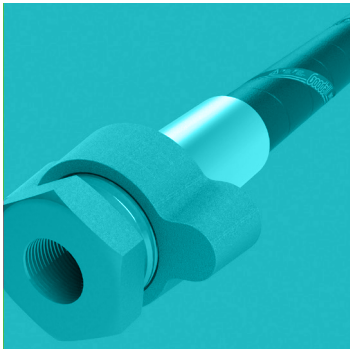


## Goodall® Duracrimp coupling system:

A safe crimping connection for our GOODALL® steamhoses

**INFERNO ISO 6134-2A and SUPER INFERNO**

QUALITY  
SOLUTIONS



**DURACRIMP®**





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# 1. Goodall® DuraCrimp® A total solution

Goodall® DuraCrimp® is an exclusive and innovative crimping system for the new generation of Goodall® steam hoses. Our specialized R & D team have designed and thoroughly tested the Goodall® DuraCrimp® system to deliver the needs of the market and the users:

## **An extremely safe and ergonomic coupling system for steam applications.**

Our innovative solution offers the following advantages:

- Increased safety and reliability
- Cost savings
- Original and innovative ergonomics
- Identifiers with colored identification rings and RFID
- Superior compounds



**DURACRIMP® CRIMPING SYSTEM  
+ GOODALL® STEAM HOSE  
=  
RELIABLE SOLUTION  
FOR YOUR STEAM APPLICATION**

**Goodall® DURACRIMP**

## 2. DuraCrimp<sup>®</sup>, your benefits

### COST SAVING

#### EXTENDED LIFETIME

- No tube popcorning
- No blistering
- Eliminates braid corrosion
- No hardening of the cover
- Kinking of the hose not possible

#### UNIQUE COUPLING SYSTEM

- Permanent connection with a crimped sleeve
- Plastic handle prevents kinking
- No more tightening of bolts / nuts

#### NO STEAM LEAKAGE

- DuraCrimp<sup>®</sup> Coupling system eliminates the possibility of steam leaks



### SAFETY

#### PARAMETERS

- Exceeds the ISO6134-2A norm
- 18 bar at 232 ° C  
260 psi at 450°F

#### PREMIUM MATERIALS

- Probably the best compound in the world against popcorning
- Corrosion resistant braids
- Superior outer cover

#### IDENTIFICATION

- Easily recognizable with a clear imprint on the hose

#### MECHANICAL STRENGTH

- Anti-kink and robust
- Leak-proof connection
- DuraCrimp<sup>®</sup> crimping system for guaranteed safety

#### ERGONOMIC HANDLE

- Kink free behind the couplings
- Ergonomic and safer grip for the user
- Color coding possible
- RFID: option for test certificates

#### ELECTRIC CONDUCTIVITY

- Static dissipation  $R < 10^6$  ohm



### SUSTAINABILITY

#### LONGER LIFE

- Proven longer life span results with fewer replacements

#### ENERGY SAVINGS

- No more steam loss at the couplings

#### Cr6 FREE COUPLINGS

- No negative impact on the environment



### 3. Saturated and superheated steam

Steam can be described in 3 different stages.

Wet saturated steam, dry saturated steam or superheated steam.

These stages are determined by the relation of pressure and temperature.

The diagram indicates whether the steam is saturated or superheated by combining pressure and temperature.

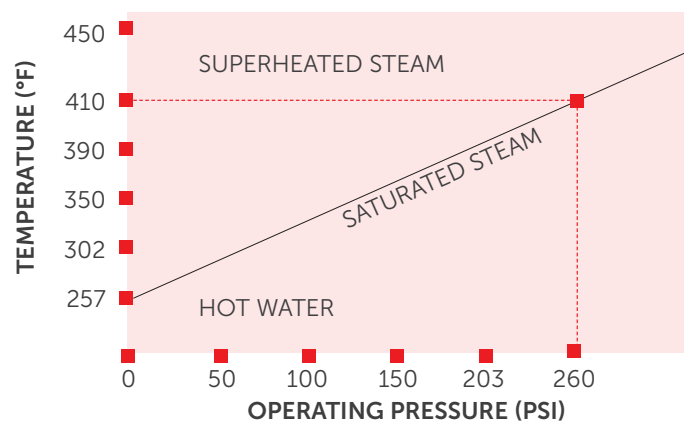
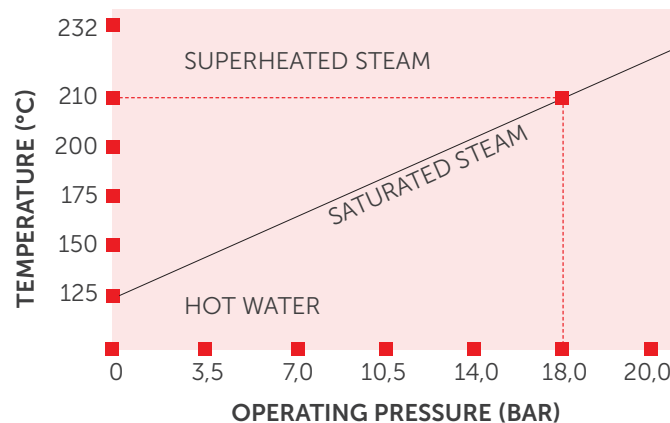
Saturated steam may or may not be free of un-vaporized water particles and can be 'dry' or 'wet' as a result.

