

Welltec® Annular Barrier (WAB®)

For Well Completion



At Welltec®, we design and test our WAB® range in accordance to ISO 14310, the industry standard which defines packer design validation grades.

Our V0 WAB® range for cased hole applications has been tested to ISO 14310 V0, the highest validation level within this industry standard, and provides, a verifiable, life of well barrier against SCP (Sustained Casing Pressure.)

Welltec®

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01 Applications

ISO 14310 V0 liner hanger
ISO 14310 V0 production packer (permanent)
Cased hole isolation plug

02 Features

Rugged, all welded, metallic construction
Tubing / liner integrity re-instated post setting
Burst protection optional
High expansion capability
Constant, high pressure Δp over full expansion range
No premature expansion
NACE compliant

03 Benefits

Removes the need for cement
Rotatable during deployment enabling liner to TD in challenging environments
Rotatable during primary cement operations enhancing cement placement
Deployable through milled windows
Slim OD allows for high rate circulation during deployment
Rapid set nature of WAB reduces time & complexity
High rate circulation capability
Full bore – as per casing / tubing

The steel packer expandable sleeve is expanded between the base pipe and the casing by applying pressure in the casing. It conforms to the actual wellbore or casing geometry and primary sealing is achieved through a patented series of elastomer seals. The WAB® Seals are optimised along the length of the steel sleeve, backed up by a series of metal fins that provide metal to metal or metal to rock contact, and high strength anchoring capability.

Through its versatility in application, and robustness in design, the Welltec® Annular Barrier (WAB®) for Well Completion can be utilized to provide solutions to many requirements throughout the completion phase of a well.

Firstly, the WAB®'s ISO14310 V0 capability, when set in cased hole, enables the incorporation of the WAB® as a high-pressure production packer for both high pressure gas, and oil well applications. Furthermore, the ability to rotate and reciprocate during installation and cementing operations, and then expand and seal, on demand, via a onetime application of surface pressure, in horizontal applications, allows the WAB® to be incorporated as a liner hanger, significantly reducing risk and complexity, in these often-challenging applications. Couple this with the V0 capability, the WAB® liner hanger offers significant benefits over conventional, dual stage set, liner hangers. Once the WAB® is set, tubing / casing integrity is re-instated via internal hydraulic isolation mechanism.

The WAB® can be mounted and welded onto any base casing in a simple and cost-effective way. Both ends are therefore fixed and provide life of well protection to the expanded WAB® Sleeve.

WCS product specifications

Welltec® WAB® WC	General Information
Product Name	Welltec® Annular Barrier (WAB®)
Product Structure	Single Piece, Machined Sleeve – Fully Welded to Base Pipe
Seal Length	Up to 2m
Base Casing	Compatibility with all Standard Casing Material / Weight / Threads
Standard Material	Alloy 28 / Super Duplex SST
Standard Elastomers & Seals	HNBR / Aflas / FFKM
Non-Elastomer Seals	PTFE

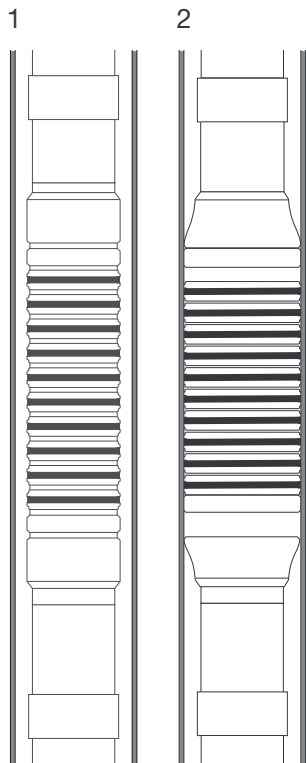
Slim Bore Liner Hanger (LH) and Production Packer (PP)						
*Welltec® WAB®	534WAB	534WAB HP	6WAB	614WAB HP	612WAB	—
Expansion Range (mm)	5.75 > 6.50" (146.05 > 165.1mm)	5.75 > 6.50" (146.05 > 165.1mm)	6.00 > 7.00" (152.4 > 177.8mm)	6.25 > 6.80" (158.7 > 172.7mm)	6.50 > 7.50" (165.1 > 190.5mm)	—
Minimum Running OD (mm)	5.56" (141.2mm)	5.56" (141.2mm)	5.70" (144.8mm)	6.00" (152.4mm)	6.25" (158.7mm)	—
ISO14310 Standard **	Up to V0	Up to V0	Up to V0	Up to V0	Up to V0	—
Maximum Working Pressure psi (bar)	10,000psi (689bar)	15,000psi (1034bar)	5000psi (345bar)	12,000psi (827bar)	6500psi (448bar)	—
Constant element ΔP across expansion range psi (bar)	10,000psi (689bar)	15,000psi (1034bar)	5000psi (345bar)	12,000psi (827bar)	6500psi (448bar)	—
Standard element lengths ft (m)	Up to 7.2ft (2.2m)	Up to 7.2ft (2.2m)	Up to 7.2ft (2.2m)	Up to 7.2ft (2.2m)	Up to 7.2ft (2.2m)	—
Temperature range °C (°F) ****	260°C (500°F)	260°C (500°F)	260°C (500°F)	260°C (500°F)	260°C (500°F)	—
Base-pipe range (up to)	4 ½"	4 ½"	4 ½"	5"	4 ½"	—
ID in (mm)	Full Bore (as per base-pipe)	Full Bore (as per base-pipe)	Full Bore (as per base-pipe)	Full Bore (as per base-pipe)	Full Bore (as per base-pipe)	—

