

ENERPAC 

PRECISION SURE-LOCK®



Concrete Stressing Products

A complete solution designed for the
challenging demands of concrete stressing

Enerpac's Global Leadership In Products and Services Expanded to Markets of Prestressed Concrete, Cable Stay, Mining, Geotechnical, and Barrier Cable

Precision SURE-LOCK®, Dallas, Texas, one of the largest suppliers of prestressing products, has combined with Enerpac's global presence to provide an unprecedented range of products and services throughout the world.

From wedge anchoring products to tensioning jacks to fabrication equipment, Precision-Sure-Lock has over 60 years of experience and knowledge providing products that have PTI, ICC, IBC and ETAG acceptance.










Enerpac's SURE-LOCK® branded products are the most trusted and recognized names in the industry. We provide over 400 anchorage products, including wedges, chucks, and anchor plates. Enerpac's SURE-LOCK® and SURE-LOCK® II single strand anchorage systems meet the requirements of the International Code Council's (ICC) Acceptance Criteria 303. All SURE-LOCK® strand chucks and wedges are manufactured in-house, using only the highest quality steel. Where appropriate, components are heat-treated and tested to rigorous specifications, including 100% magnaflux inspection, hardness testing and individual load-testing to ensure reliable performance.

Enerpac has built a strong reputation supplying tensioning components for the world's largest ETAG approved system holders. Wedges of all sizes and anchor heads up to 59 inches (1500 mm) in diameter are produced using state-of-the-art CNC machining centers. 100% inspection of size and laser checking thread tooth profiles are just a few ways Enerpac meets and exceeds our customer's high expectations for quality, reliability, and delivery.

Enerpac has also broadened its line of production equipment and field-proven installation equipment, such as stressing rams, multi-strand jacks, hydraulic pumps, tools and accessories.

Around the globe, Enerpac is committed to be the first choice provider of Pre-stressed/Post-Tensioned concrete products.



Category	Description	Series		Page
SURE-LOCK®	One time use products: Wedges, Anchors, Splice Chucks and Barrel Chucks			4 ►
	Multi-Use products: Strand Chucks, Splice Chucks and Wedges			6 ►
	Cable Barrier products: GRABB-IT® Anchors and Ferrule Loops			8 ►
	Accessories: Anchor Cleaning Tool, Hand Wedge Setter, more			9 ►
Tensioning Jacks	Mono-strand: Tensioning Jacks, Noses and Gripper sets	DA PTJ SCJ		10 ►
	Multi-strand: Tensioning Jacks			14 ►
Hydraulic Pumps	Hydraulic Pumps: For use with Mono-strand Tensioning Jacks	ZU		16 ►
	Hydraulic Pumps: For use with Multi-strand Tensioning Jacks	ZE, ZG PE, EG		18 ►
	Strand Processing Equipment			22 ►

▼ Shown left to right: F5PF, F5CA, F5CHR, F500SL2 and F5TCA



Trusted and Recognized Brand



Contact Enerpac @
972-287-2390

Custom anchors and wedges are available to meet your unique stressing needs.

- **SURE-LOCK® Wedges**
 - Custom sizes and configurations
 - Pulling wedges
 - Cable-stay wedges
- **SURE-LOCK® Anchors**
 - SURE-LOCK® Mono-strand castings
 - SURE-LOCK®II Mono-strand castings
 - Multi-strand wedge plates
- **SURE-LOCK® Chucks**
 - Splice chucks safely connect two sections of strand
 - RCB chucks for “In-Pocket” stressing
 - Chucks include 2-part wedge without ring (available with other wedge types)
- ICC-ES report ESR-2381 ensures Enerpac’s SURE-LOCK® and SURE-LOCK®II single strand anchorage systems comply with the prevailing building codes



Tensioning Jacks

A complete line of field-proven hydraulic tensioning jacks for both mono-strand and multi-strand applications.

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Anchor Heads

Machined anchor heads available in customer specified sizes and hole patterns.

▼ One-time use Wedges, Anchors and Chuck Bodies

Strand Size (in)	2-Part Wedge Model Number	2-Part Wedge with Ring Model Number	3-Part Wedge with Ring Model Number	SURE-LOCK® 0.5" Anchor Model Number	SURE-LOCK®II 0.5" Anchor Model Number	SURE- LOCK® 0.6" Anchor Model Number	Chuck Body Model Number	RCB Chuck Body Model Number
0.25	F250SL2	F250SL2R	F250SL3R	F5CA	F5TCA	–	F8B	RCB
0.38	F375SL2	F375SL2R	F375SL3R	F5CA	F5TCA	–	F8B	RCB
0.43	F437SL2	F437SL2R	F437SL3R	F5CA	F5TCA	–	F8B	RCB
0.50-0.52	F500SL2	F500SL2R	F500SL3R	F5CA	F5TCA	–	F8B	RCB
0.50-Jumbo	F500SLJ2	F500SLJ2R	F500SLJ3R	–	–	F6CA	F13B	–
0.60-0.62	F600SL2	F600SL2R	F600SL3R	–	–	F6CA	F13B	–

One-Time Use Products

▼ Unbonded Post-Tensioning Systems rely on critical SURE-LOCK® Anchor and Wedge components to transfer compressive and load balancing forces to concrete.



SURE-LOCK®



Strand Sizes:

0.25 to 0.60 inches

Wedge Type:

2-part, 3-part

Coating Type:

Unplated

▼ Pocket Former and Chair



Strand Size (in)	Model Number	Description	Weight (oz)
0.50	F5PF	1.5 Inch pocket former	1.0
0.50	F545PF	45 degree pocket former	1.9
0.50	F5CHR	1.5 inch intersectional chair	0.6
0.50	F5SPT	Split pocket former	0.3
0.60	F6PF	Pocket former	2.1

▼ Splice Chucks



Strand Size (in)	Model Number	Description	Weight (lbs)
0.25	F6250	Splice chuck	3.5
0.38	F6375	Splice chuck	3.5
0.43	F6437	Splice chuck	3.5
0.50	F6500	Splice chuck	3.5
0.60	F6600	Splice chuck	3.5

