

SDM BATTERY SERIES

25-680 Nm



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1. Before taking into use

Read and understand the contents of this manual before installing, operating, repairing, maintaining, changing accessories this tool. Only qualified and trained operators should install, adjust or use the tool.

2. Charging the battery

2.1 Slide the battery in the charger, this should go smoothly otherwise the alignment isn't correct or the battery / charger grooves are damaged. In that case check the battery and charger and replace the damaged item, do not repair.

Cool down the charger when charging more than two battery packs consecutively. Do not insert your fingers/nails into contact hole, when holding charger or any other occasions. Place charger in a relatively cool and well-ventilated area.

Plug charger into the AC outlet. CAUTION: Ensure that the power source to be utilized conforms to the power requirement specified on the product nameplate. If the red power light does not light immediately or goes out soon after the charger is plugged in, consult an authorized dealer.

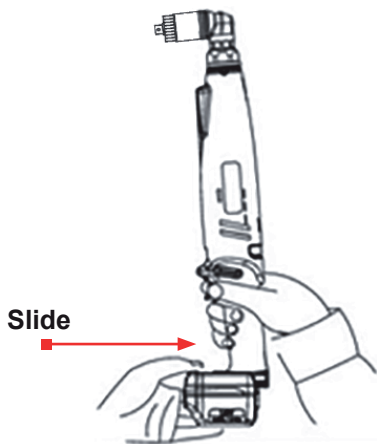
During charging, the charging light (green) will start flashing. When charging is completed, an internal electronic switch will automatically be triggered to prevent overcharging. Charging will not start if the battery pack is warm. For example, immediately after heavy-duty operation. The yellow standby light will be flashing until the battery cools down.

Once the battery is fully charged, the green lamp will be lit to indicate the charger is in float charging mode.

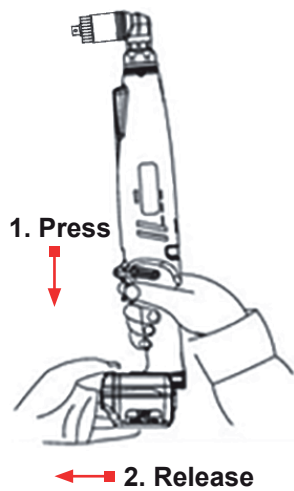
Alignment marks



2.2 Mounting the battery



2.3 Removing the battery



2.4 Battery charger light indication

		Red Lamp Charger is plugged into the AC outlet. Ready to charge.
		Yellow Flashing (1) When the temperature of the battery is too low ($<0^{\circ}\text{C}$ ($<32^{\circ}\text{F}$)), it is in a trickle charge mode until the temperature of the battery goes up to over 0°C ($<32^{\circ}\text{F}$). The lamp will change from the Yellow Flashing to Green Flashing automatically and start to charge. (If after 70 minutes, the lamp changes from yellow flashing to yellow lit, consult an authorized dealer.) (2) When the temperature of the battery is too high ($>40^{\circ}\text{C}$ (104°F)), it is in a trickle charge mode until the temperature of the battery drops to under 40°C (104°F). The lamp will change from the Yellow Flashing to Green Flashing automatically and start to charge. (If after 70 minutes, the lamp changes from yellow flashing to yellow lit, consult an authorized dealer.) (3) When the voltage of the battery is too low (below 14.4 voltage), it is in a trickle charge mode until the voltage of the battery reaches to the standard value. The lamp will change from the Yellow Flashing to Green Flashing automatically and start to charge. (If after 20 minutes, the lamp changes from yellow flashing to yellow lit, consult an authorized dealer.)
		Yellow Lamp The battery and the charger are not connected. If the yellow lit still on after trying re-attach the battery, consult an authorized dealer.
		Green Flashing Now start charging
		Green Flashing Battery is approximately 50% charged.
		Green Flashing Battery is approximately 80% charged.
		Green Lamp Charging is complete. (Fully charged.)



NOTE: Do not ignore safety precautions!

