



Operation and Maintenance Manual

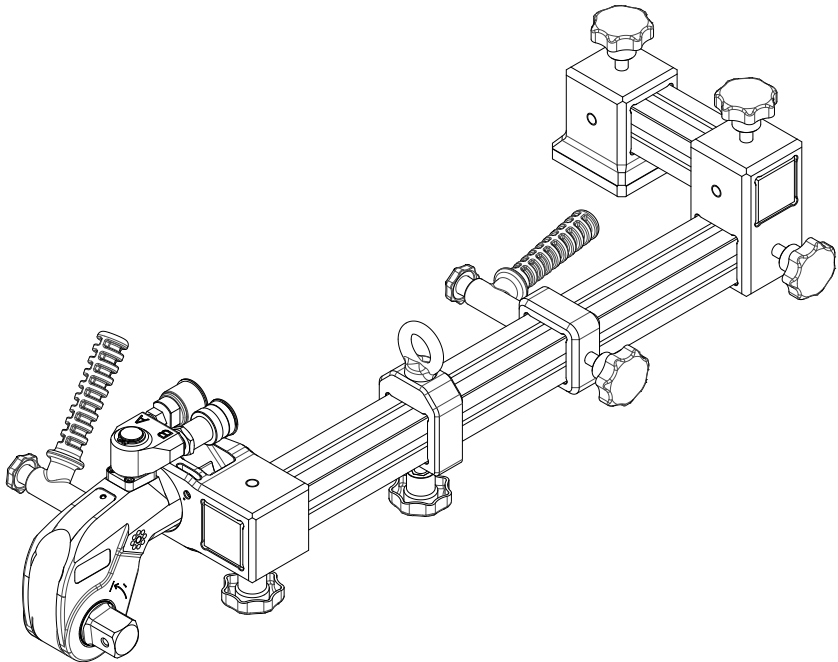
Enerpac ERAK Reaction Arm Kit

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To reduce the risk of injury, users must read and understand this document before use.

ABOUT US

Enerpac is a global market leader in high pressure hydraulic tools, controlled force products, portable machining, on-site services and solutions for precise positioning of heavy loads. As a leading innovator with a 110-year legacy, Enerpac has helped move and maintain some of the largest structures on earth. When safety and precision matters, elite professionals in industries such as aerospace, infrastructure, manufacturing, mining, oil & gas and power generation rely on Enerpac for quality tools, services and solutions. For additional information, visit www.enerpac.com.



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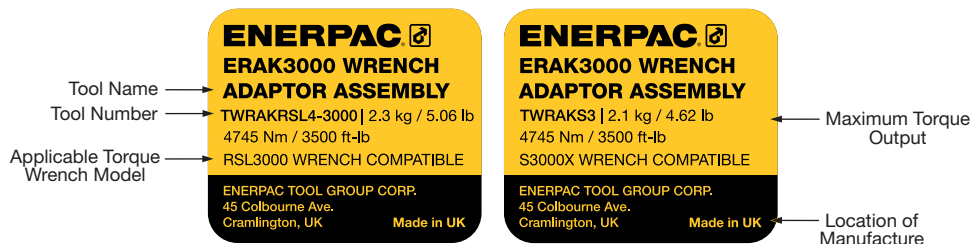


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WARRANTY

Refer to the Enerpac Global Warranty document for terms and conditions of the product warranty. Such warranty information can be found at www.enerpac.com.

NAMEPLATE



AVAILABLE LANGUAGES

L4640 is available in the following languages, visit www.enerpac.com for a copy.

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Contents

- 1. SAFETY 3
 - 1.1 SAFETY PRECAUTIONS 3
- 2. FEATURES & COMPONENTS..... 6
 - 2.1 FEATURES DIAGRAM 6
- 3. TECHNICAL PRODUCT DATA 7
 - 3.1 DIMENSIONAL CALLOUT ART 7
 - 3.2 DIMENSIONAL TABLE 7
 - 3.3 TORQUE TABLE 8
 - 3.4 KIT, ADAPTOR, COMPONENTS WEIGHTS 8
- 4. OPERATION 10
 - 4.1 MOUNTING ERAK ONTO THE WRENCHES 10
 - 4.2 ERAK ASSEMBLY AND SET-UP 10
 - 4.3 ACCEPTABLE ASSEMBLY ORIENTATIONS 11
 - 4.4 UNACCEPTABLE ASSEMBLY ORIENTATIONS..... 12
 - 4.5 MANUAL HANDLING 13
- 5. MAINTENANCE & STORAGE..... 13
 - 5.1 MAINTENANCE 13
 - 5.2 STORAGE..... 13
- 6. PARTS LIST 14

1. Safety

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and / or damage to other property. Enerpac cannot be responsible for any damage or injury from unsafe use, lack of maintenance, or incorrect operation. Do not remove warning labels, tags, or decals. In the event that any questions or concerns arise, contact Enerpac or a local Enerpac distributor for clarification.

