Safety guide

For ultra high-pressure hydraulic applications

www.cejn.com

A guide to help you and your workplace stay safe when working with UHP hydraulics

CEJN has more than half a century of experience in ultra high-pressure (UHP) hydraulics, continuously improving how to minimise risks and enhance performance.

Working with UHP systems comes with serious hazards. Precision, awareness, and the right equipment are therefore essential to keep you and your workplace safe. As a manufacturer in this industry, we take our responsibility seriously. Safety is our top priority – and it's something we will never compromise on.

Who is this guide for?

This guide is intended for everyone involved with UHP hydraulic equipment, including operators, technicians, engineers, HSE managers, and purchasers. With this guide you will find essential safety information, best industry practices, and guidance on the selection and maintenance of UHP hydraulic components and systems.

A **checklist** is included at the end of this document to support implementation of the key steps necessary to enhance safety, operational efficiency, and equipment reliability.

Did you know?

CEJN sets the global standard for UHP quick connect couplings

CEJN's UHP hydraulic couplings and nipples are relied upon around the world to help keep ships sailing, wind turbines turning, subsea exploration equipment drilling, and much more. Our original design has become the global standard for UHP hydraulic quick connect couplings.

50+ years of experience in UHP hydraulics

How to operate safely

Product assortment overview

You will find safe and durable CEJN products between the hydraulic pump and the tool. CEJN is familiar with the day-to-day routine of maintenance technicians and understands the process of bolting and other UHP applications.

Confined spaces and heavy lifting lead to requirements for smaller tools, which consequently lead to requirements for higher pressure. Our vision is to provide you with the safest products and the best performance on the market.

Couplings

Nipples

UHP hose kits

Each one of our UHP hydraulic hose kits is assembled and tested by operators trained and certified by CEJN to ensure the highest quality and safety standards.

Nipple Coupling Fitting

Adapters

Blocks

Needle valves

Gauges

Hand pumps

Hose reels

CEJN Identification System (CIS)

CIS is a tracking solution in which each hose kit is chipped and has an individual marking and traceability based on NFC technology. It lets you access technical data for the kit and view the history log – this means you can see when the kit was first and most recently tested, as well as when it is time to take it out of service.

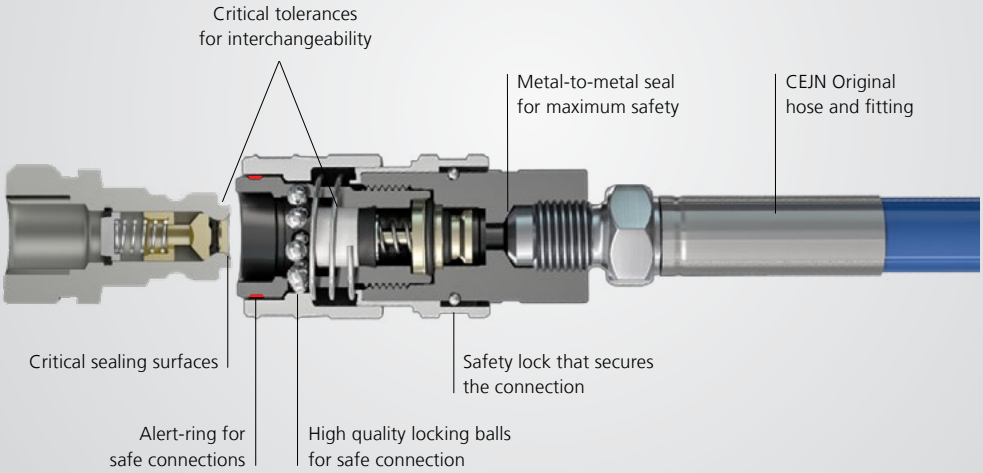
Ferrule Hose CIS tag

How to identify a CEJN coupling – and why it matters

The interface between the coupling and nipple is crucial. CEJN components are manufactured with unique tolerances and high precision to ensure optimal performance and safety. Mixing brands will compromise this precision – even if parts appear to fit, they may not function correctly. This can result in improper connection and, in the worst case, accidental disconnection with hydraulic oil released at ultra high pressure.