Each point below the dividing line 'saturated steam' represents warm water.

Each point above this line represents superheated steam.

Any use above the saturated steam line significantly shortens the lifespan of steam hoses.

Saturated and to a certain extent wet steam, have a "lubricating" effect on the rubber tube of the hose. Overheated and thus dry steam has a hardening effect on the rubber tube due to the process of vulcanization. As a result, the lifespan of the rubber will be shortened.



## 4. Steam, a critical application

Steam is a critical application in many business processes.

However, working with steam is dangerous!

Therefore we should pay the necessary attention to steam hoses, their couplings and the way they are assembled.

### What are the dangers?

#### Popcorning effect

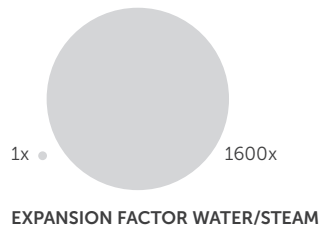
The service life of rubber steam hose is significantly shortened, when the condensed water is not discharged from the hose after use.

This condensate or vapor penetrates into the pores of the tube of the hose and remains trapped. When you connect the hose to the steam network again, the enclosed steam will expand in the tube with a factor 1600x; this sudden increase in volume will cause the formation of steam bubbles in the tube, and the rubber will be blown out from the tube.

This effect is called **popcorning**.

Longer and more frequent use of the hose, will cause the popcorning effect to increase every time you start up, whereby rubber particles become detached from the inner wall and pollute the steam network or the product. This results in clogging of the system.

The moist steam, which is located in the rubber of the hose, will also find a way out thereby affecting and weakening the steel braids of the hose



#### Leaks during installation

Steam Hoses with couplings are often mounted with grip clamps or clamping plates. This can potentially cause leaks or bolts to come loose. When this is not noticed immediately, the safety of the user is no longer guaranteed.

#### Rusting of the braids

Braids that are corroded, are not visible from the outside. These braids can no longer withstand the operating pressure of the hose, and as a result the hose will burst. Again, the safety of the user is in danger.

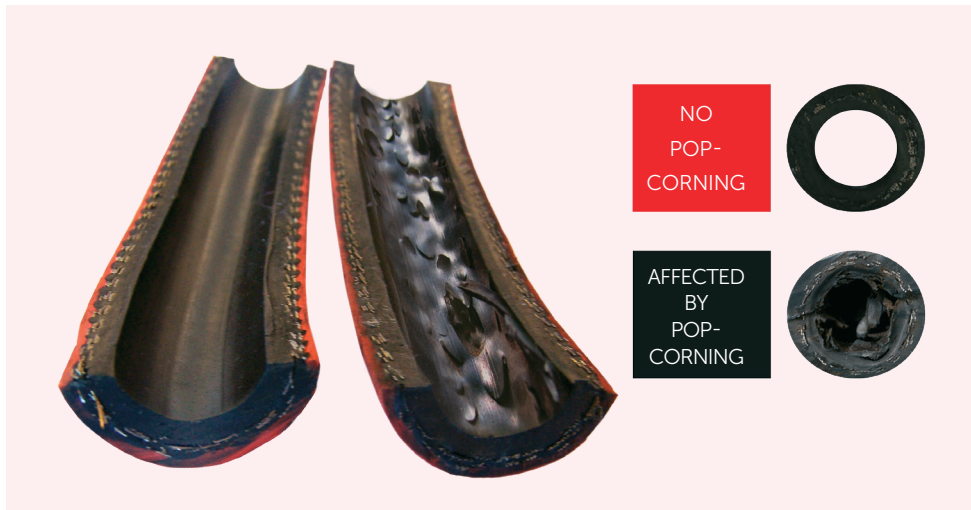
## 5. The highest quality of steam hoses

### Goodall® Inferno ISO 6134-2A and Super Inferno steam hoses

#### Exceeds ISO 6134-2A

Goodall®, has done a lot of research during the past few years in the field of rubber steam hoses. Not only have the rubber compounds for the tube and the cover been improved, also the material and the coating of the steel braids have received special attention during the development of the Goodall® rubber steam hoses.

