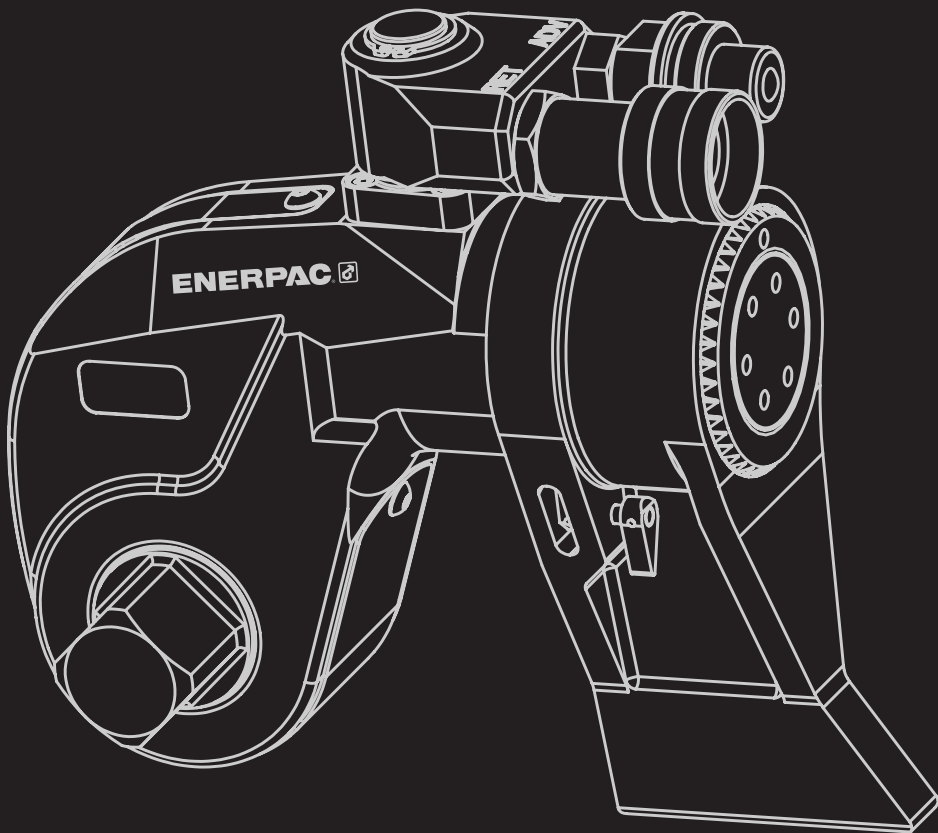


**ENERPAC** 



# Instruction Sheet

## S-Series Hydraulic Torque Wrenches

EIS 59.113-1  
08/2005

## CD with Instruction Manuals in PDF-format

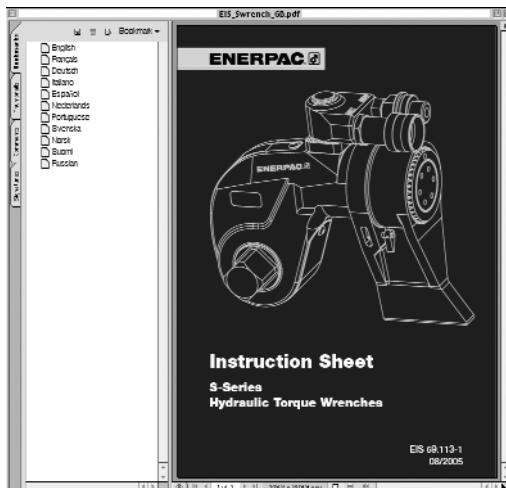
Please find the CD enclosed in the back of this manual

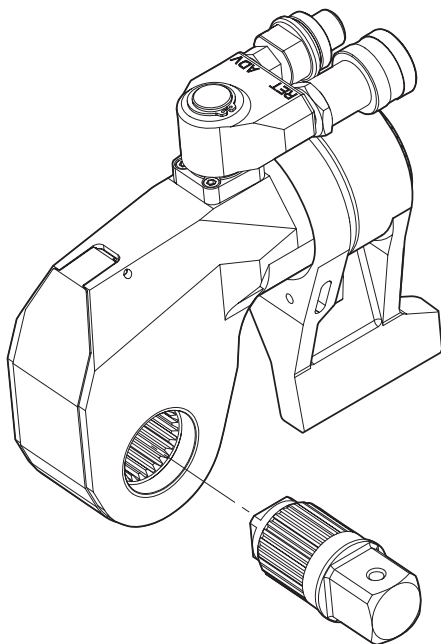
Choose the required product series from the left side of the screen, then click on the required language.

The following languages are listed:

English	Portuguese
Français	Svenska
Deutsch	Norsk
Italiano	Suomi
Español	Русский
Nederlands	

The install program of the Acrobat Reader 6.0 is included on the CD.





