



AT-1 WELLHEAD PENETRATOR

Features:

- Lower feedthrough connector is 316 SS NACE MR 0175. Environment conditions: Concentration 100% CO₂ gas or liquid and 65,000 PPM H₂S. (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.

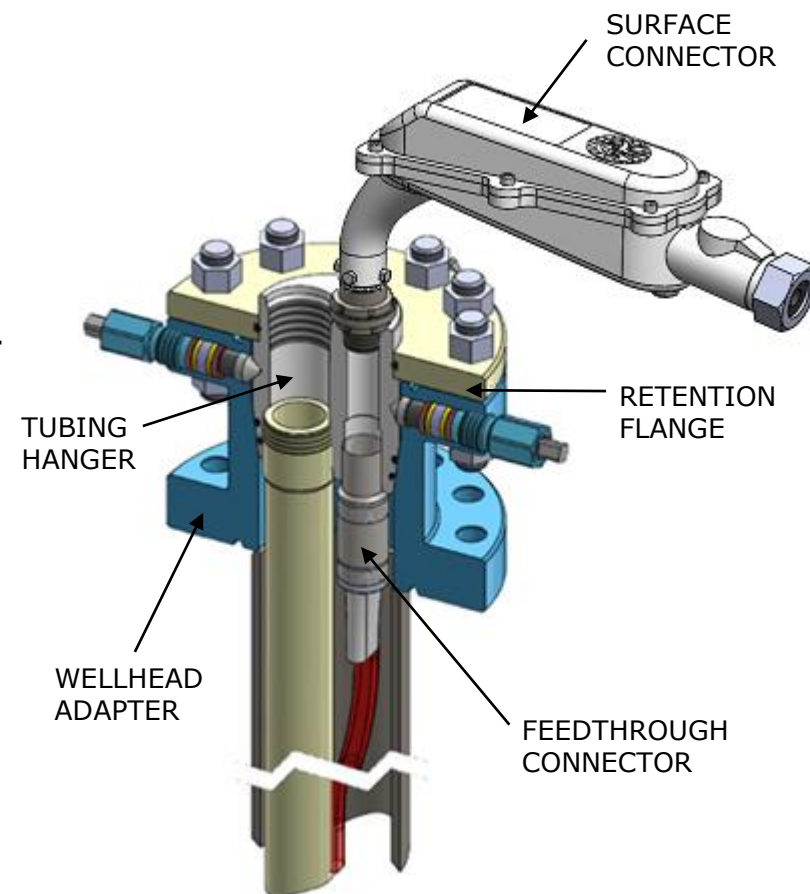




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Most outstanding features that translates in big Rig Time Savings

- ✓ 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.

