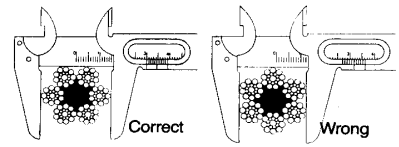
FERRULE SECURING INSTRUCTION - TALURIT™ Rev. 2005-09-15



Please note these instructions are only applicable to products produced and supplied by Talurit AB, Sweden and Gerro GmbH, Germany!

Checking of the wire rope:
Begin by checking the diameter of the wire rope.
The measured diameter is applicable.

Check rope type, rope grade, type of rope lay and fill factor (f) or metallic cross-sectional area factor (C). Make sure the wire rope corresponds to requirements in the tables for each ferrule type.

$$f = \frac{A}{A_u} \qquad C = f \cdot \frac{\pi}{4}$$

Fill factor (f): The ratio between the sum of the nominal metallic cross-sectional areas of all the wires in the rope (A) and the circumscribed area (A_u) of the rope based on its nominal diameter (D).

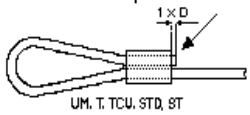
Ensure that the cut ends of pre-formed wire rope do not unlay. If a served rope end is to be pressed within the ferrule the serving shall consist only of a strand or wire. The serving material shall be of aluminium or annealed steel and shall have a tensile strength no greater than 400 N/mm^2. The diameter of the serving shall be no greater than 5% of the nominal rope diameter. Any serving within the ferrule before pressing shall be no longer than 0,5 x nominal rope diameter and the overall length of serving shall extend no further than 1 x rope diameter from the rope end.
Annealed ends must not be pressed inside the ferrule and annealed ends should not be longer than 0,5 x the wire rope diameter. Please also see our separate instructions for annealing machines type AV. Please note that our ferrules should only be used on new wire ropes.

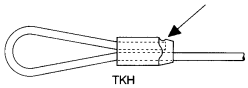
Types of ferrules and their use:
Ferrules Talurit (T), Talurit Konit™ (TK), Talurit Konit™ with inspection hole (TKH), Ultragrip™ Metal (UM), Konit™ (K), Steel (ST), Slimsteel™ (SLST), Steel (STD) and Round (R) are intended for use on steel wire ropes made from carbon steel. The Copper ferrule (TCU), Round copper ferrule (RCU), stainless steel ferrule (INOX) and stainless steel terminals are intended for use with stainless steel wire ropes.
Note! Only ferrules type T, TKH and UM correspond to the new European standard EN 13411-3.

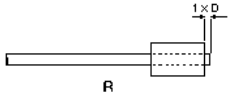
Select correct ferrule size:
The correct size of ferrule is selected from the applicable table for each type of ferrules. Note applicable rope types in each table. All our aluminium ferrules comply with this quality specification and to other material specifications stated in the ruling standards. All our ferrules are seamlessly extruded over mandrel.

Ferrule selection is based on the following criteria: the rope grade, the diameter of the wire rope, the fill factor or metallic cross-sectional area factor, the wire rope core i.e. fibre core (FC) or steel core (IWRC= independent wire rope core).

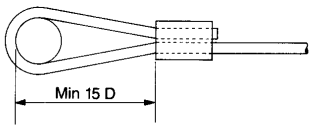
Assembly of the wire rope in the ferrule:
Enter the wire rope into the ferrule. When the loop is formed the end of the wire rope is returned into the ferrule according to type as indicated in the figures D= wire rope diameter.







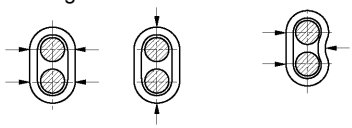
Before pressing conical ferrules with inspection hole, make sure that the short end of the wire rope is entered all the way to the back edge of the inspection hole!



If a thimble is not used, the distance from the unpressed ferrule to the bearing point of the soft eye must be at least 15 x the wire rope diameter (D), as per the figure. In some cases the sling eye should be even larger. Using a pin or a hook calculate 3 x pin diameter or the hook width to verify 15 x D or more.

The width of the eye without load shall be approximately half its length.

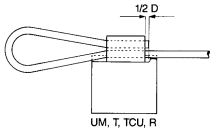
If the end of the wire rope is fixed in the ferrule before pressing then this should be done with care and preferably with controlled pressure, e.g. with our pre-pressing machines. Avoid faulty or unnecessary deformation of the ferrule. Do not clench or hammer in the middle of the long side of the ferrule. See figure.



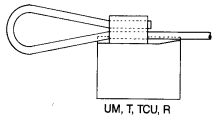
CORRECT WRONG

Press dies:
Check that the ferrule type and code number corresponds with the details stamped on the die. However our dies are not stamped with R and TCU-types; for these ferrule types use the type markings for T ferrules. Before pressing the dies should be carefully cleaned and the bore of the dies should be lightly lubricated. This will aid metal flow and lengthen die life.

