TITGEMEYER

Fastening technology / Blind rivets

Nickel-copper alloy blind rivets

Highest corrosion resistance for extreme conditions

Nickel-copper blind rivets

General advantages of blind rivets:

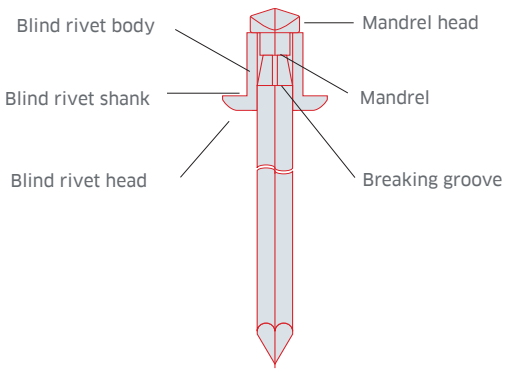
- Fast and safe processing
- One-sided processing possible
- Connection of different materials
- Versatile in use

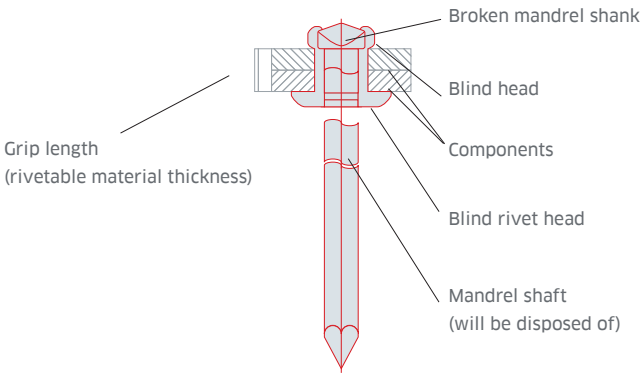
Properties of copper-nickel alloy:

The typical compostion of a nickel-copper alloy varies depending on the type of alloy. One of the best known is Monel® 400, which has the following approximate compostion:

- Nickel (Ni): approx. 63–70 %
- Copper (Cu): approx. 28–34 %
- Iron (Fe): max. 2,5 %
- Manganese (Mn): max. 2,0 %
- Silicon (Si): max. 0,5 %
- Carbon (C): max. 0,3 %
- Sulphur (S): max. 0,024 %

Structure and processing principle (before/after)





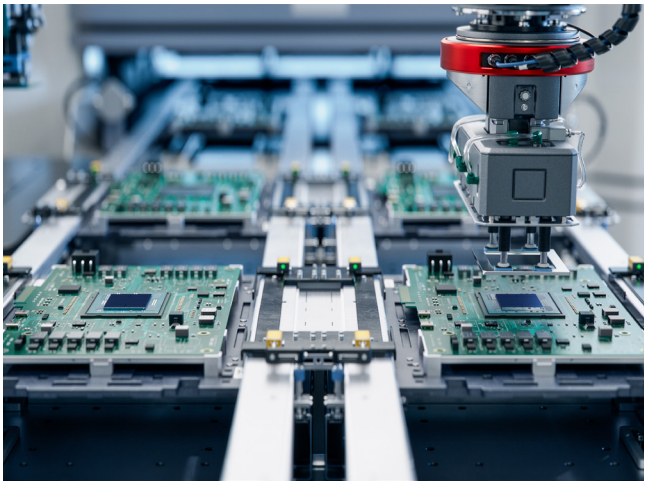
The high nickel content has several important effects on the properties of the blind rivets.

Excellent corrosion resistance

- Nickel is extremely corrosion-resistant, especially to seawater, acids and alkaline solutions.
- It protects the material against stress corrosion cracking and pitting corrosion, which can occur with other materials, e.g. stainless steel.
- This makes this alloy especially suitable for use in the marine and chemical industries.

High strength and toughness

- Nickel increases the mechanical strength while ensuring good ductility (formability).
- As a result, Monel® remains stable and resistant even under mechanical stress.



