

# Implorsive Connectors



**for overhead  
transmission lines**





VP metall is situated in Raufoss Industrial Park, where you find the leading know-how in metallurgy and machining technology in Norway.

VP metall AS was established 1 June 2000. The background for this establishment was the former owner, RAUFOSS' change of strategy and their choice to specialize within the automotive industry. Several support and production units were sold out..

3 persons with wide experience within the aluminium industry bought the unit which is now VP metall AS. We took over the products, machinery and some of the employees, continuing business in the same premises. Since then we have developed, with new machinery and new products.



We are 30 employees, and our vision is that every one contributes in the development of the company in order to make our customers satisfied with our products. Through training and participation every employee shall continuously develop his/her knowledge in the fields that VP metall and our customers require.

We are qualified in accordance with ISO 9001 and ISO 14000.



From 2011 all our implosive connectors are approved for CE marking. Each type of connectors has its own CE-number, witch are marked on the connector and on the boxes.



VP metall are qualified as a supplier in Sellihca, the register for suppliers to the energy sector in Scandinavia.



**Our strengths:**

- wide experience within machining processes and material technology
- flexible machinery covering all order sizes
- close relationship to the world leading research & development environment inside Raufoss Industrial Park
- short distance to suppliers of raw material and distribution network

We are suppliers of hot press products and mechanical components.



We produce and sell implosive connectors to builders of transmission lines to whole dealers in Scandinavia.



We are flexible regarding order sizes.

Our machinery fits both small and large order sizes, including prototypes.

**ASK US ON PROJECTS AND SPECIAL SOLUTIONS!**

## HISTORY

Implosive Connectors is a result of the expertise in metallurgy and metal working, and more than 75 years of experience on explosive at Raufoss AS. The implosive connectors were at first developed in conjunction with Statkraft, Norwegian Defence Research Establishment and The Institute for Industrial Development. Further development was performed by Raufoss AS.



## HIGH ENERGY METAL WORKING

Implosive Connectors utilize the energy in a small implosive charge to compress a metal sleeve over conductor or wire. The pressure is applied instantaneously (1/10 000 sec.) and the compression of the sleeve and cable is performed with a high degree of accuracy.

The amount of compression depends on the kinetic energy involved and the mechanical strength of the metal parts. Optimum compression is achieved through precise design of the implosive charge compatible with the metal components.

## IMPLOSIVE CONNECTORS FOR OVERHEAD TRANSMISSION LINES

Implosive Connectors includes:

- full tension joints
- dead-ends
- jumper terminals
- repair sleeves
- full tension repair joints
- non-tension sleeves
- compression rings
- miscellaneous other fittings

The Connectors can be used on dry conductor, fully greased aluminium alloy conductors and ACSR conductors with greased steel core. Connector components have been standardized to fit all common conductor types.



## THE IMPLOSIVE CONNECTOR SYSTEM PROVIDES:

- Consistent high quality
- Optimum compression
- Only radial deformation
- Reduced installation time
- Less total installed cost

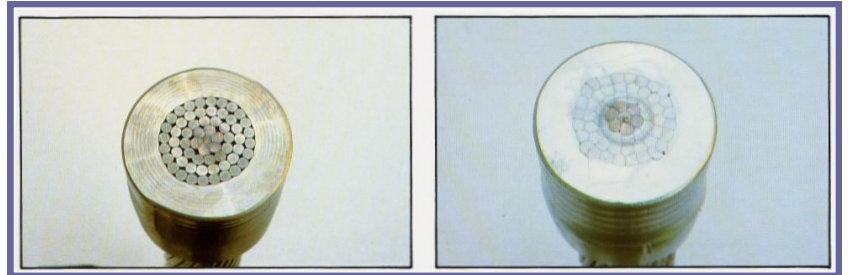
With this system buying, using, maintaining, storage and transportation of hydraulic presses or other compression tools is unnecessary!