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## 1 Introduction

### Enerpac S-Series

The Enerpac S-series of lightweight hydraulic wrenches have been designed to tighten and loosen nuts and bolts for professional applications. The tool has an interchangeable drive shaft for which a wide range of socket sizes are available. The adjustable reaction arm further enhances the flexibility of the tool. The tool easily connects to the range of available Enerpac pumps. Enerpac can supply air, electric or hand operated pumps.

### Delivery instructions

Upon delivery all components must be inspected for damage incurred during shipping. If damage is found the carrier should be notified at once. Shipping damage is not covered by the Enerpac warranty.

### Warranty

- Enerpac guarantees the product only for the purpose for which is intended.
- All Enerpac products are guaranteed against defects in workmanship and materials for as long as you own them.

Any misuse or alteration invalidates the warranty.

- Observe all instructions as laid down in this manual.
- Replace any parts with Enerpac spare parts only.

### CE Declaration of conformity

S1500/S3000/S6000/S11000/S25000

Enerpac declares that these models meet the applicable standards and directives issued by the European Community. For a detailed list refer to the separate certification sheet.

## 2 Safety

Be aware that the operator is fully responsible during the operation of this tool. Enerpac is not responsible for damage or injury caused by misuse of this tool. Under some circumstances additional safety requirements may be required. Contact Enerpac immediately if a potentially hazardous situation arises.

Read this manual carefully and observe all safety precautions.

- Make sure you have completed a 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 at least 18 years of age.
- Always wear protective headwear, 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.
- Make sure your workplace is safe.
- Do not place any part of the body between the reaction arm and the reaction point.
- Do not place any objects between the reaction arm 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.
- Tightening and loosening nuts and bolts involves little visible movement. The pressure and loads, however are extreme. Keep your hands away from the fastener being loosened or tightened.
- Make sure that the spanner used to keep the nut or bolt on the opposite end is secured.
- Always use Enerpac pumps and hoses.
- Make sure appropriate guards are always securely in position and free from damage.
- Maximum pressure is 690 bar (10,000 psi). Never apply more pressure to any tool or accessory than the maximum allowable pressure. Refer to the technical data tables for maximum pressure setting.
- Make sure that the socket size corresponds to the size of the fastener being loosened or tightened. Always make sure that the socket receptacle corresponds to the drive shaft. Failure to do so can result in the tool becoming unstable and can lead to catastrophic failure.
- Do not abuse or overstress the hoses in any way. Do not bend the hoses excessively.
- Never carry the tool by its hoses.
- Always use Enerpac spare parts.
- Always position the tool for maximum stability.
- Make sure reaction points are adequate for the forces at work during operation of the tool.
- Be aware that a nut or bolt that breaks off during operation of the tool will become a high velocity projectile.
- Make sure the reaction point is of a suitable shape. For example 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 arm and the reaction plate. When the tool is operated the reaction arm and point will make forceful contact. Always make sure the tool is stable.
- Provide adequate support in vertical and inverted applications.
- The maximum torque output of the tool must always exceed the torque required to loosen or tighten the nut or bolt.
- The torque required to loosen a nut is variable and may exceed the torque capacity of the tool. Therefore never operate the tool at maximum or close to maximum capacity when loosening a nut or bolt.
- Never operate the tool with a hydraulic supply connection to the advance side only as this may damage the internal parts.
- If the wrench is dropped from a height, have the tool inspected before you operate it again.
- In severe conditions the tool must be cleaned and lubricated more frequently.
- Make sure to minimize torsional and bending stresses in the tool, the ratchet and any accessories.
- Do not strike the tool with a hammer while under a full load. This will invalidate the guarantee.
- Use of extension pieces or long-reach sockets is not recommended. They increase torsional and bending stresses, and reduce stability of the tool.
- Always observe the maintenance instructions.

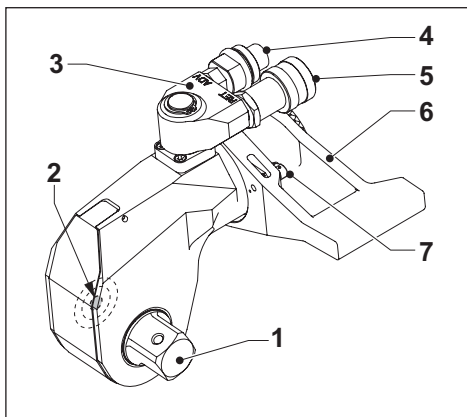


Fig. A

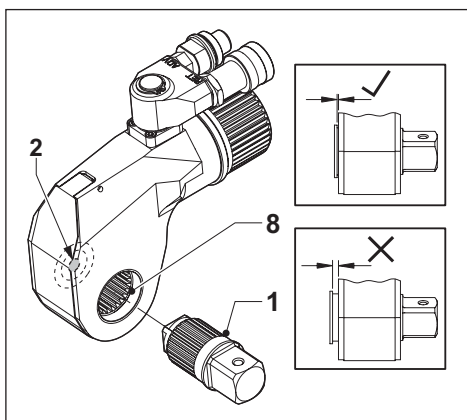



Fig. B

### 3 Assembly and adjustments

#### 3.1 Overview and features (fig. A)


- 1 Drive shaft
- 2 Drive shaft release button
- 3 Swivel coupling
- 4 Advance hose connection
- 5 Return hose connection
- 6 Reaction arm
- 7 Reaction arm latch

#### 3.2 To attach and remove the drive shaft (fig. B)

 Make sure to depressurize and disconnect the tool from the hydraulic supply first.