High temperature resistance

Nickel ensures high heat resistance and prevents the material from softening at high temperatures.

- Nickel-copper alloys remain stable even at extreme temperatures (up to approx. 600° C).
- It is therefore used in engines, heat exchangers and high-temperature applications.

Non-magnetic behaviour

- Nickel ensures that the alloy remains non-magnetic in the annealed state.
- This makes it suitable for specialized applications, such as in electronics, sensor technology, and medical engineering.

The high copper content in turn gives the material other important properties.

Improved corrosion resistance, especially against seawater

– Copper makes Monel® particularly resistant to seawater and maritime environments.
– It protects against biofouling (growth of microorganisms, algae, mussels), which is why the alloy is often used for ship drives, shafts, pumps and heat exchangers.
– In combination with nickel, copper increases resistance to acids, especially sulphuric acid and hydrofluoric acid.

Art.- No.	Article description	Corrosivity category	after testing
424520908	TIFAS® Standard DH 4,8x7,7 NiCu/A2	ISO 12944 C5-M-long	

Increased ductility and mouldability

– Copper improves the cold formability of the material.

Improvement of antibacterial properties

– Copper has antimicrobial properties that inhibit the growth of bacteria and germs.
– This makes Monel® interesting for medical technology, drinking water systems and food processing.

Influence on electrical and thermal properties

– Copper improves the electrical conductivity (Monel® has a higher conductivity than pure nickel, but remains below pure copper).
– It also increases thermal conductivity, which makes Monel® useful for heat exchangers and high-temperature components.

Typical applications for copper-nickel alloy blind rivets.

Chemical and petrochemical industry

- Container for highly corrosive liquids
- Heat exchangers and reactors in chemical processes pump housings, aggressive media (sulphuric acid, hydrofluid acid)

Medical and food technology

- Surgical instruments (high biocompability)
- Sterilisation equipment and containers for the pharmaceutical industry
- Drinking water pipes and filters in the food industry

Marine and offshore technology

- Fasteners and fittings for yachts, sailing ships and other maritime structures
- Pumps, valves and heat exchangers in seawater systems

Electronics and sensor technology

- Electronic contacts and connectors
- Pressure sensors and special lines in measuring systems
- Magnetic shielding for high-frequency technology

Summary

While nickel provides the main corrosion resistance and mechanical strength, copper provides:

- Special resistance to seawater and acids
- Better mouldability and workability
- Antibacterial effect
- Improved thermal and electrical conductivity

Conclusion

Blind rivets made of nickel-copper are a premium choice for demanding applications. Invest in the quality of nickel-copper blind rivets and benefit from a durable and reliable fastening technology.