▼ Chucks and Wedges



Strand Size (in)	Model Number	Description	Body	Wedge	Weight (lbs)
0.25	F5250	Chuck and 2-part wedge without ring	F8B	F250SL2	1.0
0.38	F5375	Chuck and 2-part wedge without ring	F8B	F375SL2	2.0
0.43	F5437	Chuck and 2-part wedge without ring	F8B	F437SL2	2.0
0.50	F5500	Chuck and 2-part wedge without ring	F8B	F500SL2	2.0
0.50	F5500R3	Chuck and 3-part wedge with ring	F8B	F500SL3R	2.0
0.60	F5600	Chuck and 2-part wedge without ring	F13B	F600SL2	2.1
0.60	F5600R3	Chuck and 3-part wedge with ring	F13B	F600SL3R	2.1

▼ Shown longest to shortest: **Splice Chucks, Strand Chucks and Anchor Chucks**



High Quality, Durability and Reliability

- Multi-use design offers economical solution for pre-casting and pre-stressing applications
- Bayonet cap features knurled finish for improved grip and easy opening
- Chuck and anchor components available separately for economical service and repair
- Engineered plating reduces corrosion and extends chuck life
- All wedge assemblies include o-ring retainer to reduce lost pieces and ease assembly

▼ SURE-LOCK® multi-use chucks and wedges are used by pre-cast/prestressed concrete plants to produce poles, slabs, walls, segments, T sections, beams and girders used in all types of construction.



Photo: DYWIDAG-Systems Int'l.



Multi-Use Strand Chucks

Normally used at the stressing end of a bed. Bayonet cap offer less likelihood of damage to cap during tensioning.

- Includes cap, spring, wedge and body
- Easy opening, cleaning and inspection
- Replacement parts available



Multi-Use Splice Chucks

Two lengths of strand can be connected while maintaining the strength of a continuous length.

- Safely connects two strand sections



Multi-Use Anchor Chucks

Often used on the non-stressing end of a bed, these chucks are very economical with few components.

- Open chuck
- Simple and easy to use
- Most economical

▼ Multi-Use Strand Chucks

Strand Size	Model Number	Jaw Assembly	Retaining Ring	Body	Cap	Spring	Weight (lbs)
5 mm	F1197	F197J	F1R	F1B	F1C	F1S	1.0
7 mm	F1276	F276J	F1R	F1B	F1C	F1S	1.0
0.25"	F1250	F250J	F1R	F1B	F1C	F1S	1.0
0.31"	F1312	F312J	F1R	F1B	F1C	F1S	1.0
0.34"	F1343	F343J	F1R	F1B	F1C	F1S	1.0
0.38"	F1375	F375J	F2R	F2B	F2C	F2S	2.0
0.43"	F1437	F437J	F2R	F2B	F2C	F2S	2.0
0.50"	F1500EL	F500JEL	F2R	F2B	F2C	F2SEL	2.0
0.56"	F1562	F562J	F3R	F3B	F3C	F3S	2.6
0.60"	F1600	F600J	F3R	F3B	F3C	F3S	2.6

▼ Multi-Use Splice Chucks

Strand Size	Model Number	Jaw Assembly	Coupling	Body	Back Plate	Spring	Weight (lbs)
5 mm	F4197	F197J	F1CP	F9B	F1BP	F1S	2.5
7 mm	F4276	F276J	F1CP	F9B	F1BP	F1S	2.5
0.25"	F4250	F250J	F1CP	F9B	F1BP	F1S	2.5
0.31"	F4312	F312J	F1CP	F9B	F1BP	F1S	2.5
0.34"	F4343	F343J	F1CP	F9B	F1BP	F1S	2.5
0.38"	F4375	F375J	F2CP	F10B	F2BP	F2S	4.0
0.43"	F4437	F437J	F2CP	F10B	F2BP	F2S	4.0
0.50"	F4500EL	F500JEL	F2CP	F10B	F2BP	F7S	4.0
0.56"	F4562	F562J	F3CP	F11B	F3BP	F3S	6.0
0.60"	F4600	F600J	F3CP	F11B	F3BP	F3S	6.0

▼ SURE-LOCK® Multi-Use Anchor Chucks

Strand Size	Model Number	Jaw Assembly	Retaining Ring	Body
5 mm	F2197	F197J	F1R	F4B
7 mm	F2276	F276J	F1R	F4B
0.25"	F2250	F250J	F1R	F4B
0.31"	F2312	F312J	F1R	F4B
0.34"	F2343	F343J	F1R	F4B
0.38"	F2375	F375J	F2R	F5B
0.43"	F2437	F437J	F2R	F5B
0.50"	F2500GL	F500JEL	F2R	F5B
0.56"	F2562	F562J	F3R	F6B
0.60"	F2600	F600J	F3R	F6B

SURE-LOCK



Strand Sizes:

5 mm to 0.60 inch

Wedge Type:

2-part and 3-part

Coating:

Zinc plated



**Contact Enerpac @
972-287-2390!**

Custom anchors and wedges are available to meet your unique stressing needs.



Pre-Tensioning Systems

Hydraulic pre-tensioning systems available with custom strokes, capacities and controls.



Accessories

A complete line of accessory components for wedge and anchor maintenance, such as cleaning brushes and wedge setters.

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▼ Clockwise from center: F21000, F18500, F22000, F22500, F500SL2P, F21500, F20500, F8BP, F17500 and FRCBP



- Cable anchorage can be assembled prior to installation (with wedges fully seated)
- Ferrule insert design allows easy installation
- Neat appearance – no chipping or removal of concrete required
- Easy maintenance and repair of damaged cable
- A cost-effective method of installing or re-tensioning barrier cable
- Swivel GRABB-IT® makes installation easy and can accommodate 5° ramp inclines

▼ Barrier Cable Products

Strand Size (in)	Model Number	Description	Weight (lbs)
0.5	F18500	1/2" Male GRABB-IT®	2.40
0.5	F20500	1/2" Female GRABB-IT®	2.20
0.5	F21500	Loop Ferrule Insert	0.55
0.5	F17500	GRABB-IT® De Bar Chuck Assembly	1.75
0.5	F21000	1/2" GRABB-IT® Splice	8.00
0.5	F500SL2P	2-Part Wedge	0.13
0.5	F500SL2RP	2-Part Wedge with Ring	0.13
0.5	F500SL3P	3-Part Wedge with Ring	0.13
0.5	F22000	0.5" OTU Chuck Threaded/Zinc	0.60
0.5	FRCBP	0.5" RCB Chuck	0.55
0.5	F8BP	Chuck	0.55
0.5	F22500	1-1/4" Galvanized Threaded Cap	0.35
0.5	F18550	1/2" Male Swivel GRABB-IT®	2.40
0.5	F20550	1/2" Female Swivel GRABB-IT®	2.20

Strand Sizes:

0.50 inch

Wedge Type:

2-part and 3-part

Coating:

Zinc Plated

GRABB-IT®
Simple, Reliable
and Cost Effective



**Contact Enerpac @
972-287-2390!**

Custom anchors and wedges are available to meet your unique stressing needs.

