

Our products – your benefits!

Tube Fittings and Hose Connections in Carbon Steel and Stainless Steel



Zinc-nickel
coating for
special parts



Make better connections!



Fittings are our speciality. Make better connections!

You can rely on us. As a family company we value long-term connections. It goes without saying that we take responsibility for the safety of our products and for our relationships with our customers, partners and staff.

Of those few German companies that offer tube couplings both in stainless steel and carbon steel, the Volz Group offers the widest range of products from its own manufacturing facilities. Both product groups – tube and hose couplings in stainless steel (Volz brand) and tube couplings in carbon steel (Metric Fittings brand) – are produced with a high level of vertical integration at our company's main site in Deilingen. We supply "Made in Germany" quality, but also provide quick delivery to wherever in the world your plant is located. Our sales companies in Turkey, the Ukraine, Australia, Shanghai, Singapore, Russia and North America deliver to you quickly and reliably. And in many other countries we work with carefully selected and competent partners who are well known and well established in the field of hydraulics.



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Specialists provide safety.

You can rely on us and on our products: Volz tube couplings and hose connections increase the safety of your hydraulic plant, reduce maintenance intervals and prevent downtime.

Carbon steel or stainless steel: We offer both!

With us you will always choose the right material. Carbon steel or stainless steel? We are specialists in both. This means you get the best possible level of safety in both product groups. The decisive question: what requirements must our product fulfil in your application?

Higher corrosion protection takes the pressure off you.

The long service life of our products reduces your costs considerably: longer product life equals less maintenance without risking downtime. How do we achieve that? By only using stainless steel 1.4571 (316 Ti) and making our steel products extremely corrosion resistant with our zinc-nickel coating. We also offer elevated pressure levels that give you additional safety. Certificates from reputable testing institutes prove this (see page 5)

Made in Germany!

Both product groups – tube and hose couplings in stainless steel (Volz brand) and tube couplings in carbon steel (Metric Fittings brand) – are produced with a high level of vertical integration at our company's main site in Deilingen. We always purchase our material – bar stock and forging blanks – from Europe.

Made in Germany

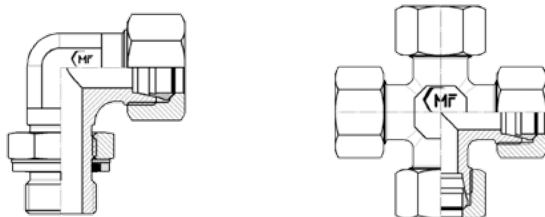




There is (almost) nothing that we don't have.

Our own production facility in Deilingen doesn't just offer you quality advantages. It also reduces delivery times for standard products and individual items. We can even supply tube and hose fittings that don't yet have order numbers in an extremely short time. The routes between consultants, designers, machining, manufacture and despatch at our central site in Deilingen are short

**You get the optimal solution for your problem –
and you get it quickly!**





Signed, sealed and ... with a CV!

We are happy to confirm the high quality and service life of our products in writing:

- Det Norske Veritas
- Germanischer Lloyd
- Lloyd's Register
- DVGW
- ABS
- RMRS
- TÜV

Upon request, and at a small extra charge, we can provide a 3.1 inspection certificate for our stainless steel products, thus guaranteeing 100% traceability back to the smelting furnace. This means you can be sure that the fittings you use are manufactured according to extremely high specifications.

Even where we combine our hose fittings with hoses from reputable manufacturers (Manuli, Gates, Eaton SEL) we have approvals from our own licensing institute. You can find the relevant documents under www.volz.de





Stainless Steel Tube Fittings



We don't compromise when it comes to quality.

Our stainless steel products won't let you down: we only use stainless steel 1.4571 (316Ti). We don't tolerate any exceptions to this rule in our standard range. Due to the special temperature and corrosion resistance, we recommend V4A in situations involving factors such as elevated salt levels, acids or nearby weld seams.