##### 3.2.1 To attach the drive shaft

- Insert the drive shaft (1) into the ratchet (8).
- Press the release button (2) and keep it depressed.
- Push and turn the drive shaft until it locks into place.

 Make sure the drive shaft fits tightly into the ratchet.

##### 3.2.2 To remove the drive shaft

- Press the release button (2) and keep it depressed.
- Pull the drive shaft (1) until it is released.
- Remove the drive shaft from the ratchet (8).

##### 3.3 To select the drive direction (fig. B)

- For tightening operations, fit the drive shaft (1) to the tool as shown.
- For loosening operations, fit the drive shaft to the opposite side of the tool.

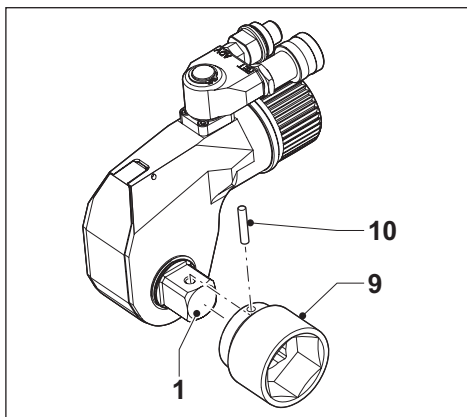


Fig. C

### 3.4 To fit and remove a hex socket (fig. C)

#### 3.4.1 To fit a hex socket

- Position the socket (9) onto the drive shaft (1).
- Fit the retaining pin (10).

#### 3.4.2 To remove a hex socket

- Remove the retaining pin (10).
- Take the socket (9) off the drive shaft (1).

### 3.5 To mount the reaction arm (fig. D)

The reaction arm can be rotated through 360° for maximum stability against a reaction point.

- Position the reaction arm (6) onto the ratchet end (11) of the tool.
- Press the latch (7) and slide the arm all the way onto the tool. Release the latch to secure the arm.
- To adjust the angle of the reaction arm (6), press the latch (7) and slide the arm off the tool. Position the arm as necessary.

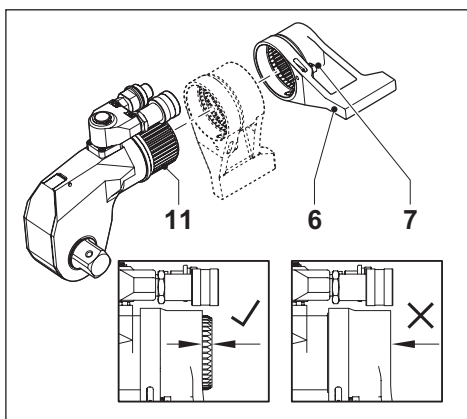


Fig. D

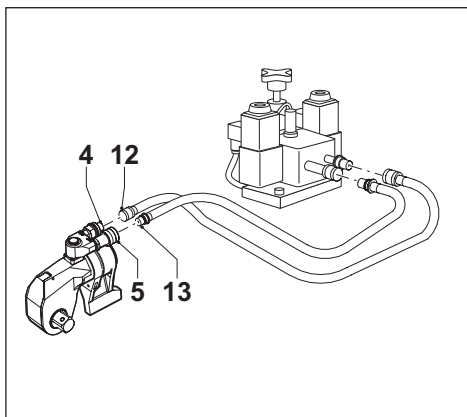


Fig. E

### 3.6 To connect the hoses (fig. E)

- ⚠** Make sure all accessories meet the pressure requirements.  
 Make sure the quick connect couplings are securely attached before operating the tool.

The tool is fitted with male and female quick-connect couplings. Use Enerpac twin safety hoses only. Refer to the table below.

Hose model number	Description
THQ-706T	Two hoses, length 6 m (19.5 feet)
THQ-712T	Two hoses, length 12 m (39 feet)

- Remove the hose dust caps.
- Connect the hose with the female coupling (12) to the advance coupling (4).
- Pull the sleeve on the female coupling of the hose over the advance coupling.
- Tighten the sleeve.
- Connect the hose with the male coupling (13) into the return coupling (5).
- Pull the sleeve on the return coupling over the male coupling of the hose.
- Tighten the sleeve.
- Fit the hoses to the pump. Refer to the pump instruction manual.