Save these instructions for future use.

If you have never been trained on high-pressure hydraulic safety, consult your distributor or service center for information about Enerpac Hydraulic Safety Courses.

This manual follows a system of safety alert symbols, signals, words, and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.

The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious injury.



Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are DANGER, WARNING, CAUTION, and NOTICE.

⚠ DANGER Indicates a hazardous situation that, if not avoided, will result in death or serious personal injury.

⚠ WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

⚠ CAUTION Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE Indicates information considered important, but not hazard related (e.g. messages related to property damage). Please note that the Safety Alert Symbol will not be used with the signal word.

1.1 Safety Precautions

⚠ WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Always wear protective head-wear, ear protectors, footwear and gloves (at a minimum rigger type gloves) suitable for safe operation of the tool. The protective clothing must not interfere with safe operation of the tool or restrict the ability to communicate with co-workers.
- Be sure your workplace is safe. Follow the instructions in your workplace's standard operating procedures and be sure to observe all communicated safety precautions.
- Do not place any part of the body between the wrench reaction foot and the reaction point.
- Be sure appropriate guards are securely in position and free from damage.

- Do not place any objects between the wrench reaction foot and the reaction point. Keep the hoses away from the reaction points.
- Do not stand in the line of movement of the tool when it is in operation. If the tool separates from the nut or bolt during operation it will detach in that direction.
- Be aware that a nut or bolt that breaks off during operation of the tool may become a high velocity projectile.
- Keep your hands away from the fastener being loosened or tightened. Tightening and loosening nuts and bolts involves little visible movement. However, the pressures and loads are extreme.
- Always be sure that pump is stopped and all pressure is fully relieved (0 psi/bar) before disconnecting or connecting hydraulic hoses. The sudden and uncontrolled release of pressurized oil could occur if hoses are disconnected while under pressure.
- Never attempt to connect or disconnect hoses while the pump is on and/or the system is pressurized.
- Be certain that all hose couplings are fully connected at both the pump and wrench ends before applying any hydraulic pressure. If the couplings are not fully connected, oil flow will be blocked, and the wrench could be subjected to excessive hydraulic pressures. Catastrophic failure of wrench could result.
- Do not abuse or overstress the hoses in any way. Do not bend the hoses excessively.
- Take every precaution to prevent oil leaks from occurring. High pressure oil leaks can penetrate the skin, resulting in serious injury.
- Never apply more hydraulic pressure to any tool, hose, fitting or accessory than the maximum allowable pressure as stated in the manufacturer's specifications. The system operating pressure must not exceed the pressure rating of the lowest rated component in the system.
- Be sure the operator has completed safety induction training, specific to the work surroundings. The operator should be thoroughly familiar with the controls and the proper use of the tool.
- The operator must be of at least the minimum age required by applicable local regulations, laws and the facility standard operating procedures.
- Never strike the tool while it is pressurized or under load. Components under tension may become dislodged, allowing them to become dangerous projectiles. Uncontrolled release of pressurized hydraulic oil could also occur.
- Avoid striking the tool at any time, even when it is not pressurized or under load. Striking the tool could cause permanent damage to wrench components and may affect the wrench calibration.
- Use only a high quality non-flammable solvent for cleaning and degreasing parts during wrench repair procedures. To reduce the risk of fire or explosion, do not use flammable solvents.
- Be sure to wear proper eye and hand protection when using solvent. Always follow the solvent manufacturer's safety and use instructions and any additional instructions included in the standard operating procedures for your work-site. Be certain there is adequate ventilation when using solvent.

 CAUTION

Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Always carry the wrench by its housing. Never carry the wrench using the positioning handle. The handle could break and the wrench could drop suddenly. The positioning handle is designed only as an aid to help position the wrench on the bolt or nut.
- Be sure that backup wrench (on the opposite end of nut or bolt being tightened or loosened) is secured so it cannot drop or become disengaged during bolting procedures.
- Be sure that the hex socket size corresponds to the size of the fastener being loosened or tightened. Failure to observe this precaution can result in the wrench becoming unstable and can lead to catastrophic failure of the tool.
- Always position the wrench for maximum stability. Use the positioning handle to properly position tool during operation.
- Be sure reaction points are adequate for the forces at work during operation of the tool.
- Be sure the reaction point is of a suitable shape. If possible, use an adjacent nut or bolt as a reaction point.
- When the hex socket is placed on the nut or bolt a gap may exist between the reaction foot and the reaction point. When the tool is operated the reaction foot and point will make forceful contact. Be sure the wrench is stable before applying hydraulic pressure.
- Provide adequate support in vertical and inverted applications.
- Be sure to minimize torsional and bending stresses in the wrench, the hex socket and any accessories.