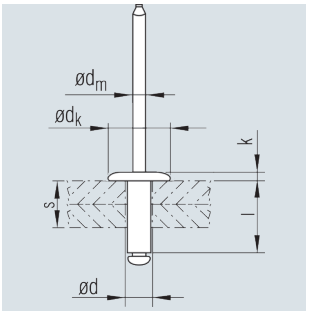
TIFAS® Standard DH Blind rivets

Dome head

Material

Sleeve:
Nickel/copper

Mandrel:
Steel, galvanised



Nominal ø d [mm]	Bore ø [mm]	Grip range s [mm]	Blind sleeve l +1.0-0.2 [mm]	Blind rivet head ø dk ±0.5 [mm]	Height k max. [mm]	Mandrel ø dm nom. [mm]	Nominal strength at break Shear [N]	Tensile [N]	Article No.
3,2	3,3 - 3,4	1,8 - 3,1	6,2	6,0	1,0	2,1	1.500	1.900	424 411 908
		3,1 - 4,3	7,5	6,0	1,0	2,1	1.500	1.900	424 412 908
		4,3 - 5,8	9,0	6,0	1,0	2,1	1.500	1.900	424 413 908
		5,8 - 7,1	10,3	6,0	1,0	2,1	1.500	1.900	424 414 908
4,0	4,1 - 4,2	1,0 - 2,5	6,2	6,7	1,0	2,4	2.200	3.000	424 420 908
		2,5 - 4,1	7,8	6,7	1,0	2,4	2.200	3.000	424 421 908
		4,1 - 5,8	9,5	6,7	1,0	2,4	2.200	3.000	424 423 908
		5,8 - 7,9	11,5	6,7	1,0	2,4	2.200	3.000	424 425 908
4,8	4,9 - 5,0	1,5 - 3,8	7,7	8,1	1,1	2,93	3.300	3.750	424 430 908
		3,8 - 5,8	10,0	8,1	1,1	2,93	3.300	3.750	424 432 908
		5,8 - 8,6	12,8	8,1	1,1	2,93	3.300	3.750	424 433 908
		8,6 - 12,5	16,5	8,1	1,1	2,93	3.300	3.750	424 434 908
		12,5 - 15,0	19,0	8,1	1,1	2,93	3.300	3.750	424 435 908
		15,0 - 17,5	21,5	8,1	1,1	2,93	3.300	3.750	424 436 908
6,4	6,5 - 6,6	0,5 - 7,6	13,0	12,5	2,2	3,85	7.000	9.000	424 440 908
		7,6 - 12,7	18,0	12,5	2,2	3,85	7.000	9.000	424 441 908

* Breaking forces refer to rivet failure.

Other versions on request.

Subject to technical changes.

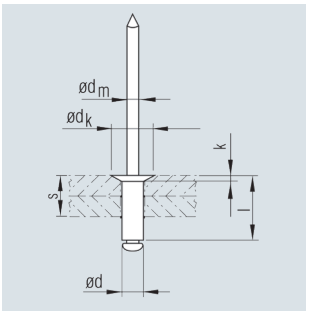
TIFAS® Standard CS Blind rivets

Countersunk head

Material

Sleeve:
Nickel/copper

Mandrel:
Steel, galvanised



Nominal ø d [mm]	Bore ø [mm]	Grip range s [mm]	Blind sleeve l +1.0-0.2 [mm]	Blind rivet head ø dk ±0.5 [mm]	Height k max. [mm]	Mandrel ø dm nom. [mm]	Nominal strength at break Shear [N]	Tensile [N]	Article No.
3,2	3,3 - 3,4	0,5-2,5	5,8	6,3	1,0	2,1	1.500	1.900	424 460 908
		2,5-3,8	7,0	6,3	1,0	2,1	1.500	1.900	424 461 908
		3,8-5,1	8,5	6,3	1,0	2,1	1.500	1.900	424 462 908
		5,1-6,6	10,0	6,3	1,0	2,1	1.500	1.900	424 463 908
4,0	4,1 - 4,2	3,3-4,8	8,7	7,5	1,1	2,4	2.200	2.750	424 471 908
		4,8-7,4	11,3	7,5	1,1	2,4	2.200	2.750	424 473 908
4,8	4,9 - 5,0	3,0-4,6	9,0	9,5	1,5	2,93	3.300	3.750	424 480 908
		4,6-6,6	11,0	9,5	1,5	2,93	3.300	3.750	424 482 908
		6,6-9,4	14,0	9,5	1,5	2,93	3.300	3.750	424 483 908
		9,4-13,2	18,0	9,5	1,5	2,93	3.300	3.750	424 484 908
		13,2-15,7	20,5	9,5	1,5	2,93	3.300	3.750	424 485 908
6,4	6,5 - 6,6	5,0-9,0	14,5	12,5	2,0	3,85	7.000	9.000	424 490 908
		9,0-13,0	19,4	12,5	2,0	3,85	7.000	9.000	424 491 908

* Breaking forces refer to rivet failure.

Other versions on request.

Subject to technical changes.

