



# Guide, safety tips and proper use of Unior hand tools

## Index

Introduction	3	
General safety tools when working	4	
Materials used in Unior tools	4 - 5	
Proper usage		
Wrenches	6 - 10	
Comparison of torques	6	
Open end wrenches	7	
Hook wrenches	8	
Hex and Torx wrenches	9	
Adjustable wrenches	10	
VDE tools	12 - 11	
VDE tests	12	
VDE tools	13	
SOCKETS AND IMPACTS	14 - 15	
Types of Unior sockets	14	
Manufacturing process	14	
SOCKETS AND IMPACTS		15
Pliers	16 - 18	
Manufacturing process	16	
Long nose pliers	17	
Flat nose pliers	17	
Diagonal cutting pliers	17	
Carpenters' and tower pincers	17	
Groove joint pliers	18	
Grip pliers	18	
Hammers	19	
Manufacturing process	19	
Hammers	19	
Pullers	20 - 21	
Manufacturing process	20	
Pullers	21	
SCREWDRIVERS	22 - 23	
Composition of Unior screwdrivers		22
Screwdrivers	23	
Vices	24	
SNIPS	25	
Pneumatic tools	26 - 27	
How to correctly connect	26	
Pneumatic tools	27	
Measuring tools	28 - 29	
Types of Unior measuring tools	28	
Torque wrenches	29	
Workshop equipment	30	
SAFE TOOLS AT HEIGHT	31	

## TRUST IS BASED ON EXCELLENCE

Top-quality hand tools, forgings manufactured in accordance with all standards and requirements, and machinery with proven effectiveness are in themselves proof of the high quality and excellence for which Unior is known. Winning new markets is a testament to the entrepreneurial spirit of the network of companies across the globe. The foundations for the success of the Unior Group lie in the innovative nature of its people and teams and in the responsibility for the people and the environment.



### WE CREATE SATISFACTION WITH QUALITY.

The quality of Unior products is based on carefully planned, managed, and tested processes. We operate in accordance with certified systems and international standards: ISO 9001 ISO/TS 16949 VDA 6.4. ISO 14001

Unior was among the first manufacturers of hand tools in Europe to receive the ISO 9001 quality certification for the development, manufacture, and marketing of hand tools, metal packaging for hand tools, and for mechanical processing of forged parts. The tools are manufactured in accordance with the DIN standard, as proven by the GS Mark. Quality compliance is checked by the German VPA institute. The tools for working at high voltage proudly bear the VDE Mark. The Hand Tools programme operates following the EFQM Excellence Model.

The Forge programme complies with the VDA 6.1, QS 9000, and IATF 16949 automotive standards.

## PROPER USAGE

Hand tools are very dangerous objects if not used correctly by the user. When using tools always follow our recommendations for safe use, and what are the proper and improper usages of the selected tool. In this booklet we have gathered the most common mistakes made by users when working with our professional tools. Always try to follow our recommendations and always check our web page for fresh and up to date information.



The sign indicates what is an improper use of our tools



The sign indicates what is proper use of our tools and how to achieve the maximum life of our hand tools.

## GENERAL TOOL SAFETY TIPS WHEN WORKING



Wear eye protection.



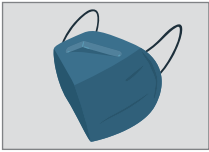
Wear hearing protection.



Wear head protection.



Wear protective gloves.



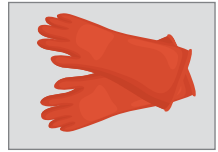
Wear dust mask.



Wear a safety jacket when needed to inform users of your presence.



Wear proper footwear.



Wear safety gloves when working with high voltage.

## MATERIALS USED IN UNIOR TOOLS

### Premium

#### Premium chrome vanadium steel

##### Reliability without wear and tear

When it comes to tools, such as spanners and pipe pliers, for example, which need to withstand high loads, properties such as high tensile strength, the corresponding ductility of the material with higher elasticity and the lowest possible susceptibility to cracking are of particular importance. These requirements are particularly well met by Premium chrome/vanadium steel, an alloyed tool steel with manganese, chrome, silicon and carbon. Tools made from this steel have a long service life and are an excellent choice for many years of use.

### Premium+

#### Premium plus carbon steel

##### For optimal grip and cutting strength

Steel with a medium carbon content is particularly suitable for pliers due to its incorporation of selected alloyed elements. Together with the hardness achieved through inductive tempering, this material property allows for extraordinary clamping strength. Pliers made of various improved steels have a suitable hardness and higher tensile strength, due to their higher carbon content. Manganese also contributes towards improvement, as it increases the ductility of the material. Silicon was used to improve the elasticity of the material, while chrome reduces its susceptibility to cracking.

### Premium<sup>Hard</sup>

#### Premium hard chrome vanadium steel

##### Durability

Hand tools such as screwdrivers, the reliability, safety and long service life of which depend on the elasticity and at the same time the hardness of their shafts, are manufactured from specially alloyed tool steel, which makes it possible to achieve higher strength due to their higher content of selected elements. The molybdenum content of the tool steel Premium Hard chrome/vanadium steel results in their higher durability, tensile strength and ductility, while the increased silicon content ensures their higher elasticity and lower susceptibility to cracking. The appropriate hardness and resistance to wear are achieved with a corresponding carbon content.

## Premium *Hard* +

### Premium Hard Plus carbon steel

#### Effortless cutting

In addition to carbon, manganese, silicon and chrome, this special carbon steel also contains vanadium, which considerably improves the pinching characteristics of the tool by increasing its carbide hardness. Pincers made from this steel prove their excellent efficiency, even when used on the hardest of wires. The high carbon content results in both a higher tensile strength of the material and in increased durability. Improvements made subsequent to the inductive forging process lead to extraordinarily high jaw hardness.

## Premium *Flex*

### Premium flex chrome vanadium steel

#### Excellence that can withstand high torque

A lower susceptibility to cracking is particularly important for tools such as socket wrenches. Tool steel with a higher chrome and manganese content guarantees a higher tensile strength. An appropriate carbon content simultaneously ensures the corresponding hardness of the tool. Premium Flex chrome vanadium steel, an alloyed tool steel with manganese, chrome and carbon, allows for the redesign of tools that can withstand high torques.

## Premium *Flex* +

### Premium flex plus carbon steel

#### Efficiency and durability under considerable crushing and deformation stress

Construction and trade steels have special properties that guarantee their appropriate hardness, ductility and elasticity, as is required for tools such as setters, hammers and screw clamps, which are exposed to great force during hammering and clamping. Steels with a medium carbon content that are used to make tools have a higher carbon content, resulting in better durability. A suitable manganese content increases the tensile strength and ductility of the material, which is particularly important under high load conditions. The chrome content reduces the susceptibility to cracking, while the silicon content increases the elasticity of tool materials subjected to strong forces.

