured company, which assures you the very best in quality.



K65

Developed in conjunction with Wieland K65 high strength copper alloy fittings enable simple, safe and economical installation of high pressure refrigeration applications up to 130 bar. K65 fittings are particularly suited for use with CO_2 (R-744) in transcritical applications.

wieland

The name Wieland has stood for quality for almost two centuries. Every individual employee of Wieland is committed to offering quality - closely guided by what you want! High levels of service and customer orientation are further defining features of our quality. For you, this means greater security more flexibility and an even more individual approach. Best quality. Better service.

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Contents

Note: To keep up-to-date on K65 please visit: www.conexbanninger.com www.wieland.com www.k65-system.com

1. Applications

K65 fittings were developed in conjunction with Wieland in response to the use of CO_2 R-744 as an environmentally friendly (zero ODP and GWP of one) refrigerant for commercial refrigeration applications, in particular supermarket refrigeration systems. The use of CO_2 as a refrigerant led to high operating pressures, and therefore variations in the gauge of tube being specified. K65 simplifies the selection process, as the K65 alloy provides a mechanical strength high enough to withstand the pressure ratings required. K65 is a safe and economical solution for refrigeration systems with operating pressures up to 130 bar.

2. Features and Benefits

Operating pressure:	K65 fittings are UL 207 recognised and listed, with a maximum operating pressure of 130 bar.
Easy to identify – even after installation:	K65 is readily identifiable and easy to distinguish from traditional copper due to its slightly magnetic property, the K65 and 130 bar markings.
Guarantee:	When professionally installed K65 fittings are covered by a twenty five year guarantee. For full terms and conditions please refer to section 13.0.
Range:	Wide range of fittings from 3/8" up to 2 1/8".
Jointing:	K65 has excellent processing properties that are similar to those of copper. K65 (EN CuFe2P CW107C, UNS C19400) tubes can be brazed to K65 fittings without any need for expensive or specialised equipment and skills required for TIG welding of stainless steel tubes.
Corrosion resistance:	K65 (EN CuFe2P CW107C, UNS C19400) is immune to stress corrosion cracking and exhibits a high resistance to natural atmospheric corrosion.
Certification:	K65 tubes are UL 207 recognised, recognised component file number SA44215. K65 fittings are UL 207 recognised and listed, refrigerant fitting report reference SA44668, approved use for field and factory installations.
Electrical continuity:	Maintains earth continuity without the need for additional earth continuity straps.
Lighter for easy handling:	The lower weight of the tubes results in a product that is easier to handle, for example, when mounting the tubes on ceilings.
Lower installed cost:	K65's high mechanical strength enables tube and fittings to be made lower in weight when compared with traditional thick walled copper or stainless steel. This is supported by traditional brazed jointing leading to lower installed cost and improved handling.
Quality:	Conex Bänninger is an ISO 9001 quality assured company, which assures you the very best in quality.
K65 system:	Conex Bänninger recommends the use of Wieland K65 tube with K65 fittings.

3. Material

Material designation Wieland K65, EN CuFe2P CW107C, UNS C19400.

K65 is immune to stress corrosion cracking. Furthermore, K65 has good corrosion resistance in natural and industrial atmospheres as well as water for industrial use, aqueous solutions and alkaline solutions, water vapour, non-oxidising acids and neutral saline solutions.

For applications other than CO_2 please contact technical@ibpgroup.com.

4. Technical Data

Physical Properties	
Material composition	Fe 2.10 - 2.60%, Zn 0.05 - 0.20%, P 0.015 - 0.15%, Pb max. 0.0%, Cu balance
Thermal conductivity	>260 W/(m.K)
Coefficient of thermal expansion	17.6 x 10^{-6}/K between 0 and 300°C
Density	8.91 g/cm^3
Modulus of elasticity	123 GPa
Specific heat capacity	0.385 J/(g K)
Mechanical properties (annealed)	R_m min. >300 N/mm^2 $R_{p0.2}$ max. 250 N/mm^2 A min. >25% For the calculation of the required wall thickness see VdTÜV Material Sheet 567
Operating Parameters	
Applications	Air conditioning and refrigeration in particular high pressure CO_2 (R-744) **Note:** Not for use with Ammonia (R-717) nor Acetylene
Maximum operating pressure	130 bar / 13000 kPa / 1885 psi at 150°C **Note:** Other pressure ranges for tubes are available
Burst pressure >3 x maximum operating and abnormal pressure EN 378-2	390 bar / 39 MPa / 5,656 psi
UL 207 recognised and listed continuous operating temperature	121°C
Maximum operating temperature	-196°C to 150°C
Tube compatibility	K65 fittings are compatible with tubes manufactured from copper iron alloy EN CuFe2P CW107C, UNS C19400 with the external dimensions and tolerances conforming to EN 12449, EN 12735-1 and ASTM B280