▼ Barrier Cable provides a safe and economical solution for vehicle and pedestrian protection in this parking structure.



▼ Shown: F10000, F7562 and F7250



- Wedge and chuck body brushes make cleaning and inspection fast and effective
- Several head sizes for correct lubrication – essential for ease of release and proper wear to extend chuck life

▼ Tools and Accessories

Use	Model Number	Description	Weight (lbs)
POST-TENSION ACCESSORIES	400460	Short cable tube	22.85
	400480	Short cable nose	2.25
	400520	Trouble shoot anchor	2.20
	400530	45° Stress spacer	4.05
	400555	12" Chair	25.80
	400560	18" Chair	34.50
	400580	Hand wedge setter	2.45
	402220	Anchor cleaning tool	1.65
MULTI-USE MAINTENANCE	F10000	Lubrication fixture	21.55
	F7562	9/16" – 0.60" Jaw brush	0.55
	F7500	1/2" Jaw brush	0.50
	F7437	7/16" – 15/32" Jaw brush	0.50
	F7375	3/8" Jaw brush	0.50
	F7250	1/4" – 5/16" Jaw brush	0.50
	F8562	9/16" – 0.60" Body brush	0.65
	F8500	3/8" – 1/2" Body brush	0.60
	F8250	1/4" – 5/16" Body brush	0.60
	F10003	Grease cone for F1B body	0.25
	F10004	Grease cone for F2B body	0.25
	F10005	Grease cone for F3B body	0.25

Tools and Accessories for SURE-LOCK® Products



Chair

Available in various lengths. Jack Feet and Stressing Tubes are also available.



Anchor Cleaning Tool

Removes residual concrete slag and debris from seating area, for improved seating performance.



Trouble Shooting Anchor

Used to help free a jack that will not release from a tensioned cable.



Hand Wedge Setter

Provides a quick way to preliminary seat wedges for retention in anchor.

▼ Shown: PTJ5S and 5DA1



Field-proven Tools for Mono-Strand Tensioning



SCJ Short Cable Jack

For pulling applications where the tendons are shortened, the SCJ Jack only requires 4" of exposed cable.

Uses standard 10" stroke S/A cylinders, other strokes available upon request.



RC-1010PT and RC-1510PT Cylinders

Longer spring life and improved retraction are the benefits from these specially designed cylinders.



5DA1-AL Reduced Weight Jack

With a 17% weight reduction, this jack increases operator safety by reducing fatigue, while still having all the durability of a SURE-LOCK® product.

- Durable, field-proven designs, with “soft-grip” ergonomic handles reduce operator fatigue
- Single-acting *PTJ* models, with spring-seating and optional power-seating are equipped with the new Enerpac *RC* Post-tensioning cylinders with a 10" stroke, ideal for slab-on-grade applications
- Double-acting *DA* models have an 8.5" stroke and are machined from a steel billet; feature standard power-seating and “gun-drilled” internal hydraulic passages
- All jacks have a standard 3" nose assembly. Longer nose assemblies are available as accessories for all models
- A full line of grippers is available to tension common strand diameters
- Complete offering of Enerpac parts and soft kits allow quick and easy service

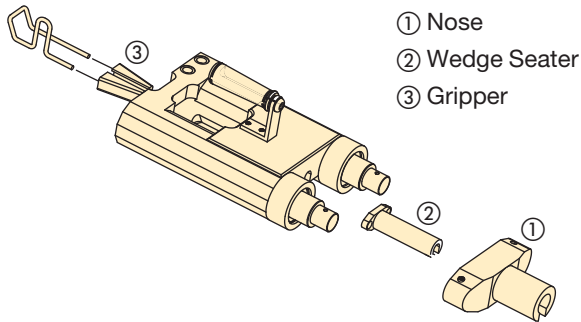
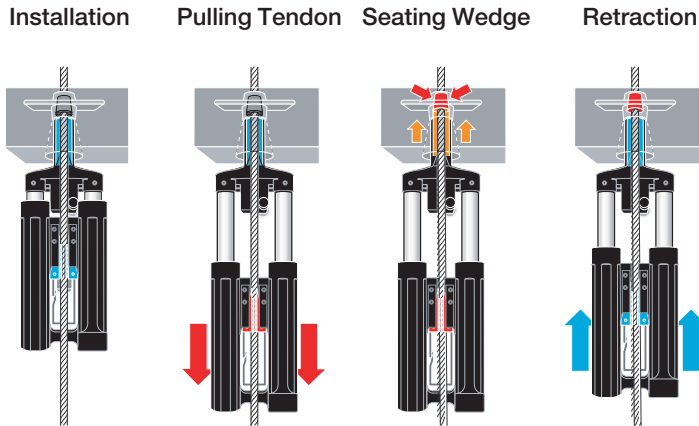
▼ TOOL SELECTION CHART

Tool Capacity (tons)	Seater Type	Strand Diameter Standard	Model Number	Tool Operation	Stroke (in)	Oil Capacity (in ³)	Tool Effective Area (in ²)	Max Pressure (psi)	Weight (lbs)
20	Spring	0.50-0.52	PTJ5S	S/A	10.0	45.3	4.48	10,000	55
20	Power	0.50-0.52	PTJ5P	S/A	10.0	45.3	4.48	10,000	55
20	Power	0.50-0.52	5DA1-AL	D/A	8.50	53.0	6.28	6,500	35
20	Power	0.50-0.52	5DA1	D/A	8.50	53.0	6.28	6,500	42
30	Spring	0.60-0.62	PTJ6S	S/A	10.0	62.8	6.28	10,000	76
30	Power	0.60-0.62	PTJ6P	S/A	10.0	62.8	6.28	10,000	76
26	Power	0.60-0.62	6DA1	D/A	8.50	67.6	7.95	6,500	52

Mono-Strand Stressing Tools

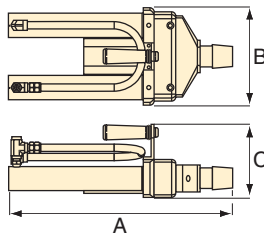
Mono-Strand Tensioning Tool Operational Sequence

The sequence of operation of the double-acting **5DA1** tool is illustrated. Single-acting, spring-seat models are similar.