## Premium + Qualicoat

### Premium plus metal sheet

#### Outstanding mechanical properties

Tool trolleys and work benches made by Unior are designed to ensure that tools are easily accessible and can be effectively and safely stored. The tool trolleys and work benches are made from cold-rolled plate steel of high quality. Cold-rolled plate steel is characterised by smooth surfaces and improved strength tolerance. The high-quality steel plate and construction techniques such as optimal reinforcement of the parts subjected to the highest loads ensure higher stability.

#### Qualicoat

#### Compatible with humans and the environment

Unior products are protected against corrosion. High-quality ecological epoxy paints have been applied using powder coating. These paints are environmentally compatible, contain no heavy metals and can be safely used by humans, as confirmed by their accreditation by the International Institute for Public Health.

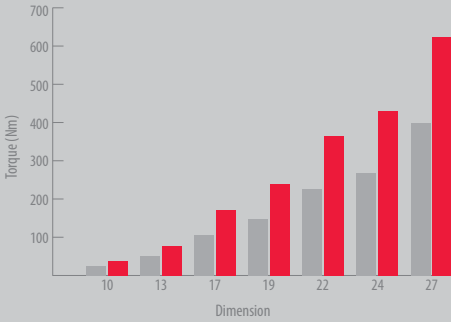
# Manufacturing procedure for a combination wrench at Unior

- 1. Cutting:** Cutting material is the first operation in the technological procedure of wrench manufacturing. Optimum design of a cut provides optimal use of material.
- 2. Forging:** Forging technology at Unior ensures excellent strength characteristics of wrenches. Notably, it maintains appropriate fiber orientation in a forged part, leaving it uninterrupted and the same as in a rolled blank. That characteristic of forged parts is vital for achieving the characteristics of products exposed to heavy dynamic loads, such as Unior wrenches.
- 3. Trimming:** Superfluous material around a forged part is removed using a special-purpose trimming tool; material is trimmed to the desired shape, always making the weight of trimmings as low as possible.
- 4. Perforation:** following the forging and trimming phases, perforations are made in the workpiece by punching or cutting. This procedure can be carried out either on hot or cold workpieces.
- 5. Burring and grinding:** Wrenches are contour-ground on grinding machines, thus making surfaces smooth on the edges of a wrench. After that, edges on forged parts are made smooth in special machines using mechanical and chemical means.
- 6. Machine marking and bending:** Each wrench is impressed with an appropriate marking providing information about the source of a wrench, dimensions and material used. The ring of the wrench is accordingly offset in line with the standard.
- 7. Broaching:** In broaching, suitable gaps are made on special-purpose tools; material is broached with linear motion of a tool incorporating a large number of cutting blades.
- 8. Tempering:** tempering by heating and cooling is designed to improve the grain flow of the steel and thereby increase the toughness of the wrench at the desired points; this heat treatment process grants the Unior wrenches a long lifespan and resistance to high loads and pressure.
- 9. Sanding:** various abrasive substances are blasted onto the surface of the wrenches by means of compressed air. The abrasives burr the surface, while at the same time imparting to it a certain asperity, important for the subsequent application of a suitable galvanic (protective) coating.
- 10. Chrome plating and polishing:** Wrenches are coated with a thin, but solid layer of chromium oxide to protect them from corrosion and other external influence. Chromium coating gives a wrench a professional appearance and warrants a long service life.

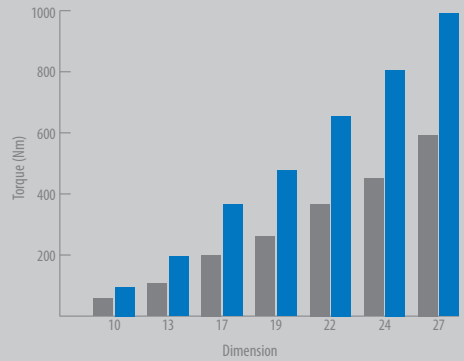
10 main steps out of 24



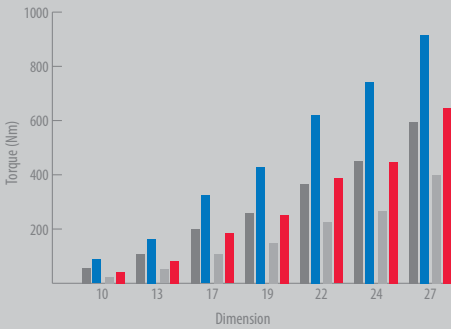
## Comparison of torque 110/1 Open end wrenches



## Comparison of torque 180/1 Ring wrenches



## Comparison of torque 120/1 Combination wrench, long type



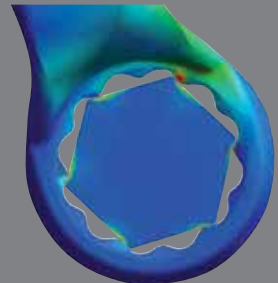
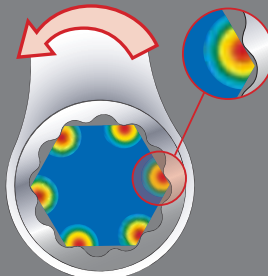
■ ISO 1711-1 (A) ring part  
 ■ UNIOR open end part  
 ■ ISO 1711-1 (C) open end part  
 ■ UNIOR ring part  
 ISO and UNIOR in Nm

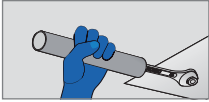


## LIFE profile

Main advantages of LIFE profile

- fastens surface screws, screw-nuts in just six
- protection of screws and screw-nuts edges
- faster position and comfortable work
- suitable also for damaged screws, screw-nuts

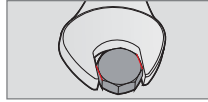




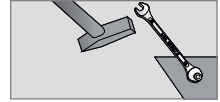
Never use an extension or any form of lever to increase the leverage of a wrench.



Don't use them to free a rusted nut or to finally tighten such a nut.



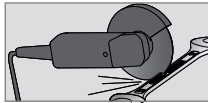
The nut must always be fully seated before use.



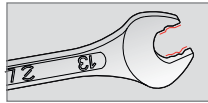
Never use a hammer on wrenches.



Never expose any wrench to excessive heat, which may change the hardness and metal structure and ruin the tool.



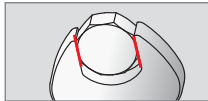
Wrenches should not be ground to change their shape.



Don't use a wrench which has been damaged and weakened by being bent, cracked or severely worn.



Use only hand force, never use any form of lever to increase the leverage.



Select a wrench whose opening exactly fits the chosen nut.



Always pull rather than push and always maintain a proper stance with your feet firm to maintain your balance.



Periodic inspection of hand tools by competent personnel is a safety must.





- Don't hammer on a wrench handle.
- Don't use an extension on the handle.



- Never expose any wrench to excessive heat, which may change the hardness and metal structure and ruin the tool.



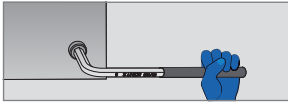
The correct force is only achieved when the hook wrench is used correctly.

