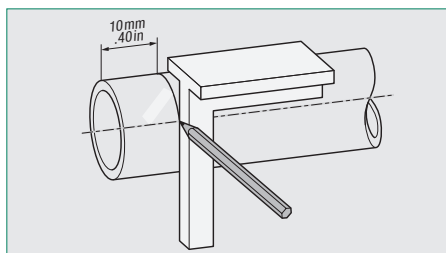


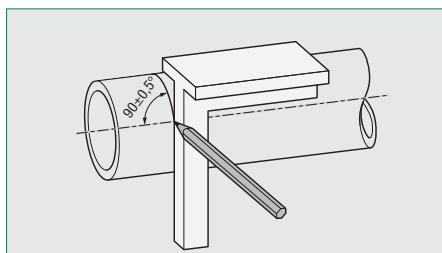
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

100% Assembly with the Manual Final Assembly Stud (Type FI-FK) and Assembly with the Fitting Body

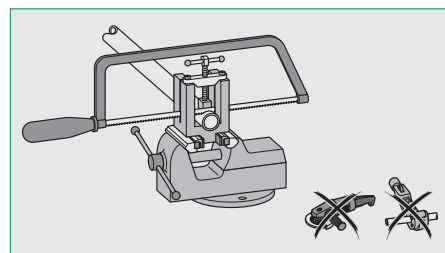
1. Tube Preparation



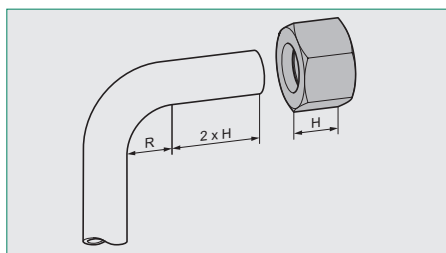
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



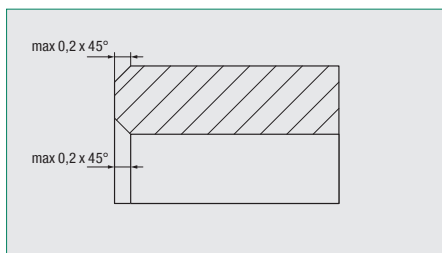
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

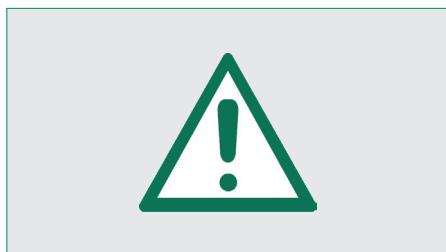


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.

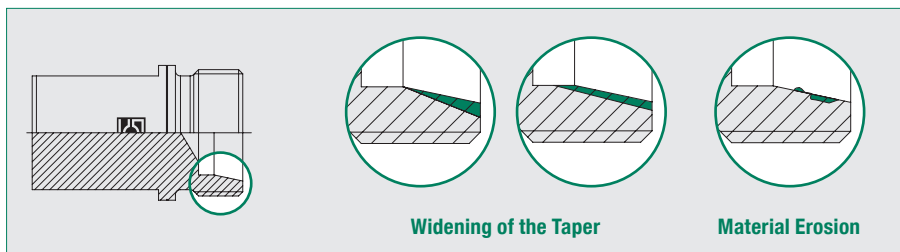


Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation

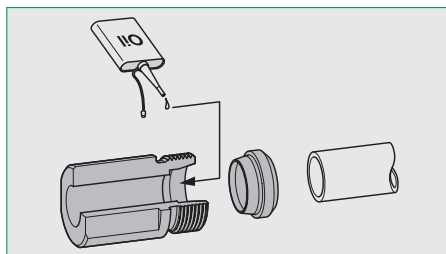


Please note: Hardened final assembly studs are wear-resistant, thus allowing for consistent assembly results with a maximum degree of accuracy, reliability and process stability.