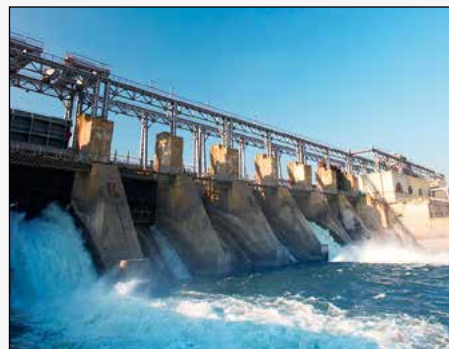
The higher service life of tube and hose couplings reduces your costs considerably: it means you can replace your couplings less often and perform less maintenance without risking downtime.

Long service life thanks to high material quality

- exclusively V4A materials, 1.4571 (316Ti)
- especially good temperature and corrosion resistance
- recommended for use with high salt levels or acids, or near weld seams
- 100% traceability to the smelting furnace, with 3.1 inspection certificate at an extra charge if required

Proven: Our quality product range in stainless steel

- Cutting Ring Fittings
- Male Connectors
- 24° Swivel Connectors
- Standpipe Connectors
- Bulkhead Couplings
- Straight Reducers
- Weld Connectors
- Diagnostic Equipment
- 37° Flare Tube Adapters
- Blanking Plugs
- Components
- Banjo and Swivel Couplings
- Check Valves
- Alternating Valves
- French GAZ-Series



Do you need information on our **products?**

Please ask for our catalogue!

T +49 7426 939-550

Our portfolio made of stainless steel



L-fittings with sealing head

- 1 Exceptional surface quality
- 2 Optimised forged body, clean seams
- 3 • Precision even in the internal area
 - No ridges or dirt that could jeopardise your hydraulic system

Adjustable Elbow Fittings



- 1 Threaded plug shape E in accordance with DIN 3852-11 and ISO1179-2. By removing the outer metal ring, threaded plug shape F in accordance with DIN 3852 T3 and ISO6149 is also possible.
- 2 Metric and BSPP JIC threads

The following applies for all components:

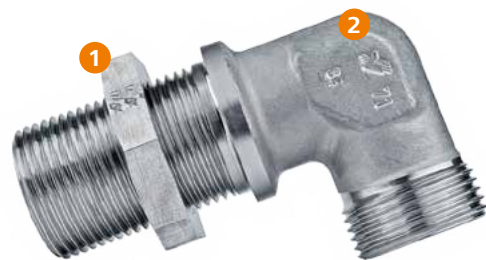
- Low construction height for limited installation space
- Low pressure losses
- Reduced number of possible leakage paths
- Available in carbon steel and stainless steel
- Standard WEE design
- Upon request also as VEE, TEE, LEE

Elbow fittings with sealing head



- 1 Assembly stop limiter preventing over tightening.
- 2 Increased pressure levels throughout the entire range thanks to the use of high-quality raw materials
- 3 O-ring with reduced pre-tensioning for leak prevention. Viton is standard sealing material in 1.4571 fittings.
- 4 Wire nail sits in a 1/2 or 1/4 shell instead of a full shell. This achieves better installation results.
- 5 The design of the blank is optimised for increased pressure levels (e.g. raised seams).
- 6 Processing in a clamping device guarantees true assembly. Pressure loss is reduced thanks to the optimised drilling.

Bulkhead couplings in straight and elbow variants



- 1 Locknuts permit powerful and lasting clamping
- 2 Optimised wrench areas make the parts easier to hold still during assembly.

Check Valves



- 1 Standard: 1 bar opening pressure, other opening pressures can be delivered quickly
- 2 Nominal flow maximised through the use of optimised components
- 3 Check valves either of stainless steel 1.4571 (316Ti) or carbon steel with ZnNi surface protection available

- 4 Different connection configurations:
 - 24° pipe connection / 24° pipe connection
 - 24° pipe connection / screw-in thread (metric / BSPP)
 - Internal thread on both ends (metric / BSPP)
- 5 Metallic sealing edge for use at high temperatures or with aggressive media
- 6 Elastomer seal in the closing direction

Alternating Valves



- 1 Carbon steel alternating valves with high-quality corrosion protection (zinc-nickel)