#### For use:

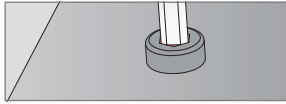
Hook wrenches are machine shop tools. They are used on machine tools for adjusting collars, lock nuts, rings, spindle bearings, face plate draw nuts.



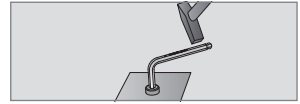
# HEX AND TORX WRENCHES



Never use an extension or other form of lever to increase the leverage of any wrench.



Never tilt a hex wrench. The nut must be fully seated.



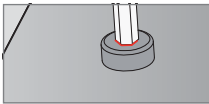
Never use a hammer on hex wrenches.



Never expose any wrench to excessive heat, which may change the hardness and metal structure and ruin the tool.



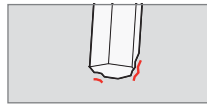
Wrenches should not be ground to change their shape.



Select a wrench whose opening fits exactly.



Always pull rather than push and always maintain a proper stance with your feet firm to maintain your balance.



Don't use a wrench which has been damaged and weakened by being bent, cracked or severely worn.



Periodic inspection of hand tools by competent personnel is a safety must.

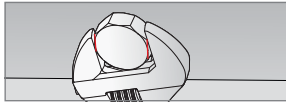


Scan Me!

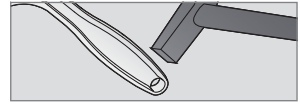
# Adjustable wrenches



Don't use them to free a rusted nut or to finally tighten such a nut.



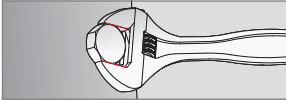
Never pull on a wrench that has a loose fit after it has been adjusted with a fastener. Always tightly adjust an adjustable wrench to fit the nut.



Never use a hammer or extension.



- Discard any wrench with a spread or damaged fixed jaw or a bent handle



Wrenches should be tightly adjusted to the nut and pulled so that the force is on the side of fixed jaw.

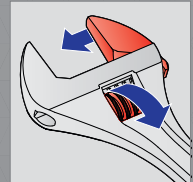
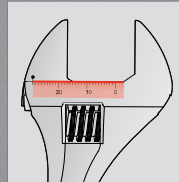
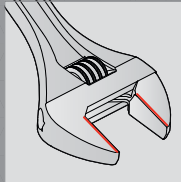
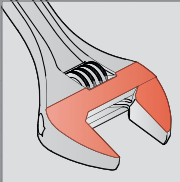


Periodically inspect to check for damaged jaws, knurls, pins and springs. Damaged parts should be replaced.

Adjustable wrenches are used by linemen and other professional workers.

## FEATURES OF

250/1, 250/1ADP, 251/4





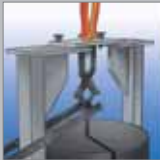
### FLAME RETARDANCY TEST

The flame is applied to the test piece for 10 seconds. The test piece is acceptable if the height of the flame on the burning handle does not exceed 120 mm in an observation period of 20 seconds after the burner has been removed.



### ELECTRICAL TEST (10KV)

Before testing the tools are immersed in a bath of water at 23° C for 24 hours +/- 5 hours. The test pieces are acceptable if there is no electrical discharge, spark over or flashover, and if the current leakage is less than 1mA for 20 mm insulation.



### INSULATION TEST

Before testing the test piece is heated to 70 C +/- 2° C for 168 hours. The hanger is loaded with weights (500 N). The duration of test is 3 minutes. The test piece is acceptable if the handle remains firmly attached to the conducting part.



### STAMP TEST

The indenter is loaded with a weight of 20 N and is applied to the centre of the handle. The test is successful if the test piece subsequently passes the electrical test.



### IMPACT TEST

The test is carried out at a temperature of -23°C. The hammer is allowed to fall freely on the test piece 3 times. The test piece is acceptable if the handle is not cracked, broken or does not show signs of flaking.

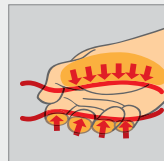
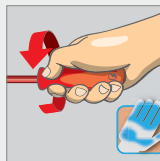


### ERGONOMIC HANDLE!

The combination of hard and soft surface improves the load factor and ensures smooth screwing. The handle was developed in such a way that it takes care of the user's health because it reduces the tension of the hand muscle.



Large hand contact area = more torque power



Ergonomic handle design = protecting your hand



1000V Hand tools for live working up to 1000 V A.C.  
IEC 60900



Sign of the institution certifying the tools (VERBAND DEUTSCHER ELEKTROTECHNIKER).



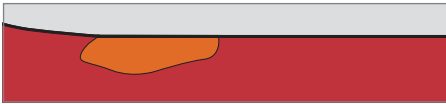
A sign indicating that the tools are in accordance with the signed standard (DIN), which prescribes the basic demands for tools (dimension, hardness, mechanical testing etc.).



Scan Me!



## **BEFORE EVERY USE ALWAYS CHECK YOUR VDE TOOLS FOR SIGNS OF WEAR. IF IN ANY DOUBT ABOUT THE SAFETY OF YOUR VDE TOOLS, DON'T USE THEM, BUT SEND THEM TO A CERTIFIED LABORATORY FOR ELECTRICAL TESTING!**



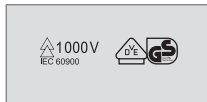
Don't use tools that shows sign of wear and have the second layer of plastic visible.



- VDE tools that have several parts, have to be assembled correctly before use.
- When working with VDE tools avoid contact with water.



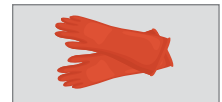
Always check tools for damage.



Always check for the VDE marking on VDE tools for extra safety.

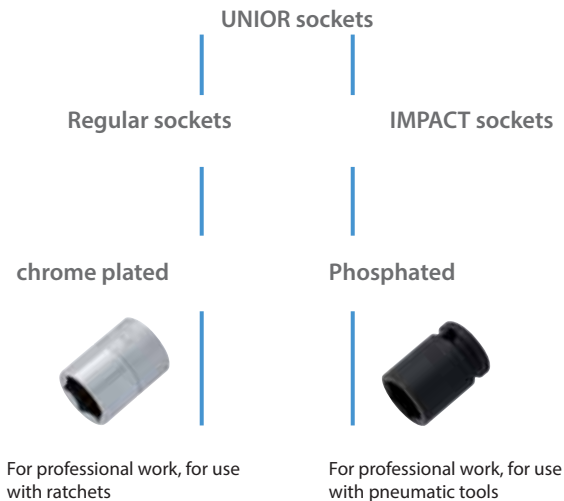


Always use insulated shoes when working with high voltage.



Always use insulated gloves when working with high voltage.

# Types of Unior sockets



## A special procedure for the manufacture of sockets

- 1. Cold forging of the socket:** This uses a two-phase technological process that includes annealing, phosphating, and contracting.
- 2. CNC working of the socket:** A special CNC turning machine is used to work the socket into the required size, which is in accordance with the ISO standard.
- 3. Sanding:** cleaning the surface before chroming is important for the sake of quality and durable surface protection.
- 4. Chroming:** The sockets are plated with a thin, hard coating of chromium oxide that protects against corrosion and wear and other mechanical damage. At the same time it gives the entire Unior socket range a glossy appearance.

