

# ENERPAC



## BOLTING TOOLS

Enerpac's Bolting Solutions caters to the complete bolting work-flow, ensuring joint integrity in a variety of applications throughout industry:

### Joint Assembly

From simple pipe alignment to complex joint positioning of large structural assemblies, our comprehensive line of joint assembly products range from hydraulic and mechanical alignment tools to PLC-controlled multi-point positioning systems.

### Controlled Tightening

Enerpac offers a variety of controlled tightening options to best meet the requirements of your application, ranging from manual torque multipliers, to pneumatic torque wrenches, as well as a comprehensive range of hydraulic torque wrenches and inter-connectable bolt tensioning tools.

### Joint Separation

Enerpac also provides hydraulic nut splitters and a variety of mechanical and hydraulic spreading tools for joint separation during inspection, maintenance and decommissioning operations.

High-quality bolting solutions from the brand you can trust. See how Enerpac can make your bolting work-flow more accurate, safer and efficient.



### Bolting Integrity Software

Visit [www.enerpac.com](http://www.enerpac.com) to access our free on-line bolting software application and obtain information on tool selection, bolt load calculations and tool pressure settings.

A combined application data sheet and joint completion report is also available.

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All information in this catalog can be changed due to product improvements without prior notice.

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## ATM-Series Flange Alignment Tools



## Misaligned Joints

Joints must be pulled together and correctly aligned prior to tightening. Current methods of manipulation tend to be dangerous and involve a high degree of manual lifting using slings, hooks and lifting gear. These methods can damage joint components, are time consuming in setup and disassembly, operational time and the amount of manpower required.

## Solution: Flange Alignment Tools

The Enerpac ATM-Series Flange Alignment Tools are developed to rectify twist and rotational misalignment without additional stress in pipelines.

Hydraulic cylinders, jacks and lifting wedges can also be used to assist in positioning and aligning.

## E-Series, Manual Torque Multipliers



## Controlled Tightening when External Power is Unavailable

Applications are often located where external power sources to drive air or electric-powered tools are unavailable but controlled bolting is required, typically at values higher than an operator can generate using manual wrenches.

## Solution: Manual Torque Multipliers

Enerpac E-series manual torque multipliers offer a range of output torques from manual inputs that can easily be achieved by an operator, providing accurate, efficient torque multiplication for make-up or break-out of joint fasteners.

## S, W and RSL-Series Torque Wrenches



## Industrial

Controlled tightening of a large range of fasteners including those in hard to reach areas, which require highly accurate torquing solutions.

## Solution: Hydraulic Torque Wrenches

Professional tools for industrial applications. Truly versatile tools which utilize standard Impact Sockets, optional direct Allen® Key Drives or Interchangeable cassettes to provide controlled tightening of multiple-sized fasteners per tool. Optional accessories further extend the application range of these products.

## PTW & ETW-Series Torque Wrenches



## General Applications

Applications that require controlled bolting, feature a high volume of fastenings.

## Solution: Pneumatic Torque Wrenches

Enerpac Pneumatic Torque Wrenches are fast, easy to use and highly accurate. The ETW-Series electric torque wrenches are particularly well suited for complex jobs, which demand precision and traceability.

## Controlled Bolting

Increasing Health and Safety, Environmental and Productivity requirements demand even and parallel joint closure to ensure a sound assembly, especially on pressure containing vessels. This often requires the simultaneous tightening of multiple fasteners.

### **Solution:** Hydraulic Bolt Tensioners

Enerpac Bolt Tensioners can achieve accurate preload in single or multiple fastener applications simultaneously, without inducing rotational twist or contending with the uncertainties of friction and lubrication.

Power Generation Bolt Tensioners (PGT) and Foundation Bolt Tensioners (FTE, FTR) are also available.

### **HM, GT, EAJ-Series, Bolt Tensioners**



## Frozen or Corroded Nuts

Often nuts are difficult to remove, while loosening using tightening tools is possible it generally requires larger equipment and is time consuming.

The use of cutting torches or hammers and chisels can cause damage to the joint components, requires significantly longer setup and operational time and can present a potential safety risk.

### **Solution:** Hydraulic Nut Cutters

Nut splitting with the NC Series Nut Cutters or NS Series Nut Splitters is the safest method. It takes less time and avoids costly damage to joint components. The head design fitted with heavy-duty chisels permits the splitting of nuts on a wide variety of applications.

### **NC and NS-Series, Nut Cutters**



## Joint Separation

Separation of stubborn joints for inspection and maintenance particularly those fitted with ring grooves or those with external forces acting on them are often difficult to separate. The use of hammers and wedges, chain blocks and lever bars can damage joint components and present a potential safety risk.

### **Solution:** Flange Spreading Tools

Enerpac Wedge Spreaders and Flange Spreading Tools offer controlled separation without bending or risk of slipping from the joint. The SWi and SG-Series flange spreading tools can also be used.

### **FSC, FSH, FSM-Series, Wedge Spreaders**



## Pumps and Accessories

A wide range of Pumps and Accessories are available including: Manual, Air and Electrically-operated pump units, hoses, gauges, manifolds and fittings.

### **Enerpac Bolting and Software Solutions**

A wide range of Pumps and Accessories are available including: Manual, Air and Electrically-operated pump units, hoses, gauges, manifolds and fittings.

### **Pumps and Accessories Bolting Integrity Software**



▼ Shown from left to right: E291, E393, E494



## Accurate, Efficient Torque Multiplication

When accurate make-up or break-out of stubborn fasteners requires high torque

- High-efficiency planetary gear sets achieve high output torque from low input torque
- Most models operator protected by anti-backlash device
- Multiplier output accuracy  $\pm 5\%$  of input torque
- Reversible, tighten or loosen bolts
- Reaction bar or reaction plate type
- Angle-of-turn protractor standard on E300 series models
- Reaction plate models offer increased versatility with reaction point locations
- E300 and E400 series replaceable shear drives provide overload protection of internal power train
- One replacement shear drive is included with each E300 and E400-Series models



### Typical Torque Multiplier Applications

- Locomotives
- Power plants
- Pulp and paper mills
- Refineries
- Chemical plants
- Mining and construction
- Off-road equipment
- Shipyards
- Cranes



### ▼ SELECTION CHART

Torque Multiplier Type	Nominal Torque Output		Model Number
	(Ft.lbs)	(Nm)	
Reaction Bar Multiplier	750	1020	<b>E290PLUS</b>
	1000	1358	<b>E291</b>
	1200	1627	<b>E391</b>
	2200	2983	<b>E392</b>
	3200	4340	<b>E393</b>
Reaction Plate Multiplier	2200	2983	<b>E492</b>
	3200	4339	<b>E493</b>
	5000	67879	<b>E494</b>
	8000	10,846	<b>E495</b>

# Manual Torque Multipliers



## Manual Torque Multipliers

Enerpac manual torque multipliers provide efficient torque multiplication in wide clearance applications and when external power sources are not available.

Manual torque multipliers are used in most industrial, construction, and equipment maintenance applications. Hydraulic torque wrenches are better suited for tight tolerance, flange and repetitious bolting applications.

## Use Reaction Bar Models:

- where space is limited
- where multiple reaction points are available
- when portability is desirable

## Use Reaction Plate Models:

- above 3200 Ft.-lbs. output torque
- on flanges and applications where neighboring bolt or nut is available to react against
- when extreme reaction forces are generated

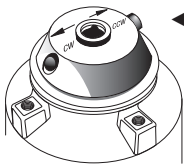
## E Series



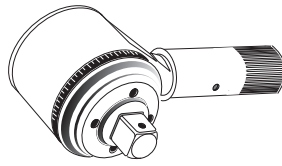
Nominal Output Torque:  
**750-8000 Ft.lbs**

Torque Ratio:  
**3.3:1-52:1**

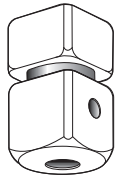
Multiplier Output Ratio Accuracy:  
**± 5 %**



**Selector Pawl**  
Models with anti-backlash protection have directional selector pawls. Set the pawl for clockwise or counter-clockwise rotation.



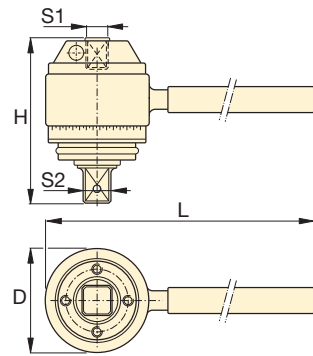
**Angle-of-Turn Protractor**  
E391, E392 and E393 models include an angle-of-turn protractor (scale) to tighten fasteners using a "torque turn" method. Allows accurate measuring a specific number of degrees of rotation.



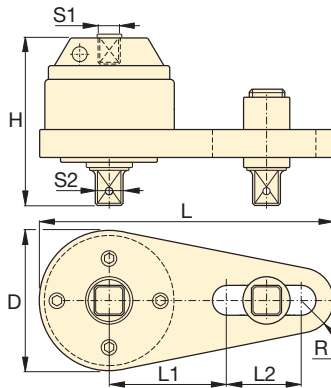
**Shearable Square Drive**  
Designed to provide overload protection on E300- and E400-series multiplier power train by shearing when excess input torque is applied. Internal shear pin prevents tool from falling off bolt.



**CAUTION!**  
Never use impact type air tools for power driving torque multipliers. Torque multiplier drive train damage will occur.



Reaction Bar Type <sup>1)</sup>



Reaction Plate Type <sup>1)</sup>



**BSH-Series Sockets**  
Heavy-Duty Impact Sockets for power driven torquing equipment.

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**Back-Up Spanners**  
Hands free tool to be used to stop back nut from turning during make up or break out. Two hex sizes in one tool.

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Input Torque		Torque Ratio	Input Female Square Drive	Output Male Square Drive		Over-load Protection	Anti-Back-lash	Dimensions (in)						Wt. (lbs)	Model Number
(Ft.lbs)	(Nm)			S1 (in)	S2 (in)			Replaceable Shear Drive Model No.	D	H	L	L1	L2		
227	309	3.3 : 1	1/2	3/4	-	No	No	2.8	3.3	8.5	-	-	-	4.0	E290PLUS
303	411	3.3 : 1	1/2	3/4	-	No	No	2.8	3.3	17.4	-	-	-	5.5	E291
200	271	6 : 1	1/2	3/4	E391SDK	Yes	No	3.9	4.0	19.6	-	-	-	9.0	E391
162	220	13.6 : 1	1/2	1	E392SDK	Yes	Yes	4.1	5.7	19.6	-	-	-	15.2	E392
173	235	20.25 : 1	1/2	1	E393SDK	Yes	Yes	4.1	6.5	19.6	-	-	-	18.3	E393
162	219	13.6 : 1	1/2	1	E392SDK	Yes	Yes	4.9	5.5	14.0	5.5	4.9	1.3	17.2	E492
173	234	18.5 : 1	1/2	1	E393SDK	Yes	Yes	4.9	6.4	14.0	5.5	4.9	1.3	19.6	E493
189	256	26.5 : 1	1/2	1 1/2	E494SDK	Yes	Yes	5.6	8.7	14.9	7.0	3.5	1.7	34.0	E494
208	154	52 : 1	1/2	1 1/2	E495SDK	Yes	Yes	5.8	10.7	15.2	7.0	3.5	1.9	50.3	E495

<sup>1)</sup> E200 and E400-series do not have an Angle-of-Turn Protractor (scale).  
User must verify manual torque wrench accuracy prior to use to ensure accurate final output torque.

# S-Series, Square Drive Hydraulic Torque Wrenches **ENERPAC**

▼ Shown: S3000PX



## Setting New Standards in Safety, Simplicity and Performance



### Two Handle Styles

Robust angled positioning handles come standard with every S-Series (X-Edition) tool. Straight positioning handles are available as accessories.

Compatible S-Series (X-Edition) wrenches	Angled positioning handles (standard)	Straight positioning handles (optional)
S1500X, S3000X	SWH6A	SWH6S
S6000X, S11000X	SWH10A	SWH10S
S25000X	Supplied with an eyebolt handle (SWH10EA)	

### Safety and Performance

- Compact, high-strength uni-body construction provides a small operating radius without sacrificing endurance
- 35° rotation angle and rapid return stroke for fast operation
- Tough manifold design with added safety feature for enhanced operator safety

### Simplicity

- 360° click-on reaction arm with quick release lever provides easier handling, even when wearing gloves
- Includes robust handle which mounts on both sides of tool for extra maneuverability
- Push button square drive release for quickly reversing the square drive for tightening or loosening

### Versatility

- Available with optional enhanced tilt and swivel TSP300 manifold for horizontal and vertical maneuverability, with greater durability\*

### Accuracy

- Constant torque output provides accuracy of +/-3% across full stroke
- Optional Angle-of-Turn Indicator provides measurement of rotation

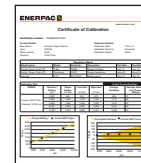
\* TSP300 is designed for X-Edition tools only, and is not compatible with standard edition tools. For replacement components for existing tools, refer to repair sheet on [www.enerpac.com](http://www.enerpac.com)



### TSP - Pro Series Swivel

The optional TSP300 tilt and swivel manifold with robust interlocking design provides 360° X-axis rotation and 160° Y-axis rotation.

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### Calibration Certificate

All X-Edition tools are CE-ATEX declared, factory calibrated and are shipped complete with a calibration certificate.

  II 2 GD ck T4  
CSA/SIRA 15XT072



### Bolting Integrity Software

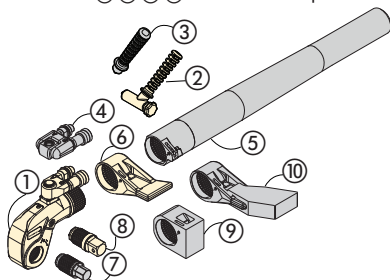
Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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# S-Series, X-Edition, Square Drive Torque Wrenches

Standard are ① ② ⑥ ⑧. Other items are optional.



- ① Drive Unit
- ② Angled Positioning Handle
- ③ Straight Positioning Handle
- ④ Pro Series Swivel
- ⑤ Reaction Tube Extension
- ⑥ Standard Reaction Arm
- ⑦ Allen® Drive
- ⑧ Square Drive
- ⑨ Short Reaction Arm
- ⑩ Extended Reaction Arm



### Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

## S Series (X-Edition)



Nominal Torque at 10,000 psi:

**26,150 Ft.lbs**

Square Drive Range:

**3/4-2 1/2 inch**

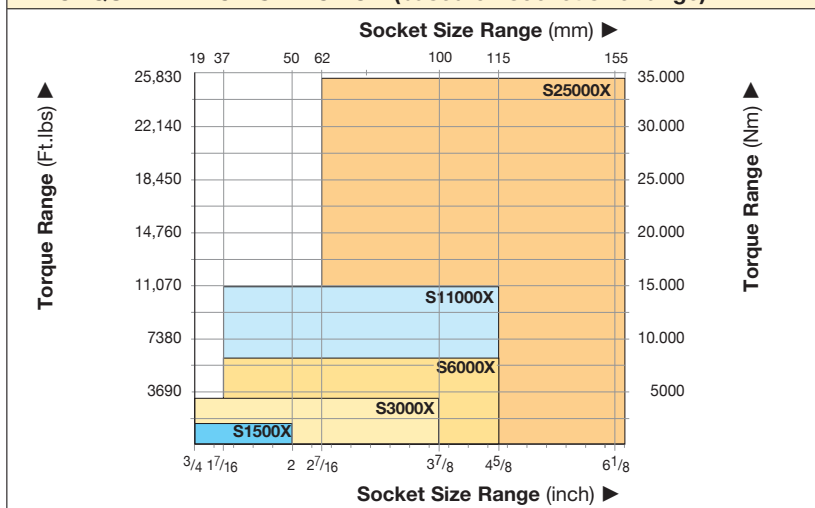
Nose Radius:

**.98-2.52 inch**

Maximum Operating Pressure:

**10,000 psi**

### \*TORQUE WRENCH SELECTION (based on socket size range)



### Back-Up Spanners

Hands free tool to be used to stop back nut from turning during make up or break out.

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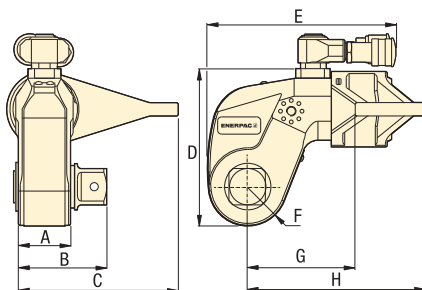
▼ The rigid steel design of the S-Series torque wrenches provides durability, reliability and safety.



### Use only Heavy-Duty Impact Sockets

For power driven torquing equipment, according to ISO2725 and ISO1174; DIN 3129 and DIN 3121 or ASME-B107.2/1995.

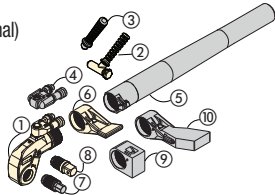
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Nominal Torque at 10,000 psi / 690 bar		Minimum Torque at 10,000 psi / 690 bar		Square Drive		Angle-of-Turn Model No. (optional)	Torque Wrench Model No.*	Dimensions (in)								Wt. (lbs)
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)	Size (in)	Model No. (included with wrench)			A	B	C	D	E	F	G	H	
1440	1952	144	195	3/4"	SD15-012	AOT15	<b>S1500X</b>	1.54	2.56	4.25	3.82	5.35	0.98	2.76	5.08	7.0
3225	4373	323	438	1"	SD30-100	AOT30	<b>S3000X</b>	1.89	3.07	5.31	5.04	6.81	1.30	3.54	6.34	12.3
6150	8338	615	834	1 1/2"	SD60-108	AOT60	<b>S6000X</b>	2.17	3.62	6.65	6.18	7.56	1.57	4.33	7.40	20.2
11,175	15,151	1,118	1516	1 1/2"	SD110-108	AOT110	<b>S11000X</b>	2.83	4.49	7.76	7.48	8.98	1.95	5.24	9.02	34.7
26,150	35,455	2,615	3545	2 1/2"	SD250-208	AOT250	<b>S25000X</b>	3.50	5.63	9.69	9.61	11.30	2.52	7.17	11.61	70.8

\* To order a S-series (X-Edition) wrench fitted with the TSP swivel, insert a "P" prior to the "X" in the tool designation. e.g., **S1500PX**.

- ① Drive Unit
- ② Angled Positioning Handle
- ③ Straight Positioning Handle (optional)
- ④ Pro Series Swivel (optional)
- ⑤ Reaction Tube Extension (optional)
- ⑥ Standard Reaction Arm
- ⑦ Allen® Drive (optional)
- ⑧ Square Drive
- ⑨ Short Reaction Arm (optional)
- ⑩ Extended Reaction Arm (optional)



Nominal Torque at 10,000 psi:

**26,150 Ft.lbs.**

Hexagon Size Allen® Drive:

**1/2-2 1/4 in. (14-85 mm)**

For  
**S**  
Series  
(X-Edition)

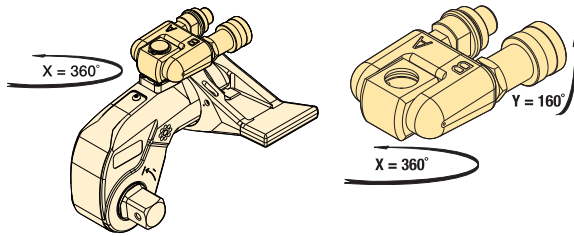


TORQUE WRENCH	OPTIONAL ALLEN® DRIVES, IMPERIAL				OPTIONAL ALLEN® DRIVES, METRIC				SHORT REACTION ARM FOR ALLEN® DRIVES			
	Model Number	Hexagon Size (in)	Maximum Torque (Ft.Lbs)	Model Number	Dim. B1 (in)	Hexagon Size (mm)	Maximum Torque (Ft.lbs)	Model Number	Dim. B1 (in)	Model Number	Dimensions (in) C1   H1	
 <b>S1500X</b> (1440 Ft-lbs)	1/2	355	SDA15-008	2.6	14	475	SDA15-14	2.60	SRA15X	2.66	2.56	
	5/8	690	SDA15-010	2.6	17	850	SDA15-17	2.68				
	3/4	1195	SDA15-012	2.8	19	1185	SDA15-19	2.76				
	7/8	1400	SDA15-014	2.9	22	1400	SDA15-22	2.87				
	1	1400	SDA15-100	3.0	24	1400	SDA15-24	2.91				
 <b>S3000X</b> (3225 Ft-lbs)	5/8	690	SDA30-010	3.0	17	850	SDA30-17	3.03	SRA30X	3.15	2.91	
	3/4	1195	SDA30-012	3.1	19	1185	SDA30-19	3.11				
	7/8	1895	SDA30-014	3.3	22	1835	SDA30-22	3.23				
	1	2825	SDA30-100	3.4	24	2385	SDA30-24	3.31				
	1 1/8	3200	SDA30-102	3.5	27	3200	SDA30-27	3.35				
	1 1/4	3200	SDA30-104	3.5	30	3200	SDA30-30	3.43				
	-	-	-	-	-	32	3200	SDA30-32				3.46
 <b>S6000X</b> (6050 Ft-lbs)	5/8	690	SDA60-010	3.3	17	850	SDA60-17	3.39	SRA60X	3.60	3.50	
	3/4	1195	SDA60-012	3.5	19	1185	SDA60-19	3.46				
	7/8	1895	SDA60-014	3.6	22	1835	SDA60-22	3.58				
	1	2825	SDA60-100	3.7	24	2385	SDA60-24	3.66				
	1 1/8	4025	SDA60-102	3.8	27	3395	SDA60-27	3.70				
	1 1/4	5520	SDA60-104	3.9	30	4655	SDA60-30	3.78				
	-	-	-	-	-	32	5650	SDA60-32				3.82
 <b>S11000X</b> (11,175 Ft-lbs)	1 1/4	5520	SDA110-104	4.5	30	4655	SDA110-30	4.41	SRA110X	5.02	4.17	
	1 3/8	7345	SDA110-106	4.6	32	5650	SDA110-32	4.49				
	1 1/2	9535	SDA110-108	4.6	36	8040	SDA110-36	4.61				
	1 5/8	11,000	SDA110-110	4.8	41	11,000	SDA110-41	4.76				
	1 3/4	11,000	SDA110-112	4.9	46	11,000	SDA110-46	5.00				
 <b>S25000X</b> (26,150 Ft-lbs)	1 1/2	9535	SDA250-108	5.5	36	8040	SDA250-36	5.51	SRA250X	6.24	5.31	
	1 5/8	12,120	SDA250-110	5.7	41	11,880	SDA250-41	5.67				
	1 3/4	15,135	SDA250-112	5.8	46	16,775	SDA250-46	5.83				
	1 7/8	18,620	SDA250-114	5.9	50	21,545	SDA250-50	5.94				
	2	22,595	SDA250-200	5.9	55	26,150	SDA250-55	6.06				
	2 1/4	26,150	SDA250-204	6.0	60	26,150	SDA250-60	6.22				
	-	-	-	-	-	65	26,150	SDA250-65				6.34
	-	-	-	-	-	70	26,150	SDA250-70				6.46
	-	-	-	-	-	75	26,150	SDA250-75				6.61
	-	-	-	-	-	85	26,150	SDA250-85				6.89

# Accessories for S-Series, X-Edition Torque Wrenches

## TSP-Series, Pro Series Swivels

- Robust interlocking design
- 360° X-axis and 160° Y-axis rotation
- Increases tool fit in restricted access areas
- Simplifies hose placement
- Includes male and female couplers



TSP Series

## TSP RTEX SRSX Series

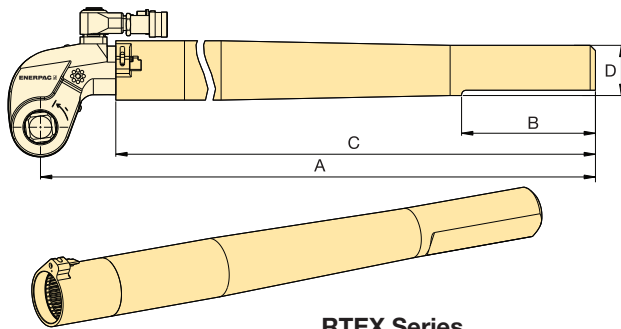


Torque Wrench Model Number	Model Number	Maximum Pressure (psi)	Wt. (lbs)
S1500X, S3000X, S6000X, S11000X, S25000X	TSP300*	10,000	0.44

Note: To order a S-series (X-Edition) wrench fitted with the TSP swivel, insert a "P" prior to the "X" in the tool designation, e.g., **S1500PX**.

\* TSP300 is designed for X-Edition tools only, and is not compatible with standard edition tools. For replacement components for existing tools, refer to repair sheet on [www.enerpac.com](http://www.enerpac.com)

## RTEX-Series, Reaction Tube Extensions



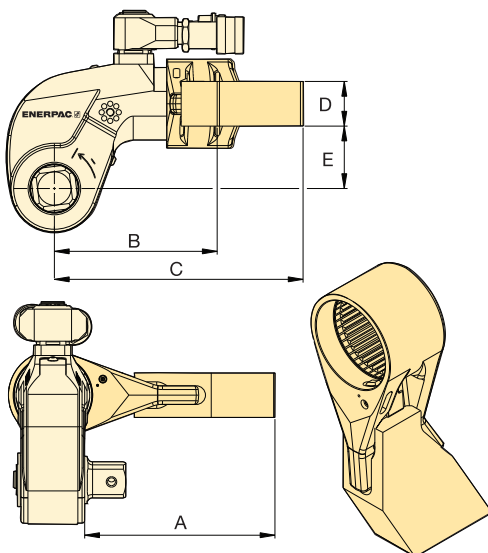
RTEX Series

- Full torque rated
- Increases tool fit in restricted access areas

Torque Wrench Model Number	Model Number	Dimensions (in)				Wt. (lbs)*
		A	B	C	D	
S1500X	RTE15X	27.80	5.98	25.04	2.28	10.1
S3000X	RTE30X	28.86	5.98	25.47	2.24	12.1
S6000X	RTE60X	29.41	5.98	25.94	2.56	17.0
S11000X	RTE110X	30.28	5.98	26.57	2.99	24.7
S25000X	RTE250X	32.01	5.98	26.97	3.94	38.1

\* Weights indicated are for the accessories only and do not include the wrench.

## SRSX-Series, Extended Reaction Arms



SRSX Series

- Lightweight interchangeable design

Wrench Model	Max. Torque (Ft-lbs)	Model Number	Dimensions (in)					Wt. (lbs)*
			A	B	C	D	E	
S1500X	1328	SRS151X	3.70	3.39	5.00	0.94	1.34	1.8
	1210	SRS152X	4.69	3.82	5.43	0.94	1.34	2.2
	1131	SRS153X	5.71	4.29	5.83	0.94	1.34	2.6
S3000X	2890	SRS301X	4.37	4.17	6.61	1.34	1.89	3.5
	2739	SRS302X	5.39	4.61	7.17	1.34	1.89	4.4
	2638	SRS303X	6.38	5.20	7.80	1.34	1.89	5.5
S6000X	5784	SRS601X	5.43	5.04	7.56	1.54	2.44	5.1
	5501	SRS602X	6.42	5.67	8.15	1.54	2.44	6.0
	5295	SRS603X	7.44	6.26	8.74	1.54	2.44	7.5
S11000X	10,812	SRS1101X	5.87	6.18	9.13	1.81	2.99	9.7
	10,300	SRS1102X	6.89	6.77	9.72	1.81	2.99	11.2
	9883	SRS1103X	7.87	7.36	10.28	1.81	2.99	12.8
S25000X	24,751	SRS2501X	7.20	8.23	11.61	1.97	3.94	16.8
	23,652	SRS2502X	8.19	8.74	12.20	1.97	3.94	18.5
	22,694	SRS2503X	9.17	9.29	12.83	1.97	3.94	22.0

\* Weights indicated are for the accessories only and do not include the wrench.

- Heavy-duty impact sockets
- Supplied with "Pin and Ring"

## BSH Series



Hexagon Sizes:

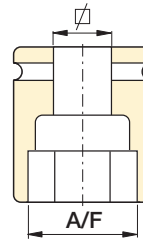
**3/4 - 6 1/8 in | 19 - 155 mm**



### Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

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### Hexagon Bolt and Nut Sizes

See the table of hexagon sizes of bolts, nuts and related thread diameters.

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METRIC SOCKETS							
3/4" Square Drive		1" Square Drive		1 1/2" Square Drive		2 1/2" Square Drive	
Model Number	A/F (mm)	Model Number	A/F (mm)	Model Number	A/F (mm)	Model Number	A/F (mm)
BSH7519	19	BSH1019	19	BSH1536	36	BSH2565	65
BSH7524	24	BSH1024	24	BSH15163	41	BSH2570	70
BSH7527	27	BSH1027	27	BSH1546	46	BSH2575	75
BSH7530	30	BSH1030	30	BSH1550	50	BSH2580	80
BSH7532	32	BSH1032	32	BSH1555	55	BSH2585	85
BSH7536	36	BSH1036	36	BSH1560	60	BSH2590	90
BSH75163	41	BSH10163	41	BSH1565	65	BSH2595	95
BSH7546	46	BSH1046	46	BSH1570	70	BSH25100	100
BSH7550	50	BSH1050	50	BSH1575	75	BSH25105	105
-	-	BSH1055	55	BSH1580	80	BSH25110	110
-	-	BSH1060	60	BSH1585	85	BSH25115	115
-	-	BSH1065	65	BSH1590	90	BSH25120	120
-	-	BSH1070	70	BSH1595	95	BSH25125	125
-	-	BSH1075	75	BSH15100	100	BSH25135	135
-	-	BSH1080	80	BSH15105	105	BSH25140	140
-	-	BSH1085	85	BSH15110	110	BSH25145	145
-	-	BSH1090	90	BSH15115	115	BSH25150	150
-	-	BSH1095	95	-	-	BSH25155	155
-	-	BSH10100	100	-	-	-	-

IMPERIAL SOCKETS													
3/4" Square Drive		1" Square Drive				1 1/2" Square Drive				2 1/2" Square Drive			
Model Number	A/F (in)	Model Number	A/F (in)	Model Number	A/F (in)	Model Number	A/F (in)	Model Number	A/F (in)	Model Number	A/F (in)	Model Number	A/F (in)
BSH7519	3/4"	BSH1019	3/4"	BSH10231	2 5/16"	BSH15144	1 7/16"	BSH15281	2 13/16"	BSH25244	2 7/16"	BSH25419	4 3/16"
BSH75088	7/8"	BSH10088	7/8"	BSH10238	2 3/8"	BSH1538	1 1/2"	BSH15288	2 7/8"	BSH25250	2 1/2"	BSH25425	4 1/4"
BSH75094	1 5/16"	BSH10094	1 5/16"	BSH10244	2 7/16"	BSH15156	1 9/16"	BSH1575	2 15/16"	BSH2565	2 9/16"	BSH25110	4 5/16"
BSH7527	1 1/16"	BSH1027	1 1/16"	BSH10250	2 1/2"	BSH15163	1 5/8"	BSH15300	3"	BSH25263	2 5/8"	BSH25438	4 3/8"
BSH7530	1 3/16"	BSH1030	1 3/16"	BSH1065	2 9/16"	BSH1543	1 11/16"	BSH15306	3 1/16"	BSH25269	2 11/16"	BSH25450	4 1/2"
BSH75125	1 1/4"	BSH10125	1 1/4"	BSH10263	2 5/8"	BSH15175	1 3/4"	BSH15313	3 1/8"	BSH2570	2 3/4"	BSH25463	4 5/8"
BSH75131	1 5/16"	BSH10131	1 5/16"	BSH10269	2 11/16"	BSH1546	1 13/16"	BSH15319	3 3/16"	BSH25281	2 13/16"	BSH25475	4 3/4"
BSH7535	1 3/8"	BSH1035	1 3/8"	BSH1070	2 3/4"	BSH15188	1 7/8"	BSH15325	3 1/4"	BSH25288	2 7/8"	BSH25488	4 7/8"
BSH75144	1 7/16"	BSH10144	1 7/16"	BSH10281	2 13/16"	BSH15194	1 15/16"	BSH15338	3 3/8"	BSH2575	2 15/16"	BSH25500	5"
BSH7538	1 1/2"	BSH1038	1 1/2"	BSH10288	2 7/8"	BSH15200	2"	BSH15350	3 1/2"	BSH25300	3"	BSH25513	5 1/8"
BSH75156	1 9/16"	BSH10156	1 9/16"	BSH1075	2 15/16"	BSH15206	2 1/16"	BSH15363	3 5/8"	BSH25306	3 1/16"	BSH25519	5 3/16"
BSH75163	1 5/8"	BSH10163	1 5/8"	BSH10300	3"	BSH15213	2 1/8"	BSH1595	3 3/4"	BSH25313	3 1/8"	BSH25525	5 1/4"
BSH7543	1 11/16"	BSH1043	1 11/16"	BSH10306	3 1/16"	BSH15219	2 3/16"	BSH15388	3 7/8"	BSH25319	3 3/16"	BSH25538	5 3/8"
BSH75175	1 3/4"	BSH10175	1 3/4"	BSH10313	3 1/8"	BSH15225	2 1/4"	BSH15100	3 15/16"	BSH25325	3 1/4"	BSH25140	5 1/2"
BSH7546	1 13/16"	BSH1046	1 13/16"	BSH10319	3 3/16"	BSH15231	2 5/16"	BSH15400	4"	BSH25338	3 3/8"	BSH25575	5 3/4"
BSH75188	1 7/8"	BSH10188	1 7/8"	BSH10325	3 1/4"	BSH15238	2 3/8"	BSH15105	4 1/8"	BSH25350	3 1/2"	BSH25150	5 7/8"
BSH75194	1 15/16"	BSH10194	1 15/16"	BSH10338	3 3/8"	BSH15244	2 7/16"	BSH15419	4 3/16"	BSH25363	3 5/8"	BSH25600	6"
BSH75200	2"	BSH10200	2"	BSH10350	3 1/2"	BSH15250	2 1/2"	BSH15425	4 1/4"	BSH2595	3 3/4"	BSH25613	6 1/8"
-	-	BSH10206	2 1/16"	BSH10363	3 5/8"	BSH1565	2 9/16"	BSH15110	4 5/16"	BSH25388	3 7/8"	-	-
-	-	BSH10213	2 1/8"	BSH1095	3 3/4"	BSH15263	2 5/8"	BSH15438	4 3/8"	BSH25100	3 15/16"	-	-
-	-	BSH10219	2 3/16"	BSH10388	3 7/8"	BSH15269	2 11/16"	BSH15450	4 1/2"	BSH25400	4"	-	-
-	-	BSH10225	2 1/4"	-	-	BSH1570	2 3/4"	BSH15463	4 5/8"	BSH25105	4 1/8"	-	-

# Back-Up Spanner for Torque Wrenches

▼ BUS03 Back-Up Spanner (safety cable not shown)



- Hands free solution – improves operator safety
- Eliminates the need for flogging spanners
- Speeds up the bolting process
- Includes safety cable with quick-connect carabiner's, stainless steel tethers and secure Allen-key fixings
- Won't lock on during operations
- Spark free
- Two hexagon sizes in one tool

## ▼ SELECTION CHART BACK-UP SPANNERS

Hexagon Sizes (A/F)		Model Number	Dimensions (in)				Wt. (lb)
S1 to S2 (in)	S1 to S2 (mm)		A	B	C	D	
1 <sup>1</sup> / <sub>16</sub> - 1 <sup>1</sup> / <sub>4</sub> "	27 - 32	<b>BUS 01</b>	2.0	3.9	0.6	M8	0.7
1 <sup>7</sup> / <sub>16</sub> - 1 <sup>5</sup> / <sub>8</sub> "	36 - 41	<b>BUS 02</b>	2.4	4.7	0.6	M8	0.9
1 <sup>3</sup> / <sub>16</sub> - 2"	46 - 50	<b>BUS 03</b>	3.0	5.6	0.8	M8	1.3
2 <sup>3</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>8</sub> "	55 - 60	<b>BUS 04</b>	3.5	6.5	0.8	M12	1.8
2 <sup>9</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>4</sub> "	65 - 70	<b>BUS 05</b>	3.9	7.5	1.0	M16	2.2
2 <sup>15</sup> / <sub>16</sub> - 3 <sup>1</sup> / <sub>8</sub> "	75 - 80	<b>BUS 06</b>	4.4	8.4	1.0	M16	2.9
3 <sup>1</sup> / <sub>2</sub> - 3 <sup>3</sup> / <sub>8</sub> "	-	<b>BUS 07</b>	5.3	10.1	1.2	M20	4.9
4 <sup>1</sup> / <sub>4</sub> - 4 <sup>5</sup> / <sub>8</sub> "	-	<b>BUS 08</b>	6.4	12.2	1.2	M20	7.3
-	85 - 90	<b>BUS 09</b>	5.0	9.5	1.0	M16	3.7
3 <sup>3</sup> / <sub>4</sub> - 3 <sup>15</sup> / <sub>16</sub> "	95 - 100	<b>BUS 10</b>	5.4	10.5	1.2	M20	5.1
4 <sup>1</sup> / <sub>8</sub> - 4 <sup>15</sup> / <sub>16</sub> "	105 - 110	<b>BUS 11</b>	6.0	11.7	1.2	M20	6.8
-	115 - 120	<b>BUS 12</b>	6.5	12.6	1.2	M20	7.7

## BUS Series

Hexagon Sizes (A/F):

**1<sup>1</sup>/<sub>16</sub> - 4<sup>15</sup>/<sub>16</sub> inch**

Hexagon Sizes (A/F):

**27 - 120 mm**

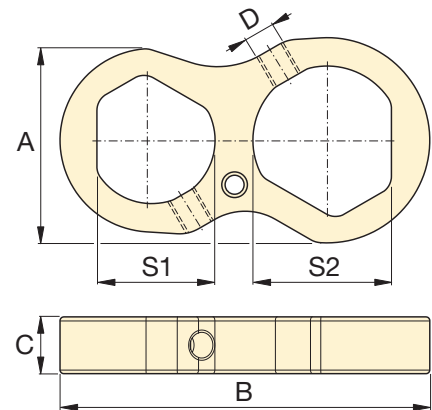


### Back-Up Spanners

Hands free operation of a hydraulic torque wrench improves the safety of the operator significantly.

Enerpac Back-Up Spanners are a hands-free tool that eliminates the need to use a flogging spanner as a backing tool.

The Back-Up Spanners have been specifically designed to prevent them from locking onto the nut during bolt torquing operations. They fit easily onto the back nut and prevent it from turning during make up or break out of bolted joints.



▼ Enerpac Back-Up Spanners to be used to stop back nut from turning during make up or break out.



▼ W4206X cassette with W4000X drive unit (Rear model shows optional straight handle)



## Setting New Standards in Safety, Simplicity and Performance



### Two Handle Styles

Robust angled positioning handles come standard with every W-Series (X-Edition) tool. Straight positioning handles designed for extreme limited access applications are available as accessories.

Compatible W-Series (X-Edition) Wrenches	Angled Positioning Handles (standard)	Straight Positioning Handles (optional)
W2000X, W4000X	SWH6A	SWH6S
W8000X, W15000X	SWH10A	SWH10S
W22000X, W35000X	Supplied with an eyebolt handle (SWH10EA)	

### Safety and Performance

- Superior strength to size ratio provides easy access to difficult to reach applications without sacrificing endurance
- 30° rotation angle and rapid return stroke provide fast operation
- Tough manifold design with added safety feature for enhanced operator safety

### Simplicity

- Fast release drive unit enables rapid exchange of cassettes, no tools required and no pins to lose
- Includes robust handles which mount on both sides, and the tops of cassettes to allow for extra maneuverability
- Quick and easy disassembly for maintenance without special tools

### Versatility

- Available with optional enhanced tilt and swivel TSP300 manifold for horizontal and vertical maneuverability, with greater durability\*
- X-Edition drive units, cassettes and most accessories are compatible with standard edition tools\*
- Drive unit compatible with UltraSlim and WCR-Series cassettes

### Accuracy

- Constant torque output provides accuracy of +/-3% across full stroke

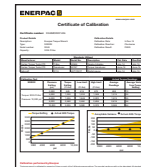
\* TSP300 is designed for X-Edition tools only, and is not compatible with standard edition tools. For replacement components for existing tools, refer to repair sheet on [www.enerpac.com](http://www.enerpac.com)



### TSP - Pro Series Swivel

The optional TSP300 tilt and swivel manifold with robust interlocking design provides 360° X-axis rotation and 160° Y-axis rotation.

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### Calibration Certificate

All X-Edition tools are CE-ATEX declared, factory calibrated and are shipped complete with a calibration certificate.

CE Ex II 2 GD ck T4  
CSA/SIRA 15XT072

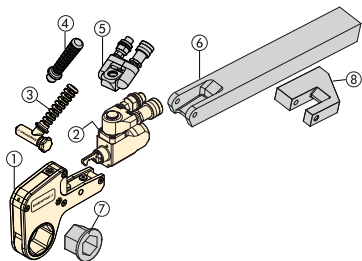


### Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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# W-Series, X-Edition Hexagon Wrenches

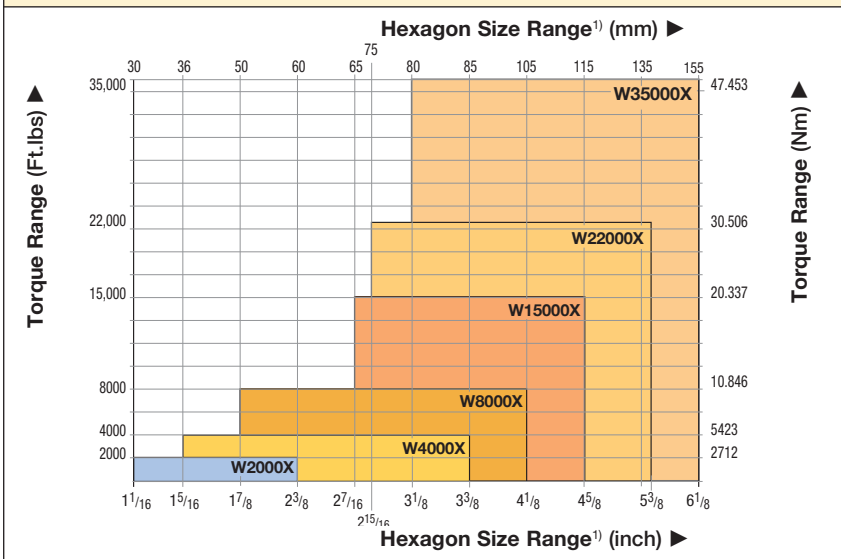


## Hexagon Cassettes and Reducer Inserts

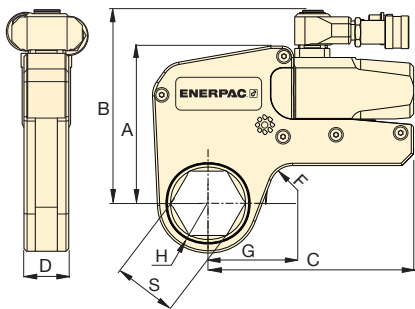
Full range of interchangeable hexagon cassettes and reducing inserts provides maximum versatility. Details available at [www.enerpac.com](http://www.enerpac.com)

- ① Hexagon Cassette
- ② Drive Unit
- ③ Angled Positioning Handle
- ④ Straight Positioning Handle (optional)
- ⑤ Pro Series Swivel (optional)
- ⑥ Extended Reaction Arm (optional)
- ⑦ Reducer Insert (optional)
- ⑧ Reaction Paddle (optional)

### DRIVE UNIT AND INTERCHANGEABLE CASSETTE SELECTION



<sup>1)</sup> See page 8 for table of hexagon sizes of bolts, nuts and related thread diameters.



### SELECTION CHART

Hexagon Range *	Nominal Torque at 10,000 psi		Drive Unit Model Number **	Minimum Torque		Dimensions (see pages 14-21 for dimensions G, H, and S)					Weight (Drive unit without hexagon cassette)	
	(in)	(mm)		(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)	A	B	C		D
1 1/16 - 2 3/8	30 - 60	2040	2766	W2000X	204	277	4.29	5.55	5.83	1.26	.79	3.04
1 5/16 - 3 3/8	36 - 85	4175	5661	W4000X	418	566	5.35	6.57	7.01	1.61	.79	4.44
1 7/8 - 4 1/8	50 - 105	8470	11,484	W8000X	847	1148	6.77	8.07	8.19	2.07	.98	6.59
2 7/16 - 4 5/8	65 - 115	15,330	20,785	W15000X	1533	2079	8.15	9.45	9.96	2.48	.79	10.72
2 5/8 - 5 3/8	75 - 135	22,500	30,506	W22000X	2250	3050	8.94	10.46	11.68	3.03	1.38	16.98
3 1/8 - 6 1/8	80-155	35,000	47,453	W35000X	3500	4745	10.54	11.94	13.60	3.57	1.98	26.40

\* With in-line reaction foot.

\*\* To order a W-series (X-Edition) wrench fitted with the TSP swivel, insert a "P" prior to the "X" in the tool designation. e.g., W2000PX.

## W Series (X-Edition)



Nominal Torque at 10,000 psi:

**35,000 Ft.lbs**

Hexagon Range:

**1 1/16 - 6 1/8 in | 30 - 155 mm**

Nose Radius:

**1.22-4.52 inch**

Maximum Operating Pressure:

**10,000 psi**

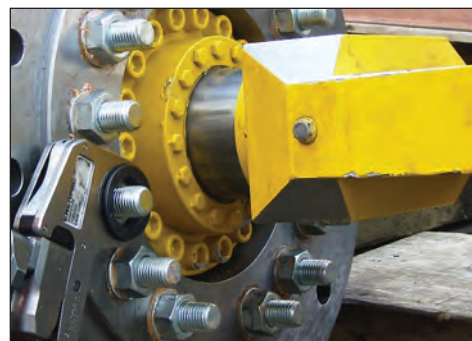


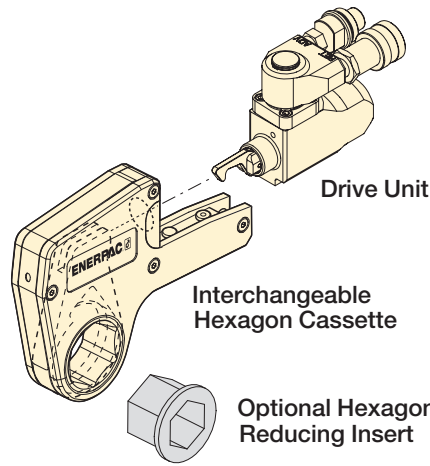
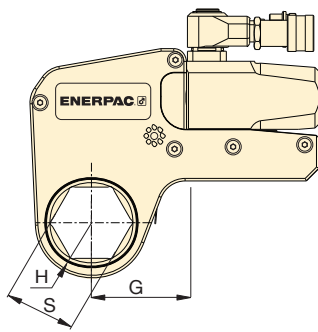
### Torque Wrench Pump Selection Matrix

For optimum speed and performance see the torque wrench and pump matrix.

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▼ These rigid steel wrenches with low-profile interchangeable hexagon cassettes guarantee durability and maximum versatility in bolting applications.





## W Series (X-Edition)



Nominal Torque at 10,000 psi:  
**2040 Ft.lbs**

Hexagon Range:  
**1<sup>1</sup>/<sub>16</sub> - 2<sup>3</sup>/<sub>8</sub> inch**

Maximum Operating Pressure:  
**10,000 psi**



### Metric Sizes

For metric sizes of hexagon cassettes and reducer inserts see:

Page: **20**






### Back-Up Spanners

Hands free tool to be used to stop back nut from turning during make up or break out.

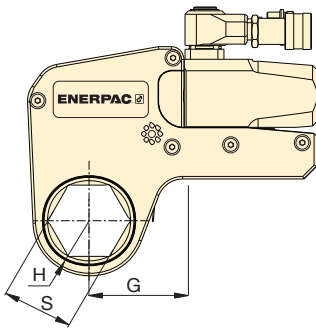
Page: **11**

### ▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius	Dim. G (in)	Model Number	Wt. (lbs)						
						Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number
<b>W2000X</b>	1 <sup>1</sup> / <sub>16</sub>	1.22	2.11	<b>W2101X</b>	4.19	-	-	-	-	-	-
	1 <sup>1</sup> / <sub>8</sub>	1.22	2.11	<b>W2102X</b>	4.19	-	-	-	-	-	-
	1 <sup>3</sup> / <sub>16</sub>	1.22	2.11	<b>W2103X</b>	4.19	-	-	-	-	-	-
	1 <sup>1</sup> / <sub>4</sub>	1.22	2.11	<b>W2104X</b>	4.19	-	-	-	-	-	-
	1 <sup>5</sup> / <sub>16</sub>	1.22	2.11	<b>W2105X</b>	4.48	-	-	-	-	-	-
	1 <sup>3</sup> / <sub>8</sub>	1.22	2.11	<b>W2106X</b>	4.43	-	-	-	-	-	-
	1 <sup>7</sup> / <sub>16</sub>	1.22	2.11	<b>W2107X</b>	4.37	1 <sup>7</sup> / <sub>16</sub> - 1 <sup>1</sup> / <sub>8</sub>	<b>W2107R102</b>	-	-	-	-
	1 <sup>1</sup> / <sub>2</sub>	1.32	2.29	<b>W2108X</b>	4.51	-	-	-	-	-	-
	1 <sup>9</sup> / <sub>16</sub>	1.32	2.29	<b>W2109X</b>	4.44	-	-	-	-	-	-
	1 <sup>5</sup> / <sub>8</sub>	1.32	2.29	<b>W2110X</b>	4.38	1 <sup>5</sup> / <sub>8</sub> - 1 <sup>1</sup> / <sub>4</sub>	<b>W2110R104</b>	1 <sup>5</sup> / <sub>8</sub> - 1 <sup>3</sup> / <sub>16</sub>	<b>W2110R103</b>	-	-
	1 <sup>11</sup> / <sub>16</sub>	1.44	2.38	<b>W2111X</b>	4.63	-	-	-	-	-	-
	1 <sup>3</sup> / <sub>4</sub>	1.44	2.38	<b>W2112X</b>	4.57	-	-	-	-	-	-
	1 <sup>13</sup> / <sub>16</sub>	1.44	2.38	<b>W2113X</b>	4.46	1 <sup>13</sup> / <sub>16</sub> - 1 <sup>7</sup> / <sub>16</sub>	<b>W2113R107</b>	1 <sup>13</sup> / <sub>16</sub> - 1 <sup>1</sup> / <sub>4</sub>	<b>W2113R104</b>	-	-
	1 <sup>7</sup> / <sub>8</sub>	1.54	2.48	<b>W2114X</b>	4.69	-	-	-	-	-	-
	1 <sup>15</sup> / <sub>16</sub>	1.54	2.48	<b>W2115X</b>	4.64	-	-	-	-	-	-
	2	1.54	2.48	<b>W2200X</b>	4.54	2 - 1 <sup>5</sup> / <sub>8</sub>	<b>W2200R110</b>	2 - 1 <sup>7</sup> / <sub>16</sub>	<b>W2200R107</b>	-	-
	2 <sup>1</sup> / <sub>16</sub>	1.65	2.70	<b>W2201X</b>	4.83	-	-	-	-	-	-
	2 <sup>1</sup> / <sub>8</sub>	1.65	2.70	<b>W2202X</b>	4.74	-	-	-	-	-	-
	2 <sup>3</sup> / <sub>16</sub>	1.65	2.70	<b>W2203X</b>	4.64	2 <sup>3</sup> / <sub>16</sub> - 1 <sup>13</sup> / <sub>16</sub>	<b>W2203R113</b>	2 <sup>3</sup> / <sub>16</sub> - 1 <sup>5</sup> / <sub>8</sub>	<b>W2203R110</b>	2 <sup>3</sup> / <sub>16</sub> - 1 <sup>7</sup> / <sub>16</sub>	<b>W2203R107</b>
	2 <sup>1</sup> / <sub>4</sub>	1.75	2.55	<b>W2204X</b>	4.94	-	-	-	-	-	-
	2 <sup>5</sup> / <sub>16</sub>	1.75	2.55	<b>W2205X</b>	4.84	-	-	-	-	-	-
2 <sup>3</sup> / <sub>8</sub>	1.75	2.55	<b>W2206X</b>	4.72	2 <sup>3</sup> / <sub>8</sub> - 2	<b>W2206R200</b>	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>7</sup> / <sub>8</sub>	<b>W2206R114</b>	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>13</sup> / <sub>16</sub>	<b>W2206R113</b>	
-	-	-	-	-	-	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>1</sup> / <sub>2</sub>	<b>W2206R108</b>	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>7</sup> / <sub>16</sub>	<b>W2206R107</b>	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>5</sup> / <sub>8</sub>	<b>W2206R110</b>



# W4000X Series Imperial Cassettes & Reducer Inserts



Nominal Torque at 10,000 psi:

**4175 Ft.lbs**

Hexagon Range:

**1<sup>5</sup>/<sub>16</sub>-3<sup>3</sup>/<sub>8</sub> inch**

Maximum Operating Pressure:

**10,000 psi**

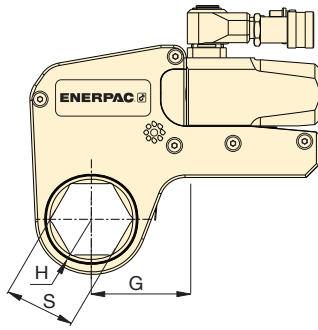
**W**  
Series  
(X-Edition)



▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius	Dim.	Model Number	Wt.	Hexagon Reducer		Hexagon Reducer		Hexagon Reducer	
						Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number
	S (in)	H (in)	G (in)		(lbs)						
W4000X	1 <sup>5</sup> / <sub>16</sub>	1.46	2.40	W4105X	8.15	-	-	-	-	-	-
	1 <sup>3</sup> / <sub>8</sub>	1.46	2.40	W4106X	8.15	-	-	-	-	-	-
	1 <sup>7</sup> / <sub>16</sub>	1.46	2.40	W4107X	8.15	-	-	-	-	-	-
	1 <sup>1</sup> / <sub>2</sub>	1.46	2.40	W4108X	8.31	-	-	-	-	-	-
	1 <sup>9</sup> / <sub>16</sub>	1.46	2.40	W4109X	8.22	-	-	-	-	-	-
	1 <sup>5</sup> / <sub>8</sub>	1.46	2.40	W4110X	8.15	-	-	-	-	-	-
	1 <sup>11</sup> / <sub>16</sub>	1.56	2.52	W4111X	8.43	-	-	-	-	-	-
	1 <sup>3</sup> / <sub>4</sub>	1.56	2.52	W4112X	8.35	-	-	-	-	-	-
	1 <sup>13</sup> / <sub>16</sub>	1.56	2.52	W4113X	8.25	-	-	-	-	-	-
	1 <sup>7</sup> / <sub>8</sub>	1.63	2.63	W4114X	8.45	-	-	-	-	-	-
	1 <sup>15</sup> / <sub>16</sub>	1.63	2.63	W4115X	8.39	-	-	-	-	-	-
	2	1.63	2.63	W4200X	8.28	2 - 1 <sup>7</sup> / <sub>16</sub>	W4200R107	-	-	-	-
	2 <sup>1</sup> / <sub>16</sub>	1.73	2.89	W4201X	8.65	-	-	-	-	-	-
	2 <sup>1</sup> / <sub>8</sub>	1.73	2.89	W4202X	8.53	-	-	-	-	-	-
	2 <sup>3</sup> / <sub>16</sub>	1.73	2.89	W4203X	8.42	2 <sup>3</sup> / <sub>16</sub> - 1 <sup>5</sup> / <sub>8</sub>	W4203R110	2 <sup>3</sup> / <sub>16</sub> - 1 <sup>7</sup> / <sub>16</sub>	W4203R107	2 <sup>3</sup> / <sub>16</sub> - 1 <sup>1</sup> / <sub>4</sub>	W4203R104
	2 <sup>1</sup> / <sub>4</sub>	1.83	2.78	W4204X	8.73	-	-	-	-	-	-
	2 <sup>5</sup> / <sub>16</sub>	1.83	2.78	W4205X	8.61	-	-	-	-	-	-
	2 <sup>3</sup> / <sub>8</sub>	1.83	2.78	W4206X	8.47	2 <sup>3</sup> / <sub>8</sub> - 2	W4206R200	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>13</sup> / <sub>16</sub>	W4206R113	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>7</sup> / <sub>16</sub>	W4206R107
	-	-	-	-	-	2 <sup>3</sup> / <sub>8</sub> - 1 <sup>3</sup> / <sub>8</sub>	W4206R106	-	-	-	-
	2 <sup>7</sup> / <sub>16</sub>	1.95	3.00	W4207X	8.96	2 <sup>7</sup> / <sub>16</sub> - 2	W4207R200	-	-	-	-
	2 <sup>1</sup> / <sub>2</sub>	1.95	3.00	W4208X	8.86	2 <sup>1</sup> / <sub>2</sub> - 2	W4208R200	2 <sup>1</sup> / <sub>2</sub> - 1 <sup>13</sup> / <sub>16</sub>	W4208R113	2 <sup>1</sup> / <sub>2</sub> - 2 <sup>1</sup> / <sub>16</sub>	W4208R201
	2 <sup>9</sup> / <sub>16</sub>	1.95	3.00	W4209X	8.67	2 <sup>9</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>16</sub>	W4209R203	2 <sup>9</sup> / <sub>16</sub> - 2 <sup>1</sup> / <sub>8</sub>	W4209R202	-	-
	-	-	-	-	-	2 <sup>9</sup> / <sub>16</sub> - 2	W4209R200	2 <sup>9</sup> / <sub>16</sub> - 1 <sup>13</sup> / <sub>16</sub>	W4209R113	-	-
	2 <sup>5</sup> / <sub>8</sub>	2.07	3.08	W4210X	9.14	-	-	-	-	-	-
	2 <sup>11</sup> / <sub>16</sub>	2.07	3.08	W4211X	9.03	-	-	-	-	-	-
	2 <sup>3</sup> / <sub>4</sub>	2.07	3.08	W4212X	8.84	2 <sup>3</sup> / <sub>4</sub> - 2 <sup>3</sup> / <sub>8</sub>	W4212R206	2 <sup>3</sup> / <sub>4</sub> - 2 <sup>3</sup> / <sub>16</sub>	W4212R203	2 <sup>3</sup> / <sub>4</sub> - 2 <sup>1</sup> / <sub>8</sub>	W4212R202
	2 <sup>13</sup> / <sub>16</sub>	2.18	3.21	W4213X	9.32	-	-	-	-	-	-
	2 <sup>7</sup> / <sub>8</sub>	2.18	3.21	W4214X	9.17	-	-	-	-	-	-
	2 <sup>15</sup> / <sub>16</sub>	2.18	3.21	W4215X	8.96	2 <sup>15</sup> / <sub>16</sub> - 2 <sup>9</sup> / <sub>16</sub>	W4215R209	2 <sup>15</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>8</sub>	W4215R206	2 <sup>15</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>16</sub>	W4215R203
	-	-	-	-	-	2 <sup>15</sup> / <sub>16</sub> - 2	W4215R200	-	-	-	-
	3	2.30	3.29	W4300X	9.51	3 - 2 <sup>3</sup> / <sub>16</sub>	W4300R203	-	-	-	-
	3 <sup>1</sup> / <sub>16</sub>	2.30	3.29	W4301X	9.42	-	-	-	-	-	-
	3 <sup>1</sup> / <sub>8</sub>	2.30	3.29	W4302X	9.16	-	-	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>3</sup> / <sub>4</sub>	W4302R212	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>9</sup> / <sub>16</sub>	W4302R209
	-	-	-	-	-	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>3</sup> / <sub>8</sub>	W4302R206	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>5</sup> / <sub>16</sub>	W4302R205	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>1</sup> / <sub>4</sub>	W4302R204
	-	-	-	-	-	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>3</sup> / <sub>16</sub>	W4302R203	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>1</sup> / <sub>8</sub>	W4302R202	3 <sup>1</sup> / <sub>8</sub> - 2	W4302R200
	3 <sup>3</sup> / <sub>16</sub>	2.44	3.37	W4303X	9.92	-	-	-	-	-	-
3 <sup>1</sup> / <sub>4</sub>	2.44	3.37	W4304X	9.92	-	-	-	-	-	-	
3 <sup>5</sup> / <sub>16</sub>	2.44	3.37	W4305X	9.92	-	-	-	-	-	-	
3 <sup>3</sup> / <sub>8</sub>	2.44	3.37	W4306X	9.92	-	-	-	-	-	-	