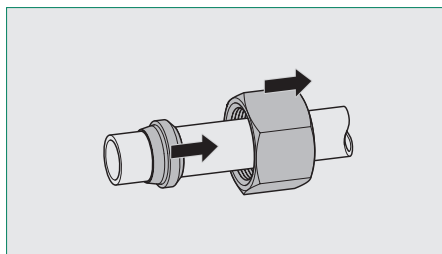
However, they have to be checked for dimensional accuracy regularly. Assembly studs that are damaged and/or dimensionally not accurate must be replaced under any circumstances!

Typical damages include widening of the 24° angle or the entire taper, as well as material erosion.



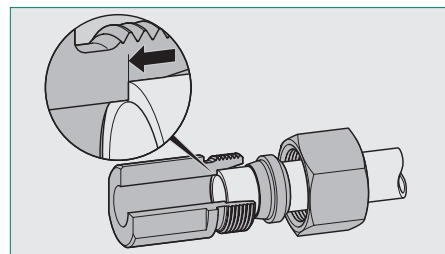
Lightly lubricate the 24° taper of the final assembly stud (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.



Consecutively put the union nut first and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.



Carefully insert the tube end into the 24° taper of the final assembly stud and push it firmly against the inner stop.

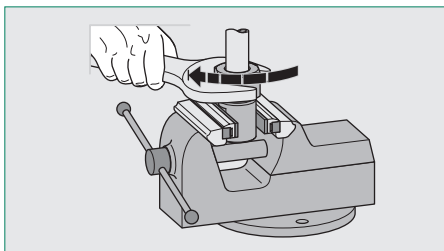
The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.



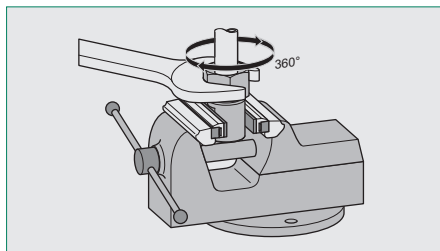
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

100% Assembly with the Manual Final Assembly Stud (Type FI-FK) and Assembly with the Fitting Body

3. Assembly in the Assembly Stud

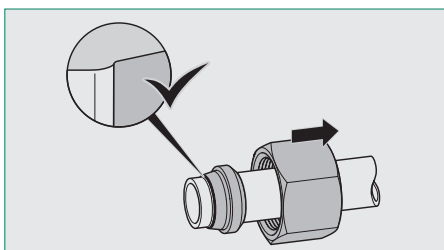


Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



Use a suitable spanner to tighten the union nut another full turn (360°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

4. Inspection



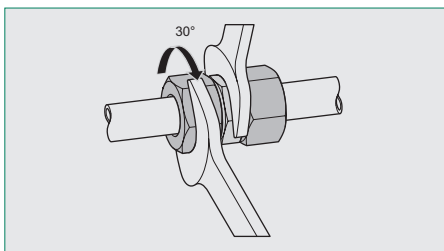
Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



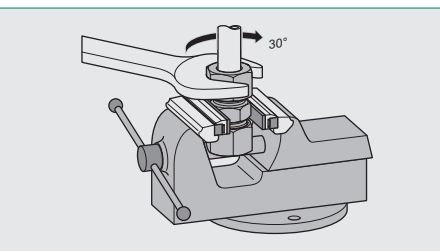
Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

5. Assembly with the Fitting Body



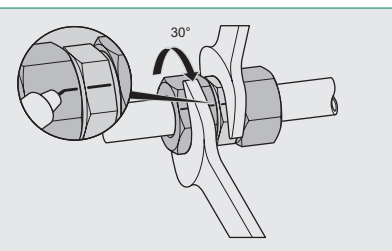
Carefully insert the assembled tube end into the 24° taper of the fitting body.

Use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.