Low friction stainless steel nuts



- 1 Low-friction coating:
 - Optimal installation results thanks to minimal friction values
 - Can be reassembled up to eight times,
 - No cold welding, even without grease,
- 2 • No discolorations like with the silver coating
- 3 Volz manufacturer's mark and material identification
- 4 Batch traceability

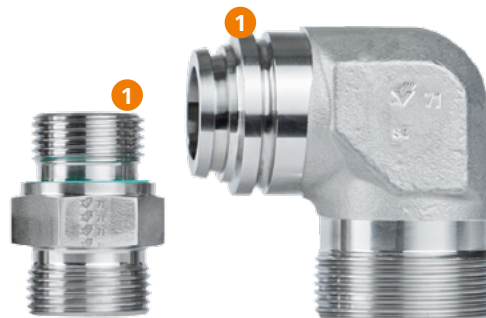
Low-friction coating: Dimensions: 15L-42L and 16S-38S

Banjo Couplings



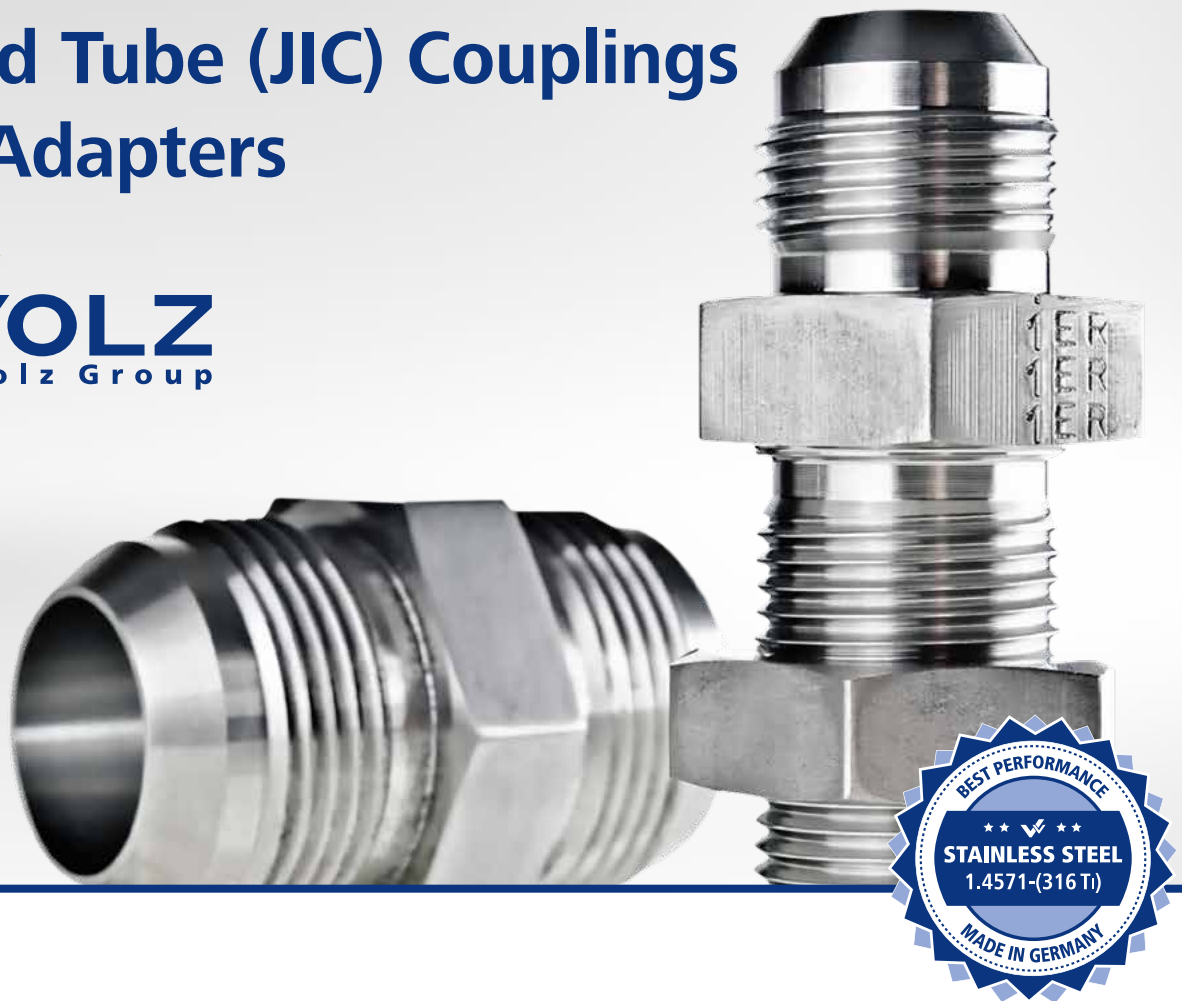
- 1 Internal elastomer O-ring seal and additional metallic seal. In applications with high temperatures or aggressive media the O-ring can be removed.
- 2 Optimised through flow and reduced pressure loss thanks to:
 - Tapered banjo bolt,
 - Bores in flow direction,
 - Rounded edges mean less swirling
- 3 Optional metallic or elastomer seal
- 4 Different thread shapes available. Metric or BSPP threads available as standard