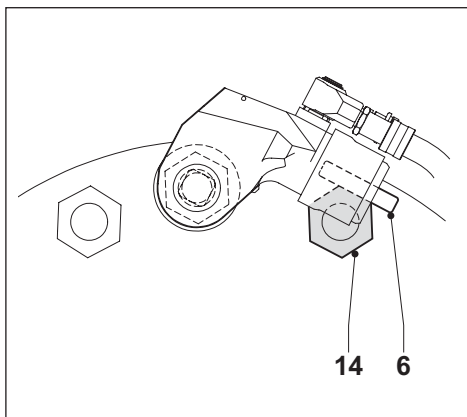


Fig. F

## 4 Operation

### 4.1 Prior to operation

- Make sure the nut or bolt to be fastened are clean and free of dust.
- Make sure the nut or bolt runs correctly on the thread.
- Make sure that the threads and the bearing surface are liberally coated with the correct lubricant or anti-seizure compound.
- Make sure that the spanner used to keep the nut or bolt on the opposite end in place, is of the correct size and that there is an adequate abutment surface.
- Contact Enerpac if a suitable reaction point is not available. Enerpac has extensive experience with providing special reaction devices.

### 4.2 To set the torque

Adjust the pressure on the pump as necessary to set the torque. For a complete list of torque settings, refer to the table in the back of the manual.

### 4.3 To operate the tool (fig. F)

- Position the reaction foot (6) against a suitable reaction point (14). The reaction point will counteract the force caused by operating the tool.
- Start the pump.
- Operate the tool to tighten or loosen the nut or bolt.
- Stop the pump immediately after work has finished.



Do not strike the tool, socket or nut with a hammer while under a full load.

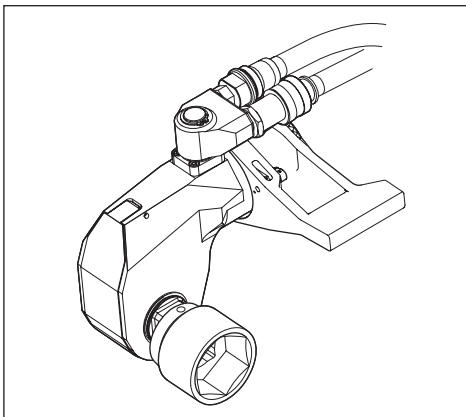


Fig. G

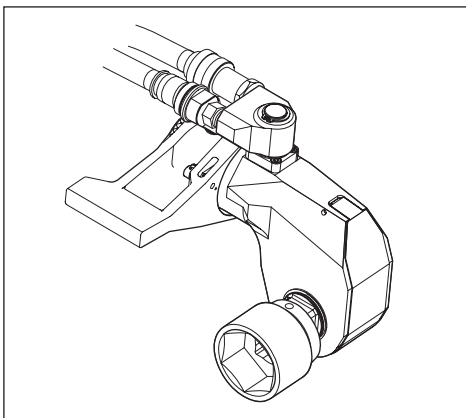


Fig. H

#### 4.3.1 To tighten a nut or bolt (fig. G)

- Position the tool on the nut or bolt in the orientation as shown.
- Operate the pump until the nut or bolt has been tightened to the required torque.

#### 4.3.2 To loosen a nut or bolt (fig. H)

- Apply releasing oil to the threads. Allow the oil to soak.
- Position the tool on the nut or bolt in the orientation as shown.
- Operate the pump until the nut or bolt is loose.

**!** If the nut or bolt will be re-used avoid excess load when loosening. Use the tool to take the load off the nut or bolt only.

- i** For fully threaded UNC nuts or bolts do not exceed one and a half times nominal torque for a coefficient of friction of 0.1.
- Be aware that when loosening a nut or bolt more torque is usually required than when tightening.
  - Humidity corrosion (rust) requires up to twice the torque required for tightening.
  - Sea water and chemical corrosion requires up to two and a half times the torque required for tightening.
  - Heat corrosion requires up to three times the torque required for tightening.

**!** Be aware that when loosening a nut or bolt shock loading can occur. Do not apply more than 75% of the maximum torque when loosening nuts or bolts.