A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

6. Repeated Assembly

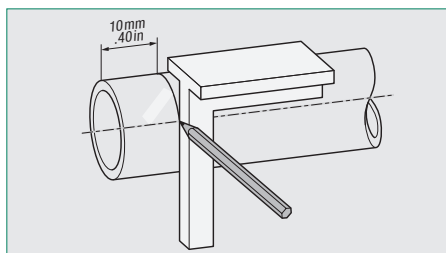
For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



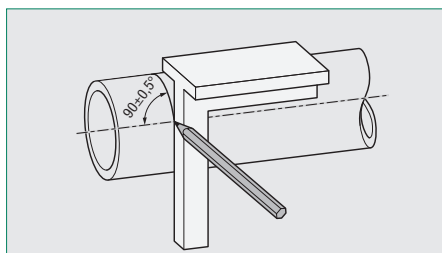
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body

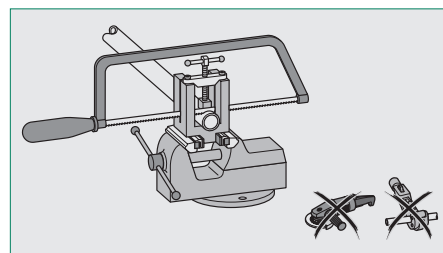
1. Tube Preparation



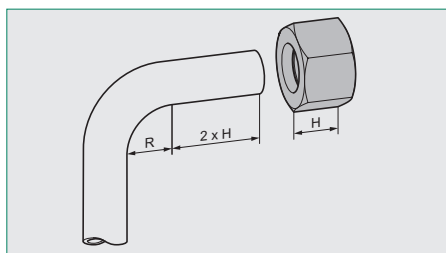
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



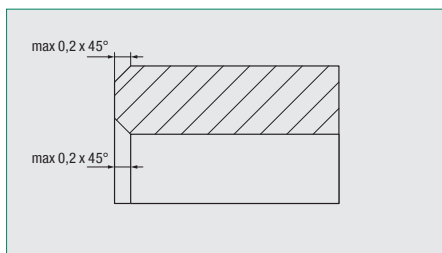
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

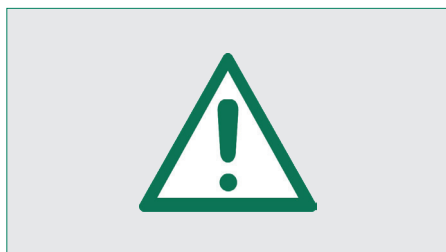


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.

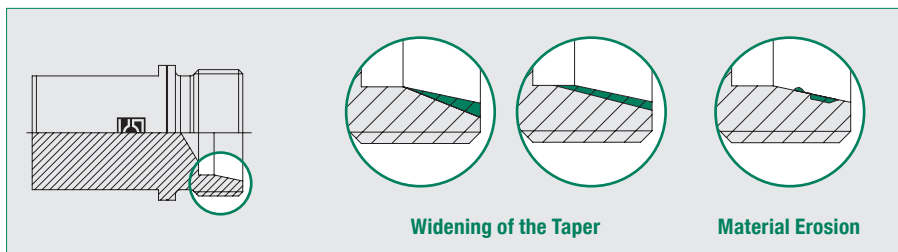


Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation

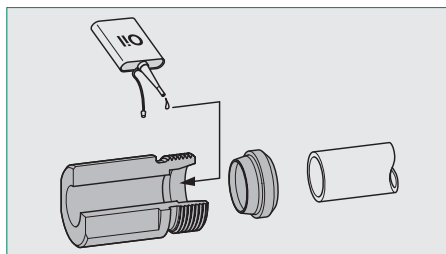


Please note: Hardened pre-assembly studs are wear-resistant, thus allowing for consistent assembly results with a maximum degree of accuracy, reliability and process stability.



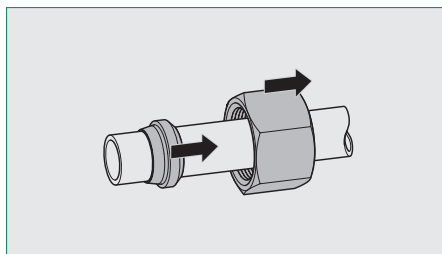
However, they have to be checked for dimensional accuracy regularly. Assembly studs that are damaged and/or dimensionally not accurate must be replaced under any circumstances!

Typical damages include widening of the 24° angle or the entire taper, as well as material erosion.



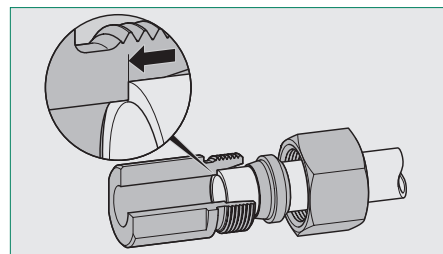
Lightly lubricate the 24° taper of the pre-assembly stud (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.