# W8000X Series Imperial Cassettes & Reducer Inserts **ENERPAC**



Nominal Torque at 10,000 psi:

**8470 Ft.lbs**

Hexagon Range:

**1 7/8 - 4 1/8 inch**






Maximum Operating Pressure:

**10,000 psi**

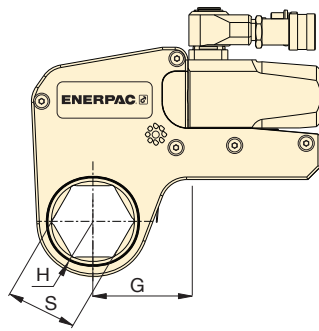
**W**  
Series  
(X-Edition)



▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius	Dim.	Model Number	Wt.						
						Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number
	S (in)	H (in)	G (in)		(lbs)						
<b>W8000X</b>	1 7/8	1.77	3.08	<b>W8114X</b>	17.97	-	-	-	-	-	-
	1 15/16	1.77	3.08	<b>W8115X</b>	17.89	-	-	-	-	-	-
	2	1.77	3.08	<b>W8200X</b>	17.75	-	-	-	-	-	-
	2 1/16	1.89	3.15	<b>W8201X</b>	17.52	-	-	-	-	-	-
	2 1/8	1.89	3.15	<b>W8202X</b>	17.36	-	-	-	-	-	-
	2 3/16	1.89	3.15	<b>W8203X</b>	17.22	-	-	-	-	-	-
	2 1/4	2.01	3.25	<b>W8204X</b>	17.92	-	-	-	-	-	-
	2 5/16	2.01	3.25	<b>W8205X</b>	17.76	-	-	-	-	-	-
	2 3/8	2.01	3.25	<b>W8206X</b>	17.59	-	-	-	-	-	-
	2 7/16	2.07	3.38	<b>W8207X</b>	17.65	-	-	-	-	-	-
	2 1/2	2.07	3.38	<b>W8208X</b>	17.52	-	-	-	-	-	-
	2 9/16	2.07	3.38	<b>W8209X</b>	17.29	2 9/16 - 2	<b>W8209R200</b>	-	-	-	-
	2 5/8	2.20	3.34	<b>W8210X</b>	17.50	-	-	-	-	-	-
	2 11/16	2.20	3.34	<b>W8211X</b>	17.36	-	-	-	-	-	-
	2 3/4	2.20	3.34	<b>W8212X</b>	17.12	2 3/4 - 2 3/16	<b>W8212R203</b>	-	-	-	-
	2 13/16	2.28	3.35	<b>W8213X</b>	17.57	-	-	-	-	-	-
	2 7/8	2.28	3.35	<b>W8214X</b>	17.38	-	-	-	-	-	-
	2 15/16	2.28	3.35	<b>W8215X</b>	17.11	2 15/16 - 2 3/8	<b>W8215R206</b>	2 15/16 - 2 3/8	<b>W8215R203</b>	-	-
	3	2.38	3.52	<b>W8300X</b>	17.77	-	-	-	-	-	-
	3 1/16	2.38	3.52	<b>W8301X</b>	17.65	-	-	-	-	-	-
	3 1/8	2.38	3.52	<b>W8302X</b>	17.33	3 1/8 - 2 9/16	<b>W8302R209</b>	3 1/8 - 2 9/16	<b>W8302R206</b>	3 1/8 - 2 9/16	<b>W8302R203</b>
	-	-	-	-	-	-	3 1/8 - 2	<b>W8302R200</b>	-	-	-
	3 1/16	2.60	3.63	<b>W8303X</b>	18.99	-	-	-	-	-	-
	3 1/4	2.60	3.63	<b>W8304X</b>	18.72	-	-	-	-	-	-
	3 5/16	2.60	3.63	<b>W8305X</b>	18.54	-	-	-	-	-	-
	3 3/8	2.60	3.63	<b>W8306X</b>	18.36	-	-	-	-	-	-
	3 7/16	2.60	3.63	<b>W8307IX</b>	18.11	-	-	-	-	-	-
	3 1/2	2.60	3.63	<b>W8308X</b>	17.81	3 1/2 - 3	<b>W8308R300</b>	3 1/2 - 2 15/16	<b>W8308R215</b>	3 1/2 - 2 3/4	<b>W8308R212</b>
	3 9/16	2.91	4.05	<b>W8309X</b>	20.36	-	-	-	-	-	-
	3 5/8	2.91	4.05	<b>W8310X</b>	20.18	-	-	-	-	-	-
	3 11/16	2.91	4.05	<b>W8311X</b>	19.93	-	-	-	-	-	-
	3 3/4	2.91	4.05	<b>W8312X</b>	19.71	3 3/4 - 3 1/8	<b>W8312R302</b>	3 3/4 - 2 15/16	<b>W8312R215</b>	3 3/4 - 2 3/4	<b>W8312R212</b>
3 13/16	2.91	4.05	<b>W8313X</b>	19.46	-	-	-	-	-	-	
3 7/8	2.91	4.05	<b>W8314X</b>	19.10	3 7/8 - 3 1/8	<b>W8314R302</b>	3 7/8 - 2 15/16	<b>W8314R215</b>	-	-	
3 15/16	3.13	4.33	<b>W8315X</b>	20.31	-	-	-	-	-	-	
4	3.13	4.33	<b>W8400X</b>	20.04	-	-	-	-	-	-	
4 1/16	3.13	4.33	<b>W8401IX</b>	19.80	-	-	-	-	-	-	
4 1/8	3.13	4.33	<b>W8402X</b>	19.39	-	-	-	-	-	-	

# W15000X Series Imperial Cassettes & Reducer Inserts



Nominal Torque at 10,000 psi:

**15,330 Ft.lbs**

Hexagon Range:

**2<sup>7</sup>/<sub>16</sub>-4<sup>5</sup>/<sub>8</sub> inch**

Maximum Operating Pressure:

**10,000 psi**

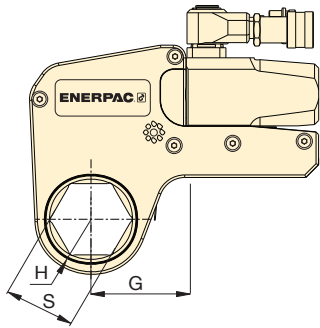
**W**  
Series  
(X-Edition)



## ▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius		Dim.  G	Model Number	Wt.  (lbs)	Hexagon Reducer		Hexagon Reducer		Hexagon Reducer	
		S (in)	H (in)				Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number
<b>W15000X</b>	2 <sup>7</sup> / <sub>16</sub>	2.32	3.49		<b>W15207X</b>	30.72	-	-	-	-	-	-
	2 <sup>1</sup> / <sub>2</sub>	2.32	3.49		<b>W15208X</b>	30.72	-	-	-	-	-	-
	2 <sup>9</sup> / <sub>16</sub>	2.32	3.49		<b>W15209X</b>	30.72	-	-	-	-	-	-
	2 <sup>5</sup> / <sub>8</sub>	2.32	3.49		<b>W15210X</b>	30.72	-	-	-	-	-	-
	2 <sup>11</sup> / <sub>16</sub>	2.32	3.49		<b>W15211X</b>	30.72	-	-	-	-	-	-
	2 <sup>3</sup> / <sub>4</sub>	2.32	3.49		<b>W15212X</b>	30.72	-	-	-	-	-	-
	2 <sup>13</sup> / <sub>16</sub>	2.44	3.56		<b>W15213X</b>	30.62	-	-	-	-	-	-
	2 <sup>7</sup> / <sub>8</sub>	2.44	3.56		<b>W15214X</b>	30.39	-	-	-	-	-	-
	2 <sup>15</sup> / <sub>16</sub>	2.44	3.56		<b>W15215X</b>	30.08	-	-	-	-	-	-
	3	2.54	3.66		<b>W15300X</b>	30.86	3 - 2 <sup>1</sup> / <sub>8</sub>	<b>W15300R202</b>	-	-	-	-
	3 <sup>1</sup> / <sub>16</sub>	2.54	3.66		<b>W15301X</b>	30.71	-	-	-	-	-	-
	3 <sup>1</sup> / <sub>8</sub>	2.54	3.66		<b>W15302X</b>	30.34	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>9</sup> / <sub>16</sub>	<b>W15302R209</b>	-	-	-	-
	3 <sup>3</sup> / <sub>16</sub>	2.74	3.80		<b>W15303X</b>	32.38	-	-	-	-	-	-
	3 <sup>1</sup> / <sub>4</sub>	2.74	3.80		<b>W15304X</b>	32.07	-	-	-	-	-	-
	3 <sup>5</sup> / <sub>16</sub>	2.74	3.80		<b>W15305X</b>	31.85	-	-	-	-	-	-
	3 <sup>3</sup> / <sub>8</sub>	2.74	3.80		<b>W15306X</b>	31.63	-	-	-	-	-	-
	3 <sup>7</sup> / <sub>16</sub>	2.74	3.80		<b>W15307IX</b>	31.32	-	-	-	-	-	-
	3 <sup>1</sup> / <sub>2</sub>	2.74	3.80		<b>W15308X</b>	30.98	3 <sup>1</sup> / <sub>2</sub> - 2 <sup>15</sup> / <sub>16</sub>	<b>W15308R215</b>	3 <sup>1</sup> / <sub>2</sub> - 2 <sup>3</sup> / <sub>4</sub>	<b>W15308R212</b>	-	-
	3 <sup>9</sup> / <sub>16</sub>	2.95	4.01		<b>W15309X</b>	31.70	-	-	-	-	-	-
	3 <sup>5</sup> / <sub>8</sub>	2.95	4.01		<b>W15310X</b>	31.70	-	-	-	-	-	-
	3 <sup>11</sup> / <sub>16</sub>	2.95	4.01		<b>W15311X</b>	31.70	-	-	-	-	-	-
	3 <sup>3</sup> / <sub>4</sub>	2.95	4.01		<b>W15312X</b>	31.70	3 <sup>3</sup> / <sub>4</sub> - 3 <sup>1</sup> / <sub>8</sub>	<b>W15312R302</b>	3 <sup>3</sup> / <sub>4</sub> - 2 <sup>15</sup> / <sub>16</sub>	<b>W15312R215</b>	-	-
	3 <sup>13</sup> / <sub>16</sub>	2.95	4.01		<b>W15313X</b>	31.70	-	-	-	-	-	-
	3 <sup>7</sup> / <sub>8</sub>	2.95	4.01		<b>W15314X</b>	31.70	3 <sup>7</sup> / <sub>8</sub> - 3 <sup>1</sup> / <sub>8</sub>	<b>W15314R302</b>	3 <sup>7</sup> / <sub>8</sub> - 2 <sup>15</sup> / <sub>16</sub>	<b>W15314R215</b>	-	-
	3 <sup>15</sup> / <sub>16</sub>	3.17	4.06		<b>W15315X</b>	34.02	-	-	-	-	-	-
	4	3.17	4.06		<b>W15400X</b>	33.70	-	-	-	-	-	-
	4 <sup>1</sup> / <sub>16</sub>	3.17	4.06		<b>W15401IX</b>	33.41	-	-	-	-	-	-
	4 <sup>1</sup> / <sub>8</sub>	3.17	4.06		<b>W15402X</b>	33.09	4 <sup>1</sup> / <sub>8</sub> - 3 <sup>1</sup> / <sub>2</sub>	<b>W15402R308</b>	4 <sup>1</sup> / <sub>8</sub> - 3 <sup>5</sup> / <sub>16</sub>	<b>W15402R305</b>	4 <sup>1</sup> / <sub>8</sub> - 3 <sup>1</sup> / <sub>4</sub>	<b>W15402R304</b>
	4 <sup>3</sup> / <sub>16</sub>	3.17	4.06		<b>W15403IX</b>	32.81	-	-	-	-	-	-
	4 <sup>1</sup> / <sub>4</sub>	3.17	4.06		<b>W15404X</b>	32.29	4 <sup>1</sup> / <sub>4</sub> - 3 <sup>1</sup> / <sub>2</sub>	<b>W15404R308</b>	4 <sup>1</sup> / <sub>4</sub> - 3 <sup>1</sup> / <sub>8</sub>	<b>W15404R302</b>	-	-
	4 <sup>5</sup> / <sub>16</sub>	3.44	4.52		<b>W15405X</b>	35.61	-	-	-	-	-	-
	4 <sup>3</sup> / <sub>8</sub>	3.44	4.52		<b>W15406X</b>	35.32	-	-	-	-	-	-
	4 <sup>7</sup> / <sub>16</sub>	3.44	4.52		<b>W15407X</b>	34.99	-	-	-	-	-	-
	4 <sup>1</sup> / <sub>2</sub>	3.44	4.52		<b>W15408IX</b>	34.63	-	-	-	-	-	-
	4 <sup>9</sup> / <sub>16</sub>	3.44	4.52		<b>W15409IX</b>	34.28	-	-	-	-	-	-
	4 <sup>5</sup> / <sub>8</sub>	3.44	4.52		<b>W15410IX</b>	33.72	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>15</sup> / <sub>16</sub>	<b>W15410R315</b>	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>7</sup> / <sub>8</sub>	<b>W15410R314</b>	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>3</sup> / <sub>4</sub>	<b>W15410R312</b>
-	-	-	-	-	-	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>1</sup> / <sub>2</sub>	<b>W15410R308</b>	-	-	-	-	

# W22000X Series Imperial Cassettes & Reducer Inserts **ENERPAC**



Nominal Torque at 10,000 psi:

**22,500 Ft.lbs**

Hexagon Range:

**2<sup>15</sup>/<sub>16</sub> - 5<sup>3</sup>/<sub>8</sub> inch**




Maximum Operating Pressure:

**10,000 psi**

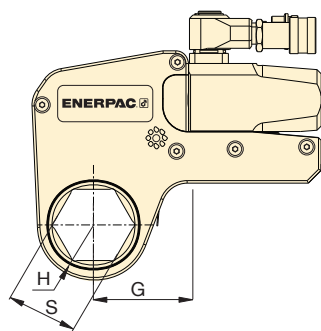
**W**  
Series  
(X-Edition)



## ▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius	Dim.	Model Number	Wt.						
						Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number	Hexagon Reducer (in)	Model Number
<b>W22000X</b>	<b>2<sup>15</sup>/<sub>16</sub></b>	2.64	4.02	<b>W22215X</b>	48.72	-	-	-	-	-	-
	<b>3</b>	2.64	4.02	<b>W22300X</b>	48.40	-	-	-	-	-	-
	<b>3<sup>1</sup>/<sub>16</sub></b>	2.64	4.02	<b>W22301X</b>	48.22	-	-	-	-	-	-
	<b>3<sup>1</sup>/<sub>8</sub></b>	2.64	4.02	<b>W22302X</b>	47.78	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>3</sup> / <sub>8</sub>	<b>W22302R206</b>	3 <sup>1</sup> / <sub>8</sub> - 2 <sup>3</sup> / <sub>16</sub>	<b>W22302R203</b>	-	-
	<b>3<sup>3</sup>/<sub>16</sub></b>	2.85	4.23	<b>W22303X</b>	50.58	-	-	-	-	-	-
	<b>3<sup>1</sup>/<sub>4</sub></b>	2.85	4.23	<b>W22304X</b>	50.19	-	-	-	-	-	-
	<b>3<sup>5</sup>/<sub>16</sub></b>	2.85	4.23	<b>W22305X</b>	49.92	-	-	-	-	-	-
	<b>3<sup>3</sup>/<sub>8</sub></b>	2.85	4.23	<b>W22306X</b>	49.66	-	-	-	-	-	-
	<b>3<sup>7</sup>/<sub>16</sub></b>	2.85	4.23	<b>W22307X</b>	50.29	-	-	-	-	-	-
	<b>3<sup>1</sup>/<sub>2</sub></b>	2.85	4.23	<b>W22308X</b>	48.87	3 <sup>1</sup> / <sub>2</sub> - 2 <sup>3</sup> / <sub>4</sub>	<b>W22308R212</b>	3 <sup>1</sup> / <sub>2</sub> - 2 <sup>9</sup> / <sub>16</sub>	<b>W22308R209</b>	3 <sup>1</sup> / <sub>2</sub> - 2 <sup>3</sup> / <sub>8</sub>	<b>W22308R206</b>
	<b>3<sup>9</sup>/<sub>16</sub></b>	3.07	4.45	<b>W22309X</b>	51.58	-	-	-	-	-	-
	<b>3<sup>5</sup>/<sub>8</sub></b>	3.07	4.45	<b>W22310X</b>	51.30	-	-	-	-	-	-
	<b>3<sup>11</sup>/<sub>16</sub></b>	3.07	4.45	<b>W22311X</b>	50.93	-	-	-	-	-	-
	<b>3<sup>3</sup>/<sub>4</sub></b>	3.07	4.45	<b>W22312X</b>	50.62	3 <sup>3</sup> / <sub>4</sub> - 2 <sup>15</sup> / <sub>16</sub>	<b>W22312R215</b>	-	-	-	-
	<b>3<sup>13</sup>/<sub>16</sub></b>	3.07	4.45	<b>W22313X</b>	50.24	-	-	-	-	-	-
	<b>3<sup>7</sup>/<sub>8</sub></b>	3.07	4.45	<b>W22314X</b>	49.77	3 <sup>7</sup> / <sub>8</sub> - 3 <sup>1</sup> / <sub>8</sub>	<b>W22314R302</b>	3 <sup>7</sup> / <sub>8</sub> - 2 <sup>15</sup> / <sub>16</sub>	<b>W22314R215</b>	3 <sup>7</sup> / <sub>8</sub> - 2 <sup>3</sup> / <sub>4</sub>	<b>W22314R212</b>
	<b>3<sup>15</sup>/<sub>16</sub></b>	3.35	4.72	<b>W22315X</b>	53.57	-	-	-	-	-	-
	<b>4</b>	3.35	4.72	<b>W22400X</b>	53.19	-	-	-	-	-	-
	<b>4<sup>1</sup>/<sub>16</sub></b>	3.35	4.72	<b>W22401IX</b>	52.82	-	-	-	-	-	-
	<b>4<sup>1</sup>/<sub>8</sub></b>	3.35	4.72	<b>W22402X</b>	52.43	-	-	-	-	-	-
	<b>4<sup>3</sup>/<sub>16</sub></b>	3.35	4.72	<b>W22403X</b>	52.09	-	-	-	-	-	-
	<b>4<sup>1</sup>/<sub>4</sub></b>	3.35	4.72	<b>W22404X</b>	51.48	4 <sup>1</sup> / <sub>4</sub> - 3 <sup>1</sup> / <sub>2</sub>	<b>W22404R308</b>	4 <sup>1</sup> / <sub>4</sub> - 3 <sup>1</sup> / <sub>8</sub>	<b>W22404R302</b>	4 <sup>1</sup> / <sub>4</sub> - 2 <sup>15</sup> / <sub>16</sub>	<b>W22404R215</b>
	<b>4<sup>5</sup>/<sub>16</sub></b>	3.54	4.92	<b>W22405X</b>	54.26	-	-	-	-	-	-
	<b>4<sup>3</sup>/<sub>8</sub></b>	3.54	4.92	<b>W22406X</b>	53.91	-	-	-	-	-	-
	<b>4<sup>7</sup>/<sub>16</sub></b>	3.54	4.92	<b>W22407X</b>	53.50	-	-	-	-	-	-
	<b>4<sup>1</sup>/<sub>2</sub></b>	3.54	4.92	<b>W22408IX</b>	53.06	-	-	-	-	-	-
	<b>4<sup>9</sup>/<sub>16</sub></b>	3.54	4.92	<b>W22409X</b>	52.64	-	-	-	-	-	-
	<b>4<sup>5</sup>/<sub>8</sub></b>	3.54	4.92	<b>W22410IX</b>	51.99	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>7</sup> / <sub>8</sub>	<b>W22410R314</b>	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>3</sup> / <sub>4</sub>	<b>W22410R312</b>	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>1</sup> / <sub>2</sub>	<b>W22410R308</b>
	<b>4<sup>3</sup>/<sub>4</sub></b>	3.74	5.12	<b>W22412X</b>	54.54	-	-	-	-	-	-
	<b>4<sup>7</sup>/<sub>8</sub></b>	3.74	5.12	<b>W22414X</b>	53.60	-	-	-	-	-	-
	<b>5</b>	3.74	5.12	<b>W22500X</b>	52.37	5 - 4 <sup>1</sup> / <sub>4</sub>	<b>W22500R404</b>	5 - 4 <sup>1</sup> / <sub>8</sub>	<b>W22500R402</b>	5 - 3 <sup>7</sup> / <sub>8</sub>	<b>W22500R314</b>
	<b>5<sup>1</sup>/<sub>8</sub></b>	3.94	5.31	<b>W22502X</b>	55.10	-	-	-	-	-	-
<b>5<sup>1</sup>/<sub>16</sub></b>	3.94	5.31	<b>W22503X</b>	54.71	-	-	-	-	-	-	
<b>5<sup>1</sup>/<sub>4</sub></b>	3.94	5.31	<b>W22504X</b>	54.05	-	-	-	-	-	-	
<b>5<sup>3</sup>/<sub>8</sub></b>	3.94	5.31	<b>W22506X</b>	52.77	5 <sup>3</sup> / <sub>8</sub> - 4 <sup>5</sup> / <sub>8</sub>	<b>W22506R410</b>	5 <sup>3</sup> / <sub>8</sub> - 4 <sup>1</sup> / <sub>4</sub>	<b>W22506R404</b>	5 <sup>3</sup> / <sub>8</sub> - 4 <sup>1</sup> / <sub>8</sub>	<b>W22506R402</b>	
-	-	-	<b>W22506X</b>	52.77	5 <sup>3</sup> / <sub>8</sub> - 3 <sup>7</sup> / <sub>8</sub>	<b>W22506R314</b>	-	-	-	-	

# W35000X Series Imperial Cassettes & Reducer Inserts



## ▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius	Dim.	Model Number	Wt.	Hexagon Reducer	
						Hexagon Reducer (in)	Model Number
W35000X	S (in)	H (in)	G (in)		(lbs)		
	3 <sup>1</sup> / <sub>8</sub>	3.02	4.99	W35302X	72.30	3 <sup>1</sup> / <sub>8</sub> – 2	W35302R200
	3 <sup>3</sup> / <sub>16</sub>	3.02	4.99	W35303X	72.10	–	–
	3 <sup>1</sup> / <sub>4</sub>	3.02	4.99	W35304X	71.70	–	–
	3 <sup>5</sup> / <sub>16</sub>	3.02	4.99	W35305X	71.40	–	–
	3 <sup>3</sup> / <sub>8</sub>	3.02	4.99	W35306X	71.00	–	–
	3 <sup>7</sup> / <sub>16</sub>	3.02	4.99	W35307IX	70.50	–	–
	3 <sup>1</sup> / <sub>2</sub>	3.02	4.99	W35308X	70.10	3 <sup>1</sup> / <sub>2</sub> - 2 <sup>5</sup> / <sub>16</sub>	W35308R205
	3 <sup>9</sup> / <sub>16</sub>	3.23	5.22	W35309X	71.40	–	–
	3 <sup>5</sup> / <sub>8</sub>	3.23	5.22	W35310X	73.40	–	–
	3 <sup>11</sup> / <sub>16</sub>	3.23	5.22	W35311X	73.00	–	–
	3 <sup>3</sup> / <sub>4</sub>	3.23	5.22	W35312X	72.50	–	–
	3 <sup>13</sup> / <sub>16</sub>	3.23	5.22	W35313X	72.10	–	–
	3 <sup>7</sup> / <sub>8</sub>	3.23	5.22	W35314X	71.40	3 <sup>7</sup> / <sub>8</sub> - 2 <sup>11</sup> / <sub>16</sub>	W35314R211
	3 <sup>15</sup> / <sub>16</sub>	3.45	5.39	W35315X	70.80	3 <sup>15</sup> / <sub>16</sub> - 2 <sup>13</sup> / <sub>16</sub>	W35315R213
	4	3.45	5.39	W35400X	74.70	–	–
	4 <sup>1</sup> / <sub>16</sub>	3.45	5.39	W35401X	74.30	–	–
	4 <sup>1</sup> / <sub>8</sub>	3.45	5.39	W35402X	73.90	–	–
	4 <sup>3</sup> / <sub>16</sub>	3.45	5.39	W35403X	73.40	–	–
	4 <sup>1</sup> / <sub>4</sub>	3.45	5.39	W35404X	72.80	4 <sup>1</sup> / <sub>4</sub> - 3 <sup>15</sup> / <sub>16</sub>	W35404R301
	4 <sup>5</sup> / <sub>16</sub>	3.69	5.63	W35405X	76.90	–	–
	4 <sup>3</sup> / <sub>8</sub>	3.69	5.63	W35406X	76.50	–	–
	4 <sup>7</sup> / <sub>16</sub>	3.69	5.63	W35407X	76.10	–	–
	4 <sup>1</sup> / <sub>2</sub>	3.69	5.63	W35408X	75.60	–	–
	4 <sup>9</sup> / <sub>16</sub>	3.69	5.63	W35409IX	75.20	–	–
	4 <sup>5</sup> / <sub>8</sub>	3.69	5.63	W35410IX	74.50	4 <sup>5</sup> / <sub>8</sub> - 3 <sup>5</sup> / <sub>8</sub>	W35410R310
	4 <sup>3</sup> / <sub>4</sub>	3.91	5.85	W35412X	78.50	4 <sup>3</sup> / <sub>4</sub> - 3 <sup>3</sup> / <sub>4</sub>	W35412R312
	4 <sup>7</sup> / <sub>8</sub>	3.91	5.85	W35414X	76.90	–	–
	5	3.91	5.85	W35500X	75.60	5 - 4	W35500R400
	5 <sup>1</sup> / <sub>8</sub>	4.09	6.02	W35502X	78.90	5 <sup>1</sup> / <sub>8</sub> - 4 <sup>1</sup> / <sub>8</sub>	W35502R402
	5 <sup>3</sup> / <sub>16</sub>	4.09	6.02	W35503X	78.50	–	–
	5 <sup>1</sup> / <sub>4</sub>	4.09	6.02	W35504X	77.60	–	–
5 <sup>3</sup> / <sub>8</sub>	4.09	6.02	W35506X	76.30	5 <sup>3</sup> / <sub>8</sub> - 4 <sup>5</sup> / <sub>16</sub>	W35506R405	
5 <sup>1</sup> / <sub>2</sub>	4.31	6.24	W35508X	79.80	–	–	
5 <sup>9</sup> / <sub>16</sub>	4.31	6.24	W35509X	79.40	–	–	
5 <sup>5</sup> / <sub>8</sub>	4.31	6.24	W35510X	78.50	–	–	
5 <sup>3</sup> / <sub>4</sub>	4.31	6.24	W35512X	76.90	5 <sup>3</sup> / <sub>4</sub> - 4 <sup>3</sup> / <sub>4</sub>	W35512R412	
5 <sup>7</sup> / <sub>8</sub>	4.52	6.46	W35514X	80.90	5 <sup>7</sup> / <sub>8</sub> - 4 <sup>7</sup> / <sub>8</sub>	W35514R414	
6	4.52	6.46	W35600X	79.60	–	–	
6 <sup>1</sup> / <sub>8</sub>	4.52	6.46	W35602X	77.80	6 <sup>1</sup> / <sub>8</sub> - 5 <sup>1</sup> / <sub>8</sub>	W35602R502	

## W Series (X-Edition)



Nominal Torque at 10,000 psi:

**35,000 Ft.lbs**

Hexagon Range:

**3<sup>1</sup>/<sub>8</sub>-6<sup>1</sup>/<sub>8</sub> inches**

Maximum Operating Pressure:

**10,000 psi**



### Back-Up Spanners

Hands free tool to be used to stop back nut from turning during make up or break out.

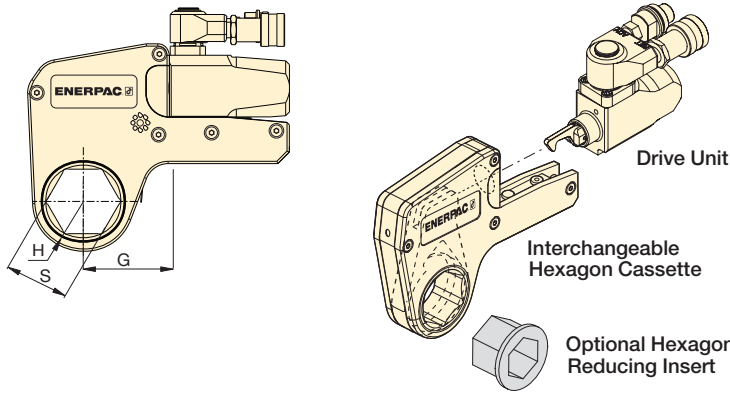
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### Hexagon Bolt and Nut Sizes

See the table of hexagon sizes of bolts, nuts and related thread diameters.

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**W**  
Series  
(X-Edition)



Hexagon Range:  
**24-105 mm**

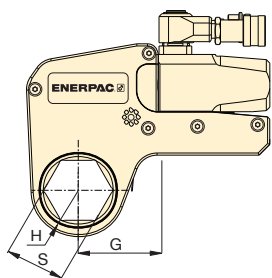
Maximum Operating Pressure:  
**10,000 psi (690 bar)**

▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size*	Nose Radius	Dim.	Model Number	Wt.	Hexagon Reducer		Hexagon Reducer		Hexagon Reducer		
						Hexagon Reducer (mm)	Model Number	Hexagon Reducer (mm)	Model Number	Hexagon Reducer (mm)	Model Number	
<b>W2000X</b>	30	1.22	2.11	W2103X	4.19	-	-	-	-	-	-	
	32	1.22	2.11	W2104X	4.19	-	-	-	-	-	-	
	36	1.22	2.11	W2107X	4.19	-	-	-	-	-	-	
	38	1.32	2.29	W2108X	4.51	-	-	-	-	-	-	
	41	1.32	2.29	W2110X	4.38	41 - 32	W2110R104	41 - 30	W2110R103	41 - 24	W2110R024M	
	46	1.44	2.38	W2113X	4.69	46 - 36	W2113R107	46 - 32	W2113R104	-	-	
	50	1.54	2.48	W2200X	4.54	50 - 41	W2200R110	50 - 36	W2200R107	-	-	
	55	1.65	2.70	W2203X	4.64	55 - 46	W2203R113	55 - 41	W2203R110	55 - 36	W2203R107	
	60	1.75	2.55	W2206X	4.72	60 - 50	W2206R200	60 - 46	W2206R113	60 - 41	W2206R110	
	-	-	-	-	-	-	60 - 36	W2206R107	-	-	-	-
<b>W4000X</b>	36	1.46	2.40	W4107X	7.72	-	-	-	-	-	-	
	41	1.46	2.40	W4110X	7.72	-	-	-	-	-	-	
	46	1.56	2.52	W4113X	7.94	-	-	-	-	-	-	
	50	1.63	2.63	W4200X	8.28	50 - 36	W4200R107	-	-	-	-	
	55	1.73	2.89	W4203X	8.42	55 - 41	W4203R110	55 - 36	W4203R107	55 - 32	W4203R104	
	60	1.83	2.78	W4206X	8.47	60 - 50	W4206R200	60 - 46	W4206R113	60 - 36	W4206R107	
	65	1.95	3.00	W4209X	8.67	65 - 55	W4209R203	65 - 50	W4209R200	65 - 46	W4209R113	
	70	2.07	3.08	W4212X	8.84	70 - 60	W4212R206	70 - 55	W4212R203	-	-	
	75	2.18	3.21	W4215X	8.96	75 - 65	W4215R209	75 - 60	W4215R206	-	-	
	-	-	-	-	-	-	75 - 55	W4215R203	75 - 50	W4215R200	-	-
	80	2.30	3.29	W4302X	9.16	80 - 75	W4302R215	80 - 70	W4302R212	80 - 65	W4302R209	
	-	-	-	-	-	-	80 - 55	W4302R203	80 - 50	W4302R200	-	-
<b>W8000X</b>	50	1.77	3.08	W8200X	17.75	-	-	-	-	-	-	
	55	1.89	3.15	W8203X	17.22	-	-	-	-	-	-	
	60	2.01	3.25	W8206X	17.59	-	-	-	-	-	-	
	65	2.07	3.38	W8209X	17.29	65 - 50	W8209R200	-	-	-	-	
	70	2.07	3.34	W8212X	17.12	70 - 55	W8212R203	-	-	-	-	
	75	2.28	3.35	W8215X	17.11	75 - 60	W8215R206	75 - 55	W8215R203	-	-	
	80	2.38	3.52	W8302X	17.33	80 - 65	W8302R209	80 - 60	W8302R206	80 - 55	W8302R203	
	-	-	-	-	-	-	80 - 50	W8302R200	-	-	-	
	85	2.60	3.63	W8085MX	18.42	85 - 70	W8085R070M	85 - 65	W8085R065M	85 - 60	W8085R060M	
	-	-	-	-	-	-	85 - 55	W8085R055M	-	-	-	
	90	2.91	4.05	W8090MX	20.46	90 - 75	W8090R075M	-	-	-	-	
	95	2.91	4.05	W8312X	19.71	95 - 80	W8312R302	95 - 75	W8312R215	-	-	
	100	3.13	4.33	W8315X	20.31	-	-	-	-	-	-	
105	3.13	4.33	W8402X	19.39	-	-	-	-	-	-		

\* See page 128 for table of hexagon sizes of bolts, nuts and related thread diameters.

# W-Series Metric Cassettes and Reducer Inserts



Hexagon Range:

**65-155 mm**

Maximum Operating Pressure:

**10,000 psi (690 bar)**

**W**  
Series  
(X-Edition)



## ▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size	Nose Radius	Dim.	Model Number	Wt.	Hexagon Reducer		Hexagon Reducer	
						Hexagon Reducer (mm)	Model Number	Hexagon Reducer (mm)	Model Number
	S (mm)	H (in)	G (in)		(lbs)				
W15000X	65	2.32	3.49	W15209X	30.72	-	-	-	-
	70	2.32	3.49	W15212X	30.72	-	-	-	-
	75	2.44	3.56	W15215X	30.08	-	-	-	-
	80	2.54	3.66	W15302X	30.34	80-65	W15302R209	-	-
	85	2.74	3.80	W15085MX	31.70	85-70	W15085R070M	-	-
	90	2.95	4.01	W15090MX	33.32	90-75	W15090R075M	-	-
	95	2.95	4.01	W15312X	31.70	95-80	W15312R302	95 - 75	W15312R215
	100	3.17	4.06	W15315X	34.02	-	-	-	-
	105	3.17	4.06	W15402X	33.09	105-90	W15402R090M	-	-
	110	3.44	4.52	W15405X	35.61	110-95	W15110R095M	-	-
	115	3.44	4.52	W15115MX	34.48	115-100	W15115R100M	-	-
W22000X	75	2.64	4.02	W22215X	48.72	-	-	-	-
	80	2.64	4.02	W22302X	47.78	80-60	W22302R206	80 - 55	W22302R203
	85	2.85	4.23	W22085MX	49.74	85-65	W22085MR209	85 - 60	W22085MR206
	90	3.07	4.45	W22090MX	51.72	90-70	W22090M212	90 - 60	W22090MR206
	95	3.07	4.45	W22312X	50.62	95-75	W22312R215	-	-
	100	3.35	4.72	W22315X	53.57	-	-	-	-
	105	3.35	4.72	W22402X	52.09	-	-	-	-
	110	3.54	4.92	W22404X	51.48	-	-	-	-
	115	3.54	4.92	W22115MX	52.88	-	-	-	-
	120	3.74	5.12	W22412X	54.54	-	-	-	-
	123	3.74	5.12	W22123MX	53.80	-	-	-	-
	130	3.94	5.31	W22502X	55.10	-	-	-	-
	135	3.94	5.31	W22506X	52.77	135 - 105	W22506R402	-	-
W35000X	80	3.02	5.08	W35302X	72.30	80-50	W35302R200	-	-
	85	3.02	5.08	W35085MX	33.10	-	-	-	-
	90	3.23	5.33	W35090MX	34.30	90-60	W35090R206	-	-
	95	3.23	5.30	W35312X	72.50	-	-	-	-
	100	3.45	5.48	W35315X	70.80	-	-	-	-
	105	3.45	5.48	W35402X	73.90	-	-	-	-
	110	3.69	5.75	W35405X	76.90	110-85	W35405R085M	-	-
	115	3.69	5.75	W35115MX	77.10	-	-	-	-
	120	3.91	6.01	W35412X	78.50	120-95	W35412R312	-	-
	123	3.91	6.01	W35123MX	78.90	-	-	-	-
	130	4.09	6.30	W35502X	78.90	130-105	W35502R402	-	-
	135	4.09	6.30	W35506X	76.30	135-110	W35506R405	-	-
	140	4.31	6.43	W35508X	79.80	140-115	W35508R115M	-	-
	145	4.31	6.43	W35512X	76.90	145-120	W35512R412	-	-
	150	4.52	6.67	W35514X	80.90	-	-	-	-
	151	4.52	6.67	W35151MX	82.10	-	-	-	-
	155	4.52	6.67	W35602X	77.80	155-130	W35602R502	-	-

# W-Series, UltraSlim Stepped-Width Cassettes **ENERPAC**

▼ Shown: W4206SL stepped-width cassette with W4000X drive unit



## Your Easy and Long-Lasting Solution to Difficult Access Bolting Applications



### Designed for Tight Spots

Stepped width design provides easy access in confined areas. UltraSlim cassettes fit where standard solutions won't.



### Built to Outperform

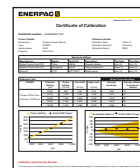
High endurance components keep working when others fail.



### Top Mounted Handles

Standard top mounted handles provide safety and versatility; optional angled handles are also available.

Replacement handle (straight)	<b>SWH6S</b>
Angled handle (optional)	<b>SWH6A</b>



### Calibration Certificate

All UltraSlim Series cassettes are CE - ATEX declared, factory calibrated and are shipped complete with a calibration certificate.

CE  II 2 GD ck T4  
CSA/SIRA 15XT072

### Versatility

- Lean, stepped width design allows tool to be mounted over bolts where other tools won't fit
- Bi-Hexagonal cassette allows twice as many positioning points on nut or bolt
- Uses same drive unit as standard W-series hexagon cassettes
- Robust top mounted handle stays out of the way, providing safe fastening in hard to reach areas

### Performance

- Premium components provide best-in-class endurance

### Ease of Use

- Few moving parts are easily accessible for quick field maintenance
- Fast release drive unit enables rapid exchange of cassettes, no tools required and no pins to lose
- Uses same drive unit as standard and X-Edition cassettes

### Accuracy

- Constant torque output provides accuracy of +/- 3% across the full stroke

*Slim enough to fit and tough enough to last. This UltraSlim wrench is the perfect controlled bolting solution for this oil and gas flange. ▶*





# UltraSlim Stepped-Width Cassettes



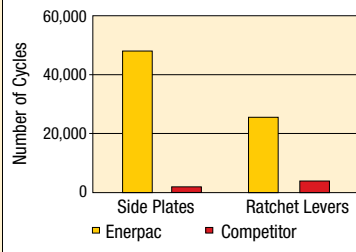
## UltraSlim Stepped-Width Cassettes

Accessing narrow spaces normally requires

significantly reducing the width of the torque wrench. For the tool operator, this has always meant vastly reduced tool durability, and/or reduced torque output.

By using the highest-grade materials, perfecting the geometry, and placing the positioning handle on top of the tool, Enerpac UltraSlim cassettes are able to provide greater torque, get into tighter spaces, and vastly outperform the competition in product durability.\*

### Durability of Key Components\*



\*Average test results, whereby three Enerpac 1<sup>3</sup>/<sub>16</sub>" UltraSlim cassettes and three competitor 1<sup>3</sup>/<sub>16</sub>" cassettes were tested at 4000 ft-lbs for 50,000 cycles. The Enerpac side plates never broke for the full duration of the test.

## W-SL Series Ultra-Slim



Nominal Torque at 10,000 psi:

**4360 Ft.lbs.**

Hexagon Range:

**1<sup>13</sup>/<sub>16</sub> - 2<sup>15</sup>/<sub>16</sub> inches**

Maximum Operating Pressure:

**10,000 psi**



### Torque Wrench Pumps

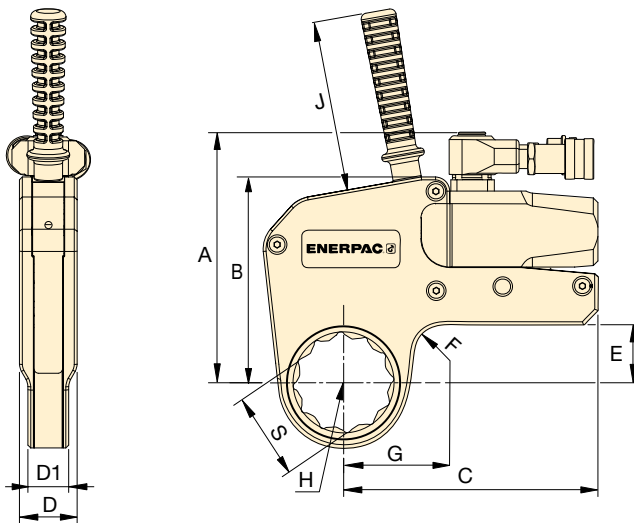
Visit [enerpac.com](http://enerpac.com) for system matched air and electric torque wrench pumps that are ideal for use with hydraulic torque wrenches.



### Torque Wrench Hoses

Use Enerpac THQ700 Series hoses with W-Series torque wrenches to ensure the integrity of your hydraulic system.

10,000 psi	
6 feet long, 2 hoses	<b>THQ702T</b>
19.5 feet long, 2 hoses	<b>THQ706T</b>
39 feet long, 2 hoses	<b>THQ712T</b>

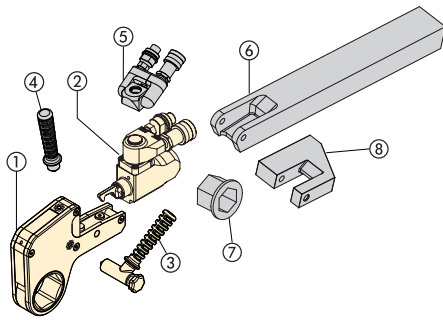


### ▼ SELECTION CHART

Hexagon Size	Nominal Torque @ 10,000 psi	Cassette Model Number	Minimum Torque @ 1000 psi	Nose Radius	Dimensions (in)									Weight (lbs)	Drive Unit Model* (sold separately)
					S (in)	S (mm)	H (in)	G	A	B	C	D	D1		
1 <sup>13</sup> / <sub>16</sub>	46	1980	200	1.44	2.35	5.54	4.30	5.81	1.28	1.00	0.94	0.79	4.72	4.87	<b>W2000X</b>
2	50	1980	200	1.52	2.40									4.87	
2 <sup>3</sup> / <sub>16</sub>	55	1980	200	1.63	2.49									4.87	
2 <sup>3</sup> / <sub>8</sub>	60	1980	200	1.75	2.56									4.88	
1 <sup>13</sup> / <sub>16</sub>	46	4360	430	1.56	2.65	6.91	5.69	7.03	1.59	1.13	1.61	0.79	4.72	10.15	<b>W4000X</b>
2 <sup>3</sup> / <sub>16</sub>	55	4360	430	1.73	2.70									10.15	
2 <sup>3</sup> / <sub>8</sub>	60	4360	430	1.89	2.82									10.36	
2 <sup>9</sup> / <sub>16</sub>	65	4360	430	1.99	2.92									10.37	
2 <sup>3</sup> / <sub>4</sub>	70	4360	430	2.11	2.98									10.42	
2 <sup>15</sup> / <sub>16</sub>	75	4360	430	2.20	2.99									10.37	

\* Bi-Hexagonal Cassette includes top mounted straight handle.

\*\* May also be used with **W2000PX** and **W4000PX** drive units, featuring double-swivel manifolds.

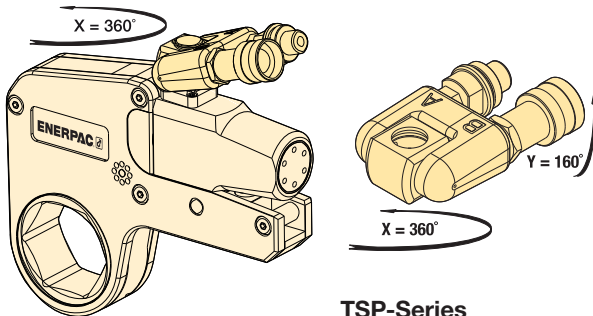


- ① Hexagon Cassette
- ② Drive Unit
- ③ Angled Positioning Handle
- ④ Straight Positioning Handle (optional)
- ⑤ Pro Series Swivel (optional)
- ⑥ Extended Reaction Arm (optional)
- ⑦ Reducer Insert (optional)
- ⑧ Reaction Paddle (optional)

## TSP WTE WRP Series



### TSP-Series, Pro Series Swivels



TSP-Series

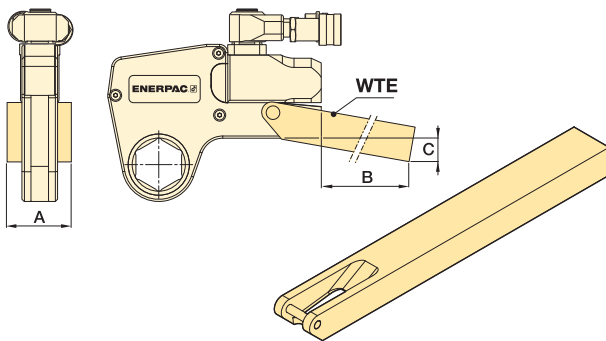
- Robust interlocking design
- 360° X-axis and 160° Y-axis rotation
- Increases tool fit in restricted access areas
- Simplifies hose placement
- Includes male and female couplers

Torque Wrench Model Number	Model Number	Maximum Pressure (psi)	Wt. (lbs)
W2000X, W4000X, W8000X, W15000X, W22000X, W35000X	TSP300*	10,000	.44

Note: To order a W-series (X-Edition) wrench fitted with the TSP swivel, insert a "P" prior to the "X" in the tool designation, e.g., W2000PX.

\* TSP300 is designed for X-Edition tools only, and is not compatible with standard edition tools. For replacement components for existing tools, refer to repair sheet on [www.enerpac.com](http://www.enerpac.com)

### WTE-Series, Extended Reaction Arm



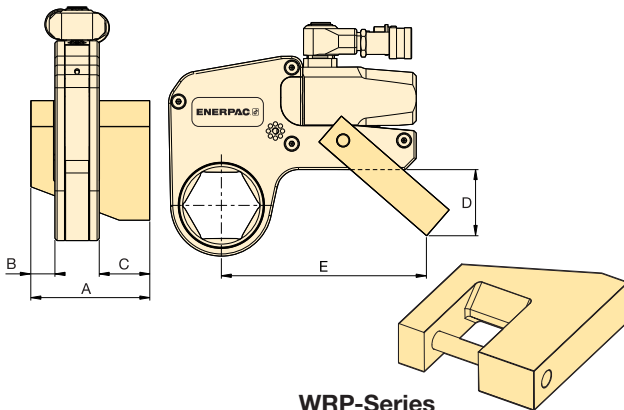
WTE-Series

- Full torque rated
- Increases tool fit in restricted access areas

Torque Wrench Model Number	Model Number	Dimensions (in)			Wt.* (lbs)
		A	B	C	
W2000X	WTE20	2.20	15.67	2.66	5.73
W4000X	WTE40	2.60	17.17	2.91	10.14
W8000X	WTE80	3.35	17.68	2.15	16.76
W15000X	WTE150	4.02	19.61	2.83	26.46
W22000X	WTE220	4.49	20.51	3.03	38.14
W35000X	WTE350	5.00	16.48	5.23	39.24

\* Weights indicated are for the accessories only and do not include the wrench.

### WRP-Series Reaction Paddles



WRP-Series

- Lightweight interchangeable design
- Allows for offset reaction when in-line reaction is not available

Torque Wrench Model Number	Model Number	Dimensions (in)					Wt.* (lbs)
		A	B	C	D	E	
W2000X	WRP20	3.31	0.63	1.40	1.77	5.83	.88
W4000X	WRP40	4.29	0.83	1.87	2.32	7.48	1.76
W8000X	WRP80	5.37	1.02	2.25	2.72	8.78	4.41
W15000X	WRP150	6.50	1.26	2.74	3.43	10.12	8.60
W22000X	WRP220	8.15	1.52	3.58	5.28	12.48	15.87
W35000X	WRP350	9.22	1.79	3.58	7.17	13.98	23.37

\* Weights indicated are for the accessories only and do not include the wrench.

**ENERPAC professional series steel torque wrenches provide reliable controlled tightening solutions across many industries.**

### **S3000X Square Drive Torque Wrench on Wind Turbine Assembly and Maintenance**

*S3000X used to connect wind turbine segments during assembly and maintenance. A robust but compact solution is required for bolt tightening on wind tower sections. Large numbers of fasteners require precise application of torque to ensure joint integrity is achieved and maintained.*

*The Enerpac S-Series wrench offers simple and reliable operation while providing accurate and repeatable results.*



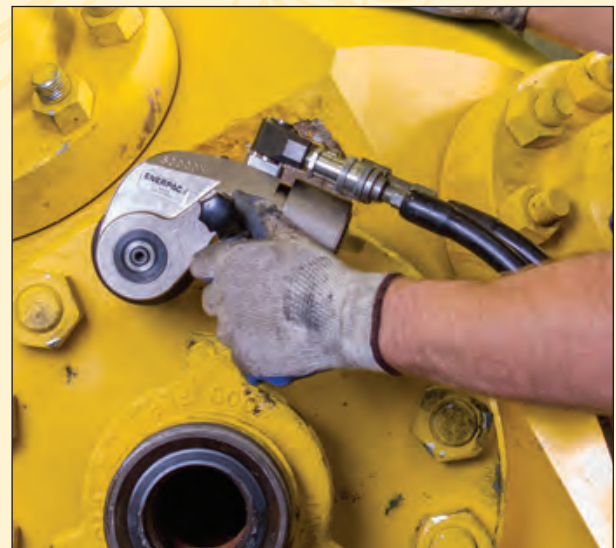
### **W4000X Low Profile Torque Wrench on an API Pipe Flange**

*Throughout the Oil and Gas, Petrochemical and Processing Industries, pipeline joints, valves, pumps and machinery present challenges for controlled bolting.*

*The restricted access on this flange was easily overcome with an Enerpac W-Series Torque Wrench. The W Wrenches offer reliability and control, ensuring even and consistent torque is applied to all bolts.*

### **S3000X on an Oil and Gas Flange**

*During maintenance, quick turnaround times are essential; S-Series wrenches provide a large angle of nut rotation per stroke, offering speed and accuracy in a compact ergonomic tool.*



▼ RSL Drive Units with interchangeable RLP Hexagon Cassette and RSQ Square Drive Head



## Setting New Standards in Safety, Simplicity and Performance



### Options and Accessories

Optional extended reaction arms and tubes are common accessories available for maximum versatility. Please contact your Enerpac representative to help you select the optimum solution for your application.

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### Back-Up Spanner

Hands free tool to be used to stop back nut from turning during make up or break out. Two hex sizes in one tool.

Hexagon Sizes (A/F)		Back-Up Spanner Model Number
(in)	(mm)	
1 1/16 - 1 1/4	27 - 32	<b>BUS 01</b>
1 7/16 - 1 5/8	36 - 41	<b>BUS 02</b>
1 13/16 - 2	46 - 50	<b>BUS 03</b>
2 3/16 - 2 3/8	55 - 60	<b>BUS 04</b>
2 9/16 - 2 3/4	65 - 70	<b>BUS 05</b>
2 15/16 - 3 1/8	75 - 80	<b>BUS 06</b>
3 1/2 - 3 7/8	-	<b>BUS 07</b>
4 1/4 - 4 5/8	-	<b>BUS 08</b>
-	85 - 90	<b>BUS 09</b>
3 3/4 - 3 15/16	95 - 100	<b>BUS 10</b>
4 1/8 - 4 15/16	105 - 110	<b>BUS 11</b>
-	115 - 120	<b>BUS 12</b>

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### Torque Wrench Pumps

Visit [enerpac.com](http://enerpac.com) for system-matched air and electric torque wrench pumps that are ideal for use with hydraulic torque wrenches.

Page: **45**

### Safety and Performance

- Innovative design that completely encloses all moving parts and minimizes pinch points
- 30-35° rotation angle provides added productivity while avoiding "tool lock-on" which is common with some torque wrench designs

### Simplicity

- Simple robust alloy steel design with just three moving parts for reduced maintenance
- Robust handles are available for both sides and the tops of cassettes to allow for extra maneuverability
- Designed to give optimum strength-to-weight and torque-to-weight ratios
- Minimum nose radius for trouble-free tool fit

### Versatility

- Interchangeable cassette design
- Wide range of hexagon sizes available for all applications
- Reaction arm has a simple dial lock for rapid change
- For use in multiple industrial, energy, and oil and gas applications

### Accuracy

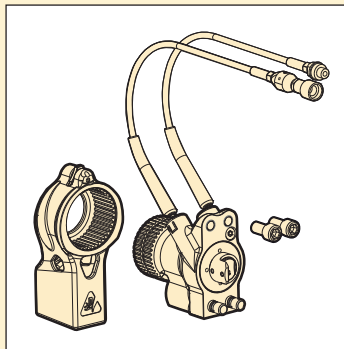
- Accuracy of +/-3%

# Drive Units for Hexagon Cassettes & Square Drive Heads

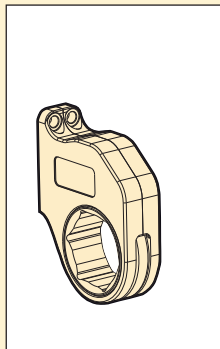


## One Drive, Two Tools

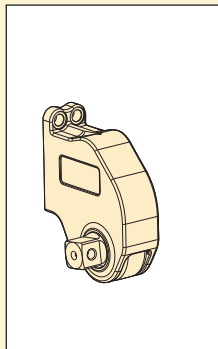
One RSL-Hydraulic Drive Unit fits RLP-Hexagon Cassette or RSQ-Square Drive Head.