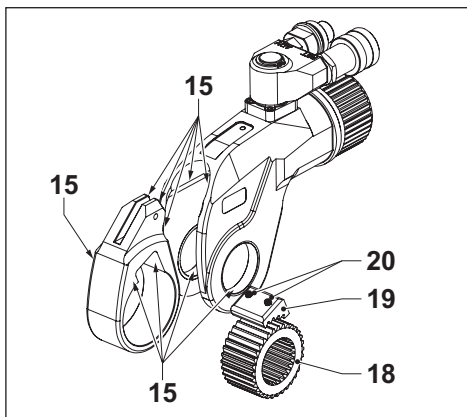


Fig. I

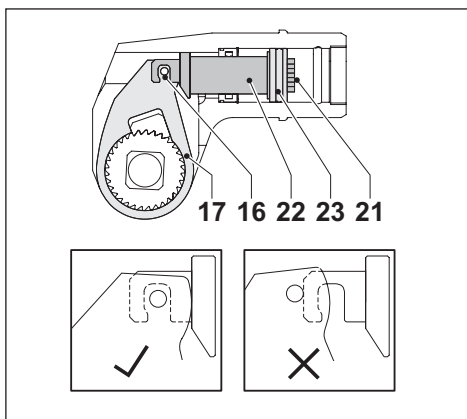


Fig. J

## 5 Maintenance and troubleshooting

**!** Preventative maintenance can be carried out by the user. Full maintenance must be carried out by an approved and authorized technician appointed by Enerpac.

- Non destructive testing must be carried out if the tool has been used under severe conditions.

### 5.1 Preventative Maintenance (fig. I & J)

- Remove the drive shaft
- Remove the housing guard screws and remove the housing guard.
- Release the crank pin (16) from the piston rod hook.
- Remove the crank assembly (17).
- Remove the ratchet (18), spring loaded drive shoe (19), and compression springs (20).
- Clean all exposed components with a mild solvent.
- Inspect all parts for damage.
- Dry all components. Apply a thin coat of molybdenum disulphide as indicated (15).

**i** Molybdenum disulphide is available from Enerpac.

- Reassemble the components in reverse order except the housing guard. Make sure that the crank, drive shoe, ratchet, and crank pin are correctly installed. Failure to install these parts correctly will result in component damage.
- Connect the tool to the pump.
- Check the tool at a nominal pressure to make sure the piston advances and retracts freely.
- Release the pressure and make sure the piston fully retracts.
- Attach the housing guard.

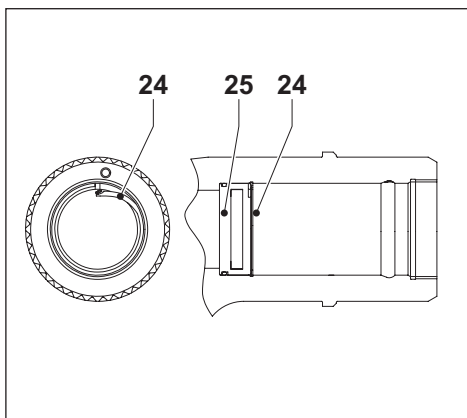


Fig. K

## 5.2 Full maintenance

### 5.2.1 Piston removal (fig. J)

- Remove all components as described for preventative maintenance.
- Remove the circlip from the swivel coupling.
- Remove the swivel-coupling block from the tool.
- Remove the pin by removing the pin retaining screws.
- Remove all 'O' rings from the pin and block.
- Carefully hold the cylinder body to unscrew the cylinder gland.
- Loosen and remove the piston locknut (21) using a socket spanner. To prevent the piston from rotating, you may temporarily replace the crank (17).
- Remove the piston rod (22) from the front of the tool.
- Remove the piston (23) by pushing a suitable drift through the front of the tool onto the piston.
- Remove the seals from the piston, piston locknut and gland.

### 5.2.2 Cylinder bush removal (fig. K) (S1500/S3000/S6000/S11000 only)



Only remove the cylinder bush if there is hydraulic fluid leakage in the head area.

- Press the retaining ring (24) radially inward using a flat-head screwdriver.
- Lift the ring away from the groove and out of the bore using a seal pick.
- The ring end must be positioned at the slot in the bush for the seal pick to locate under the bush. If the ring end is not at the slot, use the screwdriver to rotate the ring.

- Remove the cylinder bush (25) by pushing a suitable drift through the front of the tool onto the bush.
- Remove both bush seals.

### 5.2.3 Reaction arm removal



Only remove the reaction arm if the retainer is visibly damaged.

- Loosen the set screw.
- Remove the lever/pin and the retainer.

### 5.2.4 Drive shaft release button removal



Only remove the drive shaft release button if it is damaged.

- Remove the retaining ring.
- Remove the button circlip.
- Remove the retaining bush.
- Clean all exposed components with a mild solvent.
- Inspect all parts for damage.

### 5.2.5 Non Destructive Testing

- Carry out non destructive testing by magnetic particle inspection on the following components:
  - Body
  - Reaction arm
  - Crank
  - Drive shaft
  - Ratchet
  - Drive shoe

### 5.2.6 Reassembly

- Dry all components. Apply a thin coat of molybdenum disulphide as indicated (15).
- Lubricate all seals with silicon grease and reassemble in the reverse order.
- Insert the piston squarely in the bore.
- Apply Loctite 222 to the following components:
  - Swivel coupling pin retaining bolts
  - Reaction arm retaining set screw
  - Piston locknut threads
- Restrain the hook end of the piston rod using the crank (17). Tighten the locknut to the following torque.