## FACTS ABOUT IMPLOSIVE CONNECTORS

### MATERIALS

Aluminium components are manufactured from extruded aluminium and aluminium alloy tubing. Eyebolts and steel sleeves are manufactured from low alloy steel with high fatigue strength and excellent low temperature performance. The eyebolts are forged and all steel components are hot-dip galvanized.



Hydraulic compression  
with round blocks

Compression with  
Implosive Connectors

### STRENGTH

All Connector types are tested and certified to meet international strength requirements.

### CONDUCTIVITY AND CORONA PERFORMANCE

The resistance over the Connector is typically 50% of the resistance over the equivalent conductor length. The Connectors meet the heat-cycling requirements of BS 3288, NEMA CC-3 and CSA-C57.

The smooth surface of the connector ensures superior corona performance at all EHV voltage levels.

### CORROSION PROTECTION

The compact compression provides optimum corrosion protection. No filler compound is required.



### QUALITY

The in-place quality of the Connector is consistently superior to conventional fittings. The sleeves are perfectly straight after compression, the surface is round and smooth, and the sleeves does not elongate during compression. Consequently, no further work is required on the sleeve after compression and of course "bird cage" is an unknown phenomenon with implosive Connectors.



### INSTALLATION

The Connectors are delivered with the implosive charge pre-wrapped around the aluminium sleeve and are easily installed without the need of special tools. The implosive charge is activated by the use of any commonly available initiation device such as cap no. 8 and time fuse. See the Instruction Manual for detailed instructions.

### FIELD INSPECTION

Faulty assembly of the Connector which cause air gaps inside the sleeve may after compression be detected as a local constriction of the aluminium sleeve. The Connector may therefore be inspected for this type of error **after** installation.



## FULL TENSION JOINTS

### Design:

The joint consists of an aluminium sleeve pre-wrapped with an implosive charge. On applications with ACSR conductors a steel sleeve are included to grip the steel core.

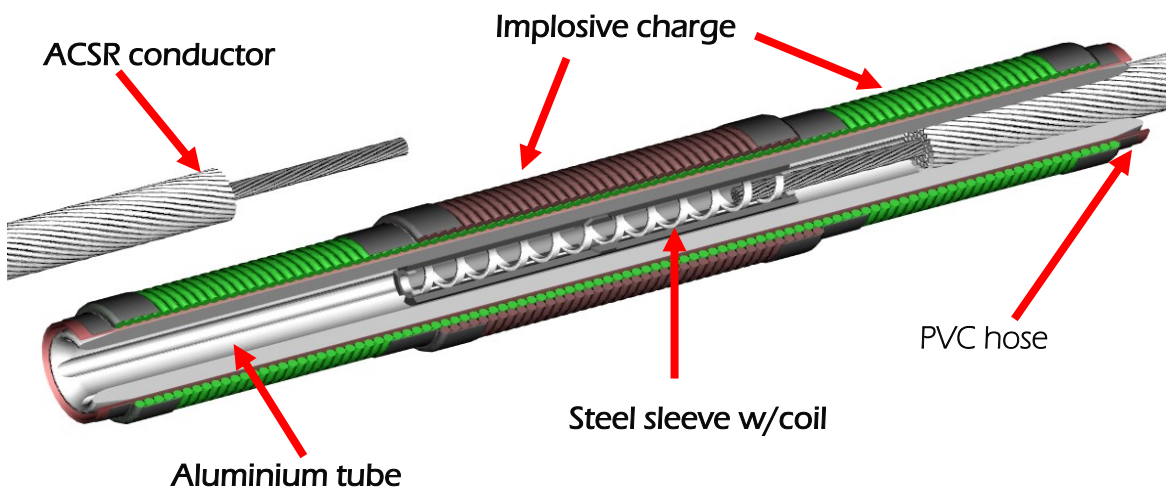
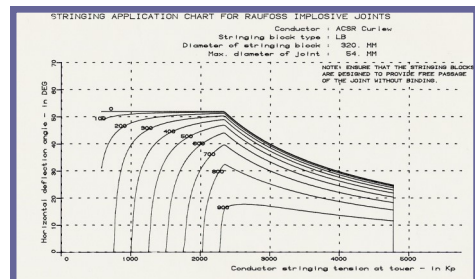
An aluminium filler tube with the outside diameter equal to the conductor diameter is typically used over the steel sleeve.