RSL

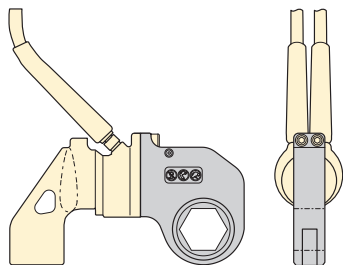


RLP... / RLP...SL

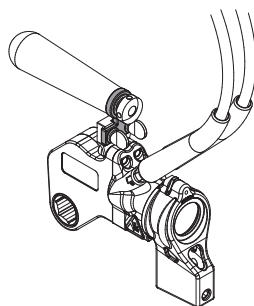


RSQ

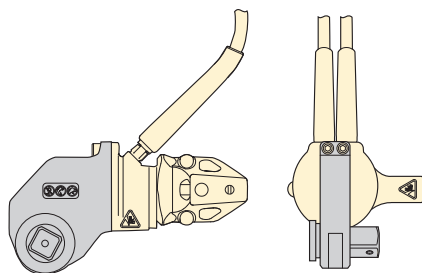
▼ RSL Torque Wrench Drive Unit shown with RLP Low-Profile Hexagon Cassette



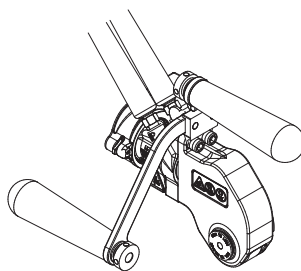
▼ Contact Enerpac for optional handles.



▼ RSL Torque Wrench Drive Unit shown with RSQ Square Drive Head



▼ Contact Enerpac for optional handles.



## ▼ SELECTION CHART

Hexagon Cassette Range (A/F) (see pages 28-32 for sizes and model numbers)		Drive Unit Model Number	Maximum Torque Output		Weight (lbs)
(in)	(mm)		(ft-lbs)	Nm	
7/8 - 2 3/8	26 - 60	RSL1500	1408	1909	3.4
1 1/4 - 2 15/16	32 - 74	RSL3000	3080	4176	5.6
2 - 3 1/8	50 - 80	RSL5000	5303	7190	8.9
2 3/16 - 3 1/8	55 - 80	RSL8000	7862	10659	10.6
2 9/16 - 4 5/8	65 - 117	RSL11000	11,154	15123	11.6
3 1/8 - 4 5/8	79 - 117	RSL19000	18,843	25547	20.0
3 1/2 - 6 1/8	89 - 155	RSL28000	28,002	37965	22.0

## RSL Series



Maximum Torque Output:

**1408 - 28,002 ft-lbs**

Hexagon Range:

**7/8 - 6 1/8 in | 26-155 mm**

Maximum Operating Pressure:

**10,000 psi**



## Select the Right Torque: Use Enerpac Bolting Integrity Software Solutions

Comprehensive on-line software solutions for Bolted Joint Integrity. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

Page: 126



## Torque Wrench Hoses

Use Enerpac THQ-700 Series hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

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## RLP-Series, Low-Profile Hexagon Cassettes

For metric and imperial hexagon cassettes see pages 28-32.

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## RSQ-Series, Square-Drive Heads

RSQ Square Drive Heads are interchangeable with the RLP Hexagon Cassettes for the same size RSL Drive Unit.

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# Hexagon Cassettes for RSL-Series



**Enerpac's Bolting Integrity Software Solutions** play a key role in implementing and managing an Integrity Program for bolted connections. Our

Bolting Software Suite includes **BoltUp** (free, online calculator providing reliable, repeatable bolt loads), **Informate** (bolt load calculation software for huge range of flanged joints and clamped connections), and **Integrity Data Management System/iDMS** (flexible data management and activity-planning system for use on assets featuring bolted connections).

Contact Enerpac for more information.



## Slimline Stepped-Width Hexagon Cassettes

For accessing narrow spaces RLP...SL Stepped-Width

Hexagon Cassettes are available. Slimline cassettes use same drive unit as standard RLP-cassettes.

Page: **35**

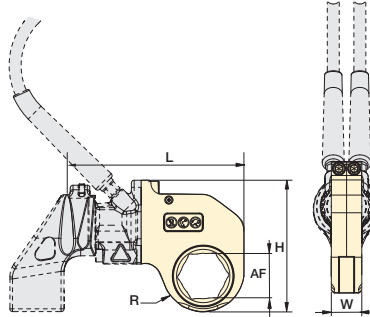
## RSL Series



Hexagon Range:  
**7/8 - 6 1/8 inches**

Hexagon Range:  
**26 - 155 mm**

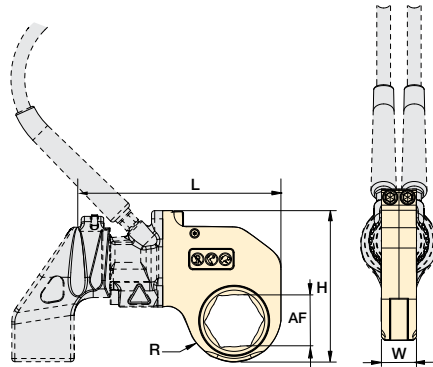
Maximum Operating Pressure:  
**10,000 psi**



### ▼ SELECTION CHART

Drive Unit Model Number	AF Size		Hexagon Cassette Model Number	Maximum Torque Output		Dimensions (in)				Wt. (lbs)	Dimensions (mm)				Wt. (kg)
	(in)	(mm)		(ft-lbs)	(Nm)	R	L	W	H		R	L	W	H	
RSL5000	1 1/16	-	RLP 5111	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 3/4	-	RLP 5112	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 3/16	46	RLP 5113	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 7/8	-	RLP 5114	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 5/16	-	RLP 5115	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	2	50	RLP 5200	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	2 1/16	-	RLP 5201	3500	4746	1.71	9.18	1.75	6.62	6.5	43,4	233,2	44,5	168,1	2,9
	2 3/8	-	RLP 5202	3500	4746	1.71	9.18	1.75	6.62	6.5	43,4	233,2	44,5	168,1	2,9
	2 3/16	55	RLP 5203	3500	4746	1.71	9.18	1.75	6.62	6.5	43,4	233,2	44,5	168,1	2,9
	2 1/4	-	RLP 5204	4500	6102	1.87	9.34	1.75	6.78	7.0	47,5	237,2	44,5	172,2	3,2
	2 5/16	-	RLP 5205	4500	6102	1.87	9.34	1.75	6.78	7.0	47,5	237,2	44,5	172,2	3,2
	2 3/8	60	RLP 5206	4500	6102	1.87	9.34	1.75	6.78	7.0	47,5	237,2	44,5	172,2	3,2
	2 7/16	62	RLP 5207	5303	7191	2.01	9.48	1.75	6.92	7.0	51,1	240,8	44,5	175,8	3,2
	2 1/2	63	RLP 5208	5303	7191	2.01	9.48	1.75	6.92	7.0	51,1	240,8	44,5	175,8	3,2
	2 9/16	65	RLP 5209	5303	7191	2.01	9.48	1.75	6.92	7.0	51,1	240,8	44,5	175,8	3,2
	2 5/8	-	RLP 5210	5303	7191	2.16	9.63	1.75	7.07	7.5	54,9	244,6	44,5	179,6	3,4
	2 1 1/16	-	RLP 5211	5303	7191	2.16	9.63	1.75	7.07	7.5	54,9	244,6	44,5	179,6	3,4
	2 3/4	70	RLP 5212	5303	7191	2.16	9.63	1.75	7.07	7.5	54,9	244,6	44,5	179,6	3,4
	2 3 1/16	-	RLP 5213	5303	7191	2.24	9.71	1.75	7.15	7.5	56,9	246,6	44,5	181,6	3,4
	2 7/8	-	RLP 5214	5303	7191	2.24	9.71	1.75	7.15	7.5	56,9	246,6	44,5	181,6	3,4
	2 5 1/16	75	RLP 5215	5303	7191	2.24	9.71	1.75	7.15	7.5	56,9	246,6	44,5	181,6	3,4
3	-	RLP 5300	5303	7191	2.26	9.73	1.75	7.17	7.2	57,4	247,1	44,5	182,1	3,3	
3 1/16	-	RLP 5301	5303	7191	2.26	9.73	1.75	7.17	7.2	57,4	247,1	44,5	182,1	3,3	
3 1/8	80	RLP 5302	5303	7191	2.26	9.73	1.75	7.17	7.2	57,4	247,1	44,5	182,1	3,3	
RSL8000	2 3/8	60	RLP 8206	4500	6102	1.87	9.53	2.25	7.00	8.9	47,5	242,1	57,2	177,8	4,0
	2 7/16	62	RLP 8207	5800	7865	2.01	9.67	2.25	7.13	9.0	51,1	245,6	57,2	181,1	4,1
	2 1/2	63	RLP 8208	5800	7865	2.01	9.67	2.25	7.13	9.0	51,1	245,6	57,2	181,1	4,1
	2 9/16	65	RLP 8209	5800	7865	2.01	9.67	2.25	7.13	9.0	51,1	245,6	57,2	181,1	4,1
	2 5/8	-	RLP 8210	7862	10.661	2.16	9.82	2.25	7.28	9.6	54,9	249,4	57,2	184,9	4,4
	2 1 1/16	-	RLP 8211	7862	10.661	2.16	9.82	2.25	7.28	9.6	54,9	249,4	57,2	184,9	4,4
	2 3/4	70	RLP 8212	7862	10.661	2.16	9.82	2.25	7.28	9.6	54,9	249,4	57,2	184,9	4,4
	2 3 1/16	-	RLP 8213	7862	10.661	2.24	9.90	2.25	7.38	9.6	56,9	251,5	57,2	187,5	4,4
	2 7/8	-	RLP 8214	7862	10.661	2.24	9.90	2.25	7.38	9.6	56,9	251,5	57,2	187,5	4,4
	2 5 1/16	75	RLP 8215	7862	10.661	2.24	9.90	2.25	7.38	9.6	56,9	251,5	57,2	187,5	4,4
	3	-	RLP 8300	7862	10.661	2.26	9.92	2.25	7.39	9.3	57,4	252,0	57,2	187,7	4,2
	3 1/16	-	RLP 8301	7862	10.661	2.26	9.92	2.25	7.39	9.3	57,4	252,0	57,2	187,7	4,2
	3 1/8	80	RLP 8302	7862	10.661	2.26	9.92	2.25	7.39	9.3	57,4	252,0	57,2	187,7	4,2

## RSL Series



Hexagon Range:

**7/8 - 6 1/8 inches**

Hexagon Range:

**26 - 155 mm**

Maximum Operating Pressure:

**10,000 psi**

### ▼ SELECTION CHART

Drive Unit Model Number	AF Size		Hexagon Cassette Model Number	Maximum Torque Output		Dimensions (in)				Wt.	Dimensions (mm)				Wt.
	(in)	(mm)		(ft-lbs)	(Nm)	R	L	W	H	(lbs)	R	L	W	H	(kg)
RSL11000	2 7/16	62	RPL 11207	5800	7865	1.98	10.00	2.50	8.03	14.2	50,3	254,0	63,5	204,0	6,4
	2 1/2	-	RPL 11208	5800	7865	1.98	10.00	2.50	8.03	14.2	50,3	254,0	63,5	204,0	6,4
	2 9/16	65	RPL 11209	5800	7865	1.98	10.00	2.50	8.03	14.2	50,3	254,0	63,5	204,0	6,4
	2 5/8	-	RPL 11210	7300	9899	2.19	11.20	2.50	8.23	14.8	55,6	284,5	63,5	209,0	6,7
	2 11/16	-	RPL 11211	7300	9899	2.19	11.20	2.50	8.23	14.8	55,6	284,5	63,5	209,0	6,7
	2 3/4	70	RPL 11212	7300	9899	2.19	11.20	2.50	8.23	14.8	55,6	284,5	63,5	209,0	6,7
	2 13/16	-	RPL 11213	9000	12.204	2.29	11.31	2.50	8.34	14.8	58,2	287,3	63,5	211,8	6,7
	2 7/8	-	RPL 11214	9000	12.204	2.29	11.31	2.50	8.34	14.8	58,2	287,3	63,5	211,8	6,7
	2 15/16	75	RPL 11215	9000	12.204	2.29	11.31	2.50	8.34	14.8	58,2	287,3	63,5	211,8	6,7
	3	-	RPL 11300	11,154	15.125	2.43	11.44	2.50	8.47	15.2	61,7	290,6	63,5	215,1	6,9
	3 1/16	-	RPL 11301	11,154	15.125	2.43	11.44	2.50	8.47	15.2	61,7	290,6	63,5	215,1	6,9
	3 1/8	80	RPL 11302	11,154	15.125	2.43	11.44	2.50	8.47	15.2	61,7	290,6	63,5	215,1	6,9
	3 3/16	-	RPL 11303	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	-	85	RPL 11085M	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 1/4	-	RPL 11304	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 5/16	-	RPL 11305	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 3/8	-	RPL 11306	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 7/16	-	RPL 11307	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 1/2	-	RPL 11308	11,154	15.125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	-	90	RPL 11090M	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 9/16	-	RPL 11309	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 5/8	-	RPL 11310	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 11/16	-	RPL 11311	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 3/4	95	RPL 11312	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 13/16	-	RPL 11313	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 7/8	-	RPL 11314	11,154	15.125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 15/16	100	RPL 11315	11,154	15.125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4	-	RPL 11400	11,154	15.125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 1/16	-	RPL 11401	11,154	15.125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 1/8	105	RPL 11402	11,154	15.125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 1/4	-	RPL 11404	11,154	15.125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 5/16	110	RPL 11405	11,154	15.125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0
4 1/2	-	RPL 11408	11,154	15.125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0	
4 5/8	-	RPL 11410	11,154	15.125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0	



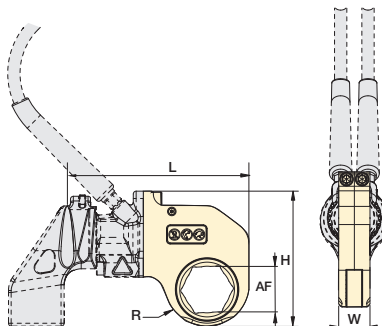
# Hexagon Cassettes for RSL-Series



**Enerpac's Bolting Integrity Software Solutions** play a key role in implementing and managing an Integrity Program for bolted connections. Our

Bolting Software Suite includes **BoltUp** (free, online calculator providing reliable, repeatable bolt loads), **Informate** (bolt load calculation software for huge range of flanged joints and clamped connections), and **Integrity Data Management System/iDMS** (flexible data management and activity-planning system for use on assets featuring bolted connections).

Contact Enerpac for more information.



## RSL Series



Hexagon Range:  
**7/8 - 6 1/8 inches**

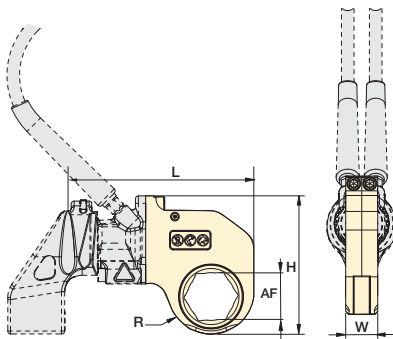
Hexagon Range:  
**26 - 155 mm**

Maximum Operating Pressure:  
**10,000 psi**

### ▼ SELECTION CHART

Drive Unit Model Number	AF Size		Hexagon Cassette Model Number	Maximum Torque Output		Dimensions (in)				Wt. (lbs)	Dimensions (mm)				Wt. (kg)
	(in)	(mm)		(ft-lbs)	(Nm)	R	L	W	H		R	L	W	H	
RSL19000	2 <sup>15</sup> / <sub>16</sub>	75	RPL 19215	11,000	14.916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3	—	RPL 19300	11,000	14.916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3 <sup>1</sup> / <sub>16</sub>	—	RPL 19301	11,000	14.916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3 <sup>1</sup> / <sub>8</sub>	80	RPL 19302	11,000	14.916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3 <sup>3</sup> / <sub>16</sub>	—	RPL 19303	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	—	85	RPL 19085M	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 <sup>1</sup> / <sub>4</sub>	—	RPL 19304	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 <sup>5</sup> / <sub>16</sub>	—	RPL 19305	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 <sup>3</sup> / <sub>8</sub>	—	RPL 19306	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 <sup>7</sup> / <sub>16</sub>	—	RPL 19307	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 <sup>1</sup> / <sub>2</sub>	—	RPL 19308	16,000	21.696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	—	90	RPL 19090M	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>9</sup> / <sub>16</sub>	—	RPL 19309	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>5</sup> / <sub>8</sub>	—	RPL 19310	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>11</sup> / <sub>16</sub>	—	RPL 19311	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>3</sup> / <sub>4</sub>	95	RPL 19312	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>13</sup> / <sub>16</sub>	—	RPL 19313	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>7</sup> / <sub>8</sub>	—	RPL 19314	18,843	25.551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 <sup>15</sup> / <sub>16</sub>	100	RPL 19315	18,843	25.551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4	—	RPL 19400	18,843	25.551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 <sup>1</sup> / <sub>16</sub>	—	RPL 19401	18,843	25.551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 <sup>1</sup> / <sub>8</sub>	105	RPL 19402	18,843	25.551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 <sup>3</sup> / <sub>16</sub>	—	RPL 19403	18,843	25.551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 <sup>1</sup> / <sub>4</sub>	—	RPL 19404	18,843	25.551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 <sup>5</sup> / <sub>16</sub>	110	RPL 19405	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 <sup>3</sup> / <sub>8</sub>	—	RPL 19406	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 <sup>7</sup> / <sub>16</sub>	—	RPL 19407	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 <sup>1</sup> / <sub>2</sub>	—	RPL 19408	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	—	115	RPL 19115M	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 <sup>9</sup> / <sub>16</sub>	—	RPL 19409	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
4 <sup>5</sup> / <sub>8</sub>	—	RPL 19410	18,843	25.551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6	

# Hexagon Cassettes for RSL-Series



Hexagon Range:  
**7/8 - 6 1/8 inches**

Hexagon Range:  
**22 - 155 mm**

Maximum Operating Pressure:  
**10,000 psi**

**RSL Series**



▼ **SELECTION CHART**

Drive Unit Model Number	AF Size		Hexagon Cassette Model Number	Maximum Torque Output		Dimensions (in)				Wt. (lbs)	Dimensions (mm)				Wt. (kg)
	(in)	(mm)		(ft-lbs)	(Nm)	R	L	W	H		R	L	W	H	
RSL28000	3 1/8	80	RLP 28302	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3 3/16	-	RLP 28303	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	-	85	RLP 28085M	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3/4	-	RLP 28304	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3 5/16	-	RLP 28305	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3 3/8	-	RLP 28306	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3 7/16	-	RLP 28307	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3 1/2	-	RLP 28308	16,000	21.696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	-	90	RLP 28090M	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 9/16	-	RLP 28309	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 5/8	-	RLP 28310	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 11/16	-	RLP 28311	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 3/4	95	RLP 28312	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 13/16	-	RLP 28313	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 7/8	-	RLP 28314	22,000	29.832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3 15/16	100	RLP 28315	28,002	37.971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4	-	RLP 28400	28,002	37.971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4 1/16	-	RLP 28401	28,002	37.971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4 1/8	105	RLP 28402	28,002	37.971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4 3/16	-	RLP 28403	28,002	37.971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4 1/4	-	RLP 28404	28,002	37.971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4 5/16	110	RLP 28405	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4 3/8	-	RLP 28406	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4 7/16	-	RLP 28407	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4 1/2	-	RLP 28408	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	-	115	RLP 28115M	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4 9/16	-	RLP 28409	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4 5/8	-	RLP 28410	28,002	37.971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4 3/4	120	RLP 28412	28,002	37.971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	-	123	RLP 28123M	28,002	37.971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	4 7/8	-	RLP 28414	28,002	37.971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	5	-	RLP 28500	28,002	37.971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	5 1/8	130	RLP 28502	28,002	37.971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1
	5 3/16	-	RLP 28503	28,002	37.971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1
5 1/4	-	RLP 28504	28,002	37.971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1	
5 3/8	135	RLP 28506	28,002	37.971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1	
5 1/2	140	RLP 28508	28,002	37.971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2	
5 5/16	-	RLP 28509	28,002	37.971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2	
5 3/8	-	RLP 28510	28,002	37.971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2	
5 3/4	145	RLP 28512	28,002	37.971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2	
5 7/8	150	RLP 28514	28,002	37.971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6	
6	-	RLP 28600	28,002	37.971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6	
6 1/8	155	RLP 28602	28,002	37.971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6	

▼ TWMP503



## TWMP503, Torque Wrench Moly Paste

- Enerpac 503 Moly Paste reduces friction on threaded fasteners – bolts, nuts and studs
- The low and uniform friction coefficient of 0.06 (torque coefficient, K, of 0.11) creates reliable assembly conditions
- This lubricant stays in place through heat, load and vibration to ensure trouble-free disassembly from -20 °F to 750 °F (-29 °C to 400 °C)
- 4 lbs. (1,8 kg) container

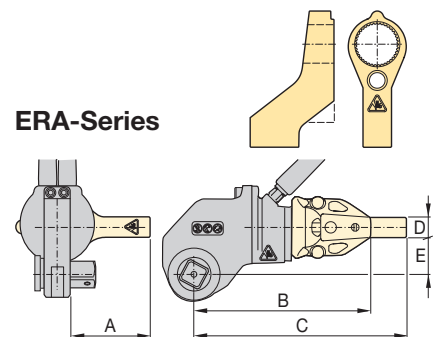
for  
**RSL Series**



## ERA-Series, Extended Reaction Arms

For Torque Wrench Model No.	Model Number	Dimensions (in)					(lbs)
		A	B	C	D	E	
RSL1500	ERA15114	3.42	5.71	7.68	1.14	1.42	1.98
	ERA15228	4.45	7.13	9.06	1.14	1.42	3.97
	ERA15342	5.47	8.90	10.87	1.14	1.42	5.95
	ERA15456	6.46	9.29	11.26	1.14	1.42	7.94
RSL3000	ERA15570	7.44	11.30	13.27	1.14	1.42	9.92
	ERA30114	4.13	7.68	10.12	1.34	1.61	5.95
	ERA30228	5.16	9.09	11.54	1.34	1.61	7.94
	ERA30342	6.14	10.47	12.91	1.34	1.61	9.92
RSL5000	ERA30456	7.13	11.89	14.66	1.34	1.61	11.90
	ERA50114	5.16	8.19	11.18	1.73	1.89	9.04
	ERA50228	6.14	9.57	12.60	1.73	1.89	11.02
	ERA50342	7.13	10.98	13.98	1.73	1.89	13.01
RSL11000	ERA50456	8.15	12.37	15.39	1.73	1.89	15.00
	ERA110114	4.92	8.62	11.65	2.01	2.32	13.89
	ERA110228	5.91	10.04	13.06	2.01	2.32	16.09
	ERA110342	6.93	11.46	14.45	2.01	2.32	18.08
RSL28000	ERA110456	7.91	12.83	15.83	2.01	2.32	20.06
	ERA280228	6.73	13.19	16.18	2.24	3.50	24.91
	ERA280342	7.76	14.57	17.60	2.24	3.50	30.00

- Only to be used on RSL-drive units with RSQ-square drive wrenches
- Used in place of standard reaction arm
- Lightweight interchangeable design
- Full torque rated

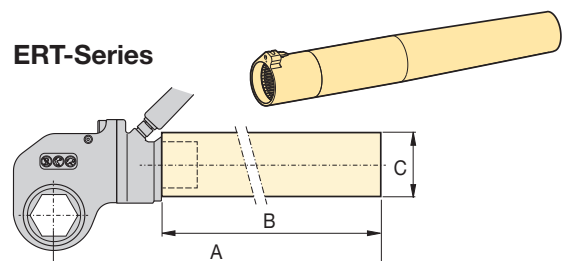


NOTE: Extended Reaction Arms for RSL8000 and RSL19000 are available on request.

## ERT-Series, Extended Reaction Tubes

For Torque Wrench Model No.	Model Number	Dimensions (in)			(lbs)
		A	B	Ø C	
RSL1500	ERT152	6.18	2.01	2.24	1.98
	ERT156	10.20	5.98	2.24	3.53
	ERT159	13.19	9.02	2.24	5.51
	ERT1512	16.18	12.01	2.24	7.50
	ERT1524	28.19	24.02	2.24	14.78
RSL3000	ERT3012	16.89	12.01	2.76	6.61
	ERT3024	28.90	24.02	2.76	13.01
RSL5000	ERT5012	17.76	12.01	3.50	12.35
	ERT5024	29.76	24.02	3.50	24.91
RSL11000	ERT1106	12.99	5.98	3.74	4.63
	ERT11012	19.02	12.01	3.74	9.04
	ERT11018	25.00	17.99	3.74	13.45
	ERT11024	30.98	24.02	3.74	18.52
RSL19000	ERT19024	31.50	24.02	5	36.82
RSL28000	ERT2806	13.82	5.98	5	7.94
	ERT28012	19.80	12.01	5	16.09
	ERT28018	25.79	17.99	5	24.03
	ERT28024	31.81	24.02	5	36.60

- Only to be used on RSL-drive units with RLP-hexagon cassettes
- Used in place of standard reaction arm
- One-piece steel design, durable and simple
- Increases tool fit in restricted access areas
- Full torque rated



NOTE: Extended Reaction Tubes for RSL8000 are available on request.

▼ Shown: RSL drive unit with interchangeable RLP—SL slimline cassette



## Setting New Standards in Simplicity, Versatility and Accuracy

### Simplicity

- Minimum nose radius for trouble-free tool fit which makes it uniquely equipped to access tight spaces, such as Blowout Preventers (BOPs)
- Simple robust alloy steel design with three moving parts for reduced maintenance
- Proven to perform even in the harshest environments
- Reaction arm has a simple dial lock for rapid change
- Designed to give optimum strength-to-weight and torque-to-weight ratios

### Versatility

- Interchangeable cassette design
- Drive unit / hexagon cassette combination for limited height in line solutions
- Wide range of hexagon sizes available for all applications

### Accuracy

- Accuracy of +/-3%

### Ease of Use

- Few moving parts are easily accessible for quick field maintenance
- Innovative design that completely encloses all moving parts and minimizes pinch points



### Torque Wrench Pumps

Visit [enerpac.com](http://enerpac.com) for system matched air and electric torque wrench pumps that are ideal for use with hydraulic torque wrenches.

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### Options and Accessories

Optional extended reaction arms and tubes are common accessories available for maximum versatility. Please contact your Enerpac representative to help you select the optimum solution for your application.

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### Back-Up Spanner

To be used to stop back nut from turning during make up or break out. Two hex sizes in one tool.

Hexagon Sizes (A/F)		Back-Up Spanner Model Number
(in)	(mm)	
1 <sup>1</sup> / <sub>16</sub> - 1 <sup>1</sup> / <sub>4</sub>	27 - 32	<b>BUS 01</b>
1 <sup>7</sup> / <sub>16</sub> - 1 <sup>5</sup> / <sub>8</sub>	36 - 41	<b>BUS 02</b>
1 <sup>13</sup> / <sub>16</sub> - 2	46 - 50	<b>BUS 03</b>
2 <sup>3</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>8</sub>	55 - 60	<b>BUS 04</b>
2 <sup>9</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>4</sub>	65 - 70	<b>BUS 05</b>
2 <sup>15</sup> / <sub>16</sub> - 3 <sup>1</sup> / <sub>8</sub>	75 - 80	<b>BUS 06</b>
3 <sup>1</sup> / <sub>2</sub> - 3 <sup>7</sup> / <sub>8</sub>	-	<b>BUS 07</b>
4 <sup>1</sup> / <sub>4</sub> - 4 <sup>5</sup> / <sub>8</sub>	-	<b>BUS 08</b>
-	85 - 90	<b>BUS 09</b>
3 <sup>3</sup> / <sub>4</sub> - 3 <sup>15</sup> / <sub>16</sub>	95 - 100	<b>BUS 10</b>
4 <sup>1</sup> / <sub>8</sub> - 4 <sup>15</sup> / <sub>16</sub>	105 - 110	<b>BUS 11</b>
-	115 - 120	<b>BUS 12</b>

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# Slimline Stepped-Width Hexagon Cassettes for RSL-Series



## Slimline Stepped-Width Hexagon Cassettes

Accessing narrow spaces, typically found on BOP stacks, normally requires significantly reducing the width of the torque wrench. For the tool operator, this has always meant vastly reduced tool durability, and/or reduced torque output.

By using the highest-grade materials and perfecting the geometry, the RSL Slimline cassettes are able to provide greater torque, get into tighter spaces, and vastly outperform the competition in product durability.

## RSL Series



Hexagon Range:

**1 1/4 - 3 3/16 inches**

Hexagon Range:

**32 - 80 mm**

Maximum Operating Pressure:

**10,000 psi**



### Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

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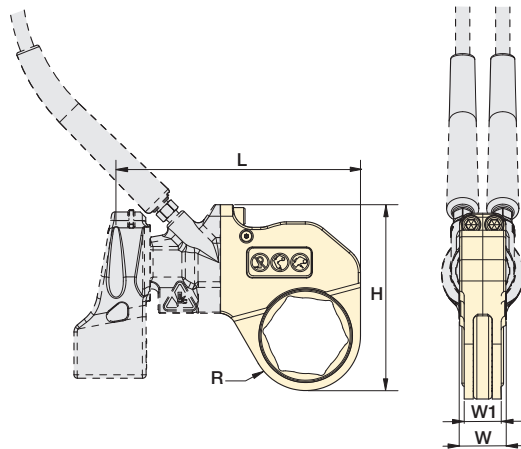


### Torque Wrench Hoses

Use Enerpac THQ-700 Series hoses with RSL-Series torque wrenches to ensure the integrity of your

hydraulic system.

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### ▼ SELECTION CHART

Drive Unit Model Number	AF Size		Hexagon Cassette Model Number	Maximum Torque Output		Dimensions (in)					Wt. (lbs)	Dimensions (mm)					Wt. (kg)
	(in)	(mm)		(ft-lbs)	(Nm)	R	L	W	W1	H		R	L	W	W1	H	
RSL1500	1 1/4	32	RLP 1104SL	375	509	1.03	6.12	1.25	1.00	4.57	2.2	26,2	155,4	31,8	25,4	116,1	1,0
	1 7/16	36	RLP 1107SL	658	892	1.15	6.24	1.25	1.00	4.69	2.3	29,2	158,5	31,8	25,4	119,1	1,0
	1 5/8	41	RLP 1110SL	831	1127	1.31	6.41	1.25	1.00	4.86	2.7	33,3	162,8	31,8	25,4	123,4	1,2
	1 13/16	46	RLP 1113SL	831	1127	1.40	6.49	1.25	1.00	4.94	2.7	35,6	164,8	31,8	25,4	125,5	1,2
	2	50	RLP 1200SL	831	1127	1.48	6.58	1.25	1.00	5.03	2.7	37,6	167,1	31,8	25,4	127,8	1,2
RSL3000	2	50	RLP 3200SL	1354	1836	1.60	8.04	1.38	1.13	5.92	4.5	40,6	204,2	35,1	28,7	150,4	2,0
	2 3/16	55	RLP 3203SL	1604	2175	1.76	8.16	1.38	1.13	6.08	4.7	44,7	207,3	35,1	28,7	154,4	2,1
	2 3/8	60	RLP 3206SL	1604	2175	1.84	8.25	1.38	1.13	6.15	4.8	46,7	209,6	35,1	28,7	156,2	2,2
	2 9/16	65	RLP 3209SL	1604	2175	1.95	8.14	1.38	1.13	6.26	4.6	49,5	206,8	35,1	28,7	159,0	2,1
	2 3/4	70	RLP 3212SL	1604	2175	2.04	8.23	1.38	1.13	6.36	4.4	51,8	209,0	35,1	28,7	161,5	2,0
RSL5000	2 5/16	75	RLP 3215SL	1604	2175	2.16	8.34	1.38	1.13	6.54	4.7	54,9	211,8	35,1	28,7	166,1	2,1
	2 3/4	70	RLP 5212SL	4173	5659	2.16	9.63	1.75	1.62	7.07	7.5	54,9	244,6	44,5	41,1	179,6	3,4
RSL8000	3 1/8	80	RLP 5302SL	4173	5659	2.26	9.73	1.75	1.62	7.17	7.2	57,4	247,1	44,5	41,1	182,1	3,3
	2 3/16	55	RLP 8203SL	2487	3372	1.71	9.53	2.25	2.00	6.84	8.5	43,4	242,1	57,2	50,8	173,7	3,9
	2 3/8	60	RLP 8206SL	3198	4336	1.87	9.67	2.25	2.00	7.00	8.9	47,5	245,6	57,2	50,8	177,8	4,0
	2 9/16	65	RLP 8209SL	4122	5589	2.01	9.67	2.25	2.00	7.13	9.0	51,1	245,6	57,2	50,8	181,1	4,1
	2 3/4	70	RLP 8212SL	5587	7576	2.16	9.82	2.25	2.00	7.28	9.6	54,9	249,4	57,2	50,8	184,9	4,4
	2 5/16	75	RLP 8215SL	5587	7576	2.24	9.90	2.25	2.00	7.36	9.6	56,9	251,5	57,2	50,8	186,9	4,4
	3 1/8	80	RLP 8302SL	5587	7576	2.26	9.92	2.25	2.00	7.39	9.3	57,4	252,0	57,2	50,8	187,7	4,2
3 3/16	-	RLP 8303SL	4740	6427	2.26	9.92	2.25	2.00	7.39	9.3	57,4	252,0	57,2	50,8	187,7	4,2	

▼ RSL drive unit with interchangeable RSQ square drive head



## Setting New Standards in Safety, Simplicity and Performance



### Options and Accessories

Optional extended reaction arms and tubes are common accessories available for maximum versatility. Please contact your Enerpac representative to help you select the optimum solution for your application.

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### Back-Up Spanner

To be used to stop back nut from turning during make up or break out. Two hex sizes in one tool.

Hexagon Sizes (A/F)		Back-Up Spanner Model Number
(in)	(mm)	
1 <sup>1</sup> / <sub>16</sub> - 1 <sup>1</sup> / <sub>4</sub>	27 - 32	<b>BUS 01</b>
1 <sup>7</sup> / <sub>16</sub> - 1 <sup>5</sup> / <sub>8</sub>	36 - 41	<b>BUS 02</b>
1 <sup>13</sup> / <sub>16</sub> - 2	46 - 50	<b>BUS 03</b>
2 <sup>3</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>8</sub>	55 - 60	<b>BUS 04</b>
2 <sup>9</sup> / <sub>16</sub> - 2 <sup>3</sup> / <sub>4</sub>	65 - 70	<b>BUS 05</b>
2 <sup>15</sup> / <sub>16</sub> - 3 <sup>1</sup> / <sub>8</sub>	75 - 80	<b>BUS 06</b>
3 <sup>1</sup> / <sub>2</sub> - 3 <sup>7</sup> / <sub>8</sub>	-	<b>BUS 07</b>
4 <sup>1</sup> / <sub>4</sub> - 4 <sup>5</sup> / <sub>8</sub>	-	<b>BUS 08</b>
-	85 - 90	<b>BUS 09</b>
3 <sup>3</sup> / <sub>4</sub> - 3 <sup>15</sup> / <sub>16</sub>	95 - 100	<b>BUS 10</b>
4 <sup>1</sup> / <sub>8</sub> - 4 <sup>15</sup> / <sub>16</sub>	105 - 110	<b>BUS 11</b>
-	115 - 120	<b>BUS 12</b>

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### Torque Wrench Hoses

Use Enerpac THQ-700 Series hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

6 feet long, 2 hoses	<b>THQ702T</b>
19.5 feet long, 2 hoses	<b>THQ706T</b>
39 feet long, 2 hoses	<b>THQ712T</b>

### Safety and Performance

- Innovative design that completely encloses all moving parts and minimizes pinch points
- 30–35° of operating stroke provides added productivity while avoiding “tool lock on” which is common with some torque wrench designs

### Simplicity

- Simple robust design with just three moving parts for reduced maintenance
- Robust handles are available which mount on both sides and the tops of cassettes to allow for extra maneuverability
- Pull-type square drive release for quickly reversing the square drive for tightening or loosening

### Versatility

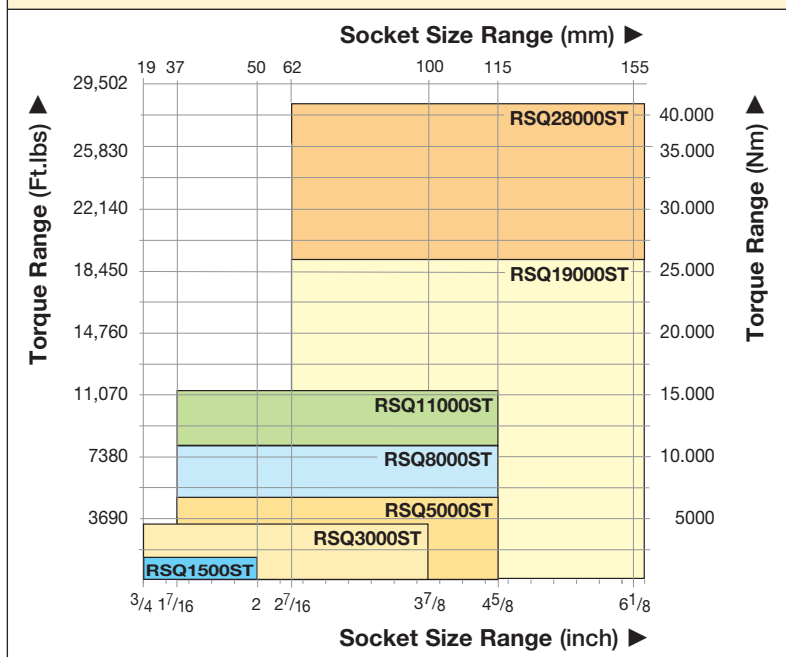
- Square Drive Sets available with interchangeable Hexagon Cassettes
- Power head / square drive combination for flexible use with standard impact quality sockets
- Reaction arm has a simple dial lock for rapid change

### Accuracy

- Accuracy of +/-3%

# RSL-Series, Square Drive Torque Wrenches

\* TORQUE WRENCH SELECTION (based on socket size range)



## RSL Series



Maximum Torque Output:

**1408 - 28,002 Ft.lbs**

Maximum Torque Output:

**1909 - 37,965 Nm**

Square Drive Range:

**3/4 - 2 1/2 inches**

Maximum Operating Pressure:

**10,000 psi**



### BSH-Series Sockets

Heavy-Duty Impact Sockets for power driven torquing equipment.

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### Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb:

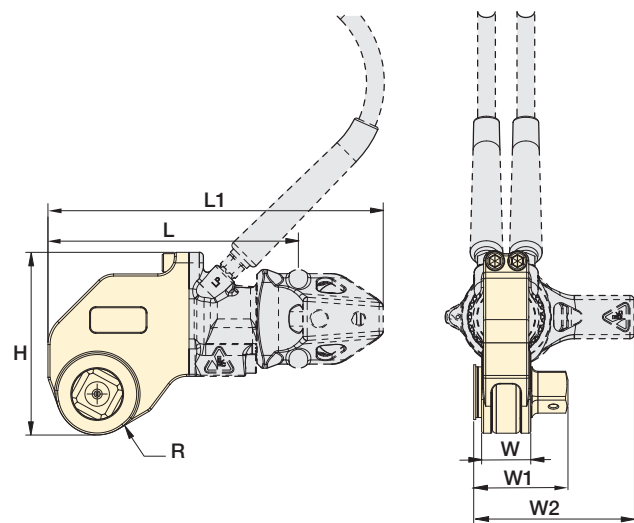
Loosening torque equals about 250% of tightening torque.



### Torque Wrench Pumps

Visit [enerpac.com](http://enerpac.com) for system matched air and electric torque wrench pumps that are ideal for use with hydraulic torque wrenches.

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### SELECTION CHART

Maximum Torque Output		Square Drive Size (in)	Square Drive Head Model Numbers <sup>1)</sup>	Square Drive Torque Wrench Set Model Numbers <sup>2)</sup>	Dimensions (in)							Weight (lbs)		
(ft-lbs)	(Nm)				W	W1	W2	H	L	L1	R	Drive Unit (no reaction arm)	Reaction Arm	Square Drive Head
1408	1909	3/4	RSQ1500	RSQ1500ST	1.25	2.30	3.98	4.48	6.29	7.45	0.94	3.4	1.0	2.8
3080	4176	1	RSQ3000	RSQ3000ST	1.50	2.88	4.89	5.57	7.67	10.30	1.25	5.6	2.2	5.2
5303	7190	1 1/2	RSQ5000	RSQ5000ST	1.75	3.71	6.31	6.42	9.27	11.67	1.52	8.9	4.0	9.1
7862	10659	1 1/2	RSQ8000	RSQ8000ST	2.40	4.14	6.30	6.65	9.47	11.78	1.52	10.6	4.3	11.6
11154	15123	1 1/2	RSQ11000	RSQ11000ST	2.50	4.63	6.70	7.93	11.20	12.40	1.88	11.6	6.6	18.4
18843	25547	2 1/2	RSQ19000	RSQ19000ST	3.25	6.38	10.42	9.48	13.46	18.97	2.50	20.0	15.7	28.9
28002	37965	2 1/2	RSQ28000	RSQ28000ST	3.50	6.54	8.93	10.35	14.09	21.07	2.50	22.0	11.1	39.3

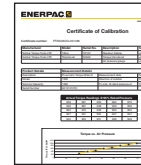
<sup>1)</sup> When ordering an RSQ Square Drive Head the RSL Drive Unit must be ordered separately.

<sup>2)</sup> An RSQ....ST Torque Wrench Set includes a RSQ Square Drive Head, RSL Drive Unit with short Whip Hoses, and Reaction Arm

▼ PTW1000



## Continuous Rotation Controlled Torque



### Calibration Certificate

All PTW tools are CE declared and are shipped complete with a calibration certificate.



### FRL120C, Filter-Regulator-Lubricator with Air Hose

All PTW-Series tools are shipped complete with standard reaction arm, and Filter-Regulator-Lubricator (FRL120C).



### MCS-Series, Mobile Calibration System

To check torque accuracy, run calibration tests and create calibration certificates prior to the use of continuous rotation torque tools in various applications while on a job site.

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### Productivity

- High speed continuous rotation for constant torque output
- Low friction planetary gearbox design minimizes wear and extends uptime

### Safety

- Ergonomic, low vibration design reduces fatigue and the risk of vibration related injuries for the operator
- Low noise air motor provides quiet, consistent performance for indoor and outdoor applications

### Convenience

- Provided with standard reaction arm; wide assortment of custom arms and accessories are available
- Available with or without Filter-Regulator-Lubricator (FRL)
- Unique calibration certificate provided with each tool

▼ PTW-Series Pneumatic Torque Wrenches are ideal for applications where speed and precision are critical, such as track maintenance.



◀ The PTW1000 makes quick work of this flange maintenance job.





# Pneumatic Torque Wrenches



## PTW-Series Pneumatic Torque Wrenches

Enerpac PTW-Series Pneumatic Torque

Wrenches are designed for applications that require speed and control. The standard package includes a Torque Wrench with a calibration certificate, an FRL (Filter/Regulator/Lubricator), and a 10 ft. (3 m) long, ½" (13 mm) diameter air hose, which connects the FRL to the wrench.

Once the air hoses are connected, the operator simply adjusts the air pressure on the FRL to achieve the

desired torque using the calibration certificate. After this, the tool is ready to go to work!\*

The air source used with the PTW system must be regulated and/or limited to 120 psi (8.3 bar), and must be capable of providing a volume of at least 50 CFM (85 CMH) at 100 psi (6.9 bar). A separate ½" (13 mm) hose (not included) must be used to connect the FRL to the air supply.

\*See instruction manual for comprehensive instructions

## PTW Series

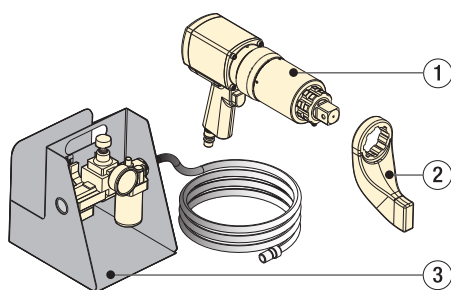


Nominal Output Torque:

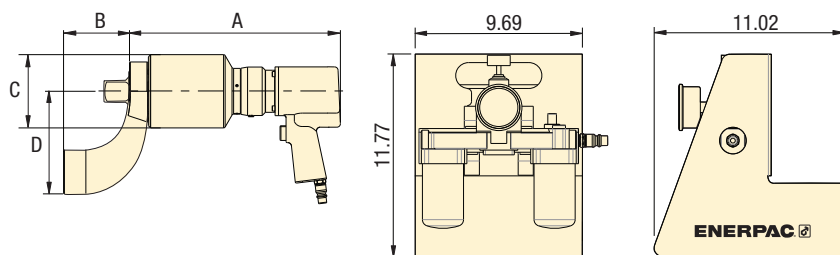
**6000 Ft.lbs**

Square Drive Range:

**¾ - 1 - 1½ inch**



- ① PTW Torque Wrench
- ② Standard Reaction Arm
- ③ FRL120C Filter-Regulator-Lubricator with 10 feet air hose



## Accessories

Enerpac offers a full line of accessories including a range of reaction arms and drives.

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## BSH-Series Sockets

Heavy-Duty Impact Sockets for power driven torquing equipment.

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## Back-Up Spanner

Hands free tool to be used to stop back nut from turning during make up or break out. Two hex sizes in one tool.

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## ▼ SELECTION CHART

All tools are shipped complete with standard reaction arm and FRL\*.

Minimum Torque		Nominal Torque		Square Drive	Model Number*	RPM	Dimensions (in)				Weight** (lbs)
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)				A	B	C	D	
300	407	1000	1356	¾	PTW1000C-75	12.6	10.70	3.27	2.83	5.12	17.4
300	407	1000	1356	1	PTW1000C	12.6	10.70	3.27	2.83	5.12	18
500	678	2000	2712	1	PTW2000C	8.0	11.26	3.27	3.11	5.24	19.5
900	1220	3000	4067	1	PTW3000C	3.1	13.50	3.27	3.74	5.24	23
1300	1763	6000	8135	1½	PTW6000C	2.5	14.40	4.49	5.00	7.00	39

\* To order without FRL and hose, remove "C" suffix from model number (e.g. PTW3000).

\*\* Weight does not include reaction arm. Reaction arm weight for PTW1000, PTW2000, PTW3000 is 2.9 lbs. and for the PTW6000 is 7.75 lbs.

▼ TW3000B (torque wrench shown without servo motor cord)\*



## Your Simple Solution for Smart Bolting



### Touchscreen Control Box

ETW tools feature an easy to use, interactive touch-screen control box, which helps make even the most complex jobs simple to complete.

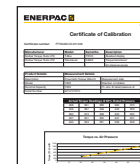
A single control box may be used to operate multiple wrench models.

Firmware upgrades may be uploaded online and easily transferred to the tool via a USB connection.



### Easy Access to Controls

Controls on back of wrench with LED display allow user to directly input desired torque, change direction of rotation, and monitor the fastening process.



### Certifications, Declarations

All ETW tools:

- Are shipped complete with a calibration certificate
- Are certified for North American Electrical Safety by CSA International
- Carry a CSA US and Canada mark
- Are CE declared



▼ ETW-Series Electric Torque Wrenches are ideal for high volume fastening applications that require precision and traceability, such as this wind tower job.



### Versatility

- Patented firmware design provides accurate fastening on soft, hard, or pre-tightened joints
- Single control box may be used to operate multiple wrench models
- Wrenches and control boxes may be purchased separately or as a set

### Performance

- High-speed continuous rotation gets the job done faster
- Torque and angle functionality allows input of nominal torque value followed by a specific angle of rotation
- Pass/Fail LED indicator on back of tool verifies fastening has been completed according to specified input

### Simplicity

- Control box with large 7-inch touchscreen simplifies tool operation
- Controls on back of wrench enable operator to monitor and manage the fastening process without returning to the control box
- Brightly lit three-line LED display on wrench is easy to read in any environment

### Traceability

- Fastening record can be viewed on-screen and transferred to a computer
- Each tool is performance tested and shipped complete with a factory calibration certificate

### Safety

- Lift points on wrench enable use with positioning handle or lifting device for greater handling safety
- Ground fault detector protects operator in the event of insufficient grounding

\* NOTE: Wrench cannot be used without control box.

# Electric Torque Wrenches



## ETW-Series Electric Torque Wrenches

Enerpac ETW-Series Electric Torque Wrenches

are particularly well suited to complex jobs which demand precision and traceability.

The tools feature an automatic mode, which helps simplify and automate complex jobs, including those with torque and angle specifications, through the creation of presets.

Using the touchscreen, simply input the number of fasteners and desired torque value for each fastening step, followed by the required angle of turn. This sequence may then be saved as an automatic preset for future use.

Once the input torque is achieved, the tool stalls, and a pass/fail indicator verifies that it is ready to move on to the next fastener.

When the job is completed, the fastening record can be viewed on the touch screen, or exported to a computer via a USB connection on the control box.

## ETW Series

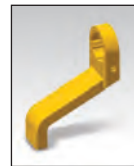


Nominal Output Torque:

**6000 Ft.lbs**

Square Drive Range:

**1 - 1½ inch**



### Torque Wrench Accessories

Enerpac offers a full line of accessories including a wide range of reaction arms and drives.

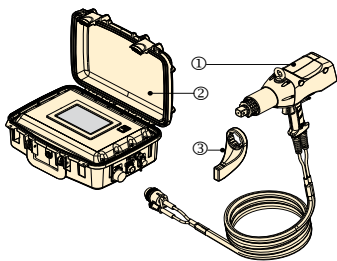
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### BSH-Series Sockets

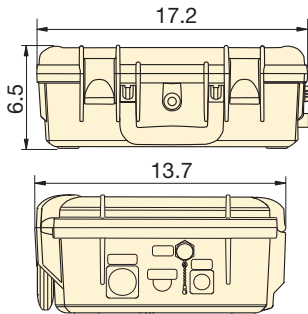
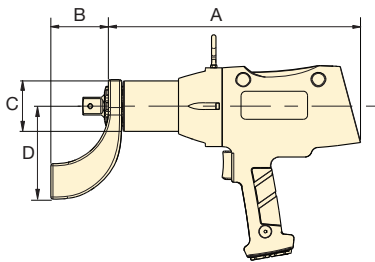
Heavy-Duty Impact Sockets for power driven torquing equipment. Details on [www.enerpac.com](http://www.enerpac.com).

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### ETW Set

- ① ETW Torque Wrench (with 20-ft. servo cord)
- ② Control Box (with 6-ft. power cord)
- ③ Reaction Arm



ETW Torque Wrench

ETWCB Control Box

### Voltage: (Model No. ending with suffix)

**B** = 115V, 60 Hz

**I** = 230V, 60 Hz (with NEMA 6-15 plug)

**E** = 230V, 50 Hz (with commonly used European (SCHUKO) plug)

Minimum Torque		Nominal Torque		Square Drive (in)	ETW Set Model Number	ETW Set Includes		Voltage	Nominal Speed RPMs	Dimensions (in)				Weight <sup>1)</sup> (lbs)
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)			Wrench Model No. <sup>2)</sup>	Control Box Model No. <sup>2)</sup>			A	B	C	D	
200	270	1000	1355	1.0	ETW1000B	TW1000B	ETWCB-B	115V 60 Hz	9.8	14.4	3.3	2.8	5.2	18.1
200	270	1000	1355	1.0	ETW1000I	TW1000EI	ETWCB-I	230V 60 Hz	15.2	14.4	3.3	2.8	5.2	18.1
200	270	1000	1355	1.0	ETW1000E	TW1000EI	ETWCB-E	230V 50 Hz	15.2	14.4	3.3	2.8	5.2	18.1
400	540	2000	2710	1.0	ETW2000B	TW2000B	ETWCB-B	115V 60 Hz	5.8	15.0	3.3	3.1	5.2	19.7
400	540	2000	2710	1.0	ETW2000I	TW2000EI	ETWCB-I	230V 60 Hz	9.0	15.0	3.3	3.1	5.2	19.7
400	540	2000	2710	1.0	ETW2000E	TW2000EI	ETWCB-E	230V 50 Hz	9.0	15.0	3.3	3.1	5.2	19.7
600	810	3000	4065	1.0	ETW3000B	TW3000B	ETWCB-B	115V 60 Hz	2.8	17.1	3.3	3.7	5.2	26.3
600	810	3000	4065	1.0	ETW3000I	TW3000EI	ETWCB-I	230V 60 Hz	4.3	17.1	3.3	3.7	5.2	26.3
600	810	3000	4065	1.0	ETW3000E	TW3000EI	ETWCB-E	230V 50 Hz	4.3	17.1	3.3	3.7	5.2	26.3
1200	1625	6000	8135	1.5	ETW6000B	TW6000B	ETWCB-B	115V 60 Hz	1.9	17.8	4.5	5.0	7.0	42.1
1200	1625	6000	8135	1.5	ETW6000I	TW6000EI	ETWCB-I	230V 60 Hz	2.9	17.8	4.5	5.0	7.0	42.1
1200	1625	6000	8135	1.5	ETW6000E	TW6000EI	ETWCB-E	230V 50 Hz	2.9	17.8	4.5	5.0	7.0	42.1

<sup>1)</sup> Wrench weight does not include reaction arm. Reaction arm weight for ETW1000, ETW2000, ETW3000 is 2.9 lbs. and for the ETW6000 is 7.75 lbs. Standard reaction arm included with TW-models. Weight of control box is 20 lbs.

<sup>2)</sup> Use of ETW requires both wrench and control box. These may be purchased separately, or as a calibrated set.



## PTW and ETW-Series Torque Wrenches

Enerpac offers the following accessories to support a wide variety of applications in industries such as mining, power generation and oil and gas. For additional custom accessories not pictured here, please contact Enerpac.

## PTW ETW Series

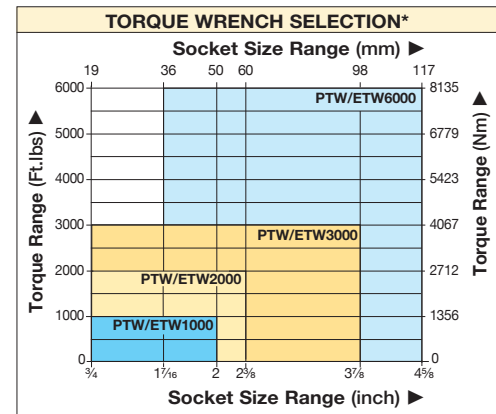
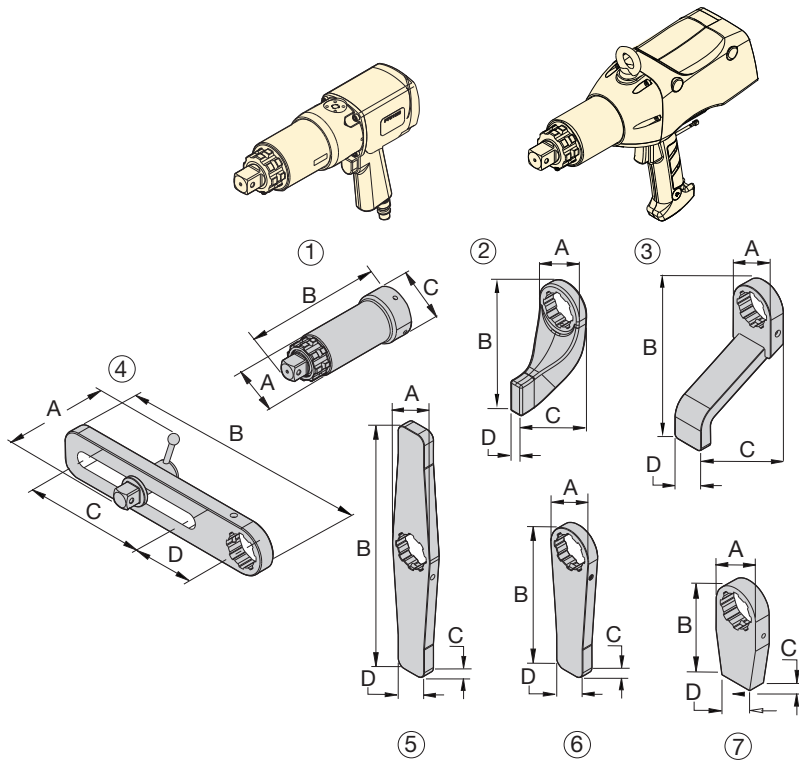


Nominal Output Torque:

**6000 Ft.lbs**

Square Drive Range:

**1 - 1½ inch**



### BSH-Series Sockets

Heavy-Duty Impact Sockets for power driven torquing equipment. Details on [www.enerpac.com](http://www.enerpac.com).

