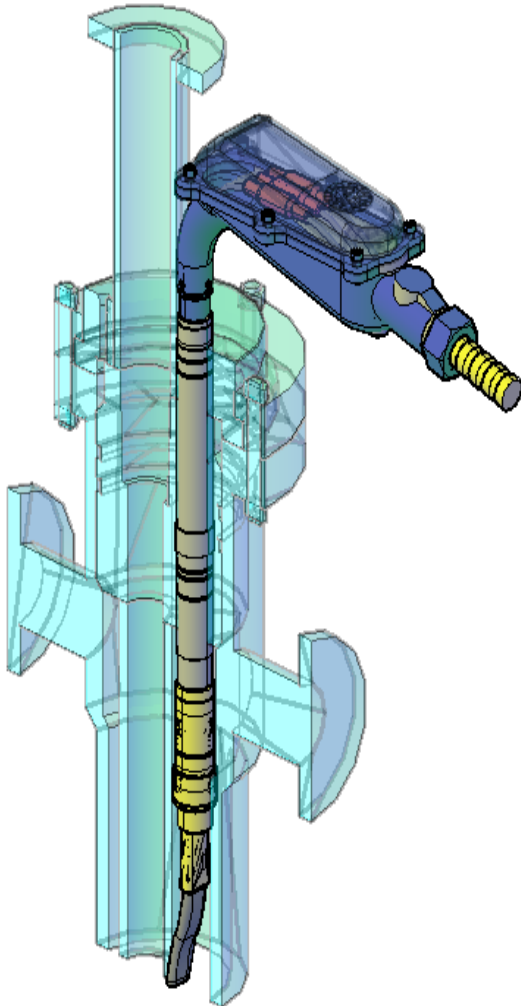




**AHOW**  
Technologies

Where SERVICE is everything, but SAFETY comes First



**“PRESSURED SEALED  
PENETRATOR”**  
**“AT-1”- “AT-1DS”**  
**WELLHEAD PENETRATOR**  
**“AT-PP” PACKER**  
**PENETRATOR**



All our equipment are manufactured with  
Environmentally Friendly Products

AHOW TECHNOLOGIES USA LLC  
PATENT # US 9,869,137 & COLOMBIA # 0985



## AT-1 WELLHEAD PENETRATOR DATA SHEET

### Features:

- Lower feedthrough connector is 316 SS NACE MR 0175. Environment conditions: Concentration 100% CO<sub>2</sub> gas or liquid and 65,000 PPM H<sub>2</sub>S. (Other metallurgies available upon request); upper connector is cast aluminum.
- Available in various elastomer materials following customer standards.
- Temperature rating from 392°F to 650°F. (200°C to 343°C)
- Optional 90° upper connector reduces clearance issues.
- Short lower mechanical seal connector needs less clearance room.
- Accommodates any ESP cable size conductor and flat or round profiles and different types of conductor barriers.
- Rated to maximum voltage and amperage ratings of the actual customer-supplied cabling or Ahow Tech supplied surface cable. Standard voltage rating of seals is 5,000 volts AC.
- Junction box (surface connection box) is available in different hazardous environment classifications. Class 1, Division 1 or Class 1, Division 2. and can connect to any size Flat, Round or submarine Power surface Cable
- Pressure Rating is 5,000 PSI.