Dimensions (in)			
Model No.	A	B	C
PTJ5	21.0	9.0	6.5
PTJ6	22.0	10.2	7.0
5DA1	18.5	7.5	6.5
6DA1	18.5	8.5	6.5

3/8" NPTF ports; PTJ and DA power seat models include FZ-1055 fitting.



**DA,
PTJ,
SCJ
Series**



Capacity:

20-30 tons

Stroke:

8.5-10 inches

Strand Diameters:

.375-.60 inch

Maximum Operating Pressure:

6,500-10,000 psi



HC-Series Hoses

Durable rubber hoses designed to stand up to the rigors of long-term tensioning applications.

Internal Dia. (in)	Length (ft)	Hose End (NPT)		Model Number
		1	2	
3/8	10	3/8	3/8	H9310
1/4	10	3/8	1/4	H9210S



Jack Feet

Two required per jack. Used in place of a nose to react on either side of wedge pocket.

Model Number	Used with Jack
402000	5DA1
403325	6DA1

▼ OPTIONAL AND REPLACEMENT ACCESSORIES SELECTION CHART

Nose		Wedge Seater		Gripper Set Diameter							
3"	6"	3"	6"	0.38"	0.43"	0.50"	0.62"	4 mm	5 mm	6 mm	7 mm
400740*	401180	305340*	401200	400900	400880	400850*	N/A	400930	400940	400950	400960
400740*	401180	305340*	401200	400900	400880	400850*	N/A	400930	400940	400950	400960
401520*	401840	305360*	305365	401652	401655	401660*	N/A	—	401670	—	—
401520*	401840	305360*	305365	401652	401655	401660*	N/A	—	401670	—	—
400740*	401180	305340*	401200	400900	400880	400850	400980*	400930	400940	400950	400960
400740*	401180	305340*	401200	400900	400880	400850	400980*	400930	400940	400950	400960
403180*	403220	403140*	403165	400988	N/A	400986	400990*	—	—	—	—

*Shipped with tool.

▼ Shown: ZU4408PB, PTJ5S, 5DA1



- Optimum match of individual components
- Sets include 10 ft. hose(s), gauge and fittings
- Uses reliable ZU-Series Post Tensioning Pump

The Quickest and Easiest Way to Start Working Right Away



More information

See the "Yellow Pages" section for precautions to consider during tensioning applications.

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4" Face Pressure Gauges

Durable and built to hold calibration, this easy to read gauge is glycerin-filled.

Pressure (psi)	Port (in)	Fill	Model Number
0-10,000	1/4	Glycerin	H4049L



▲ Designed to be tough, the ZU4-Series pump with steel reservoirs will take the abuse of today's construction sites. The ZU4 is the ideal pump for post tensioning applications.

<div>1</div> Jack Selection (See Mono-strand Jack Section of this catalog for full product descriptions) <div>Page: 10</div>		Tool Capacity (ton)	Seater Type	Nominal Strand Diameter Range (in)	Stroke (in)	Stressing Jack Model Number
	Ideal for slab-on-ground applications.	20	Spring	0.50-0.52	10	PTJ5S
		30		0.60-0.62		PTJ6S
	Ideal for slab-on-ground applications with power seating.	20	Power	0.50-0.52	10	PTJ5P
		30		0.60-0.62		PTJ6P
	Ideal for elevated applications. Fast, double-acting with power seating.	20	Power	0.50-0.52	8.5	5DA1-AL
		20		0.50-0.52		5DA1
		26		0.60-0.62		6DA1

Mono-Strand Jack Pump Sets

SET SELECTION:

- 1** Select the jack
- 2** Select the pump
- 3** Find the set model number in the blue field of the matrix

EXAMPLE:

- 1** **5DA1**, Double-acting jack for use with 0.50 strand, 8.5" stroke
- 2** **ZU4908PB**, 115VAC with Power Seating Valve
- 3** **S5D-ZB**, which will include:
 - (2) H9310 hoses
 - (1) H9210S hose
 - (1) H4049L gauge
 - Fittings to assemble hoses and gauge

S Series



Capacity:

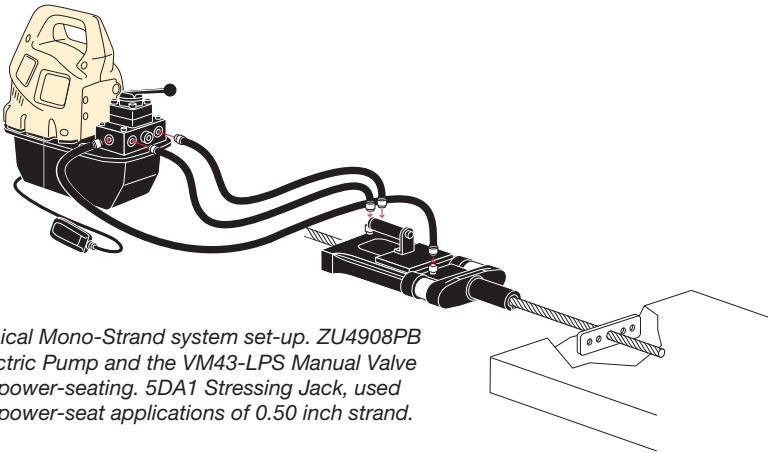
20 to 30 tons

Stroke:

8.5-10 inches

Maximum System Operating Pressure:

6,500-10,000 psi



▲ Typical Mono-Strand system set-up. ZU4908PB Electric Pump and the VM43-LPS Manual Valve for power-seating. 5DA1 Stressing Jack, used for power-seat applications of 0.50 inch strand.









Hydraulic Oil

To protect your system, use only Enerpac hydraulic oil in your jack and pump systems. Oil is available

in a number of capacities to match your needs.