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▼ Optional accessories for use with PTW1000, ETW1000, PTW2000, ETW2000, PTW3000, ETW3000 models							
No.	Description	Model No.	Application	Dimensions in inches			
				A	B	C	D
1	Extended Drive, 6 inch (152 mm)	ED6TWS	Nose extension, primarily for truck wheel bolts	2.44	8.11	2.87	—
1	Extended Drive, 12 inch (305 mm)	ED12TWS		2.44	15.12	2.87	—
1	Extended Drive, 18 inch (457 mm)	ED18TWS		2.44	20.12	2.87	—
2	Standard Reaction Arm	RATWS	Standard arm included with PTW/ETW model	2.99	6.77	4.02	0.83
3	Extended Reaction Arm	ERATWS	Long plate for use with deep well sockets	2.87	5.91	7.95	2.01
4	Sliding Reaction Arm	SLRATWS	For widely spaced and uneven bolt centers	4.41	15.00	7.99	4.02
5	Double Straight Reaction Arm	DSATWS	Reduces time to reposition arm *	2.87	15.98	0.75	4.02
6	Straight Reaction Arm	SRATWS	Long plate for wide spaced reaction points	2.87	9.45	0.75	2.01
7	Blank Reaction Arm **	BLTWS	Weldable blank for custom applications **	2.83	5.94	0.98	2.01
▼ For use with PTW6000, ETW6000 models							
1	Extended Drive 6 inch (152 mm)	ED6TWL	Nose extension, primarily for truck wheel bolts	3.31	9.13	4.02	—
1	Extended Drive 12 inch (305 mm)	ED12TWL		3.31	15.12	4.02	—
2	Standard Reaction Arm	RATWL	Standard arm included with PTW/ETW model	4.02	9.02	5.75	1.26
3	Extended Reaction Arm	ERATWL	Long plate for use with deep well sockets	4.02	10.00	7.24	2.52
4	Sliding Reaction Arm	SLRATWL	For widely spaced and uneven bolt centers	5.98	16.50	7.48	4.49
5	Double Straight Arm	DSATWL	Reduces time to reposition arm *	4.02	20.00	1.26	2.24
6	Straight Reaction Arm	SRATWL	Long plate for wide spaced reaction points	4.02	12.01	1.26	2.24
7	Blank Reaction Arm **	BLTWL	Weldable blank for custom applications **	4.02	5.98	1.26	2.24

\* Time to reposition arm when repeatedly moving from tightening to loosening.

\*\* ⚠ WARNING: Blank reaction arms must be heat treated to HRc 38-42 prior to use.

## PTW- & ETW-SERIES TORQUE WRENCHES

A simple-to-use solution for tough bolting jobs, when you want them done quickly and safely.

### Typical PTW & ETW-Series Torque Wrench Applications



#### Mining

- Track maintenance
- Undercarriage maintenance
- Wheel maintenance
- Shovel maintenance



#### Power Generation

- Turbine bolts
- Tower segments
- Turbine casings



#### Oil & Gas

- Pipe flanges
- Valves
- Manway covers
- Pressure vessels

## ADVANTAGES



▲ Safe and Quiet Axle Correction with a Pneumatic Torque Wrench.

### PRODUCTIVITY

- High speed continuous rotation for constant torque output
- Low friction planetary gearbox design minimizes wear and extends uptime

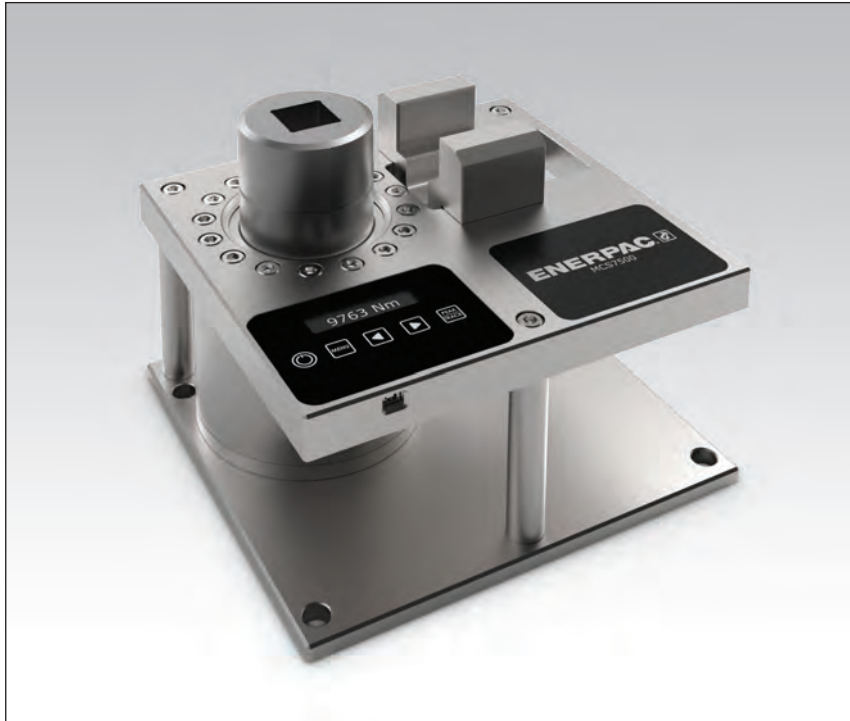
### SAFETY

- Ergonomic, low vibration design reduces operator fatigue and vibration-related injuries
- Low noise air motor provides quiet, consistent performance for indoor and outdoor applications

### SIMPLICITY

- Ready to go tool comes with Filter/Regulator/Lubricator (FRL) and calibration certificate
- Simple to operate trigger style handle with easily accessible tightening/loosening control

▼ MCS-Series, Mobile Calibration System



## MCS Series

Nominal Output Torque:

**150 - 7500 Ft.lbs**

Square Drive Range:

**1½ inch**



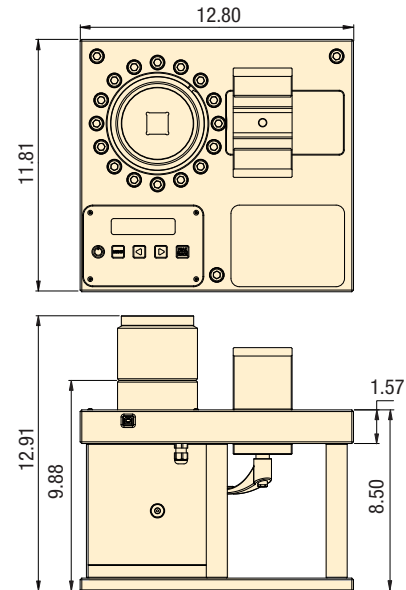
### Accuracy

The calibration system is a calibrated instrument qualified in a UKAS certified laboratory. The accuracy of the MCS7500 is calibrated to meet or exceed: 1% of FSD from 2% to 8% of torque range and 1% of reading from 8% to 100% of torque range.



### Female Reducer Set

The Female Reducer Set consists of two reducers: 1½ x 1 inch and 1½ x ¾ inch. To be ordered separately as **MCS7500RS**.



### Versatility

- Accurately measures torque output for continuous rotation tools from 150 to 7,500 Ft.lbs.
- Adaptable design enables use with a large variety of Enerpac and competitive wrenches
- Standard global electrical adaptor set enables use in most electrical outlet types from 90V to 250V

### Performance

- Certificate Manager feature enables quick and easy creation of calibration certificates
- Tool database feature allows specific wrench data and calibration results to be recorded and saved for future use
- Each MCS comes with a standard ISO17025 calibration certificate

### Ease of Use

- Compact design facilitates easy transport, allowing calibration to be carried out in the shop, on jobsites, or even in a vehicle
- Integrated digital interface enables torque values to be displayed, saved, printed or transferred to a computer






















▼ SELECTION CHART

Minimum Torque		Nominal Torque		Female Square Drive	Model Number*	Description	Weight
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)				
148	200	7375	10,000	1½	<b>MCS7500</b>	Mobile Calibration System (MCS)	76
148	200	7375	10,000	1½	<b>MCS7500C</b>	MCS with carrying case	87

\* Not suitable for use with hydraulic wrenches or impact tools.

# Selection Matrix – Optimum Wrench-Pump Combinations

For optimum speed and performance Enerpac recommends the following system set-up with wrench-pump-hose combinations. For other combinations, consult your Enerpac bolting expert or your authorized Enerpac distributor.

		ELECTRIC PUMPS					AIR DRIVEN PUMPS
		XC-Series	TQ-Series	E-Pulse® E-Series	ZU4-Series	ZE-Series	ZA4-Series
							
Speed:							
Oil Flow at 10,000 psi:		15 in <sup>3</sup> /min	30 in <sup>3</sup> /min	32 in <sup>3</sup> /min	60 in <sup>3</sup> /min	60-120 in <sup>3</sup> /min	60 in <sup>3</sup> /min
Reservoir Capacity:		.5 gallon	1 gallon	.79 gallon	1 - 1.75 gallons	1 - 10 gallons	1 - 1.75 gallons
Duty Cycle:		Intermittent	Standard	Heavy-Duty	Standard	Heavy-Duty	Heavy-Duty
Weight:							
Field/Factory Work:		Field	Field/Factory	Field/Factory	Field	Factory	Field
S-Series		S1500X	Optimal	Optimal	Optimal	Optimal	Optimal
	S3000X						
	S6000X	-	Acceptable	Acceptable			
	S11000X						
	S25000X						
W-Series		W2000X	Optimal	Optimal	Optimal	Optimal	Optimal
	W4000X						
	W8000X	-	Acceptable	Acceptable			
	W15000X						
	W22000X						
W35000X							
RSL-Series		RSL1500	Optimal	Optimal	Optimal	Optimal	Optimal
	RSL3000						
	RSL5000	-	Acceptable	-			
	RSL8000						
	RSL11000						
	RSL19000						
RSL28000							



## XC-Series, Portable Cordless Pumps

The XC battery torque wrench pump is ideal for maintenance bolting applications at sites that do not have access to power or where having extension cords or air hoses could cause trip hazards.

## TQ-700 Series, Electric Torque Wrench Pumps

Designed for both portability and production, the TQ-700 features optimized flow technology to deliver superior bolting speed.

## E-Series, E-Pulse Electric Torque Wrench Pumps

The E-Pulse has a high-efficiency permanent magnet, direct drive motor for continuous use and long service

life. It is ideal for high volume fastening applications where weight is critical and it also features a rugged roll-cage design. E-Pulse pumps include an interactive pendant for operation, programming and diagnostics.

## ZU4T-Series, Electric Torque Wrench Pumps

Utilizing a universal motor, the ZU4-Series works well with long extension cords or generator driven electrical power supplies. ZU4-pumps are available in Pro and Classic formats.

- **ZU4T Pro Pumps** have an LCD feature to display torque or pressure, selectable torque wrench, and self-diagnostics – premium features not available on any other pump.
- **ZU4T Classic Pumps** feature an analog gauge and a basic electrical

package to deliver durable, safe and efficient hydraulic power.

## ZE4T, ZE5T-Series, Electric Torque Wrench Pumps

The ZE-Series features premium options, such as the LCD to display torque or pressure values, and self-diagnostics. These pumps utilize an induction motor, making the ZE-Series the coolest and quietest pumps in their class.

## ZA4T-Series, Air Driven Torque Wrench Pumps

Utilizing the highly efficient design of the Z-Class pumping element, this air driven pump is best suited to power medium to large size torque wrenches.

▼ XC1502TB



## Portable Battery Pump for Torque Applications

- Ideal for maintenance bolting applications requiring portability and convenience
- Interactive pendant provides visual and vibratory feedback of pump operation
- User can set pressure and operate in manual or auto-cycle mode
- Superior run-time with 5Ah, 28V battery
- Brushless DC motor extends motor life and reduces maintenance
- 20-foot detachable pendant control, with option to use trigger control as well
- 4-inch glycerin-filled gauge for easy viewing
- User-adjustable relief valve can be locked when desired pressure is set



### 28-Volt Battery

The **XC28V5** with Lithium-Ion technology for maximum battery performance.



### Battery Charger

1-hour quick charger.

<b>XC115VC</b>	115 VAC
<b>XC230VC</b>	230 VAC



### Roll Cage

A roll cage accessory is available for all XC models. Please order model number **XCRCTK**.



### Torque Wrenches

The following wrenches are ideal for use with the XC Cordless Torque Wrench Pump:

<u>S-Series</u>	<u>W-Series</u>	<u>RSL-Series</u>
S1500X	W2000X	RSL1500
S3000X	W4000X	RSL3000
		RSL5000

Larger wrenches will work with the pump, battery run time and application speed will be impacted.



# Cordless Torque Wrench Pump



The XC-Series Cordless Torque Wrench pump is ideal for maintenance applications in the PowerGen, Oil & Gas and MRO markets. This portable pump is perfect for remote locations, sites that do not have access to power or where trip hazards are a concern.

The interactive pendant allows the user to set and clear pressure and operate in manual or auto-cycle mode.

The pump has an easily accessible user adjustable valve for precise pressure control.

### Fasteners Torqued On One Charge

Torque Wrench	Nut AF (in)	Stud (in)	Pressure (psi)	Torque (ft-lbs)	Fasteners Torqued
S3000X	2 3/8"	1 1/2"	4800	1500	32
W2000X	2 3/8"	1 1/2"	5000	1000	52

## XC Series



Useable Oil Capacity:

**120 in<sup>3</sup>**

Flow at Rated Pressure:

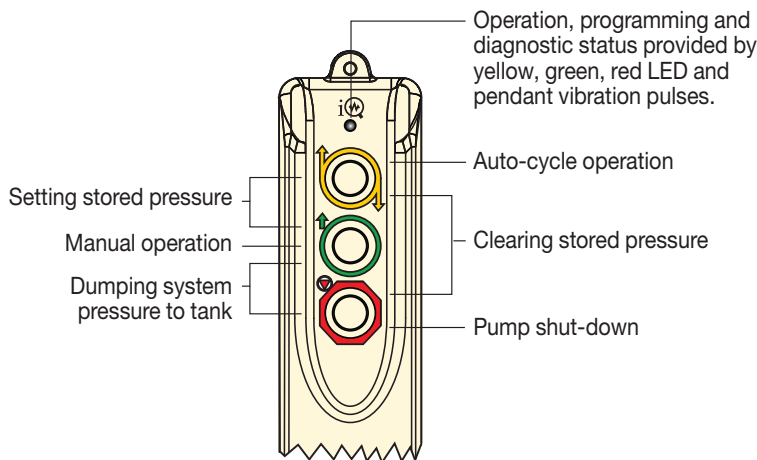
**15 in<sup>3</sup>/min.**

Motor Size:

**.5 hp**

Maximum Operating Pressure:

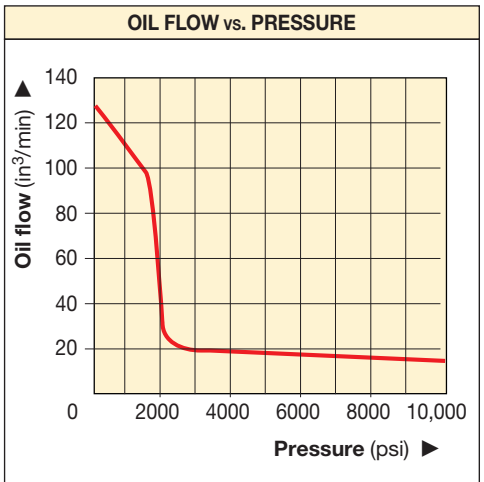
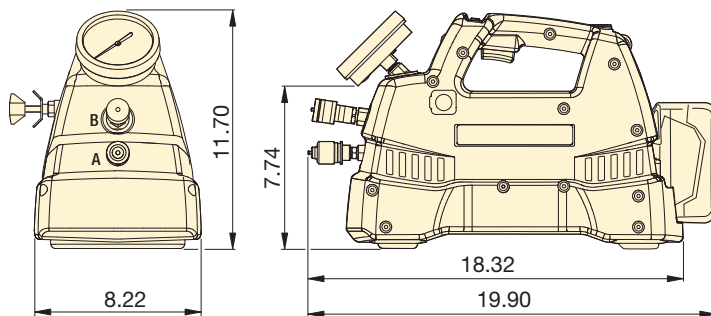
**10,000 psi**



### Twin Torque Wrench Hoses

Use Enerpac THQ700 series twin hoses with 10,000 psi pumps.

6 feet long, 2 hoses	<b>THQ702T</b>
19.5 feet long, 2 hoses	<b>THQ706T</b>
39 feet long, 2 hoses	<b>THQ712T</b>



Pump Type	Useable Oil Capacity (in <sup>3</sup> )	Model Number	Output Flow Rate (in <sup>3</sup> /min)			Included with Pump	Weight (includes oil and battery) (lbs)
			No Load	2000 psi	10,000 psi		
Cordless Pump Kit	120	<b>XC-1502TB</b>	125	30	15	2 batteries and 115V charger	29
Cordless Pump Kit	120	<b>XC-1502TE</b>	125	30	15	2 batteries and 230V charger	29
Cordless Pump	120	<b>XC-1502T*</b>	125	30	15	No batteries or charger	26.6

\* Batteries and charger not included.

▼ EP3504T E-Pulse Torque Wrench Pump



## Productivity through innovation



### Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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### Performance

- Two-stage pump with high by-pass pressure: 220 in<sup>3</sup>/min at 2900 psi, 32 in<sup>3</sup>/min at 10,000 psi
- Smart controls enable motor to maintain constant power across the pressure range
- 24V DC power regulator minimizes effects of poor power supply
- Six-piston block design provides even flow for smooth operation of tool

### Durability

- High-efficiency permanent magnet, direct drive motor enables continuous use and long service life
- Built-in thermal protection
- System components enclosed for protection
- IP Rating: IP54 on the Pump, IP67 on the Pendant
- Integrated heat exchanger minimizes heat buildup

### Convenience

- Integrated calibrated pressure gauge
- Pendant and cord management system
- Draining oil not required for pump element maintenance
- Convenient oil fill port, oil level indicator and automatic breather



### Torque Wrenches

The following wrenches are ideal for use with the E-Pulse Torque Wrench Pump:

S-Series	W-Series	RSL-Series
S1500X	W2000X	RSL1500
S3000X	W4000X	RSL3000
S6000X	W8000X	RSL5000

Larger wrenches will work with the pump, battery run time and application speed will be impacted.

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### Twin Torque Wrench Hoses

Use Enerpac THQ-700 series twin hoses with 10,000 psi pumps.

10,000 psi	
6 feet long, 2 hoses	THQ-702T
19.5 feet long, 2 hoses	THQ-706T
39 feet long, 2 hoses	THQ-712T

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# E-Pulse™, Electric Torque Wrench Pumps



## E-Pulse Torque Wrench Pump

The Enerpac E-Pulse Torque Wrench Pump, through its innovative design, is ideal for high volume fastening applications where weight is a critical factor. Smart controls enable the motor to maintain constant power providing higher flow than "traditional" ½ hp pumps.

The durable aluminum housing, integrated heat exchanger and highly efficient permanent magnet motor minimize heat buildup in the toughest environments. The interactive pendant provides the operator a number of usage options for optimal efficiency. The E-Pulse Torque Wrench Pump is the pinnacle of bolting equipment.

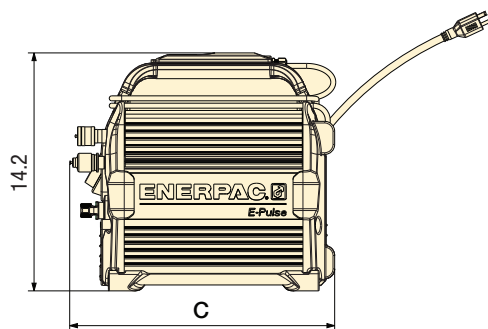
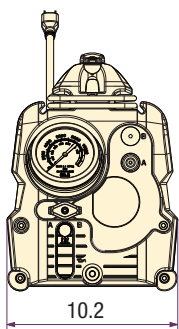


- Setting stored pressure
- Manual operation
- Dumping system pressure to tank
- Intelligent Auto-cycle
- Clearing stored pressure
- Pump shut-down

**Torque Wrench**  
20-ft. cord

### Interactive Torque Wrench Pendant

- User can set pressure and operate in manual or auto-cycle mode
- Intelligent Auto-Cycle enables press and release actuation to cycle wrench until final torque is achieved



## E Series



Useable Reservoir Capacity:

**0.8 gallon**

Flow at Rated Pressure:

**32 in<sup>3</sup>/min.**

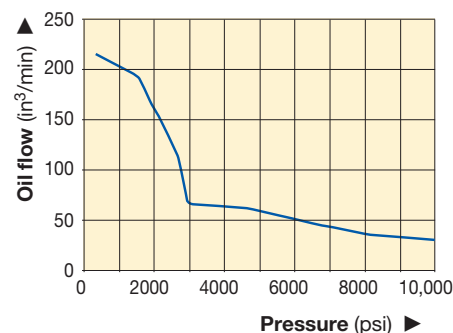
Motor Size:

**0.85 hp**

Maximum Operating Pressure:

**10,000 psi**

**FLOW vs. PRESSURE**



▲ EP3504T-M shown with multi-port manifolds

Number of Wrenches Pump can Operate	Useable Oil Capacity (gal)	Model Number	Output Flow Rate (in <sup>3</sup> /min)				Motor Voltage (VAC)	Plug Type	Current Draw (Amps)	Sound Level (dBA)	Dimension C (in)	Weight (with oil) (lbs)
			14.5 psi	2538 psi	5075 psi	10,000 psi						
1	0.8	EP3504TB	220	130	58	32	100-120	NEMA 5-15	12	70-85	15.8	44.9
		EP3504TI	220	130	58	32	200-250	NEMA 6-15	7	70-85	15.8	44.9
		EP3504TE	220	130	58	32	200-250	Schuko CEE 7/7	7	70-85	15.8	44.9
2	0.8	EP3504TB-M*	220	130	58	32	100-120	NEMA 5-15	12	70-85	16.9	47.9
		EP3504TI-M*	220	130	58	32	200-250	NEMA 6-15	7	70-85	16.9	47.9
		EP3504TE-M*	220	130	58	32	200-250	Schuko CEE 7/7	7	70-85	16.9	47.9

\* Pump model with multi-port manifold.

▼ TQ-700E



## Lightweight Electric Torque Wrench Pump

- Optimized flow technology delivers up to 50% faster bolting than competing pumps
- Compact and lightweight design fits through tight openings and provides easy handling
- Built-in protection for controls, gauge, and pendant for job-site durability
- IP55 rating for superior dust and water protection
- Advanced brushless motor provides for quiet, continuous operation, high voltage tolerance, and low maintenance
- Heat exchanger prevents breakdown of oil during heavy usage in hot environments
- Simple pressure setting and convenient pendant control for hassle-free operation

▼ The TQ-700E and the W-Series wrenches are a productive combination in wind applications.



### Hydraulic Torque Wrenches

Enerpac offers a complete range of square drive and hexagon cassette torque wrenches.

Page: 1



### Pendant Control

The TQ-700 comes equipped with a 20-foot pendant cord which allows the user to pressurize the pump from a distance increasing productivity and speed of setup.



### Four Port Manifold

The TQ-700 offers an optional four wrench manifold as an accessory (TQM) factory installed. (Add suffix "M" at the end of the model number. For example: TQ700EM)



### Twin Torque Wrench Hoses

Use Enerpac THQ-700 series twin hoses with 10,000 psi pumps.

10,000 psi	
6.5 feet long, 2 hoses	THQ-702T
19.5 feet long, 2 hoses	THQ-706T
39 feet long, 2 hoses	THQ-712T

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### Gauge Overlay Kit

Gauge overlay kits are also available separately.

GT-4015-Q includes overlays for all S-, W- and RSL-Series Torque Wrenches.

# Electric Torque Wrench Pump

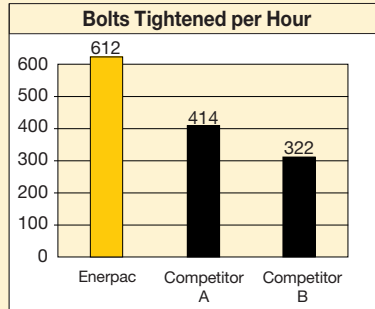


## TQ-700 Series Pump Applications

The TQ-700 Series pump is ideal for powering hydraulic wrenches for the Power Generation and Wind Markets.

Bolting speed is more complex than how much flow per minute the pump produces. The key is optimizing the flow rate across the entire bolting cycle. With more oil flowing at the right time and at the right volume, you achieve the optimized flow for a hydraulic bolting system.

The result of this optimized flow is more bolts tightened faster and a more productive work team.



Internal laboratory testing based on standard torquing procedure on a pipe flange with 14, 1 1/8" bolts.

## TQ Series



Reservoir Capacity:

**1 gallon**

Maximum Operating Pressure:

**10,000 psi**



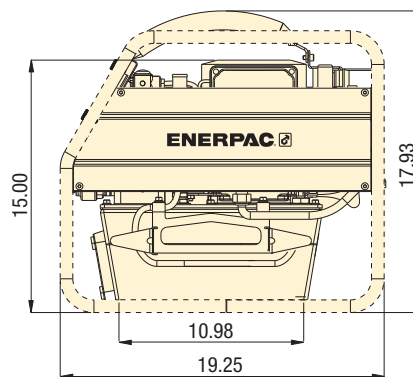
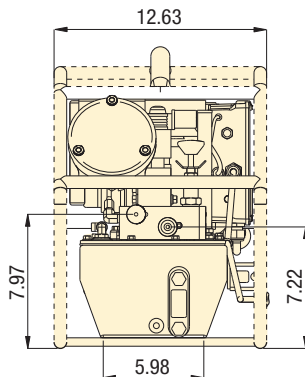
## IP55 Rating for Superior Dust and Water Protection

The IP Code (or Ingress Protection Rating) classifies and rates the degrees of protection provided against the intrusion of solid objects and water in mechanical casings and electrical enclosures.

An IP55 rating means the TQ-700 offers complete protection against contact with mechanical and electrical components, and that dust will not enter in a sufficient quantity to interfere with the operation of the equipment.

The IP55 rating also means water jets sprayed against the TQ-700 from any direction will not have any harmful effects.

Dimensions shown in inches.



▼ The TQ-700E and the W-Series wrenches are a productive combination.



### SELECTION CHART

For Use with Torque Wrenches	Pressure Rating (psi)	Model Number <sup>1)</sup>	Useable Oil Capacity (gal)	Motor Size (hp)	Motor Electrical Specifications (Volt - Ph - Hz)	Sound Level (dBA)	Wt. (lbs)
All S-, W- and RSL-Series wrenches	10,000	<b>TQ-700 B</b>	1	1.0	115 - 1 - 50/60	82 - 85	68
	10,000	<b>TQ-700 E <sup>2)</sup></b>	1	1.0	230 - 1 - 50	82 - 85	66
	10,000	<b>TQ-700 I <sup>3)</sup></b>	1	1.0	230 - 1 - 60	82 - 85	66

<sup>1)</sup> All models meet CE safety requirements and all TÜV requirements

<sup>2)</sup> European plug and CE EMC directive compliant

<sup>3)</sup> With NEMA 6-15 plug

▼ ZU4204TB-Q (Pro-Series) and ZU4204BB-Q (Classic)



**Z** Tough.  
Dependable.  
Innovative.  
**CLASSIC**



#### Classic Electrical

Basic electrical package includes mechanical contactor, ON/OFF toggle switch, pendant with electro-mechanical pushbuttons, 24V transformer timer and operator accessible circuit breaker.



#### Back-lit LCD Display for Pro Series

Back-lit LCD and Pressure Transducer featuring Auto-Cycle Technology.

- Digital read-out and "Autocycle" setting
- "Auto-Cycle" setting easily programmable
- Torque wrench model is selectable
- Pump usage information, hour and cycle counts
- Low-voltage warning and recording
- Self-test and diagnostic capabilities
- Information can be displayed in English, French, German, Italian, Spanish and Portuguese
- Pressure transducer is more accurate and durable than analog gauges
- Easy-viewing variable rate display
- Display pressure in bar, MPa or psi

- Features **Z-Class** high-efficiency pump design; higher oil flow and bypass pressure, cooler running and requires 18% less current draw than comparable pumps
- Powerful 1.7 hp universal electric motor provides high power-to-weight ratio and excellent low-voltage operating characteristics
- High-strength, molded composite shroud protects motor and electrical components, while providing an ergonomic, non-conductive handle for easy transport
- Low-voltage pendant provides additional safety for the operator

#### Pro-Series

- LCD readout provides pressure and torque display and a number of diagnostic and readout capabilities never before offered on a portable electric pump
- Auto cycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed. (Pump can be used with or without auto cycle feature.)



◀ Any brand of hydraulic torque wrench can be powered by the portable ZU4-Series torque wrench pump.



## Z-Class – A Pump For Every Application

Patented Z-Class pump technology provides

high by-pass pressures for increased productivity—important in applications using long hose runs and high pressure-drop circuits, like heavy lifting or certain double-acting tools.

Enerpac ZU4 Hydraulic Pumps are built to power small to large torque wrenches. Choosing the right ZU4 torque wrench pump for your application is easy.

### Classic Electric Torque Wrench Pump

- The Classic has an analog gauge and traditional electro-mechanical components (transformers, relays and switches) in place of solid-state electronics. The Classic

delivers durable, safe and efficient hydraulic power.

### Pro Series Electric Torque Wrench Pump

- Digital (LCD) display features a built-in hour meter, pressure and torque display, and shows self-diagnostic, cycle-count and low voltage warning information. These premium features are not available on any other pump—anywhere!
- AutoCycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed. (Pump can be used with or without AutoCycle feature).

## ZU4T Series



Reservoir Capacity:

**1 and 2 gal.**

Flow at 10,000 psi:

**60 in<sup>3</sup>/min.**

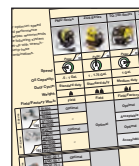
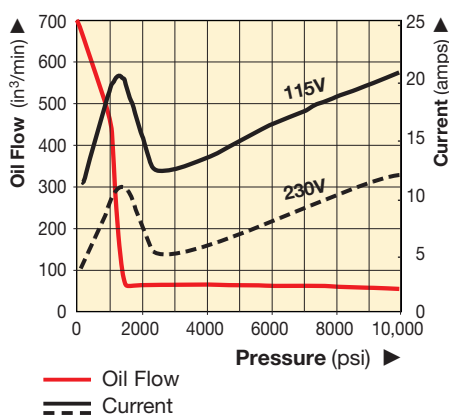
Motor Size:

**1.7 hp**

Maximum Operating Pressure:

**10,000 psi**

OIL FLOW AND CURRENT vs PRESSURE



### Torque Wrench Pump Selection Matrix

For optimum speed and performance see the torque wrench pump selection matrix.

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### Overlay Kit with Gauge

Available separately for use with ZU4T-Series Classic: **GT-4015Q** includes gauge and torque overlays for all S-, W- and RSL-Series torque wrenches.

[www.enerpac.com](http://www.enerpac.com)

### COMMON PUMP MODELS

	For Use With Torque Wrenches	Model Number 1)	Motor Electrical Specification	Usable Oil Capacity (gal)	Weight with Oil (lbs)
Pro Series	All wrenches	ZU4204TB-Q	115 V-1 ph	1.0	70
		ZU4208TB-Q	115 V-1 ph	1.75	76
		ZU4204TE-Q 2)	208-240 V-1 ph	1.0	70
		ZU4208TE-Q 2)	208-240 V-1 ph	1.75	76
		ZU4204TI-Q 3)	208-240 V-1 ph	1.0	70
		ZU4208TI-Q 3)	208-240 V-1 ph	1.75	76
Classic	All wrenches	ZU4204BB-QH	115 V-1 ph	1.0	82
		ZU4204BB-Q	115 V-1 ph	1.0	73
		ZU4208BE-QH 2)	208-240 V-1 ph	1.75	83
		ZU4204BE-Q 2)	208-240 V-1 ph	1.0	74
		ZU4208BI-QH 3)	208-240 V-1 ph	1.75	88
		ZU4208BI-Q 3)	208-240 V-1 ph	1.75	79

1) All models meet CE safety requirements and all TÜV requirements  
 2) European plug and CE EMC directive compliant  
 3) With NEMA 6-15 plug



### Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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▼ This is how a ZU4 Series pump model number is built up:



### 1 Product Type

**Z** = Pump series

### 2 Motor Type

**U** = Universal electric motor

### 3 Flow Group

**4** = 60 in<sup>3</sup>/min @ 10,000 psi

### 4 Valve Type

**2** = Torque wrench valve

### 5 Reservoir Size (useable capacity)

**04** = 1.0 gallon

**08** = 1.75 gallons

### 6 Valve Operation

**T** = Solenoid valve with pendant, LCD electric and pressure transducer

**B** = Solenoid valve with pendant, classic electrical

### 7 Voltage

**B** = 115V, 1 ph, 50/60 Hz

**E** = 208-240V, 1 ph, 50/60 Hz (with European plug CE RF compliant)

**I** = 208-240V, 1 ph, 50/60 Hz (with NEMA 6-15 plug)

### 8 Factory installed features and options

**Q** = 10,000 coupler for use with S-, W, and RSL-Series or other wrenches

**H** = Heat exchanger

**K** = Skidbar

**M** = 4-wrench manifold

**R** = Roll cage

Reservoir Capacity:

**1 and 2 gal.**

Flow at 10,000 psi:

**60 in<sup>3</sup>/min.**

Motor Size:

**1.7 hp**

Maximum Operating Pressure:

**10,000 psi**



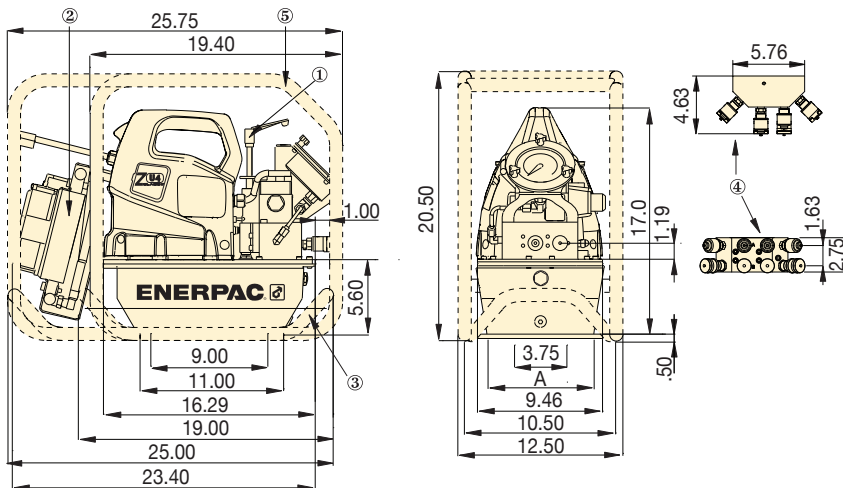
### How to Order Your ZU4T-Series Torque Wrench Pump

**Ordering Example: Model No. ZU4208TB-QMHK**

**10,000-psi** pump for use with Enerpac S-, W- and RSL-Series and other 10,000-psi torque wrenches, 115V motor, 1.75-gallon reservoir, 4-wrench manifold, heat exchanger and skidbar.

Refer to the torque wrench pump selection matrix for optimum wrench, pump and hose combinations.

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ZU4-Series Torque Wrench Pumps

Dimensions shown in inches

- ① User adjustable relief valve
- ② Heat exchanger (optional)
- ③ Skidbar (optional)
- ④ 4-wrench manifold (optional)
- ⑤ Roll cage (optional)

Reservoir Size (useable gallons)	A (in)
<b>1</b>	6.0
<b>1.75</b>	8.1

ZU4 Performance							
Motor Size (hp)	Output Flow Rate (in <sup>3</sup> /min)				Motor Electrical Specification*	Sound Level (dBA)	Relief Valve Adjustment Range (psi)
	100 psi	700 psi	5,000 psi	10,000 psi			
1.7	700	535	76	60	115 VAC, 1-ph 208-240 VAC, 1-ph	85-90	1,800-10,000**

\* 50/60 HZ

\*\* Pump type (-Q) shown, (-E) range is 1,800 - 11,600 psi.



### Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

10,000 psi	
6.5 feet long, 2 hoses	<b>THQ-702T</b>
19.5 feet long, 2 hoses	<b>THQ-706T</b>
39 feet long, 2 hoses	<b>THQ-712T</b>

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▼ Most hydraulic torque wrenches can be powered by the Enerpac ZU4-Series torque wrench pump.





# ZU4T Torque Wrench Pump Options



## 4-Wrench Manifold

- For simultaneous operation of multiple torque wrenches
- Can be factory installed or ordered separately

Accessory Kit No. *	Can be used on ZU4-Series torque wrench pumps
ZTM-Q	for 10,000-psi torque wrenches

\* Add suffix **M** to pump model number for factory installation.

### Ordering Example:

**Model No. ZU4208TB-QM**



## Skidbar

- Provides greater pump stability on soft or uneven surfaces
- Provides easy two-handed lift

Accessory Kit No. *	Can be used on ZU4-Series torque wrench pumps
SBZ-4	1 and 1.75 gallon <sup>1)</sup>
SBZ-4L	1 and 1.75 gallon <sup>2)</sup>

\* Add suffix **K** to pump model number for factory installation.

<sup>1)</sup> Without heat exchanger 4.9 lbs.

<sup>2)</sup> With heat exchanger 7.0 lbs.

### Ordering Example:

**Model No. ZU4208TB-QK**



## Heat Exchanger

- Removes heat from the bypass oil to provide cooler operation
- Stabilizes oil viscosity, increasing oil life and reduces wear of pump and other hydraulic components

Accessory Kit No. *	Can be used with:
ZHE-U115	115V pumps
ZHE-U230	230V pumps

\* Add suffix **H** to pump model number for factory installation.

Heat Exchanger adds 9.1 lbs. to pump weight.

### Ordering Example:

**Model No. ZU4208TB-H**

Thermal Transfer *	Maximum pressure	Maximum oil flow	Voltage
Btu/h	(psi)	(GPM)	(VDC)
900	4351	7.0	12

\* At 116 in<sup>3</sup>/min at 70° F ambient temperature.

Do not exceed maximum oil flow and pressure ratings.

Heat exchanger is not suitable for water-glycol or high water-based fluids.



## Roll Cage

- Protects pump
- Provides greater pump stability

Accessory Kit No. *	Can be used on ZU4-Series torque wrench pumps
ZRC-04	1 and 1.75 gallon reservoir <sup>1)</sup>
ZRC-04H	1 and 1.75 gallon reservoir <sup>2)</sup>

\* Add suffix **R** for factory installation.

<sup>1)</sup> For use with pumps without a heat exchanger fitted

<sup>2)</sup> For use with pumps with a heat exchanger fitted

### Ordering Example:

**Model No. ZU4208BB-QR**

▼ These rigid steel wrenches with low profile interchangeable hexagon cassettes guarantee durability and maximum versatility in bolting applications.



▼ ZE4204TB-QHR



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**CLASS**

- **Auto-Cycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed (Pump can be used with or without Auto-Cycle feature)**
- **LCD readout provides pressure and torque display and a number of diagnostic and readout capabilities never before offered on a portable electric pump**
- **Totally enclosed, fan-cooled industrial electric motors supply extended life and stand up to harsh industrial environments**
- **High-strength, molded electrical enclosure protects electronics, power supplies and LCD readout from harsh environments**



#### Back-lit LCD Display

- Digital pressure or torque read-out
- Programmable "Auto-Cycle" setting
- "Auto-Cycle" setting easily programmable
- Torque wrench model is selectable
- Display torque in Nm or Ft.lbs
- Pump usage information, hour and cycle counts
- Low-voltage warning and recording
- Self-test and diagnostic capabilities
- Information can be displayed in English, French, German, Italian, Spanish and Portuguese
- Pressure transducer is more accurate and durable than analog gauges



◀ The ZE4 torque wrench pumps are perfectly matched for this W2000X wrench.

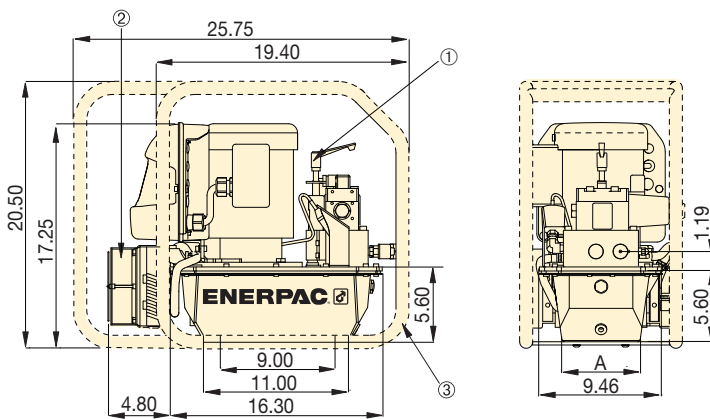
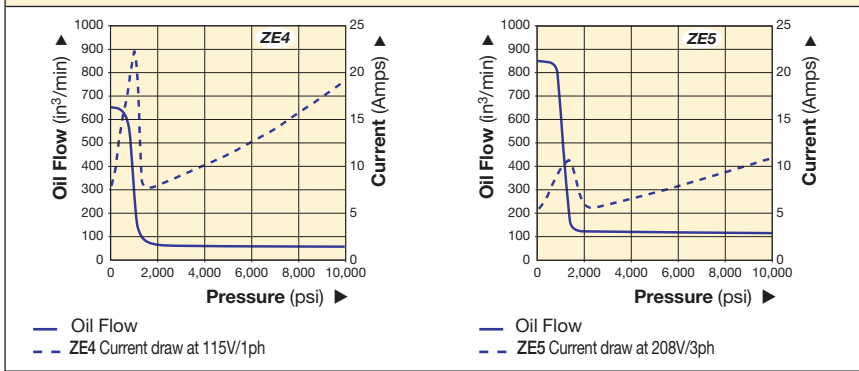


#### Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

# ZE-Series Electric Torque Wrench Pumps

ZE4 and ZE5 Oil Flow and Current vs. Pressure



Reservoir Size (useable gallons)	A (in)
1	6.0
1.75	8.1

Dimensions shown in inches.  
 ① User adjustable relief valve  
 ② Heat Exchanger (optional)  
 ③ Roll cage (optional)

## ▼ COMMON PUMP MODELS

For Use With Torque Wrenches	Max. Operating Pressure (psi)	Model Number with Heat Exchanger and Roll Cage	Motor Electrical Specification	Usable Oil Capacity <sup>1)</sup> (gal)	Weight with Oil (lbs)
All S-, W- and RSL-Series Wrenches	10,000	ZE4208TB-QHR	115 V-1 ph	2	129
	10,000	ZE4208TI-QHR	230 V-1 ph	2	129
	10,000	ZE4208TG-QHR	230 V-3 ph	2	131
	10,000	ZE5208TW-QHR	400 V-3 ph	2	131

<sup>1)</sup> Reservoir sizes available: 1, 2, 2.5, 5, 10 gallon. Contact Enerpac.

## ▼ PERFORMANCE CHART

Pump Series	Output Flow Rate (in³/min)				Motor Size		Relief Valve Adjustment Range (psi)	Sound Level (dBA)
	100 psi	700 psi	5,000 psi	10,000 psi	hp	RPM		
ZE4T	650	600	62	60	1.5	1750	1000 - 11,600	75
ZE5T	850	825	123	120	3.0	1750	1000 - 11,600	75

Flow rate will be approximately 5/6 of these values at 50 Hz.

## ZE Series



Reservoir Capacity:

**1.0 -10 gal.**

Flow at 10,000 psi:

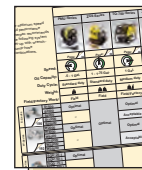
**60-120 in³/min.**

Motor Size:

**1.5-3.0 hp**

Maximum Operating Pressure:

**10,000 psi**



### Torque Wrench Pump Selection Matrix

For optimum speed and performance see the torque wrench pump selection matrix.

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### Accessory Options

A full list of optional accessories can be found in the ZU4 section.

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### Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

10,000 psi	
6.5 feet long, 2 hoses	THQ-702T
19.5 feet long, 2 hoses	THQ-706T
39 feet long, 2 hoses	THQ-712T

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▼ ZA4204TX-QR



- Two-speed operation and high by-pass pressure reduces cycle time for improved productivity
- Glycerin filled pressure gauge with transparent overlays in Ft.lbs and Nm for Enerpac torque wrenches provide a quick torque reference
- Regulator-Filter-Lubricator with removable bowls and auto drain is standard
- Ergonomic pendant allows remote operation up to 20 feet
- Valve technology reduces oil operating temperatures and withstands contaminants to increase pump reliability

▼ Most hydraulic torque wrenches can be powered by the Enerpac ZA4-Series torque wrench pump.



## Z

Tough.  
Dependable.  
Innovative.

## CLASSIC



### Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

10,000 psi	
6.5 feet long, 2 hoses	THQ-702T
19.5 feet long, 2 hoses	THQ-706T
39 feet long, 2 hoses	THQ-712T

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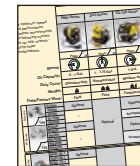


### Gauge Overlay Kit

Gauge overlay kits are also available separately.

**GT-4015-Q** includes overlays for all S-, W- and RSL-Series torque wrenches.

RSL-Series torque wrenches.



### Torque Wrench Pump Selection Matrix

For optimum speed and performance see the torque wrench pump selection matrix.

Page: 45

# ZA4T Air Driven Torque Wrench Pumps



## ZA4-Series Pump Applications

The ZA4-Series pump is best suited to power medium to large size torque wrenches.

Patent-pending *Z-Class* technology provides high by-pass pressures for increased productivity. Its high power-to-weight ratio and compact design make it ideal for applications which require easy transport of the pump.

For further application assistance contact your local Enerpac office.

## ATEX Certified

The ZA-series pumps are tested and certified according to the Equipment Directive 94 / 9 / EC "ATEX Directive".

The explosion protection is for equipment group II, equipment category 2 (hazardous area zone 1), in gas and/or dust atmospheres. The ZA-series pumps are marked with: Ex II 2 GD ck T4.



## ZA4T Series

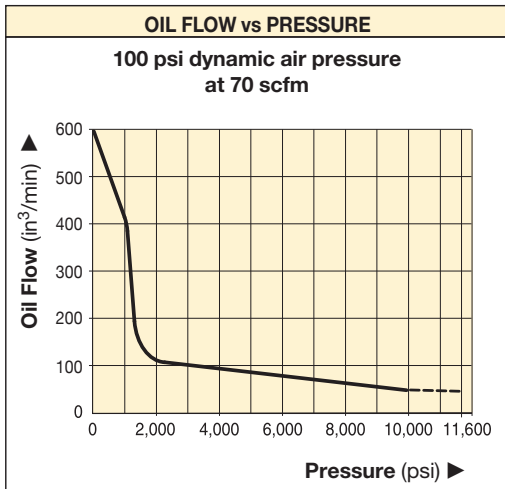


Reservoir Capacity:  
**1 and 1.75 gal.**

Flow at 10,000 psi:  
**60 in<sup>3</sup>/min.**

Air Consumption:  
**20-100 scfm**

Maximum Operating Pressure:  
**10,000**



## Accessory Options

Available by placing the following additional suffix at the end of the model number:

- K** = Skidbar
- M** = 4-wrench manifold
- R** = Roll cage

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## COMMON PUMP MODELS

For Use With Torque Wrenches	Maximum Operating Pressure (psi)	Model Number 1)	Usable Oil Capacity (gal)	Weight with Oil (lbs)
For all S- and W- Series (X-Edition) and RSL-Series	10,000	ZA4204TX-Q	1.0	94
	10,000	ZA4208TX-Q	1.75	100
	10,000	ZA4204TX-QR*	1.0	101
	10,000	ZA4208TX-QR*	1.75	112

\* With roll cage

1) All models meet CE safety requirements and all TÜV requirements.

▼ ZA4208TX-QR for improved wrench performance and torque control at low pressure.



▼ This is how a ZA4-Series pump model number is built up:



1	2	3	4	5	6	7	8	8	8
Product Type	Motor Type	Flow Group	Valve Type	Reservoir Size	Valve Operation	Voltage	Must be E or Q	Options	Options

### 1 Product Type

Z = Pump Series

### 2 Motor Type

A = Air motor

### 3 Flow Group

4 = 60 in<sup>3</sup>/min @ 10,000 psi

### 4 Valve Type

2 = Torque Wrench Valve

### 5 Reservoir Size (useable capacity)

04 = 1.0 gallon

08 = 1.75 gallons

### 6 Valve Operation

T = Air operated valve with pendant

### 7 Voltage

X = Not applicable

### 8 Factory installed features and options

Q = 10,000-psi coupler for use with S-, W- and RSL-Series or other wrenches

K = Skidbar

M = 4-wrench manifold

R = Roll cage



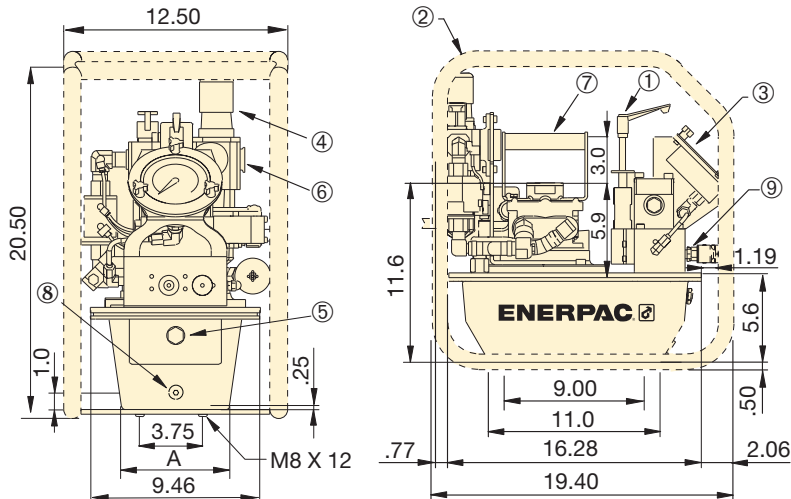
### How to Order Your ZA4-Series Torque Wrench Pump

#### Ordering Example: Model No. ZA4208TX-QMR

10,000-psi pump for use with Enerpac S-, W and RSL-Series and other 10,000-psi torque wrenches, 2-gallon reservoir, 4-wrench manifold, and roll cage.

Refer to the torque wrench pump selection matrix for optimum wrench, pump and hose combinations.

Dimensions shown in inches.



- ① User adjustable relief valve
- ② Roll bar cage (optional)
- ③ Gauge with overlays
- ④ Filter/lubricator/regulator
- ⑤ Oil level sight gauge
- ⑥ Air input 1/2" NPTF
- ⑦ Standard handle
- ⑧ Oil drain
- ⑨ 1/4"-18 NPTF Oil Outlet

▼ Most hydraulic torque wrenches can be powered by the Enerpac ZA4-Series torque wrench pump.



### ZA4-Series Torque Wrench Pumps

Reservoir Size (useable gallons)	A (in)
1	6.0
1.75	8.1

Output Flow Rate					ZA4 Performance			
(in <sup>3</sup> /min)					Dynamic Air Pressure Range (psi)	Air Consumption (scfm)	Sound Level at 100 psi Dynamic (dBA)	Relief Valve Adjustment Range (psi)
100 psi	700 psi	5,000 psi	10,000 psi	11,600 psi				
600	500	80	60	55	60-100	20-100	80-95	1,400-10,000*

\* Pump type (-Q) shown.

# ZA4T Torque Wrench Pump Options



## Skidbar

- Provides greater pump stability on soft or uneven surfaces
- Provides two-handed lift

Accessory Kit No. *	Can be used on ZA4-Series torque wrench pumps
SBZ-4	1 and 2-gallon reservoir

\* Add suffix **K** for factory installation. Skidbar weight 4.9 lbs.

### Ordering Example:

Model No. ZA4208TX-QK



## 4-Wrench Manifold

- For simultaneous operation of multiple torque wrenches
- Can be factory installed or ordered separately

Accessory Kit No. *	Can be used on ZA4-Series torque wrench pumps
ZTM-Q	for 10,000-psi torque wrenches

\* Add suffix **M** for factory installation. Manifold weight 7.9 lbs.

### Ordering Example:

Model No. ZA4208TX-QM

## ZA4T Series



Reservoir Capacity:

**1 and 2 gal.**

Flow at 10,000 psi:

**60 in<sup>3</sup>/min.**

Air Consumption:

**20-100 scfm**

Maximum Operating Pressure:

**10,000 psi**



## 10,000-psi Spin-on Couplers

- Mounted on:
  - Torque wrench pumps with suffix "Q"
  - RSL, S and W-Series wrenches
  - THQ-Series hoses
  - 4-Wrench manifold ZTM-Q



## Roll Cage

- Protects pump
- Provides greater pump stability

Accessory Kit No. *	Can be used on ZA4-Series torque wrench pumps
ZRC-04	1 and 2-gallon reservoir

\* Add suffix **R** for factory installation. Roll bar cage weight 7.5 lbs.

### Ordering Example:

Model No. ZA4208TX-QR



## Twin Torque Wrench Hoses

Use Enerpac THQ-700 series twin hoses with 10,000 psi pumps.

10,000 psi	
6.5 feet long, 2 hoses	THQ-702T
19.5 feet long, 2 hoses	THQ-706T
39 feet long, 2 hoses	THQ-712T

▼ HM10 Hydramax® Topside Tensioner



## High Bolt Load Capacities, Superior Performance



### HydraMax® Topside Tensioners

The HM-Series tensioners have been designed to fit all standard flanges, including ANSI, API and compact flanges based on Norsok L005 and generates 30% more load capacity than traditional tensioners.



### Tensioning Pumps, Hoses and Couplers

High-pressure pumps, hoses and fittings matched for use with the Enerpac Bolt Tensioners.

See [enerpac.com](http://enerpac.com)

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### Ultra-High Pressure

This tool operates at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.



### How to Order HydraMax® Tensioners

To provide maximum flexibility Load Cells are ordered separately from Adaptor and Bridge Kits.

Example, to order a complete tensioner for a M24 x 3 threaded bolt order:

1 x Load Cell: **HM03-LC**

1 x Adaptor and Bridge Kit:

**HM03BPM-NRS02430**



### Bolting Integrity Software

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet, and Joint Combination report. Custom Joint information can also be entered.

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- Fifteen load cells from ¾" to 4" / M20 to M100
- Twin ports for quick connection of multiple tools
- High bolt-load capacity at maximum 21,750 psi (1500 bar)
- Long-stroke capability of 9/16 inch (15 mm) with over stroke elimination
- HM01 to HM05: mechanical over-stroke prevention, no spring return; HM06 to HM15: relief valve for over-stroke prevention, spring return
- Quick release bridge
- Stroke indicator
- Captive socket – eliminates falling object risk
- Interchangeable adaptor kits available
- Anti-slip grip for more secure handling
- HM-Series HydraMax® Tensioners comply to following: Machine Directive 2006/42/EC, ASME B30.1, EN-ISO 4413:2010, EN-ISO 12100:2010



◀ Enerpac HM-Series HydraMax® tensioners have been designed to generate high-bolt loads associated with compact flanges, while providing versatility for maximum bolt coverage.

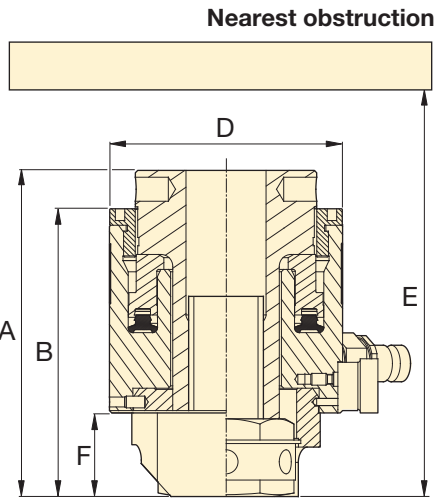
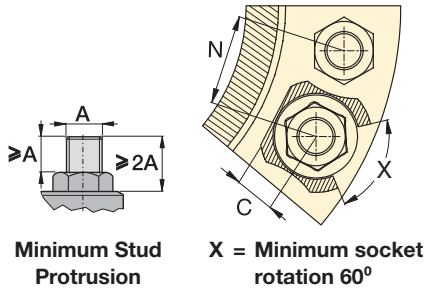


# HydraMax® Topside Tensioners



## Thread and Pitch Sizes

Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.