Practical tests and testing procedures with extreme conditions for rubber steam hoses, formed the parameters for the ultimate steam hose. Even a special EPDM compound still has a porous structure, causing tiny water and steam particles to accumulate in the wall resulting in the 'popcorning' effect.



To overcome this 'popcorning'-effect, Goodall® developed a special, non-porous rubber compound for the inner tube of these two steam hoses. This tube is extruded and thus extremely smooth and non-porous.



The double braid of galvanized steel wires contributes to higher safety and a longer lifespan. The burst pressure of both the Inferno ISO 6134-2A and the Super Inferno surpass all standards and specifications.



#### Lifespan

Since superheated steam is quite common, Goodall® has also improved the tube of its steam hoses. These hoses can withstand temperatures of 232 °C/450°F longer than any other steam hose. In combination with the non-porous structure of the tube, this ensures a much longer lifespan. Extensive tests confirm this.



## 6. Inferno ISO 6134-2A vs Super Inferno

|   | <b>INFERNO ISO 6134-2A</b>  | <b>SUPER INFERNO</b>  |
|---|---|---|
|   |    |    |
| <b>INNER WALL</b>                         | <ul style="list-style-type: none"> <li>■ Black, special, non-porous rubber compound</li> <li>■ Smooth, homogeneous and seamless extrusion</li> <li>■ Electrically conductive <math>R &lt; 10^6 \Omega</math></li> </ul> | <ul style="list-style-type: none"> <li>■ Black, special, non-porous rubber compound</li> <li>■ Smooth, homogeneous and seamless extrusion</li> <li>■ Electrically conductive <math>R &lt; 10^6 \Omega</math></li> </ul> |
| <b>BRAIDS</b>                             | 2 special braided galvanized steel braids   | 2 special braided galvanized steel braids   |
| <b>OUTER WALL</b>                         | <ul style="list-style-type: none"> <li>■ Black EPDM rubber</li> <li>■ Ozone resistant</li> <li>■ Wear-resistant</li> <li>■ Pinpricked</li> <li>■ Electrically conductive <math>R &lt; 10^6 \Omega</math></li> </ul>     | <ul style="list-style-type: none"> <li>■ Red EPDM rubber</li> <li>■ Ozone resistant</li> <li>■ Wear-resistant</li> <li>■ Pinpricked</li> <li>■ Black conducting spiral marking</li> </ul>                               |
| <b>BURST PRESSURE</b>                     | > 180 bar / > 2600 psi<br>(10: 1 safety)  | > 340 bar / > 5000 psi<br>(20:1 safety)   |
| <b>MAX. WORKING PRESSURE/ TEMPERATURE</b> | 18 bar at 232°C<br>260 psi at 450°F   | 17 bar at 232°C<br>250 psi at 450°F   |
| <b>AVAILABLE DIAMETERS</b>                | 1/2" - 3/4" - 1" - 1.1/4" -<br>1.1/2" - 2" - 3"   | 3/4" - 1" - 2"  |

**Goodall** **INFERNO ISO 6134-2A** • STEAM 18 BAR 232 °C  $\Omega$   

**Goodall** **SUPER INFERNO** • STEAM 250 PSI 450 °F  

## 7. Working safely with DuraCrimp®

DuraCrimp® ensures a secure connection between hose and couplings. A secure connection and safe installation is as important as choosing the right hose. These two components should not be considered separately, but as a system. Leaks and loosening of couplings can be avoided, with Goodall® Duracrimp steam.

Drawing on years of experience in steam applications, and the necessary experience of Goodall® as a designer and manufacturer of steam hoses, allowed Goodall® to design a unique crimping-connection by optimal alignment between the Goodall® Inferno or Super Inferno hose, and a special DuraCrimp® steam coupling system.

Within the coupling system, the sleeve is designed to grip on the steel braids and tail piece hydraulically. This ensures a secure connection, even under heavy use. Steam leakage is a thing of the past.