Note: For detailed technical information on the jointing and fabrication properties of K65 please contact Conex Bänninger Technical Department, technical@ibpgroup.com

5. Standards, Specifications and Certifications

- VdTÜV Material Sheet 567, Seamless drawn tubes in CuFe2P (CW107C) Wieland K65.
- EN 12449 Seamless, round tubes for general purposes.
- EN 12735-1 Copper and copper alloys, Seamless, round copper tubes for air conditioning and refrigeration.
- Wieland R-H-1600 Tubes for high pressure systems 130 bar (K65).
- ISO 5149-2, EN378-2 5.3.2.2.3 Strength pressure test, compliant.
- EN 14276-2 - 8.9.4.1.2 Type burst proof test, compliant.
- Tubes UL 207 component file number SA44215.
- K65 fittings are UL 207 recognised and listed, refrigerant fitting report reference SA44668, approved use for field and factory installations.

6. Quality Assurance

Both Wieland and Conex Bänninger are ISO 9001 quality assured companies.

As per the requirements of the European Pressure Equipment Directive 2014/68/EU, both K65 tube and fittings are checked according to the specifications of the VdTÜV material data sheet 567 and AD 2000-datasheet W 0:2016-05 General principles for materials. Furthermore, Wieland and Conex Bänninger production systems are certified according to the Pressure Equipment Directive by TÜV Süd, and are regularly monitored by a third party. This ensures a consistently high level of product quality.

7. Size Availability

K65 tube and fittings are available in the following sizes from stock: 3/8", 1/2", 5/8", 3/4", 7/8", 1 1/8", 1 3/8", 1 5/8" and 2 1/8".

8. Marking and Cleanliness

All K65 tubes and fittings are marked with the manufacturers own designation, the K65 mark and the corresponding pressure rating, e.g. 130 bar. Tube ends are capped with a green plug. In addition, the material is slightly magnetic and can be easily distinguished from copper by means of a strong magnet – a helpful and practical advantage. Both tubes and fittings fully comply with the cleanliness requirements of EN 12735-1.

9. Brazing

K65 has excellent processing properties which are similar to those of pure copper. K65 tubes may be joined with K65 fittings through brazing.

Brazed joints should only be made by trained and experienced staff, e.g. a certified installer who holds a current certificate. Typical requirements are set out in EN 13585: Brazing - Qualification test of brazers and brazing operators.

Silver-containing brazing alloys with a silver content of min. 2% are recommended.

For the brazing of brass products to K65 it is recommended that Ag 145 / Ag 155 / Ag 156 and AG 244 or similar brazing alloy is used.

Usually, no flux is necessary for the brazing of K65 tube and K65 fittings when using silver-containing CuP brazing alloys. For the joining of copper alloys such as brass and red brass the additional use of fluxes, e.g. FH 10 according to EN 1045, is recommended. This ensures optimum filling of the capillary gap. Residual flux has to be removed after brazing (e.g. with a moist cloth).

The processing instructions as detailed in EN 378 for the installation of tubes and fittings made of copper for air conditioning and refrigeration applications, have to be followed. In addition, compliance with the basic requirements of the European Pressure Equipment Directive 2014/68/EU has to be examined in individual cases. The safety precautions of high-pressure systems, particularly for pressure testing and commissioning have to be observed, if necessary by calling in experts. During brazing, it is imperative that the brazed joint is handled and heated properly.

In difficult-to-reach joints, as may occur in complex assemblies, we still recommend the use of brazing alloys with a silver content of minimum 2%. If higher silver content alloys are to be used such as Ag 134 or Ag 145, using fluxes is recommended. Please note these brazing alloys are characterised by a higher gap-filling rate and care needs to be taken to ensure the brazing alloy is not flowing through the joint into the tube.

Flux residue must be removed so the joint can be properly inspected, pressure and leak tested (reduce the risk of early life failures); minimise the potential of corrosion through hygroscopic action and allow any protective coatings to adhere to the base metal.

