

"THE NEXT GENERATION"

PHAZER™

The Next Generation in Centralization

Under-reamed centralizer designed to compress & glide through the previous cased hole restrictions, expanding & recovering to provide a high level of Stand-off in the open hole sections.



- Engineered for under-reamed application.
- Innovative variable blade design. Each blade working independently during insertion and RIH.
- Superior Stand-off guarantees improved zonal isolation.
- Significantly reduced running forces reduces accumulative drag forces during RIH.
- API testing and beyond, operators testing requirements will be met.
- One piece robust construction, suitable for rotation, withstanding high radial & axial loads.
- Flexibility – proprietary manufacturing process' and high strength spring steel material offers a centralizer that performs equally in close tolerance cased hole and open hole applications.
- Sizes tested and available – 5-1/2" - 24".

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"THE NEXT GENERATION"

PHAZER™ : SUB

The Next Generation in Centralization

The PHAZER™ In-line centralizer sub is specifically designed for passing through long sections of previous casing with annular clearances <0.75" & recovering to provide the best conditions for good zonal isolation in under-reamed open hole sections. .



- Engineered for under-reamed application.
- Innovative variable blade design. Each blade working independently during insertion and RIH.
- Superior Stand-off guarantees improved zonal isolation.
- Significantly reduced running forces reduces accumulative drag forces during RIH.
- API testing and beyond, operators testing requirements will be met.
- Robust construction, suitable for rotation, withstanding high radial & axial loads.
- One piece machined casing equivalent in-line sub body.
- Flexibility – proprietary manufacturing process' and high strength spring steel materials offers a centralizer that performs equally in tight cased hole and open hole scenarios.

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PHAZER™ : SR

The Next Generation in Centralization

The PHAZER™ SR is a one piece heavy duty centralizer that has been specifically designed for gauge hole centralization, offering 100% stand-off.



- Heavy Duty One Piece Construction providing flexibility and strength.
- Suitable for rotation, withstanding high radial & axial loads.
- Zero Starting & Running forces.
- Maximised Stand-off & Flow-by.
- High Restoring force exceeding API requirements. Superior Stand-off guarantees improved zonal isolation.
- Suitable for onshore installation reducing health and safety risk and reducing rig time.
- Split & hinged option available upon request.
- Sizes tested and available – 4 ½" – 30".

"THE NEXT GENERATION"

PHAZER™ : SB

The Next Generation in Centralization

The PHAZER™ SB - API qualified range of welded & non-welded bow spring centralizers.



- Engineered hinged welded & non-welded spring-bow centralizers.
- SB Range.
 - Positive Blade.
 - Tandem Rise Blade.
 - Conventional Blade.
- API 10 D Certified
 - High restoring force.
 - Low starting & running forces.
- API & ISO 9001:2015 rated manufacturing and quality control.
- Size Range 2-7/8" – 30".

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PHAZER™ : FUSION

The Next Generation in Centralization

The PHAZER™ FUSION is a ultralow friction Kevlar™ composite solid body centralizer designed specifically to reduce torque and drag in challenging ERD wellbores.



- The Bulletproof Kevlar™ composite - high strength, high impact resistant centralizer.
- Diamond Ceramic construction provides extreme wear resistance for axial and radial loading.
- Suitable for HPHT wellbores, the Phazer™ : Fusion does not degrade overtime as per certain synthetic centralizer materials.
- PTFE honeycomb structure provides exceptional coefficient of friction, affording low torque and drag during RIH.
- Suitable for long horizontal and Extreme ERD well bores.
- Free flow 360° solid blade design provides excellent cement placement and guaranteed stand-off.
- Centralizer placement / T&D analysis available.
- Sizes available 2 7/8" – 9 5/8".

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PHAZER™ : ZR

The Next Generation in Centralization

The PHAZER ZR is a low friction zinc alloy & Carbon Kevlar Composite solid body centralizer designed specifically to reduce torque and drag in Extreme ERD applications.



- Combination of Zinc Alloy & Bulletproof Carbon Kevlar ultra-low friction durable materials.
- Exceptionally low coefficient of friction providing low torque and drag during RIH.
- Suitable for highly deviated and ERD applications.
- High strength for axial and radial loading.
- Exceptionally durable materials suitable for high temperature wellbores and long-life cycles.
- Full 360° passive spiral blade, maintaining maximum flow-by area.
- Free flow solid blade design provides excellent cement placement and guaranteed stand-off.
- Centralizer placement/T&D analysis available.
- Machinable for bespoke design and reduced OD sizes.
- Split option available.
- Sizes available 4 1/2" – 13 3/8".

