

NORMACLAMP® – Hose Clamps

NORMACLAMP® FBS – Springband hose clips to DIN 3021

Because of their design, NORMACLAMP® FBS springband hose clips are particularly suitable for use with hose-spigot connections which are submitted to extreme temperature changes.

Once assembled NORMACLAMP® FBS provide a continuously readjusting dynamic tightening effect.

Also at low temperatures the radially acting tightening force is sufficient to assure a reliable tightness of the system. Even hoses that are submitted to extreme temperature cycles, or those with a tendency to “creep” can be combined to form a safe connection when NORMACLAMP® FBS are used.

Short description of technical features



- ① Lot number stamped on clamp band = safe retraceability
- ② NORMA® Logo = the visible sign for high quality
- ③ Organic/inorganic coating
= optimal protection against corrosion
Coating in different colour
= improved engine design
- ④ Nominal diameter stamped on the clamp
= prevention of mistakes
- ⑤ Special design = uniform distribution of clamping forces
and optimal roundness
- ⑥ Round band edges
= optimal hose protection

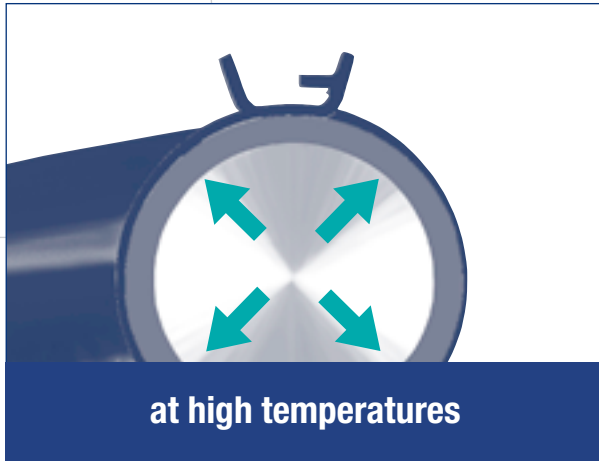
Materials

C 75 S	Zinc-Aluminium Coating	Organic Coating
X	Basecoat	Topcoat

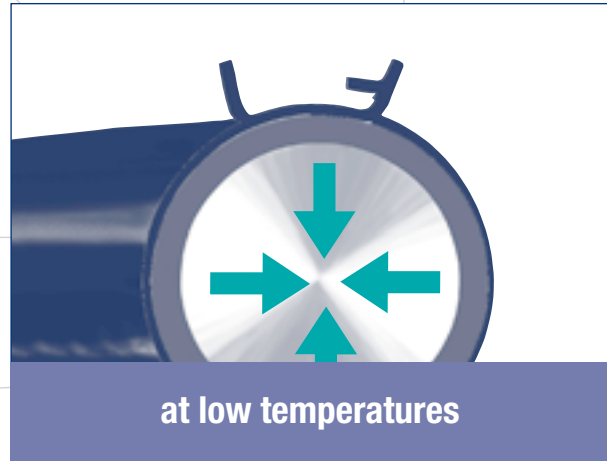
NORMACLAMP® – Hose Clamps

Short Description

- Dynamic hose clip
- Band material C 75 S
- Coating contains zinc – chromium VI-free
- Nominal diameter from 13 up to 80 mm – different gradations



- Expanding hose diameter
- FBS adapting to the hose



- Reduced hose diameter
- FBS is re-tightening
- Consistent clamping force ensuring the perfect tightness of the joint

Technical characteristics

Corrosion resistance

Material	Corrosion resistance in salt spray testing
C 75 S	from 480 h

The advantages at a glance

- Single-part hose clips without screw
- Uniform distribution of clamping forces
- Optimal roundness
- Temperature resistance from – 40 °C up to 200 °C
- Unmistakable tracing due to lot numbering
- Visual control of nominal diameters by colour codes

NORMACLAMP® – Hose Clamps

Variants



NORMACLAMP® FBS R

is a space-saving clamp. It was designed with the aim of realising the technical minimum overall height to allow its use in difficult assembly situations.



NORMACLAMP® FBS HC

is a pre-opened version secured by a plastic retaining clip. After slipping the clamp onto the hose, this clip can be easily removed by hand.



NORMACLAMP® FBS MC

is a pre-opened (and, if desired, pre-positioned) clamp secured by a small metal clip. The retaining clip for this version is removed by using pliers.



NORMACLAMP® FBS C

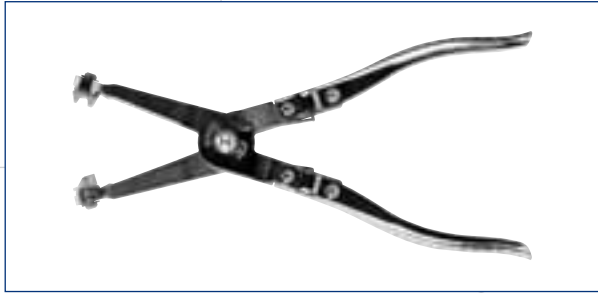
is a pre-opened clamp which is pre-positioned on the hose. The retaining mechanism for this version is an integral part of the clamp band.

