RAD TORQUE SYSTEMS

PNEUMATIC SERIES

35 - 15.000 Nm

User manual for:

- *100 SL*
- *275 SL*
- *475 SL(-2)*
- *10 GX*
- *14 GX(-2)*
- *20 DX(-2)*
- *34 GX(-2)*
- *40 DX(-2)*
- *46 GX*
- *70 DX*
- *80 DX*
- *110 DX*
- *150 DX*

USER MANUAL

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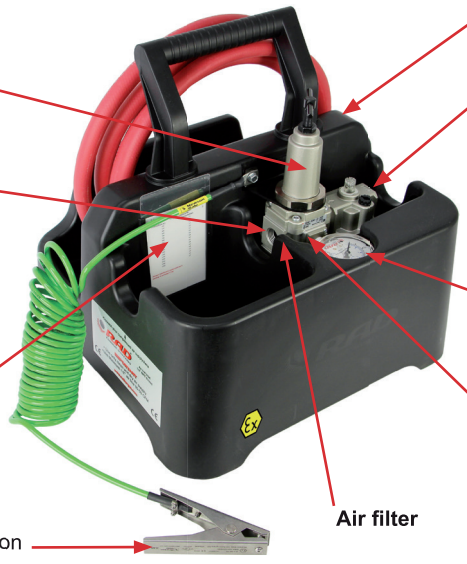
Regulator cage setup



Air pressure regulator
To increase air pressure (and torque), turn the “T” handle clockwise.
Note: the tool must always be running when setting air pressure.

½˝ NPT inlet
Install your air supply to the 1/2” NPT female port in the regulator. A minimum 1/2” airline must be used capable of 100psi at 30 cfm.

Torque chart
Always set air pressure with tool running

Earth cable and clamp
Only with ATEX certified version

RAD tool storage

½˝ NPT outlet
Install the supplied airline to the 1/2” NPT outlet port on the automatic oiler. The quick connect fitting at the opposite end of the hose will be attached to the RAD® tool.

Liquid filled pressure gauge

Automatic oiler
Fill the automatic oiler with the oil supplied by RAD.

Air filter

1. General instructions

NOTE: Do not operate the tool before reading these instructions. If breakdown, malfunction or damage occurs, do not attempt to repair, please contact RAD Torque Systems B.V. immediately. When working in an explosive environment; Always make sure you use an ATEX certified torque wrench. This is indicated by the Ex marks on the torque wrench and FRL unit and the green earth cable with clamp on the FRL unit.

RAD pneumatic torque wrenches are reversible, non-impacting, torque controlled tightening tools and must always be operated with the following:

- Clean dry air supply (air consumption can be found on page 4)
- Cage assembly with lubricator and regulator
- Impact sockets with locking pin and o-ring
- Proper reaction arm with retaining ring

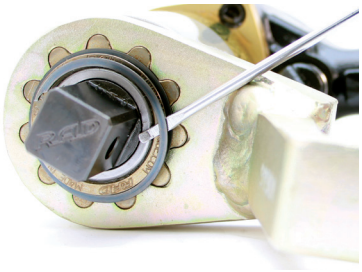
These torque wrenches contain metal components which can be dangerous if the torque wrench and FRL unit are not ATEX proof.

2. Assembly

1. Blow out hoses before connecting
1a. When ATEX certified; make sure that the original RAD hose is used between the torque wrench and the FRL unit
1b. When ATEX certified; first connect the clamp of the earth cable (green color mounted to the FRL unit) to the workpiece
1c. When used in areas with dust explosion risks, install the silencer to the air outlet of the torque wrench to limit dust whirling. Preferably, clear the environment of dust within a radius of 1 meter around the workplace before operating
2. Connect the wrench air inlet to the outlet side of the Cage Assembly, observing airflow direction
3. Connect air supply to inlet side of the Cage Assembly using a minimum hose size of 1/2” (1.27cm)
4. Check oil level in lubricator and fill to correct level
5. Fasten and secure the reaction arm on the jagged side of the gearbox with the retaining ring
6. When ATEX certified; after placing the socket, secure the socket with a pin and o-ring lock to prevent loosening of the socket.