#### Torque

	(Nm)	(Ft.lbs)
S1500	41	30
S3000	54	40
S6000/S11000	81	60
S25000	81	60

### 5.3 Trouble shooting

Symptom	Cause	Remedy
Cylinder does not advance or retract	Quick-connect coupling is damaged	Replace the coupling
	Quick connect- coupling is not connected	Reconnect the hoses and couplings securely
	Dirt in the direction control valve on the pumping unit	Disassemble the unit and clean the valve
Cylinder does not build up pressure	Piston seal leaks	Replace the seals
	Pump does not build up pressure	Adjust the pressure
	Pump is defective	Refer to the pump manual
Cylinder leaks	Seal failure	Replace the cylinder seals
Cylinder operates backwards	Connections are reversed	Reconnect the hoses
Ratchet returns on retract stroke	Broken drive shoe	Replace the drive shoe
Ratchet does not take successive strokes	Defective drive shoe	Replace the drive shoe
	Lubricant on the ratchet and/or drive shoe splines	Disassemble the head and remove the lubricant from splines

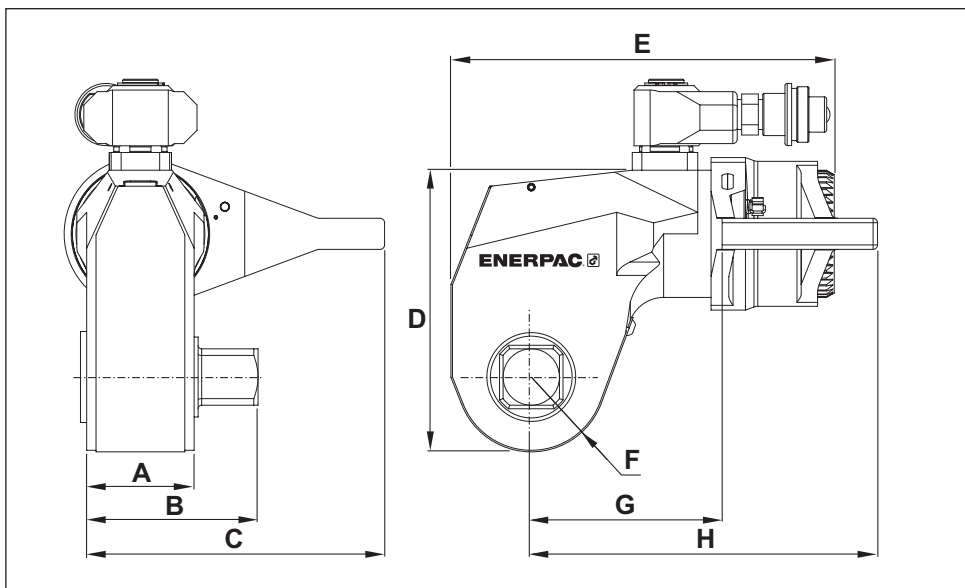


Fig. L

## 6 Technical specifications

### 6.1 Capacities and dimensions (fig. L)

			S1500	S3000	S6000	S11000	S25000
Drive shaft	inch	3/4	1	1 1/2	1 1/2	2 1/2	
Socket capacity	mm	15 - 50	20 - 100	41 - 155	41 - 155	60 - 255	
	inch	5/8 - 1 7/8	7/8 - 3 7/8	1 5/8 - 6 1/4	1 5/8 - 6 1/4	2 3/8 - 10	
Maximum operating pressure	bar	690	690	690	690	690	
	psi	10,000	10,000	10,000	10,000	10,000	
Max. torque	at 690 bar	Nm	1.898	4.339	8.144	14.914	34.098
	at 10,000 psi	Ft.lbs	1,400	3,200	6,010	11,000	25,150
Min. torque	at 69 bar	Nm	190	434	814	1.491	3.410
	at 1000 psi	Ft.lbs	140	320	601	1,100	2,515
Dimensions	A	mm (inch)	39 (1.53)	48 (1.88)	57 (2.24)	71 (2.79)	87 (3.43)
	B	mm (inch)	63 (2.48)	77 (3.03)	90 (3.54)	111 (4.37)	143 (5.63)
	C	mm (inch)	110 (4.33)	134 (5.27)	179 (7.04)	196 (7.71)	244 (9.61)
	D	mm (inch)	95 (3.74)	126 (4.96)	162 (6.37)	185 (7.28)	240 (9.45)
	E	mm (inch)	136 (5.35)	172 (6.77)	201 (7.91)	226 (8.89)	292 (11.50)
	F	mm (inch)	25,0 (.98)	33,0 (1.29)	42,0 (1.65)	49,5 (1.94)	63,5 (2.50)
	G	mm (inch)	69 (2.72)	90 (3.54)	112 (4.41)	132 (5.20)	182 (7.17)
	H	mm (inch)	119 (4.69)	159 (6.26)	187 (7.36)	227 (8.94)	292 (11.50)
Weight	kg (lbs)	2,7 (5.94)	5,0 (11.0)	8,5 (18.7)	15,0 (33.0)	31,0 (68.4)	