To guarantee safety, **do not mix** CEJN products with other brands. Always check for the CEJN mark engraved on both the coupling and the nipple to ensure full compatibility and reliability.

A closer look at the CEJN design



Coupling and nipple marking:

CEJN

CEJN
Part No.
Max WP
Date Code
Batch No.

CEJN
Part No.
Max WP
Date Code
Batch No.

Hose marking:

CEJN
Producer and hose type

MAX WP
Maximum working pressure
MPa (PSI)

MIN BP
Minimum burst pressure
MPa (PSI)

Production date code

Production batch no.

1 2 3 4 5

Ferrule marking:

CEJN 08.13,
Name of producer and production date (MM.YY)

1 2

WP
Maximum working pressure

Note

In certain circumstances, the actual working pressure of the hose assemblies may be different to the working pressure specified on the hose material. For example, this is the case when a quick connect coupling with a lower working pressure than indicated on the hose is attached to the hose assemblies. **As a strict rule, the lowest pressure value dictates the maximum working pressure of the hose assemblies**. In any case the working pressure marked on the ferrule specifies the maximum working pressure (WP) of the hose assemblies.

Global with local presence

Being one step ahead requires being one step closer to the market – a key reason why CEJN has a local presence across the globe. We offer on-location product support, and reliable deliveries to our customers in all major industrial markets. Close cooperation between the R&D department and our sales offices ensures that the market has access to all our competencies in terms of a wide product range, application support, and on-time delivery performance.

CEJN has High-Pressure Centers located around the world to be closer to our markets, each staffed by certified application experts.

CEJN High-Pressure Centers – how it works

Each High-Pressure Center features a hose crimping facility that assembles high-pressure hose kits to customer specifications. Every set is checked and measured before delivery for safety and performance to eliminate any risk of failure.

Application know-how

CEJN High-Pressure Centers are run by application experts. They work with customers on a daily basis to create just the right solution for each application.

Hose crimping

Each High-Pressure Center features a hose crimping facility that assembles hose kits to customer specifications. All operators are trained and certified by CEJN.

Hose testing

Before delivery, each hose kit is pressure-tested to ensure safe operation and optimum performance.

Deliveries

CEJN High-Pressure Centers are located near major markets, enabling fast and timely delivery as a major customer advantage.

Re-testing

It is important to pressure-test hose assemblies regularly to make sure they are not worn out or damaged.

This symbol means that the hose kit has been pressure-tested at a CEJN High-Pressure Center before delivery, to ensure safe operation and optimum performance.

Application examples

CEJN UHP hydraulics products are widely used in many application areas for **bolting**, **installation** and **maintenance**, for example:

- Railway
- Marine
- Wind power
- Oil and gas

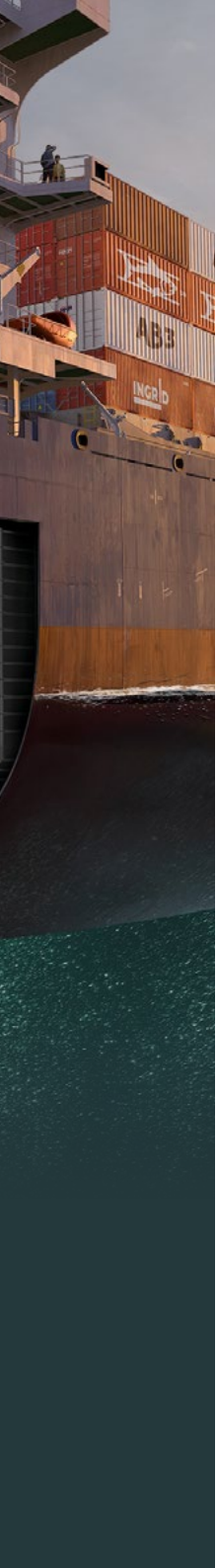
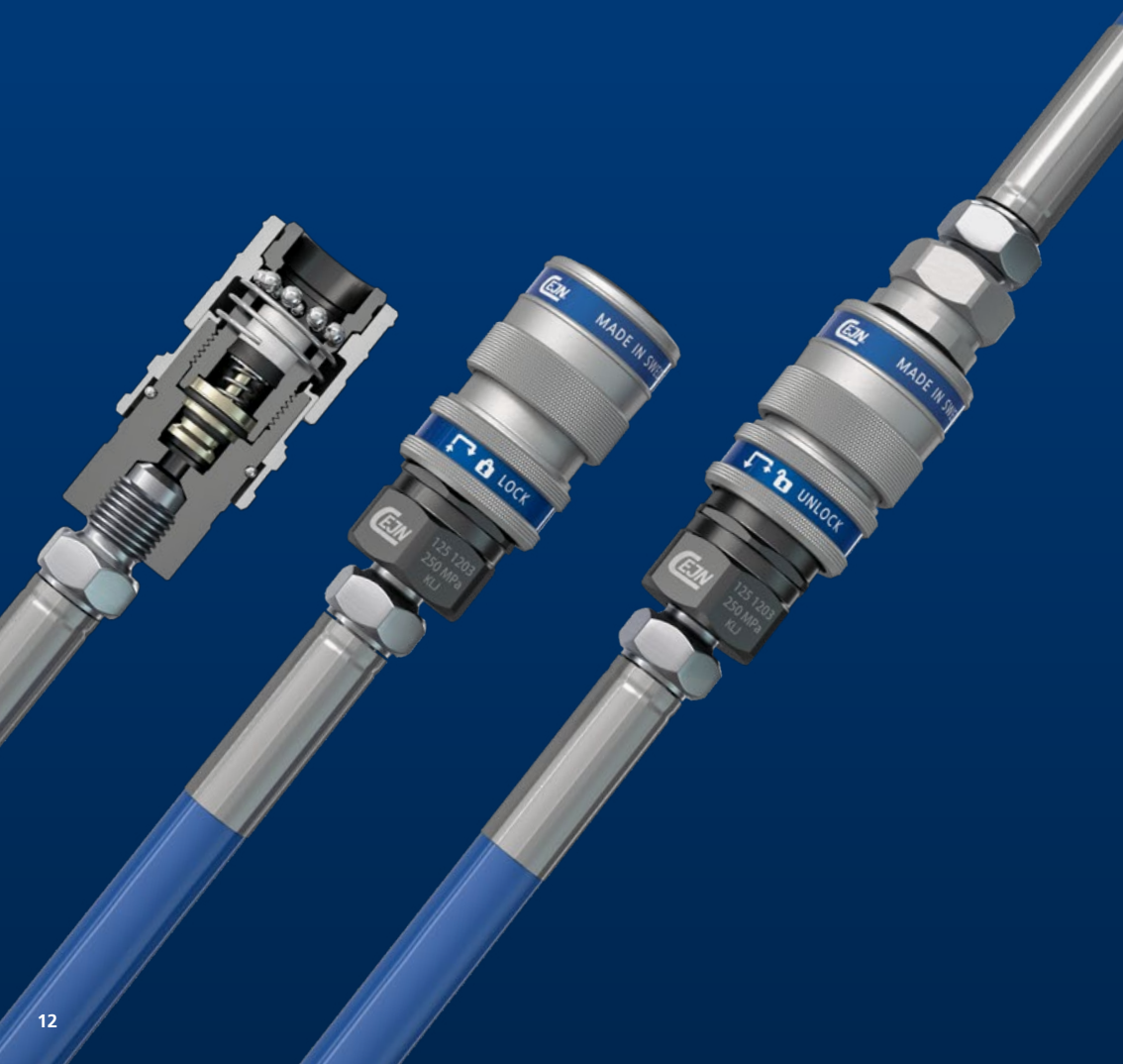


ABB
INGRID


EJN
LOCK

How to operate safely



Why safety is important

Hose assemblies may fail abruptly and unexpectedly due to a variety of reasons. Hydraulic oil shooting out at high pressure and/or at high speed can cause serious personal injury and severe damage to objects as well as pollution of the environment.