## HM Series



Bolt Range:

**3/4 - 1 1/2" | M20 - M39**

Maximum Load Capacity:

**15.1 - 70.2 tons**

Stroke:

**.39 inch - .59 inch \***

Maximum Operating Pressure:

**21,750 psi**

\* Stroke HM01 models .39 inch

Strokes all other HM-models .59 inch

Load Cell Model Number*	Thread Size	Adaptor and Bridge Kit Model Number	Cylinder Effective Area (in <sup>2</sup> )	Maximum Load Capacity (tons)	Dimensions (in)							Load Cell Weight (lbs)	Adaptor and Bridge Kit Weight (lbs)
					A	B	C	D	E min.	F	N min.		
HM01-LC	M20 x 2,5	HM01BPM-NRS02025	1.39	15.1	4.4	3.8	0.6	2.7	7.8	1.1	2.0	3.5	1.3
	3/4" - 10UN	HM01BP-NRS0750U10	1.39	15.1	4.4	3.8	0.6	2.7	7.8	1.1	2.0	3.5	1.3
HM02-LC	M20 x 2,5	HM02BPM-NRS02025	1.92	20.9	4.7	4.1	0.6	2.9	8.2	1.1	2.1	4.0	2.0
	M22 x 2,5	HM02BPM-NRS02225	1.92	20.9	4.7	4.1	0.6	2.9	8.2	1.1	2.1	4.0	2.0
	3/4" - 10UN	HM02BP-NRS0750U10	1.92	20.9	4.7	4.1	0.6	2.9	8.2	1.1	2.0	4.0	2.0
	7/8" - 9UN	HM02BP-NRS0875U09	1.92	20.9	4.7	4.1	0.7	2.9	8.2	1.1	2.2	4.0	1.8
HM03-LC	M20 x 2,5	HM03BPM-NRS02025	2.52	27.4	4.7	4.1	0.6	3.2	8.3	1.1	2.2	4.9	2.4
	M22 x 2,5	HM03BPM-NRS02225	2.52	27.4	4.7	4.1	0.6	3.2	8.3	1.1	2.3	4.9	2.4
	M24 x 3	HM03BPM-NRS02430	2.52	27.4	4.7	4.1	0.8	3.2	8.3	1.1	2.3	4.9	2.4
	3/4" - 10UN	HM03BP-NRS0750U10	2.52	27.4	4.7	4.1	0.6	3.2	8.3	1.1	2.2	4.9	2.4
	7/8" - 9UN	HM03BP-NRS0875U09	2.52	27.4	4.7	4.1	0.7	3.2	8.3	1.1	2.3	4.9	2.4
	1" - 8UN	HM03BP-NRS1000U08	2.52	27.4	4.9	4.3	0.8	3.2	8.5	1.3	2.4	4.9	2.4
HM04-LC	M22 x 2,5	HM04BPM-NRS02225	3.35	36.4	5.0	4.4	0.7	3.5	9.1	1.1	2.4	6.0	3.5
	M24 x 3	HM04BPM-NRS02430	3.35	36.4	5.1	4.4	0.8	3.5	9.1	1.1	2.5	6.0	3.5
	M27 x 3	HM04BPM-NRS02730	3.35	36.4	5.3	4.6	0.8	3.5	9.3	1.3	2.5	6.0	3.7
	M30 x 3,5	HM04BPM-NRS03035	3.35	36.4	5.4	4.7	0.9	3.5	9.4	1.4	2.6	6.0	3.7
	7/8" - 9UN	HM04BP-NRS0875U09	3.35	36.4	5.1	4.4	0.7	3.5	9.1	1.1	2.4	6.0	3.5
	1" - 8UN	HM04BP-NRS1000U08	3.35	36.4	5.3	4.6	0.8	3.5	9.3	1.3	2.5	6.0	3.7
	1 1/8" - 8UN	HM04BP-NRS1125U08	3.35	36.4	5.4	4.7	0.9	3.5	9.4	1.4	2.6	6.0	3.7
HM05-LC	M24 x 3	HM05BPM-NRS02430	4.27	46.4	5.1	4.5	0.7	3.9	9.2	1.1	2.7	7.3	4.2
	M27 x 3	HM05BPM-NRS02730	4.27	46.4	5.3	4.7	0.8	3.9	9.4	1.3	2.7	7.3	4.4
	M30 x 3,5	HM05BPM-NRS03035	4.27	46.4	5.5	4.8	0.9	3.9	9.5	1.4	2.8	7.3	4.4
	M33 x 3,5	HM05BPM-NRS03335	4.27	46.4	5.6	4.9	1.1	3.9	9.6	1.5	2.8	7.3	4.6
	1" - 8UN	HM05BP-NRS1000U08	4.27	46.4	5.3	4.7	0.8	3.9	9.4	1.3	2.7	7.3	4.6
	1 1/8" - 8UN	HM05BP-NRS1125U08	4.27	46.4	5.5	4.8	0.9	3.9	9.5	1.4	2.7	7.3	4.6
	1 1/4" - 8UN	HM05BP-NRS1250U08	4.27	46.4	5.6	4.9	1.1	3.9	9.6	1.5	2.8	7.3	4.6
HM06-LC	M30 x 3,5	HM06BPM-NRS03035	6.45	70.2	5.6	5.0	0.9	4.6	9.7	1.4	3.1	9.9	6.2
	M33 x 3,5	HM06BPM-NRS03335	6.45	70.2	5.7	5.1	1.1	4.6	9.8	1.5	3.2	9.9	6.4
	M36 x 4	HM06BPM-NRS03640	6.45	70.2	5.9	5.2	1.3	4.6	9.9	1.6	3.3	9.9	6.6
	M39 x 4	HM06BPM-NRS03940	6.45	70.2	6.0	5.3	1.3	4.6	10.0	1.8	3.3	9.9	6.8
	1 1/8" - 8UN	HM06BP-NRS1125U08	6.45	70.2	5.6	5.0	0.9	4.6	9.7	1.4	3.1	9.9	6.2
	1 1/4" - 8UN	HM06BP-NRS1250U08	6.45	70.2	5.7	5.1	1.1	4.6	9.8	1.5	3.2	9.9	6.4
	1 3/8" - 8UN	HM06BP-NRS1375U08	6.45	70.2	5.9	5.2	1.3	4.6	9.9	1.6	3.2	9.9	6.6
	1 1/2" - 8UN	HM06BP-NRS1500U08	6.45	70.2	6.0	5.3	1.3	4.6	10.0	1.8	3.3	9.9	6.8

\* Tommy bar is included with Load Cell

# HM-Series, HydraMax® Topside Tensioners **ENERPAC**



## Thread and Pitch Sizes

Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.

## HM Series



Bolt Range:

**1 1/4" - 2" | M33 - M52**

Maximum Load Capacity:

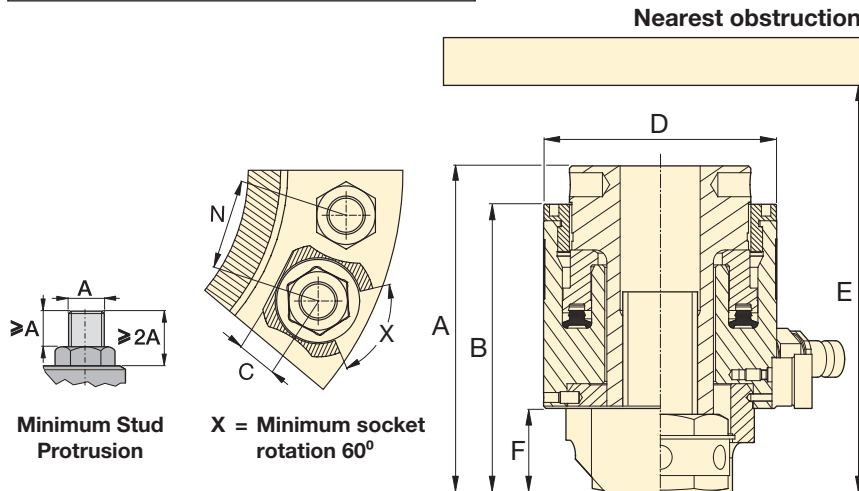
**83.9 - 131.9 tons**

Stroke:

**.59 inch**

Maximum Operating Pressure:

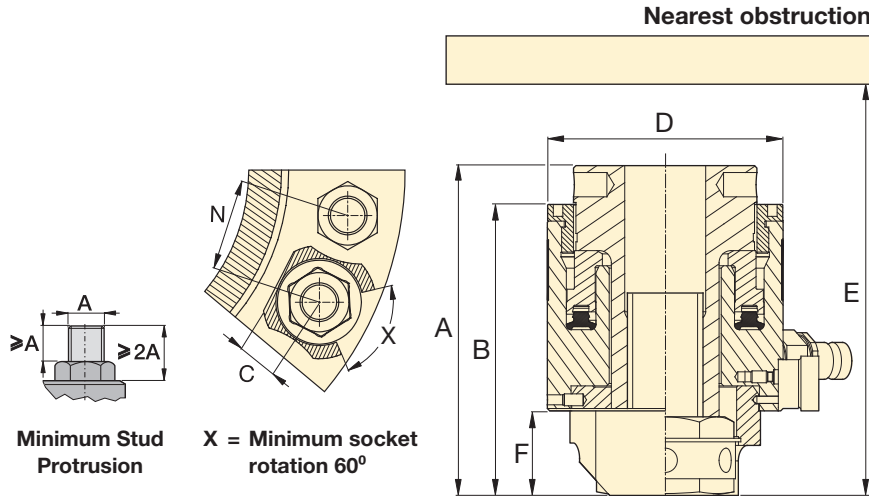
**21,750 psi**



Load Cell Model Number*	Thread Size	Adaptor and Bridge Kit Model Number	Cylinder Effective Area (in <sup>2</sup> )	Maximum Load Capacity (tons)	Dimensions (in)							Load Cell Weight (lbs)	Adaptor and Bridge Kit Weight (lbs)
					A	B	C	D	E min.	F	N min.		
HM07-LC	M33 x 3,5	HM07BPM-NRS03335	7.72	83.9	5.7	5.0	1.1	5.0	9.7	1.5	3.4	11.5	7.5
	M36 x 4	HM07BPM-NRS03640	7.72	83.9	5.8	5.2	1.3	5.0	9.8	1.6	3.4	11.5	7.7
	M39 x 4	HM07BPM-NRS03940	7.72	83.9	5.9	5.3	1.3	5.0	9.9	1.8	3.5	11.5	7.9
	M42 x 4,5	HM07BPM-NRS04245	7.72	83.9	6.1	5.4	1.3	5.0	10.0	1.9	3.6	11.5	8.2
	1 1/4" - 8UN	HM07BP-NRS1250U08	7.72	83.9	5.7	5.0	1.1	5.0	9.7	1.5	3.4	11.5	7.5
	1 3/8" - 8UN	HM07BP-NRS1375U08	7.72	83.9	5.8	5.2	1.3	5.0	9.8	1.6	3.4	11.5	7.7
	1 1/2" - 8UN	HM07BP-NRS1500U08	7.72	83.9	5.9	5.3	1.3	5.0	9.9	1.8	3.5	11.5	7.9
1 5/8" - 8UN	HM07BP-NRS1625U08	7.72	83.9	6.1	5.4	1.3	5.0	10.0	1.9	3.5	11.5	8.2	
HM08-LC	M36 x 4	HM08BPM-NRS03640	9.10	98.9	5.9	5.2	1.3	5.4	9.9	1.6	3.6	13.9	8.6
	M39 x 4	HM08BPM-NRS03940	9.10	98.9	6.0	5.3	1.3	5.4	10.0	1.8	3.7	13.9	8.8
	M42 x 4,5	HM08BPM-NRS04245	9.10	98.9	6.1	5.5	1.3	5.4	10.1	1.9	3.8	13.9	9.0
	M45 x 4,5	HM08BPM-NRS04545	9.10	98.9	6.2	5.6	1.5	5.4	10.3	2.0	3.8	13.9	9.7
	1 3/8" - 8UN	HM08BP-NRS1375U08	9.10	98.9	5.9	5.2	1.3	5.4	9.9	1.6	3.6	13.9	8.6
	1 1/2" - 8UN	HM08BP-NRS1500U08	9.10	98.9	6.0	5.3	1.3	5.4	10.0	1.8	3.7	13.9	8.8
	1 5/8" - 8UN	HM08BP-NRS1625U08	9.10	98.9	6.1	5.5	1.3	5.4	10.1	1.9	3.7	13.9	9.0
1 3/4" - 8UN	HM08BP-NRS1750U08	9.10	98.9	6.2	5.6	1.5	5.4	10.3	2.0	3.8	13.9	9.7	
HM09-LC	M39 x 4	HM09BPM-NRS03940	10.59	115.2	6.0	5.4	1.3	5.7	10.0	1.8	3.9	14.3	11.0
	M42 x 4,5	HM09BPM-NRS04245	10.59	115.2	6.1	5.5	1.3	5.7	10.1	1.9	3.9	14.3	13.4
	M45 x 4,5	HM09BPM-NRS04545	10.59	115.2	6.2	5.6	1.5	5.7	10.3	2.0	4.0	14.3	11.2
	M48 x 5	HM09BPM-NRS04850	10.59	115.2	6.4	5.7	1.6	5.7	10.4	2.1	4.0	14.3	12.1
	1 1/2" - 8UN	HM09BP-NRS1500U08	10.59	115.2	6.0	5.4	1.3	5.7	10.0	1.8	3.8	14.3	11.2
	1 3/8" - 8UN	HM09BP-NRS1625U08	10.59	115.2	6.1	5.5	1.3	5.7	10.2	1.9	3.9	14.3	11.2
	1 1/4" - 8UN	HM09BP-NRS1750U08	10.59	115.2	6.2	5.5	1.5	5.7	10.1	2.0	4.0	14.3	13.2
1 7/8" - 8UN	HM09BP-NRS1875U08	10.59	115.2	6.4	5.7	1.6	5.7	10.4	2.1	4.0	14.3	11.9	
HM10-LC	M42 x 4,5	HM10BPM-NRS04245	12.20	132.6	6.3	5.6	1.3	6.1	10.5	1.9	4.1	18.3	12.6
	M45 x 4,5	HM10BPM-NRS04545	12.20	131.9	6.4	5.7	1.5	6.1	10.6	2.0	4.2	18.3	12.6
	M48 x 5	HM10BPM-NRS04850	12.20	131.9	6.5	5.8	1.6	6.1	10.7	2.1	4.3	18.3	13.4
	M52 x 5	HM10BPM-NRS05250	12.20	131.9	6.7	6.0	1.7	6.1	10.8	2.3	4.3	18.3	13.9
	1 3/8" - 8UN	HM10BP-NRS1625U08	12.20	131.9	6.3	5.6	1.3	6.1	10.5	1.9	4.1	18.3	12.6
	1 1/4" - 8UN	HM10BP-NRS1750U08	12.20	131.9	6.4	5.7	1.5	6.1	10.6	2.0	4.2	18.3	12.3
	1 7/8" - 8UN	HM10BP-NRS1875U08	12.20	131.9	6.5	5.9	1.6	6.1	10.7	2.1	4.2	18.3	13.2
2" - 8UN	HM10BP-NRS2000U08	12.20	131.9	6.7	6.0	1.7	6.1	10.8	2.3	4.3	18.3	13.9	

\* Tommy bar is included with Load Cell

# HM-Series, HydraMax® Torsioners



## HM Series



Bolt Range:

**1 3/4 - 4" | M45 - M100**

Maximum Load Capacity:

**171 - 522 tons**

Stroke:

**.59 inch**

Load Cell Model Number*	Thread Size **	Adaptor and Bridge Kit Model Number	Cylinder Effective Area (in <sup>2</sup> )	Maximum Load Capacity (tons)	Dimensions (in)							Load Cell Weight (lbs)	Adaptor and Bridge Kit Weight (lbs)
					A	B	C	D	E min.	F	N min.		
HM11-LC	M45 x 4,5	HM11BPM-NRS04545	15.74	171.1	6.6	5.7	1.5	6.9	10.8	2.0	4.6	23.1	16.3
	M48 x 5	HM11BPM-NRS04850	15.74	171.1	6.7	5.8	1.6	6.9	10.9	2.1	4.6	23.1	17.4
	M52 x 5	HM11BPM-NRS05250	15.74	171.1	6.8	6.0	1.7	6.9	11.0	2.3	4.7	23.1	17.9
	M56 x 5,5	HM11BPM-NRS05655	15.74	171.1	7.2	6.3	2.0	6.9	11.4	2.6	4.8	23.1	20.1
	M60 x 5,5	HM11BPM-NRS06055	15.74	171.1	7.2	6.3	2.0	6.9	11.4	2.6	4.9	23.1	19.2
	1 3/4" - 8UN	HM11BP-NRS1750U08	15.74	171.1	6.6	5.7	1.5	6.9	10.8	2.0	4.6	23.1	16.5
	1 7/8" - 8UN	HM11BP-NRS1875U08	15.74	171.1	6.7	5.8	1.6	6.9	10.9	2.1	4.6	23.1	17.4
	2" - 8UN	HM11BP-NRS2000U08	15.74	171.1	6.8	6.0	1.7	6.9	11.0	2.3	4.7	23.1	17.9
2 1/4" - 8UN	HM11BP-NRS2250U08	15.74	171.1	7.2	6.3	2.0	6.9	11.4	2.6	4.8	23.1	19.4	
HM12-LC	M48 x 5	HM12BPM-NRS04850	19.72	214.4	6.7	5.8	1.6	7.6	11.0	2.1	5.0	29.3	21.4
	M52 x 5	HM12BPM-NRS05250	19.72	214.4	6.8	6.0	1.7	7.6	11.2	2.3	5.1	29.3	21.6
	M56 x 5,5	HM12BPM-NRS05655	19.72	214.4	7.2	6.3	2.0	7.6	11.5	2.6	5.2	29.3	23.6
	M60 x 5,5	HM12BPM-NRS06055	19.72	214.4	7.2	6.3	2.0	7.6	11.5	2.7	5.2	29.3	22.9
	M64 x 6	HM12BPM-NRS06460	19.72	214.4	7.3	6.5	2.2	7.6	11.7	2.7	5.3	29.3	24.5
	1 7/8" - 8UN	HM12BP-NRS1875U08	19.72	214.4	6.7	5.8	1.6	7.6	11.0	2.1	5.0	29.3	21.2
	2" - 8UN	HM12BP-NRS2000U08	19.72	214.4	6.8	6.0	1.7	7.6	11.2	2.3	5.1	29.3	21.6
	2 1/4" - 8UN	HM12BP-NRS2250U08	19.72	214.4	7.2	6.3	2.0	7.6	11.5	2.6	5.2	29.3	22.9
2 1/2" - 8UN	HM12BP-NRS2500U08	19.72	214.4	7.3	6.5	2.2	7.6	11.7	2.7	5.3	29.3	23.8	
HM13-LC	M64 x 6	HM13BPM-NRS06460	26.29	285.9	7.7	6.8	2.2	8.6	12.2	2.7	5.8	38.8	32.0
	M68 x 6	HM13BPM-NRS06860	26.29	285.9	7.7	6.8	2.2	8.6	12.2	2.7	5.9	38.8	36.4
	M72 x 6	HM13BPM-NRS07260	26.29	285.9	8.0	7.1	2.5	8.6	12.5	3.1	6.0	38.8	35.3
	M76 x 6	HM13BPM-NRS07660	26.29	285.9	8.1	7.3	2.7	8.6	12.7	3.2	6.0	38.8	35.9
	2 1/2" - 8UN	HM13BP-NRS2500U08	26.29	285.9	7.7	6.8	2.2	8.6	12.2	2.7	5.8	38.8	31.3
	2 3/4" - 8UN	HM13BP-NRS2750U08	26.29	285.9	8.0	7.1	2.5	8.6	12.5	3.1	5.9	38.8	34.8
3" - 8UN	HM13BP-NRS3000U08	26.29	285.9	8.1	7.3	2.7	8.6	12.7	3.2	6.3	38.8	34.8	
HM14-LC	M72 x 6	HM14BPM-NRS07260	36.35	395.3	8.0	7.1	2.5	10.2	12.6	3.1	6.8	56.9	45.9
	M76 x 6	HM14BPM-NRS07660	36.35	395.3	8.1	7.3	2.7	10.2	12.7	3.2	6.8	56.9	47.0
	M80 x 6	HM14BPM-NRS08060	36.35	395.3	8.1	7.3	2.7	10.2	12.7	3.2	6.9	56.9	46.7
	M85 x 6	HM14BPM-NRS08560	36.35	395.3	8.5	6.5	2.7	10.2	11.9	3.6	7.0	56.9	50.5
	M90 x 6	HM14BPM-NRS09060	36.35	395.3	8.7	7.8	3.1	10.2	13.3	3.8	7.1	56.9	51.4
	3" - 8UN	HM14BP-NRS3000U08	36.35	395.3	8.1	7.3	2.7	10.2	12.7	3.2	6.8	56.9	45.0
	3 1/4" - 8UN	HM14BP-NRS3250U08	36.35	395.3	8.5	6.5	2.7	10.2	11.9	3.6	7.0	56.9	50.0
3 1/2" - 8UN	HM14BP-NRS3500U08	36.35	395.3	8.7	7.8	3.1	10.2	13.3	3.8	7.2	56.9	52.7	
HM15-LC	M90 x 6	HM15BPM-NRS09060	48.06	522.7	8.7	7.8	3.1	11.7	13.3	3.8	7.8	71.6	66.1
	M95 x 6	HM15BPM-NRS09560	48.06	522.7	8.9	8.1	3.2	11.7	13.5	4.0	7.9	71.6	74.3
	M100 x 6	HM15BPM-NRS10060	48.06	522.7	9.1	8.3	3.5	11.7	13.7	4.2	8.0	71.6	77.4
	3 1/2" - 8UN	HM15BP-NRS3500U08	48.06	522.7	8.7	7.8	3.1	11.7	13.3	3.8	7.8	71.6	65.0
	3 3/4" - 8UN	HM15BP-NRS3750U08	48.06	522.7	8.9	8.1	3.2	11.7	13.5	4.0	7.9	71.6	72.3
4" - 8UN	HM15BP-NRS4000U08	48.06	522.7	9.1	8.3	3.5	11.7	13.7	4.2	8.3	71.6	75.0	

\* Tommy bar is included with Load Cell

\*\*Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.

▼ GT-Series Topside Bolt Tensioners



## Accurate & Reliable Extreme Performance Bolt Tensioner



### Tensioning Pumps, Hoses and Couplers

High-pressure pumps, hoses and fittings matched for use with the Enerpac Bolt Tensioners.

See [enerpac.com](http://enerpac.com)

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- Seven load cells from 5/8" to 4" or from M16 to M105
- Twin ports for quick connection of multiple tools
- Only one size of bridge per size of load cell
- Detachable and rotational bridge simplifies tool positioning
- Full bridge window – increased access to socket
- Captive socket – eliminates falling object risk
- Piston stroke indicator
- Black surface treatment protects against corrosion
- Anti-slip grip for more secure handling
- Universal and multi-use tool



### How to Order

To provide maximum flexibility Load Cell and Bridges are ordered separately from Adaptor Kits.

Example, to order a complete tensioner for a M36 x 4 threaded bolt order:  
1 x Load Cell and Bridge: **GT2-LCB**  
1 x Adaptor Kit: **GT2PM-NRS03640**

Load Cell and Bridge Model Number*	Thread Size	Adaptor Kit Model Number	Cylinder Effective Area (in <sup>2</sup> )	Maximum Load Capacity (ton)	Dimensions (in)							Load Cell and Bridge Weight (lbs)	Adaptor Kit Weight (lbs)
					A	B	C	D	E min.	F	N min.		
GT1-LCB	M16 x 2	GT1PM-NRS01620	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.2	6.6	3.5
	M18 x 2,5	GT1PM-NRS01825	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.3	6.6	3.3
	M20 x 2,5	GT1PM-NRS02025	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.3	6.6	3.1
	M24 x 3	GT1PM-NRS02430	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.4	6.6	2.9
	M27 x 3	GT1PM-NRS02730	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.5	6.6	2.6
	M30 x 3,5	GT1PM-NRS03035	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.6	6.6	2.2
	5/8" - 11UN	GT1P-NRS0625U11	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.2	6.6	3.5
	3/4" - 10UN	GT1P-NRS0750U10	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.3	6.6	3.1
	7/8" - 9UN	GT1P-NRS0875U09	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.4	6.6	2.9
	1" - 8UN	GT1P-NRS1000U08	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.5	6.6	2.6
1 1/8" - 8UN	GT1P-NRS1125U08	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.6	6.6	2.2	
GT2-LCB	M30 x 3,5	GT2PM-NRS03035	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	2.9	9.0	5.7
	M33 x 3,5	GT2PM-NRS03335	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.0	9.0	5.3
	M36 x 4	GT2PM-NRS03640	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.1	9.0	4.9
	M39 x 4	GT2PM-NRS03940	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.2	9.0	4.2
	1 1/8" - 8UN	GT2P-NRS1125U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	2.9	9.0	5.7
	1 1/4" - 8UN	GT2P-NRS1250U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.0	9.0	5.3
	1 3/8" - 8UN	GT2P-NRS1375U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.1	9.0	4.9
	1 1/2" - 8UN	GT2P-NRS1500U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.2	9.0	4.4

\* Tommy bar is included with Load Cell

# Topside Bolt Tensioners



## Thread and Pitch Sizes

Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.

## GT Series



Bolt Range:

**5/8" - 4" | M16 - M105**

Maximum Load Capacity at 1500 bar:

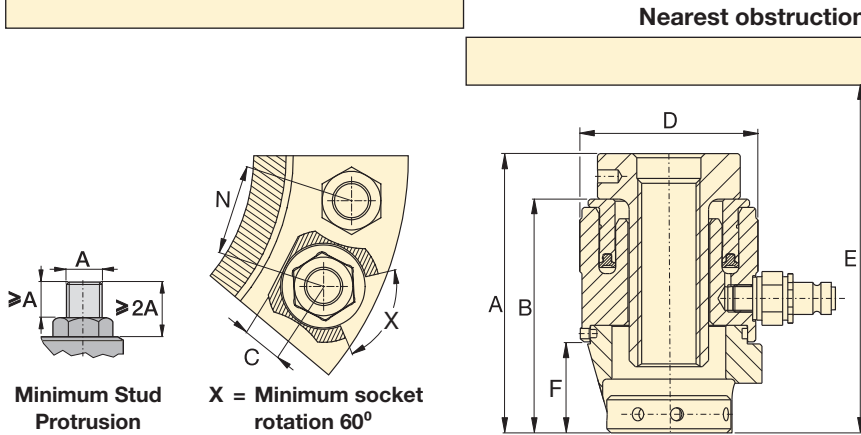
**86.4 - 444.9 tons**

Stroke:

**.39 inch**

Maximum Operating Pressure:

**21,750 psi**



Load Cell and Bridge Model Number*	Thread Size	Adaptor Kit Model Number	Cylinder Effective Area (in <sup>2</sup> )	Maximum Load Capacity (ton)	Dimensions (in)							Load Cell and Bridge Weight (lbs)	Adaptor Kit Weight (lbs)
					A	B	C	D	E min.	F	N min.		
GT3-LCB	M39 x 4	GT3PM-NRS03940	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.8	7,0	12.6
	M42 x 4,5	GT3PM-NRS04245	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.9	7,0	11.9
	M45 x 4,5	GT3PM-NRS04545	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.0	7,0	11.0
	M48 x 5	GT3PM-NRS04850	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.1	7,0	10.4
	M52 x 5	GT3PM-NRS05250	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.2	7,0	9.3
	1½" - 8UN	GT3P-NRS1500U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.7	7,0	12.6
	1⅝" - 8UN	GT3P-NRS1625U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.9	7,0	11.7
	1¾" - 8UN	GT3P-NRS1750U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.0	7,0	11.0
	1⅞" - 8UN	GT3P-NRS1875U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.1	7,0	10.1
2" - 8UN	GT3P-NRS2000U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.2	7,0	9.3	
GT4-LCB	M52 x 5	GT4PM-NRS05250	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	4.8	12,2	23.6
	M56 x 5,5	GT4PM-NRS05655	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	4.9	12,2	22.3
	M60 x 5,5	GT4PM-NRS06055	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.0	12,2	20.7
	M64 x 6	GT4PM-NRS06460	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.1	12,2	19.4
	M68 x 6	GT4PM-NRS06860	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.2	12,2	17.9
	2" - 8UN	GT4P-NRS2000U08	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	4.7	12,2	23.6
	2¼" - 8UN	GT4P-NRS2250U08	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.0	12,2	21.4
2½" - 8UN	GT4P-NRS2500U08	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.2	12,2	18.7	
GT5-LCB	M68 x 6	GT5PM-NRS06860	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	5.8	18,7	38.1
	M72 x 6	GT5PM-NRS07260	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	5.9	18,7	36.2
	M76 x 6	GT5PM-NRS07660	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.0	18,7	34.2
	M80 x 6	GT5PM-NRS08060	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.1	18,7	32.2
	2½" - 8UN	GT5P-NRS2500U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	5.8	18,7	39.2
	2¾" - 8UN	GT5P-NRS2750U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.0	18,7	35.9
	3" - 8UN	GT5P-NRS3000U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.2	18,7	32.6
3¼" - 8UN	GT5P-NRS3250U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.3	18,7	28.9	
GT6-LCB	M80 x 6	GT6PM-NRS08060	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.6	27,8	49.2
	M85 x 6	GT6PM-NRS08560	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.7	27,8	46.3
	M90 x 6	GT6PM-NRS09060	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.9	27,8	42.8
	M95 x 6	GT6PM-NRS09560	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	7.0	27,8	39.7
	3¼" - 8UN	GT6P-NRS3250U08	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.8	27,8	45.6
	3½" - 8UN	GT6P-NRS3500U08	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	7.1	27,8	41.4
	3¾" - 8UN	GT6P-NRS3750U08	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	7.4	27,8	37.0
GT7-LCB	M100 x 6	GT7PM-MNRS10060	40.90	444.9	9.6	7.2	3.5	10.9	13.1	4.3	7.7	38,2	62.8
	M105 x 6	GT7PM-MNRS10560	40.90	444.9	9.6	7.2	3.5	10.9	13.1	4.3	7.8	38,2	60.2
	4" - 8UN	GT7P-NRS4000U08	40.90	444.9	9.6	7.2	3.5	10.9	13.1	4.3	8.0	38,2	60.2

\* Tommy bar is included with Load Cell

▼ Aquajack® Tensioner EAJ2LC with Quick Fastening Nut



- Compact design
- Long piston stroke
- Misalignment compensation
- Quick, simple hose connection
- Visible piston stroke indication
- ‘No spill’ overstroke elimination
- Quick fastening or solid reaction nut

▼ *Guaranteed to save time and increase efficiency, Aquajack® tensioners improve diver safety, productivity and reduce diver fatigue.*



## The Most Cost-Effective Solution to Subsea Bolt or Stud Tightening



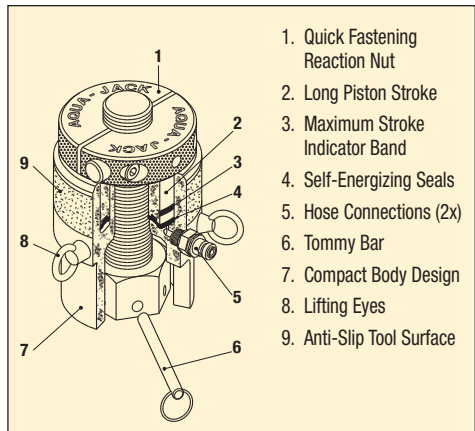
### Quick Fastening Nut Design

Easily positioned in poor visibility conditions, Aquajack® subsea tensioners feature a compact design and long piston stroke. The unique Split Nut® design of these tools allows rapid application to long bolts and damaged threads, and rapid tool removal.



### No Oil Spillage or Over-Stroking

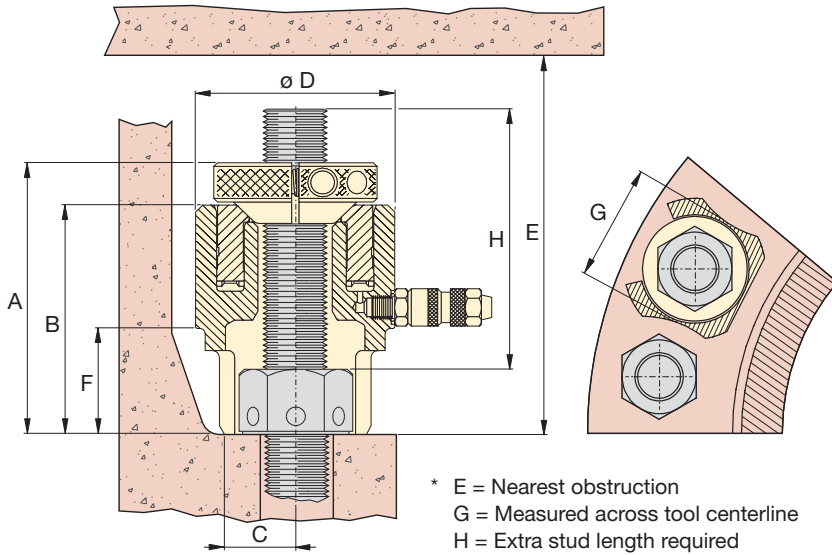
Innovative tool design ensures maximum tool strokes can be used without over stroking the piston or oil spillage. Guaranteed to save time and increase efficiency, Aquajack® subsea tensioners improve diver safety, productivity and reduce diver fatigue.



### Hose Reel and Stand

Stainless steel stand with 21,750 psi hoses from 98 ft. up to 885 ft. lengths. All hose reels are built up with multiple 98 ft. length hoses.

# Aquajack® Subsea Tensioners



## EAJ Series



Bolt Range:

**3/4" - 3 1/2" | M20 - M90**

Maximum Load Capacity:

**17.0- 260 US ton**

Maximum Operating Pressure:

**21,750 psi**

Load Cell Model Number *	Thread Size	Quick Fastening Nut Model Number	Cylinder Effective Area (in <sup>2</sup> )	Maximum Load Capacity (ton)	Stroke (in)	Dimensions (in)								Tool Wt. (lbs)
						A	B	C	D	E*	F	G*	H*	
EAJ1LC	3/4" - 10 UN	EAJ1QFN0750U10	1.56	17.0	0.79	4.49	3.58	0.75	2.60	8.54	1.38	2.09	3.78	3.31
	7/8" - 9 UN	EAJ1QFN0875U09												
	M20 x 2,5	EAJ1QFNM02025												
	M22 x 2,5	EAJ1QFNM02225												
EAJ2LC	1" - 8 UN	EAJ2QFN1000U08	2.57	28.0	1.18	5.79	4.72	0.98	3.23	11.38	1.97	2.44	4.92	6.61
	M24 x 2,5	EAJ2QFNM02425												
	M27 x 3,0	EAJ2QFNM02730												
	1 1/8" - 8 UN	EAJ2QFN1125U08												
EAJ3LC	M30 x 3,5	EAJ2QFNM03035	3.91	42.6	1.18	6.20	5.16	1.10	3.86	12.09	2.28	3.07	5.12	9.92
	1 1/4" 8 UN	EAJ3QFN1250U08												
	M33 x 3,5	EAJ3QFNM03335												
	1 3/8" - 8 UN	EAJ3QFN1375U08												
EAJ4LC	M36 x 3,5	EAJ3QFNM03635	5.71	62.2	1.18	6.73	5.35	1.30	4.49	12.56	2.48	3.58	5.31	13.23
	1 1/2" - 8 UN	EAJ4QFN1500U08												
	M39 x 4,0	EAJ4QFNM03040												
	1 5/8" - 8 UN	EAJ4QFN1625U08												
EAJ5LC	M42 x 4,5	EAJ4QFNM04245	9.16	99.6	1.18	7.24	5.75	1.57	7.60	13.46	2.76	4.49	5.51	19.84
	1 3/4" - 8 UN	EAJ5QFN1750U08												
	M45 x 4,5	EAJ5QFNM04545												
	1 7/8" - 8 UN	EAJ5QFN1875U08												
	M48 x 5,0	EAJ5QFNM04850												
EAJ6LC	2" - 8 UN	EAJ5QFN2000U08	12.88	140.2	1.18	7.91	6.34	1.93	6.46	14.45	3.23	5.43	5.91	28.66
	M52 x 5,0	EAJ5QFNM05250												
	M56 x 5,5	EAJ6QFNM05655												
	2 1/4" - 8 UN	EAJ6QFN2250U08												
	M60 x 5,5	EAJ6QFNM06055												
EAJ7LC	2 1/2" - 8 UN	EAJ6QFN2500U08	19.17	208.6	1.18	9.06	7.01	2.95	7.56	15.75	3.74	6.06	6.50	41.89
	M64 x 6,0	EAJ6QFNM06460												
	M68 x 6,0	EAJ7QFNM06860												
	2 3/4" - 8 UN	EAJ7QFN2750U08												
EAJ8LC	M72 x 6,0	EAJ7QFNM07260	23.98	260.9	1.18	9.72	7.60	2.68	8.39	16.22	4.29	7.17	6.50	54.01
	M76 x 6,0	EAJ7QFNM07660												
	3" - 8 UN	EAJ7QFN3000U08												
	M80 x 6,0	EAJ8QFNM08060												
	3 1/4" - 8 UN	EAJ8QFN3250U08												
M85 x 6,0	EAJ8QFNM08560													
	3 1/2" - 8 UN	EAJ8QFN3500U08												
	M90 x 6,0	EAJ8QFNM09060												

\* Tommy Bar is included with Load Cell.

▼ PGT-Series Single-Stage and Double-Deck Tensioners



## High Precision, Low Maintenance



### Tensioner Pumps

Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



### Hoses and Fittings

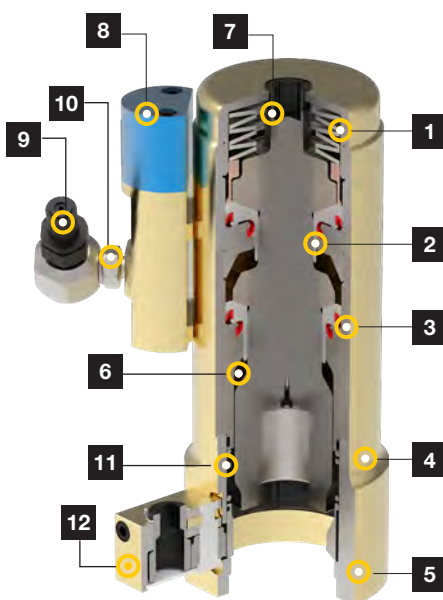
High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

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- PGT-Series Bolt Tensioners are designed for critical fastening applications in wind, steam and gas turbines
- A broad range of single stage and double deck tensioners provide high performance in tight spaces associated with Power Generation applications
- PGT-Series Bolt Tensioners are loaded with performance enhancing features such as Auto-Retract Pistons, Cycle Counters and a premium coating to offer the ultimate in efficiency, durability and ease of use

Description	PGTS Single Stage	PGTD Double Deck
Auto-Retract Piston	✓	✓
Zinc Coating	✓	✓
Geared Nut-Rundown	✓	✓
Over-stroke Indicator	✓	✓
Over-stroke Preventer	✓	✓
Single Male Fitting	✓	✓
Swivel Manifold	+	+
Cycle Counter	-	+

- ✓ = Standard on tensioner
- ⊕ = Possible option
- = Option not available



- 1. Auto-retract piston:** Simplifies use and improves speed of operation.
- 2. Long-life puller:** For maximum durability.
- 3. Long-life seals:** For maximum durability and extended service life intervals.
- 4. Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
- 5. Interchangeable bridge:** For optimal application fit.
- 6. Over-stroke Preventer:** Mechanically prevents over-stroke, extending cylinder life.
- 7. Over-stroke Indicator:** Extends cylinder life by helping to prevent over-stroking of cylinder.
- 8. Optional counter:** Helps indicate when maintenance is due to maximize uptime.
- 9. Quick-disconnect coupler:** For safe, simple hydraulic connection.
- 10. Optional 360° swivel:** available for additional hose positioning flexibility.
- 11. Spring-loaded nut engagement:** Keeps socket positioned on nut for faster and easier seating process.
- 12. Auto-engage nut rundown:** For rapid and accurate seating of nuts.

▲ The model above illustrates a typical tool configuration. Actual model configurations vary.



# PGT-Series, Power Generation Bolt Tensioners



## Options

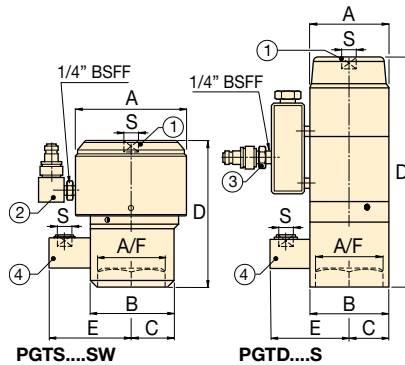
### Fitting Type

**SW** = Swivel manifold with single male fitting  
Example: **PGTS2436SW**

### Cycle-Counter

**C** = Cycle Counter (not available on PGTS-models)  
Example: **PGTD3655SWC**

- ① Puller bar square drive
- ② Swivel manifold with single male fitting
- ③ Single male fitting
- ④ Nut run down gear box



## PGT Series



Bolt Range:

**M20 - M72**

Load Range:

**23 - 334 Tons**

Maximum Operating Pressure <sup>1)</sup>:

**19,575 - 21,750 psi**

<sup>1)</sup> Max. Pressure varies, see specification table for details.

## ▼ SPECIFICATION TABLE

Tensioner Type	Thread Diameter (mm)	Model Number (with single male fitting)	Nut Size A/F (mm)	Max. Pressure (psi)	Hyd. Pres. Area (in <sup>2</sup> )	Max. Load Cap. (tons)	Stroke (in)	Dimensions (in)					Wt. (lbs)	Bolt Protrusion (in)		
								A	B	C	D	E		S* (in)	min.	max.
Single Stage	M20 x 2.5	PGTS2030S	30	21,750	2.10	22.9	0.28	2.52	2.52	1.26	3.19	3.07	3/8	4.41	1.73	2.17
	M24 x 3.0	PGTS2436S	36	21,750	3.02	32.8	0.28	3.03	3.03	1.22	3.86	3.20	3/8	6.39	1.93	2.44
	M27 x 3.0	PGTS2742S	42	21,750	4.10	44.6	0.31	3.62	2.95	1.34	5.08	3.27	3/8	10.58	2.36	2.76
	M30 x 3.5	PGTS3046S	46	21,750	4.97	54.0	0.31	3.90	3.35	1.50	5.28	3.46	3/8	12.79	2.68	2.87
	M33 x 3.5	PGTS3350S	50	21,750	6.14	66.8	0.31	4.17	3.54	1.57	5.59	3.54	3/8	14.88	2.95	3.94
	M36 x 4.0	PGTS3655S	55	21,750	6.92	75.3	0.35	4.37	3.54	2.19	5.04	3.75	1/2	14.11	2.90	3.74
	M39 x 4.0	PGTS3960S	60	21,750	8.62	93.8	0.39	4.86	4.09	1.81	6.30	3.78	3/8	21.54	3.50	4.53
	M42 x 4.5	PGTS4265S	65	21,750	9.70	105.6	0.39	5.28	4.53	2.65	6.97	3.90	1/2	20.94	3.11	4.53
	M45 x 4.5	PGTS4570S	70	21,750	11.63	126.6	0.39	5.63	4.69	2.07	6.61	4.02	3/8	29.10	3.86	4.57
	M48 x 5.0	PGTS4875S	75	21,750	13.00	141.5	0.39	5.98	4.92	2.20	6.22	4.17	3/8	29.32	4.06	4.69
	M52 x 5.0	PGTS5280S	80	21,750	15.65	170.2	0.39	6.50	5.28	2.30	6.73	4.25	3/8	39.46	4.17	4.65
	M56 x 5.5	PGTS5685S	85	21,750	18.08	196.7	0.39	6.97	5.59	2.44	6.69	4.41	3/8	44.97	4.57	5.04
	M60 x 5.5	PGTS6090S	90	21,750	20.89	227.3	0.39	7.48	5.98	2.60	7.32	4.53	3/8	54.59	4.86	5.39
	M64 x 6.0	PGTS6495S	95	21,750	23.74	258.3	0.39	7.87	6.26	2.70	8.15	4.65	1/2	67.68	5.39	5.91
	M68 x 6.0	PGTS68100S	100	21,750	27.11	295.0	0.39	8.41	6.65	2.85	8.11	4.84	1/2	75.62	5.35	5.83
M72 x 6.0	PGTS72105S	105	21,750	30.69	333.9	0.39	8.86	7.01	2.99	8.78	4.96	1/2	88.85	5.94	6.57	
Double Deck	M24 x 3.0	PGTD2436S	36	19,575	3.55	34.8	0.24	4.69	3.03	1.22	7.28	3.19	3/8	10.14	2.09	2.34
	M27 x 3.0	PGTD2742S	42	19,575	4.56	44.6	0.24	4.92	2.95	1.34	7.72	3.28	3/8	11.57	2.36	2.68
	M30 x 3.5	PGTD3046S	46	19,575	5.31	52.0	0.28	5.28	3.35	1.46	7.68	3.46	3/8	12.70	2.36	2.76
	M33 x 3.5	PGTD3350S	50	19,575	6.62	64.8	0.28	5.59	3.03	1.52	8.19	3.54	3/8	14.70	2.56	3.03
	M36 x 4.0	PGTD3655S	55	19,575	7.74	75.8	0.31	5.98	3.27	1.61	8.58	3.66	1/2	17.06	2.76	3.43
	M39 x 4.0	PGTD3960S	60	19,575	9.70	95.0	0.39	6.26	4.09	1.89	10.47	3.78	3/8	27.56	3.31	3.66
	M42 x 4.5	PGTD4265S	65	19,575	10.64	104.2	0.39	6.69	4.09	2.05	9.78	3.90	1/2	25.02	3.23	3.58
	M45 x 4.5	PGTD4570S	70	19,575	12.93	126.6	0.39	6.97	4.69	2.09	11.57	4.09	3/8	38.91	3.82	4.21
	M48 x 5.0	PGTD4875S	75	19,575	14.62	143.1	0.39	4.53	4.92	2.26	11.97	4.17	3/8	44.31	4.06	4.45
	M52 x 5.0	PGTD5280S	80	19,575	17.50	171.3	0.39	4.88	5.28	2.40	12.91	4.25	3/8	57.54	4.33	4.94
	M56 x 5.5	PGTD5685S	85	19,575	20.06	196.4	0.39	5.20	5.59	2.56	13.62	4.41	3/8	66.14	4.61	5.22
	M60 x 5.5	PGTD6090S	90	19,575	23.30	228.2	0.39	5.55	5.98	2.78	14.65	4.53	3/8	81.90	4.92	5.63
	M64 x 6.0	PGTD6495S	95	19,575	26.54	259.9	0.39	5.94	6.26	2.99	15.20	4.69	1/2	94.80	5.24	6.00
	M68 x 6.0	PGTD68100S	100	19,575	30.25	296.2	0.39	6.30	6.69	3.15	15.67	4.84	1/2	109.13	5.43	6.30
	M72 x 6.0	PGTD72105S	105	19,575	34.06	333.6	0.39	6.73	6.97	3.48	16.89	4.96	1/2	132.50	5.75	6.73

\* Dimension S = Square Drive of Puller Bar and Gear Box.

▼ FTR-Series Foundation Bolt Tensioner



## High Precision, Low Maintenance



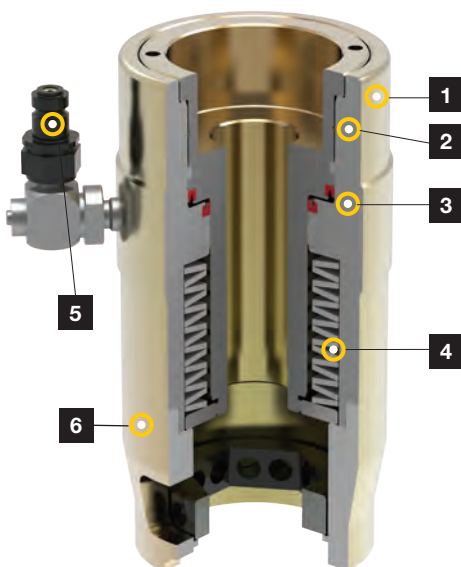
### FTR-Series Foundation Bolt Tensioners

FTR-Series Foundation Bolt Tensioners are designed specifically for tensioning wind tower foundation bolts. These tensioners provide the speed and precision required by this critical application.

Potential thread fit problems are eliminated through the use of existing rebar hex nuts as a reaction point.

The FTR-Series includes long-stroke models, which provide greater speed and ease of use by enabling applications to be completed in a single pull.

- **FTR-Series Foundation Bolt Tensioners provide fast, accurate and easy tightening of external or internal ring wind tower foundations**
- **Standard models are available for 75, 150 ksi and metric style Williams, Dyson and Macalloy® bar types**
- **Long-stroke options accelerate process with single-pull tensioning**



- 1. Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
- 2. Over-stroke indicator:** Extends life by helping to prevent over-stroking of cylinder.
- 3. Long-life seals:** For maximum durability and extended service life intervals
- 4. Auto-retract piston:** Simplifies use and improves speed of operation.
- 5. Quick-disconnect coupler:** For safe, simple hydraulic connection. *OPTIONAL 360° swivel available for additional hose positioning flexibility.*
- 6. Interchangeable bridge:** For optimal application fit.

▼ FTR-Series Foundation Bolt Tensioner Wrench



# Foundation Bolt Tensioners

▼ This is how a FTR-Series Foundation Bolt Tensioner Model Number is Built Up:



1 Product Type      2 Bar Grade      3 Bar Size Designation      4 Stroke      5 Fitting Type      6 Run Down Gear

### 1 Product Type

**FTR** = Foundation Tensioner, Round

### 2 Bar Grade

**75** = 75 ksi  
**150** = 150 ksi  
(or metric designation)

### 3 Bar Size Designation

**Example:** 14 = No. 14 bar

### 4 Maximum Stroke

**Example:** **0.79** = 0.79 in. max. stroke

### 5 Fitting Type

**SW** = Includes swivel manifold with single male fitting

### 6 Run Down Gear

**G** = Includes Run Down Gear (available in select models)

## FTR Series



Load Range:

**0-308 Tons**

Maximum Operating Pressure\*:

**21,750 psi / 1500 bar**

\* Max. Pressure varies, see specification table for details.



### Tensioner Pumps

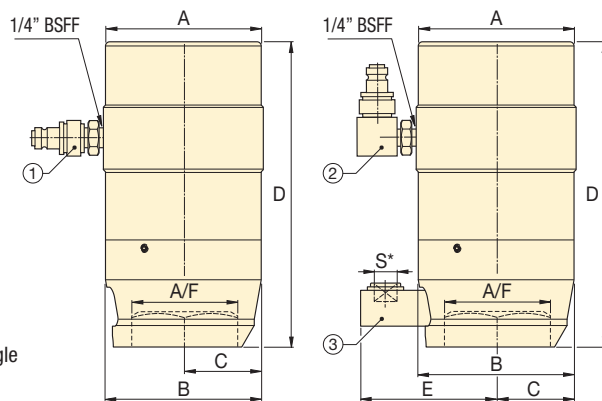
Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



### Hoses and Fittings

High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

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- ① Single male fitting
- ② Swivel manifold with single male fitting
- ③ Nut run down gear box

FTR...S

FTR...SWG

## ▼ SPECIFICATION TABLE

Bar Grade	Bolt Diameter		Bar Size Designation	Model Number	Nut AF (in)	Maximum Pressure (psi)	Hydraulic Pressure Area (in <sup>2</sup> )	Load Capacity (tons)	Stroke (in)	Dimensions (in)					Wt. (lbs)	Min. Bolt Protrusion (in)
	(in)	(mm)								A	B	C	D	E		
75 ksi	1.38	35	#10	FTR751010S	2.00	17,400	4.86	42.3	0.39	3.90	3.48	1.74	6.42	-	12.9	7.87
	1.38	35	#10	FTR751025S	2.00	17,400	4.84	42.1	0.98	4.53	4.02	1.65	8.64	-	24.1	9.84
	1.50	38	#11	FTR751110S	2.25	21,750	4.86	52.8	0.39	3.90	3.86	1.50	7.01	-	12.1	8.66
	1.50	38	#11	FTR751125SG	2.25	21,750	4.84	52.7	0.98	4.53	4.02	2.01	8.92	3.78	25.3	10.24
	1.88	48	#14	FTR751420S	2.75	16,965	9.44	80.1	0.79	5.20	5.20	2.60	10.55	-	40.2	12.40
150 ksi	1.44	37	1.25	FTR15012510S	2.25	16,965	8.34	90.8	0.39	4.37	4.33	1.57	7.01	-	18.2	8.66
	1.56	40	1.375	FTR15013810S	2.50	21,750	8.34	90.8	0.39	4.37	4.33	1.50	7.01	-	17.8	8.86
	2.75	70	2.50	FTR15025025S	4.25	21,750	28.27	307.5	1.00	8.44	8.35	3.39	13.68	-	127.8	17.72
10.9	1.42	36	36	FTR1093610SG	2.36	21,750	5.92	64.4	0.39	4.02	3.90	1.57	6.93	3.74	19.0	7.68

Gear box square drive dimension S = 1/2 inch.

▼ FTE-Series Elliptical Foundation Tensioner



## High Precision, Low Maintenance



### FTE-Series, Foundation Bolt Tensioners

Similar to Standard Foundation Tensioners, Elliptical tensioners were designed specifically for foundation fastening applications on wind towers, and utilize the existing hex nut as a reaction point in order to eliminate thread fit misalignment.

Unlike Standard FTR-Series Tensioners, FTE-Series Tensioners feature an elliptical geometry, which enables fit in narrow access foundation applications, without reducing load capabilities.

Operators may access the nut with a Tommy bar rather than employing the use of an offset rundown gear.

Elliptical tensioners are ideal for close clearance applications, or as a universal tool that will work in nearly any foundation application, whether standard or narrow access.

- **FTE-Series Foundation Bolt Tensioners provide fast and accurate performance in difficult, narrow access foundation tensioning applications**
- **Standard models are available for 75, 150 ksi and metric style Williams, Dyson and Macalloy® bar types**
- **Ideal universal solution that fits both standard and narrow access applications**

- 
- 1. Max. stroke Indicator:** Extends life by helping to prevent over-stroking of cylinder.
  - 2. Long-life seals:** For maximum durability and extended service life intervals.
  - 3. Auto-retract piston:** Simplifies use and improves speed of operation.
  - 4. Elliptical form:** Provides access to close clearance applications.
  - 5. Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
  - 6. Quick-disconnect coupler (not shown):** For safe, simple hydraulic connection. *OPTIONAL 360° swivel available for additional hose positioning flexibility.*

▼ FTE-Series, Foundation Bolt Tensioner, designed to fit both standard and narrow access foundation applications.



# FTE-Series, Foundation Bolt Tensioners (Elliptical)

▼ This is how an FTE-Series Foundation Bolt Tensioner Model Number is Built Up:



## 1 Product Type

**FTE** = Foundation Tensioner, Elliptical

## 2 Bar Grade

**75** = 75 ksi  
**150** = 150 ksi  
(or metric designation)

## 3 Bar Size Designation

**Example:** 10 = No. 10 bar

## 4 Fitting Type

**S** = Includes single male fitting  
**SW** = Includes swivel manifold with single male fitting

## FTE Series



Load Range:

**0-86 Tons**

Maximum Operating Pressure\*:

**21,750 psi / 1500 bar**

\* Maximum pressure varies, see specification table for details.



## Tensioner Pumps

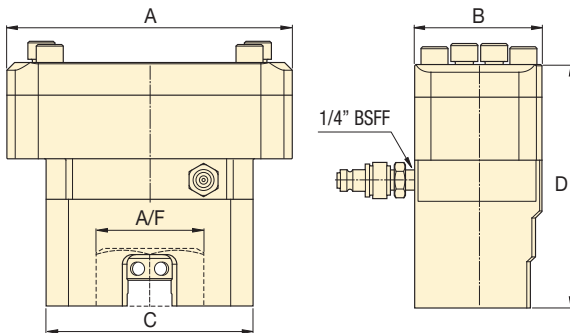
Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



## Hoses and Fittings

High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

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## ▼ SPECIFICATION TABLE

Bar Grade	Bolt Diameter		Bar Size Designation	Model Number	Nut AF	Maximum Pressure	Hydraulic Pressure Area	Load Capacity	Stroke	Dimensions (in)				Wt. (lbs)	Min. Bolt Protrusion (in)
	(in)	(mm)								A	B	C	D		
75 ksi	1.38	35	#10	<b>FTE7510S</b>	2.00	17,400	4.82	41.9	0.39	6.69	3.23	5.59	5.81	18.19	7.87
	1.50	38	#11	<b>FTE7511S</b>	2.25	21,750	4.82	52.4	0.39	6.69	3.23	5.59	5.81	18.19	8.66
150 ksi	1.44	37	1.25	<b>FTE150125S</b>	2.25	17,400	7.86	68.4	0.39	8.74	3.90	6.34	8.01	41.67	9.45
	1.56	40	1.375	<b>FTE150138S</b>	2.50	21,750	7.86	85.6	0.39	8.74	3.90	6.34	8.01	40.81	9.06
8.8	1.42	36	36	<b>FTE8836S</b>	2.36	21,750	4.82	52.4	0.39	5.59	3.23	5.59	5.81	21.32	7.09

## Tensioning Every Single Stud in a Joint Simultaneously



▲ *Multi Stud Tensioning Set-Up.*

### MULTI STUD TENSIONERS

Enerpac Multi Stud Tensioning (MST) systems are capable of tensioning every single stud in a joint simultaneously. By applying a predictable and accurate pre-load to all studs, problems associated with conventional bolt tightening techniques are avoided. Typical Enerpac Multi Stud Tensioning applications include:

#### Manway, Hand Hole & Inspection Covers

MST systems are the fastest and most accurate means of loosening and tightening studs on Primary and Secondary Manway Covers, Hand-Hole and Inspection Ports in nuclear facilities. Using special ram areas and strong lightweight materials, the MST's reduce bolting time by as much as 75%.

#### Coolant Pump

A custom slimline tensioning system for a Nuclear Reactor Coolant Pump, using six equally spaced tensioners and tightening studs in four passes, has reduced bolting times by 25% and significantly increased tensioning accuracy.

#### Wind Turbine Blade Assembly

Using an Enerpac MST has allowed wind turbine blade assembly times to be reduced by approx. 65% while bolt load accuracy and consistency have improved, resulting in better joint life and reduced maintenance requirements. The MST, comprising four tool segments, is capable of simultaneously tensioning up to 88 bolts connecting a 125 ft long blade to a bearing slew ring.

## MST - Multi-Stud Tensioners

This tool can be custom designed, and built, for virtually any nuclear facility. We specialize in addressing difficult projects that demand accurate loads within tight space envelopes, while also seeking ease of operation and performance.

- Designed in segments enabling the operator to easily and quickly connect each segment to the joint and link together to provide simultaneous loading.
- Very accurate and fast closure system for large tensioning applications on pumps, valves, and steam generators, for example.
- For ease of handling on-site, Enerpac MST systems can be supplied with an integral lifting frame and trolley.



▲ *Multi-Stud Tensioner.*



▲ *Multi-Stud Tensioning application.*

## A Simple and Effective Method of Tensioning Large Bolts in Difficult to Access Areas



▲ Tensioning with hydraulic nuts.

### HYDRAULIC NUTS

Enerpac hydraulic nuts are used in many process-critical bolting applications where the ease of installation and manpower time savings are substantial and ongoing. Moreover, they eliminate many of the uncertainties of torque arising from friction, point loading and load scatter.