3. Safety

- Do not modify this tool in any way, this can cause danger for the operator.
Make sure that this manual is accessible at all times for any relevant person, in case of loss of this manual ask your dealer for a new copy.
- Risk of explosion or fire: Make sure that generated sparks and/or increased temperature of the work piece can not cause any explosion or ignite a fire.
- Make sure that during operation of the tool no projectiles can be generated, this can be dangerous and may cause injuries.
- Make sure that the work piece is securely fixed.
- Make sure that the inserted tool or accessory is mounted correctly, if not it may cause high speed projectiles.
- Make sure that no dangerous circumstances can occur for other persons in the work area.
- Always wear safety glasses during operation of the tool. The grade of protection must be in relation to the risk of the operation.
- Rotating mounted accessories can be easily entangled by rubber coated or metal reinforced gloves. Wear suitable gloves.
- Keep fingers out of reach of the inserted tool or accessory.
- Never hold the drive shaft, socket, bit, inserted/mounted tool/accessory with your hands while rotating.
- For impact and impulse wrenches: Only use impact sockets, see our Action catalogue.
- The use of safety-/working gloves is recommended.
- Use ear protection as instructed by your employer or as required by occupational health and safety requirements.
- Reasonable countermeasures have to be taken to keep the noise level as low as possible.
- Always check that the mounted tool or accessory is not damaged. Breakage and flying fragments can cause injuries.
- Keep rotating parts out of reach of any body part. In case of long hair, wear a hairnet otherwise it can be trapped causing injuries. Never wear loose clothing, wear suitable clothing otherwise it can be trapped causing injuries.
- Only use accessories for this tool that are designated for this tool by its manufacturer.
- Convince yourself that no persons are in the working zone or danger zone.
- The advised minimum age for operating this tool is 18 years.
- This tool is not intended for use in potential hazardous areas and is not insulated from coming into contact with electric power.
- Wear the appropriate clothing to feel comfortable at the workplace.
- On overhead work, use safety helmet.
- Due to the process, the work piece, inserted/mounted tool/accessory may get hot causing burning injuries: Be aware of this.



- Never let the tool run free in the air: the accessory may come loose and become a projectile causing danger or injury.
- Only use accessories that are in good condition, worn accessories can be dangerous and cause injuries.
- Only trained and qualified operators should use the tool.
- Never use a damaged tool. Tools shall be inspected periodically to verify that the ratings and markings required by the applicable part of the ISO 11148 series are legibly marked on the tool. If not the user/employer shall obtain replacement labels from the dealer or manufacturer.
- Use only tight fitting gloves, loose gloves can be trapped or entangled causing injuries. Use the specified gloves for the application that protects against: heat, cold, entanglement, cutting, impacting.
- Do not wear any shawls jewelry etc that can be trapped or entangled causing injuries.
- In case of power loss, release the trigger immediate.
- Make the possible countermeasures to minimize noise emission: if possible, use silence materials on the workpiece or walls around the work station.
- A risk assessment related to the noise emission on at the work station on the work piece has to be made to determine the correct ear protection according health and safety regulation.
- A risk assessment related to the vibration exposure to determine the maximum working hours per day for the operator. Vibration can cause damage to blood vanes and nerves (white finger disease). Hold the tool with light but safe grip, higher grip force can increase vibration effects.



3.1 Electrical safety

This product is for the indoor exclusive use. Do not use it in rain, in a damp place and a wet place. Moreover, never use it in the place with the fear of the ignition and the explosion, because those are hazardous situation. Do not move by holding the power cord. Do not pull the cord to remove the plug from the socket-outlet.

Avoid damage of cord due to stepping, entangling, or unreasonable force, a damaged cable must be replaced immediate. Avoid pinching of power cord in the object to be tightened or surrounding facility in the tool operation and avoid the contact with rotating parts. The power cord may be damaged and it may results in accident. Use the battery charger at rated supply voltage (AC 100-240 V).

Do not use DC power supply, engine generator, or power transformer.

Keep away from sources generating large electromagnetic noise, such as welder, DC brush motor.

Be sure to use the provided power supply cord. Use of other power supply cord may cause malfunction, heat generation, or fire.

Be sure to fully insert the power plug. Failure to do so may result in electric shock or fire due to heat generation. If you do not use the product, unplug from the receptacle.

Wipe out dust or stain accumulated on the power plug or receptacle with a dry cloth. Failure to do so may result in electric shock or fire.

Do not insert or remove the power plug from the receptacle with wet hand. Doing so may result in electric shock. Never disassemble or modify the charger.