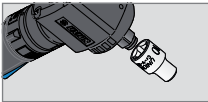
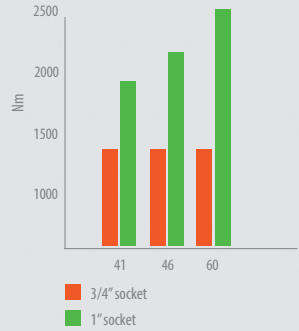
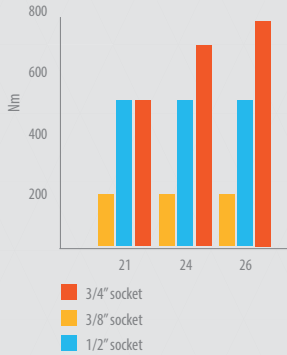
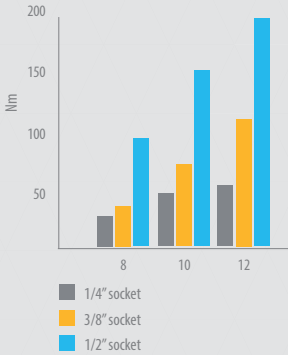




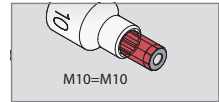
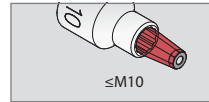
# SOCKETS AND IMPACTS



## Comparison of torques with internal 4 point socket

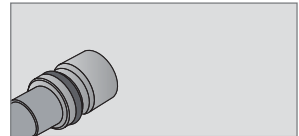
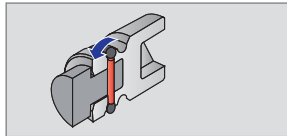
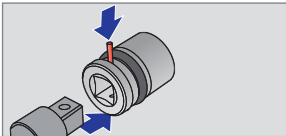


Never use regular sockets with pneumatic tools.



Always use the exact socket dimension, never use sockets that do not fit the nut.

## HOW TO CORRECTLY CONNECT IMPACT SOCKETS?



## A special procedure for the manufacture of pliers

1. **Cutting:** Cutting material is the first operation in the technological procedure of wrench manufacturing. Optimum design of a cut provides optimal use of material.
2. **Forging:** Forging technology at Unior ensures excellent strength characteristics of wrenches. Notably, it maintains appropriate fiber orientation in a forged part, leaving it uninterrupted and the same as in a rolled blank. That characteristic of forged parts is vital for achieving the characteristics of products exposed to heavy and dynamic loads.
3. **Trimming:** Excess material is removed from forged parts using a special-purpose tool that trims products along the dividing shape. Some products are also trimmed when hot, thus preventing major mechanical surface deformation on the cut part and providing a quality basis for undisturbed machining.
4. **Joint processing:** Using a special-purpose CNC machine, a bore hole is drilled that will serve as the pivot point for pliers. At the same time, the joint is milled and sliding surfaces are made, ensuring precise and undisturbed movement of pliers during use.
5. **Broaching**
6. **Shaping the head part of pliers:** Using a special-purpose trimming tool with linear movement, complex surfaces of pliers are shaped. That operation includes the shaping of external radii of the joint and teeth on the jaw used to grip various shapes.
7. **Milling the cutting edges:** A special-purpose CNC machine is used for making cutting edges, thus giving pliers the relevant functionality. Important elements are the angle of a cutting edge and the thickness of the edge top. Optimum and accurate machining of cutting edges gives pliers the properties required to cut wire.
8. **Riveting:** Pliers are assembled and riveted together with a rivet. At that stage, it is important to ensure that the joint is firm enough, while still allowing the jaws to move freely, but with no slack.
9. **Wet grinding**
10. **Machining the head part of pliers:** At that stage, the surface of pliers is evened to remove any differences in height that might appear as a result of thickness tolerance margins when making a forged part or during further machining, including riveting.
11. **Shaping:** Using a tape grinding machine, the remaining untreated surfaces are ground to create better quality surfaces than can be achieved in the forging process. The pliers now have their final shape, but the roughness of individual surfaces still needs to be adjusted.
12. **Quenching and tempering:** The heat treatment of pliers is carried out by annealing pliers in oil and then tempering them. Such type of heat treatment ensures an appropriate microstructure of the material and excellent strength properties of the final product. Quality heat treatment maximises the mechanical properties of the material and gives pliers a long service life.
13. **Sanding:** At this stage, the product surfaces are struck with abrasive materials to even the roughness of surfaces and remove the oxides that appear during heat treatment. The sanded surfaces are evenly rough and precise, giving products a better appearance. Some surfaces are later even more precisely treated, giving them a contrasting look.
14. **Induction hardening:** The cutting edges of pliers must be covered with a thin layer of very rigid surface that is able to withstand damage caused by cutting solid wires.







## PLIERS



- Don't use pliers for cutting hardened wire, unless specifically manufactured for this purpose.
- Don't expose pliers to excessive heat. This may ruin the tool.
- Don't use pliers as a hammer.
- Don't hammer on the handles. They may crack or break.
- Don't extend the length of plier handles to secure greater leverage.
- Don't use pliers on nuts or bolts. A wrench will do a better job and with less risk of damage to the fastener.



- Pliers should be oiled regularly. A drop of oil at the hinge will lengthen the tool life and assure easy operation.
- When cutting wire with pliers, you should always wear glasses or goggles.
- Handles are provided for comfort. They are not intended to give user any degree of protection against electric shocks and should never be used on live electric circuits.

## LONG NOSE PLIERS

Long nose pliers are designed for electrical, telephone and electronic work with smaller wire gauges. They will reach into awkward places and perform work difficult with any other tool. Their usefulness is not limited to wire work.

## FLAT NOSE PLIERS

Flat nose pliers have diverse uses in the electrical, telephone, electronic and other fields. They are extensively used in typewriter repair and assembly work and in textile weaving and knitting operations.

## DIAGONAL CUTTING PLIERS

They are designed for electrical, electronic, telephone, automotive and general work.

## CARPENTERS AND TOWER PINCERS

They are designed for cutting soft wire, nails, and rivets close to a work surface.



## GROOVE JOINT PLIERS

Widely used by plumbers, electricians, auto mechanics and professionals in the construction and industrial fields. They can grip round, square, flat and hexagonal objects and are capable of applying limited torque without damage to the work piece.

## GRIP PLIERS

These pliers can function as pliers, wrenches, portable vices or clamps.



- Don't hammer to tighten jaws or to cut wire or bolts.
- Don't expose wrenches or clamps to heat from welding torches or to contact with welding electrodes.
- They should never be used as steps or ladders to support personnel.
- Don't use pipes, other extensions, or hammering to increase the torque applied to these tools.
- When subjected to severe vibration such as encountered during riveting, locking wrenches or clamps holding the work pieces should be wired or taped closed to prevent accidental opening..