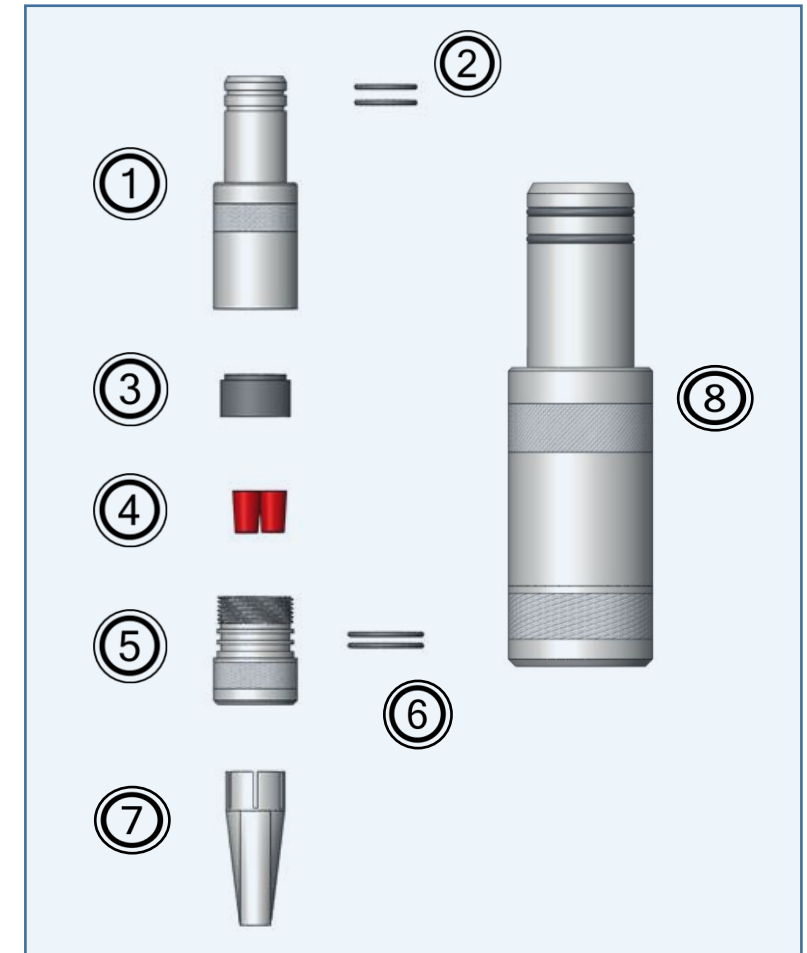




OPTION 1: COMPLETE EQUIPMENT SET

UPPER MANDRIL	①
DESCRIPCIÓN ITEM 2	②
PISTON OR COMPRESSION BLOCK	③
SEALS	④
LOWER MANDRIL	⑤
DESCRIPCIÓN ITEM 6	⑥
TRANSITION COLLAR (ONLY FOR FLAT CABLE)	⑦
AT-1 WELLHEAD PENETRATOR	⑧