- The torque required to loosen a nut is variable and may exceed the torque capacity of the wrench. Never operate the wrench at above 75 percent of its rated maximum torque when loosening a nut or bolt.
- Bolt lubricants and anti-seize compounds will have a rated coefficient of friction. Be sure to know the coefficient of friction for the lubricant or anti-seize compound that is being used. To ensure proper tightening of nuts and bolts, always use this coefficient of friction when calculating required torque values.

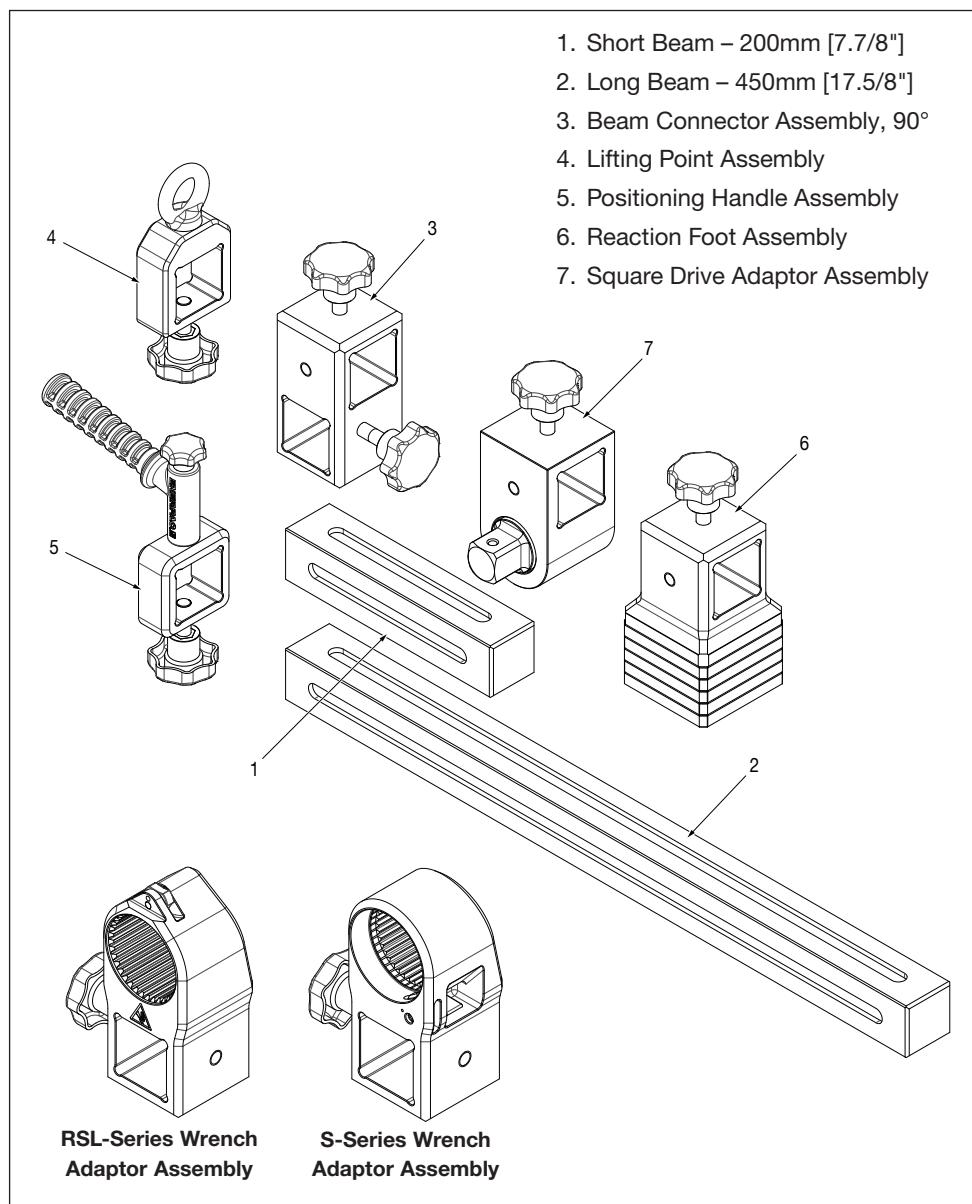
NOTICE

Failure to observe and comply with the following precautions could result in property damage and/or void the product warranty.

- Never carry the wrench by its hoses.
- Always use Enerpac pumps and hoses.
- Always use Enerpac replacement parts.
- The maximum torque output of the wrench must always exceed the torque required to loosen or tighten the nut or bolt.
- Never operate the wrench with a hydraulic supply connection to the advance side only as this may damage the internal parts.
- In severe service conditions, be aware that the wrench must be inspected, cleaned and lubricated more frequently than normal.
- Check that the swivel post screws are tight prior to use.
- If oil leakage is present from wrench, replace seals as required before placing the wrench back into service.
- If the wrench is dropped from a significant height, have the tool inspected and checked for proper operation before placing it back into service.