Wide range in all dimensions



- 1 Standard: VITON seals

Flared Tube (JIC) Couplings and Adapters



We can do more than DIN.

Do you have plant all over the world? Do you have customers in North and South America or in the Asia-Pacific region? Then we are the right partner for you. Inspect our JIC range, all made at our site in Deilingen to exacting standards.

And we supply to you quickly and reliably via our sales partners throughout the world.

Long service life thanks to high material quality

- DNV certificate for significantly higher pressure levels
- exclusively V4A materials, 1.4571 (316Ti)
- especially good temperature and corrosion resistance
- recommended for use with high salt levels or acids, or near weld seams
- 100% traceability to the smelting furnace, with 3.1 inspection certificate at an extra charge if require

International: Flared Tube (JIC) Couplings

- Flared tube (JIC) couplings
- Adapters
- DIN 2353 metric to JIC



"Made in Germany" all over the world

We supply flared tube (JIC) couplings with various threads for the non-European market:

- NPT
- BSPP, BSPP-WD
- BSPT
- UN/UNF
- Wire lock retention of swivel nuts

The standard imperial threads have a 60° inner taper. This permits not only use as screw-in thread, but also as a screw connection with taper (DKR).



Quick delivery, wherever you are

We deliver within Germany or direct to other countries. Our sales partners throughout the world have our products in stock and ensure that you can completely rely upon them even when you need spare parts. Wherever you are, we deliver to you quickly.

Flared tube (JIC) connectors are subject to SAE J514 standard, according to ISO 8434-2.

Adapters



- 1 Raised forging seam to guarantee extremely high pressures (a "sunken" forged seam can be a weak point)
- 2 Screw-in thread BSPP with 60° cone for multiple use
- 3 High-quality forged parts made of 1.4571 (316Ti)
- 4 Batch traceability

Flared tube (JIC) connectors

- 1 Flared tube (JIC) couplings have a precision 37° sealing interface.
 - 2 Numerous transition sizes and adapters
 - 3 Optimal features for easy identification of the thread types
 - 4 Batch traceability
- Numerous thread types available



We pay particular attention to the surface condition of the sealing surfaces. Large and heavy parts are protected during transport by the use of protective caps (sealing surfaces are protected).



Stainless Steel Hose Fittings and Ferrules



You can rely upon our hose fittings!

It is the fitting that turns the hose into a connecting element. Our hose fittings perform, even under adverse environmental conditions and under high loads. We supply a wide range of high-quality hose fittings made of stainless steel to highly diverse industries. Day in day out, we manufacture a wide variety of different types. You benefit from our experience.