At CEJN, we believe that an effective way of maintaining workplace safety when working with ultra high-pressure hoses is to make workers aware of the potential hazards.

Examples of potential hazards:

- Bursting hose components
- Whipping hose ends
- Oil spray leakage
- Coupling blow-off

Never try to locate a leak with your hands!

If leakage occurs, shut down machinery immediately. Never try to locate the leak with your hands or any other part of the body when the hose set is pressurised. Use a suitable implement to inspect the hose for damage.

If a fluid injection injury occurs, or if you suspect your skin has been penetrated with oil, it must **always** be treated as a medical emergency!

Regular inspection and maintenance of couplings and hoses

Due to external and internal influences, the couplings and hoses are subject to wear and ageing. In addition to regular wear caused by time and usage, hoses can be squeezed in hatches or damaged when tools are carried in the hose. Regular inspection and maintenance ensure safe operation of the ultra high-pressure couplings and hoses throughout their service life. Inspection and maintenance must be carried out by a qualified person.

Tough conditions can cause the locking balls to wear the nipple surface.

If it is difficult to connect or disconnect, replace the nipple before it damages the coupling!

How to maximise the lifespan of the hose kit

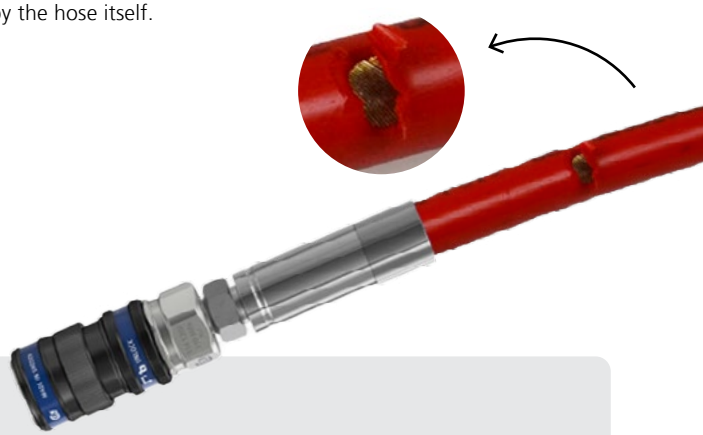
Regular inspection and maintenance of hose kits are important to ensure safe operation throughout their lifespan. This task must be performed by a qualified person. Maintenance must be performed in an unpressurised condition, and defective hose kits or damaged components must be replaced immediately. Additional pressure testing must be performed to verify the safe condition of the hose. Always perform a visual inspection before each use.

Observe all necessary safety precautions during pressure testing. Faulty, damaged, or worn-out components may, in extreme cases, lead to fatal hose failure, ultimately resulting in personal injury, damage to objects or pollution of the environment.

The hose is <u>not</u> a handle

Tools should **not** be carried, or machinery dragged along by the hose itself.

Example of a hose kit requiring immediate replacement.



Make sure that:

- The specification and operation of couplings and hose kits in use with tools and machines complies with the existing local safety regulations.
- You inspect your hose kit accordingly to the *CIS control chart* on page 17.

CEJN Identification System (CIS)

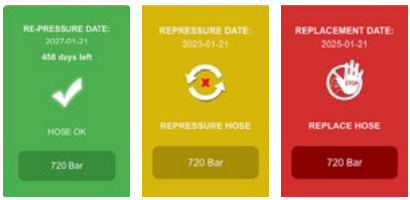
CIS is based on NFC (Near Field Communication) technology. Information about the hose kit is stored on an electronic chip which is placed between the two layers of the plastic tag attached to the hose. All information is stored securely in the cloud on EU servers, supporting maintenance planning and full traceability of hose assemblies. Read more at **www.cejn.com/cis.**

Monitor your hose kit with the CIS app

Seeing the daily condition of your equipment with CIS is quick and easy. Scan the CIS tag with the CIS app on a mobile device or with an NFC reader connected to a PC. The tag instantly displays all relevant data, including the latest pressure test, inspection history, and current status. Status indicators provide clear guidance on the hose status.