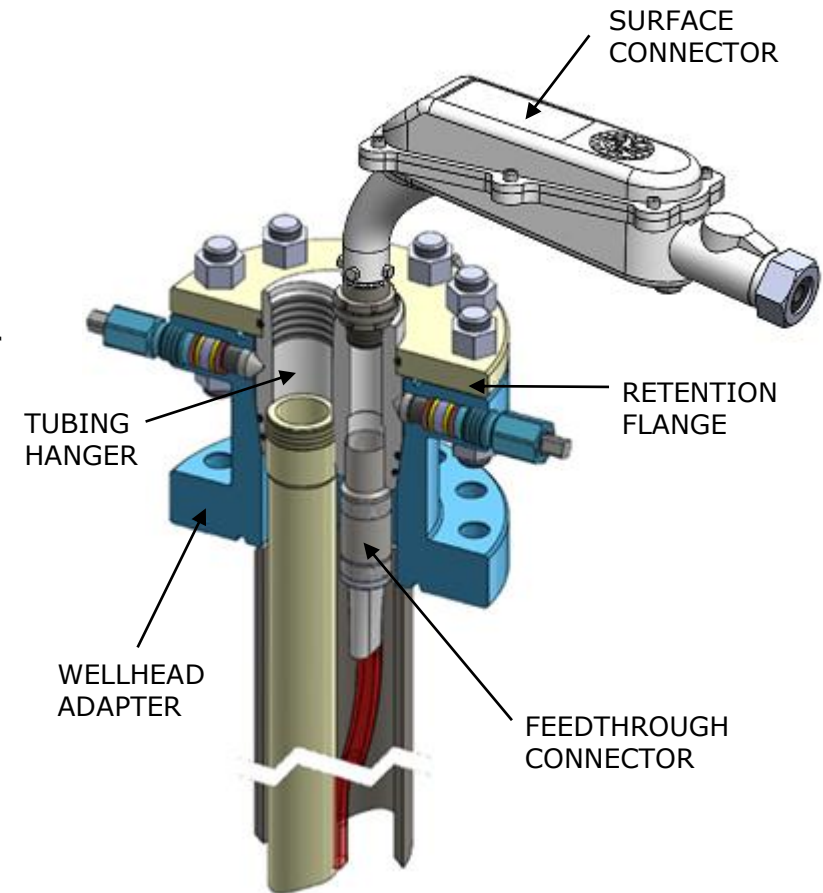




## AT-1 WELLHEAD PENETRATOR DATA SHEET

### Most outstanding features that translates in big Rig Time Savings

- ✓ Is a POSITIVE mechanical seal.
- ✓ No need of epoxy or tape so it can be installed in any weather condition.
- ✓ NO splice in pump cable. Below the hanger.
- ✓ The only required electrical connection is outside of the wellhead connecting the cable from below the wellhead to the surface power cable.
- ✓ Fastest install time available in the market.
- ✓ Can replace and retrofit into any competitor's existing profile without wellhead modification.
- ✓ It has its own standard profile that can be machined directly into any wellhead allowing the lowest COST and the largest possible tubing and ESP completion.
- ✓ It can fit into a 7" x 3-1/2" completion providing 5000 psi WP rating with up to #1 size pump cable.
- ✓ Field installed eliminates tubing space-out.
- ✓ NO special tools required.