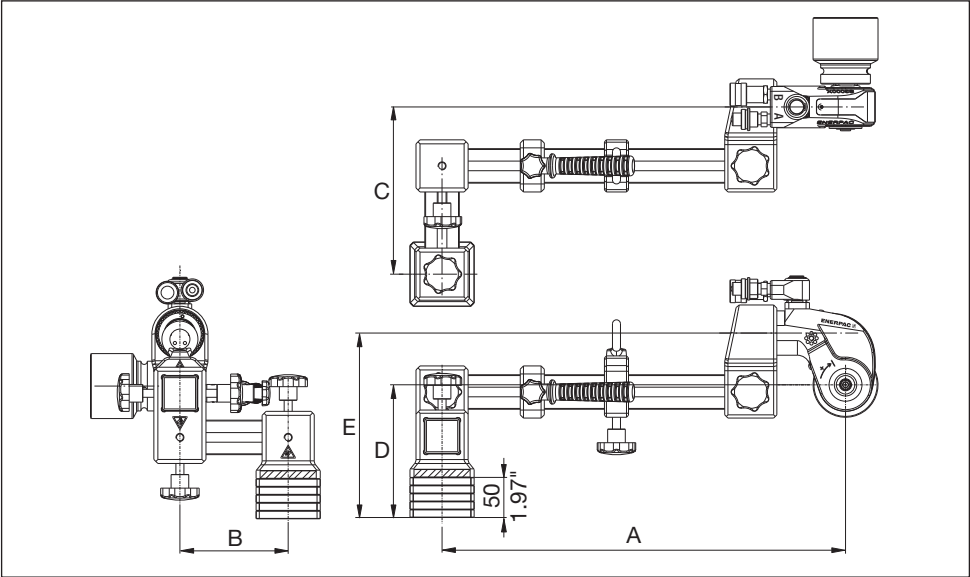
2. Features & Components

2.1 Features Diagram



3. Technical Product Data

3.1 Dimensional Callout Art



3.2 Dimensional Table

Reaction Arm Kit	Wrench Adaptors	Torque Wrench*	Dimensions - mm [inch]					 kg [lbs]
			A min. - max.	B	C	D	E	
ERAK1500	TWRAKS15	S1500X	149-495 [5.9-19.5]	148 [5.8]	215 [8.5]	118 [4.6]	164 [6.5]	11.0 [24.2]
	TWRAKRSL2-1500	RSL1500	185-530 [7.3-20.9]	148 [5.8]	215 [8.5]	114 [4.5]	164 [6.5]	11.0 [24.2]
ERAK3000	TWRAKS3	S3000X	183-503 [7.2-19.8]	135 [5.3]	209 [8.2]	111 [4.4]	175 [6.9]	17.1 [37.6]
	TWRAKRSL4-3000	RSL3000	222-542 [8.7-21.3]	135 [5.3]	209 [8.2]	117 [4.6]	175 [6.9]	17.1 [37.6]
ERAK8000	TWRAKS6	S6000X	270-552 [10.6-21.7]	116 [4.6]	199 [7.8]	155 [6.1]	236 [9.3]	36.2 [79.6]
	TWRAKRSL6-5000	RSL5000	214-496 [8.4-19.5]	116 [4.6]	199 [7.8]	166 [6.5]	236 [9.3]	36.2 [79.6]
	TWRAKRSL8-8000	RSL8000	273-555 [10.7-21.9]	116 [4.6]	199 [7.8]	166 [6.5]	236 [9.3]	36.2 [79.6]

* to be ordered separately

3.3 Torque Table

Reaction Arm Kit	Wrench Adaptors	Torque Wrench*	Wrench Torque Output		Max. Kit Working Torque	
			lb.ft	Nm	lb.ft	Nm
ERAK1500	TWRAKS15	S1500X	1440	1952	1500	2034
	TWRAKRSL2-1500	RSL1500	1408	1909		
ERAK3000	TWRAKS3	S3000X	3225	4373	3500	4745
	TWRAKRSL4-3000	RSL3000	3080	4176		
ERAK8000	TWRAKS6	S6000X	6150	8338	8000	10847
	TWRAKRSL6-5000	RSL5000	5303	7190		
	TWRAKRSL8-8000	RSL8000	7862	10659		

3.4 Kit, Adaptor, Components Weights

3.4.1 Kit Weights

Reaction Arm Kit	Weight (kg)	Weight (lb)
ERAK1500	11.0	24.2
ERAK3000	17.1	37.6
ERAK8000	36.2	79.6

3.4.2 Adaptor Weights

Wrench Adaptor*	Weight (kg)	Weight (lb)
TWRAKS15	1.3	2.86
TWRAKRSL2-1500	1.5	3.30
TWRAKS3	2.1	4.62
TWRAKRSL4-3000	2.3	5.06
TWRAKS6	3.4	7.48
TWRAKRSL6-5000	3.4	7.48
TWRAKRSL8-8000	4.3	9.46