Large Bore LH and PP						
*Welltec® WAB®	812WAB	812WAB HP	812WAB UHP***	912WAB	1214WAB	1214WAB HP***
Expansion Range (mm)	8.50 > 10.00" (215.9 > 254mm)	8.50 > 9.40" (215.9 > 238.7mm)	8.40 > 9.00" (213.36 > 228.6)	9.50 > 10.50" (241.3 > 266.7mm)	12.25 > 14.00" (311.1 > 355.6mm)	11.60 > 12.40" (294.64 > 314.96mm)
Minimum Running OD (mm)	8.180" (207.8mm)	8.240" (209.5mm)	8.2" (208.28 mm)	9.00" (228.6mm)	11.380" (289.1mm)	11.380" (289.1mm)
ISO14310 Standard **	Up to V0	Up to V0	Up to V0	Up to V0	Up to V0	Up to V0
Maximum Working Pressure psi (bar)	10,000psi (689bar)	15,000psi (1034bar)	15,000psi (1034bar)	8,000psi (552bar)	6000psi (414bar)	10,000psi (689bar)
Constant element ΔP across expansion range psi (bar)	10,000psi (689bar)	13,000psi (896 > 1034 bar)	15,000psi (1034bar)	8,000psi (552bar)	6000psi (414bar)	10,000psi (689bar)
Standard element lengths ft (m)	Up to 7.2ft (2.2m)					
Temperature range °C (°F) ****	260°C (500°F)					
Base-pipe range (up to)	7"	5 ½"	7"	7 ⅝"	9 ⅞"	9 ⅝"
ID in (mm)	Full Bore (as per base-pipe)					

*Custom specification and control line feedthrough options available on request ** V0 Leak Criteria available on request for all WAB® sizes *** In development **** Maximum Temperature is based on FFKM seals & elements

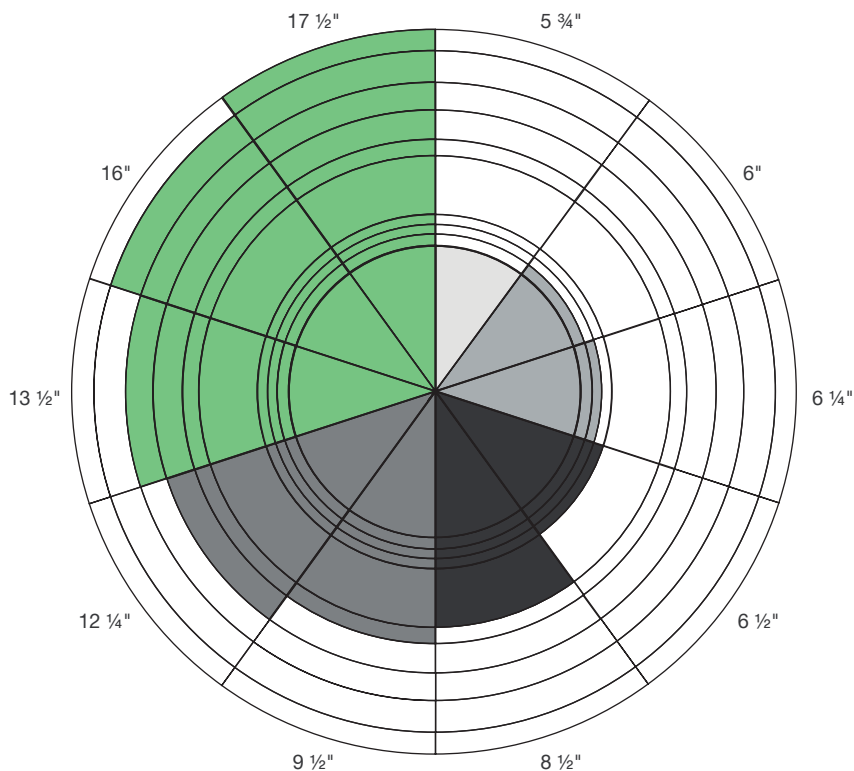
01. How it works

- 1: Mounted on base pipe
- 2: Hydraulic expansion controlled from surface



02. Our product range

Per open hole size.



03. The benefits

The WAB®'s metal construction provides a fast, high expansion, rugged seal against the open hole or casing irrespective of the fluid in the well. Furthermore, as shown in the chart below, there is no degradation of the maximum delta P capability versus expansion diameter.

■ Conventional annular barrier Delta P
■ 812WAB® Delta P

Delta P