## 6.2 Torque settings

To set the torque, adjust the pump pressure according to the following calculation:

- Pump pressure = Torque / Torque factor

### Torque factor

	S1500	S3000	S6000	S11000	S25000
Metric system	2,753	6,293	11,818	21,631	49,417
Imperial system	0.14	0.32	0.601	1.1	2.515



## 6.2.1 Metric system table

	S1500	S3000	S6000	S11000	S25000
Pump pressure (bar)	Torque (Nm)	Torque (Nm)	Torque (Nm)	Torque (Nm)	Torque (Nm)
69	190	434	814	1.491	3.410
83	228	520	977	1.789	4.132
97	266	607	1.140	2.087	4.821
110	304	694	1.303	2.385	5.510
124	341	780	1.466	2.683	6.199
138	379	867	1.629	2.981	6.887
152	417	954	1.792	3.279	7.576
166	455	1.041	1.955	3.577	8.265
179	493	1.127	2.117	3.875	8.954
193	531	1.214	2.280	4.173	9.642
207	569	1.301	2.443	4.472	10.331
221	607	1.388	2.606	4.770	11.020
234	645	1.474	2.769	5.068	11.709
248	683	1.561	2.932	5.366	12.397
262	721	1.648	3.095	5.664	13.086
276	759	1.734	3.258	5.962	13.775
290	797	1.821	3.420	6.260	14.464
303	835	1.908	3.583	6.558	15.152
317	873	1.995	3.746	6.856	15.841
331	911	2.081	3.909	7.154	16.530
345	949	2.168	4.072	7.453	17.219
359	986	2.255	4.235	7.751	17.907
372	1.024	2.341	4.398	8.049	18.596
386	1.062	2.428	4.561	8.347	19.285
400	1.100	2.515	4.724	8.645	19.973
414	1.138	2.602	4.886	8.943	20.662
428	1.176	2.688	5.049	9.241	21.351
441	1.214	2.775	5.212	9.539	22.040
455	1.252	2.862	5.375	9.837	22.728
469	1.290	2.948	5.538	10.135	23.417
483	1.328	3.035	5.701	10.434	24.106
497	1.366	3.122	5.864	10.732	24.795
510	1.404	3.209	6.027	11.030	25.483
524	1.442	3.295	6.189	11.328	26.172
538	1.480	3.382	6.352	11.626	26.861
552	1.518	3.469	6.515	11.924	27.550
566	1.556	3.556	6.678	12.222	28.238
579	1.593	3.642	6.841	12.520	28.927
593	1.631	3.729	7.004	12.818	29.616
607	1.669	3.816	7.167	13.116	30.305
621	1.707	3.902	7.330	13.415	30.993
634	1.745	3.989	7.492	13.713	31.682
648	1.783	4.076	7.655	14.011	32.371
662	1.821	4.163	7.818	14.309	33.060
676	1.859	4.249	7.981	14.607	33.748
690	1.897	4.336	8.144	14.905	34.098

## 6.2.2 Imperial system table

	S1500	S3000	S6000	S11000	S25000
Pump pressure (psi)	Torque (Ft.lbs)	Torque (Ft.lbs)	Torque (Ft.lbs)	Torque (Ft.lbs)	Torque (Ft.lbs)
1,000	140	320	601	1,100	2,515
1,200	168	384	721	1,320	3,048
1,400	196	448	841	1,540	3,556
1,600	224	512	962	1,760	4,064
1,800	252	576	1,082	1,980	4,572
2,000	280	640	1,202	2,200	5,080
2,200	308	704	1,322	2,420	5,588
2,400	336	768	1,442	2,640	6,096
2,600	364	832	1,563	2,860	6,604
2,800	392	896	1,683	3,080	7,112
3,000	420	960	1,803	3,300	7,620
3,200	448	1,024	1,923	3,520	8,128
3,400	476	1,088	2,043	3,740	8,636
3,600	504	1,152	2,164	3,960	9,144
3,800	532	1,216	2,284	4,180	9,652
4,000	560	1,280	2,404	4,400	10,160
4,200	588	1,344	2,524	4,620	10,668
4,400	616	1,408	2,644	4,840	11,176
4,600	644	1,472	2,765	5,060	11,684
4,800	672	1,536	2,885	5,280	12,192
5,000	700	1,600	3,005	5,500	12,700
5,200	728	1,664	3,125	5,720	13,208
5,400	756	1,728	3,245	5,940	13,716
5,600	784	1,792	3,366	6,160	14,224
5,800	812	1,856	3,486	6,380	14,732
6,000	840	1,920	3,606	6,600	15,240
6,200	868	1,984	3,726	6,820	15,748
6,400	896	2,048	3,846	7,040	16,256
6,600	924	2,112	3,967	7,260	16,764
6,800	952	2,176	4,087	7,480	17,272
7,000	980	2,240	4,207	7,700	17,780
7,200	1,008	2,304	4,327	7,920	18,288
7,400	1,036	2,368	4,447	8,140	18,796
7,600	1,064	2,432	4,568	8,360	19,304
7,800	1,092	2,496	4,688	8,580	19,812
8,000	1,120	2,560	4,808	8,800	20,320
8,200	1,148	2,624	4,928	9,020	20,828
8,400	1,176	2,688	5,048	9,240	21,336
8,600	1,204	2,752	5,169	9,460	21,844
8,800	1,232	2,816	5,289	9,680	22,352
9,000	1,260	2,880	5,409	9,900	22,860
9,200	1,288	2,944	5,529	10,120	23,368
9,400	1,316	3,008	5,649	10,340	23,876
9,600	1,344	3,072	5,770	10,560	24,384
9,800	1,372	3,136	5,890	10,780	24,892
10,000	1,400	3,200	6,010	11,000	25,150