### Special features:

The joint is specifically designed to be pulled through the stringing blocks.

Stringing charts which show the maximum line angle through which the joint may be pulled, are available for all standard conductor types.



## DEAD-ENDS

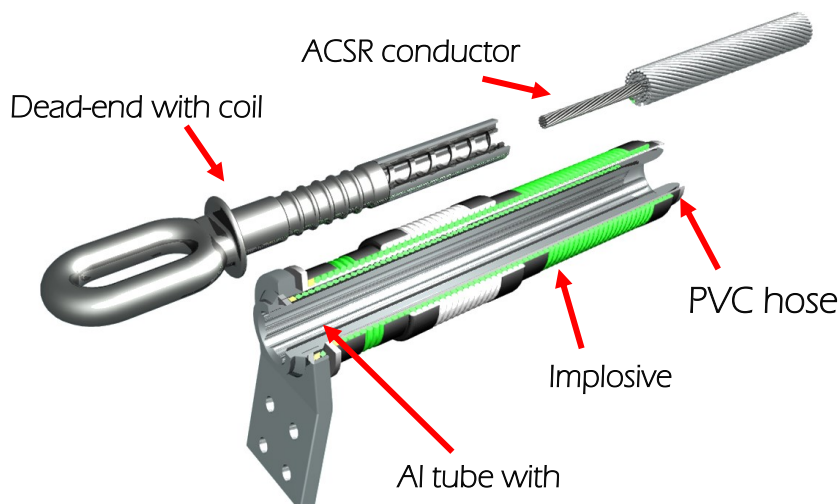
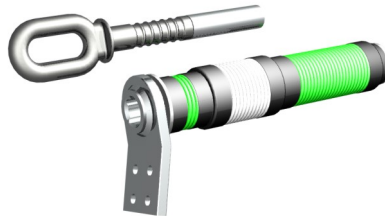
### Design:

The dead-ends consists of an aluminium sleeve with a forged steel end connector. The implosive charge is pre-wrapped around the aluminium sleeve. On applications with ACSR conductors a short steel sleeve with filler tube are included to grip the steel core.



### Special features:

The end connector is attached to the sleeve at the factory but must be turned to correct position before compression. This feature further simplifies the installation procedure.



The dead-ends are easy to install and are ready to use after activation. A number of units can be activated simultaneously.

## JUMPER TERMINALS

The jumper terminals consist of an aluminium sleeve pre-wrapped with an implosive charge and with connector pad at one end. The pad is bent 15° and may have NEMA or other hole patterns. A number of units may be installed simultaneously.

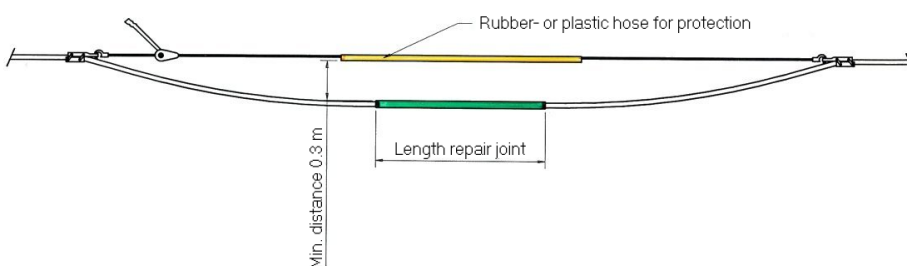
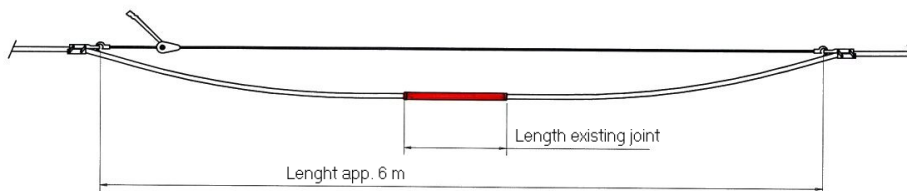


### Special feature:

The jumper terminals may be attached to the Dead-end pad at 0° or 30° exit angle. Cold forming of the connector pad eliminates welding and ensures optimum strength and conductivity.