3.2 Battery safety

- Do not disassemble or modify the battery pack and battery charger, doing so may result in heat generation, fire, electric shock, or injury.
- Do not throw the battery pack into fire or heat it, doing so may result in rupture or release of hazardous substances.
- Do not drive a nail or give an impact such as fall on the battery pack or battery charger. Doing so may result in heat generation, fire, electric shock, and/or injury.
- Do not short-circuit the terminals of the battery pack.
Do not carry or store the battery pack with metal object such as nail. Doing so may result in smoking, ignition, or rupture. If the battery pack gets hot during its use, stop using it immediately and contact your sales outlet or sales agent. The battery pack leaks, avoid contact with the substance, stop using it and contact your sales outlet or sales agent.
- Charge the battery pack in well-ventilated place.
While charging, do not cover the ventilation openings on the battery pack and battery charger with cloth. Doing so may result in rupture or fire.
- Do not charge the battery pack at less than 0 or more than 40.
Doing so may result in rupture or fire.
- Do not store the battery pack in a place reaching over 50.
Doing so may cause deterioration of the battery pack and result in smoking or fire.
- Attach an anti-short-circuit cap after the battery pack is removed from the tool or the battery charger or when the tool is not used.
Failure to do so may result in short-circuit of the terminals of the battery pack and fire.
- Do not expose battery cartridge to water or rain. A battery short can cause large current flow, overheating, possibly burns and even a break-down.
- Do not dispose of battery packs into household waste, fire or water. Battery packs should be collected, recycled or disposed of in an environmentally-friendly manner.
- If the electrolyte of the battery gets in your eyes, do not pass your hand over your eyes, but flush them with a plenty of clean water and seek medical attention. Failure to do so may result in loss of vision.
- If the electrolyte of the battery comes in contact with body part or clothes, rinse with a plenty of clean water and seek medical attention. Failure to do so may result in dermal inflammation or injury.
- If the tool is not used for long time, fully charge the battery pack before storage. Even during storage, fully charge the battery pack at least once within one year of last charge. Otherwise, over-discharge of the battery pack may prevent it from charging.

4. Accessories

Only use accessories and consumables that are designed for the use with this tool.

Select the best available inserted/mounted accessories/consumables for the lowest possible noise level and vibration. Replace them in case of an increased noise level and/or vibration.

Do not use worn or bad fitting impact sockets or extensions, as this is likely to increase noise and vibration.

Make sure that the inserted/mounted tool/accessory is properly held by the retainer and make sure that the retainer is in good condition. Never use the tool without a retainer as this may cause high speed projectiles. Only use impact rated sockets when using impact or impulse wrenches.



5. Assembly

1. Make sure the battery is fully charged.
2. Slide in the battery pack until it engages.
3. Fasten and secure the reaction arm on the jagged side of the gearbox with the retaining ring.



4. Spread the retaining ring open with a screwdriver and place the open side in the groove at the end of the gearbox.

5. Then gradually press the retaining ring until it is completely closed.

6. To remove the reaction arm, place a screwdriver at the beginning of the retaining ring and spread the retaining ring open. Then pull the retaining ring off and remove the reaction arm.

6. Movement of the reaction arm

6.1 Installing the reaction arm

Ensure the reaction arm and retaining ring are installed securely to hold the reaction arm in place. Make sure the reaction arm is in contact with a solid reaction point before you operate the tool. When the tool is in operation the reaction arm rotates in the opposite direction to the output square drive and must be allowed to rest squarely against a solid object or surface adjacent to the bolt to be tightened, see Figure 2.