* to be ordered separately

3.4.3 Component Weights

			Weight (kg)	Weight (lb)
Item	ERAK1500	Enerpac Reaction Arm Kit 1500 lb.ft / 2034 Nm - S1500, RSL2, RSL1500	11.0	24.2
1	DM2140060	Beam-ERAK1500, 200mm / 7.7/8" Long	0.7	1.5
2	DM2141060	Beam-ERAK1500, 450mm / 17.5/8" Long	1.6	3.5
3	DM2142900	ERAK1500 Beam Connector Assembly, 90°	1.1	2.4
4	DM2150900	ERAK1500 Lifting Point Assembly	0.5	1.1
5	DM2152900	ERAK1500 Positioning Handle Assembly	0.5	1.1
6	DM2144900	ERAK1500 Reaction Foot Assembly	3.2	7.0
7	DM2148900	ERAK1500 Square Drive Adaptor Assembly	1.3	2.9
Item	ERAK3000	Enerpac Reaction Arm Kit 3500 lb.ft / 4745 Nm - S3000, RSL4, RSL3000	17.1	37.6
1	DM2125060	Beam-ERAK3000, 200mm / 7.7/8" Long	0.9	2.0
2	DM2126060	Beam-ERAK3000, 450mm / 17.5/8" Long	2.4	5.3
3	DM2127900	ERAK3000 Beam Connector Assembly, 90°	2.0	4.4
4	DM2135900	ERAK3000 Lifting Point Assembly	0.8	1.8
5	DM2137900	ERAK3000 Positioning Handle Assembly	0.6	1.3
6	DM2129900	ERAK3000 Reaction Foot Assembly	4.0	8.8
7	DM2133900	ERAK3000 Square Drive Adaptor Assembly	2.6	5.7
Item	ERAK8000	Enerpac Reaction Arm Kit 8000 lb.ft / 10847 Nm - S6000, RSL6, RSL8, RSL5000, RSL8000	36.2	79.6
1	DM2170060	Beam-ERAK8000, 200mm / 7.7/8" Long	1.7	3.7
2	DM2171060	Beam-ERAK8000, 450mm / 17.5/8" Long	4.2	9.2
3	DM2172900	ERAK8000 Beam Connector Assembly, 90°	4.3	9.5
4	DM2180900	ERAK8000 Lifting Point Assembly	1.4	3.1
5	DM2182900	ERAK8000 Positioning Handle Assembly	1.3	2.9
6	DM2174900	ERAK8000 Reaction Foot Assembly	7.0	15.4
7	DM2178900	ERAK8000 Square Drive Adaptor Assembly	5.9	13.0

4. Operation

4.1 Mounting ERAK onto the wrenches

4.1.1 S-Wrench

The ERAK adaptor can be rotated incrementally through 360° and can maintain stability against a reaction point up to full torque.

- Position the ERAK adaptor onto the splined end of the tool.
- ERAK adaptor should be positioned parallel/perpendicular to the wrench.

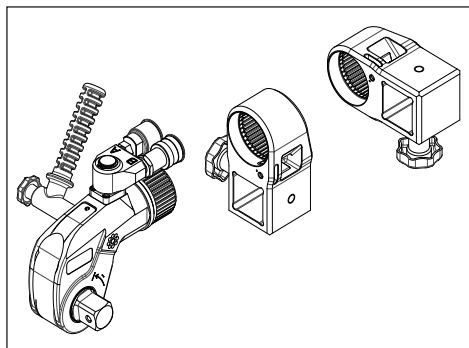


Figure 1: Attaching Reaction Arm Kit Adaptor (S-Series)

4.1.2 RSL-Wrench

The ERAK adaptor can be rotated incrementally through 360° and can maintain stability against a reaction point up to full torque.

- Position the ERAK adaptor onto the splined end of the tool.
- Rotate the diallock to allow adaptor to slide onto the wrench.
- Once in position, rotate the diallock to lock the adaptor in position.
- To adjust angle of the reaction arm kit, rotate the diallock and slide the adapter off the tool. Position the arm as necessary.

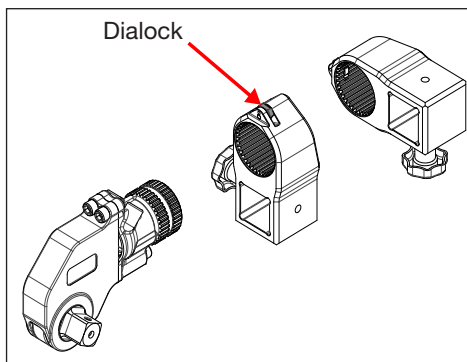


Figure 2: Attaching Reaction Arm Kit Adaptor (RSL-Series)

4.2 ERAK Assembly and Set-Up

⚠ WARNING

- Always use reaction foot, never react directly onto the beams.
- Ensure components are locked together before operating the tool.
- Ensure reaction point is as flat as possible, and in the center of the reaction foot.