Consecutively put the union nut first and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.



Carefully insert the tube end into the 24° taper of the pre-assembly stud and push it firmly against the inner stop.

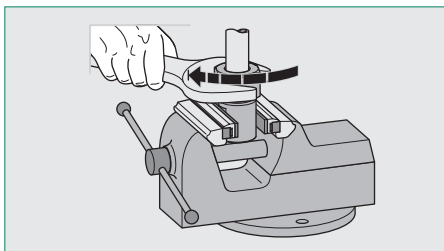
The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.



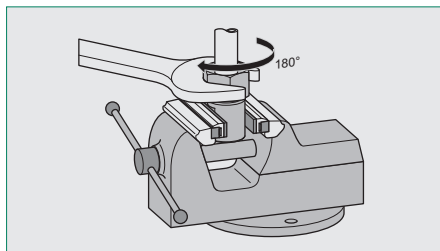
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body

3. Assembly in the Assembly Stud

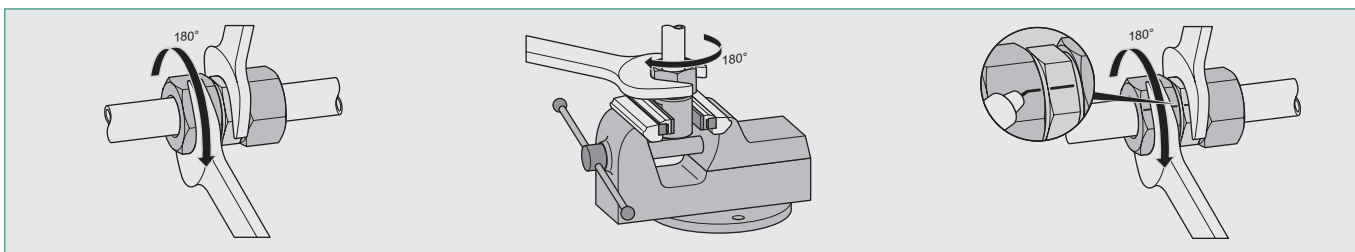


Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



Use a suitable spanner to tighten the union nut another 1/2 a turn (180°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

4. Assembly with the Fitting Body



Carefully insert the assembled tube end into the 24° taper of the fitting body.

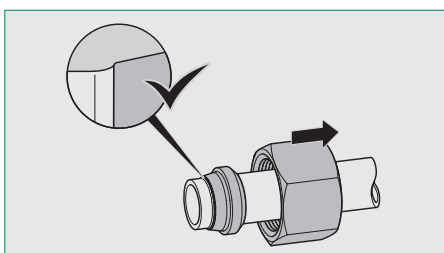
Use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/2 a turn (180°) beyond this point.

Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.

A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

5. Inspection



Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

6. Repeated Assembly

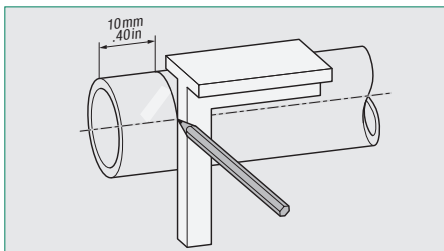
For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



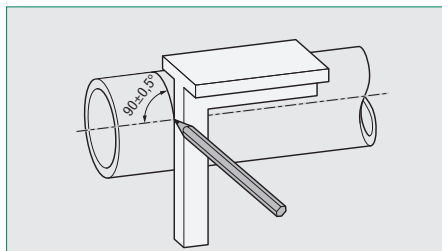
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