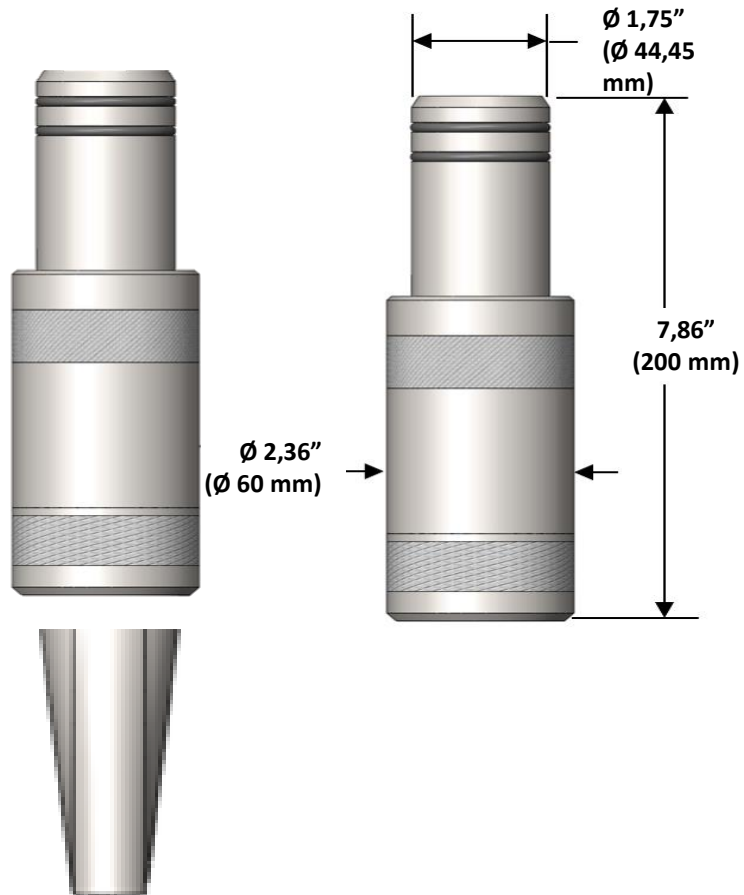




# AT-1 WELLHEAD PENETRATOR

## AT-1 Feedthrough Connector:

For Flat or Round Cable

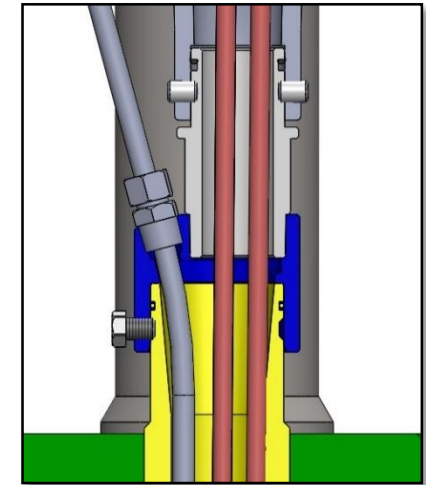
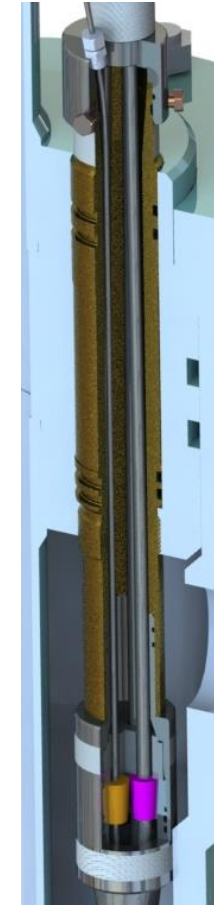