Selection of EN ISO 17672 recommended brazing alloys

Solder according to EN IS0 17672	Operating temperature °C	Composition in per cent by weight				
		Ag	Cu	Zn	Sn	P
CuP 279	740	2	91.7	-	-	6.3
CuP 281	710	5	89	-	-	6.0
CuP 284	700	15	80	-	-	5.0
Ag 244*	730	44	30	26	-	-
Ag 134	710	34	36	27.5	2.5	-
Ag 145*	670	45	27	25.5	2.5	-
Ag 155*	660	55	21	22	2	-
Ag 156*	660	56	22	17	5	-

Recommended fluxes

Flux EN 1045	Temp °C	Note
FH 10	550 - 970	Flux residues are corrosive and must be removed
FH12	520 - 1030	Flux residues are corrosive and must be removed

Note: A suitable inert gas such as oxygen free nitrogen (OFN) should be passed through the pipework during the brazing process to prevent the build-up of oxides or scale on the inner surface of the tube.

*Brazing alloys suitable for brazing brass.

10. Installation Process

General

Transport and storage: Tubes and fittings should not be stored outdoors and shall be protected from moisture and dust.

Design considerations: All refrigeration pipelines should be designed so that the number of joints is kept to a practical minimum.

Pipework support: All pipework should be supported by the use of appropriate clips, brackets or supports.

Pipework protection: Tubing and fittings shall be protected as far as possible against adverse environmental or other external effects.

Pipework identification: Every refrigeration system and its main components shall be identifiable by marking. This marking shall always be visible.

Pipework insulation: Sufficient space shall be provided to allow for insulation where insulation of the piping is required. The insulation thickness and conductivity shall conform to national requirements and shall prevent formation of condensation. Insulation containing ammonia should not be used with copper based pipework systems.

Refrigeration pipelines should be designed in compliance with the following key standards and in line with local regulations, codes of practice and by-laws governing the installation. All applicable health and safety practices must be adhered to.

- EN 378-2: Refrigerating systems and heat pumps. Safety and environmental requirements. Design, construction, testing, marking and documentation.
- ISO 14903: Refrigerating systems and heat pumps - Qualification of tightness of components and joints.
- EN 14276-2: Pressure equipment for refrigerating systems and heat pumps. Piping. General requirements.
- European Pressure Equipment Directive 2014/68/EU.

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Health and safety:

When brazing always wear appropriate personal protective equipment; gloves, flame retardant overalls, eye, head and foot protection. Working areas where brazing processes are to be performed must be well ventilated and free from fire risk. Fumes and gases detrimental to health are emitted from most brazing processes; these must be disposed of quickly, either by use of exhaust ventilation equipment or adequate circulation of fresh air throughout the working area. If necessary where these criteria cannot be assured operators should wear breathing apparatus. A full risk assessment must be completed for all the activities involved specific to the work area where the brazing is being carried out.

Assembly preparation:

1. Check sizes

- Ensure the tube and fitting sizes are compatible.

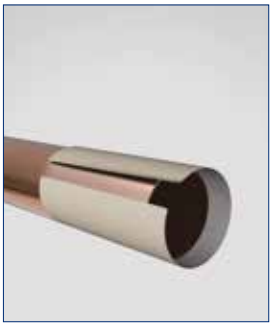
2. Cut to length

- Cut the tube end square, an electric tube cutter is recommended.
- Check the tube has retained its shape and is damage free.

3. Deburr the tube end

- Deburr the inside, and outside of the tube.

4. Clean the tube end



- Clean the tube end using a cleaning pad.
- Tube ends must be free from oxidation, dirt and debris.

5. Mark insertion depth

- Mark the correct insertion depth on the tube.
- The mark will be used as a visual aid prior to brazing.

To braze K65 fittings to K65 tubes without flux:

1. Fully insert tube

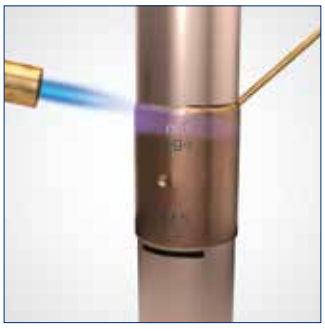
- Insert the tube fully into the socket to ensure joint integrity.
- Use the insertion depth mark as a guide.

2. Apply heat evenly

- Apply heat, keeping the flame moving to ensure that parent metals are evenly heated to a cherry-red colour.

Note: A suitable inert gas such as oxygen free nitrogen (OFN) should be passed through the pipework during the brazing process to prevent the buildup of oxides or scale on the inner surface of the tube.