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



OPTION 1: COMPLETE EQUIPMENT SET

COMPLETE JUNCTION BOX

①

COVER & BOLTS

②

SILICONE SPLICE BOOTS

③

COPPER SPLICE CONNECTORS

④

GROUND TERMINAL

⑤

JUNCTION BOX

⑥

ALLEN SCREWS

⑦

O-RING # 219

⑧

1-1/4" NPT ADAPTER

⑨

DRAIN & VENT

⑩

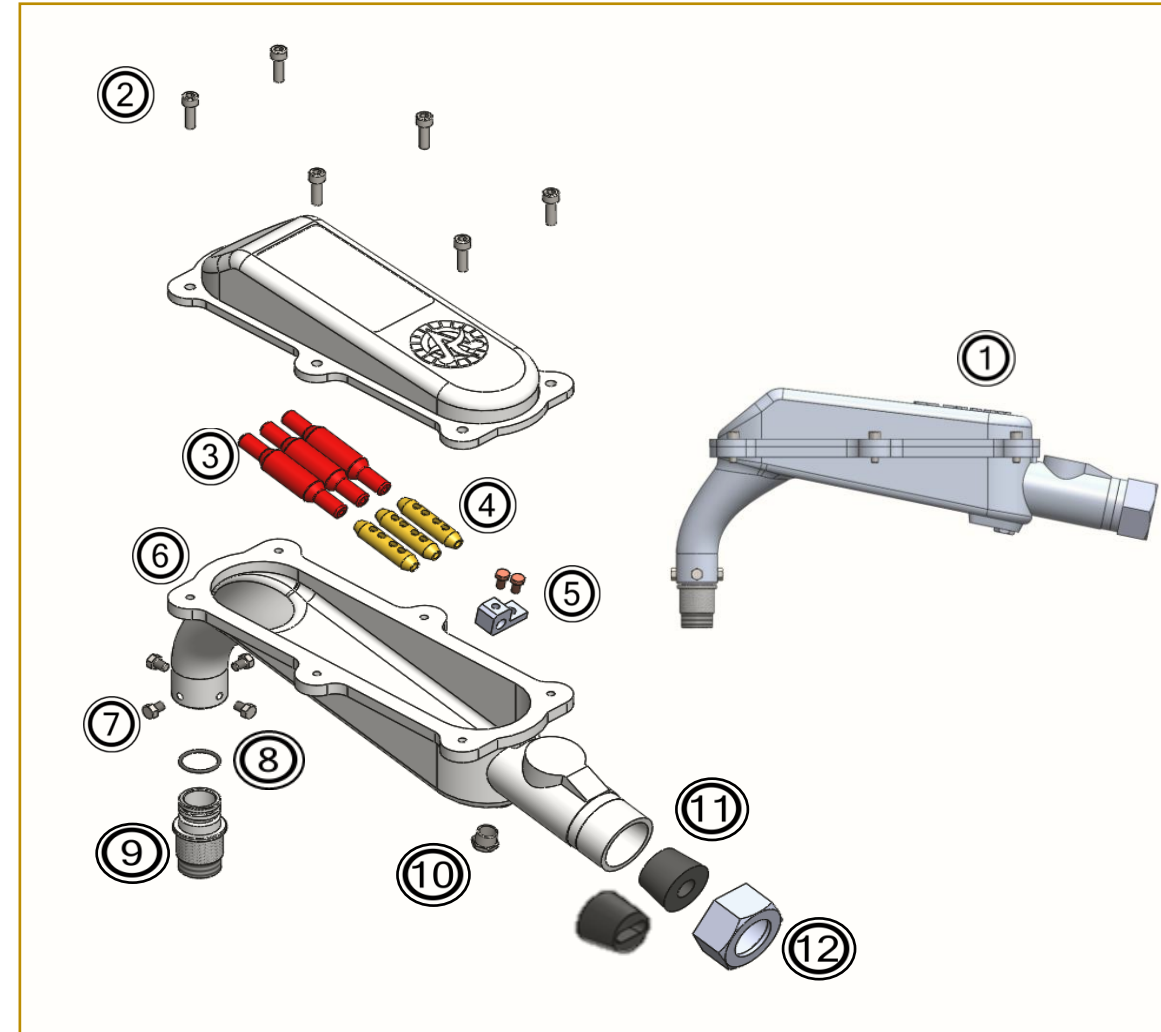
CABLE GLAND FOR ROUND or FLAT CABLE

⑪

NUT

⑫

JUNCTION BOX CLASS 1 DIV 2

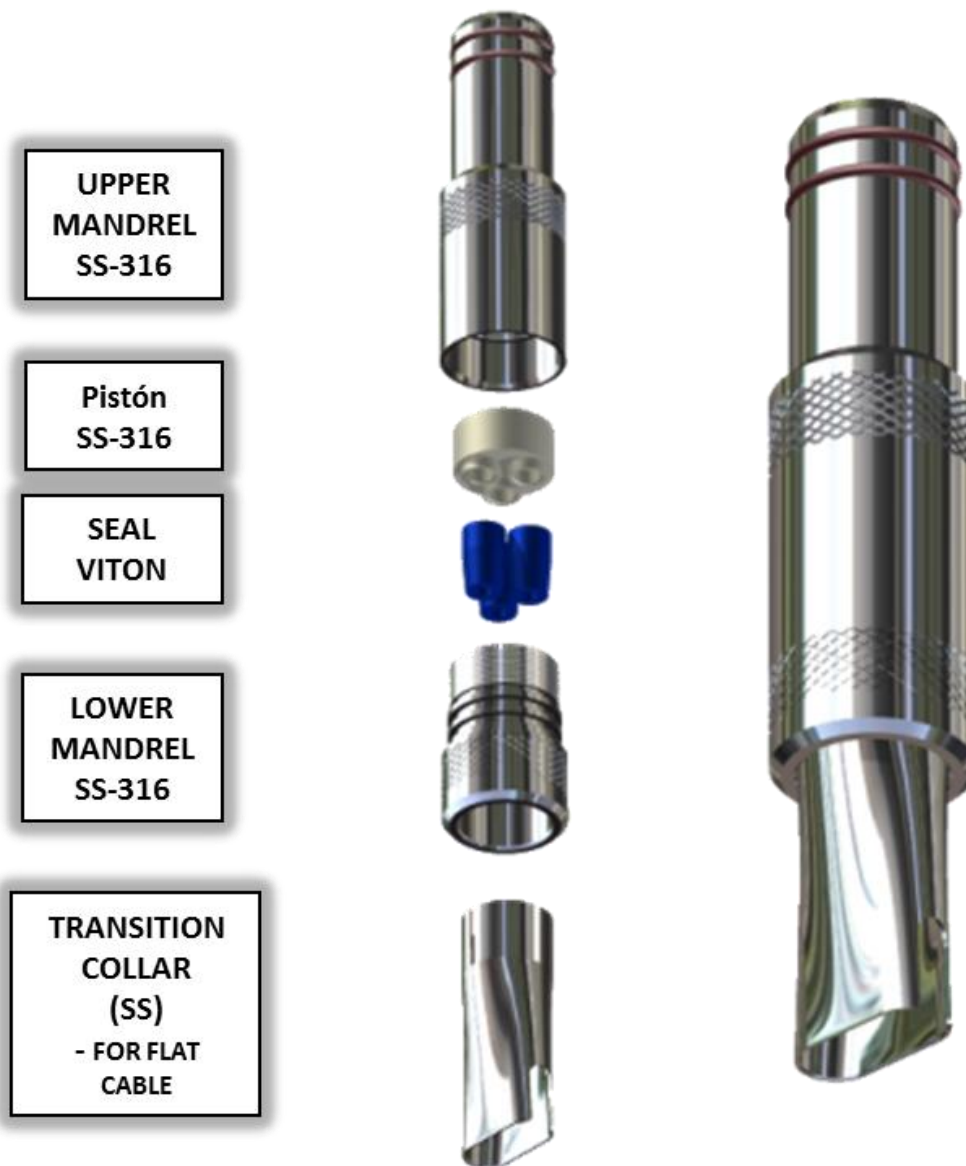


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OPTION 2: AT-1 WELLHEAD PENETRATOR