Model Number	Contents
HF-100	1 Quart
HF-101	1 Gallon
HF-102	5 Gallons

2 Pump Selection (See Pump Section of this catalog for full product descriptions)		Accessories Included			
Page: 16					
ZU4408PB*	ZU4908PB*	Hose(s)	Gauge	Swivel Fitting	45° Street Elbow
<div>3</div>	<div>3</div>				
S5S-ZB*	-	(1) H9310	H4049L	(1) FZ1660	F100095
S6S-ZB*	-			(2) FZ1660	
-	S5J-ZB*	(1) H9310			
-	S6J-ZB*	(1) H9210S			
-	S5DAL-ZB*	(2) H9310 (1) H9210S			
-	S5D-ZB*				
-	S6D-ZB*				

*115 Volt model shown. To order 208-240-Volt pump, replace "B" with "I" (Americas) or "E" (Europe).

▼ Shown: Stressing Jack - 680 ton, 150 mm stroke



- Custom sizes available
- Equipped with hydraulic lock noses or self-tightening
- Multi-use stressing heads available
- Plated for corrosion resistance
- Power seating available on all models
- For use with 0.50" – 0.62" strand

▼ An example of the versatile, durable multi-strand stressing jacks available.



Multi-Strand Series

Capacity:

50-1000 tons

Stroke:

6-20 inches

Maximum Operating Pressure:

8,800 psi



Anchor Heads

A number of standard anchor head sizes and patterns are available. They can also be built to customer's specific design.



Pumps for Multi-Strand Jacks

A complete line of large pumps are available to power any size multi-strand stressing jack. From 3 hp to 20 hp and with any valve requirement, there is an Enerpac pump to fit your application.



**Contact Enerpac @
972-287-2390**

Contact Enerpac to specify custom jacks and anchor heads.

Stressing Jack System Worksheet



▼ Please complete the following information prior to contacting Enerpac for a stressing jack system proposal.

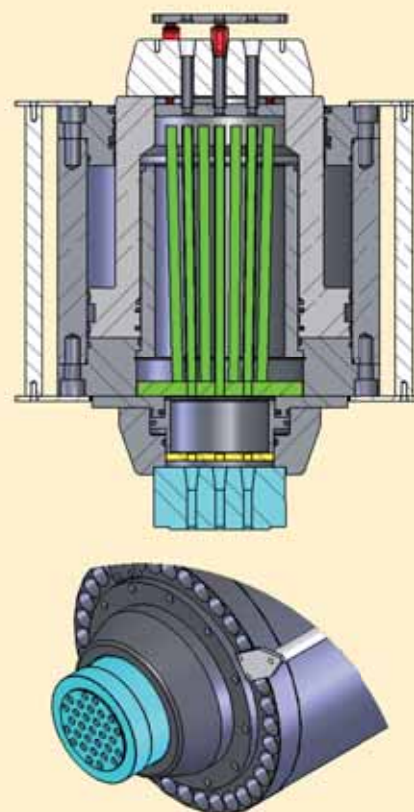
Company _____ Contact _____ Project _____

Phone _____ Fax _____ E-mail _____

Description of Application (provide drawings if possible):

Tensioning System	<input type="checkbox"/> Existing	<input type="checkbox"/> Development
Tendons	<input type="checkbox"/> Bonded	<input type="checkbox"/> Unbonded
Jack Design	<input type="checkbox"/> Standard	<input type="checkbox"/> Custom
Bearing Location	<input type="checkbox"/> Anchor Head	<input type="checkbox"/> Bearing Plate
Drawing of Anchor Head(s) Available	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Number of Strands		
Strand Size		
Hole Pattern and Diameter		
Anchor Head Diameter		
Anchor Head Height		
Anchor Head Material		
Stroke		
Total Force Needed		
Hydraulic Seating Device	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Front or Rear Gripping		
Tube Bundle	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Quantity		
Stressing Wedge Release	<input type="checkbox"/> Auto	<input type="checkbox"/> Manual
Number of Hose Connections	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Special Corrosion Requirement		
Weldable Cylinder or Non		
Required Lead Time		
Spare Part Requirements		

DRAWING EXAMPLE



Environmental Conditions (e.g. ambient temperature, dust, saltwater, etc.)

Additional Requirements (e.g. lifting attachments, spare parts)

▼ Shown: ZU4908PB



- 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 electric components, while providing an ergonomic, non-conductive handle for easy transport
- Low-voltage pendant provides additional safety for the operator (remote control units)
- Metal valve handle provides strength for repetitive actuation and allows operator to select handle positions

Your First Choice for a Construction Pump



Electrical Information

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



VM-22 Valve

The VM-22 is a 3-way, 2-position valve with in-line check to hold pressure after pump is turned off. Select by placing a 7 in the fourth digit of the pump model number.



Optional Skidbar

An optional skidbar provides greater pump stability on soft or uneven surfaces. To order, add -K to model number or SB2-4.



ZU4 Pump with LCD

LCD readout provides diagnostic capabilities and a visual pressure display for operators demanding the most sophisticated portable electric pump. To order, specify model ZU4408KB-T or ZU4908KB-T.

Page: 17



◀ Increased output flow and extended brush life increase productivity for post-tensioning applications.



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. Choosing the right ZU4 pump for your application is easy:

Premium Electric Pump

- Digital (LCD) display features a built-in hour meter and shows self-diagnostic, cycle-count and low voltage warning information. Pressure can also be displayed when the pump is equipped with an optional pressure transducer. These premium features are not available on any other pump—anywhere!

Standard Electric Pump

- For applications that do not require digital display features of the Premium Pump. Available in all manual or jog versions.

Classic Electric Pump

- The Classic has traditional electro-mechanical components (transformers, relays and switches) in place of solid-state electronics. The Classic delivers durable, safe and efficient hydraulic power for demanding markets like construction, post-tensioning and foundation repair.

ZU Series



Reservoir Capacity:

1.0-10.0 gal.