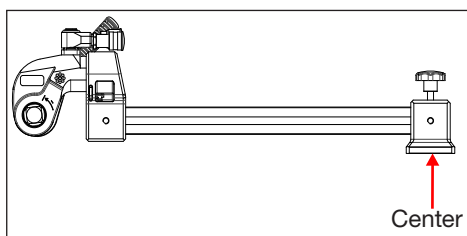


Figure 3: ERAK Positioning

NOTICE In extreme reaction point configurations and torque near tools max output, the wrench may see additional stresses on components which may result in reduced cycle-life of the wrench.

4.2.1 Component Assembly/Locking Star Knob

Once components are in desired position, tighten star knob to lock in place.

Each component has multiple positions for the star knobs, use the position which will not interfere with the operation of the tool, or reaction point.

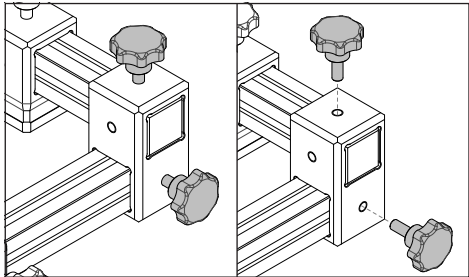


Figure 4: Component Assembly/ Locking Star Knob

4.2.2 Reaction Foot & Spacer Plates

The reaction foot can be used on its own, or with any number of spacer plates.

Spacer plates should be added as and when required by the application.

Bolts should be tightened hand-tight using a 5mm Allen key.

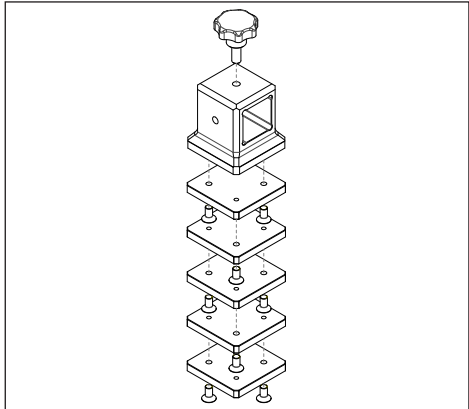


Figure 5: Reaction Foot/ Spacer Plates

4.3 Acceptable Assembly Orientations

Short/long beam assembled into the adapter, with the reaction foot.

- Reaction foot can be positioned anywhere along the beam.
- Adapter can be rotated around the wrench splines.

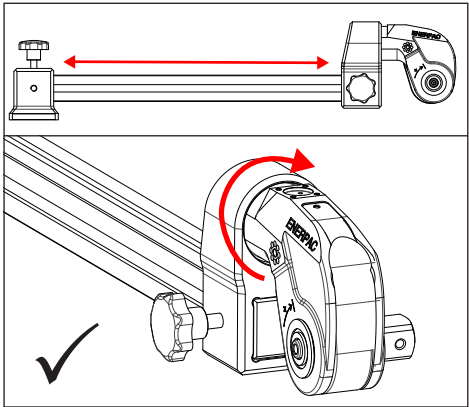


Figure 6: Long Beam Assembly

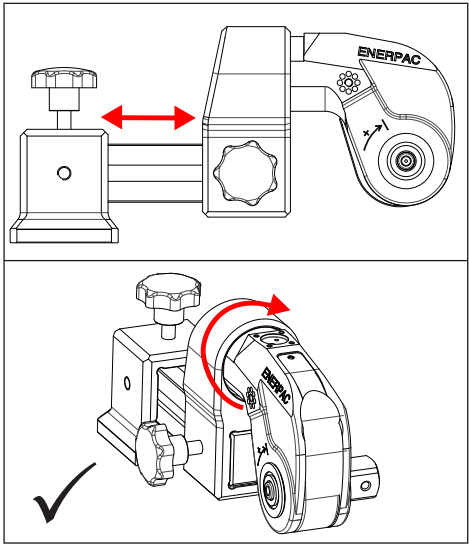


Figure 7: Short Beam Assembly

Long beam into the adapter, short beam at 90°, with reaction foot.

- 90° connector can be positioned anywhere along the beam.
- Reaction foot can be positioned anywhere along the beam.

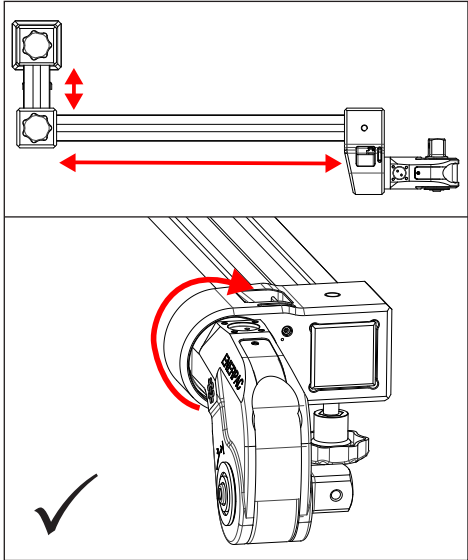


Figure 8: Long Beam/ Short Beam Assembly

4.4 Unacceptable Assembly Orientations

The ERAK must not be assembled in the following orientations or derivatives of them:

- Reaction foot positioned above or below the beam.