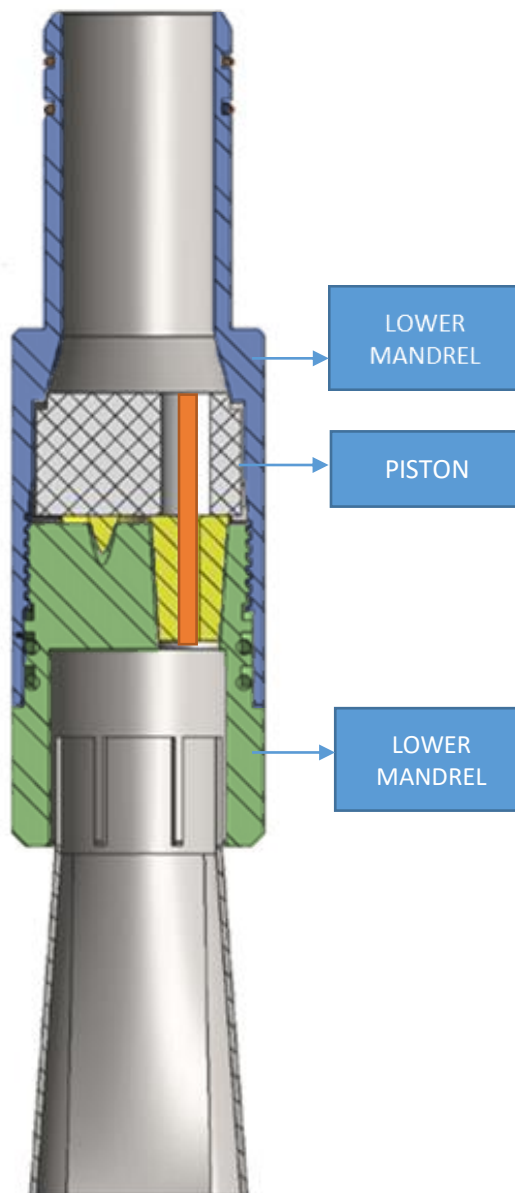


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AT-1 WELLHEAD PENETRATOR



POSITIVE MECHANICAL SEAL



100% STAINLESS STEEL
(316 SS NACE MR 0175 for H₂S & CO₂ 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

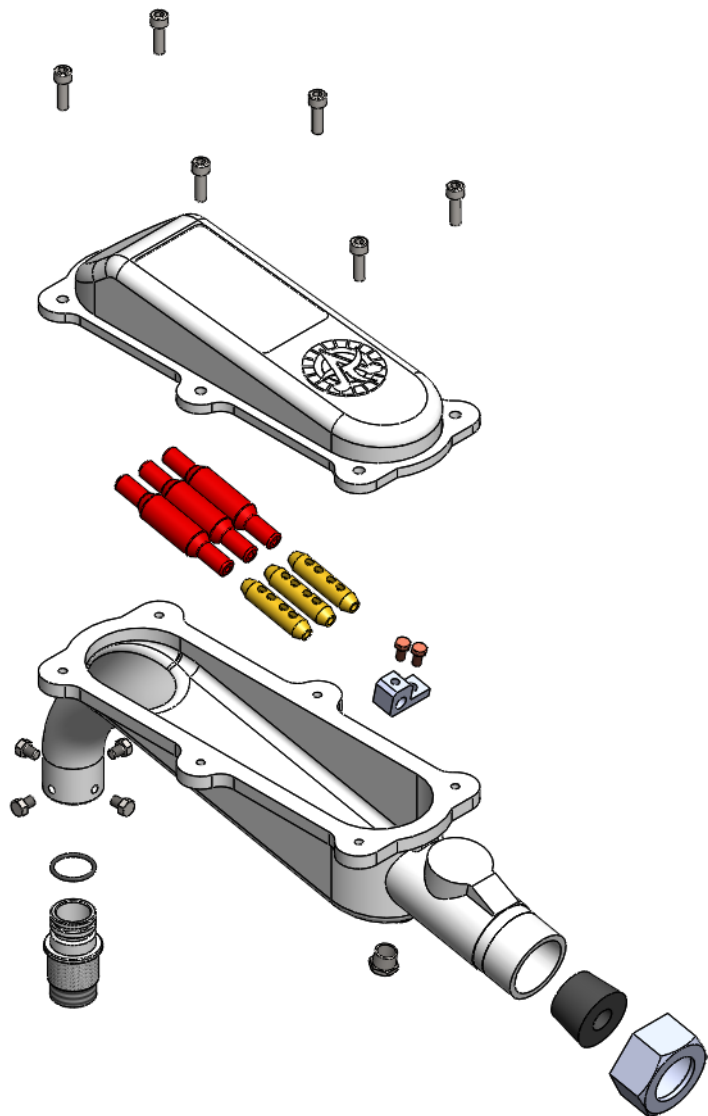


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JUNCTION BOX SURFACE CONNECTOR



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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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.