Flow at Rated Pressure:

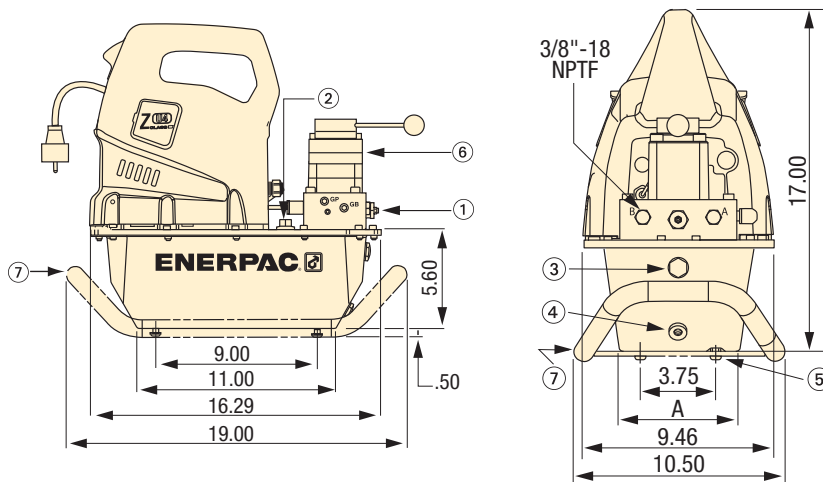
60 in³/min.

Motor Size:

1.7 hp

Maximum Operating Pressure:

10,000 psi

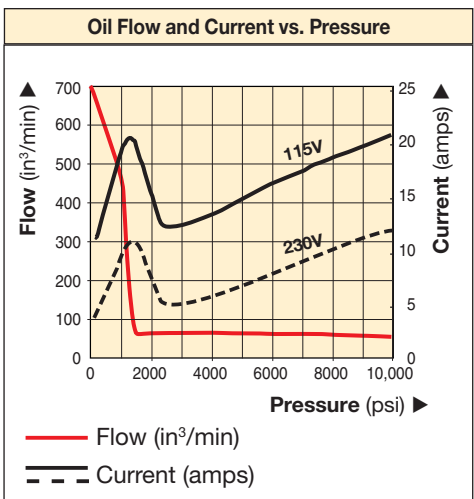


Dimensions (in)	
Reservoir Size (gal)	
1	2
A	6.0
	8.1

- ① User Adjustable Relief Valve
- ② Oil Fill Port SAE #10
- ③ Oil Level Sight Gauge
- ④ Oil Drain 1/2" NPTF
- ⑤ M8 x 12 LG
- ⑥ VM43M Valve (shown)

Factory Installed Features and Options

⑦ Skid Bar (shown)



SELECTION CHART

Used with Tool	Valve Type ¹⁾	Model Number ²⁾³⁾ 115 VAC	Output Flow Rate (in ³ /min)				Usable Oil Capacity ⁴⁾ (gal)	Relief Valve Adjustment Range (psi)	Motor Electrical Specification ³⁾ (volts-ph-Hz)	Motor Size (hp)	Sound Level (dBA)	Weight (lbs)
			100 psi	700 psi	5,000 psi	10,000 psi						
*	VM22	ZU4704PB	700	535	76	60	1.0	1,000-10,000	115-1-50/60	1.7	85-90	61.1
S/A & D/A	VM43M	ZU4404PB	700	535	76	60	1.0					59.4
	VM43M	ZU4408PB	700	535	76	60	1.75					65.6
	VM43M	ZU4408KB-T	700	535	76	60	1.75					67.3
Power Seat	VM43-LPS	ZU4904PB	700	535	76	60	1.0					63.5
	VM43-LPS	ZU4908PB	700	535	76	60	1.75					69.7
	VM43-LPS	ZU4908KB-T	700	535	76	60	1.75					72.0

*Model used for single-acting cylinder in foundation repair applications. ¹⁾ A VM33M may be substituted when only single-acting tools are used. Replace the 4th digit with number 3.

²⁾ To order pump with no remote operator control, replace the P with R in the model number. ³⁾ To order pump with 208-240V, 1ph, 50/60 Hz, replace the B with I in the model number.

⁴⁾ To order pump with larger oil reservoir, replace the "04" (1 gal.) in the model number with 08 (1.75 gal.), 10 (2.5 gal.), 20 (5 gal.) or 40 (10 gal.).

▼ Shown from left to right: ZG6440MX-BCFH, ZG5420MX-B



- Two-speed pump design, with high by-pass pressure, for rapid cylinder advance
- Electric pumps available in multiple voltage options
- Full length reservoir sight tube for monitoring oil level
- Gasoline pumps utilize 4-cycle Briggs®, Honda® and Waukesha® Engines
- Electric pumps include TEFC motors with starters

The Right Pump for the Job



Power Options

Pumps can be powered by electricity or gasoline, with multiple horsepower and reservoir options for greater versatility.



All Z-Class electric pumps are CSA compliant and most are also CE compliant. Contact Enerpac for more information.



4" Face Pressure Gauges

Durable and built to hold calibration, this easy to read gauge is glycerin-filled.

Pressure	Port (in)	Fill	Model Number
0-10,000	1/4	Glycerin	H4049L

◀ The San Francisco - Oakland Bay Bridge (far left) is a dramatic example of SURE-LOCK® components performing in signature projects.

SURE-LOCK® Wedges are part of the PT System for the Woodrow Wilson Bridge crossing the Potomac River. Sixty massive precast post-tensioned segmental V-Piers connected by post-tensioned tie beams are the core of the project which will support over 200,000 vehicles per day.



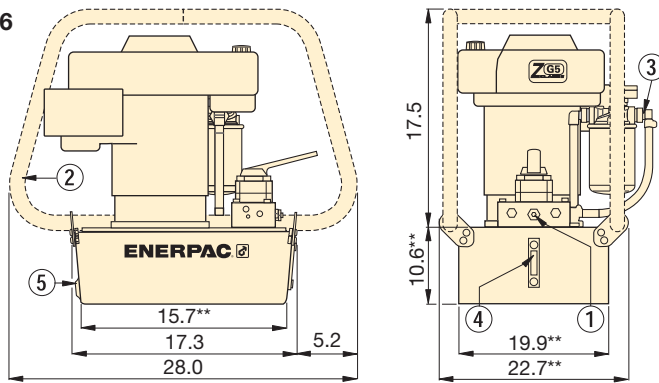
Photo: Schwager Davis, Inc.



Photo: DYWIDAG-Systems Int'l.