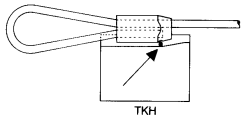
Positioning of the ferrule in the dies before pressing:
The following figures show how the ferrule should be positioned before pressing when using press dies with rounding or taper. In straight cylindrical dies the ferrule is placed in the middle of the cylindrical bore.



(Die with one-sided rounding)
Place the ferrule about half a wire rope diameter away from the die rounding.

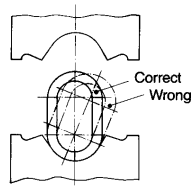


(Conical die)
Place the ferrule centered in the straight cylindrical section of the die.



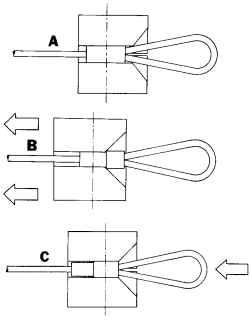
(Conical die)
Place the ferrule with the short wire rope end downwards and make sure the tap is in the inspection hole.

Pressing:
Make sure the dies are set up correctly and aligned. Press the ferrule, holding the wire rope with your two hands, one at each side of the dies. The major axis of the oval ferrule cross-section must align with the direction of pressing. Use the regulating valve on the press to find the correct pressure. On completion of the pressing operation the contact faces of the two supporting parts of the dies shall meet. Stop pressing immediately when the dies meet! Do not overload the dies. The ferrule shall be pressed in one direction, without being turned. Fins or flash material shall be removed by a grinding method without damaging or reducing the round diameter of the ferrule. Any flash material shall not be pressed back into the ferrule.



Multi bite pressing:
There are two types of dies for multi-bite pressing, a full length and a short type.

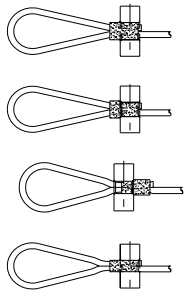
This procedure is for the full-length type. The press dies are first fixed in the press as usual (Fig. A) using the centre fixing position, and pressing takes place as per standard procedure utilizing full pressure. The pressing is completed when the die faces fully touch. If the press dies do not touch fully they must be moved to the second fixing position and pressing of half the ferrule carried out with reduced pressure as per Fig. B. NOTE! The pressure must be decreased to almost half not to overload the dies.
This method also ensures the pressure remains over the centre of the piston. The remaining half ferrule length is pressed as per Fig. C.
The procedure employing the short type dies involves moving the ferrule with the die remaining static in its fixed position see figure below. The pressure must be decreased to almost half the necessary pressure for full length pressing.



Ferrule in the middle of the die.

Lower the pressure. Move the die to its second fixing position. Press half the ferrule until the dies meet.

Press the remaining ferrule half.



Place the ferrule as shown in the picture. Reduce the pressure to half the value compared to full length.

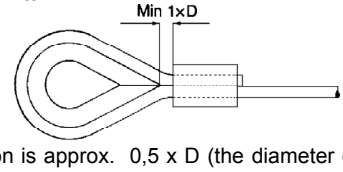
Press the ferrule just about half the required distance.

Now press the other side of the ferrule until the dies meet.

Press the first side of the ferrule once again, this time until the dies meet.

Checking and marking after pressing:
Check that the ferrule has been properly pressed and the wire rope is correct in alignment. Each ferrule shall be visually examined, free from flaws and defects. Any flash produced on the ferrules should be removed without damage to the ferrule or the rope. At each set-up the pressed ferrule shall be dimensionally checked to verify that it is within the diameter and when applicable length limits specified in the tables for ferrules. Each pressed ferrule after the set-up shall be checked for diameter to verify that it is within the diameter limits.

If a thimble is incorporated the point of the thimble should be at least 1 x D (the diameter of the wire rope) away from the ferrule after pressing. See figure. When using a thimble without a point the distance shall be 1,5 x D. Thimbles shall be according to EN 13411-1.



Make sure the dead end of the wire rope protrudes from the ferrule, after pressing. Our recommendation is approx. 0,5 x D (the diameter of the wire rope), to exceed this can cause injury. In case of conical ferrule make sure the dead end is visible in the inspection hole. Marking of pressed ferrules should be carried out according to ruling standards. Use a steel stamp or our marking machines. The following maximum letter sizes and maximum depth of impression are valid:

For ferrule No.	**Max. letter Size**	**Max. impression depth**
8-24	3 mm	0,5 mm
24-110	5 mm	1,0 mm

Usage and scrapping:
Ferrule terminations of aluminium or copper shall not be exposed to temperatures outside the range -40°C to 100°C or to long-term submersion in sea water. Slings shall be taken out of use if their ferrules have been exposed to deformation or when the outer diameter has been reduced to less than 95% of the original diameter.

If you have wire ropes not covered by this instruction or have any technical questions, please contact our Technical Department for advice.