## AT-1-DS

### DOUBLE SEAL



## AT-1-CT WITH CAPILLARY TUBE





# AT-1 WELLHEAD PENETRATOR DATA SHEET



**POSITIVE MECHANICAL SEAL**



**100% STAINLESS STEEL**  
(316 SS NACE MR 0175 for H<sub>2</sub>S & CO<sub>2</sub> Service)



**RATED TO MAXIMUM VOLTAGE AND  
AMPERAGE SAME AS THE CONDUCTORS**



**“NO” SPLICE BELOW THE HANGER**



**“NO” INTERRUPTION OF THE ELECTRICAL  
CIRCUIT**



**WORKING PRESSURE: 5,000 psi.**



## SEALS AND O-RINGS

- VITON: 392°F – 200°C
- THERMANITE: 600°F – 315°C
- VERMANITE: 650°F - 343°C



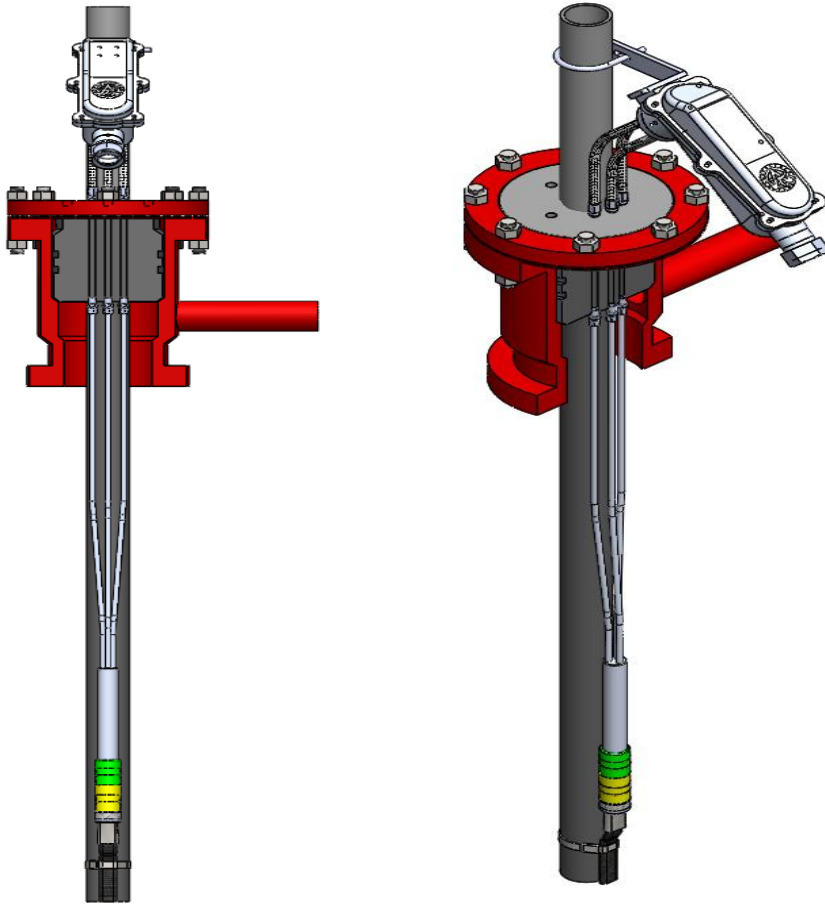
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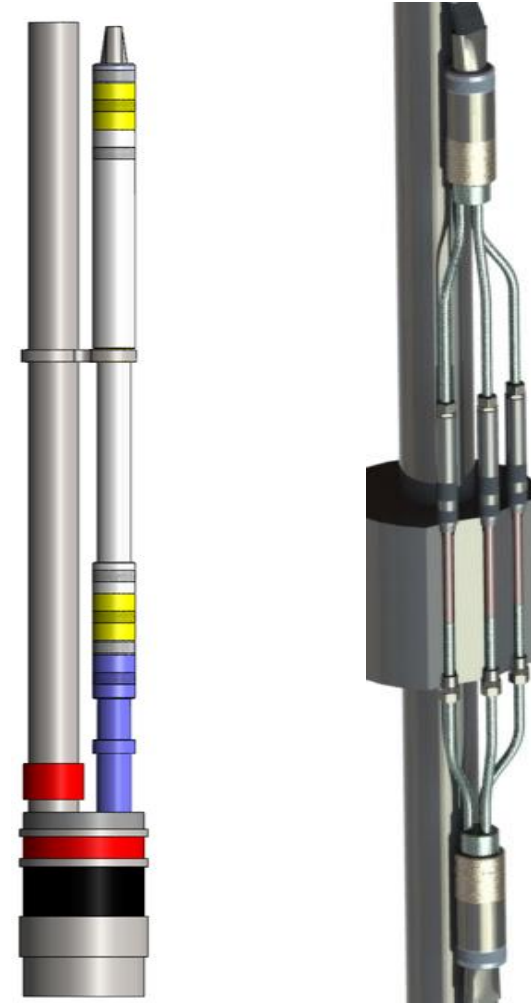