Instant safety feedback

When a CIS tag is scanned, colour indicators instantly show whether a hose is ready for use, needs inspection, or must be taken out of service:



- Green: Safe to use
- Yellow: Pressure inspection required
- Red: Do not use – recycle

Note: this technology cannot detect damages on hose kit.

CIS control chart

Use the CIS control chart to plan regular checks and maintenance. It shows how often each component should be inspected and what action to take to keep your kit safe and reliable.

Time frames may vary in different industries.

Components	Daily check	Daily check CIS*	Every 1 year	Every 2 year	Every 6 year	Action
Leaking at connection	○					To be inspected by a qualified person and replaced if damaged.
Hose kits bent	○					To be replaced.
Oil contamination	○					To be replaced.
Visual check of hydraulic couplings	○					Inspect according to this guideline.
Rusty fittings/ adapters	○					To be replaced.
Damage to hoses, fittings	○					To be replaced.
Hydraulic oil replacement			○			
Hydraulic hose kit re-testing		○		○		
Hydraulic coupling replacement					○	
Hydraulic hose replacement		○			○	
Working pressure		○				

** Use the CIS tag to check the condition of your equipment before use.*

How to connect and disconnect safely

In addition to avoiding mixed brands, damage control and regular inspections, it is all about making a safe connection. The parts need to be properly connected to avoid any accidental disconnection that may lead to serious injury.

CEJN alert-ring and safety lock secures the connection

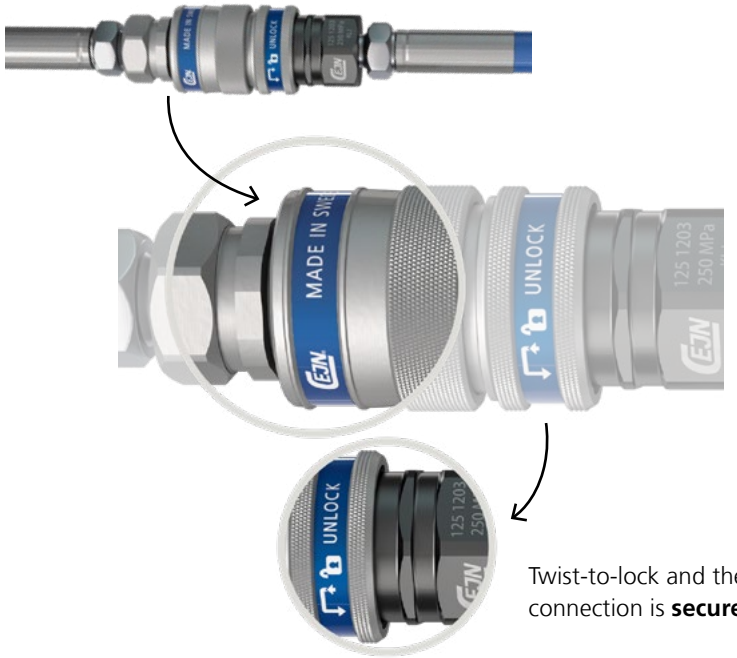
CEJN UHP hydraulic quick couplings have an "alert-ring" installed on the front part that clearly indicates if the connection is safe. If the red-colored ring is fully covered by the locking sleeve (not visible), the connection is safe. If the red ring is still visible, the connection is not complete and when pressurising the system, the nipple may suddenly shoot out of the coupling at an undefined pressure level. The safety lock feature will also eliminate unintentional disconnections, providing extended security to the connection.