Enerpac Hydraulic Nuts are a simple and effective method of tensioning large bolts in difficult to access areas with insufficient space for standard tensioners. Typically used when installing and maintaining bolting systems, hydraulic nuts can replace both conventional hexagon nuts and standard round nuts providing a high and predictable degree of tensioning accuracy.

Threaded directly onto the stud, Enerpac hydraulic nuts apply a direct axial elongation by means of hydraulic force generated via the nut's integral hydraulic cylinder. The nut is held in place either by means of a top or bottom load retaining collar externally located on the nut or by the insertion of mechanical shims. Enerpac hydraulic nuts can be retrofitted to existing plant providing an accurate solution to mechanical jointing problems.

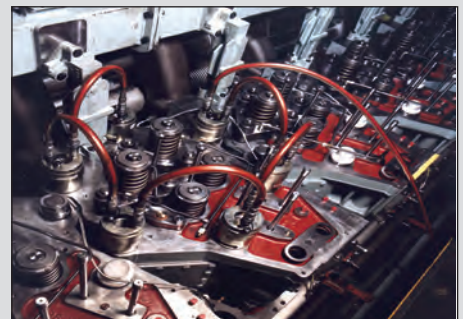
### Benefits of Enerpac Hydraulic Nuts

- Highly accurate and repeatable bolt loads
- Ideal where space limitations prevent use of standard detachable tensioners
- Direct Axial Loading - No nut rotation required
- Multiple nuts can be connected and tightened / loosened simultaneously
- Eliminates issues with friction
- Substantial time savings due to the quick set-up and hydraulic nuts remaining in-situ
- No stud or flange damage (Galling, Seizure)
- No need to change joint hardware – system works with existing studs
- Ideal when the tension in bolts needs to be checked regularly such as vibration loosening.

## Enerpac Hydraulic Nut Applications Have Included:

The Hydraulic Nut is a permanent fixture, replacing the conventional nut and retaining the high bolt load and extension in small space envelopes where there may not be sufficient space to use tensioners.

- Flange Clamps: Pipeline, Structural
- Turbines: Gas, Wind, Steam
- Pressure & Reactor Vessels
- Diesel Engines
- Nuclear Applications: Steam Generators
- Hydraulic and Mechanical Presses
- Heat Exchangers
- Pipeline Flanges, Valves and Control Systems
- Valves & Pumps
- Cranes – Slew Ring Bolts, Tower Cranes
- Shaft Couplings
- Mining: Grinders, Cutters, Earth Moving Equipment



▲ Hydraulic nuts on a diesel engine.

# High-Pressure Hand Pump & Accessories **ENERPAC**

▼ HPT-1500



## HPT, HT, B Series

Reservoir Capacity:

**155 in<sup>3</sup>**

Flow at 10,000 psi:

**.037-.99 in<sup>3</sup>/stroke**

Maximum Operating Pressure:

**21,750 psi (1500 bar)**



### Ultra-High Pressure

These pumps operate at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.

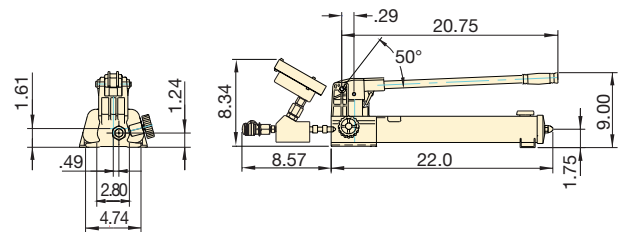
- Lightweight and portable high-pressure hand pump
- Two-speed operation displaces a larger volume of oil per stroke, reducing cycle times for many testing applications
- Includes a gauge and coupler for direct connection to GT-Series bolting tools
- Integrated relief valve set at 21,750 psi



### Applications

The Enerpac HPT high-pressure Hand Pump is ideally suited for use with hydraulic bolt tensioning tools and hydraulic nuts.





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### ▼ 21,750 psi ULTRA-HIGH PRESSURE PUMP




Model Number	Description	Usable Oil Capacity (in <sup>3</sup> )	Oil Displacement per Stroke (in <sup>3</sup> )		Pressure Rating (psi)		Weight (lbs)
			1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	
HPT-1500	Ultra-High Pressure Hand Pump with Gauge	155	.99	0.037	200	21,750	19

### ▼ 21,750 psi HOSES

Model Number	Hoses	End 1	End 2	Length (ft)
HT-1503		1/4 BSPM 120° Cone	1/4 BSPM 120° Cone	3.28
HT-1510		1/4 BSPM 120° Cone	1/4 BSPM 120° Cone	9.84
HT-1503HR*		BH150	BR150	3.28
HT-1510HR*		BH150	BR150	9.84

\* Includes dust caps

### ▼ 21,750 psi COUPLERS

Description	Fittings	Complete Set	Female Half	Male Half
Quick Disconnect Coupler*		B150	BR150	BH150
Quick Disconnect Coupler and Adaptor Kit*		BW150AW	—	—
Quick Disconnect Blanking Coupler Set*		B150B	—	—

\* Includes dust caps



Safe, reliable and repeatable, the use of hydraulic tensioners has many advantages over other less accurate tightening methods. Tensioning requires longer bolts, and a seating area on the assembly around the nut. Tensioning can be done using detachable Bolt Tensioners or Hydraulic Nuts.

***Enerpac Subsea Tensioners Apply Uniform Bolt Load to MORGRIP™ Mechanical Connectors***

*MORGRIP™ Mechanical Connectors have unique pipe gripping and sealing systems which allows them to withstand high internal pressure and external load conditions. As a result, they have a 100% leak-free in-service record, providing the ultimate in-service assurance for all types of metal pipe work, onshore, offshore and subsea.*

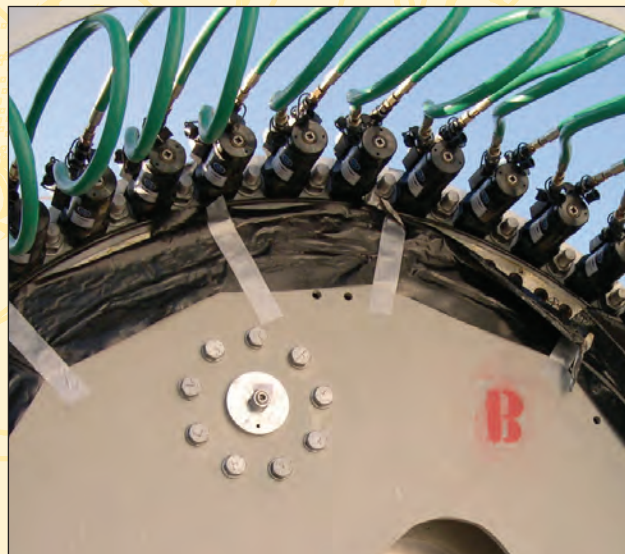


***Safe, Reliable, and Repeatable Tensioning with Compact Hydramax® Tensioners to Complete Joint Integrity***

*With their compact fit and high load generation, and the flexibility to work with all standard flanges, the Enerpac HM-Series HydraMax® tools can be used in almost every industry and in many different applications.*

***On-Site Tensioning Wind Turbines***

*Versatile – tensioning allows for loading multiple fasteners in a joint at the same time. Reliable – uniform bolt loading ensures a high level of accuracy by applying a consistent force.*



▼ ZUTP-1500SB-H



## Reliability, Power and Precision



### Applications

The Enerpac ZUTP-Series electric pump is ideally suited for use with hydraulic bolt tensioning tools and hydraulic nuts.

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### Ultra-High Pressure

These pumps operate at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.

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### Bolting Integrity Software

Visit [www.enerpac.com](http://www.enerpac.com) to access our free on-line bolting software application and obtain information on tool selection, bolt load calculations and tool pressure settings. A combined application data sheet and joint completion report is also available.

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- High-efficiency Universal Motor draws lower amps for superior performance in remote locations with low power quality
- Two-stage pump design provides high flow at low pressure for fast system fills and controlled flow at high pressure for safe and accurate operation
- Compact and lightweight design fits through tight openings and provides easy handling
- Panel mounted 6" pressure gauge, with polycarbonate cover, is set into the protective metal shroud for improved visibility and safety
- Panel mounted user adjustable valve for safe and precise pressure control
- Safety relief valve limits output pressure



◀ *The ZUTP-1500 pump is rugged, lightweight, compact for tight openings, and delivers hassle-free operation of bolt tensioning in remote locations with up to two times the speed of competitive pumps.*

# Electric Tensioning Pump



## ZUTP-Tensioning Pumps

The ZUTP-Series of pumps achieve high pressure without the need for an intensifier. This allows for low maintenance, resulting in less cost for the end-user.

## ZUTP-S with Solenoid Valve

The **ZUTP1500-S Series** with pendant-operated solenoid valve is ideal for multiple bolt tensioning applications as it allows for single-person operation. The operator can pressurize and depressurize the tensioner directly from the pendant.

## ZUTP Series



Reservoir Capacity:

**1 gallon**

Flow at Rated Pressure:

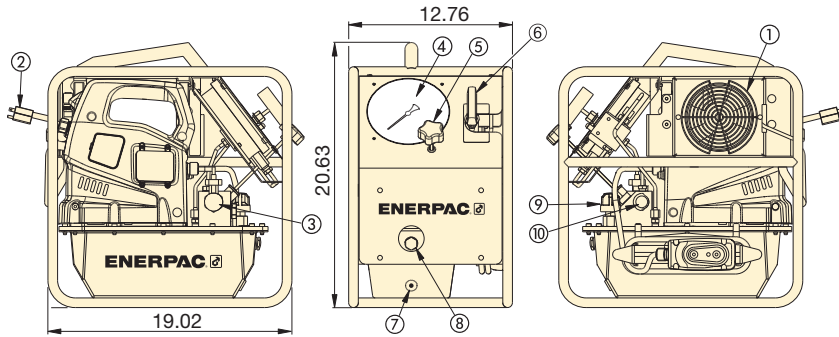
**20.0 in<sup>3</sup>/min.**

Motor Size:

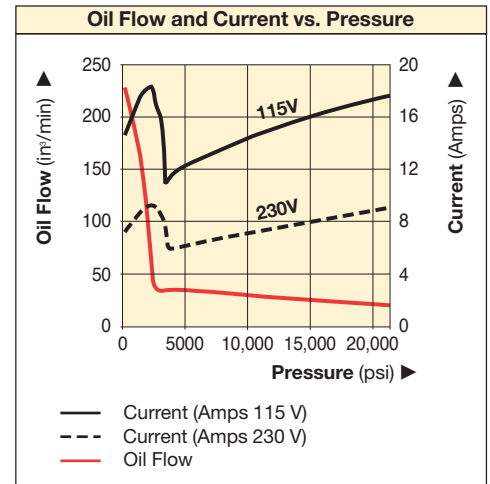
**1.7 hp**

Maximum Operating Pressure:

**21,750 psi**



- ① Heat Exchanger (optional)
- ② Power Cord
- ③ Solenoid Dump Valve
- ④ Pressure Gauge
- ⑤ User Adjustable Relief Valve
- ⑥ Manual Release Valve
- ⑦ Oil Drain
- ⑧ Oil Level Sight Glass
- ⑨ Breather
- ⑩ Outlet Port with CEJN Coupler (116 Series)



Pump Type	Useable Oil Capacity (gal)	Valve Type	Model Number <sup>1)</sup>	Pressure Rating (psi)	Output Flow Rate at 0 psi (in <sup>3</sup> /min)	Output Flow Rate at 21,750 psi (in <sup>3</sup> /min)	Motor Electrical Specification (50 Hz)	Motor Size (hp)	Sound Level (dBA)	Wt. (lbs)
Ultra-high pressure	1.0	Solenoid	ZUTP-1500SB	21,750	230	20	115 VAC, 1-ph	1.7	89	65
			ZUTP-1500SE <sup>2)</sup>				230 VAC, 1-ph <sup>2)</sup>			
			ZUTP-1500SI <sup>3)</sup>				230 VAC, 1-ph <sup>3)</sup>			
Ultra-high pressure	1.0	Solenoid	ZUTP-1500SB-H <sup>4)</sup>	21,750	230	20	115 VAC, 1-ph	1.7	89	75
			ZUTP-1500SE-H <sup>2) 4)</sup>				230 VAC, 1-ph <sup>2)</sup>			
			ZUTP-1500SI-H <sup>3) 4)</sup>				230 VAC, 1-ph <sup>3)</sup>			
Ultra-high pressure	1.0	Manual	ZUTP-1500B	21,750	230	20	115 VAC, 1-ph	1.7	89	65
			ZUTP-1500E <sup>2)</sup>				230 VAC, 1-ph <sup>2)</sup>			
			ZUTP-1500I <sup>3)</sup>				230 VAC, 1-ph <sup>3)</sup>			

<sup>1)</sup> All models meet CE safety requirements and all TÜV requirements.  
<sup>2)</sup> European plug and CE EMC directive compliant.

<sup>3)</sup> With NEMA 6-15 plug.  
<sup>4)</sup> Add suffix "H" for factory installation of Heat Exchanger.

▼ ATP-1500



**ATP Series**

II 2 GD ck T4  
IBExU 070/10

Reservoir Capacity:

**1.0 gallon**

Flow at Rated Pressure:

**4 in<sup>3</sup>/min.**

Maximum Operating Pressure:

**21,750 psi (1500 bar)**

- General purpose, high-pressure air-driven pump unit for products requiring up to 21,750 psi hydraulic pressure
- Compact, lightweight, rugged steel frame for protection and easy handling
- Prelubricated pump element, does not require an air line lubricator
- Easily adjustable output pressure control
- Integrated and protected easy to read glycerine-filled gauge
- Safety relief-valve limits output pressure
- ATEX Certified

The ATP-series pump was tested and certified according to the Equipment Directive 94 / 9 / EC "ATEX Directive". The explosion protection is for equipment group II, equipment category 2 (hazardous area zone 1), in gas and/or dust atmospheres. The ATP-series pump is marked with: Ex II 2 GD ck T4.



These products operate at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.

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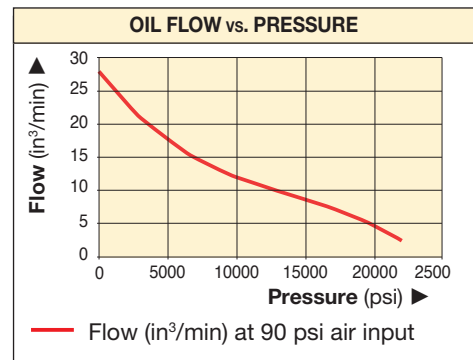
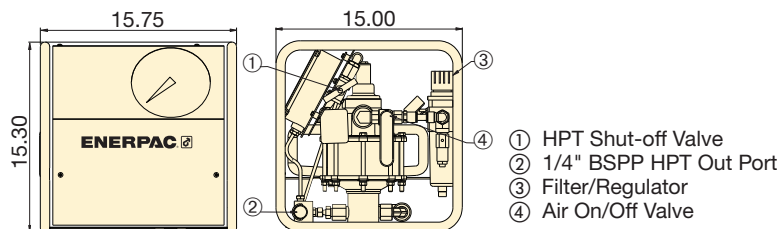


**Applications**

The ATP-pump is ideally suited for use with HM and GT-Series hydraulic bolt tensioning tools and hydraulic nuts. See our

Bolting Tools catalogue or [enerpac.com](http://enerpac.com)

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**21,750 PSI HIGH PRESSURE PUMP**

Pump Type	Useable Oil Capacity (gal)	Model Number	Pressure Rating (psi)	Output Flow Rate at 0 psi (in <sup>3</sup> /min)	Output Flow Rate at 21,750 psi (in <sup>3</sup> /min)	Air Pressure Range (psi)	Air Consumption (sfcm)	Sound Level (dBA)	Wt. (lbs)
Ultra-High pressure	1.0	<b>ATP-1500</b>	21,750	26	4	80-90	70	70	65

# Portable Hydraulic Toolbox

▼ SCR154PGH



## SC, SL, SR, SW Series

Capacity:

**1 - 45 ton**

Stroke:

**0.43 - 6.14 inches**

Maximum Operating Pressure:

**10,000 psi**








### Gauge Adaptor Assembly

Toolbox sets include a 45 degree angled gauge adaptor assembly for improved operating ergonomics and safety.

- Includes a single-acting cylinder, two-speed lightweight hand pump (P392), gauge adaptor assembly (GA45GC), and 6 ft. rubber hose with couplers (HC9206C)
- Complete and ready-to-use hydraulic system
- Easy to carry sturdy toolbox
- All components ship inside the toolbox as one package

▼ The Hydraulic Toolbox is a versatile tool and applicable everywhere.



	Cylinder Model	Cylinder Stroke (in)	Cylinder Capacity ton (kN)	Wt. (lbs)	Toolbox Set Model Number
	<b>Lifting Wedge</b>				
	LW-16	0.83	17.6 (157)	19.8	SLW16PGH <sup>2)</sup>
	<b>Wedge Spread Cylinder</b>				
	WR-5	3.70 <sup>1)</sup>	1.0 (8,9)	26.4	SWR5PGH
	<b>General Purpose Cylinders</b>				
	RC-102	2.13	10 (101)	27.1	SCR102PGH
	RC-106	6.14	10 (101)	31.7	SCR106PGH
	RC-154	3.98	15 (142)	33.1	SCR154PGH
	RC-156	5.98	15 (142)	37.0	SCR156PGH
	<b>Low Height Cylinders</b>				
	RCS-101	1.50	10 (101)	31.1	SCL101PGH
	RCS-201	1.77	20 (201)	33.1	SCL201PGH
	<b>Flat-Jac® Cylinders</b>				
	RSM-100	0.43	10 (101)	25.1	SRS100PGH
	RSM-200	0.43	20 (201)	28.9	SRS200PGH
	RSM-300	0.51	30 (295)	32.0	SRS300PGH
	RSM-500	0.63	50 (435)	37.0	SRS500PGH

<sup>1)</sup> Maximum spread of WR-5.

<sup>2)</sup> With P-142 two-speed lightweight hand pump.

▼ Cylinder-pump set: SCR-1010H



## The Quickest and Easiest Way to Start Working Right Away



### Portable Hydraulic Toolbox Set SWR5PGH

Tool box includes P-392 hand pump, gauge adaptor assembly, hose and WR-5.

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- Optimum match of individual components
- All sets are ready to use and include single-acting cylinder, two-speed pump, 6-foot safety hose, calibrated gauge with gauge adaptor
- Choose between handpump, air driven foot pump or cordless, (battery-powered) pump
- RC-Series DUO, general purpose cylinders for maximum versatility
- RCS-Series, low-height cylinders for maximum versatility
- RCH-Series hollow cylinders for pushing and pulling

1 Cylinder Selection	Nominal Set Capacity (ton)	Cylinder Model No.	Stroke (in)	Collapsed Height (in)
	5	RC-55	5.00	8.50
	10	RC-102	2.13	4.78
		RC-106	6.13	9.75
		RC-1010	10.13	13.75
	15	RC-154	4.00	7.88
		RC-156	6.00	10.69
25	RC-252	2.00	6.50	
	RC-254	4.00	8.50	
	RC-256	6.25	10.75	
	RC-2514	14.25	18.75	
50	RC-506	6.25	11.13	
	10	RCS-101	1.50	3.47
	20	RCS-201	1.75	3.88
	30	RCS-302	2.44	4.63
	50	RCS-502	2.38	4.81
	100	RCS-1002	2.25	5.56
	12	RCH-121	1.63	4.75
	20	RCH-202	2.00	6.31
	30	RCH-302	2.50	7.03
	60	RCH-603	3.00	9.75
	100	RCH-1003	3.00	10.00

▼ Cylinder-Pump Sets - optimum match of components. The quickest and easiest way to start working right away.



# Single-Acting, Cylinder Pump Sets

## SELECTION EXAMPLE

### Selected Cylinder:

- RC-106, Single-acting cylinder with 6.13" stroke

### Selected Pump:

- P-392, Lightweight hand pump

### Set Model Number:

- SCR-106H

### Included:

- HC-7206 hose
- GF-10P gauge
- GA-2 adaptor



### GA45GC Gauge Adaptor <sup>3)</sup>

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

[enerpac.com](http://enerpac.com)

## SC Series



Capacity:

**5-100 tons**

Stroke:

**1.50-14.25 inches**

Maximum Operating Pressure:

**10,000 psi**

## SET SELECTION:

- 1 Select the cylinder
- 2 Select the pump
- 3 Find the set model number in the gray field of the matrix

2

Pump Selection (See Pump Section of this catalog for full product descriptions)

Accessories Included

Hand Pump P-142	Hand Pump P-392	Hand Pump P-80	Foot Pump P-392FP	XA-Series Air Pump XA-11	XC-Series Cordless Pump <sup>2)</sup> XC-1202MB	Hose Model No.	Gauge Model No.	Gauge Adaptor Model No.
SCR-55H	-	-	-	-	-	HC-7206	GP-10S	GA-4
-	SCR-102H	-	SCR-102FP	SCR-102XA	SCR-102XCB	HC-7206	GF-10P	GA-2
-	SCR-106H	-	SCR-106FP	SCR-106XA	SCR-106XCB	HC-7206	GF-10P	GA-2
-	SCR-1010H	-	SCR-1010FP	SCR-1010XA	SCR-1010XCB	HC-7206	GF-10P	GA-2
-	SCR-154H	-	SCR-154FP	SCR-154XA	SCR-154XCB	HC-7206	GP-10S	GA-2
-	SCR-156H	-	SCR-156FP	SCR-156XA	SCR-156XCB	HC-7206	GP-10S	GA-2
-	SCR-252H	-	SCR-252FP	SCR-252XA	SCR-252XCB	HC-7206	GF-20P	GA-2
-	SCR-254H	-	SCR-254FP	SCR-254XA	SCR-254XCB	HC-7206	GF-20P	GA-2
-	SCR-256H	-	-	SCR-256XA	SCR-256XCB	HC-7206	GF-20P	GA-2
-	-	SCR-2514H	-	SCR-2514XA <sup>1)</sup>	-	HC-7206	GF-20P	GA-2
-	-	SCR-506H	-	SCR-506XA <sup>1)</sup>	-	HC-7206	GF-50P	GA-2
-	SCL-101H	-	SCL-101FP	SCL-101XA	-	HC-7206	GF-10P	GA-2
-	SCL-201H	-	SCL-201FP	SCL-201XA	-	HC-7206	GF-230P	GA-2
-	SCL-302H	-	SCL-302FP	SCL-302XA	SCL-302XCB	HC-7206	GF-230P	GA-2
-	SCL-502H	-	SCL-502FP	SCL-502XA	SCL-502XCB	HC-7206	GF-510P	GA-2
-	-	SCL-1002H	-	-	SCL-1002XCB	HC-7206	GF-510P	GA-2
SCH-121H	-	-	-	-	-	HB-7206	GF-120P	GA-4
-	SCH-202H	-	SCH-202FP	SCH-202XA	SCH-202XCB	HC-7206	GF-813P	GA-3
-	SCH-302H	-	SCH-302FP	SCH-302XA	SCH-302XCB	HC-7206	GF-813P	GA-3
-	-	SCH-603H	-	SCH-603XA <sup>1)</sup>	SCH-603XCB	HC-7206	GF-813P	GA-3
-	-	SCH-1003H	-	-	-	HC-7206	GP-10S	GA-2

<sup>1)</sup> With XA-12 air pump

<sup>2)</sup> XC Cordless Pump includes 115 V charger, for 230 V charger replace the "B" in the model number with an "E".

<sup>3)</sup> XC Pump Sets include only the HC-7206 Hose and GA45GC Gauge Adaptor accessories

▼ HF-101, HF-100, HF-102, LX-101 and THQ-706T



## HF, LX, THQ Series

Hydraulic Oil Contents:

**1 Qt & 1, 5, 55 Gal**

Hose Lengths:

**6.5, 19.5, 39 feet**

Maximum Operating Pressure:

**10,000 psi**

### HF Oil

- Specially formulated for power pumps
  - maximum volumetric efficiency
  - maximum heat transfer
  - prevents cavitation
  - anti-sludge, anti-rust, anti-foam additives
- Maximum film protective lubricity
  - anti-oxidation additives

### LX Hand Pump Oil

- Specially formulated for hand pumps
  - anti-sludge, anti-rust additives
- Reduced handle effort over HF blue oil
  - good low temperature performance
- Not for use in power pumps

### Twin Torque Wrench Hose

- Thermo-plastic safety dual hoses for RSL, S and W-Series hydraulic torque wrenches and torque wrench pumps
- For demanding applications, featuring a 4:1 safety factor
- Maximum working pressure of 700 bar
- Outside jacket is polyurethane, to provide maximum abrasion resistance
- Exhibits low volumetric expansion under pressure to enhance overall system efficiency
- Crimped-on rubber strain relief for improved life and durability on all models

Internal Diameter (in)	Hose Ends Assemblies and Couplers *		Hose Length (ft)	Model Number	Wt. (lbs)
	Hose one	Hose two			
0.25	female half + male half	male half	6	THQ-702T	10
		female half	19.5	THQ-706T	30
		male half + female half	39	THQ-712T	60

\* 1/4" Spin-on Torque Wrench Couplers. **TR-630** female half, **TH-630** male half.

### Hydraulic Oil

Contents	Model Number	High viscosity index ensures maximum lubricity over a wide range of operation temperatures.
1 Quart	HF-100	
1 Gallon	HF-101	
5 Gallons*	HF-102	
55 Gallons	HF-104	
1 Gallon**	LX-101	

\* Packed in two 2½ gallon cans.

\*\* Hand pump oil.

### ▼ Oil Specifications Chart

	HF Oil	LX Oil
ISO Viscosity Grade	32	15
API Gravity, ASTM D1298	32	34
Viscosity, ASTM D445		
SUS @ 212°F	43.7	38
SUS @ 104°F	151	77.5
Viscosity Index, ASTM D2270	95	100
Pour Point, °F, ASTM D97	-36.5	-47.5
Flash Point, °F, ASTM D92	375	370
Color	Blue	Yellow

NOTE: SAE grades do not apply to hydraulic oil.



# Hydraulic Wedgie and Spread Cylinders

▼ Shown clockwise from top: **WR-5, A-92, WR-15**



- **Single-acting, spring return**
- **WR-15:** For long-stroke spreading applications
- **WR-5:** For use in very confined work areas
- **A-92\*:** Spreader attachment screws onto RC-Series 10-ton cylinders (except RC-101)

## A, WR Series

Capacity:  
**0.75-1.00 ton**

Tip Clearance:  
**0.50-1.38 inches**

Maximum Spread Range:  
**3.70-11.50 inches**

Maximum Operating Pressure:  
**10,000 psi**



### Portable Hydraulic Toolbox Set SWR5PGH

Tool box includes P-392 hand pump, gauge adaptor assembly, hose and WR-5.

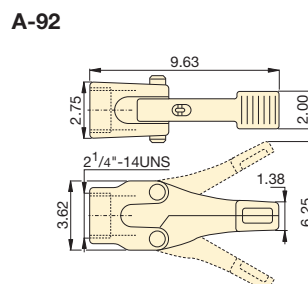
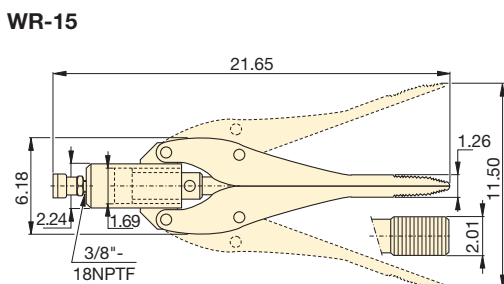
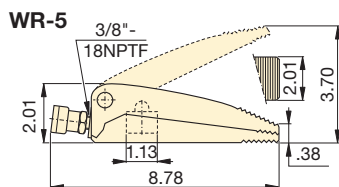
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### Best Match Hand Pump

To power your WR5 and WR15 the **P-392** hand pump is an ideal choice. Use H700-Series hose for hydraulic connection.

[www.enerpac.com](http://www.enerpac.com)



▼ A WR-5 wedgie cylinder is used for maintenance on a bridge bearing.



Spreader Capacity	Tip Clearance	Model Number	Maximum Spread	Cylinder Effective Area	Oil Capacity	Weight
(ton)	(in)		(in)	(in <sup>2</sup> )	(in <sup>3</sup> )	(lbs)
1.00	.50	<b>WR-5</b>	3.70	1.00	.61	5.0
.75	1.26	<b>WR-15</b>	11.50	2.25	3.91	25.0
1.00	1.38	<b>A-92*</b>	6.25	–	–	8.0

\* Maximum system pressure must be limited to half the rated pressure (5000 psi)

▼ From left to right: **ATM-4, ATM-9, ATM-2**



## The Faster, Simpler and Safer Way to Align Flanges

- Enerpac ATM-Series tools rectify twist and rotational misalignment quickly, safely, and without the need for an external power source
- Appropriate for use on most ANSI, API, BS and DIN flanges
- No slings, hooks or lifting gear required
- Can be installed and used in any position (horizontally or vertically)
- Portable, lightweight design enables easy transport and use, even in remote locations
- Stays stable in position under full load
- Reduces set-up time: no need for chains, pulleys or rigs
- Safety strap helps provide secure operation
- Each ATM-model contains a tool and kit box



### Adjustable Reach

The highly adjustable reach of the wing and drop leg on the ATM-4 and ATM-9 allows precise alignment.



### Gauge and Adaptor

The ATM-9 includes P-142 hand pump and HC-7206C 6 ft. long hose. Enerpac recommend the use of the pressure gauge **GP-10S** and gauge adaptor **GA-4** for easy mounting of the gauge onto your system or use GA45GC Gauge Adaptor Assembly.

▼ *The compact ATM-2 is actuated by simply hand turning the crank.*



▼ *The ATM-9 is shown here with optional pressure gauge and gauge adaptor.*



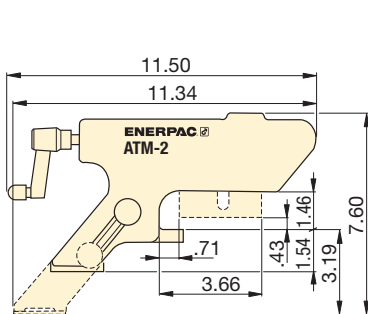
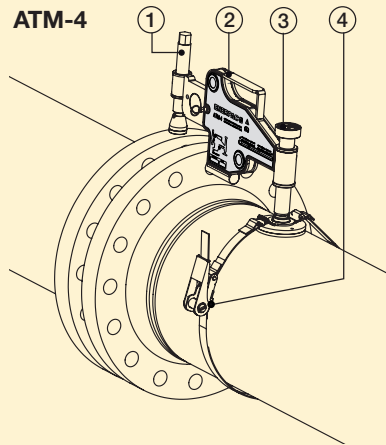


## Applications

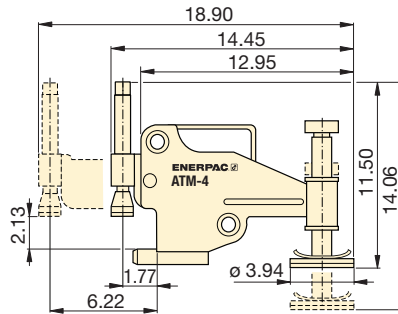
Enerpac ATM-Series Tools help correct flange misalignment, and allow bolts to be placed into joints. This alignment takes place during pipework construction, or maintenance.

These tools provide pipe installers and maintenance personnel with some of the simplest, safest and most productive solutions available for flange alignment in the market today.

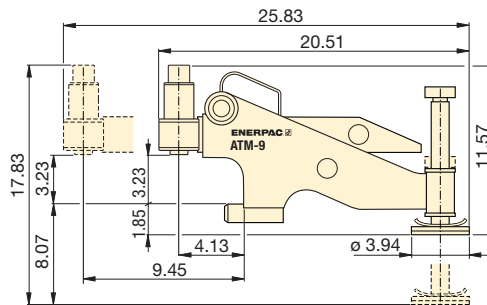
- ① Extendable wing provides usage on wide variety of flanges.
- ② Portable, light weight design enables easy transport and use.
- ③ Hand-adjustable base for easy positioning by a single operator.
- ④ Safety strap helps provide secure operation from a horizontal or vertical position.



ATM-2



ATM-4



ATM-9

Maximum Lifting Force (ton)* (kN)*	Model Number	Minimum Bolt Size**		Flange Wall Thickness (max)		Wt. (lbs)	
		(in)	(mm)	(in)	(mm)		
1	10	ATM-2	.63	16	.55 - 3.29	14 - 82	3.5
4	40	ATM-4	.95	24	1.18 - 5.23	30 - 133	19
10	90	ATM-9**	1.40	35.5	3.66 - 9.00	93 - 228	32

\* At 10,000-psi maximum operating pressure.

\*\* ATM-9 includes an Enerpac hand pump and hydraulic hose (gauge and adaptor sold separately). ATM-9 weight includes tool only.

## ATM Series



Minimum Bolt Size:

**.63-1.24 inches**

Flange Wall Thickness:

**.55-9.00 inches**

Maximum Lifting Force:

**1-10 tons**



## Cylinder-Pump Sets

Hydraulic cylinders, jacks and lifting wedges can also be used to assist in pipe line positioning and aligning.

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## Pipe Flange Face Tool

The portable, hand powered tool FF-120 makes even the hardest to reach pipe flanges resurfaceable in a safe and convenient way.

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▼ The ATM-Series – the faster, simpler and safer way to align flanges.



▼ FSH-14 and FSM-8 with Safety Blocks Sb1

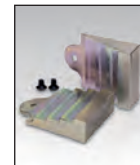


## Practical, Portable And Lightweight



### FSC-14 with Integrated Hand Pump

Powered by a built-in hydraulic hand pump, the FSC-14 is a ready-to-use tool – no making or breaking hydraulic connections. This compact tool delivers 14 US tons of force and requires a clearance gap as small as .24 inch.



### Stepped Blocks FSB-1

Use this pair of stepped blocks to increase wedge opening up to 3.16 in. (80 mm). Fits **FSC**, **FSH** and **FSM** models.



### AM-Series Control Manifolds

For simultaneously and even spreading of flange joints, 180° apart with FSH-14.



### Flange Maintenance Tools

Secure-Grip and Zero-Gap flange spreading tools for application on flanges with a zero or small gap.

See pages 104-109.

- **Integrated wedge concept:** friction-free, smooth, parallel wedge movement eliminates flange damage and spreading arm failure
- **Unique interlocking wedge design:** no first step bending and risk of slipping out of joint
- **Requires very small access gap of only .24 inch (6 mm)**
- **Stepped spreader arm design:** each step can spread under full load
- **Few moving parts means durability and low maintenance**
- **Safety block SB-1 and ratchet spanner SW-22 included with FSM-8**
- **Safety block and Enerpac RC-102 cylinder included with FSH-14**



◀ Two FSH-14 spreaders used simultaneously with Enerpac handpump, hoses and AM-21 control manifold.

# Flange Spreading Wedges



## Flange Spreading Wedges

The flange spreading tools have been developed to aid and simplify the maintenance of flange joints. No longer will those tasked with separating flanges have to rely on using ropes and pulleys, podgers, tirsors, come-alongs or hammers – there is a safe, quick and effective alternative, the Enerpac range of

spreaders. These spreaders use mechanical and hydraulic principles for separating flanges and can spread small, medium or large flange joints. Tool selection is made on the basis of the access gap between the flange faces, the flange size and the required scope of work.

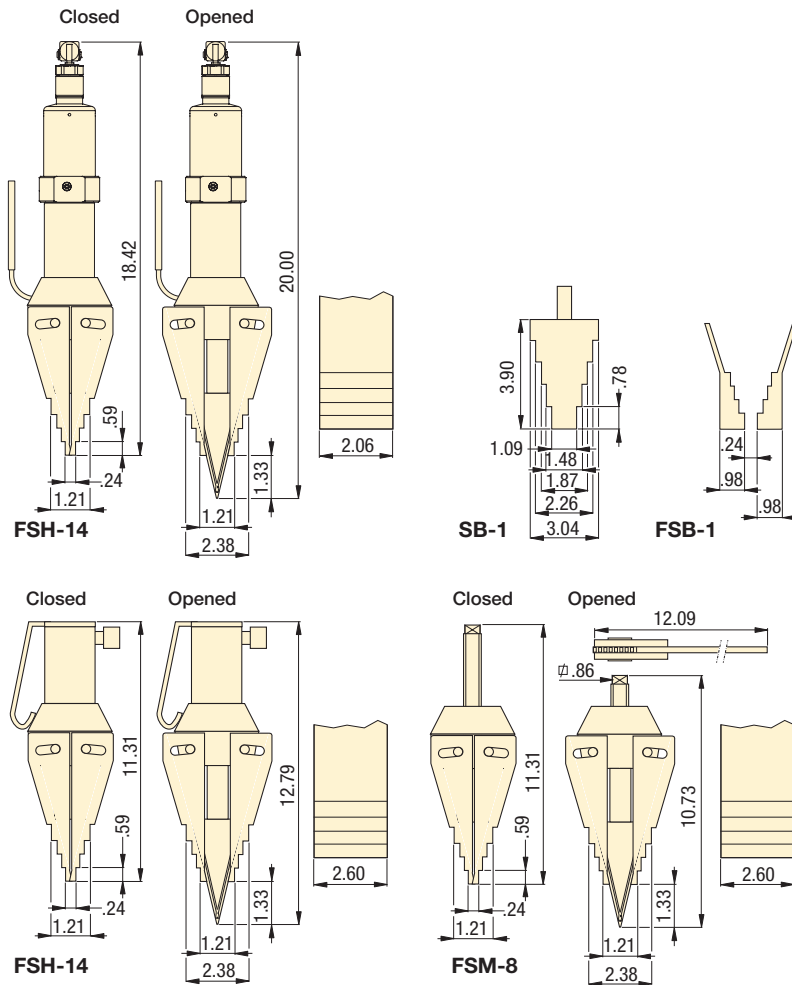
## FSC, FSH, FSM Series



Tip Clearance / Maximum Spread<sup>1)</sup>:  
**0.24/3.16 inches**

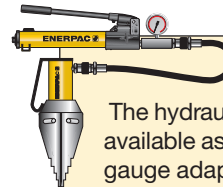
Maximum Spread Force:  
**8-14 tons**

Maximum Operating Pressure:  
**10,000 psi (FSH-14)**



### Safety Lanyard FSC-1

Recommended safety accessory to compliment the safe hands-free bolting. Includes steel cable with carabiners.



### Tool Pump Sets

The hydraulic flange spreader is available as a set (pump, tool, gauge, gauge adaptor, couplers and hose) for your ordering convenience.

Spreader Model No.	Hand Pump Model No.	Set Model Number
FSH-14	P-392	STF-14H

▼ Flange maintenance and joint separation with FSH-14 Hydraulic Wedge Spreader.



Max. Spreading Force (ton)	Model Number	Tip Clearance (in)	Max. Spread <sup>1)</sup> (in)	Type	Oil Capacity (in <sup>3</sup> )	Wt. (lbs)
14	FSC-14	.24	3.16	Integral hydraulics	–	19.84
14	FSH-14*	.24	3.16	External hydraulics	4.76	15.7
8	FSM-8	.24	3.16	Mechanical	–	14.3

<sup>1)</sup> Using stepped blocks FSB-1.

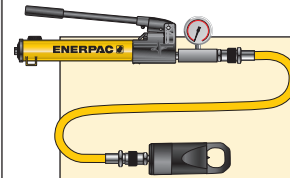
\* Available as Tool Pump Set, see note on this page.

▼ Shown from left to right: NC-3241, NC-1319, NC-1924



## The Safest and Easiest Way to Remove Corroded and Frozen Nuts

- Compact and ergonomic design, easy to use
- Unique angled head allows flush access
- Two blade design (NC-D models) for time saving operation – nuts are split from two sides in one action
- Single-acting, spring return cylinder
- Heavy-duty chisels can be reground
- Nut Splitters include spare chisel, spare set screw and wrench used to secure the chisel. A CR-400 coupler is standard
- Applications include servicing trucks, piping industry, tank cleaning, petrochemical, steel construction and mining



### Tool-Pump Kits

Hydraulic Nut Cutters are available as sets (pump, tool, gauge, adaptor and hose) for your ordering convenience.

Hydraulic Nut Cutters are available as sets (pump, tool, gauge, adaptor and hose) for your ordering convenience.

Splitter Model Number	Pump Model Number	Set Model Number
NC-1924	P-392	STN-1924H
NC-2432	P-392	STN-2432H
NC-3241	P-392	STN-3241H



### High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

Enerpac hydraulic hoses.

▼ Enerpac hydraulic nut splitters – the safest and easiest way to remove corroded and frozen nuts



### GA45GC Gauge Adaptor

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

# Single-Acting Hydraulic Nut Splitters



## Frozen or Corroded Nuts

Often nuts are difficult to remove, while loosening using tightening tools is possible, it generally requires larger equipment and is time consuming.

The use of cutting torches or hammers and chisels can cause damage to the joint components, requires significantly longer setup and operational time, and can present a potential safety risk.

## Hydraulic Nut Cutters

Nut splitting with the Enerpac Hydraulic Nut Cutters is the safest method. It takes less time and avoids costly damage to joint components. The head design fitted with heavy-duty chisels permits the splitting of nuts on a wide variety of applications. With the two blade models nuts are split from two sides in one action.

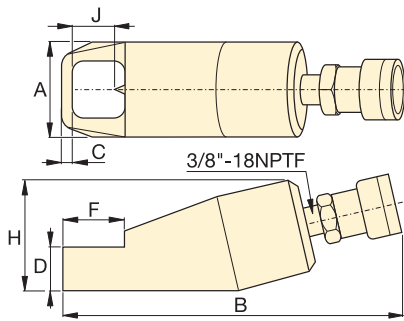
## NC, STN Series



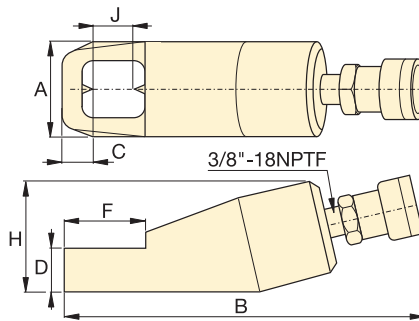
Capacity:  
**5-90 tons**

Bolt Range:  
**0.31-2.88 inches**

Maximum Operating Pressure:  
**10,000 psi**



Single Blade Models (NC)



Double Blade Models (NC-D)

For Nut Splitter Model No.	Replacement Chisel Model Number	
	Moving	Static
NC-1319	NCB-1319	-
NC-1924	NCB-1924	-
NC-2432	NCB-2432	-
NC-3241	NCB-3241	-
NC-4150	NCB-4150	-
NC-5060	NCB-5060	-
NC-6075	NCB-6075	-
NC-1924D	NCB-1924	NCB-1924D
NC-2432D	NCB-2432	NCB-2432D
NC-3241D	NCB-3241	NCB-3241D

	Bolt Range (in)	Hexagon Nut Range (in)	Capacity (ton)	Oil Capacity (in <sup>3</sup> )	Model Number	Dimensions (in)						Weight (lbs)	
						A	B	C	D	F	H		J
	.31-.50	.50-.75	5	.92	NC-1319	1.57	7.87	.24	.75	1.10	1.89	.83	1.8
	.50-.63	.75-.94	10	1.22	NC-1924 *	2.17	8.94	.32	.98	1.50	2.80	1.00	4.4
	.63-.88	.94-1.13	15	3.66	NC-2432 *	2.60	10.24	.39	1.22	1.93	2.99	1.30	6.6
	.88-1.13	1.13-1.56	20	4.88	NC-3241 *	2.95	11.26	.59	1.38	2.60	3.50	1.69	9.7
	1.13-1.38	1.56-2.00	35	9.46	NC-4150	3.78	12.80	.83	1.77	2.87	4.29	2.13	18.0
	1.38-1.50	2.00-2.25	50	14.64	NC-5060	4.17	14.41	1.06	2.13	3.63	4.96	2.38	26.0
	1.50-1.88	2.38-2.88	90	30.00	NC-6075	6.14	14.43	1.06	2.95	4.33	7.09	3.07	75.1
	.50-.63	.75-.94	10	1.22	NC-1924D	2.17	6.61	0.87	0.98	1.97	2.60	2.60	8.38
	.63-.88	.94-1.13	15	3.66	NC-2432D	2.60	10.83	0.98	1.22	2.56	3.07	3.07	11.90
	.88-1.13	1.13-1.56	20	4.88	NC-3241D	3.03	12.00	1.22	1.46	3.15	3.54	3.54	15.87

Ordering Notes: Maximum allowable hardness to split is HRc-44. Not to be used on square nuts.

\* Available as Tool-Pump set, see note on this page.

▼ NS-7080, NS-70105



## Power and Precision High Performance Nut Splitter

- Specially designed to suit standard ANSI B16.5 / BS1560 flanges
- Single-acting, spring return cylinder
- Tri-blade technology provides three cutting surfaces on a single blade
- Interchangeable heads provide maximum nut range flexibility
- Preset scale allows controlled blade extension, which avoids damage to bolt threads
- Grip tape and handle included for more secure maneuverability
- Nickel-plated cylinder body for excellent corrosion protection and improved durability in harsh environments
- Internal Pressure Relief Valve for overload protection
- CR-400 coupler and dustcap included on all models



### Blade Cutting Depth Scale

Adjustable cutting depth scale for controlled blade extension, which avoids damage to bolt threads.

The scale indicates the bolt range in metric and imperial values on each cutting head.



### Hydraulic Nut Cutters

The NC-Series models are available featuring an angle-head design for 0.50" -2.88" hexagon nuts.

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### FS-Series Spreaders

FS-Series Flange Spreaders (FSC, FSH, FSM-Series) provide quick and easy joint separation using hydraulic or mechanical force.

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### ATM Flange Alignment Tools

The ATM series provides safe high-precision flange alignment tools that fit most commonly used ANSI, API, BS, and DIN flanges.

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◀ Heavily corroded and weathered nuts are quickly split and removed using an NS-Series Nut Splitter.



# Hydraulic Nut Splitters



## Nut Splitter Sets

To provide maximum flexibility, NS-Series Nut Splitters can also be ordered in sets (NS-xxxSx). Select Nut Splitter size and pump style from the chart below.

To order additional Cutting Heads (NSH-xxxxxx), Cylinders (NSC-xxx) or Replacement Blades (NSB-xxx), see Selection Chart below.

### SET SELECTION:

- 1 Select your Nut Splitter
- 2 Select your Pump Type

## NS Series



Capacity:

**103.2-192.5 tons**

Hexagon Nut Range:

**2.75-5.38 inches**

Bolt Range:

**1.75-3.50 inches**

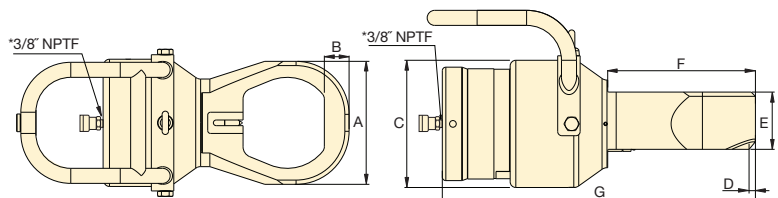
Maximum Operating Pressure:

**10,000 psi**

Nut Splitter Model Number	Set Model Number	Pump Options				Accessories Included			
		Hand Pump Model No.	Air Pump Model No.	Cordless Pump Model No. <sup>1)</sup>	Electric Pump Model No.	Gauge Model No.	Gauge Adaptor Model No.	Hose Model No.	Storage Case Model No.
NS-70105	NS-70105SH	P392	-	-	-	GP-10S	GA-2	HC-7206	CM-4
NS-70105	NS-70105SA	-	XA-11G*	-	-	integrated*	-	HC-7206	CM-4
NS-70105	NS-70105SCB	-	-	XC-1202MB	-	GA45GC		HC-7206	CM-4
NS-70105	NS-70105SE	-	-	-	PUD-1100B	GP-10S	GA-2	HC-7206	CM-7
NS-110130	NS-110130SH	P802	-	-	-	GP-10S	GA-2	HC-7206	CM-4
NS-110130	NS-110130SA	-	XA-11G*	-	-	integrated*	-	HC-7206	CM-4
NS-110130	NS-110130SCB	-	-	XC-1202MB	-	GA45GC		HC-7206	CM-4
NS-110130	NS-110130SE	-	-	-	PUD-1100B	GP-10S	GA-2	HC-7206	CM-7

<sup>1)</sup> XC Cordless Pump includes 115 V charger, for 230 V charger replace the "B" in the model number with an "E". Example: **NS-70105SCB** (set with XC-Cordless pump, 115V) ; **NS-110130SEB** (set with PU-series electric pump, 115V)

\* XA-11G air pump features an integrated pressure gauge.



Hexagon Nut Range <sup>1)</sup>	Bolt Range	Cap.	Oil Cap.	Model Number <sup>2)</sup>	Dimensions (in)							Wt. (lbs)	NS Cylinder <sup>3)</sup>	NS Cutting Head <sup>3)</sup>	Replacement Blade
					A	B	C	D	E	F	G				
(in)	(in)	(ton)	(in <sup>3</sup> )												
2.75-3.13	1.75-2.00	103.2	23.0	NS-7080	5.2	1.1	7.1	0.3	3.2	7.3	16.2	81.4	NSC-70	NSH-7080	NSB-70
2.75-3.50	1.75-2.25	103.2	23.0	NS-7085	5.7	1.2	7.1	0.3	3.2	7.7	16.6	82.7	NSC-70	NSH-7085	NSB-70
2.75-3.88	1.75-2.50	103.2	23.0	NS-7095	6.3	1.3	7.1	0.3	3.2	7.9	17	84.9	NSC-70	NSH-7095	NSB-70
2.75-4.25	1.75-2.75	103.2	23.0	NS-70105	6.9	1.4	7.1	0.4	3.2	8.2	17.5	87.1	NSC-70	NSH-70105	NSB-70
4.25-4.63	2.75-3.00	192.5	50.0	NS-110115	7.4	1.4	9.2	0.1	4.4	9.2	18.6	151.6	NSC-110	NSH-110115	NSB-110
4.25-5.38	2.75-3.50	192.5	50.0	NS-110130	8.6	1.6	9.2	0.1	4.4	9.5	19.4	158.3	NSC-110	NSH-110130	NSB-110

<sup>1)</sup> Maximum allowable hardness to split is HRc-44. See page 128 for hexagon bolt and nut sizes and related thread diameters.

<sup>2)</sup> NS-Series Nut Splitters ship in two cases: One containing the NSC Cylinder and one containing the NSH Cutting Head. Assembly required.

<sup>3)</sup> Both, the NSH-head and the NSC-cylinder include a cutting blade.

▼ FF-120



## Safe, Efficient and Accurate Refacing of Flat Pipe Flange Surfaces

- Refacing made easy — hand-operated machine tool can be set up anywhere without the need for air, electric or hydraulic power support
- Lightweight and portable — easily transported to remote locations for increased productivity
- Adjustable cutting range for flange diameters between 1-12 inches [25,4-304,8 mm]
- Interchangeable collets for ID mounting range from 1-6 inches allowing the user to work on many different flanges with minimal time between set-ups
- Interchangeable lead screws suitable for refacing damaged raised-face (RF), flat-face (FF) or lens-ring joint flanges
- Tool body with expanding collets centers itself providing real concentric operation

▼ The Enerpac FF-120 used to face a pipe flange.



### Complete In-Wheeled Carrying Case

The FF-120 comes as portable set (15 kg). Can be transported, easy set-up and operated by a single technician. Set includes:

- FFL-kit with locators, O-Rings and extensions
- FSS-kit with feed screw and nut ½"-20 UN for surface roughness Ra 64 - 96 µin.
- FSF-kit with feed screw and nut ½"-11 UNF for surface roughness Ra 125 - 250 µin.



### Joint Separation Tools

FSC, FSH and FSH-Series parallel wedge spreaders provide quick and easy joint separation using hydraulic or mechanical force.

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### Flange Alignment Tools

The ATM-Series provide safe and high-precision flange alignment tools that fit most commonly used ANSI, API, BS and DIN flanges.

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### Controlled Tightening and Loosening

Use Enerpac Bolting Tools to seal the joint to the precise torque or tension required: torque multipliers, torque wrenches and hydraulic bolt tensioners.

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# Quick Face, Mechanical Flange Face Tool



## Mechanical Flange Face Tool

Portable, hand powered tool makes even the hardest to reach pipe flanges resurface-able in a safe and convenient way.

### Makes Refacing Easy

A simple and cost effective solution – the FF-120 turns a two man operation with heavy equipment, compressors and portable generators into a one man job.

The FF-120 has interchangeable lead screws that make it suitable for resurfacing damaged flat-faced, raised-face or lens-ring joint flanges to the high safety standards required. After selecting the correct lead screw for the operation, the tool body is inserted in the pipe end and centres itself with adjustable locators to provide real concentric operation.

The tool arm is then rotated by hand using a worm-gear mechanism to provide a perfect spiral “gramophone” finish.

The tool can be adjusted with a calibrated slide to define cut depth and the correct finish.

### Surface Finish and Accuracy

A serrated finish with 30-55 grooves per inch and a resultant roughness of between Ra 125-492 micro inches (3,2-12,5 µm).

The FF-120 has same precision and quality of finish as a lathe.

### Cost-effective Solution

Small and portable enough to be a permanent addition to your equipment range, Enerpac’s FF-120 is the perfect solution to all of your small diameter facing problems.

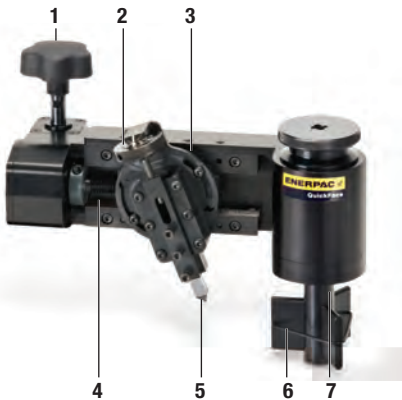
## FF Series



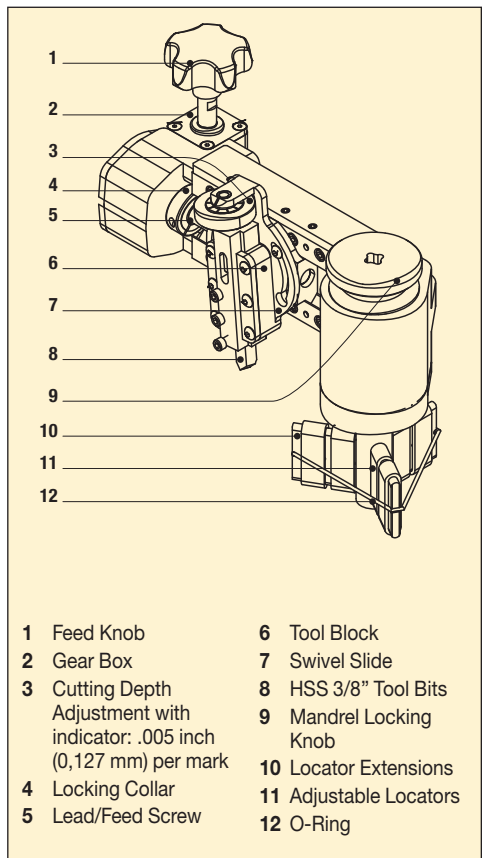
Pipe Flange Cutting Diameter Range:  
**1-12 in (25-305 mm)**

Internal Pipe Mounting Diameter Range:  
**1-6 in (25-152 mm)**

Average Roughness:  
**125-492 µin (3,2-12,5 µm)**

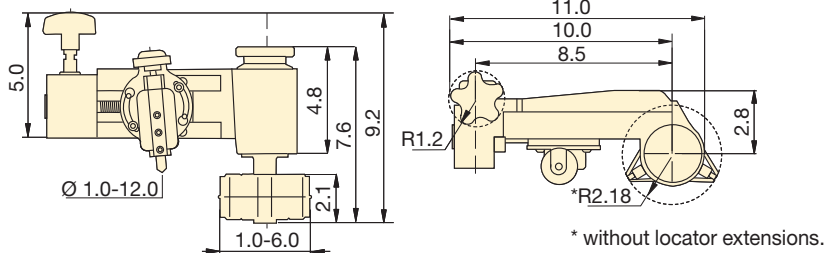


- 1 Hand-operated cold work tool – no need for external power and hot work permits.
- 2 Calibrated cross slide for accurate cutting control.
- 3 Adjustable cutting head for reface of flat flange surfaces of pipes with flange OD facing range  $\varnothing$  1-12 inch [25,4-304,8 mm].
- 4 Interchangeable lead screws enable selection of surface finish between Ra 125-492 µin.
- 5 Utilizes standard 3/8 inch or 10 mm tool steel.
- 6 Range of interchangeable collets allow the tool to accommodate  $\varnothing$  1 - 6 inch [25,4 - 152,4 mm] pipe ID.
- 7 Tool body with expanding collets centers in the bore ensuring concentric and accurate set-up.



- |  |                        |
|--|------------------------|
| 1 Feed Knob  | 6 Tool Block           |
| 2 Gear Box   | 7 Swivel Slide         |
| 3 Cutting Depth Adjustment with indicator: .005 inch (0,127 mm) per mark | 8 HSS 3/8" Tool Bits   |
| 4 Locking Collar   | 9 Mandrel Locking Knob |
| 5 Lead/Feed Screw  | 10 Locator Extensions  |
|  | 11 Adjustable Locators |
|  | 12 O-Ring              |

Dimensions shown in inches.