3. Braze Joint



- Touch a brazing rod, strip or wire to the joint mouth and melt in the flame.
- Filler metal is drawn into the fitting socket by capillary action.
- A continuous fillet of filler metal will be visible around the joint.
- To aid development of the fillet, the flame should be kept slightly ahead of the point of the filler metal.

4. Allow joint to cool

- Once brazing is complete, heating should be discontinued.
- During cooling, do not move or twist the components.

Note: Brazing fillers such as CuP279, CuP281 and CuP284 do not require additional flux when K65 components are brazed.

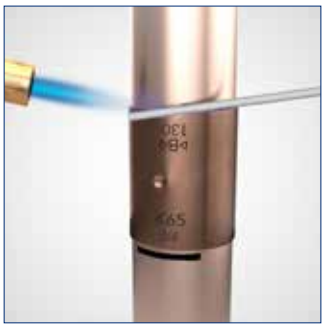
To braze K65 fittings using a flux coated brazing rod:

Follow assembly steps 1-5 under 'assembly preparation' then:

1. Fully insert tube

- Insert the tube fully into the socket to ensure joint integrity.
- Use the insertion depth mark as a guide.

2. Apply heat and flux



- Apply heat, keep the flame moving, apply flux from the outside of the rod. Be careful to avoid localised overheating which may melt the base metal and burn a hole through the tube.
- At the correct temperature, the flux should be clear and flow over the joint area. The parent metals should show a cherry-red colour.

Note: A suitable inert gas such as oxygen free nitrogen (OFN) should be passed through the pipework during the brazing process to prevent the buildup of oxides or scale on the inner surface of the tube.

3. Braze joint

- Touch the brazing rod to the joint mouth and melt the filler metal in the flame.
- Filler metal is drawn into the fitting socket by capillary action.
- A continuous fillet of filler metal will be visible around the joint.
- To aid development of the fillet, the flame should be kept slightly ahead of the point of the filler metal.

4. Allow to cool

- Once brazing is complete, heating should be discontinued.
- During cooling, do not move or twist the components.

5. Remove flux residue

- Flux residue must be removed so the joint can be properly inspected, pressure and leak tested (eliminate early life failures), eliminate risk of corrosion through hygroscopic action and allow any protective coatings to adhere to the base metal.
- Clean the outside of the joint(s) with a wet cloth, or remove flux residue using an abrasive pad.

11. Product Range

11.1 K65 tube

Material: Wieland K65, EN CuFe2P CW107C, UNS C19400.

Pressure rating: Wieland K65 tubes are available with pressure ratings from 80 bar to 130 bar.

Dimensions: K65 tube is available in the following dimensions from stock:
130 bar 3/8", 1/2", 5/8", 3/4", 7/8", 1 1/8", 1 3/8", 1 5/8", and 2 1/8".

Dimensional tolerances: EN 12735-1, ASTM B280.

Temper: R300 (heat treated) diameters ≥ 5/8", R420 (drawn) diameters < 5/8".

Maximum operating pressure: 130 bar / 13000 kPa / 1885 psi at 150°C.

Packaging: Tube ends closed, packed in bundles.

The dimensions mentioned here can be cold bent with suitable bending equipment and bending segments that are precisely tailored to the outside diameter. Hot bending is not recommended. Industrial bending machines also enable tighter bending radii. Bending of hairpins is possible on suitable bending equipment.

11.2 K65 fittings

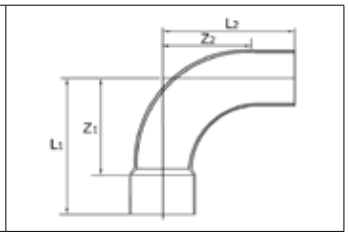
Material: Wieland K65, EN CuFe2P CW107C, UNS C19400.

Maximum operating and abnormal pressure: 130 bar / 13000 kPa / 1885 psi at 150°C.

K65 fittings internal dimensions and tolerances comply with product standards EN 1254-1 and EN 1254-5 and are appropriate for capillary joints to EN 14276-1.

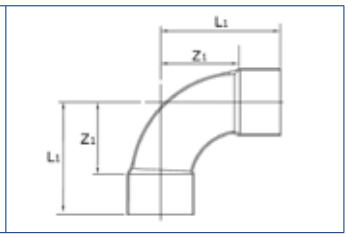
K65 fittings are compatible with CuFe tubes manufactured from EN CuFe2P CW107C, UNS C19400 with the external dimensions and tolerances conforming to EN 12449, EN 12735-1 and ASTM B280.