## **"AT-3 & PACKER PENETRATORS WELLHEAD PENETRATOR"**

### **"AT-3 WELLHEAD PENETRATOR"**

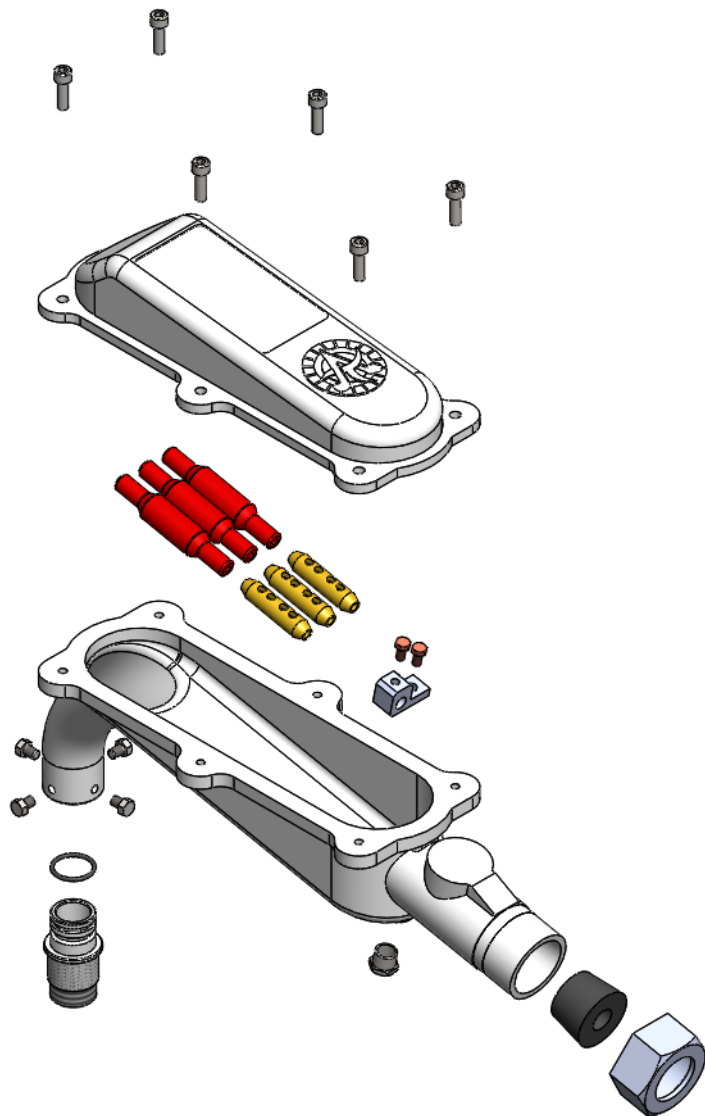


### **"AT-PP PACKER PENETRATOR"**





# AT-1 WELLHEAD PENETRATOR DATA SHEET



## National Electrical Code

### Class I

- Locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures

### Division 2

- Locations in which hazardous concentrations are handled, processed, or used but are normally within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown

### Group D

- Atmospheres containing gasoline, hexane, naptha, benzine, butane, alcohol, acetone, benzol, lacquer solvent vapors, or natural gas



## National Electrical Manufacturers Association

### NEMA 4

- Protection: Water-tight/dust-tight
- Location: Indoor/ outdoor
- Description: Splashing water, outdoor seepage of water, falling or hose-directed water