Your safety: material, processes, certificates

We set high standards for materials, suppliers, and for ourselves. This applies to every stage in our own manufacturing process:

- | | |
|---|---|
| <ul style="list-style-type: none">• exclusively V4A materials, 1.4571 (316Ti)• especially good temperature and corrosion resistance• recommended for use with high salt levels or acids, or near weld seams | <ul style="list-style-type: none">• many certificates are required in combination with the hose types and brands used• 100% traceability to the smelting furnace, with 3.1 inspection certificate at an extra charge if required |
|---|---|

Complete: Stainless steel hose fittings

- Hose fittings
- Hose fittings (Interlock)
- Ferrules



Universal and individual

We supply stainless steel hose fittings for your applications.

In addition to universal and Interlock hose fittings, we offer individual ferrules for various hose types, for example for:

- Braided hose (ST, SN, SC)
- Spiral hose (SP, SH, R13, R15)
- Textile hose
- PTFE hose (corrugated pipe, smooth pipe)
- Thermoplastic (R7, R8)
- Special solutions

Complete and quick

We supply a complete range of hose fittings that are compatible with industry recognised hose types (EN, ISO, SAE). These are available in different connection configurations:

- DKO in L and S
- JIC (male/female)
- BSP 60° (male/female)
- 3000 and 6000 PSI flange
- Connection for high-pressure cleaner
- All hose fittings are available in bent variant (45°, 90°)

We have (almost) everything!

We take all the major steps on the route to a high-quality hose fitting ourselves. What this means to you, is that we can quickly produce even less common types to meet your specific requirements. Just call us:

T +49 7426 939-550



Safety without ifs and buts

We produce all hose fittings – even bent ones – as a single part without soldered connections. This eliminates hazards due to shrinkage cavities and faulty solder/weld points and dispenses with the need for after-treatment and certification. For high-pressure areas we also offer hose fittings with interlock yank-out protection.

**MADE IN
GERMANY**



High quality for adverse conditions

Our hose couplings are often used in places where special requirements are imposed and industry-specific approvals may often be necessary. Our products offer a particularly high service life even under the extreme conditions of many application areas:

- Wind energy systems
- Process plants (e.g. chemical, medical, process industry)
- Shipbuilding & offshore technology
- Diving robots (Remote Operated Vehicles (ROV))
- Oil drilling platforms
- Railway technology
- Machine tools and plastics machinery
- Mobile hydraulics (e.g. winter service vehicles)
- Applications involving high temperatures or steam
- Floodgates and hydropower plants (turbines)
- Paper products and processing
- Systems for the production of biofuels



Guaranteed quality!

Upon request, and at a small extra charge, we can provide a 3.1 inspection certificate for our stainless steel products, thus guaranteeing 100% traceability back to the smelting furnace. This means you can be sure that the fittings you use have been manufactured according to extremely high specifications.

Hose Fittings



- 1 Internal and external skive assembly ensure optimal safety. A hose, finished inside and out, ensures optimal compression.
- 2 Single-part, solder-free fitting for maximum security
- 3 Different fitting configurations in the standard range (3000 / 6000 PSI flange, DKO, BSPP, NPT, UNO, JIC), plus numerous step sizes
- 4 Conforming hoses from many manufacturers may be used. Ask about our third party accreditation program.
- 5 Stop limiters for assistance in locating of the hose tail in the hose and the ferrule in the suspension zone

Ferrules



Ferrules for standard hose types:

- Braided hose (ST, SN, SC)
- Spiral hose (SP, SH, R9R, R13, R15)
- Textile hose
- PTFE hose (corrugated pipe, smooth pipe)
- Thermoplastic (R7, R8)
- Special solutions

- 1 Optimised ferrule design depends upon the hose type; a universal hose tail is offered that is suitable for hose type specific ferrules.
- 2 Batch traceability

Interlock

Interlock series with wiretrap



Metric Fittings Carbon Steel Tube Fittings and Accessories



Consistent: Our quality products in carbon steel

Metric Fittings, our brand for carbon steel tube couplings, offers you especially good corrosion protection. The zinc-nickel coating far exceeds the requirements defined by VDMA standard sheet 24576 for corrosion protection class K5.

Metric Fittings tube couplings exhibited no traces of white or red rust after 1,000 hours in an salt spray test. Find out why our surface treatment is so durable in the special section starting on page 20.

Optimally protected with ZnNi coating.