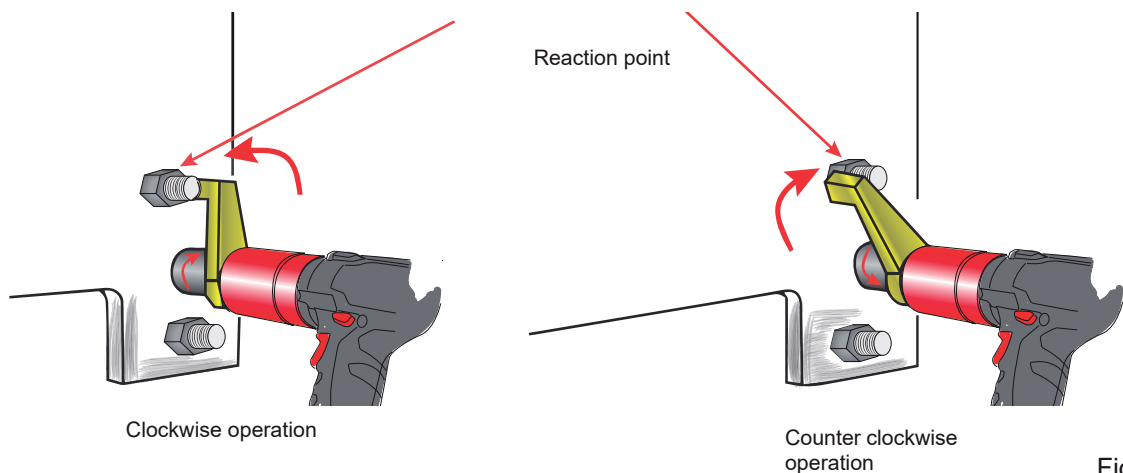


Figure 2



WARNING: In use, this tool must be supported at all times in order to prevent unexpected release in the event of a fastener or component failure!

6.2 Reaction arm height

Ensure the height of the socket is even with the height of the reaction arm as seen below in Figure 3A. The height of the socket cannot be shorter or higher than the height of the reaction arm as seen below in Figure 3B and 3C.

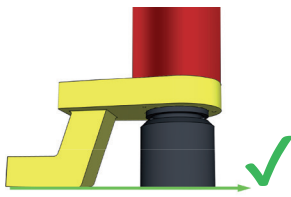


Figure 3A

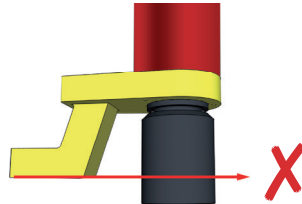


Figure 3B

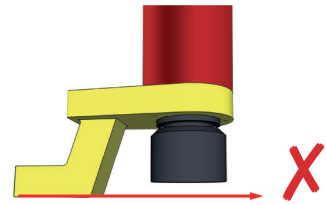


Figure 3C



NOTE: Improper reaction will void warranty and can cause premature tool failure.

6.3 Reaction arm foot

Ensure the foot of the reaction arm aligns with the length of the nut as seen in Figure 4A. The length of the foot cannot be shorter or longer than the nut as seen in Figure 4B and 4C.

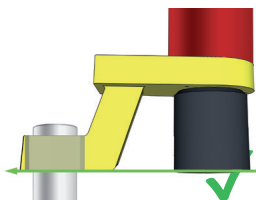


Figure 4A

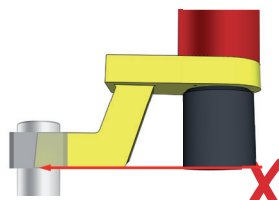


Figure 4B

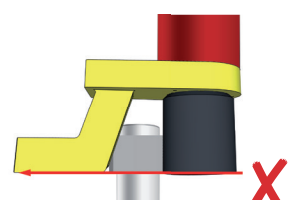


Figure 4C

6.4 Reaction point

Ensure the reaction arm reacts off the middle of the foot as seen in Figure 5A. Do not react off the heel of the reaction foot as seen in Figure 5B.

Please contact RAD Torque Systems B.V. or your local RAD authorised distributor for custom reaction arms.



WARNING: Always keep your hands and other body parts away from the reaction arm when the torque wrench is in operation, see Figure 5C.

