KUHNE
INDUSTRIE BV

INSTALLING INSTRUCTION FOR FIBER REINFORCED BUSHINGS

First read all instructions before installing the bushing!

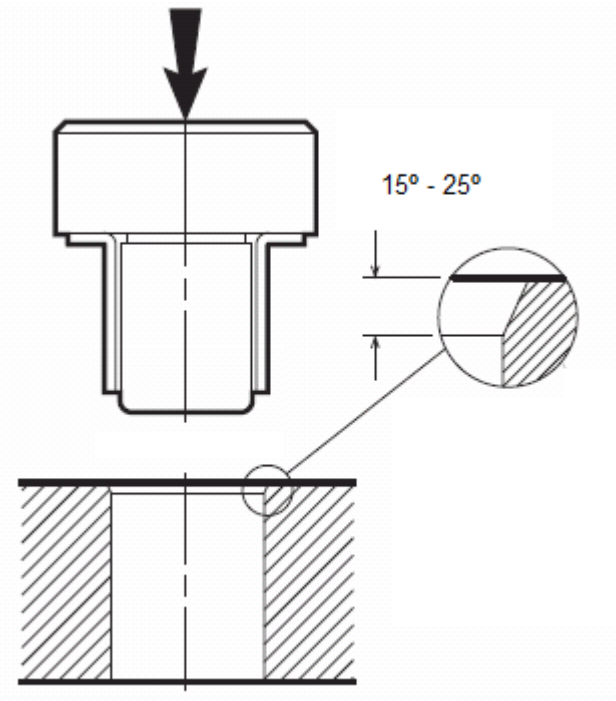
General information

Bushings with outer diameter up to 300 mm can easily be pressed into the housing. To do this, a pressing tool must be created on which the bushing can be guided into the housing. Bushings with an outer diameter larger than 300 mm can be shrunk by nitrogen shrinking.

For proper functioning, we advise to use grease like for example Ferolube® during the run-in period.

Standard installation

For proper installation of the bushing, a pressing tool must be created. With this tool the bushing is protected against damaging during assembling in the housing. A chamfer on both bushing and housing is necessary to provide the bushing from getting damaged in this pressing operation.



KUHNE INDUSTRIE BV
Gildenstraat 11b
3861 RG Nijkerk

T. +31 (0)85 487 48 00
F. +31 (0)85 487 48 01
E. info@kuhne-industrie.nl
W. www.kuhne-industrie.nl

KÜHNE
INDUSTRIE BV

Nitrogen shrinking

To install fiber reinforced bushings, there is a possibility to shrink the product by nitrogen cooling. The nitrogen has a temperature of -196ºC that will cause the bushing to shrink, and thereby the diameter will decrease.

Accessories

For this “freeze-fit”-installation following tools are necessary:

- 1 nitrogen gas cylinder with enough capacity to lower the temperature of the bushing
- 1 isolated box, or better, cylindrical barrel
- Pliers, to grab the bushing out of the nitrogen
- Personal protective equipment
- Glue (only in case glue for extra fixation is advised by the supplier)

Personal protection

Working with nitrogen requires a high level of discipline.
Nitrogen is dangerous, take following into account:

- Nitrogen can cause burns, in case handled without thermal safety gloves
- Temperature of liquid nitrogen is -196 ºC!
  USE THERMAL SAFETY GLOVES!
- The weight of nitrogen is more than air. This causes oxygen will get repressed by the nitrogen. If there is too little ventilation, this will cause extremely dangerous situations for people.
  ONLY DO THE NITROGEN SHRINKING IN VENTILATED AREAS!

Method

1) Before starting anything make sure the housing and bushing have the proper dimensions (and are within tolerances). In case of any doubt, always contact Kühne Industrie B.V.. Take the temperature of the environment into account; the higher the temperature, the bigger the difference in diameter of the cooled bushing and housing.
2) Make sure the bushing is placed in the center of the isolated box and put the nitrogen supply hose in the opening of the isolated box.
3) Open the nitrogen cilinder until the complete bushing is below nitrogen level. Take in account that nitrogen evaporates fast. In case the bushing gets above the surface of the nitrogen, ad new nitrogen.

KUHNE INDUSTRIE BV
Gildenstraat 11b
3861 RG Nijkerk

T. +31 (0)85 487 48 00
F. +31 (0)85 487 48 01
E. info@kuhne-industrie.nl
W. www.kuhne-industrie.nl

Duration of the shrinking operation

4) The normal timespan of the shrinking operation is 10 up to 45 minutes in the nitrogen fluid (this depends on the size of the bushing). The exact time is determined by the time the temperature of the bushing has dropped to the temperature of the nitrogen. That will be visible when the nitrogen stops bubbling. When stopped the busing is ready for installation.
5) Use the pliers to grab the bushing out of the nitrogen, position the bushing in front of the housing and slide it in. Positioning of the bushing can be done with thermal safety gloves. Check if both sides of the bushing and the housing are equal. If hand force is not enough a plastic hammer can be used. If this also does not work the last option is to use a pressing tool.
6) The temperature of the bushing will rise directly, therefore the bushing will lock in its housing.

7) The safest way to get rid of the liquid nitrogen is by evaporation. In case of any hazards we advise to mark the area during this last operation.

Remark

For safe handling of nitrogen, we refer to the instructions of the nitrogen supplier

KUHNE INDUSTRIE BV
Gildenstraat 11b
3861 RG Nijkerk

T. +31 (0)85 487 48 00
F. +31 (0)85 487 48 01
E. info@kuhne-industrie.nl
W. www.kuhne-industrie.nl

KÜHNE
INDUSTRIE BV

In case of bonding…

Why using glue?

There are 2 reasons for bonding a bushing in its housing.

1- This will give extra fixation of the bushing in the housing. Normally the bushing will not turn in the housing, but this can be the worst case scenario if the bushing is affected by walzing forces. Bonding will provide the bushing from rotating inside its housing.
2- With glue it is possible to fill spaces between the bushing and housing. This will prevent water to get between the housing and bushing. This will therefor help provide the house from corrosion.

Bonding (with ARALDITE 2011)
In most cases bonding of the bushing is done with ARALDITE 2011. This glue is available in two tube sizes (50 and 200 ml). The glue has its own pistol. The surface of the bushing and housing needs to be dry and free of dust.
Carefully make an thin equal glued surface on the housing. Use a spatula to portion the glue on the surface

A WRONG GLUE LAYER CAN NEGATIVELY INFLUENCE THE PRESS FIT!!

For complete information about the glue we refer to the guidelines of the supplier of the glue
For questions you can contact:

Kühne Industrie B.V.
Tel +31(0)85 – 487 4800

KUHNE INDUSTRIE BV
Gildenstraat 11b
3861 RG Nijkerk

T. +31 (0)85 487 48 00
F. +31 (0)85 487 48 01
E. info@kuhne-industrie.nl
W. www.kuhne-industrie.nl