## A special procedure for the manufacture of hammers

### HAMMER

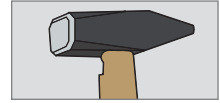
- 1. Cutting:** Cutting material is the first operation in the technological procedure of wrench manufacturing. Optimum design of a cut provides optimal use of material.
- 2. Forging:** Forging technology at Unior ensures excellent strength characteristics of wrenches. Notably, it maintains appropriate fiber orientation in a forged part, leaving it uninterrupted and the same as in a rolled blank. That characteristic of forged parts is vital for achieving the characteristics of products exposed to heavy and dynamic loads.
- 3. Trimming:** Superfluous material around a forged part is removed using a special-purpose trimming tool; material is trimmed to the desired shape, always making the weight of trimmings as low as possible.
- 4. Broaching:** the appropriate size of the hammer is achieved by broaching.
- 5. Induction hardening:** Local heating and tempering of a hammer on the impact surface ensures a high degree of hardness for the functional part of Unior hammers. Annealing provides optimum microstructure and necessary hardness on impact surfaces. That ensures a long service life of hammers.
- 6. Coating:** the surface is protected by electrostatic coating.

### HANDLE

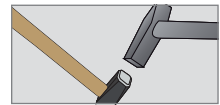
- 7. The handle** is made using selected ash tree wood with the required characteristics in accordance with the DIN 68340 standard. It is protected with wax.
- 8. Forging part:** making the blue inscription, which also reminds the user to handle the hammer correctly.

### ASSEMBLY

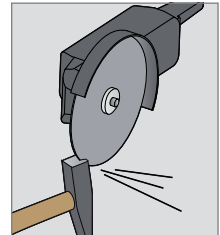
- 9. Final assembly:** the trained, skilled and meticulous workers performing the final assembly will assemble the product into a solid whole that ensures the functioning and high quality of the Unior hammers.



Don't use handles that are rough, cracked, broken, splintered and loosely attached to head.



Don't use one hammer to strike another hammer.



Don't grind, weld or reheat-treat a hammer head.

## A special procedure for the manufacture of pullers

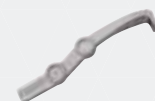
### HEAD (BODY)

1. **Cutting:** Cutting material is the first operation in the technological procedure of wrench manufacturing. Optimum design of a cut provides optimal use of material.
2. **Forging:** Forging technology at Unior ensures excellent strength characteristics of wrenches. Notably, it maintains appropriate fiber orientation in a forged part, leaving it uninterrupted and the same as in a rolled blank. That characteristic of forged parts is vital for achieving the characteristics of products exposed to heavy and dynamic loads.
3. **Trimming:** Superfluous material around a forged part is removed using a special-purpose trimming tool; material is trimmed to the desired shape, always making the weight of trimmings as low as possible.
4. **CNC working:** a CNC machine is used to accurately work the head of the puller, which ensures smooth movement of the small handles.
5. **Threading:** the accurate threading of the internal trapezoid thread ensures the smooth movement of the spindle and thus enables rapid adjustment when using the puller.
6. **Heat treatment (quenching and tempering) and sanding:** the heat treatment with hardening and tempering is intended to improve the structure of the steel, to provide greater hardness and toughness of the product and other properties required to overcome the strain that work with such products requires.
7. **Sanding:** cleaning the surface before chroming is important for the sake of quality and durable surface protection.
8. **Chroming:** the handle of the puller is plated with a thin, hard coating of chromium oxide, which protects against corrosion and wear and other mechanical damage. At the same time, it gives the entire Unior puller a glossy appearance.



### SPINDLE

9. **Forging part:** the forging part is made by warm upsetting, which provides the shape of the spindle head
10. **CNC working:** the CNC machine is used to accurately work the spindle that is the basis for thread rolling.
11. **Thread rolling:** is carried out on a special machine with special rollers. The resulting trapezoid thread is intended for use under greater strain.
12. **Heat treatment (quenching and tempering) and sanding:** the heat treatment with hardening and tempering is intended to improve the structure of the steel, to provide greater hardness and toughness of the product and other properties required to overcome the strain that work with such products requires.
13. **Sanding:** cleaning the surface before chroming is important for the sake of quality and durable surface protection.
14. **Burnishing and oiling:** Burnishing gives a spindle a proper professional appearance and, together with the right oil, the necessary surface protection.



### SMALL HANDLE

15. **Forging and trimming a small handle:** A forged part is made using drop forging technology. Drop forging provides various ergonomic product shapes. Suitable forging procedures maintain appropriate fiber orientation, leaving it the same as in rolled blanks. Superfluous material around a forged part is removed using a special-purpose trimming tool; material is trimmed to the desired shape, always making the weight of trimmings as low as possible.
16. **Hole broaching and CNC treatment:** Broaching shapes the tip of the jaw. The latter must have optimal thickness for the necessary functionality of the broach. That is followed by CNC treatment of small handles that provides the necessary positioning of the broach assembly.
17. **CNC working:** CNC working of the small handles provides accuracy and thus improves the functioning of the entire product.
18. **Heat treatment (quenching and tempering) and sanding:** Heat treatment with annealing and tempering is intended to enhance the structure of steel, product strength and toughness, and other properties required to withstand the loads to which such a product is exposed to. Sanding is used to clean the surface for further operations.
19. **Sanding:** cleaning the surface before chroming is important for the sake of quality and durable surface protection.
20. **Chroming:** the handle of the puller is plated with a thin, hard coating of chromium oxide, which protects against corrosion and wear and other mechanical damage. At the same time, it gives the entire Unior puller a glossy appearance.



### ASSEMBLY

21. **Final assembly:** the trained, skilled and meticulous workers performing the final assembly assemble the product into a solid whole that ensures the functioning and high quality of the Unior puller.

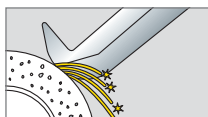




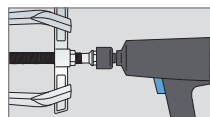
Don't use a spindle that is damaged.



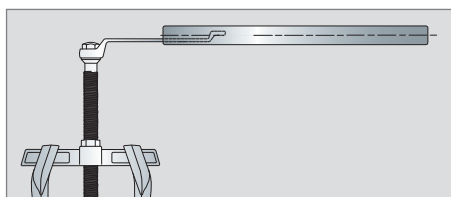
Don't use a puller which has a dirty spindle. Always clean your tools properly.



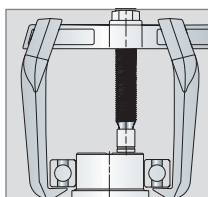
Don't grind, weld or reheat-treat puller arms.



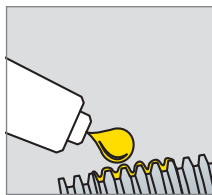
Don't use pneumatic tools with pullers.



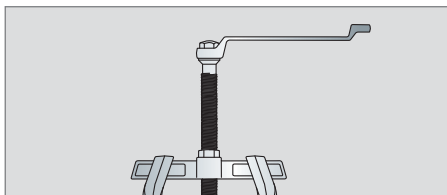
Never use a pipe extension or other form of lever to increase the leverage.