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

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



9. 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.

WARNING! Always check all air hose connections before the air supply is activated.

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.

WARNING! Always keep hands clear of the reaction arm when the tool is in use or serious injury could result.

3. Air pressure regulator

Rotate clockwise to increase the air supply, and counter-clockwise to decrease the air supply. Note: the torque wrench should run freely while setting the torque. The direction is not important.

3.1 ½" NPT inlet

Connect your air supply to the ½" NPT inlet. The diameter of the hose should be at least ½ ".

3.2 ½" NPT outlet

Connect the supplied air hose to the ½" NPT outlet automatic oiler. The outlet on the other end of the hose is attached to the torque wrench.

NOTE: The water tank from the filter outlet should be emptied periodically. The drain filter is accessible from the bottom of the FRL unit.

3.3 Automatic oiler

Fill the oiler with oil only for air tools.

NOTE: Ensure a sufficient compressor capacity in terms of volume and pressure.

Air motor	Torque wrench	Air consumption
NPW 120	100 SL	792 Liter at 6,7 bar per minute
	275 SL (-2)	
	475 SL (-2)	
	10 GX	
	14 GX (-2)	
	20 DX (-2)	
NPW 180	34 GX (-2)	1130 Liter at 6,7 bar per minute
	40 DX (-2)	
NWP 200	46 GX	1727 Liter at 6,7 bar per minute
	70 DX	
	80 DX	
	110 DX	
	150 DX	

4. Setting torque

Every RAD torque wrench is supplied with a torque chart which relates torque output to air pressure.

Set the torque as follows:

1. Establish the air pressure required using the torque chart provided with the tool
2. Adjust the regulator until the correct pressure is shown on the gauge
3. The wrench must be free running while adjusting the air pressure to give the correct setting.

Set the oiler as follows

1. Close the oiler.
2. Set the manometer at 6 bar while the torque wrench runs without resistance.
3. Depending on the size of the torque wrench, the number of oil drops is as follows:

Wrenches up to 2.000 Nm:	Turn the oiler 1.5 turns for one drop per second.
Wrenches from 2.000 till 3.400 Nm:	Turn the oiler 2 turns for 2 drop per second.
Wrenches from 3.400 till 15.000 Nm:	Turn the oiler 2.5 turns for 3 drop per second.

WARNING: Exceeding the maximum air pressure will overload the wrench and may cause serious damage. When removing the torque wrench from the bolt connection, the direction switch must be set on “reverse”. Then, the maximum torque need to be chosen.

WARNING: Before the first use, or after a long period of time without using the wrench, RAD advises to add 5 drops of oil through the quick connect fitting on the wrench.

Operating the torque wrench:

1. Fit the wrench with the correct size impact socket to suit the bolt to be tightened.
2. Check that the Forward/Reverse switch is set correctly.
3. Rotate the handle to a convenient position relative to the reaction arm.
4. Fit the tool onto the bolt to be tightened with the reaction arm adjacent to the reaction point.
5. Squeeze the trigger partially to bring the reaction arm into contact with the reaction point.
6. Fully depress Trigger and keep fully depressed until wrench stalls. If the Trigger is released before the wrench stalls, full torque will not be applied to the bolt.
7. Release Trigger and remove the tool from bolt.

5. Movement of the reaction arm

5.1 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 (Figure 1).