**ATTENTION:** This crimping connection is not suitable for other steam hoses.



**GOODALL® INFERNO  
WITH DURACRIMP®  
CRIMPING SYSTEM**

In our Goodall® testlab, the assembled hoses are subject to a steam endurance test, which is stricter than the 720 hours prescribed by the ISO 6134 standard. The Goodall® hoses with DuraCrimp® couplings, are tested with saturated steam for 1000 hours. It is important that the hoses are not drained during rest periods (= Condensate remains in the hose).



These tests show that the DuraCrimp® couplings combine perfectly with the Goodall® Inferno and Super Inferno hose.

The DuraCrimp® press-connection exceeds the minimum required burst pressure of > 180 bar / > 2600 psi according to ISO 6134-2.

The burstpressure of the Goodall® Super Inferno is even > 340 bar / 5000 psi.

## 8. Ergonomical

In combination with the DuraCrimp® coupling system, there is an option to provide the coupling with an impact and heat-resistant red Goodall® DuraCrimp® handle.

The DuraCrimp® handle offers multiple advantages:

- Protects the hose from kinking, thereby expanding the lifespan of the hose
- Better protection of the user against heat when the hose is held in the hand while being used  
Attention: The operator should wear protective equipment at all times
- Ergonomic: The handle fits comfortably in the hand for a better and more secure grip
- Identification (different color codes possible)
- RFID: the handle is provided with a space in which a simple RFID chip can be placed

**GOODALL® INFERNO WITH DURACRIMP®  
STEAM CRIMPING SYSTEM  
DURACRIMP® HANDLE**



## 9. Saving on the cost of steam

Besides the many advantages such as safety and ergonomics the Goodall® steam hoses with the DuraCrimp® steam couplingsystem also offer extensive savings. The costs of steam loss can be very high and can be avoided with this new development.

### A CALCULATION EXAMPLE

- 2.6 lbs = volume of steam per minute escaping from a small steam leak
- \$ 12.5 = estimated costs to produce one tonne of steam
- \$ 46.8 = estimated cost per day per leaking steam coupling
- \$ 327.6 = estimated cost per week per leaking steam coupling
- \$ 1404 = estimated cost per month per leaking steam coupling

If we take into account approximately 5 months a year where a lot of steam hoses are being used :

- \$ 7020 = estimated cost per year per leaking steam coupling

**WITH THE 100% CLOSED CONNECTION OF THE GOODALL DURACRIMP COUPLINGS YOU SAVE HUGE!**



### SAVING ON THE PURCHASE BUDGET AND WASTE PROCESSING:

Due to the high quality rubber tube compound of the Goodall® steam hoses and to the high-quality double-braided galvanized steel braids, the life span of the Goodall® Inferno ISO6134-2A and the Super Inferno can be up to 3x longer.

The consumption of steam hoses will decrease dramatically, which is a saving on the purchasing budget.

It also generates less waste, and that too is a considerable saving.

## 10. Recurring problems

| PROBLEMS  | SOLUTIONS WITH GOODALL®<br>HOSE ASSEMBLIES  |                |        |                     |
|---|---|----------------|--------|---------------------|
|   |   | COST<br>SAVING | SAFETY | SUSTAINA-<br>BILITY |
| 1. Tube popcorning                                  | 1. Superior gas-tight and extruded tube   | ✓              | ✓      | ✓                   |
| 2. Cover blistering                                 | 2. Cover extruded and "pin-pricked"   | ✓              | ✓      | ✓                   |
| 3. Short lifespan due to rusting reinforcements     | 3. Double braided galvanized steel reinforcements                                   | ✓              | ✓      | ✓                   |
| 4. Danger as a result of not being able to identify | 4. Clear spiral-shaped marking  |                | ✓      |                     |
| 5. Ageing due to curing of the cover                | 5. Heat and weather resistant cover   | ✓              |        | ✓                   |
| 6. Kinking of the hose                              | 6. Robust braided inlays to prevent kinking   | ✓              | ✓      | ✓                   |
| 7. Static electricity                               | 7. Inner and outer wall are electrically conductive $\Omega / T; R < 10^6 \Omega *$ |                | ✓      |                     |
| 8. Leakage of couplings during retesting            | 8. 100% safe and leak-free connection with DuraCrimp                                | ✓              | ✓      | ✓                   |
| 9. Heavy grip clamps                                | 9. Lighter, but mechanically stronger crimp sleeves                                 |                | ✓      |                     |
| 10. Difficult grip at the level of the grip clamps  | 10. Ergonomic handle available  |                | ✓      |                     |
| 11. Kinks behind the coupling                       | 11. Handle offers anti-kink protection  | ✓              | ✓      | ✓                   |
| 12. Difficulty in applying color coding             | 12. Various color codings possible (e.g. after retesting)                           |                | ✓      |                     |
| 13. Loosening bolts / nuts                          | 13. No bolted connection  | ✓              | ✓      |                     |
| 14. Difficulty in applying RFID chip                | 14. RFID chip may be integrated in the sleeve                                       | ✓              | ✓      | ✓                   |

\* Applies only to the Inferno ISO6134-2A

## 11. DuraCrimp® steam options

The DuraCrimp® couplings are especially designed to ensure a safe mounting onto the Goodall® Inferno or Super Inferno steam hose.