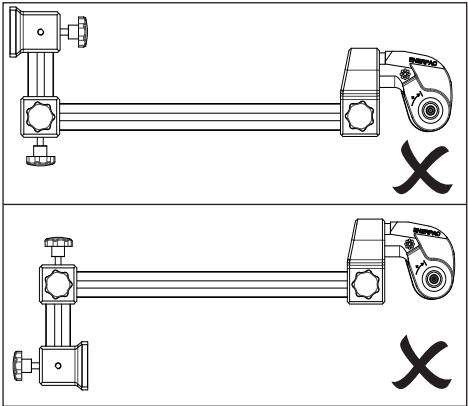


Figure 9: Incorrect Reaction Foot Placement

- ERAK Adaptor positioned on the short beam.

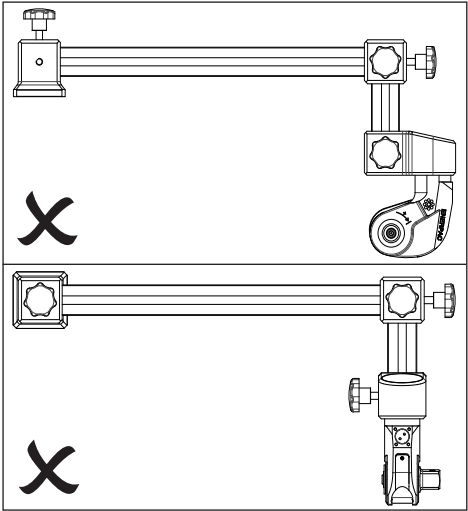


Figure 10: Incorrect Adaptor Kit Placement

4.5 Manual Handling

Refer to section 4.2 Kit, Adaptor, Components Weights for detailed ERAK tool weights.

- Lifting point assembly should be used in all kit arrangements weighing above 25kg (50lbs) (including wrench).

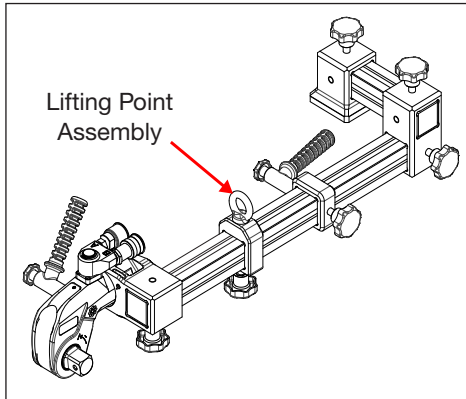


Figure 11: ERAK with Lift Point Assembly

- Although not necessary for lighter arrangements, it is advised to use the Lifting point assembly to assist handling and positioning of the tool.
- Where possible, the Lifting Point Assembly should be positioned close to the center of gravity of the full assembly.

5. Maintenance & Storage

5.1 Maintenance

After use the ERAK should be strip down and all components cleaned with a mild solvent. Inspect all parts for damage.

Any damaged components must be replaced.