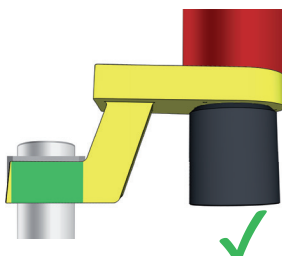


Figure 5A

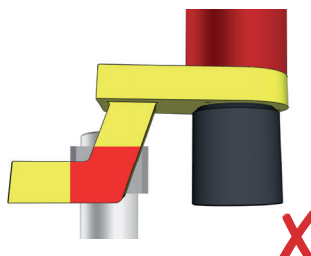


Figure 5B

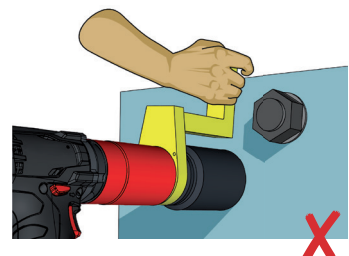


Figure 5C

7. Using the tool

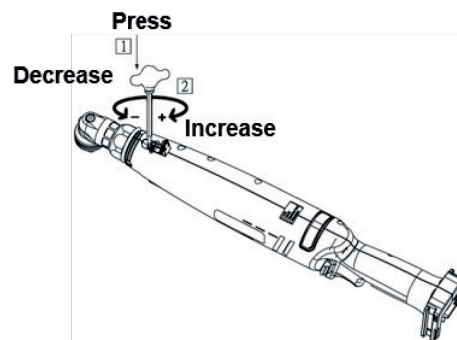
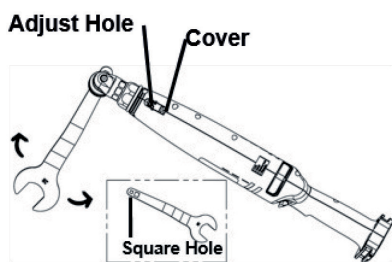
1. Before start using the tool, make sure that you are familiar with the workplace and surrounding area.
2. Always obey the safety regulations for the work area you are working in.
3. Hold the tool always firmly with both hands.
4. During operating the tool, the operator may be exposed to hazards as crushing, impacts, heat, vibration, cuts, abrasions, etc: Wear suitable gloves.
5. Any person handling the tool must be able to handle the size, weight and power of the tool.
6. Always be prepared for normal/abnormal movements/forces generated by the tool.
7. Keep your body in balance, place your feet safe and secure.
8. Take care of the reaction forces, if the tool (suddenly) stalls.
9. When using a power tool, you may experience discomfort in your hands, arms, shoulders, neck and other parts of your body.
10. If you experience symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensation, or stiffness: Do not ignore these warning signs. Stop using the tool, tell your employer and consult a qualified health professional.
11. Check if the direction of rotation is in the required direction.
12. Place the tool with the accessory on the bolt/nut screw.
13. Place the tool with the accessory on the bolt/nut screw.
14. Pull the trigger to start the tool and release the trigger to stop the tool.
15. Do not overtighten the bolt/nut/screw, a broken part can become a projectile causing danger or injury.
16. At loosening the bolt/nut/screw may become a projectile causing danger or injury.
17. Operator should change posture regularly to avoid discomfort and fatigue.
18. Use hear protection according employer and health and safety regulations



8. Torque adjustment

1. Remove the battery before adjusting.
2. Pistol model: open the cover. Insert the adjust wrench in the shaft and rotate. The SDM Battery Series are calibrated on one pre-specified torque setting, multiple torque settings are not possible. If you need a different torque we advise to send the tool back to RAD Torque Systems B.V. to make the adjustment and recalibrate the tool. However, the torque adjustment can be done as follow: hole is seen. Push the adjust wrench in the hole and rotate the adjust wrench.
3. Angle model: open the cover. Use a wrench to rotate the shaft until the adjust hole is seen. Push the adjust wrench in the hole and rotate the adjust wrench.
4. Clockwise = increase torque output, counterclockwise = decrease torque output.

Please note: you need a calibration form to verify the new torque ...



9. SDM calibration



NOTE: Only one target value can be set and calibrated at this tool.

The repeatability can be filled out on the special SDM Calibration Template.

- Connect the tool to the calibration system and perform a first pull.
- The torque value after this pull determines whether more or less torque is required.
If more torque is required, use the calibration tool to turn a few clicks clockwise.
If less torque is needed, use the calibration tool to turn a few clicks counter clockwise.
- This torque value must be checked every time after taking a few clicks, by making 1 or 2 pulls.
- Be careful with the amount of clicks when approaching the maximum torque of the gearbox, to avoid over torque.
- When target torque is achieved, perform 5 pulls to validate.
- These 5 torque values can be filled out on the SDM Calibration Template together with all the other information regarding the gearbox, handle and the transducer.
- A calibration sticker needs to be applied to the gearbox with a 1 year validation.
- Save the template as a file for future reference and print and laminate a copy of the certificate for the customer.



