



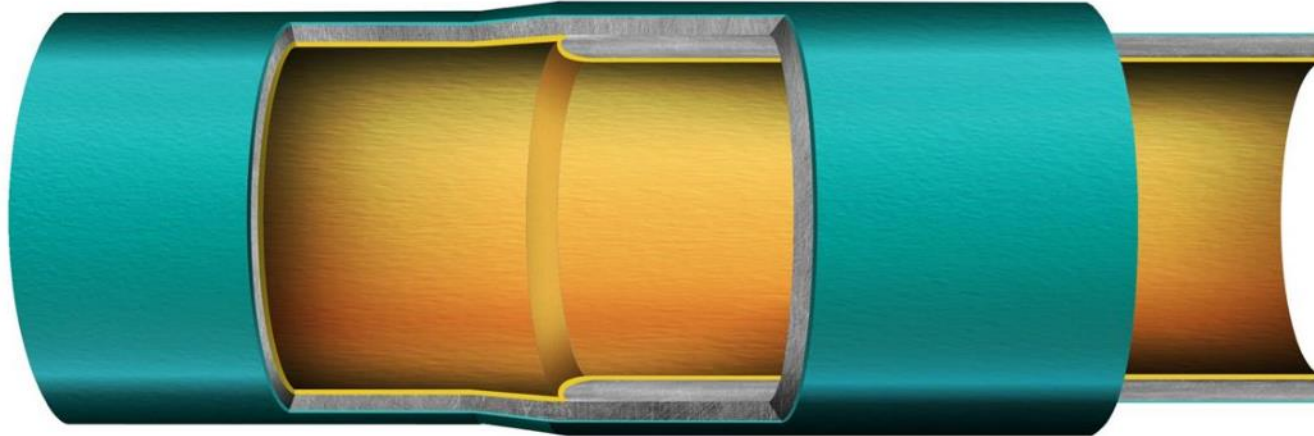
# Tuboscope | NOV

Wellbore  
Technologies

## Zap-Lok™ Technology

*Presented by Edward Currey*

# Zap-Lok Connection System



<b>Dia. (NPS):</b>	2 to 12-inch (50-300mm)
<b>Wall:</b>	Up to schedule 80
<b>Material:</b>	Grade B through X65; SMLS, HFI or ERW
<b>Service:</b>	Sweet and sour crude, gas or condensate, water
<b>Pressure:</b>	As per line pipe material specification



# Zap-Lok End-Preparation – Belling & Pinning

The first step is to prepare both ends of each pipe joint for the connection. One end of each joint (Bell End) is cold formed by expansion into a bell shape by the insertion of a hardened steel mandrel. A liquid lubricant is used to prevent galling of the steel pipe surface. The opposite end (Pin End) is grooved and has a slight bevel applied to the end by a tapered roller.

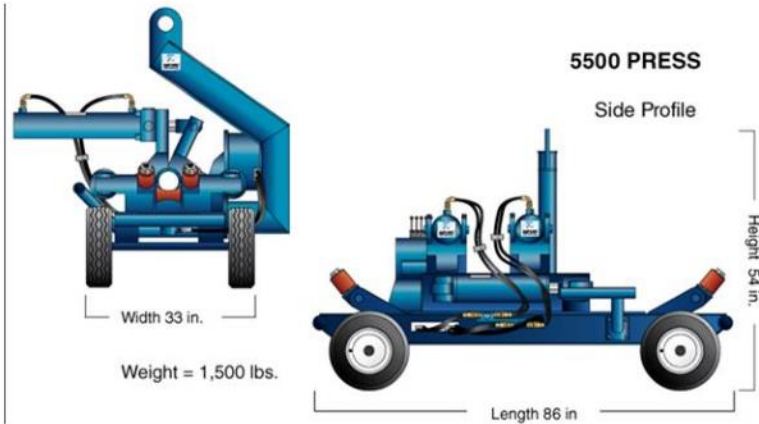
Belling Process cold forms standard API 5L pipe by approximately 5.2% creating a box end