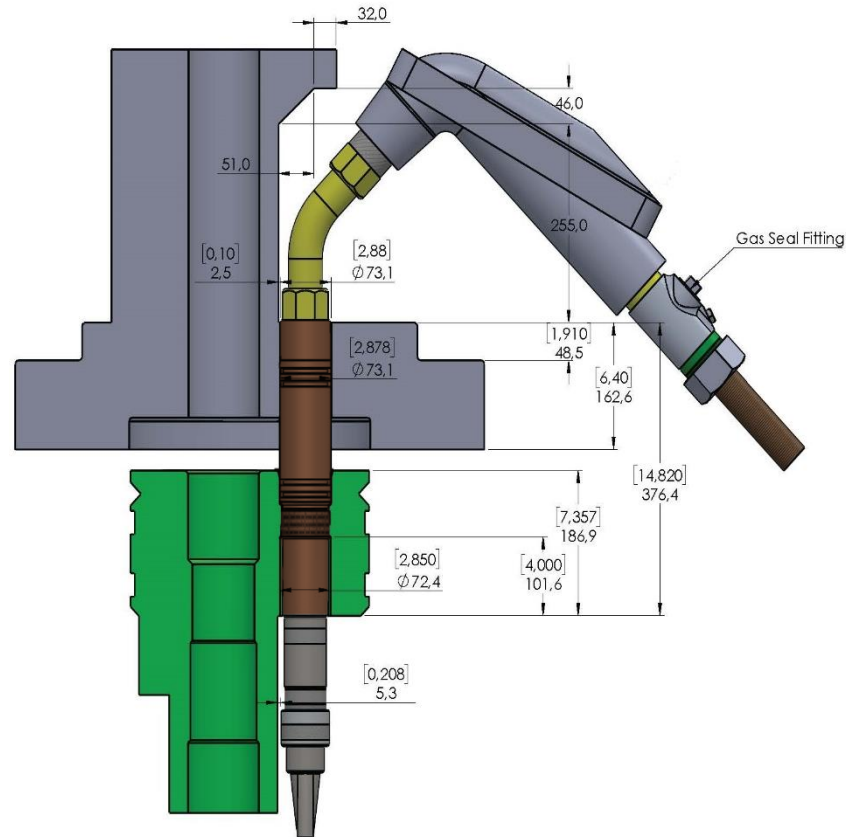
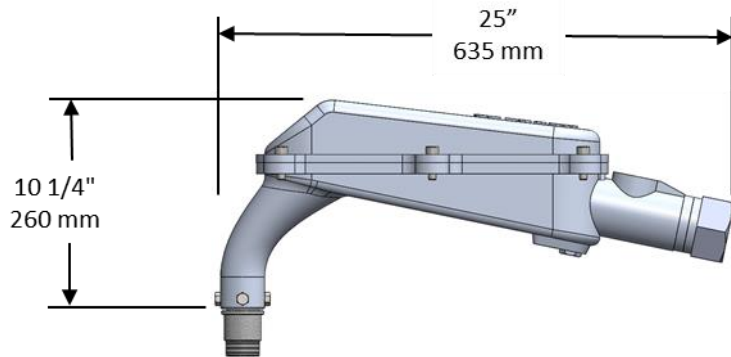
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## "AT-3 WELLHEAD PENETRATOR"

### Explosion Proof Junction Box Class 1 Div.1 or Div. 2



#### NEC/CEC:

Class I, Division 1 and 2, Group D  
Class I, Zone 1 and 2, Group IIA  
Class II, Division 1 and 2, Groups E, F, G  
Class III  
NEMA 4, 7CD, 9EF

#### NEC/CEC Certifications and Compliances

- UL Standard: 886
- UL Listed: E85310
- CSA Standard: C22.2 No. 30
- CSA Certified: 009
- NEC Articles 500-503 and 505
- Fed. Spec: A-A-50563



***AHOW TECHNOLOGIES provides innovative, reliable solutions for various special customer needs, supported by a group of highly experienced engineers in the oil sector.***