- | | |
|---|--|
| <ul style="list-style-type: none">• Enormous resistance to white and red rust: more than 1,000 hours salt spray test according to DIN EN ISO 9227• High abrasion protection• High temperature stability | <ul style="list-style-type: none">• Good overpaintability• Low tendency to contact corrosion with aluminium; greatly delayed in the case of stainless steel• Gleaming appearance |
|---|--|

Consistent: our quality range in carbon steel

- Cutting Ring Fittings
- Male Connectors
- 24° Swivel Connectors
- Standpipe Connectors
- Bulkhead Couplings
- Straight Reducers
- Weld Connectors
- Diagnostic Equipment
- 37° Flare Tube Adapters
- Blanking Plugs
- Components
- Banjo and Swivel Couplings
- Check Valves
- Alternating Valves



Do you need information on our **products**?

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Our portfolio made of carbon steel

Union nuts



All Volz union nuts have an anti-friction coating to reduce the frictional values during assembly.

This is an environmentally friendly, silicone-free, yellowy transparent suspension of light-coloured solid lubricants in water that does not require labelling.

Overpainting is always possible for the Volz surfaces with an organic passivation coating and seal.

If specific requirements exist regarding paint finish quality, the surfaces may sometimes need to be treated.

As this is a lubricant, we recommend a paint test be performed before painting. If necessary, components should be degreased.

Adjustable Elbow Fittings



1 Threaded plug shape E in accordance with DIN 3852-11 and ISO1179-2. By removing the outer metal ring, threaded plug shape F in accordance with DIN 3852 T3 and ISO6149 is also possible.

2 Metric and BSPP JIC threads

The following applies for all components:

- Low construction height for limited installation space
- Low pressure losses
- Reduced number of possible leakage paths
- Available in carbon steel and stainless steel
- Standard WEE design
- Upon request also as VEE, TEE, LEE

Elbow fittings with sealing head



- 1 Assembly stop limiter preventing over tightening
- 2 Increased pressure levels throughout the entire range thanks to the use of high-quality raw materials
- 3 Zinc-nickel surface protection with < 1,000 hours corrosion resistance to red dust
- 4 O-ring with reduced pre-tensioning for leak prevention. Standard sealing material is Perbunan, Viton is available as an option.
- 5 Wire nail sits in full shell instead of a 1/2 or 1/4 shell. This achieves better installation results. Processing in a clamping device guarantees true assembly.
- 6 The design of the blank is optimised for increased pressure levels (e.g. raised seams).
- 7 Pressure loss is reduced thanks to the optimised drilling.

Male connectors



- 1 DIN 5353 pipe connection with 24° cone or sealing head
- 2 Manufacturer identifier
- 3 Wide range of seal forms and sealing materials available. (NBR, Viton, etc.)
- 4 Thread types:
 - Metric form B and form E
 - Metric ISO 6149 with O-ring
 - Imperial (BSPP) form B and form E
 - Imperial tapered (BSPT)
 - NPT
 - UNF
- 5 Material selection tailored to elevated pressure requirements

Check Valves



- 1 Standard: 1 bar opening pressure, other opening pressures can be delivered quickly
- 2 Nominal flow maximised through the use of optimised components
- 3 Check valves either of stainless steel 1.4571 (316Ti) or carbon steel with ZnNi surface protection available

- 4 Different connection configurations:
 - 24° pipe connection / 24° pipe connection
 - 24° pipe connection / screw-in thread (metric / BSPP)
 - Internal thread on both ends (metric / BSPP)
- 5 Elastomer seal
- 6 Elastomer seal in the closing direction

Banjo Couplings



- 1 Internal elastomer O-ring seal and additional metallic seal. In applications with high temperatures or aggressive media the O-ring can be removed.

- 2 Optimised through flow and reduced pressure loss thanks to:
 - Tapered banjo bolt,
 - Bores in flow direction,
 - Rounded edges mean less swirling
- 3 Optional metallic or elastomer seal.
- 4 Different thread shapes available. Metric or BSPP threads available as standard.