Note: Because of the high strength of EN CuFe2P CW107C, UNS C19400 the wall thickness of both tube and fittings is thinner than that specified in the above standards for the comparable pressure rating.



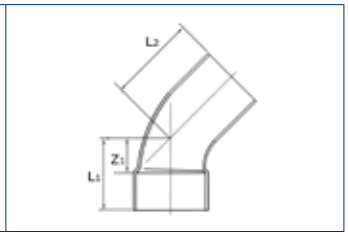
K5001
Street Elbow 90°

Code	Size	L1	L2	Z1	Z2
K5001003000000	3/8"	19	23.5	12	14.5
K5001004000000	1/2"	28	28	19.5	17.5
K5001005000000	5/8"	29	33	18.5	20.5
K5001006000000	3/4"	39.5	40.5	27	26
K5001007000000	7/8"	45	48.5	29.5	31
K5001009000000	1 1/8"	53.5	55.5	38	38
K5001011000000	1 3/8"	67	71	47	49
K5001013000000	1 5/8"	86	86	66	64
K5001017000000	2 1/8"	134	134	108	106



K5002
Elbow 90°

Code	Size	L1	Z1
K5002003000000	3/8"	19	12
K5002004000000	1/2"	26.5	18
K5002005000000	5/8"	34	23.5
K5002006000000	3/4"	42	29.5
K5002007000000	7/8"	42.5	27
K5002009000000	1 1/8"	57.5	42
K5002011000000	1 3/8"	67	47
K5002013000000	1 5/8"	86	66
K5002017000000	2 1/8"	134	108

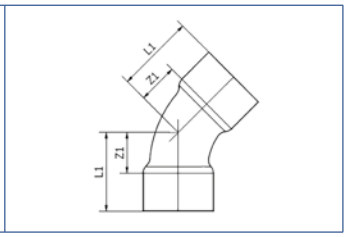


K5040
Street Elbow 45°

Code	Size	L1	L2	Z1
K5040003000000*	3/8"	16	16	9
K5040004000000*	1/2"	17	17	8.5
K5040005000000*	5/8"	19	19	8.5
K5040006000000	3/4"	21.5	27.5	9
K5040007000000	7/8"	25.5	27.5	10
K5040009000000	1 1/8"	28	31	12.5
K5040011000000	1 3/8"	38	43	18
K5040013000000	1 5/8"	39	51	19
K5040017000000*	2 1/8"	70.7	74.7	44.7

*Available 2022

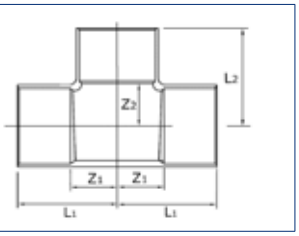
K5041
Elbow 45°



Code	Size	L1	Z1
K5041003000000	3/8"	16	9
K5041004000000	1/2"	17	8.5
K5041005000000	5/8"	19.5	9
K5041006000000	3/4"	21.5	9
K5041007000000	7/8"	25.5	10
K5041009000000	1 1/8"	27	11.5
K5041011000000	1 3/8"	39	19
K5041013000000	1 5/8"	43	23
K5041017000000*	2 1/8"	70.7	44.7

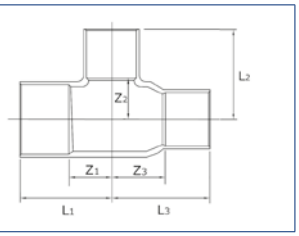
*Available 2022

K5130
Tee Equal

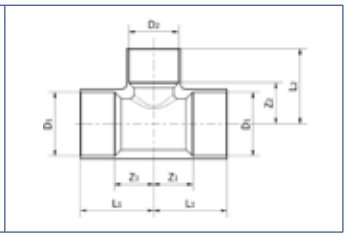


Code	Size	L1	L2	Z1	Z2
K5130003003003	3/8"	14.5	14.5	7.5	7.5
K5130004004004	1/2"	18	18	9.5	9.5
K5130005005005	5/8"	22	22	11.5	11.5
K5130006006006	3/4"	26	26	13.5	13.5
K5130007007007	7/8"	30.5	30.5	15	15
K5130009009009	1 1/8"	36	36	20.5	20.5
K5130011011011	1 3/8"	44	44	24	24
K5130013013013	1 5/8"	48	48	28	28
K5130017017017	2 1/8"	53	53	33	33