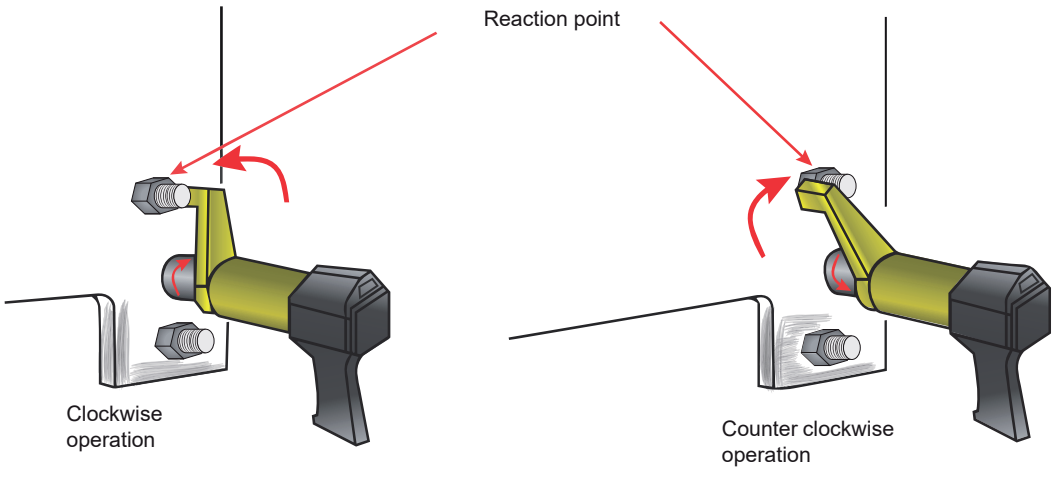


Figure 1

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!

5.2 Reaction arm height

Ensure the height of the socket is even with the height of the reaction arm as seen below in Figure 2A. The height of the socket cannot be shorter or higher than the height of the reaction arm as seen below in Figure 2B and 2C.

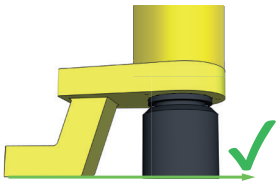


Figure 2A

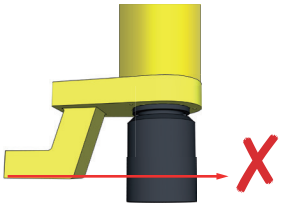


Figure 2B

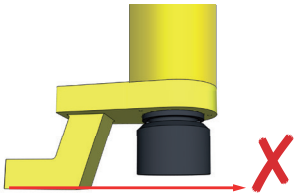


Figure 2C

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

5.3 Reaction arm foot

Ensure the foot of the reaction arm aligns with the length of the nut as seen in Figure 3A. The length of the foot cannot be shorter or longer than the nut as seen in Figure 3B and 3C.

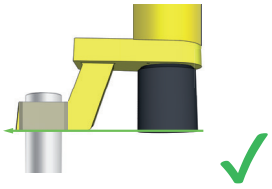


Figure 3A

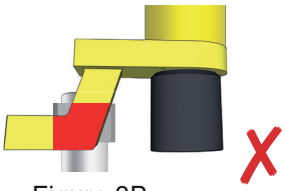


Figure 3B

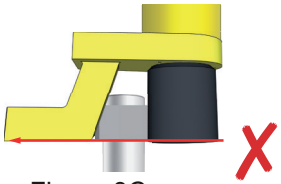


Figure 3C

5.4 Reaction point

Ensure the reaction arm reacts off the middle of the foot as seen in Figure 4A. Do not react off the heel of the reaction foot as seen in Figure 4B.

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

WARNING: Always keep your hand and body parts clear of the reaction arm and barrel when the tool is in operation (Figure 4C).

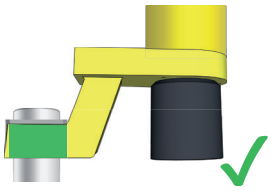


Figure 4A

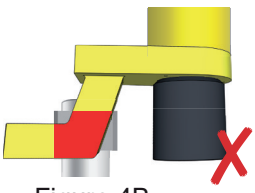


Figure 4B

Figure 4C

6. Safety

RAD tools use pressurized air to develop very large forces to tighten and loosen threaded fasteners. For your safety and that of others, warning labels and attention labels are prominently attached to the torque wrench and its accessories.

NOTE: Make sure you observe the directions on the warning labels at all times.