### ▼ TOOL SELECTION CHART

Pipe Flange Cutting Diameter Range		Internal Pipe Mounting Diameter Range		Average Roughness (Ra µ)		Model Number	Wt. (lbs)
(in)	(mm)	(in)	(mm)	(in)	(m)		
1.0 - 12.0	25,4 -304,8	1.0 - 6.0	25,4-152,4	125 - 492	3,2 - 12,5	<b>FF-120</b>	15

\* When using fine thread feed screw, FF120FSF.

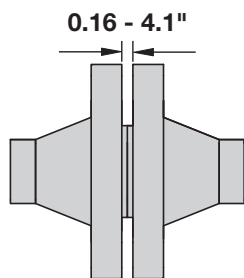
▼ The Enerpac FF-120 Quick Face has same precision and quality of finish as powered machines.



The Equalizer™ range of patented flange spreading tools have been developed to aid and simplify the maintenance of flange joints. No longer will those tasked with separating flanges have to rely on using ropes and pulleys, podgers, tirlors, come-alongs or hammers – there is a safe, quick and effective alternative, the Equalizer™

range of spreaders. These spreaders use mechanical and hydraulic principles for separating flanges and can spread small, medium or large flange joints. Tool selection is made on the basis of the access gap between the flange faces, the flange size and the required scope of work.

## SWi Flange Spreading Wedges:

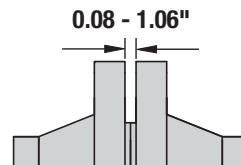


An innovative flange spreading wedge for use on small, medium or large flange joints with a minimum access gap of 0.16". The SWi range includes ATEX approved options.

The SWi range has set the new standard for spreading flange joints powerfully, efficiently, effectively and safely. The tools offer the following features and benefits:

- Wider spreading - using the Standard Stepped Block accessories means the SWi range offers up to 30% more flange spreading distance than a traditional SW tool.
- Unrivalled power - the tools now offer up to 27 ton of spreading force when used in pairs, which provides additional confidence when spreading.
- Narrower jaws - the SWi5TE tools are only 1.97 inches wide to help them fit more easily between flange bolts.
- Fully rotational handle – the handle swivels 360° around the wedge head, so that the SWi tools can be used comfortably in all orientations.
- Easier maintenance – end-users will appreciate the ease with which the tools can be maintained. The supplied hex-key and a two-step process is all that's required to disassemble and reassemble the tools.
- No pinch points – the SWi range of tools has been engineered to overcome finger pinch-points.

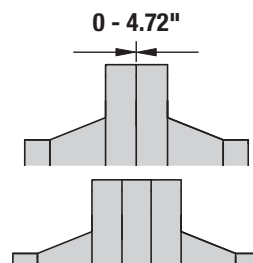
## MG Flange Spreading Tool:



A mechanical tool for small diameter, low pressure flanges with a minimum access gap of 0.08 inch.

For use on smaller, lower pressure flange joints, this portable and flexible tool can be assembled in two alternative configurations that gives it twice the application range from one tool. The tool is locked onto the flange joint by the spreading bar preventing the risk of it falling from the flange joint.

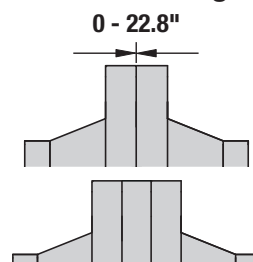
## SG Flange Spreading Tools:



A unique flange spreader that is ideal for situations where there is no access gap or where there is a spacer, a wafer or butterfly valve positioned between the flanges.

Equalizer's unique Secure-Grip tools spread by locking into the flange bolt holes and pulling the mating flanges away from each other, the Secure Grip flange spreaders are locked on to the flanges when under load making them arguably the world's safest flange spreading tools.

## VC Valve Change-Out Tools:



Using the same technology as the SG flange spreaders, the VC range has been developed for valve removal applications.

The Equalizer™ VC Range of Valve Change-Out tools has been developed to assist in the removal of valves, spades/spacers or gaskets from large flange joints. The span of the tool is longer than a standard Secure-Grip Flange Spreader and is adjustable to enable the tool to operate in a range of applications.

# Equalizer Flange Spreading Tools

▼ MG7TM



## MG

FLANGE  
SPREADING TOOL

Spreading Force:

**7.6 tons**

Spreading Distance:

**0.08 - 1.06 inches**



### Range of Application

For a detailed range of application please request the MG7TM Operator Instruction Sheet.

- Reversible leg design giving greater range of applications
- Unique double-angled wedge produces a greater spreading force without reducing spreading distance
- Robust lightweight tool
- Spreading force of 7.6 ton

### OPERATING BENEFITS

- Locks on to flange joint
- Safe, quick and easy operation
- Saves time and cost



### CAUTION

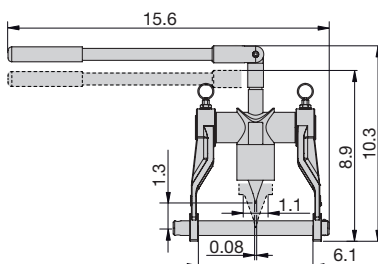
A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.

### MG7TMSTD Standard Kit

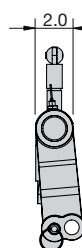
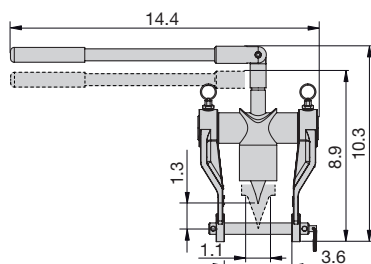


- 1 x MG7TM Tool
- 2 x Spreading Bar
- 1 x Moulded Plastic Carry Case

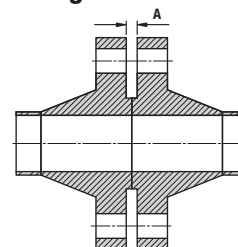
Tool retracted and advanced using large (Ø 0.8 in) spreading bar



Tool retracted and advanced using small (Ø 0.6 in) spreading bar



### Flange Dimensions



Model Number	Type	Maximum Spreading Force Per Tool (ton)	Spreading Distance Maximum (in)	Flange Dimensions	Wedge Width (in)	Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
				Minimum Access Gap A (in)					
<b>MG7TMSTD</b>	Mechanical	7.6	1.06	0.08	1.8	11.02	12.13	14.2 x 11.8 x 3.5	MG7TM

▼ SWi20/25TI



**SWi**



**FLANGE  
SPREADING WEDGES**

Spreading Force:

**8.7 - 27 ton**

Spreading Distance:

**0.16 - 4.1 inch**

Maximum Operating Pressure:

**10,000 psi \***

\* Only relevant for hydraulic tools

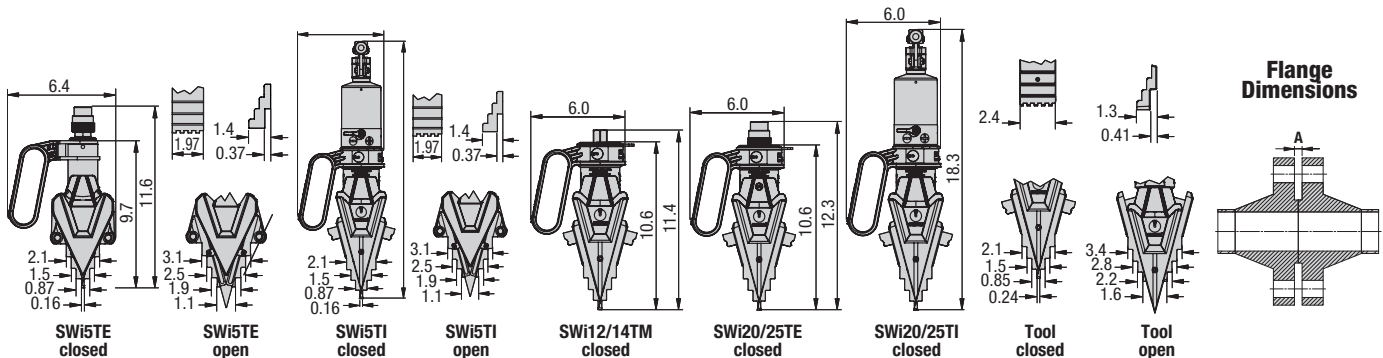


**CAUTION**

A minimum of two Flange Spreading Tools must be used when opening flange joints.

This will enable the operator to maintain an equal spreading distance across the flange faces.

- Practical, portable and lightweight
- Revolving handle to aid horizontal or vertical spreading
- Removable handle for improved access
- No finger pinch point
- Increased step depth on upper steps
- Safety lanyard length, 39 inches
- Forged key components for strength and reliability
- Rapid disassembly and assembly
- Narrow jaw teeth – improved tool wear



Model Number	Type	Maximum Spreading Force Per Tool (ton)	Spreading Distance Maximum * (in)	Flange Dimensions	Jaw Width (in)	Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
				Minimum Access Gap A (in)					
SWi5TE-S	External Hydraulic	8.7	4	0.16	1.97	11.4	19.1	22.8 x 13.4 x 7.1	SWi5TE
SWi5TE-T	External Hydraulic	8.7	4	0.16	1.97	11.4	31.7	22.8 x 13.4 x 7.1	SWi5TE
SWi5TI-S	Integral Hydraulic	8.7	4	0.16	1.97	15.4	23.1	22.8 x 13.4 x 7.1	SWi5TI
SWi1214TMSTDSPB	Mechanical	15.7	4.1	0.24	2.4	13.7	28.7	22.8 x 13.0 x 6.5	SWi12/14TM
SWi2025TEMINSPB	External Hydraulic	27	4.1	0.24	2.4	14.1	25.6	22.8 x 13.0 x 6.5	SWi20/25TE
SWi2025TESTDSPB	External Hydraulic	27	4.1	0.24	2.4	14.1	45.6	36.2 x 19.7 x 8.1	SWi20/25TE
SWi2025TEMAXSPB	External Hydraulic	27	4.1	0.24	2.4	14.1	72.8	36.2 x 19.7 x 8.1	SWi20/25TE
SWi2025TISTDSPB	Integral Hydraulic	27	4.1	0.24	2.4	18.7	20.4	22.8 x 13.0 x 6.5	SWi20/25TI

\* Using stepped blocks.

# Equalizer Flange Spreading Tools

## SWi5TE - Hydraulic Flange Spreading Wedge

### SWi5TE-S - SWi5TE S Kit



- 1 x SWi5TE Flange Spreading Tool
- 1 x Standard Safety Block
- 1 x Lanyard
- 1 x Moulded Plastic Carry Case with Protective Foam Inserts

### SWi5TE-T - SWi5TE T Kit



- 2 x SWi5TE Flange Spreading Tools
- 2 x Standard Safety Blocks
- 2 x Lanyards
- 1 x Moulded Plastic Carry Case with Protective Foam Inserts

### 1640016-01 - SWi5TE Stepped Block Kit



- 1 x Pair of SWi5TE Stepped Blocks
- 2 x M6 CSK Hex Screw
- 2 x Retaining Washer
- 1 x SWi5TE Large Safety Block
- 2 x Hex Key

## SWi12/14TM - Mechanical Flange Spreading Wedge

### SWi1214TMSTDSPB - SWi12/14TM STD Kit



- 1 x SWi12/14TM Flange Spreading Tool
- 1 x Torque Wrench with 22 mm Socket
- 1 x Set of Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Moulded Plastic Carry Case

## SWi20/25TE - Hydraulic Flange Spreading Wedge

### SWi2025TEMINSPB - SWi20/25TE MIN Kit



- 1 x SWi20/25TE Flange Spreading Tool
- 1 x Set Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Moulded Plastic Carry Case

### SWi2025TESTDSPB - SWi20/25TE STD Kit



- 1 x SWi20/25TE Flange Spreading Tool
- 1 x 10,000 psi Hydraulic Hose, 6.5' with 90° Elbow
- 1 x 10,000 psi HP350S Single-Port Sealed Hand Pump with Gauge
- 1 x Set Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Moulded Plastic Carry Case

### SWi2025TEMAXSPB - SWi20/25TE MAX Kit



- 2 x SWi20/25TE Flange Spreading Tools
- 2 x 10,000 psi Hydraulic Hoses, 6.5' with 90° Elbow
- 1 x 10,000 psi HP550D Twin-Port Sealed Hand Pump with Gauge
- 2 x Set Safety Blocks
- 2 x Pair of Stepped Blocks
- 2 x Lanyards
- 2 x Hex Keys
- 1 x Moulded Plastic Carry Case

## SWi5TI - Integral Hydraulic Flange Spreading Wedge

### SWi5TI-S - SWi5TI S Kit



- 1 x SWi5TI Flange Spreading Tool
- 1 x Standard Safety Block
- 1 x Lanyard
- 1 x Moulded Plastic Carry Case with Protective Foam Inserts

### 1640016-01 - SWi5TE Stepped Block Kit



- 1 x Pair of SWi5TE Stepped Blocks
- 2 x M6 CSK Hex Screw
- 2 x Retaining Washer
- 1 x SWi5TE Large Safety Block
- 2 x Hex Key

## SWi20/25TI - Integral Hydraulic Flange Spreading Wedge

### SWi2025TISTDSPB - SWi20/25TI STD Kit



- 1 x SWi20/25TI Flange Spreading Tool
- 1 x Set of Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Carry-Strap
- 1 x Moulded Plastic Carry Case

▼ SWi20/25TEEX



SWi



ATEX CERTIFIED FLANGE SPREADING WEDGES

Spreading Force:

**15.7 - 27 ton**

Spreading Distance:

**0.24 - 4.1 inches**

Maximum Operating Pressure:

**10,000 psi \***

\* Only relevant for hydraulic tools

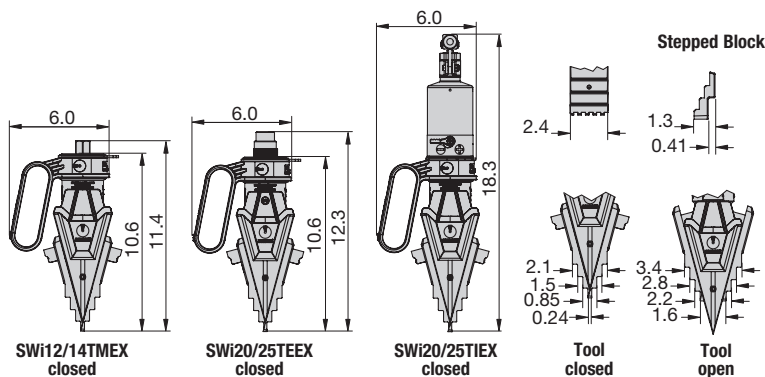


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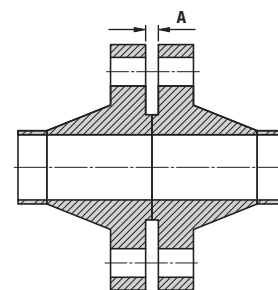
A minimum of two Flange Spreading Tools must be used when opening flange joints.

This will enable the operator to maintain an equal spreading distance across the flange faces.

- ATEX certified
- Practical, portable and lightweight
- Revolving handle to aid horizontal or vertical spreading
- Removable handle for improved access
- No finger pinch point
- Increased step-depth on upper steps
- Safety lanyard length, 39 inches
- Forged key components for strength and reliability
- Rapid disassembly and assembly
- Narrow jaw teeth – improved tool wear



**Flange Dimensions**



Model Number	Type	Maximum Spreading Force Per Tool (ton)	Spreading Distance Maximum * (in)	Flange Dimensions	Jaw Width (in)	Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
				Minimum Access Gap A (in)					
SWi1214TMSTDEX	Mechanical	15.7	4.1	0.24	2.4	13.7	37.5	22.8 x 15.7 x 7.1	SWi12/14TMEX
SWi2025TEMINEX	External Hydraulic	27	4.1	0.24	2.4	14.1	33.1	22.8 x 15.7 x 7.1	SWi20/25TEEX
SWi2025TESTDEX	External Hydraulic	27	4.1	0.24	2.4	14.1	60.6	26.8 x 22.0 x 7.1	SWi20/25TEEX
SWi2025TEMAXEX	External Hydraulic	27	4.1	0.24	2.4	14.1	85.5	36.6 x 23.6 x 7.1	SWi20/25TEEX
SWi2025TISTDEX	Integral Hydraulic	27	4.1	0.24	2.4	18.7	38.6	22.8 x 15.7 x 7.1	SWi20/25TIEX

\* Using stepped blocks.



# Equalizer Flange Spreading Tools

**SWi12/14TMEX -**  
ATEX Certified Mechanical  
Flange Spreading Wedge



II 2G Ex h IIB T5 Gb  
II 2D Ex h IIIC T185°F Db

**SWi1214TMSTDEX - SWi12/14TMEX STD Kit**



- 1 x SWi12/14TMEX Flange Spreading Tool
- 1 x ATEX Torque Wrench with 22 mm Socket
- 1 x Set of Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Aluminium Carry Case with Protective Foam Inserts

**SWi20/25TEEX -**  
ATEX Certified Hydraulic  
Flange Spreading Wedge



II 2G Ex h IIB T5 Gb  
II 2D Ex h IIIC T212°F Db

**SWi2025TEMINEX - SWi20/25TEEX MIN Kit**



- 1 x SWi20/25TEEX Flange Spreading Tool
- 1 x Set Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Aluminium Carry Case with Protective Foam Inserts

**SWi20/25TIEX -**  
ATEX Certified Integral Hydraulic  
Flange Spreading Wedge



II 2G Ex h IIB T5 Gb  
II 2D Ex h IIIC T212°F Db

**SWi2025TISTDEX - SWi20/25TIEX STD Kit**



- 1 x SWi20/25TIEX Flange Spreading Tool
- 1 x Set of Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Carry-Strap
- 1 x Aluminium Carry Case with Protective Foam Inserts

**SWi2025TESTDEX - SWi20/25TEEX STD Kit**



- 1 x SWi20/25TEEX Flange Spreading Tool
- 1 x 10,000 psi ATEX Hydraulic Hose, 6.5 ft. with 90° Elbow
- 1 x 10,000 psi HP350S ATEX Single-Port Sealed Hand Pump with Gauge
- 1 x Set Safety Blocks
- 1 x Pair of Stepped Blocks
- 1 x Lanyard
- 1 x Hex Key
- 1 x Aluminium Carry Case with Protective Foam Inserts

**SWi2025TEMAXEX - SWi20/25TEEX MAX Kit**



- 2 x SWi20/25TEEX Flange Spreading Tools
- 2 x 10,000 psi ATEX Hydraulic Hose, 6.5 ft. with 90° Elbow
- 1 x 10,000 psi HP550D ATEX Twin-Port Sealed Hand Pump with Gauge
- 2 x Set Safety Blocks
- 2 x Pair of Stepped Blocks
- 2 x Lanyards
- 2 x Hex Keys
- 1 x Aluminium Carry Case with Protective Foam Inserts



These tools have been designed for use in potentially explosive atmospheres which is:

- Group II (Non-mining equipment)
- Equipment **category 2** where explosive atmosphere is likely to occur in normal operation
- Can be applied in **zones 1** and **2** of gaseous explosive atmospheres and in **zones 21** and **22** of dust explosive atmosphere
- **Gas G** or **Dust D** with type of protection **Ex h** for non-electrical equipment
- Suitable for use with **Group IIB** of a gases and vapours (Ethylene group) and **Group IIIC** of dust (conductive dust)
- For hydraulic tools **T5** means that minimum ignition temperature of gas or vapor **>212°F**; **T212°F** means that minimum ignition temperature of a dust cloud **≥302°F** and minimum ignition temperature of a 0.2 inch (5mm) dust layer **≥347°F**
- For mechanical tools **T6** means that minimum ignition temperature of gas or vapor **>185°F**; **T185°F** means that minimum ignition temperature of a dust cloud **≥261.5°F** and minimum ignition temperature of a 0.2 inch dust layer **≥ 320°F**

These tools have been designed and manufactured in accordance with the following transposed harmonized European standards:

- **EN ISO 80079-36:2016** Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements;
- **EN ISO 80079-37:2016** Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k"

▼ SG11TM



## SG

**FLANGE  
SPREADING TOOLS**

Spreading Force:  
**4.2 - 16.9 tons**

Spreading Distance:  
**0 - 4.53 inches**

Maximum Operating Pressure:  
**10,000 psi \***

\* Only relevant for hydraulic tools



### Range of Application

For a detailed range of application please request the Secure-Grip Mechanical or Hydraulic Operator Instruction Sheet.



### CAUTION

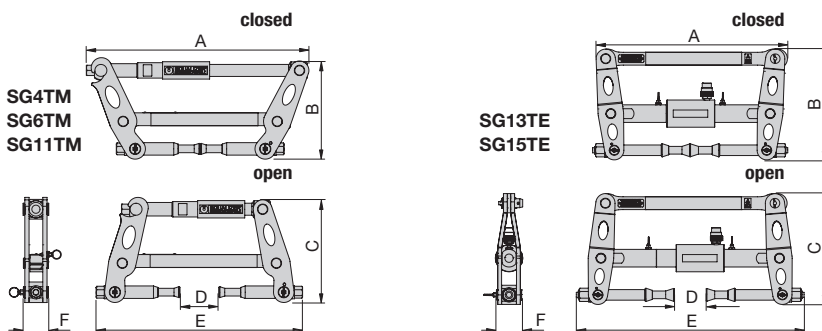
A minimum of two Flange Spreading Tools must be used when opening flange joints.

This will enable the operator to maintain an equal spreading distance across the flange faces.

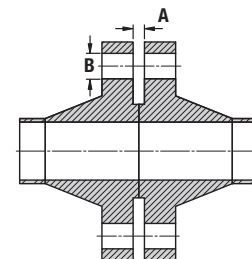
- For use on all flange types with bolt-hole sizes ranging from 0.69 inches to 2.44 inches
- Unique expanding collet technology
- Little or no access gap required
- Secure bolt-hole locking mechanism

### OPERATING BENEFITS

- Time-saving, simple operation
- Measurable, controlled flange spreading force
- Virtually universal, the Secure-Grip Flange Spreader range covers ANSI, DIN, SPO, ASME, API and BS flanges



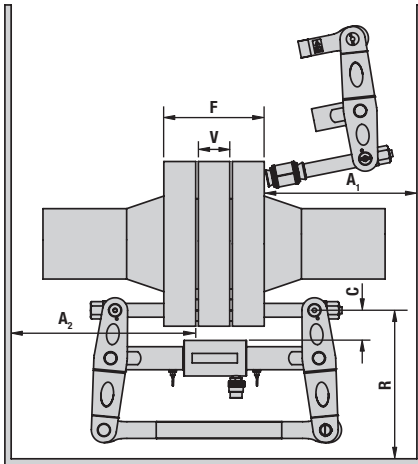
### Flange Dimensions



Model Number	Type *	Maximum Spreading Force Per Tool (ton)	Spreading Distance Maximum (in)	Flange Dimensions (in)		Tool Dimensions (in)						Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B	A	B	C	D	E	F				
SG4TMSTD	M	4.2	2.95	0	0.69 - 0.91	15.7	7.5	7.2	3.0	15.2	1.9	9.9	28.2	20.5x14.8x6.5	SG4TM
SG6TMSTD	M	6.7	3.15	0	0.94 - 1.18	18.4	9.6	9.9	3.1	17.5	2.0	16.5	35.3	25.2x21.3x6.5	SG6TM
SG11TMSTD	M	12.4	3.54	0	1.18 - 1.54	20.3	9.8	10.4	3.5	18.2	2.4	23.1	44.1	25.2x21.3x6.5	SG11TM
SG13TESTD	H	14.6	4.53	0	1.50 - 1.93	20.3	11.9	12.4	4.5	24.8	2.8	47.4	89.3	35.0x22.4x6.5	SG13TE
SG15TESTD	H	16.9	3.94	0	1.87 - 2.44	23.6	13.6	15.0	3.9	28.3	3.1	57.3	99.2	35.0x22.4x6.5	SG15TE

\* M = Mechanical  
H = Hydraulic

# Equalizer Flange Spreading Tools



**SG**

**FLANGE  
SPREADING TOOLS**

Model Number	Flange Joint Thickness F			Valve / Spacer Thickness V			Flange Clearance C		Radial Space R		Axial Space (for installation) A <sub>1</sub>		Axial Space (installed) A <sub>2</sub>		Tool Number
	Min. (in)	Max. (in)	Measured: From / To	Min. (in)	Max. (in)	Measured: From / To	Max. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	
<b>SG4TMSTD</b>	2.4	7.3	Outside face of flange / Outside face of flange	0*	1.8*	Inside face of flange / Inside face of flange	2.0	Bolt-hole circle / Largest OD of valve/spacer	6.7	Bolt-hole circle / Closest obstruction	6.7	Outside face of flange / Closest obstruction	7.9	Inner face of flange / Closest obstruction	SG4TM
<b>SG6TMSTD</b>	2.4	8.3		0*	2.0*		2.2		9.1		7.9		9.2		
<b>SG11TMSTD</b>	3.8	9.4		0*	2.4*		2.4		9.4		8.8		10.2		
<b>SG13TESTD</b>	4.7	12.2		0*	3.7*		2.8		11.0		12.2		10.2		
<b>SG15TESTD</b>	5.5	15.7		0*	3.1*		3.1		14.6		15.0		12.4		

\* Short Collet Holder Kits (SCH) are available which can offer improved range of application.

## SG4TM MECHANICAL TOOL KIT



- 1 X SG4TM Tool
- 1 X 6" Vernier Calliper
- 1 X 3/8" Drive Torque Wrench and 16 mm Socket
- 1 X Safety Block
- 2 X M16 (5/8") Collets
- 2 X M20 (3/4") Collets
- 1 x Aluminium Carry Case with Protective Foam Inserts

## SG6TM MECHANICAL TOOL KIT



- 1 x SG6TM Tool
- 1 X 6" Vernier Calliper
- 1 X 3/8" Drive Torque Wrench and 21 mm Socket
- 1 x Safety Block
- 2 x M24 (7/8") Collets
- 2 x M27 (1") Collets
- 1 x Aluminium Carry Case with Protective Foam Inserts

## SG11TM MECHANICAL TOOL KIT



- 1 x SG11TM Tool
- 1 x 6" Vernier calliper
- 1 x 1/2" Drive torque wrench and 24 mm socket
- 1 x Safety block
- 2 x M30 (1-1/8") Collets
- 2 x M33 (1-1/4") Collets
- 2 x M36 (1-3/8") Collets
- 1 x Aluminium Carry Case with Protective Foam Inserts

## SG13TE HYDRAULIC TOOL KIT



- 1 x SG13TE Tool
- 1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
- 1 x 10,000 psi Hydraulic Hose, 78.7"
- 1 x 6" Vernier Calliper
- 1 x 1/2" Square Drive Flexible Handle
- 1 x 1-1/8" Socket
- 1 x Safety Block
- 2 x M39 (1-1/2") Collets
- 2 x M42 (1-5/8") Collets
- 2 x M45 (1-3/4") Collets
- 1 x Aluminium Carry Case with Protective Foam Inserts

## SG15TE HYDRAULIC TOOL KIT



- 1 x SG15TE Tool
- 1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
- 1 x 10,000 psi Hydraulic Hose, 78.7"
- 1 x 12" Vernier Calliper
- 1 x 1/2" Square Drive Flexible Handle
- 1 x 1/2" Socket
- 1 x Safety Block
- 2 x M48 (1-7/8") Collets
- 2 x M52 (2") Collets
- 2 x M56 (2-1/4") Collets
- 1 x Aluminium Carry Case with Protective Foam Inserts

▼ SG18TE & SG25TE



## SG

FLANGE  
SPREADING TOOLS

Spreading Force:  
**20.2 - 28.1 tons**

Spreading Distance:  
**0 - 4.72 inches**

Maximum Operating Pressure:  
**10,000 psi**

- Applicable for larger-sized flanges
- Actuated by an external hand pump
- Suitable for bolt holes from 2.34 to 4.25 inches



### Range of Application

For a detailed range of application please request the Secure-Grip In-Line Hydraulic Operator Instruction Sheet.

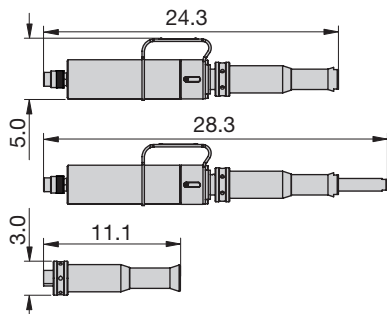


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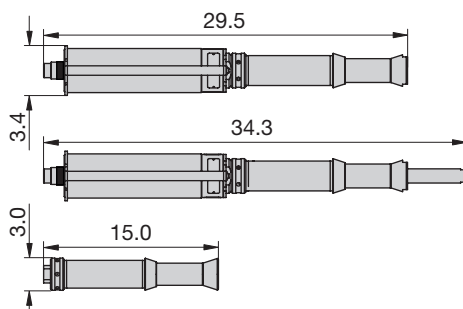
A minimum of two Flange Spreading Tools must be used when opening flange joints.

This will enable the operator to maintain an equal spreading distance across the flange faces.

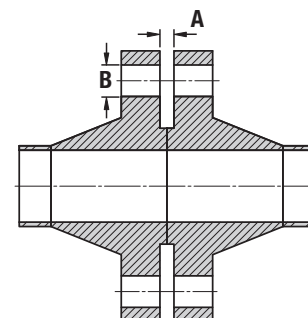
#### SG18TE



#### SG25TE

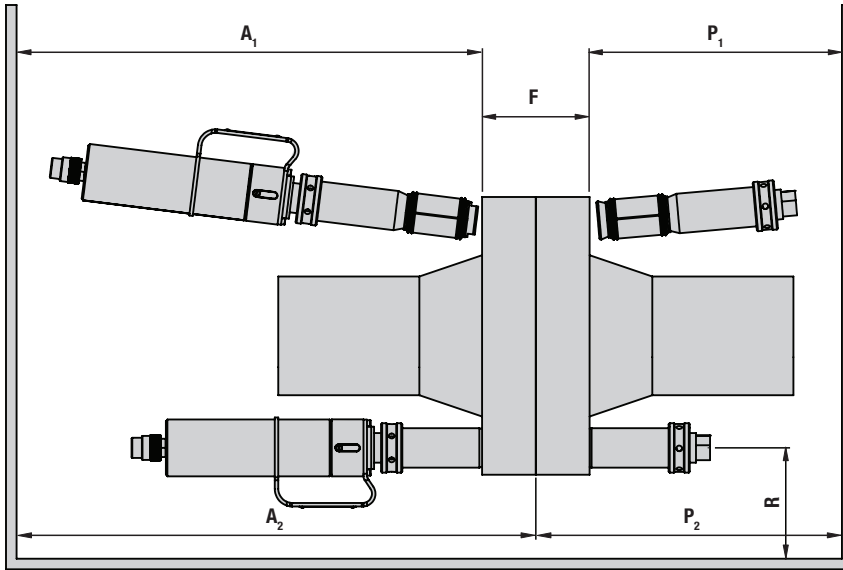


### Flange Dimensions



Model Number	Type	Maximum Spreading Force Per Tool (ton)	Spreading Distance Maximum (in)	Flange Dimensions (in)		Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B				
SG18TESTD	Hydraulic	20.2	3.93	0	2.34 - 2.95	30.9	99.2	35 x 22.4 x 6.5	SG18TE
SG25TESTD	Hydraulic	28.1	4.72	0	2.95 - 4.25	52.9	110.2	35 x 22.4 x 6.5	SG25TE

# Equalizer Flange Spreading Tools



**SG**

**FLANGE  
SPREADING TOOLS**

Model Number	Flange Joint Thickness F			Radial Space R		Axial Space (for installation) A <sub>1</sub>		Axial Space (installed) A <sub>2</sub>		Axial Plug Space (for installation) P <sub>1</sub>		Axial Plug Space (installed) P <sub>2</sub>		Tool No.
	Min. (in)	Max. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	
<b>SG18TESTD</b>	7.5	17.7	Outside face of flange/ Outside face of flange	2.2	Bolt-hole circle / Closest obstruction	24.4	Outside face of flange/ Closest obstruction	35.4	Inner face of flange/ Closest obstruction	11.1	Outside face of flange/ Closest obstruction	11.1	Inner face of flange/ Closest obstruction	SG18TE
<b>SG25TESTD</b>	8.3	22.4		2.2		29.5		43.3		15.0		15.0		SG25TE

## SG18TE HYDRAULIC TOOL KIT



- 1 x SG18TE Tool
- 1 x Spreading Plug
- 1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
- 1 x 10,000 psi Hydraulic Hose, 6.5'
- 1 x 12" Vernier Calliper
- 1 x 0.5" Spacer Plate
- 1 x 5mm Allen Key
- 1 x 2.0" Spacer
- 1 x Safety Block
- 2 x M60 (2-3/8") Collets
- 2 x M64 (2-1/2") Collets
- 2 x M70 (2-3/4") Collets
- 1 x Aluminium Carry Case with Protective Foam Inserts

## SG25TE HYDRAULIC TOOL KIT

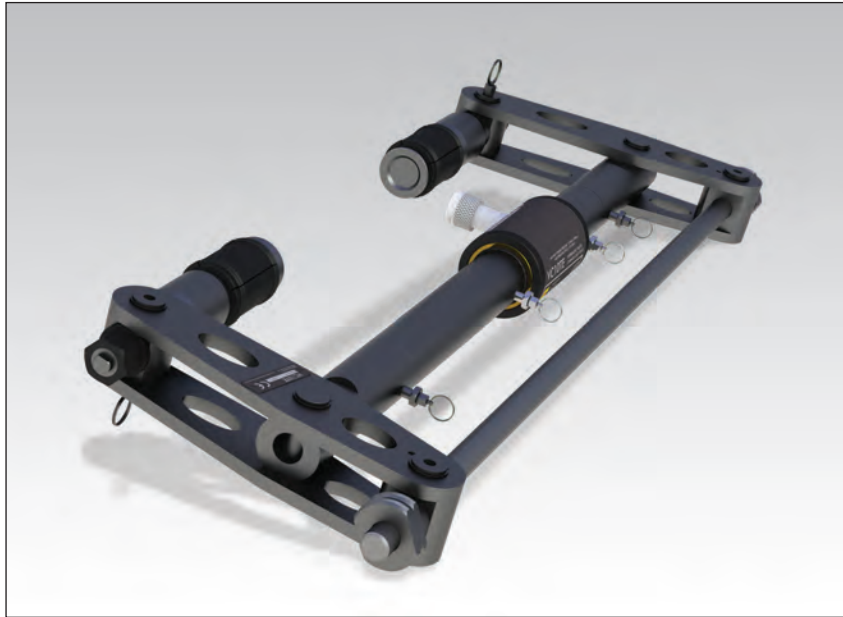


- 1 x SG25TE Tool
- 1 x Spreading Plug
- 1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
- 1 x 10,000 psi Hydraulic Hose, 6.5'
- 1 x 12" Vernier Calliper
- 1 x 0.5" Spacer Plate
- 1 x Safety Block
- 1 x Aluminium Carry Case with Protective Foam Inserts

### SG25TE COLLETS (AVAILABLE SEPARATELY)

Model Number	Description
<b>673601-01</b>	2 x M76 (3") Collets
<b>673901-01</b>	2 x M80 (3-1/4") Collets
<b>674501-01</b>	2 x M84 (3-3/8") Collets
<b>674801-01</b>	2 x M90 (3-1/2") Collets
<b>675101-01</b>	2 x M95 (3-3/4") Collets
<b>675601-01</b>	2 x M100 (4") Collets

▼ VC10TE



## VC

VALVE  
CHANGE-OUT TOOLS

Spreading Force:  
**11.2 tons**

Spreading Distance:  
**0 - 22.8 inches**

Maximum Operating Pressure:  
**10,000 psi**



### CAUTION

A minimum of two Flange Spreading Tools must be used when opening flange joints.

This will enable the operator to maintain an equal spreading distance across the flange faces.



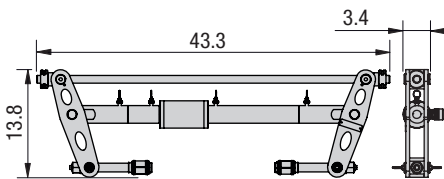
### The Actuator and Extension

Subassembly can be assembled into 4 different configurations to suit a variety of applications. For a detailed range of application please request the VC10 Operator Instruction Sheet.

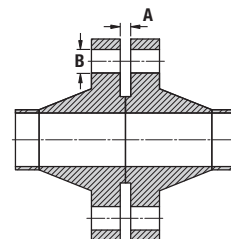
- Assists in the removal of wafer/butterfly valves, spades/spacers or gaskets from large flange joints
- Tool span is longer than a standard Secure-Grip Flange Spreader
- Adjustable to enable the tool to operate in a range of situations

### PATENTED SECURE-GRIP SYSTEM:

- Unique expanding collet technology
- Secure bolt-hole locking mechanism
- Unique technology makes the Secure-Grip arguably the safest flange spreader available in the world today
- Virtually universal, the Secure-Grip Flange Spreader range will cover ANSI, DIN, Norsok L005, ASME, API and BS Flanges
- Time-saving, simple operation



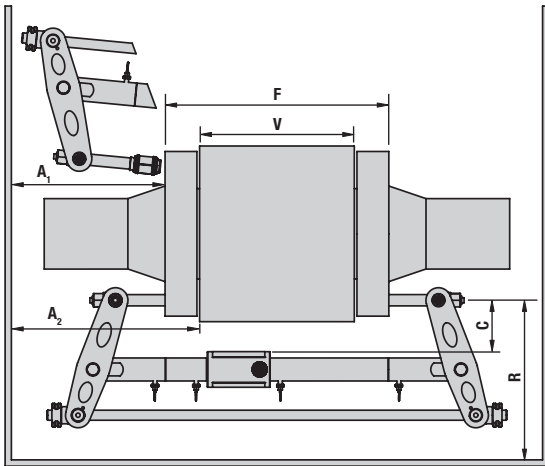
### Flange Dimensions



Model Number	Type*	Maximum Spreading Force Per Tool (ton)	Spreading Distance Maximum (in)	Flange Dimensions (pulg)		Tool Kit Weight (2 per Maxi Kit) (lbs)	Pump Kit Weight (lbs)	Gross Kit Weight (lbs)	Tool Case Dimensions (in)	Pump Case Dimensions (in)	Tool No.
				Minimum Access Gap A	Bolt-hole Diameter B						
VC10/13TESTD	H	11.2	22.8	0	1.50 - 1.93	110	60	170	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/13TE
VC10/13TEMAX	H	11.2	22.8	0	1.50 - 1.93	110	66	287	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/13TE
VC10/15TESTD	H	11.2	22.0	0	1.87 - 2.44	117	60	176	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/15TE
VC10/15TEMAX	H	11.2	22.0	0	1.87 - 2.44	117	66	300	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/15TE
VC10/18TESTD	H	11.2	20.2	0	2.34 - 2.95	128	60	187	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/18TE
VC10/18TEMAX	H	11.2	20.2	0	2.34 - 2.95	128	66	322	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/18TE
VC10/25TESTD	H	11.2	19.3	0	2.95 - 4.25	128	60	187	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/25TE
VC10/25TEMAX	H	11.2	19.3	0	2.95 - 4.25	128	66	322	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/25TE

\* H = Hydraulic

# Equalizer Flange Spreading Tools



## VC

**VALVE  
CHANGE-OUT TOOLS**

Model Number	Flange Joint Thickness F			Valve / Spacer Thickness V			Flange Clearance C	Radial Space R	Axial Space (for installation) A <sub>1</sub>	Axial Space (installed) A <sub>2</sub>	Tool Number
	Min. (in)	Max. (in)	Measured: From / To	Min. (in)	Max. (in)	Measured: From / To	Measured: From / To	Measured: From / To	Measured: From / To	Measured: From / To	
<b>VC10/13TESTD</b>	4.3	27.2	Outside face of flange / Outside face of flange	0*	22.8*	Inside face of flange / Inside face of flange	Bolt-hole circle / Largest OD of valve/spacer - max. 5.1"	Bolt-hole circle / Closest obstruction - min. 14.2"	Outside face of flange / Closest obstruction - min. 11.8"	Inner face of flange / Closest obstruction - min. 14.6"	VC10/13TE
<b>VC10/13TEMAX</b>	4.3	27.2		0*	22.8*						VC10/13TE
<b>VC10/15TESTD</b>	5.1	27.2		0*	22.0*						VC10/15TE
<b>VC10/15TEMAX</b>	5.1	27.2		0*	22.0*						VC10/15TE
<b>VC10/18TESTD</b>	6.9	27.2		0*	20.2*						VC10/18TE
<b>VC10/18TEMAX</b>	6.9	27.2		0*	20.2*						VC10/18TE
<b>VC10/25TESTD</b>	7.9	27.2		0*	19.3*						VC10/25TE
<b>VC10/25TEMAX</b>	7.9	27.2		0*	19.3*						VC10/25TE

\* Short Collet Holder Kits (SCH) are available which can offer improved range of application.

### TOOL KITS (1 PER STD KIT, 2 PER MAX KIT)



#### VC10/13TE

1 x VC10/13TE Tool  
2 x M39 (1-1/2") Collets  
2 x M42 (1-5/8") Collets  
2 x M45 (1-3/4") Collets  
1 x Aluminium Carry Case with Protective Foam Inserts

#### VC10/15TE

1 x VC10/15TE Tool  
2 x M48 (1-7/8") Collets  
2 x M52 (2") Collets  
2 x M56 (2-1/4") Collets  
1 x Aluminium Carry Case with Protective Foam Inserts

#### VC10/18TE

1 x VC10/18TE Tool  
2 x M60 (2-3/8") Collets  
2 x M64 (2-1/2") Collets  
2 x M70 (2-3/4") Collets  
1 x Aluminium Carry Case with Protective Foam Inserts

#### VC10/25TE

1 x VC10/25TE Tool  
1 x Aluminium Carry Case with Protective Foam Inserts

### PUMP KITS



#### For STD Tool Kits

1 x 10,000 psi HP550S Single Port Hydraulic Hand Pump  
1 x Hydraulic Gauge with Manifold  
1 x 10,000 psi Hydraulic Hose, 6.5'  
1 x Secure Grip Safety Block  
1 x Square Drive Flexible Handle  
1 x Vernier Calliper  
1 x Aluminium Carry Case with Protective Foam Inserts

#### For MAX Tool Kits

1 x 10,000 psi HP1000D Twin Port Hydraulic Hand Pump  
2 x Hydraulic Gauges with Manifolds  
2 x 10,000 psi Hydraulic Hoses, 6.5'  
2 x Secure Grip Safety Blocks  
1 x Square Drive Flexible Handle  
1 x Vernier Calliper  
1 x Aluminium Carry Case with Protective Foam Inserts



### Collet Sizing

It is important that the correct size of collet is used. An undersized collet could allow the collet holder to pull through its bore. An oversized collet has the potential to become jammed in the bolt-hole.



### Range of Application

For a detailed range of application please request the Hydraulic Secure-Grip Valve Change-Out Tool Operator Instruction Sheet.

### VC10/25TE COLLETS (AVAILABLE SEPARATELY)

Model Number	Description
<b>673601-01</b>	2 x M76 (3") Collets
<b>673901-01</b>	2 x M80 (3-1/4") Collets
<b>674501-01</b>	2 x M84 (3-3/8") Collets
<b>674801-01</b>	2 x M90 (3-1/2") Collets
<b>675101-01</b>	2 x M95 (3-3/4") Collets
<b>675601-01</b>	2 x M100 (4") Collets

▼ TFA15TI



## TFA

### WIND TURBINE TOWER FLANGE ALIGNMENT TOOLS

Hook Force:

**4.5 - 30.3 tons**

Aligning Distance:

**1.7 - 2.6 inches**

#### TFA4TM Mechanical Tool Kit



- 1 x TFA4TM Tool
- 1 x Torque Wrench
- 1 x Moulded Plastic Carry Case

#### TFA12TE / TFA15TE External Hydraulic Tool Kit



- 1 x TFA12TE or TFA15TE Tool
- 1 x Safety Lanyard
- 1 x Aluminium Carry Case with Protective Foam Inserts

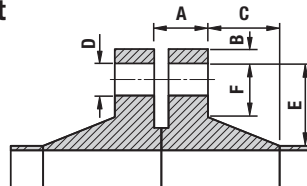
#### TFA12TI / TFA15TI Internal Hydraulic Tool Kit



- 1 x TFA12TI or TFA15TI Tool
- 1 x Aluminium Carry Case with Protective Foam Inserts

The TFA Wind Turbine Tower Flange Alignment Tools have been developed to aid the alignment of large flanges on the inside of wind turbine towers during their assembly or installation.

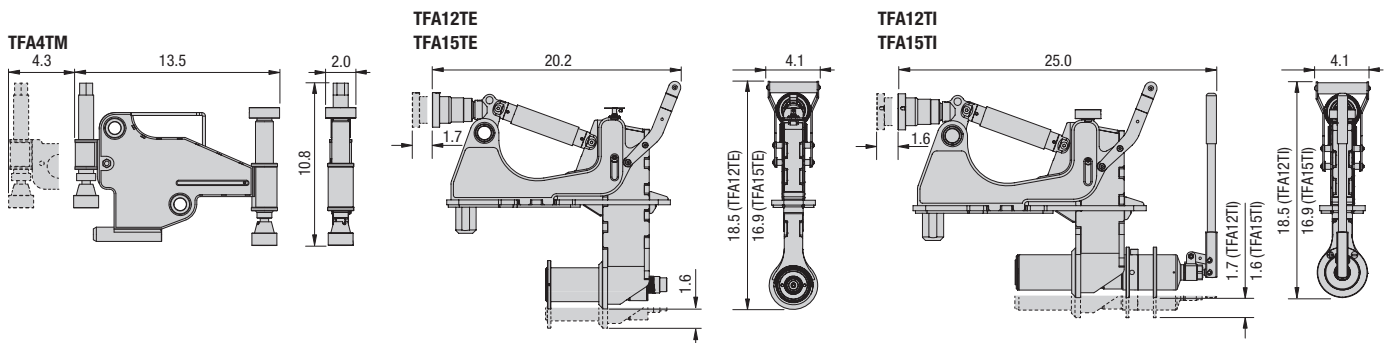
- Assists in aligning / de-ovalizing large internal pipe flanges
- Helps resolve bolt-hole misalignment within tower sections of wind turbine towers
- Can be used both on and offshore



Flange Dimensions

Model Number	Type*	Maximum Hook Force Per Tool (ton)	Maximum Aligning Distance (in)	Maximum Operating Pressure (psi)	Flange Dimensions (in)						Tool Weight (lbs)	Kit Weight (lbs)	Box/Case Dimensions (in)	Tool Number
					A	B	C	D min	E	F min				
TFA4TMSTD	M	4.5	1.7	-	1.4-5.3	0-2.2	0-9.1	0.98	0-4.1	0.94	17.9	39.7	23.6 x 14.6 x 7.9	TFA4TM
TFA12TEMIN	H	27.0	2.6	7,400	5.1-7.0	4.3-9.5	0-16.6	1.8	3.4-4.9	2.4	42.5	62.6	25.2 x 21.3 x 6.5	TFA12TE
TFA15TEMIN	H	30.3	2.6	10,000	3.5-5.4	4.3-9.5	0-16.6	1.8	3.4-4.9	2.4	41.7	61.7	25.2 x 21.3 x 6.5	TFA15TE
TFA12TISTD	H	27.0	2.6	-	5.1-7.0	4.4-9.5	0-16.6	1.8	3.4-4.9	2.4	48.3	68.3	23.0 x 35.4 x 6.3	TFA12TI
TFA15TISTD	H	30.3	2.6	-	3.5-5.4	4.4-9.5	0-16.6	1.8	3.4-4.9	2.4	47.4	67.5	23.0 x 35.4 x 6.3	TFA15TI

\* M = Mechanical  
H = Hydraulic





# Equalizer Flange Pulling Tool

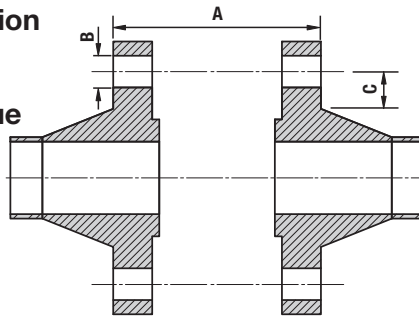
▼ FC10TE



- Applicable to all flanges with a bolt-hole diameter of 1 inch or greater, including ANSI, DIN, Norsok L005, ASME and BS flanges
- Slide and lock collet system
- Low profile tool
- Can be used on all vertical and horizontal flanges including ANSI, API, BS, DIN & Norsok L005
- Robust yet light weight
- Subsea compatible
- Reciprocating hydraulic action

## OPERATING BENEFITS

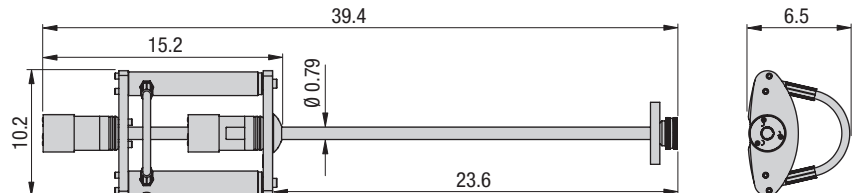
- Reduction in operator fatigue
- Reduction in pinch point
- Quick and easy to use



Flange Dimensions

Model Number	Type	Maximum Closing Force Per Tool (ton)	Closing Distance (in)	Flange Dimensions (in)			Tool Weight (lbs)	Kit Weight (lbs)	Box/Case Dimensions (in)	Tool Number
				A	B min.	C min.				
FC10TESTD	Hydraulic	11.2	22.4	0.63-22.4	1*	1.3	24.3	51.8	35.0 x 22.4 x 6.5	FC10TE
FC10TEMAX	Hydraulic	11.2	22.4	0.63-22.4	1*	1.3	24.3	80.5	35.0 x 22.4 x 6.5	FC10TE

\* For hole diameter greater than 1.7 inches, please contact Enerpac.



## FC

FLANGE  
CLOSING TOOL

Closing Force:

**11.2 tons**

Closing Distance:

**22.4 - 0 inches**

Maximum Operating Pressure:

**10,000 psi**



### CAUTION

A minimum of two flange closing tools must be used when flange pulling. This will enable the operator to maintain an even gap between flange faces and prevent flange / gasket damage.

### FC10TESTD STD Kit



- 1 x FC10TE Tool
- 1 x 10,000 psi Hydraulic Hose, 6.5' long
- 1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
- 1 x Aluminium Carry Case with Protective Foam Inserts

### FC10TEMAX MAX Kit



- 2 x FC10TE Tool
- 2 x 10,000 psi Hydraulic Hoses, 6.5' long
- 1 x 10,000 psi HP550D Twin Port Sealed Hand Pump with Gauge
- 1 x Aluminium Carry Case with Protective Foam Inserts

▼ HP350D



## HP

HYDRAULIC SEALED  
HAND PUMPS

Maximum Pressure Rating:

**1st Stage: 197 psi**

**2nd Stage: 10,000 psi**

Pump Type:

**2-Speed**

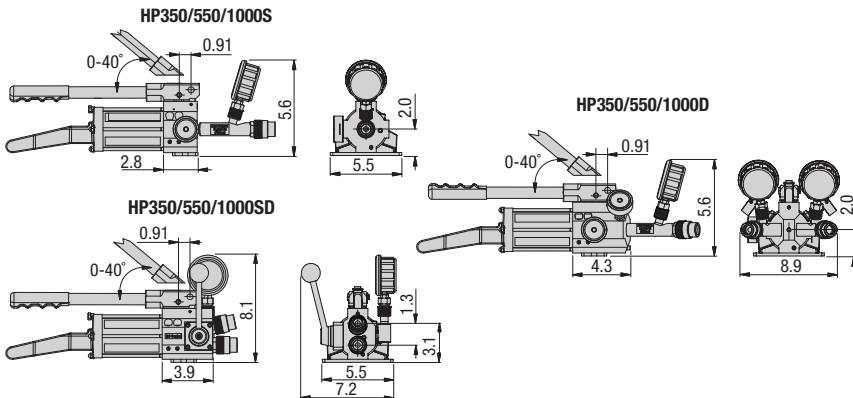


### Pump Ratings

The Hydraulic Single Port, Twin Port and Double-Acting Hand-Pump (and hoses) are tailored for use with hydraulic equipment.

Each pump's output is regulated to 10,000 psi and is delivered from threaded 3/8" NPT output ports. The pumps and hoses can be used with any 10,000 psi rated hydraulic equipment within their oil capacity specification. The HP range of hydraulic hand-pumps have been designed with a seal oil reservoir, which allows the pumps to be used in any orientation without the risk of oil spills or air contamination.

- HP-S , HP-D and HP-SD pump ranges are operable at all angles and are highly resistant to accidental spillage of hydraulic fluid (certified)
- The Single-Port and Twin-Port Hand Pumps are also available with ATEX rating, which are certified for use in hazardous areas II 2G Ex h IIB T5 Gb, II 2D Ex h IIIC T212° F Db



### 10,000 PSI HOSES

AVAILABLE TO PURCHASE SEPARATELY

Model Number	Description
302701-01	Hydraulic Hose 78.7"
302702-01	Hydraulic Hose 157.5"
302705-01	Hydraulic Hose 118.1"
302706-01	Hydraulic Hose 196.9"
302707-01	Hydraulic Hose 236.2"
1440008-01	ATEX Hydraulic Hose 78.7"
1440013-01	ATEX Hydraulic Hose 157.5"
1440014-01	ATEX Hydraulic Hose 236.2"

Model Number		Type*	Nominal Oil Capacity (cc)	Useable Oil Capacity (cc)	Oil Volume per Stroke (cc)		Max. Handle Effort (lbf)	Piston Stroke (in)	Overall Length (in)	Box Dimensions (in)	Pump Weight (lbs)	Kit Weight (lbs)	Tool Number
Standard	ATEX				1st Stage	2nd Stage							
HP350SMIN	HP350SMINEX	SA, SP	21.4	18.3	0.221	0.047	72.75	0.71	21.8	9.8 x 7.1 x 23.6	9.7	10.8	HP350S
HP550SMIN	HP550SMINEX	SA, SP	33.6	35.4	0.221	0.047	55.12	0.71	25.3	9.8 x 7.1 x 27.6	11.2	13.0	HP550S
HP1000SMIN	HP1000SMINEX	SA, SP	61.0	67.7	0.221	0.047	46.30	0.71	34.1	9.8 x 7.1 x 35.4	13.4	15.7	HP1000S
HP350DMIN	HP350DMINEX	SA, TP	21.4	18.3	0.221	0.047	72.75	0.71	22.8	9.8 x 7.1 x 23.6	14.3	15.9	HP350D
HP550DMIN	HP550DMINEX	SA, TP	33.6	35.4	0.221	0.047	55.12	0.71	26.3	9.8 x 7.1 x 27.6	15.9	17.9	HP550D
HP1000DMIN	HP1000DMINEX	SA, TP	61.0	67.7	0.221	0.047	46.30	0.71	35.2	9.8 x 7.1 x 35.4	15.7	20.5	HP1000D
HP350SDMIN	N/A	DA	21.4	18.3	0.221	0.047	72.75	0.71	18.0	9.8 x 7.1 x 23.6	11.7	12.5	HP350SD
HP550SDMIN	N/A	DA	33.6	35.4	0.221	0.047	55.12	0.71	22.8	9.8 x 7.1 x 27.6	12.6	13.2	HP550SD
HP1000SDMIN	N/A	DA	61.0	67.7	0.221	0.047	46.30	0.71	30.3	9.8 x 7.1 x 35.4	13.0	13.9	HP1000SD

\* SA = Single Acting  
SP = Single Port

DA = Double Acting  
TP = Twin Port



## Product Training

Equalizer designs and builds products of the highest quality, using the best components. This quality ethos extends to training and a range of training components are offered to ensure the optimal use of the tools. In addition to online training materials, Equalizer has a hands-on training facility, class-room based training and an onsite training system with a mobile demo trailer which travels around providing on-site introductions and training. Through this, users can experience first-hand how quick, simple and easy the tools are to apply and use on a series of custom-built flanges.

## Class-Room Based Training

Commercial and technical presentations provide distributors with the necessary information to respond to a wide range of customer enquiries and challenges.



## On-Site Training

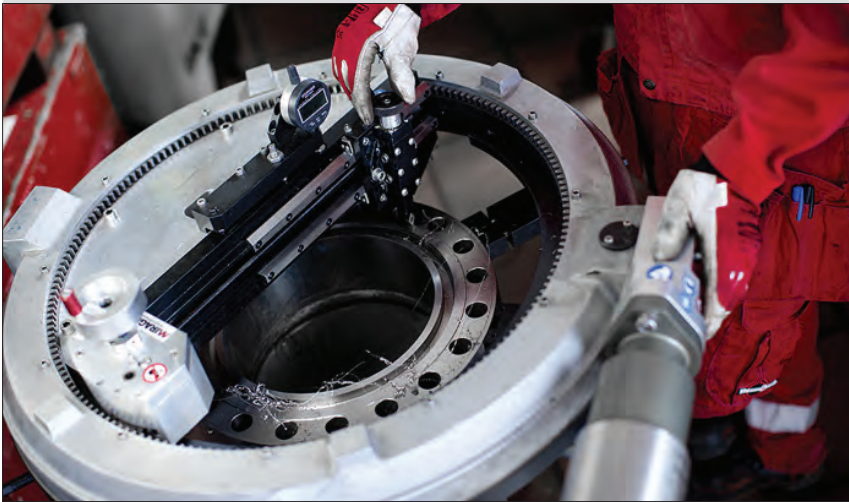
- Custom built trailer, containing the full range of Equalizer™ tools
- Portable training rig with flange joints
- Flange aligning, spreading and pulling tool demonstrations.