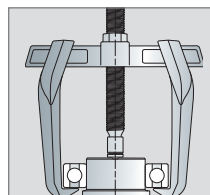
Never put the puller spindle off centre, as slippage of the puller arm can occur.



Always oil the puller spindle.



Always use the right tool for the job.



Always centre the puller spindle on the middle of the object, so the holding arms are distributed evenly on the body.

## TBI handles for screwdrivers are composed of three layers, namely:

1. layer: black PP (polypropylene) which surrounds the stem of the screwdriver and is extremely solid, preventing the turning of the screwdriver stem in the handle at high torque
2. layer: blue PP (polypropylene) which surrounds the 1st layer of the handle is very stiff and ensures the constant shape of the handle under various environmental effects
3. layer: grey TPE (thermoplastic elastomer) which partially surrounds the 2nd layer of the handle is a medium-strength material that gives the handle its final ergonomic shape, ensures a pleasant and non-slipping grip and thereby the achievement of high torques

Able to fit a variety of screw profiles and exhibiting innovative three-component handles, UNIOR screwdrivers ensure great efficiency and a slip-proof grip.

Unior screwdrivers are made of premium hard chrome vanadium steel. The surface is additionally protected with quality nickel and/or chrome plating. The superior quality of materials used for Unior screwdrivers is complemented by well-thought ergonomically designed handles to provide the best possible grip.

With its combination of soft and hard surfaces, the special, three-component handle – a Unior patent – ensures comfort and efficient performance with minimum strain on the wrist while working. The soft material ensures maximum gripe even when oily.

Along with the varied consistency of the plastic handle practically eliminating the danger of the screwdriver slipping in the hand, the improved grip also ensures greater torque. This can also be achieved by inserting a rod in the perforation added with this purpose to all handles functioning also as a hanging hole for handier storage.

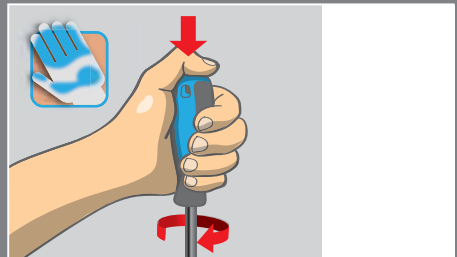


### ERGONOMIC HANDLE!

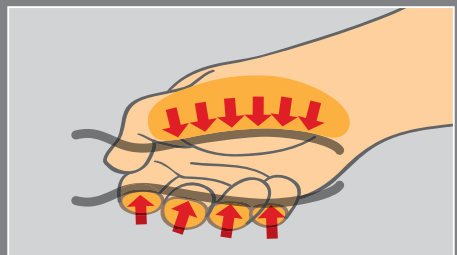
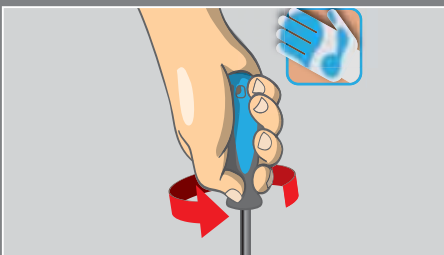
The combination of hard and soft surface improves the load factor and ensures smooth screwing. The handle was developed in such a way that it takes care of the user's health because it reduces the tension of the hand muscle.



Large hand contact area = more torque power



Ergonomic handle design = protecting your hand





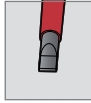
Scan Me!



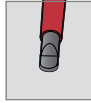
- Don't use pliers on the handle of a screwdriver to get extra turning power. A wrench should only be used on the square shank or bolster of a screwdriver that is especially designed for that purpose.
- Don't expose a screwdriver blade to excessive heat as it may reduce the hardness of the blade.
- Don't use a screwdriver with a split or broken handle.
- Don't use a regular screwdriver to check a storage battery or to determine if an electrical circuit is live.



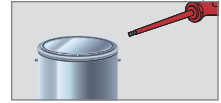
Don't use a screwdriver for stirring paint.



Don't use a screwdriver with rounded edges or tips; it will slip and cause damage to the work or yourself.



Don't use a screwdriver near live wires or for electrical testing.



Don't use a screwdriver for prying, punching, chiselling, scoring or scraping.



- Use a screw holding screwdriver to get screws started in awkward, hard-to-reach areas.
- Use a stubby screwdriver in close quarters where a conventional screwdriver cannot be used.
- A rounded tip should be redressed with a file; make sure edges are straight.
- Screwdrivers used in the shop are best stored in a rack. This way, the proper selection of the right screwdriver can be quickly made.
- Keep the screwdriver handle clean; a greasy handle is apt to cause accidents.
- A screwdriver should never be used as pry bar. If it is overstressed in this manner, the blade might break and send a particle of steel into the operator's arm or even towards his eyes.



- Don't use the jaws of a vice as an anvil.
- Never use an extension handle for extra clamping pressure.
- Never pound on the handle to tighten beyond hand pressure.
- Never try to repair a vice by welding or brazing.
- Don't try to bend a heavy rod in a light vice.



- Avoid clamping with heavy pressure on the corner of the vice jaws as it may break off a corner of a jaw.
- Replace a bent handle as soon as possible.
- Use bolts in all of the holes in the base of the vice.
- Use lock washers under the nuts.
- When work is held in a vice for sawing, saw as close to the jaws as possible to prevent vibrations. Be careful not to cut into the jaws.
- When clamping extra long work, support the far end of work rather than putting extra pressure on the vice.
- Regularly lightly oil all moving parts.
- If the threaded part of the vice is exposed, keep it free of chips and dirt.
- Discard any vice that exhibits the slightest hairline fracture.
- Always use a vice large enough to hold the work without strain.



Wear safety glasses when hammering or pounding on an object held by the vice.

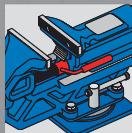


Replace worn jaw inserts with new.

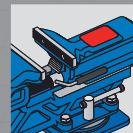
## FEATURES OF UNIOR VICE 721/6Q



UniPRO slides ensure precise running of moving parts.



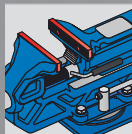
Quick moving system.



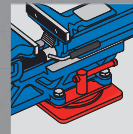
Grounded working place.



Fixed jaws for pipes holding.



Drop forged jaws from tool carbon steel, hardened and tempered.



Swivel base can be rotated for 360°.





Scan Me!



- Don't try to cut sharp curves with straight cut snips.
- Don't sharpen a snip blade.
- Don't use snips as a hammer, screwdriver or pry bar. Use proper tools for the job.
- Don't store snips in a drawer with other tools. Tools with cutting edges should always be treated with extra respect.



- Never hammer, or use your foot to get extra pressure on the cutting edges.
- Be careful of sharp edges on the cutting edges of these tools.
- Use only hand pressure for cutting.
- Never hammer, or use your foot to get extra pressure on the cutting edges.
- Snips should be carefully put away after use. Wipe the cutting edges with a lightly oiled rag.
- Oil the pivot bolt on the snips occasionally.