The hose connection is guaranteed for a maximum operating pressure of 260 psi at 450°F (18 bar steam at 232°C).

### **DURACRIMP® STEAM 3-PIECE COUPLING**

type GDS-UF

A fast and reliable steam coupling!  
The large wing nut is made from solid stainless steel or galvanized steel.  
Its shape makes it easier for the user to establish a quick and secure connection.

**MATERIAL** Galvanized steel, Cr6-free or  
SS AISI 304 (W.Nr 1.4301)

**FOR HOSE** 1/2". 3/4". 1"

**THREAD** EN 10226-1 BSPT  
ANSI B.1.20.1, NPT



### **DURACRIMP® STEAM, WITH MALE THREAD**

type GDS-M

Heavy conically sealed male thread coupling

**MATERIAL** Galvanized steel, Cr6-free or  
SS AISI 304 (W.Nr 1.4301)

**FOR HOSE** 1/2". 3/4". 1". 1 1/4". 1 1/2". 2"

**THREAD** EN 10226-1 BSPT  
ANSI B.1.20.1, NPT



## DURACRIMP® STEAM, SWIVELLING FEMALE THREAD BSP type GDS-F

Heavy female threaded coupling with flat seal.

|                 |  |
|-----------------|--|
| <b>MATERIAL</b> | Galvanized steel, Cr6-free or<br>SS AISI 304 (W.Nr 1.4301) |
| <b>FOR HOSE</b> | 1/2". 3/4". 1". 1 1/4". 1 1/2". 2"                         |
| <b>THREAD</b>   | ISO 228-1,BSP  |
| <b>SEAL</b>     | Novatec Premium II Kevlar                                  |



## DURACRIMP® STEAM, LOOSE OR FIXED FLANGES, PN10 / 16, PN40 type GDS-FF of GDS-LF

Hose couplings with fixed or loose flange

|                  |  |
|------------------|--|
| <b>MATERIAL</b>  | Galvanized steel, Cr6-free or<br>SS AISI 304 (W.Nr 1.4301) |
| <b>FOR HOSE</b>  | 1/2". 3/4". 1". 1 1/4". 1 1/2". 2"                         |
| <b>EXECUTION</b> | Fixed or loose flange                                      |
| <b>HOLE</b>      | EN 1092-1: PN10/16 - PN40                                  |



## DURACRIMP® STEAM HANDLE (POSSIBILITY OF COLOR CODING) type GDS-EH

Red ergonomic handle

|                   |  |
|-------------------|--|
| <b>MATERIAL</b>   | Durable, heat-resistant<br>plastic                               |
| <b>FOR HOSE</b>   | 1/2". 3/4". 1"   |
| <b>RFID-READY</b> | There is space provided for<br>implementation of an RFID<br>chip |

IDENTIFICATION RINGS AVAILABLE  
IN THE FOLLOWING COLORS:  
YELLOW, BLUE, RED, GREEN AND BROWN



## Goodall® : quality, safety and durability

Goodall® has been producing industrial hoses and couplings for more than 100 years. Throughout the years we have built a name and a reputation in North America, and we have recently become active on the European market.

Providing **superior quality products** and **continually investing** in new, innovative and market-oriented hose solutions gives us the strength behind our name and is the result of the trust our customers rely on.

Each industrial hose and coupling that carries the Goodall® logo guarantees **superior quality**. All hose connections have been thoroughly tested in our hose labs and in practice. Our **R & D departments** develop the necessary assembly techniques which are described in detail in work instructions. Our distributors follow our instructions thoroughly to assure the safety of your employees and the environment.

Goodall® is very involved and committed to **environmental of sustainability**.

The improvement of the durability through an ecological and sustainable production, developing hoses and couplings with a longer service life (less waste!) and the support to our customers in reducing their TCO (Total Cost of Ownership) contribute to this.

**Goodall® : intelligent hose technology**

Visit our website to find your local GOODALL distributor :

**[www.goodalhoses.com](http://www.goodalhoses.com)**

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