Direct Assembly with the Fitting Body

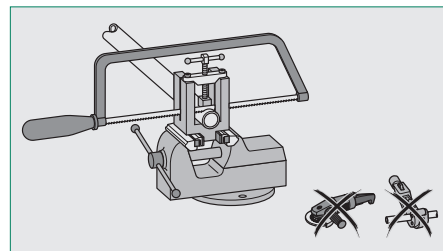
1. Tube Preparation



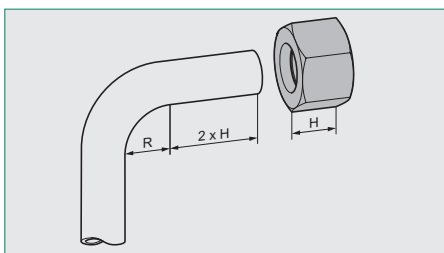
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



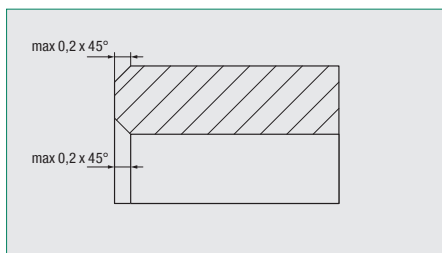
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

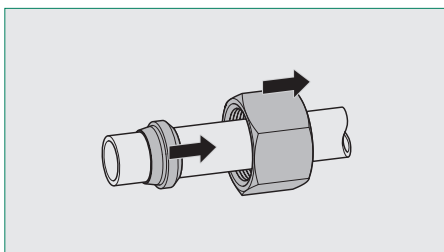


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.



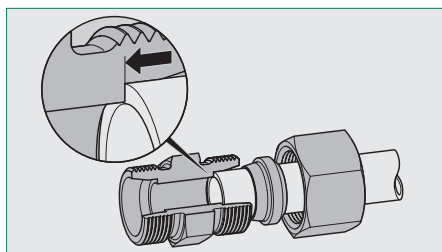
Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation



Consecutively put the union nut first and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.



Carefully insert the tube end into the 24° taper of the fitting body and push it firmly against the inner stop.

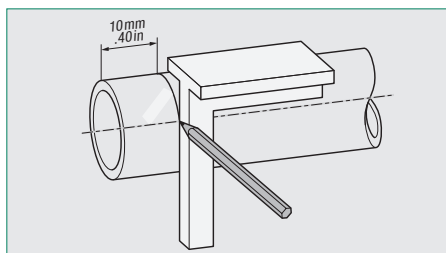
The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.



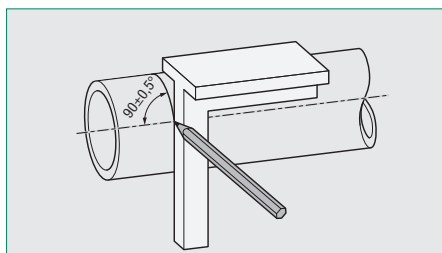
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Soft-Sealing Cutting Ring (Type FI-WDDS)

50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body

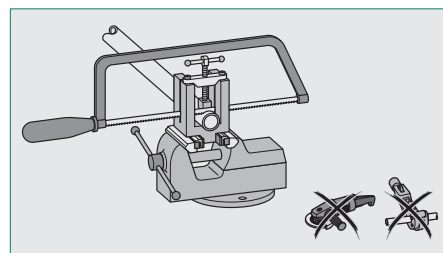
1. Tube Preparation



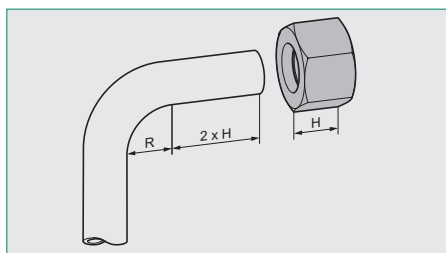
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



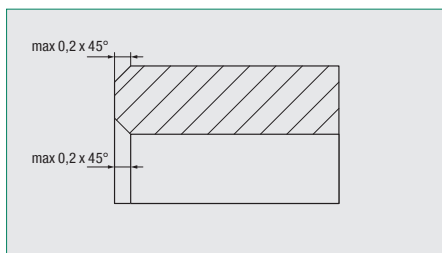
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

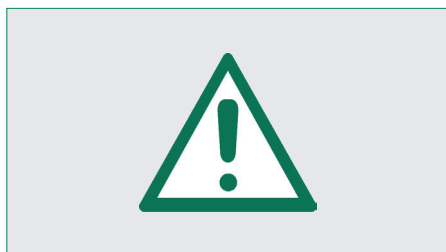


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.