RAD tools have been designed with safety in mind however, as with all tools you must observe all general workshop safety practices, and specifically the following:

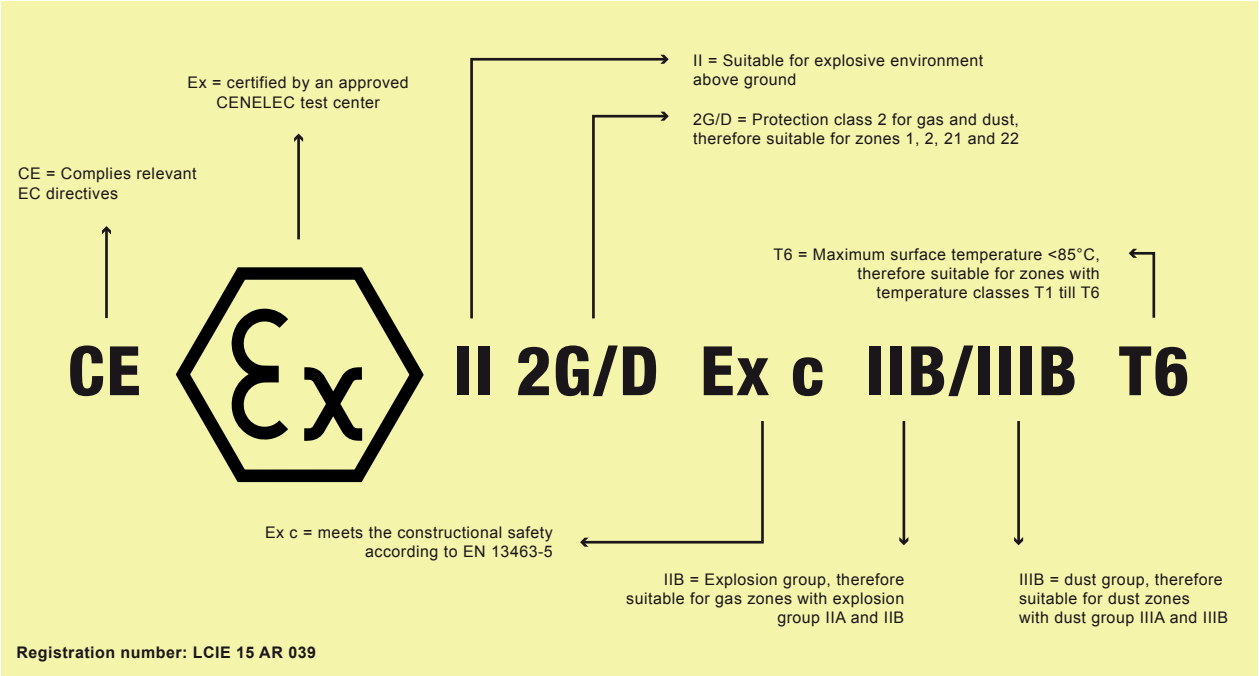
- Before using your new tool, get familiar with all its accessories and how they work
- Always wear safety goggles when the tool is in operation
- When working in an explosive environment, always be sure you use an ATEX certified torque wrench
- Make sure the reaction arm is in contact with a solid contact point before you operate the tool
- Keep your body parts clear of the reaction arm and the contact point
- Set your air pressure while the tool is running
- Refer to the enclosed torque chart to set the correct air pressure regulator setting for a required torque
- Never exceed the maximum air pressure shown on the torque chart
- Always use the regulator and oiler that is supplied. Failure to do this voids the warranty and can place you in danger
- Be sure to use a minimum 1/2” airline to the cage assembly as this will allow for adequate air flow
- Make sure the reaction arm retaining ring is securely in place to hold the reaction arm or blank in place.

RAD tools are safe and reliable. Not following precautions and instructions outlined here can result in injury to you and your fellow workers. RAD Torque Systems B.V. is not responsible for any such injury.

7. ATEX

As option, RAD torque wrenches are available with ATEX. The applied RAD ATEX is explained below. See our website for more information: www.radtorque.nl/atex.

The RAD torque wrenches are marked according to ATEX 95 and suiteable for use in zone 1, 2, 21 and 22 with explosion group IIA and IIB or dust group IIIA and IIIB.



If you have an ATEX torque wrench please note the following:

- Socket must at all times be secured using the locking pin and o-ring
- The reaction arm must be at all times be secured using the retaining ring
- There should be at all times a earth connection with the work piece.

8. Warranty

8.1 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.

8.2 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.

8.3 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.

9. Contact

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Notes

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RAD®
TORQUE SYSTEMS

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