## Hands-On Training and Demonstration

Practical demonstrations and hands-on training provide distributors and customers with valuable knowledge, information and experience to safely use the full range of Equalizer products. This in turn strengthens Equalizer's reputation as the expert in tools for flange maintenance within the oil and gas, chemical, power generation, nuclear, water, mining and renewable energy sectors world-wide.



## For the Toughest On-Site Machining Jobs



▲ Flange facing machining.

### FLANGE FACING MACHINES

If you mention flange facing machines to an on-site machinist, the chances are the first manufacturer they'll think of is Mirage. This success stems from their precision construction, the results they deliver, and how easy they are to set-up on-site. Choose from external and internal mount options in a wide range of sizes.

### LINEAR MILLING MACHINES

These are available in 2 and 3 axis configurations. Each includes the latest workshop tool technology in a portable format. Choose our optional switch magnets and chain clamps for a fast and efficient set-up onto pipe diameters.

### ORBITAL MILLING MACHINES

Mirage orbital milling machines deliver fast material removal and achieve high accuracy across large diameters. The WP orbital milling range is designed especially for companies manufacturing wind turbine rotor blades and towers.

### HOT TAPPING MACHINES

Hot tapping is a high-pressure intervention and the Mirage range of machines can help you achieve a safe and effective solution. Innovations used include a helical gear drive located close to the cutting head to ensure maximum efficiency, rotary pressure seals, and four fixed feeds.

## Portable Machine Tools to Power Your Success

Decades of engineering knowhow combined with a continuing drive to innovate has resulted in a wide range of world-class portable machining products - each one robust enough to handle the toughest of on-site machining challenges.



▲ Flange facing machines to ensure flange joint integrity.

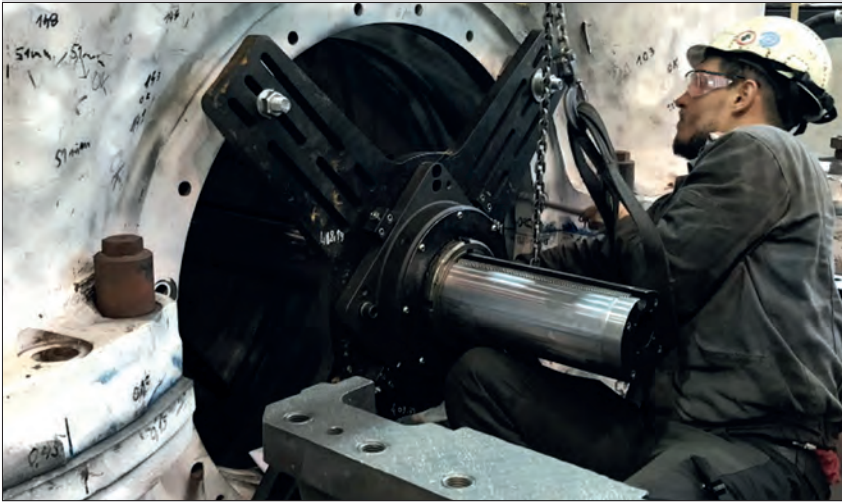


▲ Orbital milling machines used in shipbuilding and power generation industries.



▲ Orbital milling machines for wind turbine manufacture.

## Our Mission is to Help You Create Success Stories, for Both You and Your Customers



▲ Pipe cutters and weld preparation.

### LINE BORING MACHINES

Mirage Line Boring Machines produce workshop quality tolerances on site - eliminating costly dismantling and production downtime. Many configurations are possible by choosing different bar diameters and lengths, along with a wide range of inserts, boring arms and facing heads.

### DECOMMISSIONING SAWS

Mirage provides a range of saws for a diverse range of heavy-duty tubular severance projects. Band saws deliver a cost-effective solution to cold cutting requirements and our diamond wire saws are ideal for quickly cutting through dissimilar materials.

### DRILLING AND TAPPING MACHINES

Mirage heavy-duty drilling and tapping machines offer high torque and easy operation through their heavy duty spindles with ISO standard tapers. Optional switch magnet mounts and chain clamps enable a quick and easy setup. For large scale offshore decommissioning projects Mirage casing pin drills provide an effective solution for creating lift holes in casings.

### DL RICCI CLAMSHELL CUTTERS

Throughout the world, the DL Ricci name is synonymous with pipe cutting and beveling. Mirage is now able to offer these pioneering machines, each capable of delivering an outstanding performance in industries such as construction, decommissioning, maintenance, fabrication and refurbishment.

## High Performing Portable Machine Tools

Creating machines to deal with the toughest machining challenges doesn't just happen by accident. It comes from decades of engineering know-how, from the relentless need to innovate - and above all, from placing the customer at the heart of everything we do.



▲ Pipe cutters and weld preparation.



▲ Line boring machines for power generation and maintenance of construction vehicles.



▲ High torque portable drilling machines.



## Enerpac “Yellow Pages” Stand For Hydraulic Information!

If selecting hydraulic equipment is not your daily routine then you will appreciate these pages. The “Yellow Pages” are designed to help you work with hydraulics. They will help you to better understand the basics of hydraulics, of system set-ups and of the most commonly used hydraulic techniques. The better your choice of equipment, the better you will appreciate hydraulics. Take the time to go through these “Yellow Pages” and you will benefit even more from Enerpac High Pressure Hydraulics.

Section		Page
Safety Instructions		118 ▶
Bolting Theory		120 ▶
Torque Tightening		122 ▶
Tensioning		124 ▶
Bolting Integrity Software		126 ▶
Hexagon Bolt & Nut Sizes		128 ▶
Key to Measurement		129 ▶
Bolting Service & Safety		130 ▶
Enerpac Academy		131 ▶
About Enerpac		132 ▶



### ENERPAC WARRANTY STATEMENT

[www.enerpac.com](http://www.enerpac.com)

Visit our website for the complete Enerpac Global Warranty or call your Enerpac Authorized Service Center.

Enerpac is certified for several quality standards. These standards require compliance with standards for management, administration, product development and manufacturing.



Enerpac provides Declarations of Conformity, Declarations of Incorporation, and CE marking for products that conform to the European Community Directives.

### EMC Directive

Where specified, Enerpac electric power pumps meet the requirements for Electromagnetic Compatibility per EMC Directive 2014/30/EU.



DEKRA & IBEx  
ATP-1500, ZA and XA-Series air-motor driven pumps, and S- and W-Series Torque Wrenches are tested and certified according to the Directive 2014 / 34 / EU “ATEX Directive”. The explosion protection is for equipment group II, equipment category 2 (hazardous area zone 1), in gas and/or dust atmospheres. ATP-1500, ZA and XA-Series pumps are marked with: Ex II 2 GD ck T4.

### ASME B30.1-2015

Our cylinders fully comply with the criteria set forth by the American Society of Mechanical Engineers (except RD, BRD, CUSP, HCL, and LPL-Series).



Enerpac’s Quality Management System is certified to the ISO 9001-2015 requirements.



Where specified, Enerpac electric power units meet the design, assembly and test requirements of The Standards Council of Canada (CAN C22.2 No. 68-92), and UL73 for the United States. Units were tested and certified for both USA and Canada by TUV and CSA, Nationally Recognized Testing Laboratories.

### ISO1402

Enerpac thermoplastic and rubber hoses are tested to the criteria set forth in this standard.

### Product Design Criteria

All hydraulic components are designed and tested to be safe for use at maximum 10,000 psi unless otherwise specifically noted.

# Bolting Solution and Application Worksheet



▼ Please complete the following information prior contacting Enerpac for your bolting proposal:

Requested By: \_\_\_\_\_ Requested Date: \_\_\_\_\_

Company: \_\_\_\_\_ Industry: \_\_\_\_\_

Contact: \_\_\_\_\_ Title: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Description of Application (provide drawings if possible):

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Type of Application:

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## APPLICATION TECHNICAL DATA

Bolt Quantity: \_\_\_\_\_

Bolt Diameter: \_\_\_\_\_

Bolt Threads per Inch/Pitch: \_\_\_\_\_

Bolt Grade: \_\_\_\_\_

Bolt Coating: \_\_\_\_\_

Gasket Type: \_\_\_\_\_

App. Operating Temp., °C or °F: \_\_\_\_\_

### Known Bolting Values:

Load  
(Lbs. / kN) \_\_\_\_\_  
% of Yield (psi/Nmm<sup>2</sup>) \_\_\_\_\_

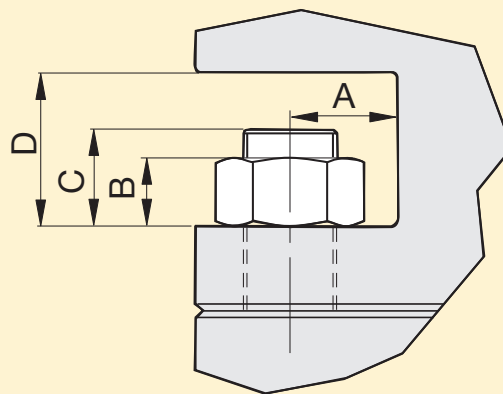
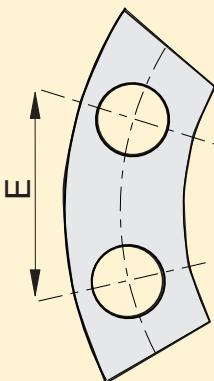
Stretch-Bolt Length  
(inch / mm) \_\_\_\_\_

Turn of Nut  
(Preload / Degrees) \_\_\_\_\_

Torque  
(Ft.lbs / Nm / Kgm) \_\_\_\_\_

### Application Position:

Top-side  Vertical  Inverted



Specify Dimensions:	INCH	MM (Metric)
A _____ B _____ C _____ D _____ E _____		
Distance to Closure: _____		
Current Lubrication:	Type _____	Brand _____



When used correctly, hydraulic power is one of the safest methods of applying force to your work. And to that end we offer some DO's and DON'Ts, simple common sense points which apply to practically all Enerpac hydraulic products.

- Lift slowly and check the load often
- Avoid standing in the line of force
- Anticipate possible problems and take steps to avoid them.

The line drawings and application photos of Enerpac products throughout this catalog are used to portray how some of our customers have used hydraulics in industry.

In designing similar systems, care must be taken to select the proper components that provide safe operation and fit your needs.

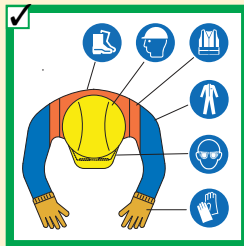
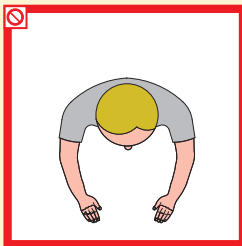
Check to see if all safety measures have been taken to avoid the risk of injury and property damage from your application or system.

Enerpac can not be held responsible for damage or injury, caused by unsafe use, maintenance or application of its products.

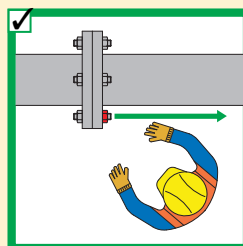
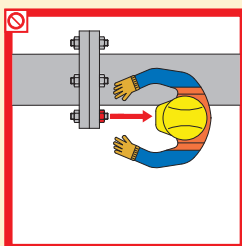
Please contact the Enerpac office or a representative for guidance when you are in doubt as to the proper safety precautions to be taken in designing and setting up your particular system.

In addition to these tips, every Enerpac product comes with instructions spelling out specific safety information. Please read them carefully.

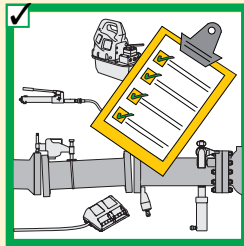
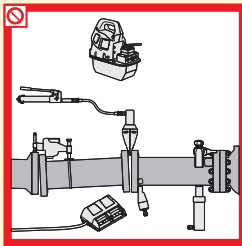
## Bolting Tools



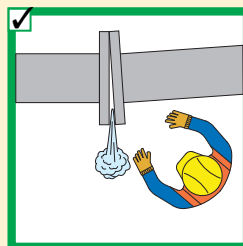
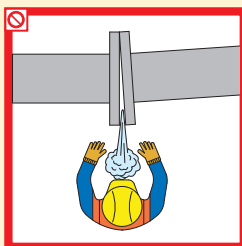
◀ Always use the proper personal protection equipment (PPE).



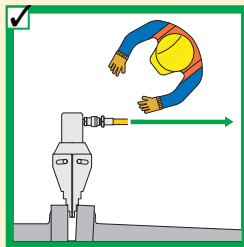
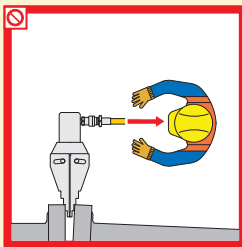
◀ Never stand in-line with the bolt axis.



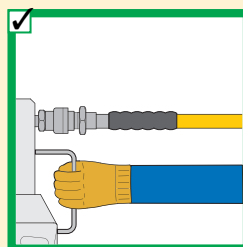
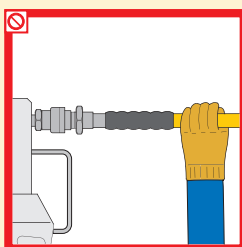
◀ Always check your system set-up and follow the correct bolting procedures.



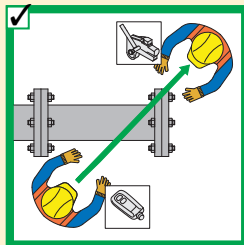
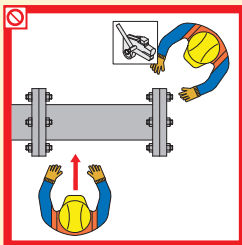
◀ Never stand in-line with the flange or pipe opening.



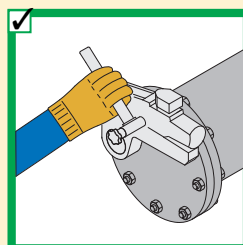
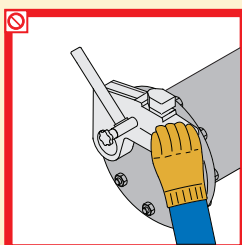
◀ Never stand in-line with the pressure, couplers or hoses.



◀ Never hold pressurized hoses.

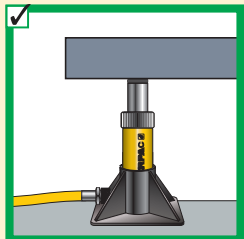
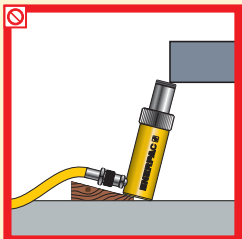


◀ The torque wrench (or tool) operator is always in charge.



◀ Hold torque wrench (or tool) at handle only. Do not place any part of body between wrench and reaction point.

## Cylinders



◀ Provide a solid support for the entire cylinder base area. Use cylinder base attachment for more stability.



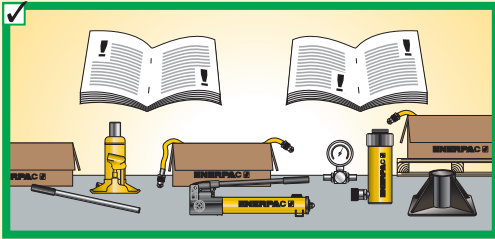
◀ As with jacks, never place any part of your body under the load. Load must be on cribbing before venturing under.



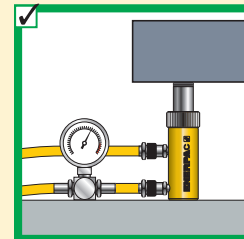
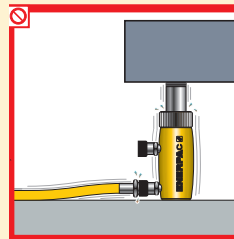


## General

**80%** Manufacturer's rating of load and stroke are maximum safe limits. **80%**  
**Good practice encourages using only 80% of these ratings!**

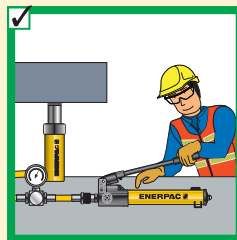
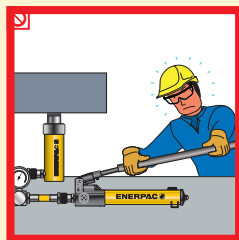


Always read instructions and safety warnings that come with your Enerpac hydraulic equipment.

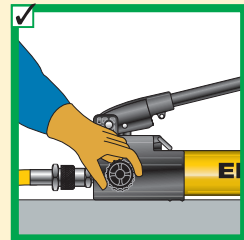
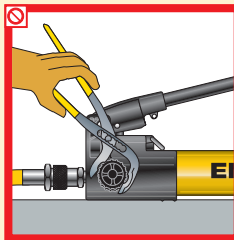


Both couplers must be connected when using double-acting cylinders. Ensure return hose is fitted.

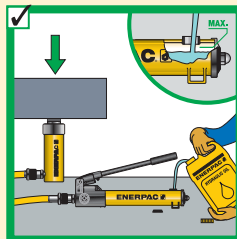
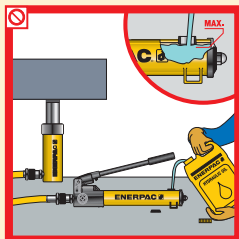
## Pumps



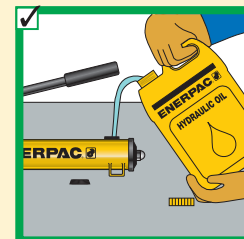
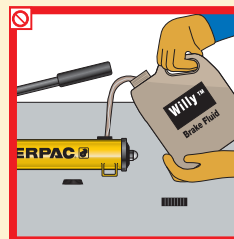
Don't use handle extenders. Hand pumps should be easy to operate when used correctly.



Close release valve finger tight. Using force will ruin the valve.

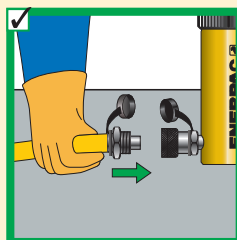
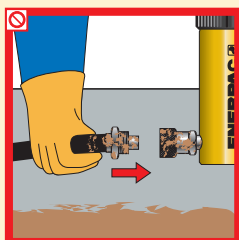


Fill pump only to recommended level. Fill only when connected cylinder is fully retracted.

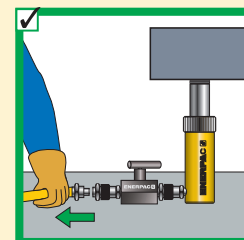
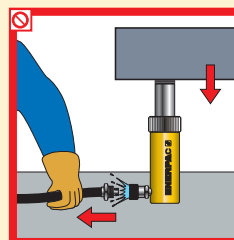


Always use genuine Enerpac hydraulic oil.

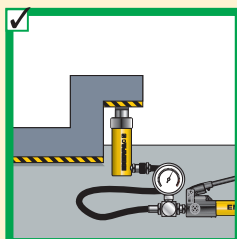
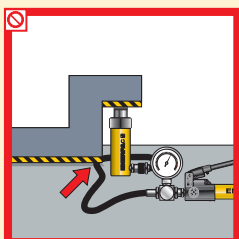
## Hoses and Couplers



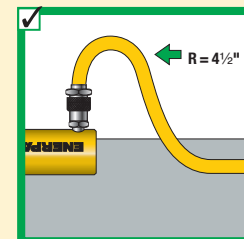
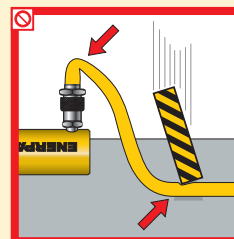
Clean both coupler parts before connecting. Use dust caps when coupler parts are not connected.



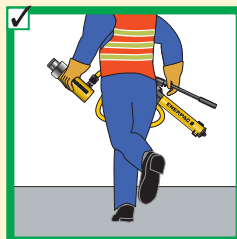
Detach cylinder only when fully retracted or use shut-off valves or safety valves to lock-in cylinder pressure.



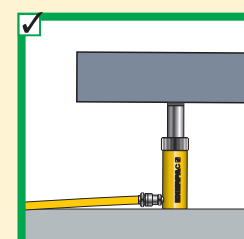
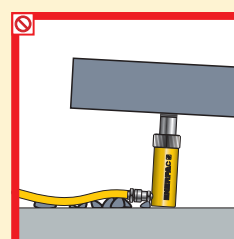
Keep hoses away from the area beneath loads.



Don't kink hoses. Bending radius should be at least 4 1/2 inch. Don't drive over or drop heavy objects on hoses.



Don't lift hydraulic equipment by the hoses.



Never allow the cylinder to be lifted off of the ground through the couplers.

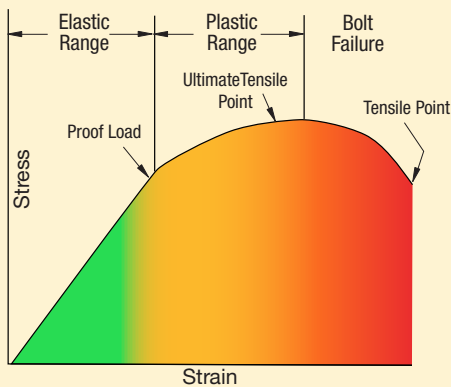


## Function of Bolts and Nuts

Threaded fasteners are used across industry to assemble products ranging from pipelines to heavy-duty earth movers and from cranes to bridges and many more. Their principle function is to create a clamping force across the joint which is able to sustain the operating conditions without loosening.

Correctly tightened bolts make use of their elastic properties, to work well they must behave like springs. When load is applied, the bolt stretches and tries to return to its original length. This creates compressive force across the joint members.

## Hooke's Law of Physics



## Behavior of Bolts and Nuts

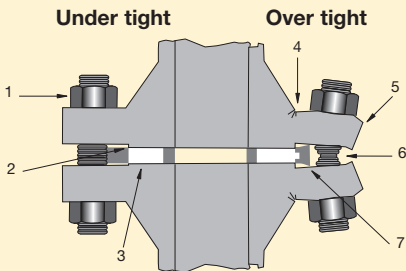
Elasticity is defined in Hooke's Law of physics: The stress in a bolt is directly proportional to its strain. The stress-strain of a bolt has an **elastic range** and a **plastic range**. In the elastic range Hooke's Law is true.

All of the elongation applied within the elastic range is relieved when the load is removed. The amount of elongation increases when more load is applied. When a bolt is stressed beyond its **proof load** (maximum load under which a bolt will behave in an elastic manner), the elastic elongation changes to plastic deformation and the strain will no longer be proportional to the stress.

In the plastic deformation a part of the elongation will remain after the load is removed. The point where this permanent elongation occurs is called the yield strength. The further application of load takes the bolt to a point where it begins to fail this is termed its **ultimate tensile strength** (UTS). At this UTS-point, if additional force is applied to the bolt it will continue to elongate until it finally breaks. The point at which the bolt breaks is called the **tensile point**.

Careful attention must be paid to the grade of bolt being used as bolt grades differ in the elastic range.

## Uniform preload (residual load)



1. Bolt loosens due to cycle loads of vibration.
2. Sealing face surface damage.
3. No compression.
4. Cracking.
5. Flange rotation.
6. Yielding of bolts.
7. Over compression of gasket.

## Preload

The main purpose of a bolt and nut is to clamp parts together with the correct force to prevent loosening in operation. The term **preload** refers to the loading in a bolt immediately after it has been tightened.

The amount of preload (residual load) is critical as the joint can fail if the load in the bolt is too high, too low or not uniform in every bolt.

### Uneven Bolt Loads can Result in:

- Some bolts being loose while others are overloaded.
- Crushing of the gasket on one side, leakage on the other side.

Preload is normally dictated by the joint design, (see Enerpac Bolted Joint Integrity) for information on common joint types or contact your local representative.



## Tightening Methods

Principally there are two modes of tightening: "Uncontrolled" and "Controlled".

### Uncontrolled Tightening

Uses equipment and/or procedures that cannot be measured. Preload is applied to a bolt and nut assembly using a hammer and spanner or other types of impact tools.

### Controlled Tightening

Employs calibrated and measurable equipment, follows prescribed procedures and is carried out by trained personnel. There are two main techniques: Torque tightening and Bolt tensioning.

1. **Torque Tightening** - Achieves preload in a bolt and nut assembly via the nut in a controlled manner using a tool.
2. **Bolt Tensioning** - Achieves preload in a bolt and nut assembly by stretching the bolt axially using a tool.

## Advantages of Controlled Tightening

### Known, Controllable and Accurate Bolt Loads

Employs tooling with controllable outputs and adopts calculation to determine the required tool settings.

### Uniformity of Bolt Loading

Especially important on gasketed joints as an even and consistent compression is required for the gasket to be effective.

### Safe Operation Following Prescribed Procedures

Eliminates the dangerous activities of manual uncontrolled tightening and requires that the operators be skilled and follow procedures.

### Reduces Operational Time Resulting in Increased Productivity

Reduces tightening time and operator fatigue by replacing manual effort with the use of controlled tooling.

### Reliable And Repeatable Results

Using calibrated, tested equipment, following procedures and employing skilled operators achieves known results consistently.

### The Right Results First Time

Many of the uncertainties surrounding in-service joint failures are removed by ensuring the correct assembly and tightening of the joint are carried out the first time.



### Bolting Integrity Software

A comprehensive on-line software solution for Bolted Joint Integrity.

Integral databases hold data for:

- ASME B16.5, ASME B16.47, API 6A and API 17D flanged joints
  - Common gasket materials and configurations
  - Comprehensive range of bolt materials
  - Comprehensive range of lubricants
  - Enerpac's Controlled Bolting Equipment including: Torque Multipliers, Hydraulic Wrenches and Bolt Tensioning tools
- Custom Joint information can also be entered.

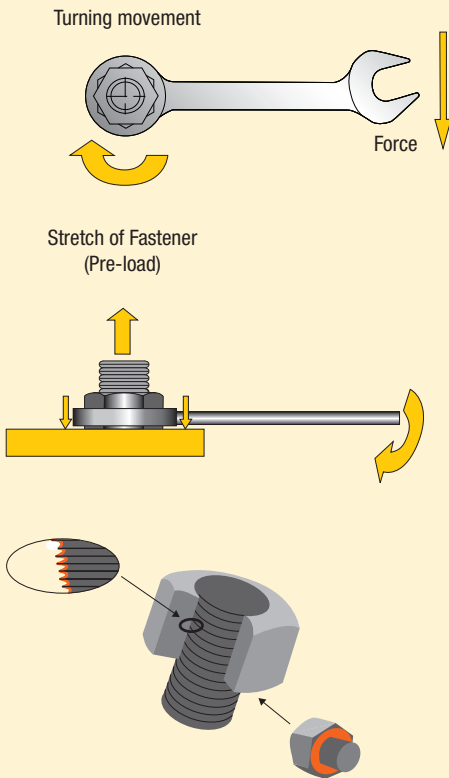
The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report.

The screenshot displays the ENERPAC Bolting Calculator interface. It includes a navigation menu with 'Calculations', 'Inquiries', 'Help', 'Contact Us', and 'Enerpac.com'. The main section is titled 'Torque Calculation' and contains a 'Calculation Information' form with fields for Tightening Method (Torqueing selected), Pressure Units (Psi/Barg), Lubricant (μ advised as 0.12), Standard (ANSI), Breakout (No), Flange Size (100mm), Flange Class (1500), Flange Material (Carbon Steel), Gasket (Spiral Wound), Joint Type (Standard), and Bolt Material (ASTM A193 B7). A 'Tooling Options' list shows various tool models like S1500, S3000, S5000, W2000, W4000, W8000, SQD-25, SQD-50, SQD-75, and SQD-100. On the right, 'Diagram Values' and 'Tightening Values' are listed, including Bolt Hole Diameter, Flange OD, Bolt Circle Diameter, Total Flange Length, Flange Thickness, Weld Neck OD, Pipe OD, Residual Stress, Bolt Load, Torque, and Lubricant. A 'Selected Tool' section shows 'No Tool Selected'. At the bottom right, 'Joint Data' includes Joint Thickness, Bolt Size (8 x M33), Min Bolt Length, NUT A/P, Minimum To Seal, Yield Stress, Allowable Stress, % Residual Yield, Applied Stress, and Applied Load.

Visit [www.enerpac.com](http://www.enerpac.com) to access our free on-line bolting software application and obtain information on tool selection, bolt load calculations and tool pressure settings. A combined application data sheet and joint completion report is also available.



## Torque Tightening



Friction points should always be lubricated when using the torque tightening method.

## What is Torque?

It is a measure of how much force acting on an object which causes that object to rotate.

## What is Torque Tightening?

The application of preload to a fastener by the turning of the fastener's nut.

## Torque Tightening and Preload

The amount of preload created when torquing is largely dependant on the effects of friction.

Principally there are three different "torque components":

- torque to stretch the bolt
- torque to overcome the friction in bolt and nut threads
- torque to overcome friction at the nut spot face (bearing contact surface).



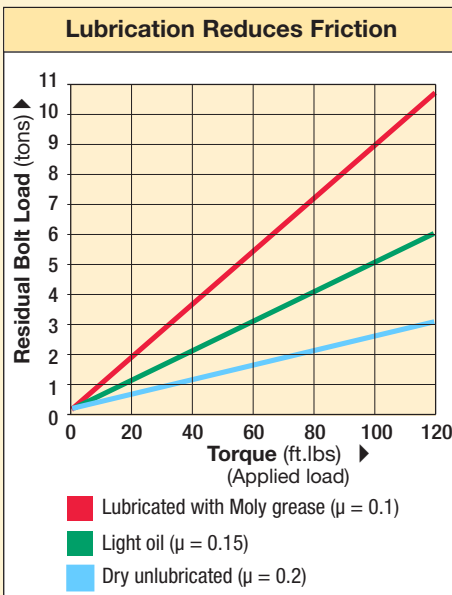
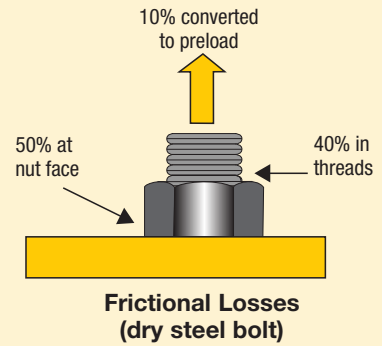
$$\text{Preload (residual load)} = \text{Applied Torque} \textit{ minus} \text{ Frictional Losses}$$

## Lubrication Reduces Friction

Lubrication reduces the friction during tightening, decreases bolt failure during installation and increases bolt service life. Variation in friction coefficients affect the amount of preload achieved at a specified torque. Higher friction results in less conversion of torque to preload. The value for the friction coefficient provided by the lubricant manufacturer must be known to accurately establish the required torque value.

Lubricant or anti-seizure compounds should be applied to both the nut bearing surface and the male threads.

## Frictional Losses



Example of how a lubricant can reduce the effect of friction and convert more torque to bolt preload.

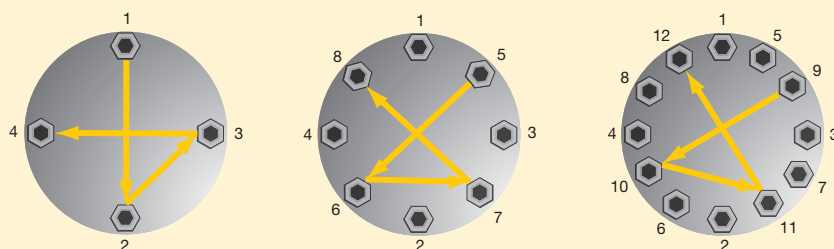


**Manufacturer's rating of pressure and torque are maximum safe limits.  
Good practice encourages using only 80% of these ratings!**

## Torque Procedure

When torquing it is common to tighten only one bolt at a time, this can result in Point Loading and Load Scatter. To avoid this, torque is applied in stages following a prescribed pattern:

### Torque Sequence



- Step 1:** Spanner tight ensuring that 2-3 threads extend above nut
- Step 2:** Tighten each bolt to one-third of the final required torque following the pattern as shown above.
- Step 3:** Increase the torque to two-thirds following the pattern shown above.

- Step 4:** Increase the torque to full torque following the pattern shown above.
- Step 5:** Perform one final pass on each bolt working clockwise from bolt 1, at the full final torque.



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  - Common gasket materials and configurations
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- Custom Joint information can also be entered.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report.



### Select the Correct Wrench

Choose your Enerpac torque wrench using the untightening rule of thumb:

- When loosening a nut or bolt more torque is usually required than when tightening.
- For general conditions it can take up to 2½ times the input torque to breakout.
- Do not apply more than 75% of the maximum torque output of the tool when loosening nuts or bolts.

### Conditions of Bolted Joints

- Humidity corrosion (rust) requires up to twice the torque required for tightening.
- Sea water and chemical corrosion requires up to 2½ times the torque required for tightening.
- Heat corrosion requires up to 3 times the torque required for tightening.

### Minimum Output Torque

- The recommended minimum torque value of a hydraulic wrench is 10% of the maximum rated value.



### Breakout Torque

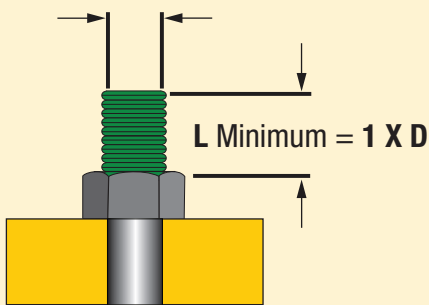
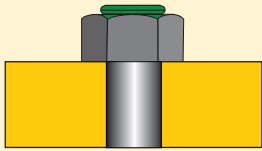
When loosening bolts a torque value higher than the tightening torque is normally required. This is mainly due to corrosion and deformations in the bolt and nut threads.

Breakout torque cannot be accurately calculated, however, depending on conditions it can take up to 2½ times the input torque to breakout.

The use of penetrating oils or anti-seize products is always recommended when performing breakout operations.



## Tensioning Requires Longer Bolts



## What is Bolt Tensioning

Tensioning is the direct axial stretching of the bolt to achieve **preload**. Inaccuracies created through friction are eliminated. Massive mechanical effort to create torque is replaced with simple hydraulic pressure. A uniform load can be applied by tensioning multiple studs simultaneously.

Tensioning requires longer bolts, and a seating area on the assembly around the nut. Tensioning can be done using detachable Bolt Tensioners or Hydraulic Nuts.



**Preload (residual load) = Applied Load minus Load Losses**

## What is Load Loss

**Load loss** is a loss of bolt elongation depending on factors such as thread deflections, radial expansion of the nut, and embedding of the nut into the contact area of the joint. Load loss is accounted for in calculation and is added to the preload value to determine the initial **Applied Load**.

The preload depends on **Applied Load and Load Loss (load loss factor)**.



## GLOSSARY OF TERMS

**Applied Load:** The load applied to a bolt during tensioning which includes an allowance for Load Loss.

**Bolt Tensioning:** A method of controlled tightening which applies preload to a bolt by stretching it axially.

**Breakout Torque:** The amount of torque required to loosen a tightened bolt. (Usually more torque is required to loosen a bolt than was used to tighten it.)

**Elastic Range:** The range on a bolt's stress / strain curve where stress is directionally proportional to strain.

**Load Loss:** The losses in a bolt which occur on transfer of load from a tensioning device to the bolt assembly (these may arise from phenomena such

as thread deflection and embedding of the nut to the contact area of the joint, and is calculated as a factor of the length to diameter ratio of the bolt).

**Load Scatter:** The spread of differing loads in a sequence of bolts after they have been loaded. It is mostly due to the elastic interaction of the bolts and the joint member; as subsequently tightened bolts further compress the joint, previously tightened bolts are subject to some relaxation.

**Plastic Range:** The range on a stress/strain curve where the tensile load applied to a bolt results in permanent deformation.

**Preload:** The load in a bolt immediately after it has been tightened.

**Proof Load:** Proof load is often used interchangeably with Yield Strength but is usually measured at 0.2% plastic strain.

**Tensile Point:** The point at which the tensile loading on a bolt causes the bolt to rupture.

**Torque Tightening:** The application of Preload to a bolt by turning of the bolt's nut.

**Ultimate Strength:** The maximum tension which can be created by tensile load on a bolt.

**Yield Strength:** The point at which a bolt begins to plastically deform under tensile loading.

**NOTE:** Bolt is used as a generic term for a threaded fastener.

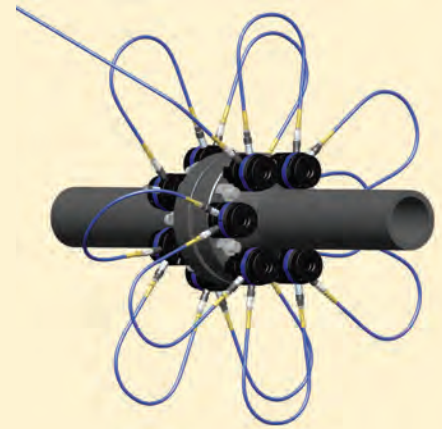


**Manufacturer's rating of pressure and load are maximum safe limits. Good practice encourages using only 80% of these ratings!**

## Tensioning Operation

Tensioning permits the simultaneous tightening of multiple bolts; the tools are connected in sequence via a high-pressure hose assembly to a single pump unit. This ensures each tool develops the exact same load and

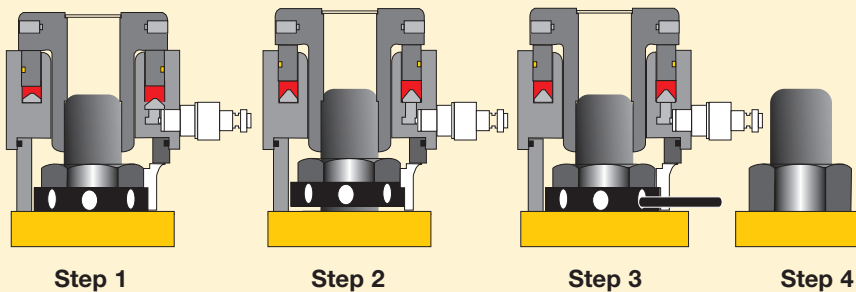
provides a uniform clamping force across the joint. This is especially important for pressure containing vessels requiring even gasket compression to affect a seal.



### Set-up Using a 100% Tensioning Procedure

All bolts are tensioned simultaneously.

## General Procedure



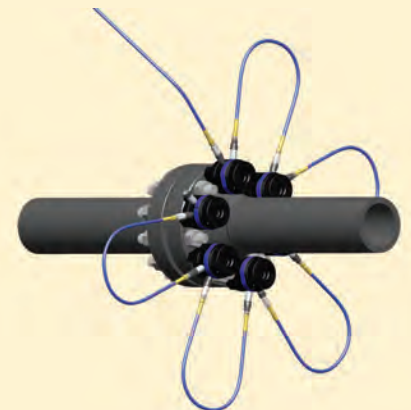
**Step 1:** The bolt Tensioner is fitted over the stud.

**Step 2:** Hydraulic pressure is applied to the tensioner which then stretches the stud.

**Step 3:** The Stud's nut is wound down against the joint face.

**Step 4:** Pressure is released and the tool removed.

The bolt behaves like a spring, when the pressure is released the bolt is under tension and attempts to contract, creating the required clamping force across the joint.



### Set-up Using a 50% Tensioning Procedure

Half the bolts are tensioned simultaneously, the tools are relocated on the remaining bolts and they are subsequently tensioned.

## Less than 100% Tensioning

Not all applications allow for the simultaneous fit of a tensioning device on each bolt, in these cases at least two tensioning pressures are applied. This is to account for a load loss in those bolts already tensioned as the

next sets are tightened. The load losses are accounted for in calculation and a higher load is applied to allow the first sets to relax back to the target preload.



### Read Instruction Manuals

Please refer to the product Instruction Sheets for safe use guidelines and detail on the correct set up and operation of the equipment.



Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software is used extensively within Enerpac and increasingly by a wide range of clients worldwide often interfacing with maintenance, construction and commissioning management systems.

- First developed over 20 years ago, we have continued to update and enhance the software based on user feedback, technology advances and our roles on industry standard committees, to produce the most comprehensive suite of joint integrity software available.
- Recommended bolt loads for standard joints are derived from independently verified calculation methods and traceable back to standards

### Integral databases hold data for:

- ASME B16.5, ASME B16.47, API 6A and API 17D flanged joints
- Common gasket materials and configurations
- Comprehensive flange and bolt materials
- Comprehensive range of lubricants
- Enerpac controlled bolting equipment includes torque, multipliers, hydraulic wrenches and bolt tensioners.
- Custom joint information can also be entered.



▲ Standard flange calculation menu (INFORMATE)

### The Enerpac Bolting Software Suite includes:

- **Bolt-Up** - Online bolt load calculator. Free access and use on [www.enerpac.com](http://www.enerpac.com).
- **INFORMATE** - Advanced calculation and procedure software. Contact Enerpac for user licenses and dedicated support.
- **IDMS Integrity Data Management System** - A complete Integrity Assurance project management package for managing bolted joints from cradle to grave. Contact Enerpac for user licenses and dedicated support.

### Bolt-Up

**Bolt-Up** is a simple to use online calculator, built upon the Informate calculation engine, providing reliable, repeatable bolt loads for:

- Carbon steel weldneck ANSI 16.5 standard flanges, using a limited range of bolt materials; selected gasket options and a fixed lubrication value.
- Inputting basic joint configuration information allows Bolt-Up to determine: bolt load; bolt stress and the required torque. These outputs are displayed alongside basic flange and bolt information e.g. joint thickness and bolt size/quantity.



### Bolting Integrity Software

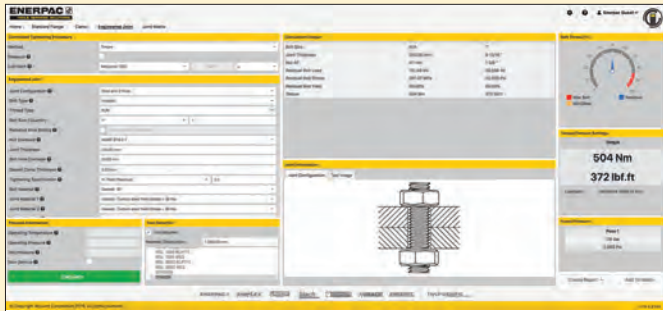
The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report.

This software includes following hydraulic tools selections:

- RSL, S and W-Series Torque Wrenches,
- HM-Series HydraMax® and GT-Series Bolt Tensioners.

Software Model No.	INFORMATE Subscriptions
BSOFIN1	Contact Enerpac for details
BSOFIN1 S	1x user license
BSOFIN5	1x user license + dedicated support
BSOFIN5 S	5x user licenses
BSOFIN5 S	5x user licenses + dedicated support





▲ Engineered Joint menu (INFORMATE)

## INFORMATE Bolt Load Calculation Software

INFORMATE can be used on a huge range of flanged joints and clamped connections in virtually any situation from process piping to custom-designed flange connections.

- Calculate bolt loads and stresses, determine tooling pressures for Enerpac torque and tensioning equipment; analyse existing connections and test custom designed connections.
- Extensive material database covering all common standards:
  - Common and industry specific lubricants
  - 200+ bolting materials
  - 500+ flange materials
  - 60+ gasket materials
- Engineered Joint Calculation Features - allows for different types of bolted application for non-circular or structural applications.
- Installed direct to the desktop or accessed via the internet, Informate is available in a single version that is configurable to client requirements and includes multiple international standards and the latest and forthcoming regulatory data, when taken with a maintenance package.



▲ Clamp menu (INFORMATE)

## Integrity Data Management System (iDMS)

iDMS is a flexible data management and activity planning system specifically for use on assets featuring bolted connections.

Designed to store the entire lifecycle data relating to every critical bolted joint on an installation, it aids planning, ensures joint integrity, as well as reducing construction and maintenance schedules and costs.

- Provides managers and technicians with essential information about joint components used in assembly, in addition it specifies the tools and the torque or tension values to deliver a leak-free joint.
- Allows planner and maintenance engineers to rapidly build packages of work complete with all documentation and then track them to completion
- Whenever a joint is worked on, all of the previous history and experience of that joint is available, allowing any particular requirements of the joint to be taken into account proactively prior to joint assembly and tightening.

iDMS Custom Tailored Solutions available to meet client needs, for example:

- Embedded Informate bolted joint calculator
- Export and import of data to asset management systems
- Exporting data to populate customer documentation
- Colour coding of the joint provides an instant review of the status.

**Contact Enerpac for User License**



# Hexagon Nut and Bolt Sizes

METRIC SIZES		
Thread Size D (mm)	Hexagon Size S (mm)	Hexagon Size J (mm)
M 10	17	8
M 12	19	10
M 14	22	12
M 16	24	14
M 18	27	14
M 20	30	17
M 22	32	17
M 24	36	19
M 27	41	19
M 30	46	22
M 33	50	24
M 36	55	27
M 39	60	27 (30)
M 42	65	32
M 45	70	-
M 48	75	36
M 52	80	36
M 56	85	41
M 60	90	46
M 64	95	46
M 68	100	50
M 72	105	55
M 76	110	60
M 80	115	65
M 85	120	70
M 90	130	70 (75)
M 95	135	-
M 100	145	85
M 105	150	-
M 110	155	-
M 115	165	-
M 120	170	-
M 125	180	-
M 130	185	-
M 140	200	-
M 150	210	-

IMPERIAL SIZES		
Thread Size D (in)	Hexagon Size * S (in)	Hexagon Size J (in)
5/8"	1 1/16"	1/2"
3/4"	1 1/4"	5/8"
7/8"	1 7/16"	3/4"
1"	1 5/8"	3/4"
1 1/8"	1 13/16"	7/8"
1 1/4"	2"	7/8"
1 3/8"	2 3/16"	1"
1 1/2"	2 3/8"	1"
1 5/8"	2 9/16"	-
1 3/4"	2 3/4"	1 1/4"
1 7/8"	2 15/16"	1 3/8"
2"	3 1/8"	1 5/8"
2 1/4"	3 1/2"	1 3/4"
2 1/2"	3 7/8"	1 7/8"
2 3/4"	4 1/4"	2"
3"	4 5/8"	2 1/4"
3 1/4"	5"	2 1/4"

\* Heavy hexagon nuts.



Determine the maximum torque according to the bolt (nut) size and grade. Always consult the manufacturers instructions or engineering recommendations when making bolted connections.



### IMPORTANT

The hexagon sizes shown in the tables should be used as a guide only. Individual sizes should be checked before specifying any equipment.



**Use Only Heavy-Duty Impact Sockets** for power driven torquing equipment, according to ISO2725 and ISO1174; DIN3129 and DIN3121 or ASME-B107.2/1995.



## Key to Measurements

All capacities and measurements in the catalog are expressed in uniform values.

The conversion chart provides helpful information for their translation into equivalent systems.

FDM Conversion Chart		
Inches	Decimal	mm
1/16	0.06	1,59
1/8	0.13	3,18
3/16	0.19	4,76
1/4	0.25	6,35
5/16	0.31	7,94
3/8	0.38	9,53
7/16	0.44	11,11
1/2	0.50	12,70
9/16	0.56	14,29
5/8	0.63	15,88
11/16	0.69	17,46
3/4	0.75	19,05
13/16	0.81	20,64
7/8	0.88	22,23
15/16	0.94	23,81
1	1.00	25,40

### Pressure:

1 psi	= 0,069 bar
1 bar	= 14,50 psi
	= 10 N/cm <sup>2</sup>
1 kPa	= 0,145 psi
1 MPa	= 145 psi

### Force:

1 lbf	= 4.45 N
1 klbf	= 1000 lbf
1 kN	= 1000 N

### Weight:

1 pound (lb)	= 0,4536 kg
1 kg	= 2,205 lbs
1 metric ton	= 2205 lbs
	= 1000 kg
1 ton (short)	= 2000 lbs
	= 907,18 kg

### Temperature:

To Convert °C to °F:  
 $T^{\circ}\text{F} = (T^{\circ}\text{C} \times 1,8) + 32$

To Convert °F to °C:  
 $T^{\circ}\text{C} = (T^{\circ}\text{F} - 32) \div 1,8$

### Volume:

1 in <sup>3</sup>	= 16,387 cm <sup>3</sup>
1 cm <sup>3</sup>	= 0,061 in <sup>3</sup>
1 liter	= 61,02 in <sup>3</sup>
	= 0,264 gal
1 US gal	= 3,785 cm <sup>3</sup>
	= 3,785 l
	= 231 in <sup>3</sup>

### Other measurements:

1 in	= 25,4 mm
1 mm	= 0,039 in
1 ft	= 0,3048 m
1 m	= 3,2808 ft
1 in <sup>2</sup>	= 6,452 cm <sup>2</sup>
1 cm <sup>2</sup>	= 0,155 in <sup>2</sup>
1 hp	= 0,746 kW
1 kW	= 1,340 hp
1 Nm	= 0,738 Ft.lbs
1 Ft.lbs	= 1,356 Nm
1 kN	= 224,82 lbs
1 lb	= 4,448 N

## Torque Conversion Factors

Units to be converted	International System - S.I. (Nm)	Imperial (Lbf.ft)	Metric (kgf.m)
1 Ft.lbs	1,356	1,000	0,138
1 Nm	1,000	0,738	0,102
1 kgf.m	9,807	7,233	1,000



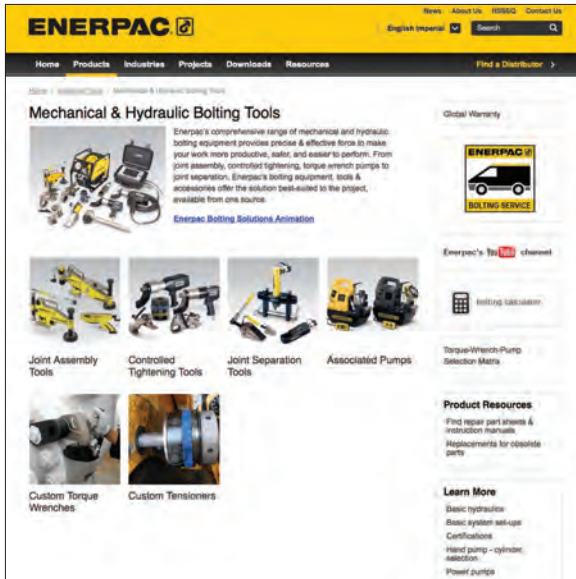
### Bolting Integrity Software

A comprehensive on-line software solution for Bolted Joint Integrity.

Integral databases hold data for:

- ASME B16.5, ASME B16.47, API 6A and API 17D flanged joints
  - Common gasket materials and configurations
  - Comprehensive range of bolt materials
  - Comprehensive range of lubricants
  - Enerpac's Controlled Bolting Equipment including: Torque Multipliers, Hydraulic Wrenches and Bolt Tensioning tools
- Custom Joint information can also be entered.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report.



### Torque Calculation Engine

Enerpac's Bolting Calculator is our free web-based calculator designed to technically support our products. The software will calculate as well as recommend bolt load/stresses for your bolted applications. You may choose between torque or tension as your tightening method and all calculations include hydraulic tool pressures based on tool selection.

### Calculation Features

ANSI B16.5 & B16.47 Flanges  
API 6A & 17D Flanges

### Custom Calculations

Customer Support Features  
Access to Technical Documents  
Engineering Inquiry Section  
Procedures and Guidance

Log on to the bolting calculator at [www.enerpac.com](http://www.enerpac.com)

Enerpac is the leading global provider of high-pressure hydraulic tools and solutions with a broad range of products, local expertise and worldwide distribution network. With a proven track record in a wide range of markets, Enerpac designs and manufactures high-quality tools and solutions for all industrial applications.

Enerpac has gained unique experience in delivering hydraulic solutions for the controlled movement and positioning of heavy objects. Enerpac supports your business by offering the right solutions and service to help you get your work done efficiently and safely.

### www.enerpac.com for latest Enerpac information

Visit the Enerpac Web Site and find out about:

- Bolting Calculator
- Learn more about hydraulics
- Promotions
- New products
- Electronic Catalogs
- Trade shows
- Manuals (instruction and repair sheets)
- Nearest Distributors & Service Centers
- Enerpac products in action
- Heavy Lifting Technology

### Ordering Products and Catalogs

To find the name of the closest Enerpac distributor or service center, to request literature or technical application assistance, go to [www.enerpac.com](http://www.enerpac.com)



### Enerpac Bolting Van

Enerpac's Bolting Van offers full bolting tool service and maintenance wherever you need it.

- Demonstrate Enerpac Bolting Tools on your premises
- Repair and calibrate all Bolting Tool brands
- Training for the safe and efficient use of Bolting Tools

### Enerpac catalogs/brochures to meet your needs:

To obtain your copy just give us a call, or visit our Internet site [www.enerpac.com](http://www.enerpac.com)



### E329 Industrial Tools Catalog

Contains our full line of cylinders, pumps, presses, pullers, tools, valves and system components, bolting solutions and heavy-lifting technology.



### E215 Workholding Catalog

Offers innovative products and solutions to provide powerful clamping and positioning force to every type of manufacturing process. Enerpac Workholding solutions increase product quality and production output.



At Enerpac, we are committed to safety. Unfortunately, serious incidents can happen on a job site. Nevertheless, such mishaps may be avoidable if workers pay attention to the hazards and potential risks, and know how to use tools correctly. Whether you work in maintenance or production, power plant, shipyard, mine, shop floor or construction site; learning to use hydraulic tools safely is mandatory.

Our Goal Zero initiative is part of our global commitment to improve workplace safety. We are committed to achieve the Goal of Zero harm to customers and end-users of our products.

# Enerpac Academy - The Power of Knowledge



The Enerpac Academy is our in-house training program, offering Enerpac product operators and maintenance staff the opportunity to be trained in the use and maintenance of high-pressure hydraulic tools.

Operating these tools requires sound knowledge of how they work and how they should be maintained. Correct use of these tools increases safety and reduces risk – both for the operator and the environment in which the tools are used. Having the right training enables the operator to use the tools safely and properly.



## Enerpac Academy

- Safety focus for operators, tools and environment
- Dedicated in-house Enerpac training centers
- Both standard training courses and specialized training services
- Highly experienced trainers
- Selection of training courses with a proven (value-added) track record
- Knowledge and experience sharing

## In-House Training Centers

Do you work with high-pressure hydraulic tools on a regular basis or even every day? The training courses are designed to be highly interactive with a strong hands-on element. Each training course is led by a qualified trainer, an Enerpac specialist capable of providing high quality training. A written or practical exam is part of certain training courses.

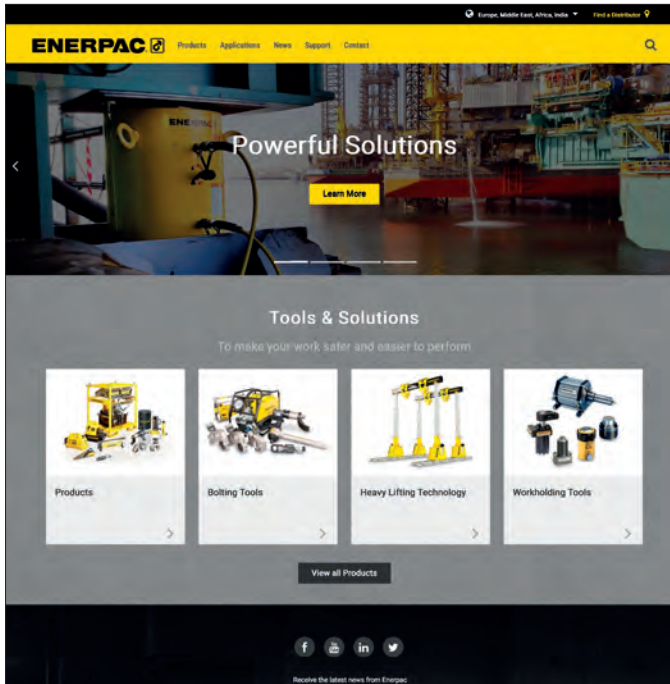


## Training Center Locations

- Columbus, Wisconsin (USA)
- Ede (The Netherlands)
- Hosur, Tamil Nadu (India)
- Singapore
- Sydney (Australia)

Enerpac Academy offers a meticulously compiled training program covering tool knowledge, repairs and maintenance, and safe operation of Enerpac hydraulic tools. If you would like to schedule a training course, please contact Enerpac for a training calendar, application form, and brochure at [www.enerpac.com](http://www.enerpac.com).





Enerpac is the leading global provider of high-pressure hydraulic tools and solutions with a broad range of products, local expertise and worldwide distribution network. With a proven track record in a wide range of markets, Enerpac designs and manufactures high-quality tools and solutions for all industrial applications.

Enerpac has gained unique experience in delivering hydraulic solutions for the controlled movement and positioning of heavy objects. Enerpac supports your business by offering the right solutions and service to help you get your work done efficiently and safely.

**www.enerpac.com** for latest Enerpac information

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- Promotions
- New products
- Electronic Catalogs
- Trade shows
- Manuals (instruction and repair sheets)
- Nearest Distributors & Service Centers
- Enerpac products in action
- Heavy Lifting Technology

### Ordering Products and Catalogs

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*All illustrations, performance specifications, weights and dimensions reflect the nominal values and slight variations may occur due to manufacturing tolerances. Please consult Enerpac if final dimensions are critical.*

*All information in this catalog can be changed due to product improvements without prior notice.*

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TOOL GROUP

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