## FULL TENSION REPAIR JOINTS

Full tension repair joints may be used in replacing defective connectors. The work is performed fast, possibly in the air and without the need for additional conductor.





### REPAIR SLEEVES

Repair sleeves restores the conductivity of a conductor with one or more broken strands. The implosive charge is mounted on one half of the sleeve and is taped together before compression.



### NON-TENSION SLEEVES

Non-tension sleeves are superior electrical joints without full-tension capability. The sleeves may be used at substations or in connection with bolted clamps



### COMPRESSION RINGS

Compression rings are made for use in handling and sleeving large conductors and special conductors with aluminium alloy strands. They will make the installation work a lot easier.



### PULLING GRIPS

Pulling grips replace socks in regions where very high pulling tension is required.

### GUY GRIPS

Guy grips have been developed for all steel or alumoweld guy wire applications. The guy grips are particularly cost effective on large size wires.

### OTHER AREAS OF USE

Implosive Connectors may also be used for other purposes. As shown on the photos, Implosive Connectors are used in connecting steel wires between two bridgeheads. Here at the building of the bridge "Höga Kusten" on E4 north of Stockholm, Sweden.



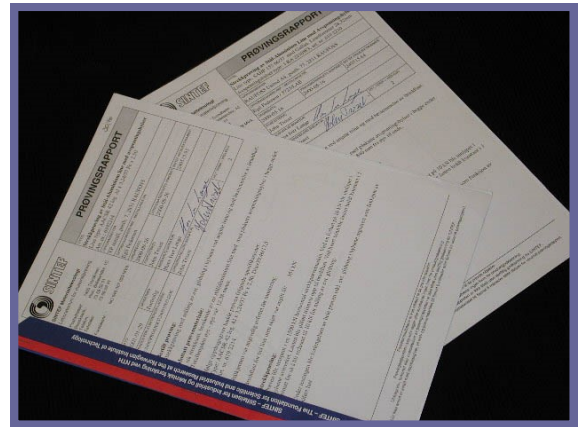
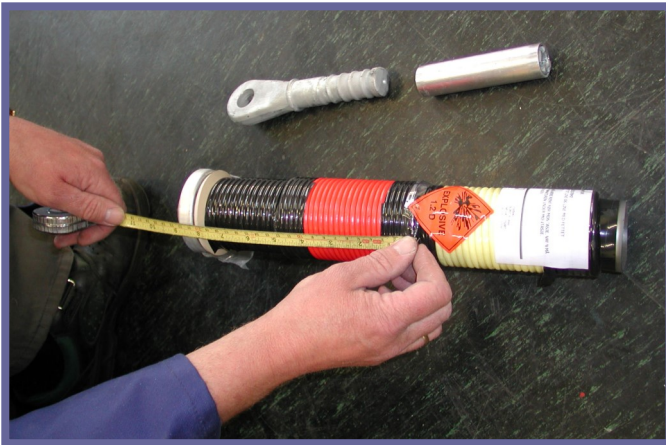


## FIELD ASSISTANCE AND SPECIAL APPLICATIONS

VP metall will design and certify new designs for special applications and render field assistance if required.