K5130
Tee Reduced End and Branch

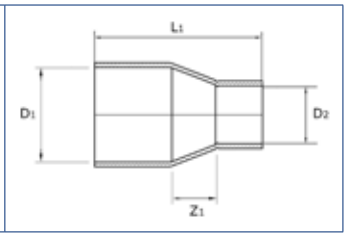


Code	Size	L1	L2	L3	Z1	Z2	Z3
K5130004003003	1/2" x 3/8" x 3/8"	16	17	16	7.5	10	9
K5130005004004	5/8" x 1/2" x 1/2"	21	20	22	10.5	11.5	13.5
K5130009007004	1 1/8" x 7/8" x 1/2"	26	28	32	10.5	19.5	16.5



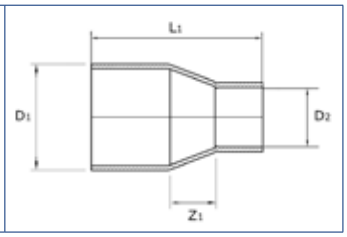
K5130
Tee Reduced Branch

Code	Size	L1	L2	Z1	Z2	D1	D2
K5130004004003	1/2" x 1/2" x 3/8"	16	16	7.5	9	1/2"	3/8"
K5130005005003	5/8" x 5/8" x 3/8"	18.5	20.5	8	13.5	5/8"	3/8"
K5130005005004	5/8" x 5/8" x 1/2"	21	21	10.5	12.5	5/8"	1/2"
K5130006006004	3/4" x 3/4" x 1/2"	21.5	22.5	9	14	3/4"	1/2"
K5130006006005	3/4" x 3/4" x 5/8"	24.5	24.5	12	14	3/4"	5/8"
K5130007007004	7/8" x 7/8" x 1/2"	25	23.5	9.5	15	7/8"	1/2"
K5130007007005	7/8" x 7/8" x 5/8"	28	26	12.5	15.5	7/8"	5/8"
K5130007007006	7/8" x 7/8" x 3/4"	29.5	25	14	12.5	7/8"	3/4"
K5130009009006	1 1/8" x 1 1/8" x 3/4"	29.5	31	14	18.5	1 1/8"	3/4"
K5130009009007	1 1/8" x 1 1/8" x 7/8"	33	34	17.5	18.5	1 1/8"	7/8"
K5130011011006	1 3/8" x 1 3/8" x 3/4"	34	34	14	21.5	1 3/8"	3/4"
K5130011011007	1 3/8" x 1 3/8" x 7/8"	37	37	17	21.5	1 3/8"	7/8"
K5130011011009	1 3/8" x 1 3/8" x 1 1/8"	38.5	37	18.5	21.5	1 3/8"	1 1/8"
K5130013013006	1 5/8" x 1 5/8" x 3/4"	34	37	14	24.5	1 5/8"	3/4"
K5130013013007	1 5/8" x 1 5/8" x 7/8"	35.5	41	15.5	25.5	1 5/8"	7/8"
K5130013013009	1 5/8" x 1 5/8" x 1 1/8"	38.5	40.5	18.5	25	1 5/8"	1 1/8"
K5130013013011	1 5/8" x 1 5/8" x 1 3/8"	43.5	45	23.5	25	1 5/8"	1 3/8"
K5130017017013	2 1/8" x 2 1/8" x 1 5/8"	46	53	26	26	2 1/8"	1 5/8"