## 7 Recommended spare parts

### 7.1 To order spare parts

Quote the information below when ordering spare parts:

- The assembly name and serial numbers.
- The component name and part number.
- The contract number or approximate date of purchase.

All item numbers quoted below refer to the repair parts sheets. For specific component part numbers refer to the appropriate bill of materials.

### 7.2 Seal kit (item 3.0)

- 1 Gland 'O' ring
- 1 Piston 'T' Seal
- 1 Piston locknut 'O' ring - small
- 1 Piston locknut 'O' ring - large
- 1 Rod 'T' seal
- 1 Body bush 'O' ring
- 2 Swivel manifold pin face 'O' rings
- 1 Swivel manifold pin 'O' ring
- 2 Swivel manifold block 'O' rings
- 1 Manifold retaining clip

### 7.3 Swivel manifold seal kit (item 2.0)

- 2 Swivel manifold pin face 'O' rings
- 1 Swivel manifold pin 'O' ring
- 2 Swivel manifold block 'O' rings
- 1 Manifold retaining clip

### 7.4 Spares kit (item 4.0)

- 1 Male coupling
- 1 Female coupling
- 1 Male adaptor
- 1 Body bush retaining ring
- 1 Guard screw (model S1500)
- 2 Guard screws (model S3000)
- 3 Guard screws (model S6000/S11000/S25000)
- 1 Manifold retaining circlip
- 4 Swivel manifold pin retaining screws
- 1 Crank pin
- 2 Drive shoe springs
- 1 Reaction arm retainer screw
- 1 Reaction arm retainer spring
- 1 Guard pin (S1500 only)
- 1 Drive shaft holder retaining ring

### 7.5 Drive shaft button kit (item 1.13)

### 7.6 Recommended tool kit

S1500

- 1 7/8" spanner
- 1 3/4" spanner
- 1 5/8" spanner
- 1 Circlip pliers
- 1 Seal extraction tool
- 1 14 mm socket
- 1 ø 4 x 20 mm PCD pin spanner
- 1 1,5 mm Allen key
- 1 2 mm Allen key
- 1 2,5 mm Allen key
- 1 3 mm Allen key

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**S3000**

- 1 7/8" spanner
- 1 3/4" spanner
- 1 5/8" spanner
- 1 Circlip pliers
- 1 Seal extraction tool
- 1 20 mm socket
- 1 ø 4 x 25 mm PCD pin spanner
- 1 1,5 mm Allen key
- 1 2,5 mm Allen key
- 1 3 mm Allen key

**S6000**

- 1 7/8" spanner
- 1 3/4" spanner
- 1 5/8" spanner
- 1 Circlip pliers
- 1 Seal extraction tool
- 1 22 mm socket
- 1 ø 4 x 30 mm PCD pin spanner
- 1 1,5 mm Allen key
- 1 2,5 mm Allen key
- 1 4 mm Allen key

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**S11000**

- 1 7/8" spanner
- 1 3/4" spanner
- 1 5/8" spanner
- 1 Circlip pliers
- 1 Seal extraction tool
- 1 26 mm socket
- 1 ø 4 x 40 mm PCD pin spanner
- 1 1,5 mm Allen key
- 1 3 mm Allen key
- 1 4 mm Allen key

**S25000**

- 1 7/8" spanner
- 1 3/4" spanner
- 1 5/8" spanner
- 1 Circlip pliers
- 1 Seal extraction tool
- 1 36 mm socket
- 1 ø 5 x 60 mm PCD pin spanner
- 1 1,5 mm Allen key
- 1 3 mm Allen key
- 1 4 mm Allen key

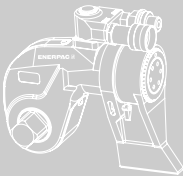
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