How to handle residual pressure in UHP systems

When working with UHP systems, residual pressure can occur within the system. This residual pressure can make connecting nipples and couplings difficult or potentially unsafe. CEJN provides specially engineered nipple and coupling designs that enable safe pressure relief before a standard connection is established.

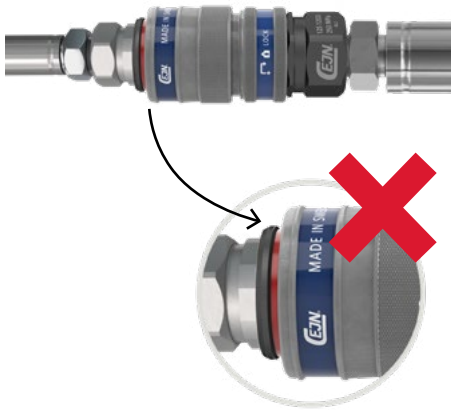
Part no.	Description
19 950 1660	Nipple with pressure relief screw
19 950 1666	Coupling series 116 relief
19 950 1667	Coupling series 125 relief

Secured connection:



Twist-to-lock and the connection is **secured**!

Incomplete connection:



If the alert-ring is visible, the connection is **incomplete**!

Safety checklist

Don’t mix genuine CEJN products with copies

Connecting components from different manufacturers will cause severe safety hazards and lead to invalidation of warranty.

- [ ] I have connected the coupling and nipple of one specific manufacturer only to ensure minimal safety risk and no invalidation of warranty.
- [ ] I have checked that the technical data for the quick connect systems complies with the technical data for the particular hose kit.
- [ ] I have checked that the coupling and hoses are fully compatible with each other (this is always the case with complete hose assemblies from CEJN).

Connect safely

Ultra high-pressure hydraulics is a powerful media and you need to take all necessary steps to avoid any risks to safety.

- [ ] I always check that the nipple is completely connected to the coupling.
- [ ] I always make sure that the alert-ring is not visible.
- [ ] I always make sure that the connection is secured with the safety lock feature.
- [ ] I never exceed the pressure values specified for my hose assembly.
- [ ] I refer to the pressure rate as indicated on the ferrules on the hose assemblies.
- [ ] I never exceed the minimum bending radius specified for the particular hose type.
- [ ] I never connect or disconnect the coupling and nipple under pressure.
- [ ] Due to the pressure load, it is not possible to operate the locking sleeve of the coupling.
- [ ] I do not use any tools to release the nipple from the coupling.
- [ ] I always comply with working conditions of hose assemblies, including couplings and nipples.

This checklist summarises the key steps to ensure safe operation of your UHP hydraulic systems. Use it to check connections, maintain equipment, and follow recommended safety practices to prevent accidents, damage, or invalidated warranties.

Do regular inspection and maintenance

Hose kits showing wear or damage must be replaced immediately!

- [ ] I am a qualified person.
- [ ] I perform a visual check for wear, aging or damage in advance of usage.
- [ ] I always inspect coupling and nipple for cleanness in advance of usage.
- [ ] Locking balls are complete and undamaged.
- [ ] Locking sleeve is intact and moves freely.
- [ ] I comply with all necessary safety precautions during inspection.
- [ ] I perform a regular check for wear, aging, or damage.
- [ ] My hose kit inspection is performed in depressurised mode.
- [ ] I never use my hands to try to detect a leak.
- [ ] Quick connect couplings are free of corrosion.
- [ ] Threads and sealing surfaces are undamaged, clean and free of corrosion.
- [ ] The plastic outer layer of hose material is free of damage (abrasion, cuts, no steel wires are visible, cracks and bubbles).
- [ ] Hose kits are free of damage (kinking damage, squeezing damage, deformation, layer-separation, etc.).
- [ ] When coupling and nipple are connected, I always make sure to connect dust caps well as well to prevent dirt from contaminating the dust caps.


MADE IN

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Your choice for sustainable
quick connect solutions