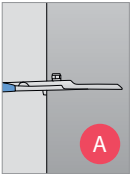


Always wear safety goggles when using snips.

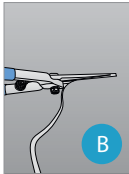


Wear gloves when working with snips.

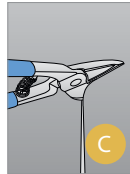
## ALWAYS WEAR SAFETY GOOGLES WHEN USING SNIPS.



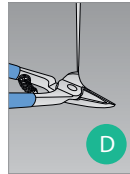
For long, straight continuous cuts.



For short straight and shaped cuts.



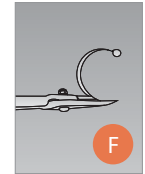
For straight continuous and shaped cuts.



For straight continuous and shaped cuts.



For short, straight and shaped cuts.

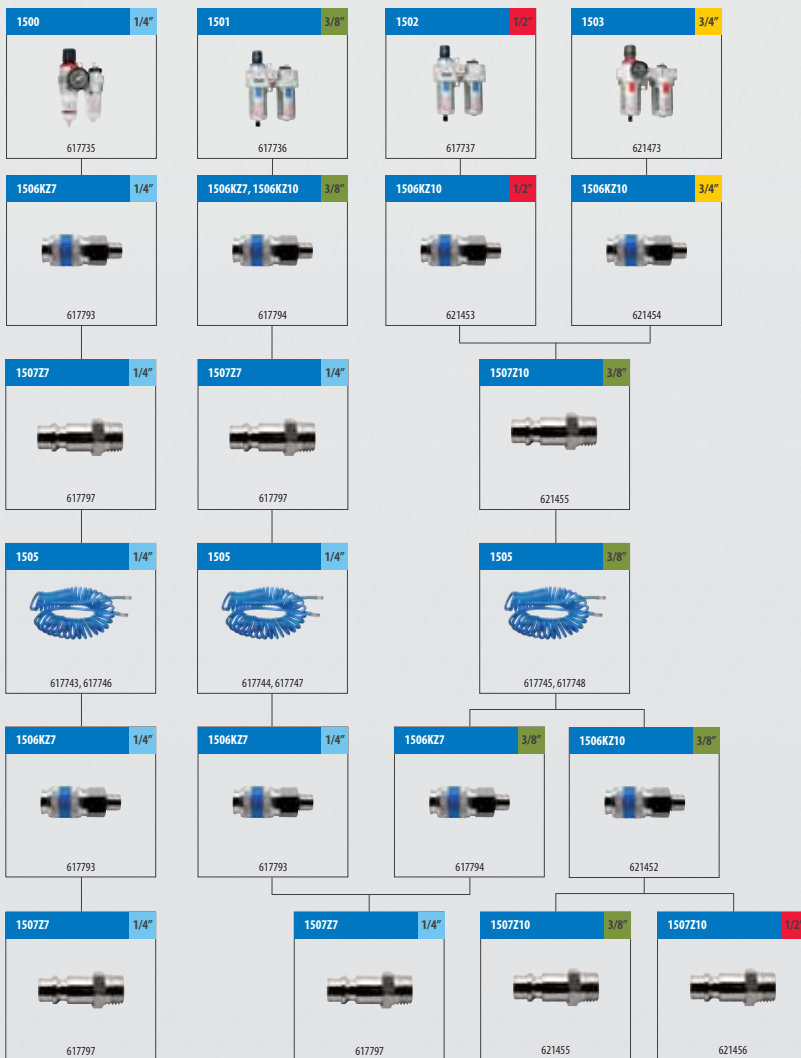


For short, straight and shaped cuts.

# How to connect Unior Pneumatic tools?



maximum air pressure : 9.5 Bar



## How to fasten with the right wrench?

1506KN7	617795	1/4"	20
1506KN7	617796	3/8"	20
1506KZ7	617793	1/4"	20
1506KZ7	617794	3/8"	20
1506KZ10	621452	3/8"	24
1506KZ10	621453	1/2"	24
1506KZ10	621454	3/4"	27
1507Z7	617797	1/4"	14
1507Z7	617798	3/8"	19
1507Z7	618483	1/2"	22
1507Z10	621455	3/8"	17
1507Z10	621456	1/2"	24
1507Z10	621457	3/4"	27

- 1508A (617767)
- 1508B (617768)
- 1514 (615320)
- 1531 (615318)
- 1522 (627565)

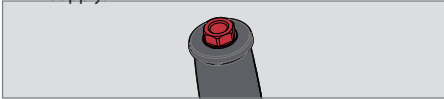
- 1517 P (617728)
- 1517 S (617729)
- 1541 (615320)
- 1561 (615322)
- 1551 (615319)
- 1562 (615321)
- 1571 (615324)
- 1510 (617733, 617713)
- 1514 (617714, 617715)
- 1532 (627566)
- 1552 (627567)
- 1563 (627568)
- 1515 (617726)
- 1515 H (617727)
- 1516 (617731)
- 1516 A (617732)
- 1531 (615318)
- 1518 (617730)
- 1564 (627569)
- 1566 (627570)

- 1572 (615323)
- 1573 (627571)

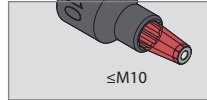
- 1591 (615325)
- 1592 (615326)
- 1596 (617690)
- 1597 (617691)



- Always disconnect tools not in use from the air supply.



Don't oil pneumatic tools directly, always use Unior pneumatic filter regulators and lubricators for this job.



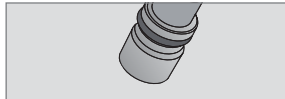
Always use proper dimensions of IMPACT sockets to avoid accidents and damage.



- The pressure in the tool during the operation has to be at least 6.2 bar for the tool to work properly.
- Regularly clean and dry the air filters and inlet air supply.
- Always use clean and dry air with the correct mixture of oil, for maximum tool life.
- Check the joints and ensure that the tubes and other equipment are not damaged before use.
- All tools should be gently oiled prior to being stored.
- Always store pneumatic tools in dry places away from water.
- Always use original spare parts.
- Repairs can be performed only by authorised staff people authorised by Unior d.d.



The pressure in the tool during the operation has to be at least 6.2 bar for the tool to work properly.



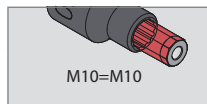
Always use IMPACT sockets with pneumatic tools.



Tool must be cleaned and lubricated after every use.



Always use proper dimensions of oil filter regulators, hoses and couplings according to our pneumatic tool scheme.

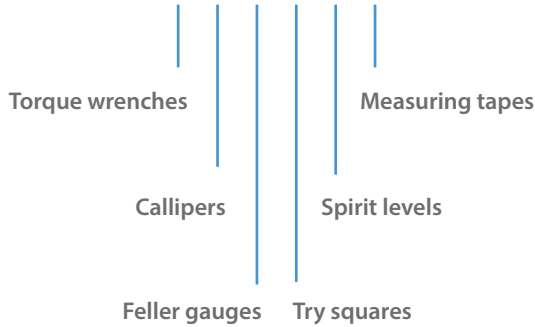


Always use proper dimensions of IMPACT sockets with pneumatic tools to avoid accidents and damage.