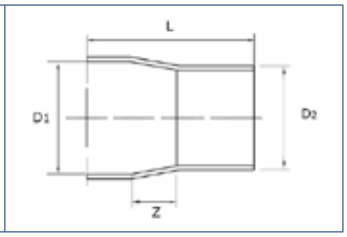
K5240
Reducing Coupler

Code	Size	L1	Z1	D1	D2
K5240004003000	1/2" x 3/8"	23.5	8	1/2"	3/8"
K5240005004000	5/8" x 1/2"	27	8	5/8"	1/2"
K5240006005000	3/4" x 5/8"	28.5	5.5	3/4"	5/8"
K5240007006000	7/8" x 3/4"	31	3	7/8"	3/4"
K5240009004000	1 1/8" x 1/2"	42	18.0	1 1/8"	1/2"
K5240009007000	1 1/8" x 7/8"	37	6	1 1/8"	7/8"
K5240011004000	1 3/8" x 1/2"	51	22.5	1 3/8"	1/2"
K5240011005000	1 3/8" x 5/8"	53	22.5	1 3/8"	5/8"
K5240011006000	1 3/8" x 3/4"	51	18.5	1 3/8"	3/4"
K5240011007000	1 3/8" x 7/8"	51	15.5	1 3/8"	7/8"
K5240011009000	1 3/8" x 1 1/8"	50.5	15	1 3/8"	1 1/8"
K5240013006000	1 5/8" x 3/4"	55	22.5	1 5/8"	3/4"
K5240013007000	1 5/8" x 7/8"	56	20.5	1 5/8"	7/8"
K5240013009000	1 5/8" x 1 1/8"	51	15.5	1 5/8"	1 1/8"
K5240013011000	1 5/8" x 1 3/8"	51	11	1 5/8"	1 3/8"
K5240017013000	2 1/8" x 1 5/8"	60	14	2 1/8"	1 5/8"



K5243
Fitting Reducer

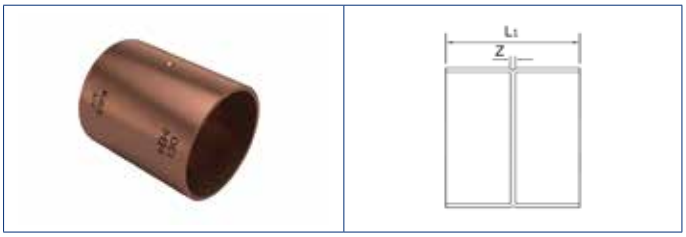
Code	Size	L1	Z1	D1	D2
K5243004003000	1/2" x 3/8"	25	7.5	1/2"	3/8"
K5243005003000	5/8" x 3/8"	26	6.5	5/8"	3/8"
K5243005004000	5/8" x 1/2"	26.5	5.5	5/8"	1/2"
K5243006003000	3/4" x 3/8"	30.5	9	3/4"	3/8"
K5243006004000	3/4" x 1/2"	30	7	3/4"	1/2"
K5243006005000	3/4" x 5/8"	30.5	5.5	3/4"	5/8"
K5243007003000	7/8" x 3/8"	38.5	14	7/8"	3/8"
K5243007004000	7/8" x 1/2"	34	8	7/8"	1/2"
K5243007005000	7/8" x 5/8"	31	3	7/8"	5/8"
K5243007006000	7/8" x 3/4"	34	4	7/8"	3/4"
K5243009004000	1 1/8" x 1/2"	39	13	1 1/8"	1/2"
K5243009005000	1 1/8" x 5/8"	40.5	12.5	1 1/8"	5/8"
K5243009006000	1 1/8" x 3/4"	39.5	9.3	1 1/8"	3/4"
K5243009007000	1 1/8" x 7/8"	39.5	6.5	1 1/8"	7/8"
K5243011009000	1 3/8" x 1 1/8"	45.5	8	1 3/8"	1 1/8"
K5243013007000	1 5/8" x 7/8"	51	13.5	1 5/8"	7/8"
K5243013011000	1 5/8" x 1 3/8"	47	5	1 5/8"	1 3/8"
K5243017013000	2 1/8" x 1 5/8"	56	8	2 1/8"	1 5/8"



K5243m
Fitting Reducer to Metric
(Female Inch x Male Metric)

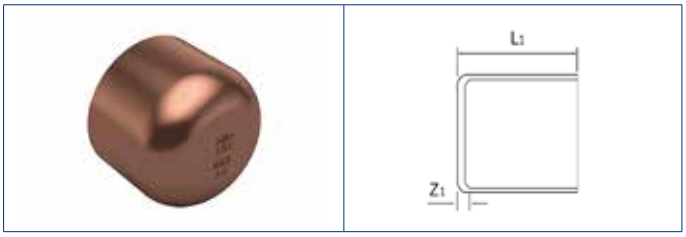
Code	Size	L	Z	D1	D2
K5243004012000	1/2" x 12	22	5	1/2"	12
K5243005015000	5/8" x 15	28	7	5/8"	15
K5243006018000	3/4" x 18	31	6	3/4"	18
K5243007022000	7/8" x 22	34.5	3.5	7/8"	22
K5243009028000	1 1/8" x 28	38.5	4.5	1 1/8"	28
K5243011035000	1 3/8" x 35	54	11	1 3/8"	35
K5243013042000	1 5/8" x 42	56.5	9.5	1 5/8"	42