10. Preparing

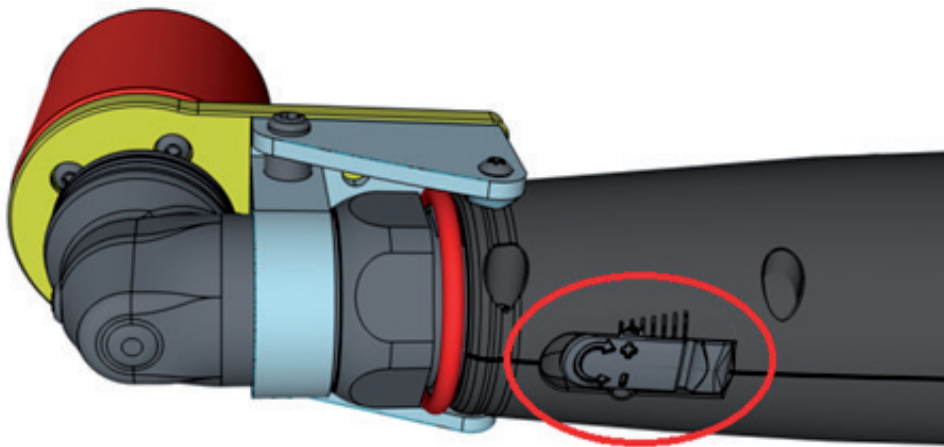
- Ensure the entire calibration system is ready, clean and checked (bolt, grease, washers and transducer).
- Ensure that the calibration certificate of the transducer has not expired.
- Ensure the SDM is properly mounted together with the special bracket to the motor drive unit.
- Ensure the battery is fully charged.

! **NOTE:** Make sure the spring inside the tool is NOT tensioned too high before performing the first pull in order to prevent over torque and damage to the gearbox.

Please see picture below

Open the cover to access the spring. Turning the motor in order to find the opening which fits the phillips-head calibration tool.

Use the calibration tool to relieve spring tension by turning/clicking counter clockwise.



10.1 LED indicator and beeper on the tool shows the following status

Status of the LED indicator and beeper	Status of the tool	Action to be taken
Light up in red, yellow and green together for one second. A long beep for one second.	The motor is switched on	-
Light up in red for one second. A long beep for one second.	The preset torque is not reached (NOK).	The screwing fastener must be performed again.
Light up in red for one second. A long beep for one second.	The screw is refastened after fastening (NOK).	The screwing fastener must be performed again.
Light up in green.	The preset torque is reached and the tightening is OK.	-
Blinks in yellow for five times. Five short beeps	The battery power becomes low	Replace the battery with a fully charged one.
Light up in yellow for five seconds. A long beep for five seconds	The battery power is used up, the tool stops immediately.	Replace the battery with a fully charged one.
Light up in blue.	The tool is in reverse operation	-
Blinks in red for two times	The motor is too hot	Remove the battery and let the tool cool down, and then reattach the battery. The tool can work properly again.
Blinks in red for three times.	The motor has failed.	Send to the service center.
Blinks in red for four times	The connector wire has failed.	Send to the service center.