## TESTING AND QUALITY ASSURANCE

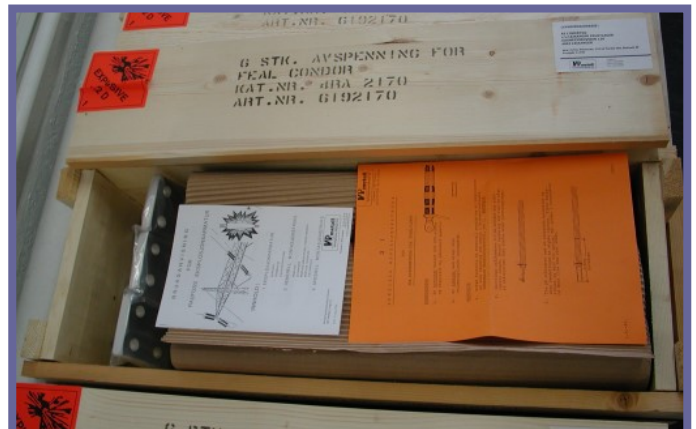
All Implosive Connectors are tested and certified to international standards. The work is performed both at Raufoss Industrial Park's own laboratories and at SINTEF in Trondheim.

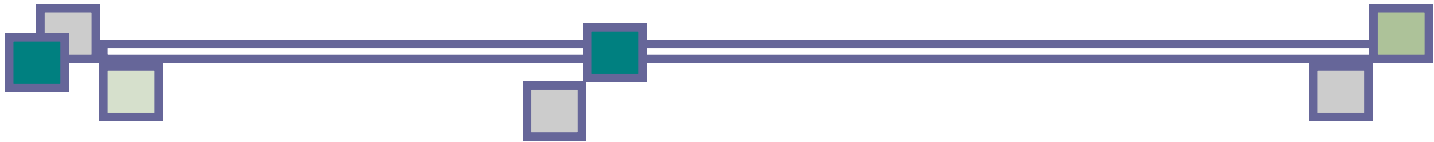


The production of the Implosive Connectors are executed on basis of thorough procedures. Quality are ensured by control-routines on materials and the metal work.

## TRANSPORT - HANDLING - STORAGE

The Implosive Connectors are shipped in stout wooden boxes. The boxes are marked and a detailed instruction manual are included in each box. The implosive charge has very low sensitivity to shock, friction, heat or accidental detonation. But since it does contain a small amount of explosive it should be treated accordingly. Consequently the user should follow local laws and regulations regarding transportation, handling and storage of explosive devices and ensure that all safety rules are followed.







For more information see our web-site:  
[www.vpmetall.no](http://www.vpmetall.no)  
or get in touch with us!

**VP metall**  
Varmpresse Metall AS

Forsiden | Produksjon | **Eksplsjonsarmatur** | Referanser | Om oss | Kontakt oss

**Eksplsjonsarmatur**

- Lineskjøter
- Reparasjonsskjøter
- Loophylser
- Avspenninger
- Tilbehold
- Service og utvikling
- Varekatalog

**EKSPLOSJONSARMATUR**  
- FOR ELEKTRISKE OVERFØRINGSANLEGG

VP metall AS produserer og selger eksplsjonsarmatur til linjbyggere og grossister innen linjemateriell i Norden.

Armaturen omfatter: lineskjøter, avspenninger, loophylser, reparasjonsskjøter, montasjeeringer og diverse annen armatur.

Eksplsjonsmetoden erstatter i prinsippet hydraulisk pressing av friksjonsforbindelser. Et metallrør utsettes for et utvendig overtrykk ved detonasjon. Trykket er mange ganger større enn flytgrensen for alminnelige metaller, og fører til komprimering av metaller og line. Strekkfasthet møter skandinaviske krav til mekanisk holdfasthet, og er sertifisert til å holde 90% av linsens oppgitte bruddlast. Armaturen er typegodkjent etter internasjonale normer når det gjelder elektrisk ledningsevne. Armaturen kan anvendes på tørre liner, på helinnfettede legerte liner og feral-liner med innfettet stålkerne. Den er utviklet for alle standard linetyper.

**Aktuelt**

Vi har investert i ny dreiebenk!

Nye web-sider for VP metall AS.

NCE-Raufoss støtter prosjekt hos VP metall.

Historien om aluminiumsfalet "Frugg".

VP metall inn i nye lokaler.

Nye ansatte i 2007.

[» Arkiv](#)

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