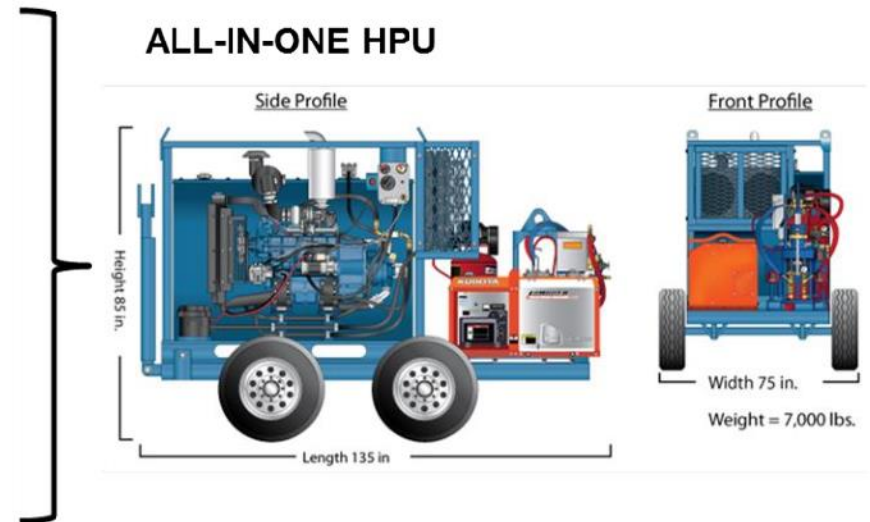
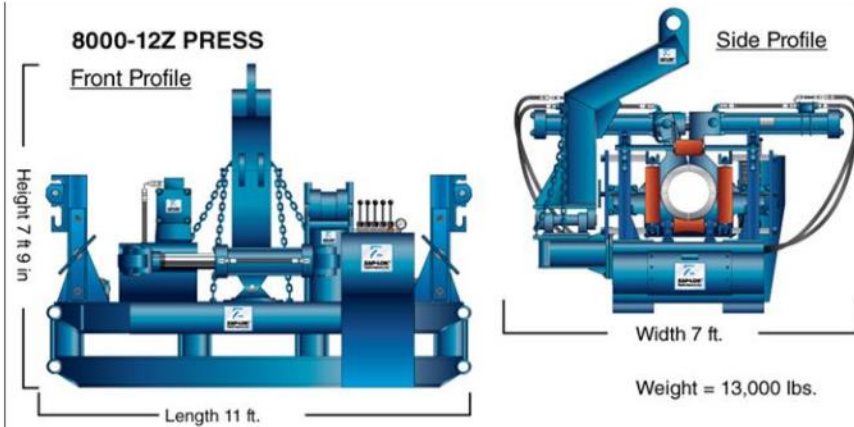
Pinning Process creates a pre-formed beveled end



# Zap-Lok Installation Equipment



## 6-12 INCH NPS INSTALLATION PRESS



# Zap Lok installation 1: string pipe





## Zap Lok installation 2: lift pipe into





## Zap Lok installation 3: apply epoxy



## Zap Lok installation 4: Align pipe





# Zap Lok installation 5: Move Zap Lok machine in place



# Zap Lok installation 6: make up joint with hydraulic press





# Zap Lok installation 7: move machine to next joint



# Zap-Lok Installation: Terrain





# Zap-Lok Results: Less people on site

## 8 Inch welded construction (4 welding crews)

### Welding Crew

1 Assistant Superintendent	1 Pickup and Trailer
1 Foreman – Craft	1 Sideboom Crane
1 Foreman – Labour	4 Welding Machines
1 Equipment Operators	3 Tracked Utility Vehicles
8 Skilled Labourers	
4 Welders + 4 Welders Helpers	

### Field Joint Coating Crew

1 Foreman – Craft	2 light duty pickups
4 Skilled Labor	1 utility trailer
	1 generator
	1 abrasive blasting unit

### X Ray Crew

1 Ray Technician	X Ray processing truck
1 Assistant	

**Total people on site for construction:**  
**27 people**

**Total pieces of equipment on site:**  
**16 pieces**

## 8 Inch Zap Lok construction (1 Zap-Lok crew)

### Zap Lok installation crew

3 Laborers	1 Pickup
2 Sideboom operators	2 Sideboom Cranes
1 Supervisor / Permit Holder	1 Zap-Lok Press
1 Zap-Lok Operator	1 Zap Lok Power Unit

**Total people on site for construction:**  
**7 people**

**Total pieces of equipment on site:**  
**5 pieces**

# Zap-Lok Results: Less people on site

## Actual installation times for lines in Eagle Ford (4 x welding spreads vs. 1 x Zap-Lok spread)

Line Section	Pipeline diameter	Pipeline length	Total days of construction	Average installation Pipe Per Day
D16 Line B	8 inch	9,280 m	8	1.16 km
A12 Line B	8 inch	18,952 m	15	1.26 km
Transfer Line B	8 inch	9,978 m	7	1.43 km
D2 Line B	12 inch	7,242 m	11	0.66 km
D16 Line C	12 inch	9,283 m	8	1.16 km
<b>C4 – Zap-Lok</b>	<b>8 inch</b>	<b>18,227 m</b>	<b>7</b>	<b>2.60 km</b>

## Installation Method

## Average installation speed

Welded 8 inch pipeline – 4 x welding spreads	1.28km / day	or	<b>320 meters /day / spread</b>
Zap Lok 8 inch pipeline – 1 x Zap-Lok spread	2.60km / day	or	<b>2,600 meters /day / spread</b>



# THANK YOU

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