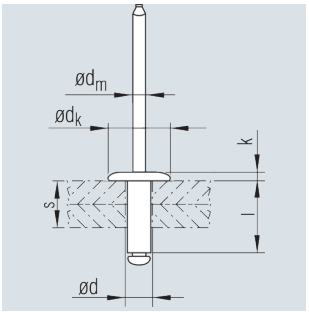
TIFAS® Standard DH Blind rivets

Dome head

Material

Sleeve:
Nickel/Copper

Mandrel:
Stainless steel A2



Nominal ø d [mm]	Bore ø [mm]	Grip range s [mm]	Blind sleeve l +1.0-0.2 [mm]	Blind rivet head ø dk ±0.5 [mm]	Height k max. [mm]	Mandrel ø dm nom. [mm]	Nominal strength at break Shear [N]	Tensile [N]	Article No.
3,2	3,3 - 3,4	3,1-4,3	7,5	6,0	0.8	2,1	1.500	1.900	424 502 908
		4,3-5,8	9,0	6,0	0.8	2,1	1.500	1.900	424 503 908
		5,8-7,1	10,3	6,0	0.8	2,1	1.500	1.900	424 504 908
4,0	4,1 - 4,2	1,0-2,5	6,2	6,7	1,0	2,4	2.200	3.000	424 510 908
		2,5-4,1	7,8	6,7	1,0	2,4	2.200	3.000	424 511 908
		4,1-5,8	9,5	6,7	1,0	2,4	2.200	3.000	424 512 908
		5,8-7,9	11,5	6,7	1,0	2,4	2.200	3.000	424 514 908
4,8	4,9 - 5,0	1,5-3,8	7,7	8,1	1,1	3,1	3.300	3.750	424 520 908
		3-8-5,8	10,0	8,1	1,1	3,1	3.300	3.750	424 522 908
		5,8-8,6	12,8	8,1	1,1	3,1	3.300	3.750	424 523 908
		8,6-12,5	16,5	8,1	1,1	3,1	3.300	3.750	424 524 908
		12,5-15,0	19,0	8,1	1,1	3,1	3.300	3.750	424 525 908

* Breaking forces refer to rivet failure.

Other versions on request.

Subject to technical changes.

Tools for setting blind rivets

Pneumatic-hydraulic tool RL20-2

Benefits at a glance

- High speed processing cycle
- Riveting cycle faster than 1 second
- Economical air consumption due to separate trigger
- Simple handling
- Easy to maintain
- Low weight
- Balanced pressure point at the trigger
- Center of gravity of the tool is in the middle of the tool
- Ergonomic handle
- Air connection at the Back of the tool
- Suspension device for balancer
- Tool-free removal of the pulling unit
- Rivet mandrel container with quick release

Working range

Rivet Ø [mm]	2.4*	3.0/3.2	4.0	4.8/5.0	6.0	6.4
Aluminium, copper, brass	•	•	•	•		
Steel	•	•	•	•		
Stainless steel	•	•	•	•		

* Depending on rivet type

** Not suitable for cup-type blind rivets.

Pneumatic-hydraulic tool RL60-2

Benefits at a glance

- High speed processing cycle
- Riveting cycle approx. 1 second
- Economical air consumption due to separate trigger
- Simple handling
- Easy to maintain
- Low weight
- Balanced pressure point at the trigger
- Center of gravity of the tool is in the middle of the tool
- Ergonomic handle
- Air connection at the back of the tool
- Suspension device for balancer
- Tool-free removal of the pulling unit
- Rivet mandrel container with quick release

Working range

Rivet Ø [mm]	2.4	3.0/3.2	4.0	4.8/5.0	6.0	6.4
Aluminium, copper			•	•	•	•
Steel			•	•	•	•
Stainless steel			•	•	•	•*

* Depending on rivet type

** Not suitable for cup-type blind rivets.

Other tools

Pneumatic-hydraulic

- ProSet XT2

Battery

- PB2500
- Q-Tool R64XL

Notes

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The Titgemeyer Group is a leading company for fastening technology fastening technology and vehicle components at 15 locations in Europe. The long-established company develops, manufactures and distributes more than more than 30,000 fastening elements, tools and vehicle components - in series and on customer request.

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