Alternating Valves



- 1 Carbon steel alternating valves with high-quality corrosion protection (zinc-nickel)

T-adapters



- 1 A wide range of transition sizes and configurations in the standard range. Special parts available upon request
- 2 Wide product range of our own manufacture "Made in Germany" with MF logo
- 3 Optimised material selection to withstand elevated pressure requirements

Optimised ZnNi corrosion protection with < 1,000 hours in salt spray test.

Hydraulics convey. Zinc-nickel shines.



Optimally protected with ZnNi coating.

- Enormous resistance to white and red rust: more than 1,000 hours salt spray test according to DIN EN ISO 9227
- High abrasion protection
- High temperature stability
- Good overpaintability
- Low tendency to contact corrosion with aluminium; greatly delayed in the case of stainless steel
- Gleaming appearance

Hydraulics convey.

Water, salt, acids, heat, impacts, vibrations, dirt, increasing amounts of corrosive substances in the air – these are the environmental conditions to which our tube couplings are exposed. In shipbuilding, on drilling platforms, in wind turbines and hydropower plants, in railway technology, in construction machines and machine tools, in mobile hydraulics.

Zinc-nickel shines.

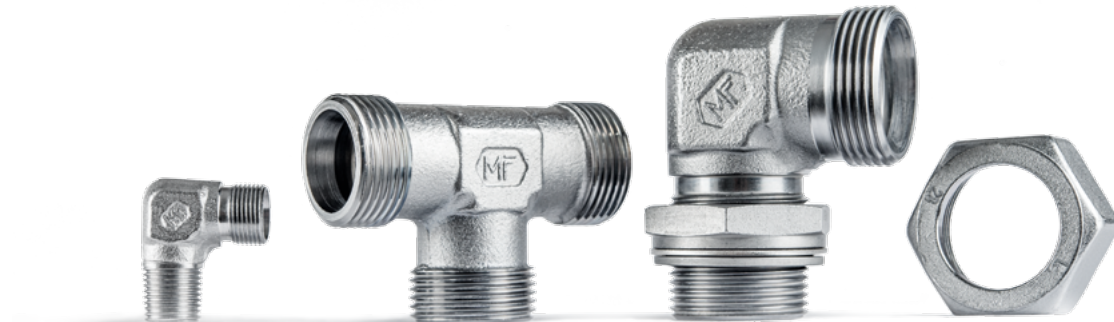
The surface makes the difference. Our zinc-nickel coating provides corrosion protection that far exceeds the requirements of corrosion protection class K5 defined by VDMA standard 24576 for tube couplings: the surfaces of our tube couplings withstand 1,000 hours in the salt spray test without traces of white or red rust. What this previously unattained service life means for you is significantly lower costs for replacement and maintenance without risking leakage or downtime.

And last but not least: our zinc-nickel surface offers not only premium corrosion protection but also a premium appearance. All in all it simply shines.