K5270
Coupler



Code	Size	L1	Z
K5270003000000	3/8"	16	2
K5270004000000	1/2"	20	3
K5270005000000	5/8"	23	2
K5270006000000	3/4"	28.5	3.5
K5270007000000	7/8"	36	5
K5270009000000	1 1/8"	37	6
K5270011000000	1 3/8"	45.5	5.5
K5270013000000	1 5/8"	46	6
K5270017000000	2 1/8"	56	4

K5301
End Cap



Code	Size	L1	Z1
K5301003000000	3/8"	10	3
K5301004000000	1/2"	12	3.5
K5301005000000	5/8"	15	4.5
K5301006000000	3/4"	17	4.5
K5301007000000	7/8"	21	6
K5301009000000	1 1/8"	22	6.5
K5301011000000	1 3/8"	29.5	11
K5301013000000	1 5/8"	32	12
K5301017000000	2 1/8"	36	10

12. K65 Fittings Product Guarantee

When professionally installed, used and maintained in accordance with the installation and maintenance instructions detailed in the K65 technical brochure available on the Conex Bänninger website (www.conexbanninger.com), Conex Universal Ltd. guarantees that K65 fittings supplied by Conex Universal Ltd. will be free of material defects resulting from errors in manufacture, for twenty five years from the date of first purchase by an end user. This Guarantee is limited to the repair or replacement of defective product(s) (at the sole discretion of Conex Universal Ltd.). At the request of Conex Universal Ltd. the allegedly defective product(s) must be returned to the address below* and Conex Universal Ltd. reserves the right to inspect and test the alleged defects. This guarantee provided by Conex Universal Ltd. does not affect your statutory rights.

The Guarantee set out above is given by Conex Universal Ltd. and subject to the following conditions:

A. Any alleged defects must be reported to Conex Universal Ltd. within one month of the first occurrence of any such alleged defect, clearly setting out the nature of the claim and the circumstances surrounding it.

B. Conex Universal Ltd. shall be under no liability in respect of any defect in any product arising from:

- defective installation,
- fair wear and tear,
- wilful damage,
- negligence of any party other than Conex Universal Ltd.
- abnormal working or environmental conditions,
- failure to follow the instructions of Conex Universal Ltd.,
- misuse (which includes any use of the product(s) concerned for a purpose or in a situation / environment or for an application other than that for which it was designed), or
- alteration or repair of any product without the prior approval of Conex Universal Ltd.

C. At the request of Conex Universal Ltd. the person claiming under this guarantee must deliver to Conex Universal Ltd. Written evidence of the date of first purchase by an end user of the product(s) concerned.

* The address for returns is:

Customer Services at Conex Universal Limited,
Global House, 95 Vantage Point, The Pensnett Estate,
Kingswinford, West Midlands DY6 7FT,
UNITED KINGDOM

13. Frequently Asked Questions

1. **Where are the K65 fittings manufactured?**

   Europe.

2. **What is the maximum operating pressure for K65 fittings?**

   The maximum operating pressure for K65 fittings is 130 bar.

3. **What sizes of tube and fittings are available?**

   K65 tube and fittings are available in the following sizes, 3/8", 1/2", 5/8", 3/4", 7/8", 1 1/8", 1 3/8", 1 5/8" and 2 1/8".

4. **What is the guarantee on K65 fittings?**

   K65 fittings are guaranteed for 25 years, for full details please see section 12.

5. **Can K65 tube and fittings be used with Ammonia (R717)?**

   K65 cannot be used with Ammonia (R-717).

6. **Are there any concerns with corrosion where installations are made in coastal areas or with respect to cleaning agents?**

   K65 is immune to stress corrosion cracking. Furthermore, K65 has good corrosion resistance in natural and industrial atmospheres as well as water and water for industrial use, aqueous solutions and alkaline solutions, water vapour, non-oxidising acids and neutral saline solutions.

7. **How clean are the fittings?**

   K65 and fittings fully comply with the cleanliness requirements of EN 12735-1.

8. **Is K65 suitable for medical gas applications?**

   No K65 is not suitable for medical gas applications.

9. **Is K65 approved for drinking water systems?**

   No K65 is not approved for drinking water systems.

10. **Is K65 certified by UL?**

    Yes, please see file no's listed below.

    K65 Tubes UL 207 recognised component file number SA44215.

    K65 fittings are UL 207 recognised and listed, refrigerant fitting report reference SA44668, approved use for field and factory installations.