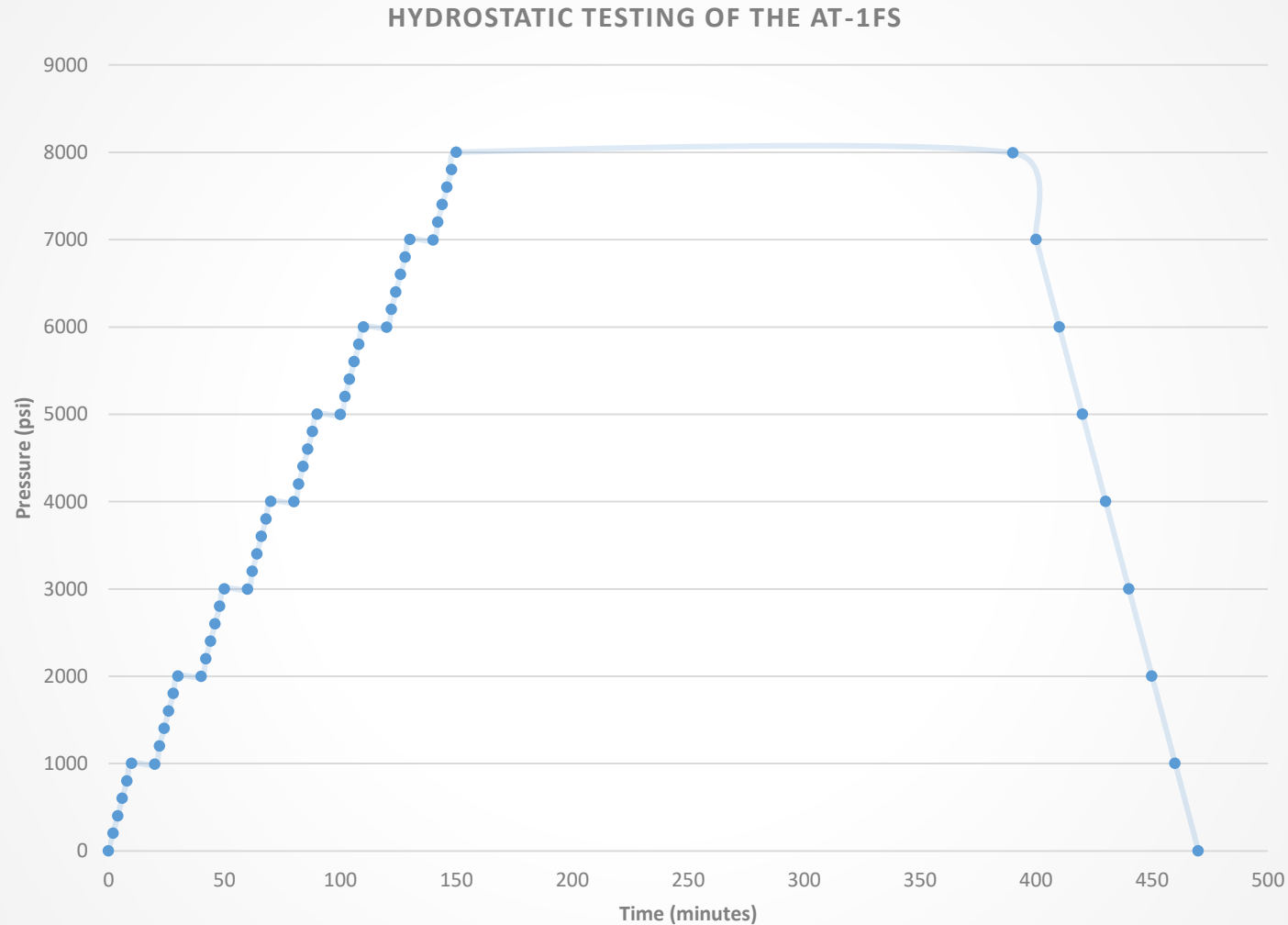
***Our solutions are reliable and responsive, meeting the international standards of quality and safety.***



## AT-1 WELLHEAD PENETRATOR DATA SHEET

### HYDROSTATIC TEST RESULTS

- The AT-1FS Wellhead Penetrator System was tested by applying a pressure of 1,000 psi for 10 minutes to a pressure of 8,000 psi for 4 hours without evidence of oil leakage or pressure loss.





# AT-1 WELLHEAD PENETRATOR

Worldwide installations