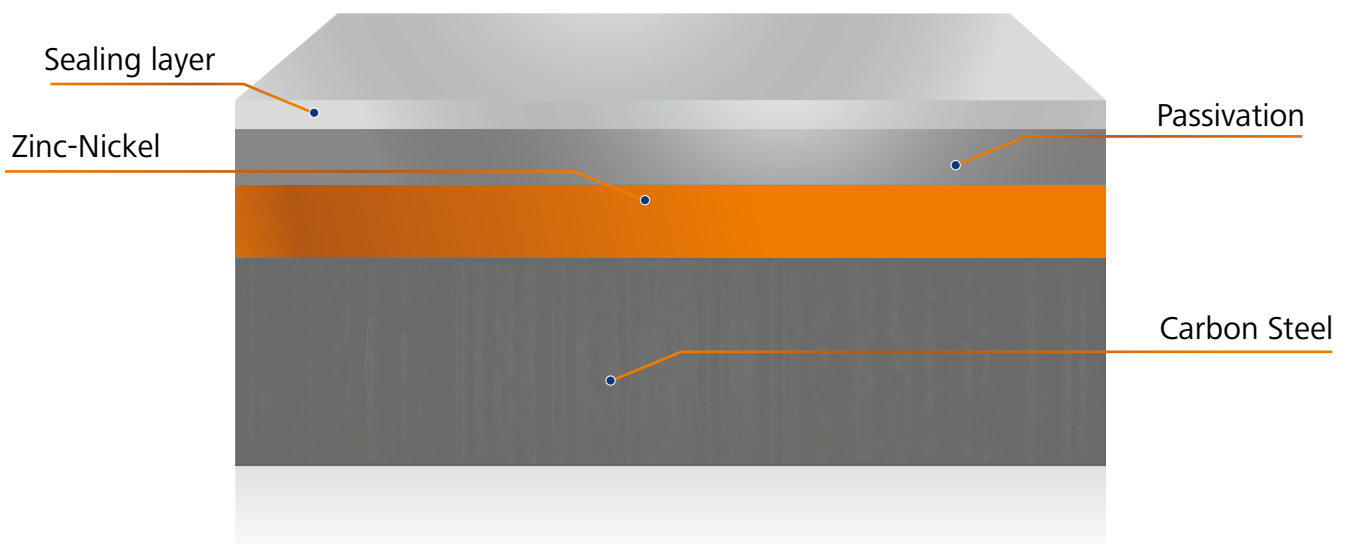
The procedure

We haven't taken the easy way out when choosing the "right" procedure. We have extensively tested both acid and alkaline zinc-nickel coatings as well as alternative corrosion protection treatments, for example those that dispense with the nickel components and base their protection on zinc only. In the end, we ultimately decided in favour of a galvanic treatment with zinc-nickel in an acid environment. This procedure, which has a new process sequence and a new coating structure, is the only way to fulfil our strict corrosion protection requirements.



First of all, an approx. 8 μm thick base coating made of zinc with a nickel content of 12 to 15% and a very homogeneous distribution of ZnNi molecules is applied galvanically. Then an additional passivation with a coating thickness of approx. 500 nanometres is applied, followed by the final coat, a 2 μm thick seal. These coats make the difference: they protect the ZnNi surface and thus extend the corrosion protection effect.

The ZnNi coating is applied with a significantly improved chemical efficiency of around 98%. This minimises the problem of increased hydrogen formation. The conventional procedure, with an efficiency around just 40%, can give rise to embrittlement in the carrier material.





Water



Acids



Impacts



Vibrations



Heat



Dirt



Salt

*Nickel release
according to
DIN EN 1811
far below the
permitted limit of
0,5µg/cm²/week*

The result

Excellent resistance to white and red rust

A white rust resistance of significantly above 1,000 hours was found by the salt spray tests according to DIN EN ISO 9227. After this time, there was still no red rust formation visible. The components therefore far exceed the values specified in VDMA standard sheet 24576 for class K5 corrosion protection of 360 hours against white rust and 720 hours against red rust. They also exceed the requirements of the extremely demanding automotive industry.

Resistant surfaces, premium appearance

The other advantages of the new procedure include the very low level of contact corrosion with aluminium and stainless steel. This is due to the practical electrochemical series, which gives the ZnNi coating an advantage over other procedures. The treated surfaces are very ductile, which means they can deform plastically when under load. In addition, abrasion resistance is improved. ZnNi base layers exposed due to damage are significantly more corrosion resistant than layers of pure zinc. Last but not least, the parts are presented with a high-quality, matt-gloss appearance. Parts retain their overpaintability and resistance to the normal hydraulic fluids.

Hydraulics convey. Our zinc-nickel coating shines.

If you buy straight from the producer,
you can rely on the quality.



The Volz Group employs a total of 340 staff, most of these in Deilingen. Regionally, the company is particularly involved in issues relating to trainees and the reconciliation of family and working life. In 2013 we were honoured with the FamilyNET award.

We give you "Made in Germany" quality and quick delivery wherever in the world your plant is located. Our sales companies in Turkey, Ukraine, Australia, Shanghai, Singapore, Russia and North America deliver to you quickly and reliably. And in many other countries we work with carefully selected and competent partners who are well known and well established in the field of hydraulics.

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