# Types of Unior measuring tools



## TYPES OF MEASURING TOOLS UNIOR OFFERS



### Torque wrenches

Unior offers a broad range of professional torque products. Our torque product line ranges from dial torque wrenches, slipper torque wrenches, torque wrenches and industrial torque wrenches. Each torque wrench is manufactured to precise specifications for maximum performance for your torque application.

Each Unior torque wrench includes Calibration Certificate that verifies the actual readings.

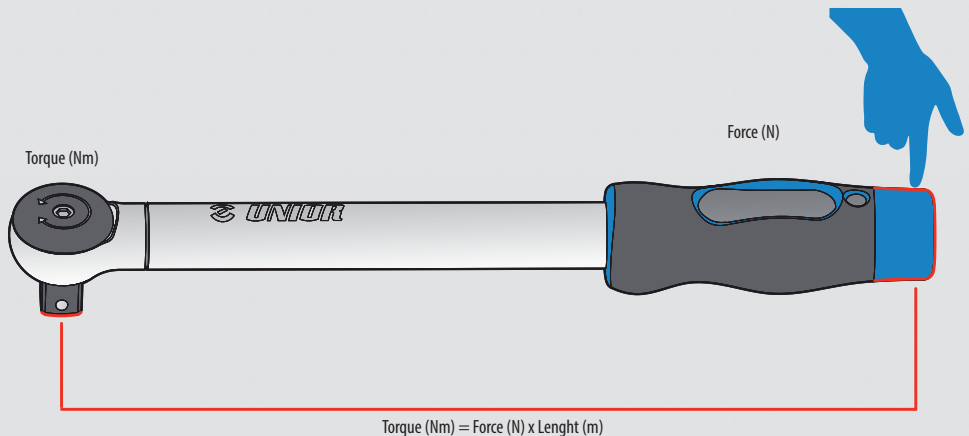
Unior torque wrenches are certified to meet, and exceed the standards specified in ISO 6789.

### What is torque wrench?

A torque wrench is a wrench used to precisely set the torque of a fastening such as a nut or bolt. It is usually in the form of a socket wrench with special internal mechanisms.

A torque wrench is used where the tightness of screws and bolts is crucial. It allows the operator to measure the torque applied to the bolt so it can be matched to the specifications.

This permits proper tension and loading of all parts. A torque wrench indirectly measures bolt tension. The technique suffers from inaccuracy due to inconsistent friction between the fastener and its mating hole. Measuring bolt tension (bolt stretch) is more accurate but most often torque is the only means of measurement possible.





**TORQUE WRENCHES ARE MEASURING INSTRUMENTS, SO ALWAYS HANDLE THEM AS SUCH. WHEN NOT IN USE, ALWAYS SET YOUR TORQUE TOOLS TO VALUE 0 AND DO NOT USE THEM FOR ANY OTHER OPERATION.**



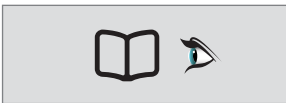
Don't store a tool that is dusty and not cleaned after use.



Don't use a torque wrench with an extension unless specifically permitted or supplied by manufacturer.



- Only an authorised person in a certificated service centre can perform technical maintenance.
- Tools should always be serviced and calibrated by a certified service engineer.
- Tool should only be used for precise tightening as specified in the instruction manual.
- Check instruction manual on how to read the value scale on the tool properly.
- Stop tightening after hearing a feedback from the tool.
- Use only sockets with the same square drive.
- Always return the value on the scale back to 0 after usage and before storing.



Always check that tool has a valid certificate and always follow the calibration interval specified in the instruction manual for your tool.



When applying torque, always apply it with even and constant pressure.



The torque wrench must always be kept protected in its original packaging when not used.

For use in:

Auto & moto repair and maintenance, agricultural machinery repair and maintenance, aerospace repair and maintenance, industrial machinery application, whenever regulations demand precise tightening, when you want to tighten a group of bolts evenly.



- Don't open two or more drawers at the same time, there is high chance of it tipping over.
- Don't throw tools into drawer, always put the tools in.
- Don't use an opened drawer as a working surface.
- Don't clean a lacquered surface with a solvent cleaner.
- Don't pull a tool cabinet as you won't be able to see where you are headed. Push it in front of you so you can see where you are going.
- Don't stack a tool cabinet with too many extra chests or tool trays; it may tip over at the most unexpected time.
- Don't roll a tool cabinet with loose tools or parts on top of the cabinet.
- Don't roll a tool cabinet too quickly; a pot hole in the floor or some hardware on the floor may cause an accident.
- Don't overload the drawers; if you haven't got room for all of your tools, you need a larger tool cabinet.
- Don't open up too many loaded drawers at a time; close each drawer before opening up another. Heavily loaded opened drawers are an invitation to tipping.



- Lock all your drawers before trying to roll the tool cabinet into a new work area.
- Set the brakes on the locking casters after you have rolled the cabinet to your work area.
- Treat you tool cabinet, chest, or tool box with respect.
- Always follow the prescribed max load capacity of individual drawers and the cabinet as a whole.
- Always put heavier objects in the bottom drawers
- Always close drawers when not in use.
- Always follow manufacturer manual instructions regarding assembly and repair of your tools.



- Don't use tools without attaching them to your work belt when working at height.
- Don't use and fix damaged tools.
- Don't exceed maximum weight of 2.3kg for individual tools that a worker can attach to their belt.



- Always change tools in secure areas where there is no risk of falling tools.
- Always use tools with Unior carabiners and never use carabiners with a diameter less than 6mm.
- Tools being used at height should regularly be checked for damage and that there is no damage to lanyards, carabiners, attachment rings or belts.

## CORRECT SWITCHING OF TOOLS



Correct loading of tools on to tool belt.



The carabiner on the lanyard is attached to the ring on the tool. The rings on the tools are large enough to accept 2 carabiners.



The carabiner on the lanyard has to be protected against opening using a lock ring.



Before removing the tool from the belt, unscrew the lock ring on the carabiner on the belt.



Open the carabiner on the belt and remove the tool, which is attached to a lanyard, from the carabiner on the belt. The tool is now ready for use.



Correct attachment of the tool to the lanyard. Return the tool to the belt following the steps in reverse order.

## CORRECT SWITCHING OF SOCKET ELEMENTS.



Use of ratchet. The ratchet does not have a button for switching sockets like a standard ratchet.



Using the socket remover (Article 1111) depress the pin in the hole while removing the socket from the square drive of the ratchet and then switch the socket or extension.



When mounting sockets or extensions make sure that the hole in the socket and the pin on the square drive are aligned. Using the socket remover (Article 1111) depress the pin while attaching the socket. Make sure that the pin clicks into the hole.