Hydraulic Pumps for Multi-Strand Jacks

ZG5, ZE5, ZE6



**ZE, ZG,
PE, EG
Series**



Reservoir Capacity:

5-18 gal.

Flow at Rated Pressure:

0.43 - 4.40 gal/min.

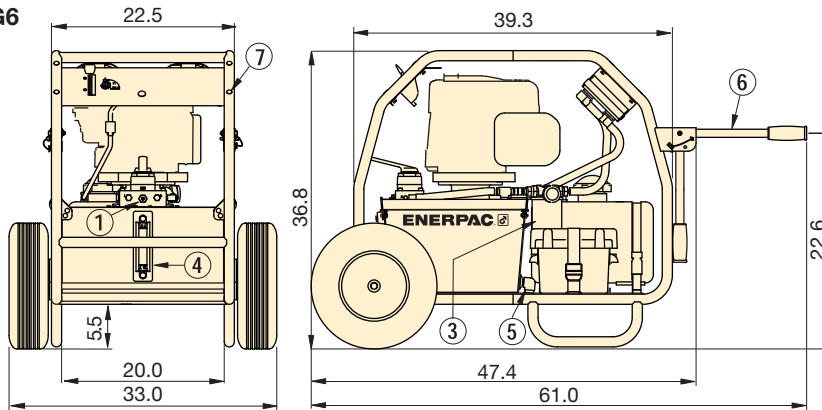
Motor Size:

3-18 hp

Maximum Operating Pressure:

10,000 psi

ZG6



Dimensions shown in inches.

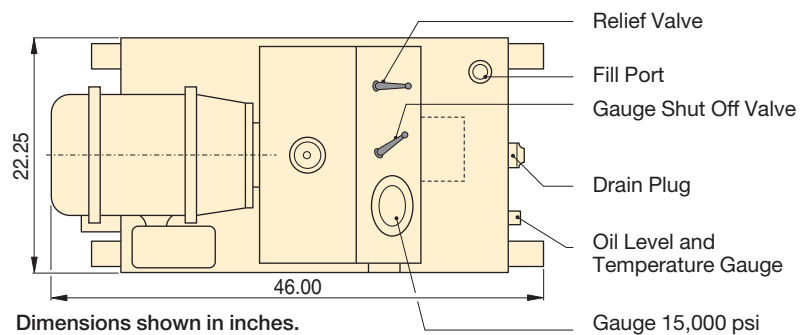
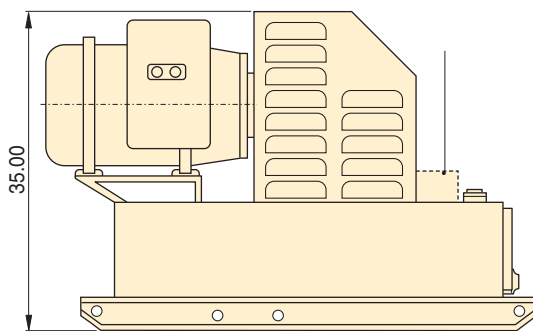
- ① User adjustable relief valve on all manual valves, 3/8" NPTF on A and B ports, 1/4" NPTF on auxiliary ports.
- ② Roll Bar (optional)
- ③ Return Line Filter (optional on ZG5, Standard on ZG6)
- ④ Oil Level Gauge
- ⑤ Oil Drain
- ⑥ Collapsible Handles (ZG6 only)
- ⑦ Cart (standard on ZG6 only)



Due to the differences in control requirements and size of certain multi-strand jacks, please contact

Enerpac for the correct pump and valve configuration for your exact application. The selection chart shown here is for use in determining pump flow, oil capacities and weight of the different pump series.

PE, EGM



Dimensions shown in inches.

Usable Oil Capacity (gal)	Motor / Engine Type	Pump Series (See info box above, right)	Pressure Rating (psi)		Output Flow Rate (gal/min)		Motor/Engine Size* (hp)	Sound Level (dBA)	Weight (lbs)
			1st stage	2nd stage	1st stage	2nd stage			
5,10	Electric	ZE5	1,200	10,000	3.68	0.52	3.0	75	210
5	Gas - Honda®	ZG5	1,800	10,000	3.03	0.43	5.5	88-93	140
5,10	Electric	ZE6	1,200	10,000	3.90	0.87	7.5	80	250
10	Gas - Briggs®	ZG6	2,000	10,000	3.90	0.87	13.0	91-95	334
18	Electric	PE	3,700	10,000	4.40	2.00	12.5	78-84	720
18	Gas - Kohler®	EGM	3,700	10,000	3.40	1.50	18.0	94	890

* Consult Enerpac for available voltages. ** Dimension shown based on 10-gallon reservoir to approximate size. Consult Enerpac for exact specifications on models with 2.5- and 5-gallon reservoirs.

Definitions¹⁾

Anchor: For monostrand tendons, normally a ductile iron casting which houses the wedges and is used to transfer the prestressing force to the concrete.

Anchor Heads (Wedge Plate): The hardware which holds the wedges of a multi-strand tendon and transfers the tendon force to the bearing plate.

Barrel Chuck: A cylindrical metal device housing the wedges and normally used with a bearing plate to transfer the prestressing force to the concrete.

Calibration of Jack and Gauge: Calibration is extremely important. This is the process of using a load cell to validate the load induced by the jack, through its entire stroke, correctly corresponds with the pressure on the gauge. In general, stressing jacks are about 95% efficient, actual efficiency will vary with age and condition of the jack.

Chair: Hardware used to hold post-tensioning tendons in their proper position to prevent displacement before and during concrete placement.

Splice Chuck: A device, normally spring loaded, for connecting two strand ends together, transferring the prestressing force from one end to end of the tendon.

Encapsulated System: A system which provides watertight connections at all stressing, intermediate and fixed-ends, and has the anchor cavity side of the anchorage covered by a water-tight cap filled with a corrosion inhibiting coating material.

Hand Seating Tool: A small, hand held device used to properly align (seat) the wedges in the anchor prior to attaching the jack to the strand for stressing.

Lift-Off: The process of checking the force in a stressed tendon by using a jack and lift-off chair (optional) to load the strand until the wedges begin to move from the wedge plate.

Multi-Use Splice Chuck: A coupler which uses a 3-piece wedge and is made of material for repeated use.

OTU: One-time use.