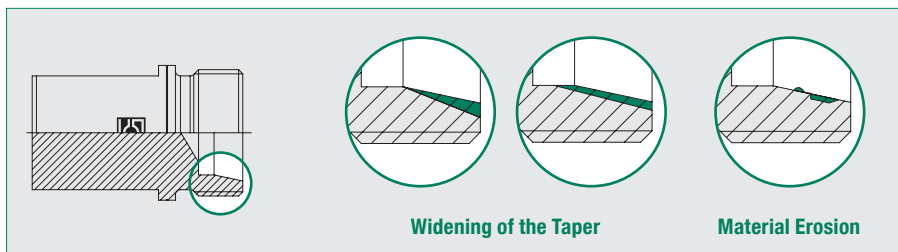


Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation

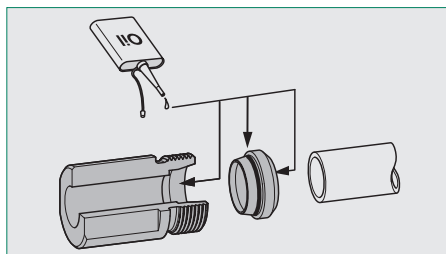


Please note: Hardened assembly studs are wear-resistant, thus allowing for consistent assembly results with a maximum degree of accuracy, reliability and process stability.



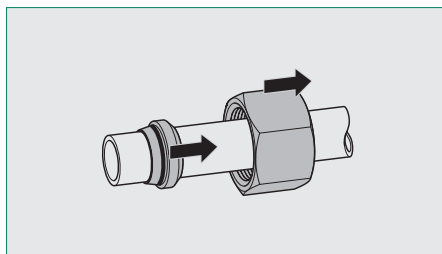
However, they have to be checked for dimensional accuracy regularly. Assembly studs that are damaged and/or dimensionally not accurate must be replaced under any circumstances!

Typical damages include widening of the 24° angle or the entire taper, as well as material erosion.



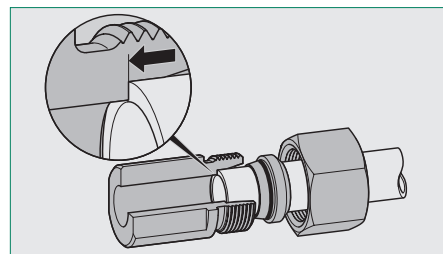
Lightly lubricate the 24° taper of the assembly stud as well as the two soft-sealing elements of the cutting ring (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.



Consecutively put the union nut first and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.



Carefully insert the tube end into the 24° taper of the pre-assembly stud and push it firmly against the inner stop.

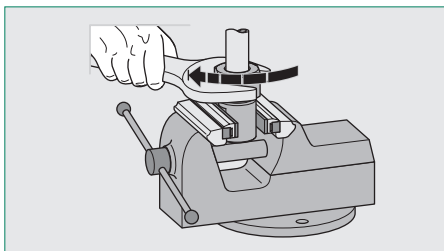
The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.



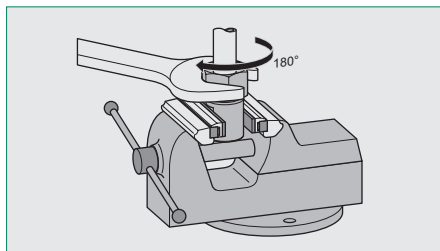
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Soft-Sealing Cutting Ring (Type FI-WDDS)