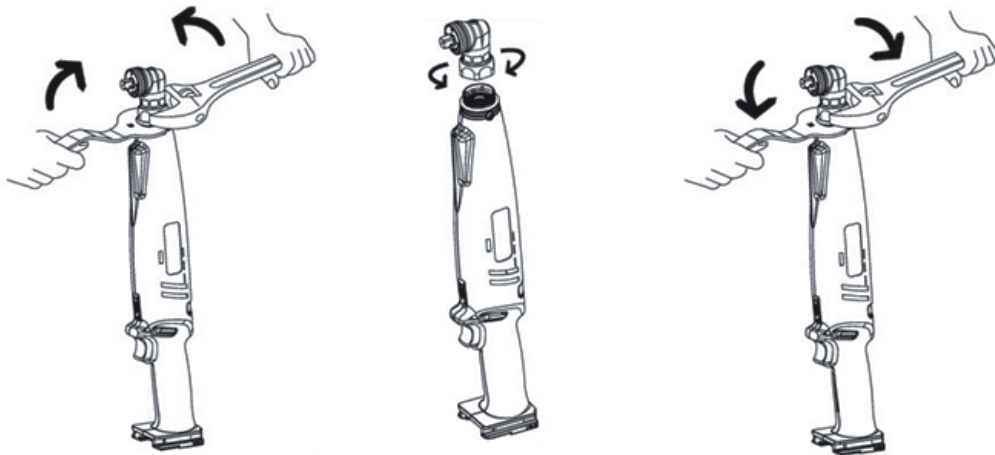
10.2 Left – right rotation

For left rotation: push the F/R button, blue light > tool is in left rotation. Push F/R button again for right rotation. Automatically switching back from left to right rotation: push the F/R button for 5 seconds until the blue LED blinks once, now the tool rotates one cycle in left direction and after stopping the tool switches automatic to the right rotation. Deactivating: holding the F/R button again for 5 seconds until the blue LED blinks once.

10.3 Angle head position adjustment

Loosen the nut of the angle head by using 2 wrenches.

Angle head has 8 positions, mount the angle head in the requested position and take that the positioning pins are in place. Tighten the nut of the angle head by using 2 wrenches.



11. Maintenance

Check the tool regularly on loose bolts/screws or parts. In case of power loss: Have the tool repaired.

Only trained and qualified engineers are allowed to adjust or repair the tool.

In case of disposal of the tool, follow local regulations, so as much as possible can be recycled.

Do not throw it in the normal waste bin.

The tool should be maintained regularly to minimize the noise emission and occurring vibration.

12. Intended use

The user or the user's employer shall assess the specific use that can be present as a result of each use. Never use the tool otherwise than the tool is designed for and as explained in this manual.

Damages as a consequence of not following this manual, or caused by incorrect use or incorrect repairs, will never be covered by our warranty and we will have no responsibility for it. We reserve the right for technical improvements, without prior notification.

This tool is designed for tightening processes on threaded fasteners, if used otherwise a risk assessment has to be made by the employer/user.

13. Warranty

13.1 New tool warranty

(1) RAD B.V. guarantees the proper performance of the goods delivered for a period of twelve (12) months after delivery to the final customer and is limited to fifteen (15) months after the original RAD B.V. calibration date.

(2) Excluded from this warranty are electric components of RAD B.V.'s digital tools (e.g. MB-RAD, MV-RAD, E-RAD, SmartSocket™, RT and TV-RAD) which have a twelve (12) month warranty after date of delivery to the final customer with a maximum of nine (9) months after the original RAD B.V. calibration date. Mechanical components of these tools fall under the terms of paragraph 1.

13.2 Repaired tool warranty

(1) Once a tool is beyond its new tool warranty, RAD B.V., for a period of three (3) months from the date of repair, will replace or repair for the original purchaser, free of charge, any part or parts, found upon examination by RAD B.V., to be defective in material or workmanship or both. If any tool or part is replaced or repaired under the terms and conditions of this warranty, that tool or part will carry the remainder of the warranty from the date of original repair. To qualify for the above mentioned warranties, written notice to RAD B.V. must be given immediately upon discovery of such defect, at which time RAD B.V. will issue an authorization to return the tool. The defective tool must promptly be returned to RAD B.V., all freight charges prepaid. When returning a tool, the reaction arm(s) being used with the tool must also be returned.

13.3 Customer cannot invoke a warranty if

- (1) the defect, wholly or partly, is due to unusual, inappropriate, improper or careless use of a delivery;
- (2) the defect, wholly or partly, is due to normal wear and tear or lack of proper maintenance;
- (3) the defect, wholly or partly, is due to installation, assembly, modification and/or repair by the Customer or by third parties;
- (4) the delivery is altered, modified, used or processed;
- (5) the delivery is transferred to a third party;
- (6) RAD B.V. has obtained the tool, wholly or partly, from a third party, and RAD B.V. cannot claim compensation under warranty;
- (7) RAD B.V. in manufacturing of the tool, has used raw materials, and suchlike on the instructions of the Customer;
- (8) the tool has a small deviation in its quality, finishing, size, composition and suchlike, which is not unusual in the industry or if the defect was technically unavoidable;
- (9) the Customer has not promptly and correctly fulfilled all obligations under the agreement towards RAD B.V.



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Notes



Notes





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