Pocket Former: A temporary device used at the stressing-end during casting of the concrete to provide an opening in the concrete, allowing the stressing equipment access to the anchor cavity.

SOG: Slab-on-ground.

Trouble-Shooting Anchor: A special anchor used for structural modification or repair of existing tendons. The anchor consists of a removable segment which allows it to slide onto an existing strand. The segment is then returned and tightened by screw or bolt.

Wedge: A conically shaped device which transfers the stressing force from the prestressing steel (strand) into the wedge plate or anchor. The teeth are beveled at the front end to assure gradual development of tendon force over the length of the wedge.



Precautions

1. Only trained and certified personnel are allowed to operate the stressing equipment and observe stressing operations.
2. Follow all instructions in the Post-Tensioning Institute Field Procedures Manual.
3. Don't stress any tendons with concrete slurry inside the anchor cavity. Concrete in the anchor cavity will prevent proper seating of the wedges and can cause property damage or injury.
4. Don't use the jack if it does not seat properly on the face of the anchor.
5. Don't overstress tendons in order to achieve elongation.
6. Don't allow obstructions in the path of the jack extension.
7. Don't use extension cords longer than 100 ft. (30m) or less than 3 wire, 12 gauge. Improper power supply will damage the equipment.
8. Don't continue stressing if you suspect that something is not working properly.
9. Don't de-tension with loose plates, spacing shims or piggy backing. Always use proper tools and training.
10. Don't stand in the immediate vicinity of the jack, any point of the tendon being stressed, or between the jack and the pump during stressing or de-stressing.
11. Don't permit other workers in the immediate area of the jack or pump during stressing operations.
12. Don't hammer or beat on the jack or jack cylinders.
13. Don't do anything if you are not sure – contact an expert.

¹⁾ From Post Tensioning Institute



www.enerpac.com

Visit our web site to learn more about hydraulics and system set-ups.

General Capability Sheet

System Component Supply

All information shown is for general understanding, contact Enerpac to discuss your specific requirements.

▼ Common Wedges

Strand		Wedge
Type	Diameter Range (in)	Material
Single-use	0.19-0.62	Carbon and Alloy Steels
Multi-use		

▼ Common Anchor Heads

Strand		Anchor Head		
Quantity	Diameter Range (in)	Diameter (in)	Height (in)	Material
1	0.50-0.62	1.97	2.17	Carbon and Alloy Steels
3		4.33	2.56	
6		5.12	2.56	
7		5.91	2.56	
12		6.69	2.56	
19		8.27	2.95	
27		10.24	4.33	
31		10.24	4.33	
37		11.81	4.92	
42		12.60	4.92	

▼ Common Couplers

Strand		Coupler		
Quantity	Diameter Range	Diameter (in)	Height (in)	Material
4	0.50-0.62	6.30	3.35	Carbon and Alloy Steels
7		7.68	4.13	
12		9.06	4.13	
19		10.63	4.13	
27		13.98	5.12	
31		14.37	5.12	
37		15.16	6.10	
42		17.52	6.50	

Custom Products

Enerpac/PSL has built a strong reputation supplying tensioning products to our ETAG approved system holders and to other system holders as well. Wedges of all sizes and anchor heads up to 59 inches (1500 mm) in diameter are produced using state-of-the-art CNC machining centers. 100% inspection of size and laser checking thread tooth profiles are just a few ways ENERPAC meets and exceeds our customers' high expectations for quality, reliability, and delivery.





Unbonded Tendon Fabrication Lines

SURE-LOCK® builds machines to suit the needs of the client. We manufacture 2-, 3-, and 4-tub lines depending on the customer's preference. SURE-LOCK® lines automatically measure and shear the strand, giving accurate length control. Single or dual pay-offs can be provided, making material changes swift and easy. Leveraged hydraulic shears provide clean end cuts of 0.50" and 0.60" PC strand. Easy access to rotate or change shear blades minimizes down-time, and multi-track drive belts reduce expense. Local or remote data input is available. SURE-LOCK® delivers quality, durability, and customer support in our complete line of equipment.



Fixed End Seating Equipment

SURE-LOCK® builds complete anchor seating systems that include the required hydraulic pump, seating ram, steel work bench, gauge, and hoses with both 0.5" and 0.6" strand capacity. We provide either "push" or "pull" systems according to the customer's need.



Unbonded Tendon Extrusion Lines

Complete lines are available in several configurations. Single or multiple strand pay-offs, various extruder diameters depending on desired output, cooling trough lengths, chiller capacity, and single or multiple take-ups are all options for the client. SURE-LOCK® lines are built with everything the customer needs, including pumps, vacuum loaders, drawer magnets, high capacity chillers, heat exchanging coils, and the most durable take-ups in the industry. Individual components are also available for upgrade of existing lines.



Cable Bolt Fabrication Lines

SURE-LOCK® builds automatic cable bolt fabrication equipment for the mine supply industry. These lines include strand pay-off, measuring, and cutting stations, providing accurately cut pieces for further fabrication into roof bolts.

Strand Anchor Fabrication Lines and Assembly Table

Geotechnical strand anchors require specialized production equipment. SURE-LOCK® provides equipment built with knowledge of the industry requirements. Precise measurement and cutting along, with either half-pipe or rolling tables, make anchor assembly efficient.

SURE-LOCK® provides high-quality equipment for coiling and uncoiling anchors that is proven durable and reliable.



Anchor Coilers and Uncoilers

SURE-LOCK® manufactures extremely productive coating lines for strand used in the fabrication of geotechnical anchors. The heart of this system is an innovative computer-controlled skip-coating system that provides clean bonded zones and stressing tails while properly unbonding the free length. Touch screen programming of various configurations within coils is easy and intuitive.



Strand Anchor Extrusion Lines and Custom Machinery

SURE-LOCK® also has capabilities to manufacture custom equipment. Based on the client's desired function or proprietary design, SURE-LOCK® makes machines that work.



Material Handling Equipment

SURE-LOCK® manufactures strand reels, fork extensions, racks, coil stackers, and many other types of handling equipment.



Concrete Stressing Products



SURE-LOCK stressing equipment is available as complete units, including jack, pump, gauge, and all hoses required.



Original SURE-LOCK and SURE-LOCKII cast anchors and wedges are available from 5 mm to 0.60 inch.



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