NORMACLAMP® – Hose Clamps

NORMA®-Professional tooling

Hand-held pliers

For professional assembly operations we offer you a range of quality hand-held and pneumatic tools:



FBS hand-held pliers Type 1

Suitable for small diameters.



FBS hand-held pliers Type 2

Suitable for all nominal diameters.
The integrated safety lever fixes the position of the pliers.

Pneumatic tools



FBS pneumatic pliers Type "S"

Suitable for the assembly of FBS that are pre-positioned on the hose.



FBS pneumatic pliers Type "W"

Suitable for volume production.
The clamp head is approached sideways.

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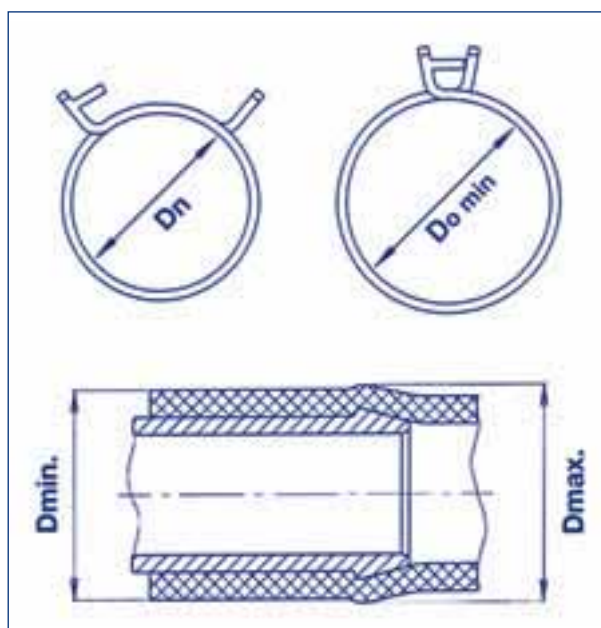
Applications in the automotive industry

NORMACLAMP® FBS springband clips are specially suitable for use in applications where connections are under extreme cyclic temperature loads:

- Coolant and heating systems
- Fuel lines
- Airducts

In order to determine the correct size of clamp please proceed as follows:

1. Slide the hose onto the spigot and measure the $D_{min.}$ and $D_{max.}$ (see diagram below)
2. From the $D_{min.}$ value determine the nominal diameter (D_n) of the appropriate clamp.
 $D_n = D_{min.}$
3. Compare the $D_{max.}$ value with the stated minimum diameter of the open clamp and select the suitable clamp size.
 $D_{o min} \geq D_{max.}$



Samples can be provided on request. We shall be pleased to discuss your specific problem or application in detail. Just contact us.

NORMACLAMP® – Hose Clamps

Survey of sizes, band widths & materials NORMACLAMP® FBS

Band width (mm)	Description	D _n in mm	D ₀ min in mm	Packaging IC	C 75 S
12	FBS 13/12	13	14.5	3000	X
12	FBS 14/12	14	15.8	3000	X
12	FBS 15/12	15	16.8	3000	X
12	FBS 16/12	16	17.5	1000	X
12	FBS 17/12	17	18.5	3000	X
12	FBS 18/12	18	19.0	2500	X
12	FBS 19/12	19	21.0	2000	X
12	FBS 20/12	20	21.6	2000	X
12	FBS 21/12	21	22.5	1500	X
12	FBS 22/12	22	24.5	1500	X
12	FBS 23/12	23	24.7	1500	X
12	FBS 24/12	24	26.0	1000	X
12	FBS 25/12	25	27.0	1000	X
12	FBS 26/12	26	28.0	1000	X
12	FBS 27/12	27	29.0	1000	X
12	FBS 28/12	28	30.5	1000	X
12	FBS 29/12	29	31.5	1000	X
12	FBS 30/12	30	32.5	1000	X
12	FBS 32/12	32	34.5	1000	X
12	FBS 35/12	35	38.0	1000	X
12	FBS 36/12	36	39.0	1000	X
12	FBS 38/12	38	41.5	1000	X
12	FBS 40/12	40	42.5	500	X
12	FBS 42/12	42	44.5	500	X
12	FBS 44/12	44	46.5	500	X
12	FBS 46/12	46	49.0	500	X
12	FBS 47/12	47	50.0	500	X
12	FBS 50/12	50	53.0	500	X
12	FBS 51/12	51	54.0	500	X
12	FBS 53/12	53	56.0	500	X
12	FBS 55/12	55	58.0	500	X
12	FBS 60/12	60	63.0	150	X
12	FBS 65/12	65	68.0	500	X
12	FBS 70/12	70	73.0	500	X
12	FBS 75/12	75	78.0	500	X
12	FBS 80/12	80	83.0	250	X

Enquiries/ordering:

When making enquiries or placing orders please indicate as follows:

	1. Typ	2. Nominal diameter	3. Band width
Example	FBS	13/	12