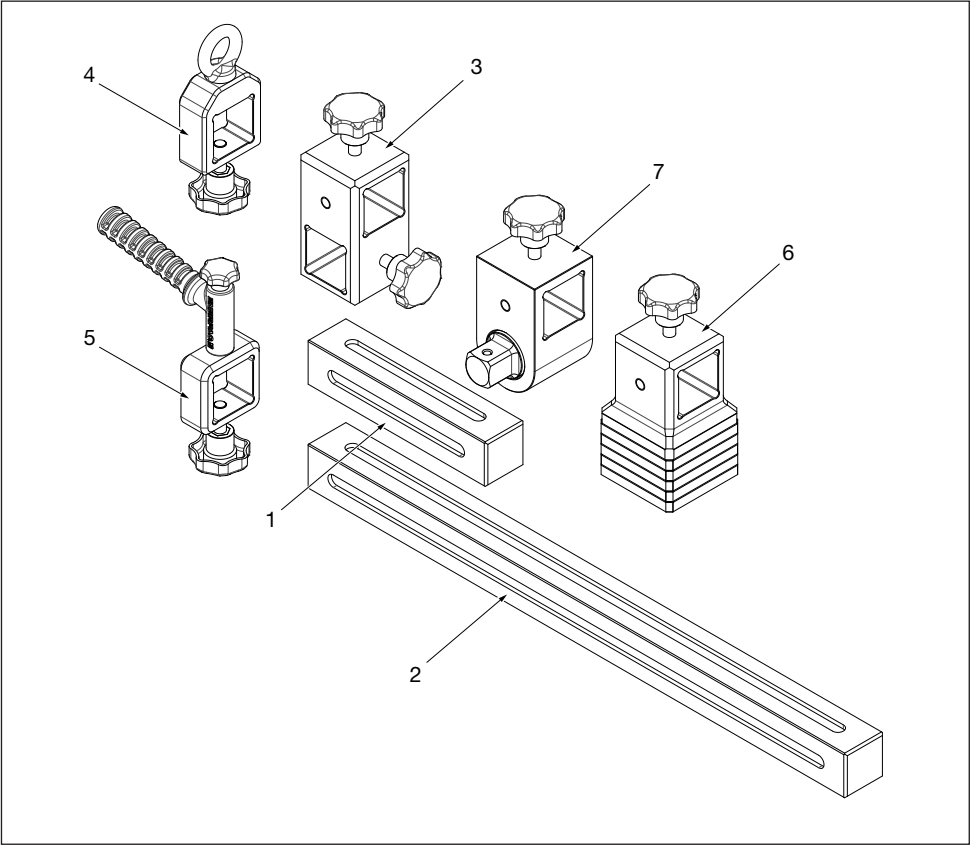
Lubricate each component prior to storage.

5.2 Storage

Store the ERAK tool in a cool dry place in the designated packing case.

6. Parts List

6.1 Exploded Views - ERAK1500, ERAK3000, ERAK8000



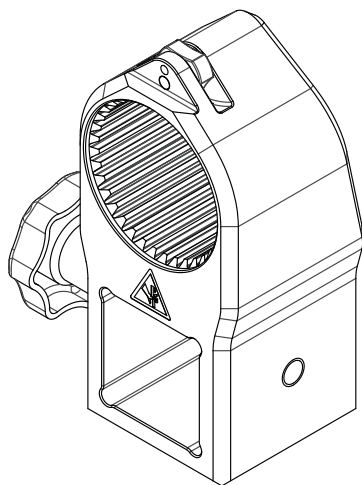
6.2 Table of Parts - ERAK1500, ERAK3000, ERAK8000

Item	Description	Qty	Part Numbers
			ERAK1500
1	Short Beam – 200mm [7.7/8"]	1	DM2140060
2	Long Beam – 450mm [17.5/8"]	1	DM2141060
3	Beam Connector Assembly, 90°	1	DM2142900
4	Lifting Point Assembly	1	DM2150900
5	Positioning Handle Assembly	1	DM2152900
6	Reaction Foot Assembly	1	DM2144900
7	Square Drive Adaptor Assembly	1	DM2148900
8	Carry Case (not shown)	1	TR138

Item	Description	Qty	Part Numbers	
			ERAK3000	ERAK8000
1	Short Beam – 250mm [9.7/8"]	1	DM2125060	DM2170060
2	Long Beam – 450mm [17.5/8"]	1	DM2126060	DM2171060
3	Beam Connector Assembly	1	DM2127900	DM2172900
4	Lifting Point Assembly	1	DM2135900	DM2180900
5	Positioning Handle Assembly	1	DM2137900	DM2182900
6	Reaction Foot Assembly	1	DM2129900	DM2174900
7	Square Drive Adaptor Assembly	1	DM2133900	DM2178900
8	Carry Case (not shown)	1	TR138	TR5015

Miscellaneous Spare Parts			
Item	Description	Qty	Part Numbers
9	Star Knob Spares Kit (not shown)	2	DM2189147K

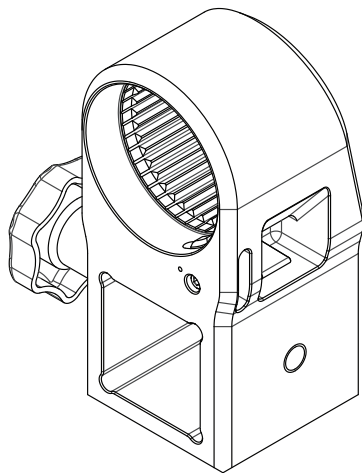
**6.3 View - RSL-Series Wrench
Adaptor Assembly**



**6.4 Table of Parts - RSL-Series
Wrench Adaptor Assembly**

Torque Wrench	Part Numbers
RSL1500	TWRAKRSL2-1500
RSL3000	TWRAKRSL4-3000
RSL5000	TWRAKRSL6-5000
RSL8000	TWRAKRSL8-8000

**6.5 View - S-Series Wrench
Adaptor Assembly**



**6.6 Table of Parts - S-Series
Wrench Adaptor Assembly**

Torque Wrench	Part Numbers
S1500X	TWRAKS15
S3000X	TWRAKS3
S6000X	TWRAKS6

Notes

[illegible]