50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body

3. Assembly in the Assembly Stud

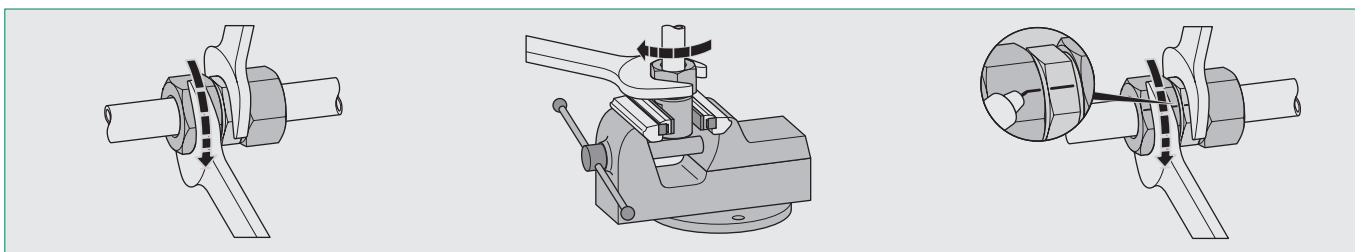


Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



Use a suitable spanner to tighten the union nut another 1/2 a turn (180°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

4. Assembly with the Fitting Body



Lightly lubricate the soft-sealing element located on the 24° taper of the cutting ring (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.

Carefully insert the assembled tube end into the 24° taper of the fitting body.

Use a suitable spanner to tighten the union nut until the point where the cutting ring comes into contact and sits closely with the face side of the fitting body, and pretension it.

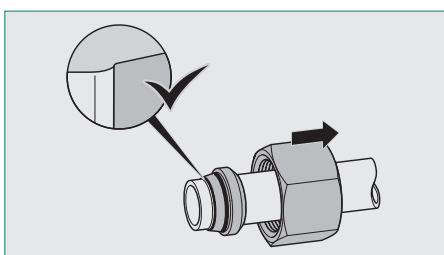
This point is characterised by a significant increase in force and typically situated 1/2 to 1 turns (180° to 360°) beyond the fixed point.

Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.

A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

5. Inspection



Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

6. Repeated Assembly

Check the soft-sealing element located on the 24° taper of the cutting ring for possible damages.

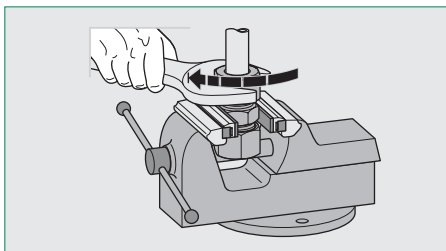
Use a suitable spanner to tighten the union nut until the point where the cutting ring comes into contact and sits closely with the face side of the fitting body, and pretension it. This point is characterised by a significant increase in force.



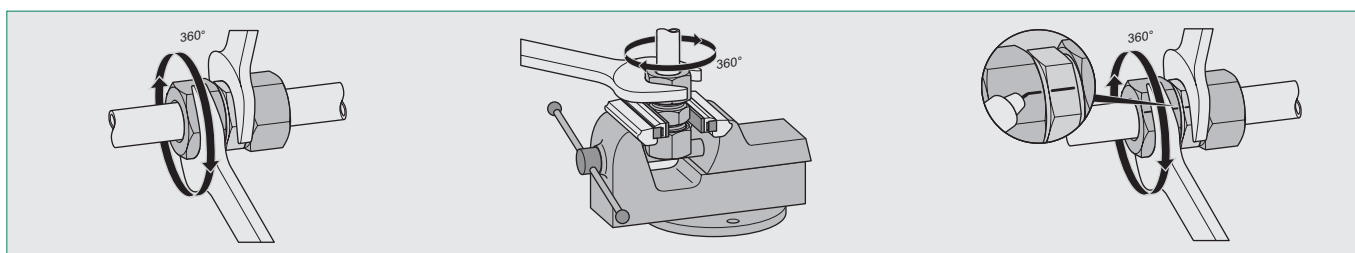
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

Direct Assembly with the Fitting Body

3. Assembly in the Fitting Body



Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



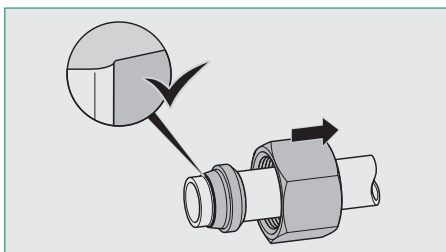
Use a suitable spanner to tighten the union nut another full turn (360°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.

A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

4. Inspection



Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

5. Repeated Assembly

For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.