"THE NEXT GENERATION"

PHAZER™ : Z

The Next Generation in Centralization

The PHAZER™ Z is a low friction zinc alloy solid body centralizer designed specifically to reduce torque and drag in ERD wellbores.



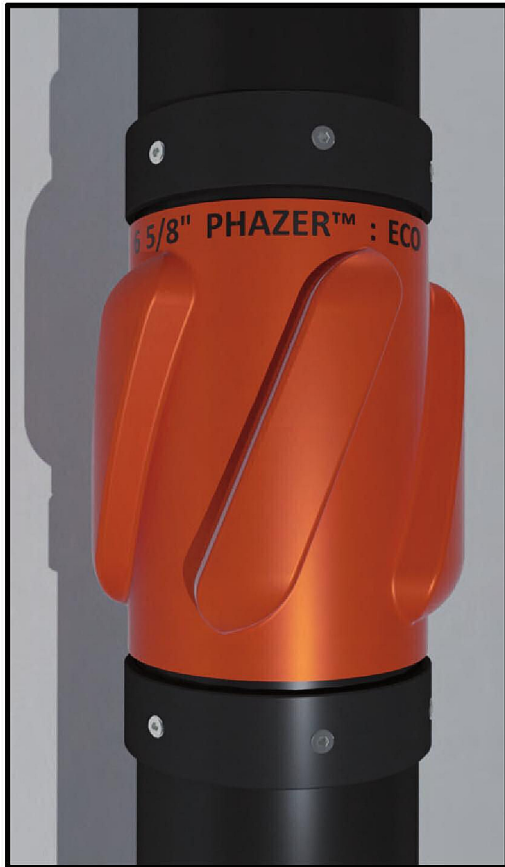
- Low coefficient of friction providing low torque and drag during RIH.
- Suitable for long horizontal and ERD well bores.
- High strength for axial and radial loading.
- Exceptionally durable materials suitable for high temperature wellbores and long life cycles.
- Full 360° spiral blade.
- Free flow solid blade design provides excellent cement placement and guaranteed stand-off.
- Centralizer placement/T&D analysis available.
- Machinable for bespoke design and reduced OD sizes.
- Split option available.
- Sizes available 2 7/8" – 13 5/8".

"THE NEXT GENERATION"

PHAZER™ : ECO

The Next Generation in Centralization

The PHAZER™ ECO is a fabricated steel solid body gauge hole centralizer suitable for intermediate well bores.



- One piece steel, heavy duty centralizer.
- Suitable for intermediate well bores.
- Positive stand-off & Maximised flow-by.
- Free flow solid blade design improves cement placement.
- Bi-directional fitment.
- Excellent side loading > 20 tonnes.
- Spiral bladed or Straight Blade options available.
- Integral stop collar option available.
- Size Range 2 7/8" – 30" .

"THE NEXT GENERATION"

PHAZE-LOK™ : KEVLAR™

The PHAZE-LOK Kevlar™ Composite bonded on stop collar that accompanies the Vulcan Phazer™ Under-Reamed centralizers. This virtually indestructible and bulletproof stop collar provides exceptionally high holding forces, ideal for tight/close tolerances application.



- A moulded and bonded stop collar.
- Moulded directly onto casing/liner and sand screen joints.
- Maximised flow by area and reduced ECD's.
- Extremely high holding force in excess of 50 tonnes.
- Non-metallic, fully millable and drillable material.
- Fully compatible with Chrome Tubulars.
- No set screws or the potential for carbon impregnation.

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"THE NEXT GENERATION"

PHAZE-LOK™

A full range of high holding force stop collars to accompany the Vulcan centralizer product lines.



- **PHAZE-LOK HD**
 - Heavy Duty
 - Tapered leading edge
 - High Holding force >20 tonnes
 - Offset Knurled Set Screws
 - Stainless Steel Suitable for Chrome Tubulars
 - Run in conjunction with Phazer under-reamed and SR centralizers
- **PHAZE-LOK DI**
 - High Holding Force >15 tonnes
 - Heavy Duty casting suitable for Chrome tubulars
 - Knurled stainless steel set screws
 - Run in conjunction with Phazer Fusion and ZA centralizers
- **PHAZE-LOK ECO**
 - Standard Stop Collar
 - Good holding force >10 tonnes
 - Stainless Steel Knurled Set Screws
- **PHAZE-LOK HINGED**
 - Hinged with set screws
 - Hinged with spiral nail
 - Hinged with bolt

"THE NEXT GENERATION"

PROBE : RS

The Next Generation in Reaming & Guide Shoe Technology

A sophisticated range of Reamer & Guide Shoes designed to assist casing/liner/screen running when difficult hole conditions are anticipated.



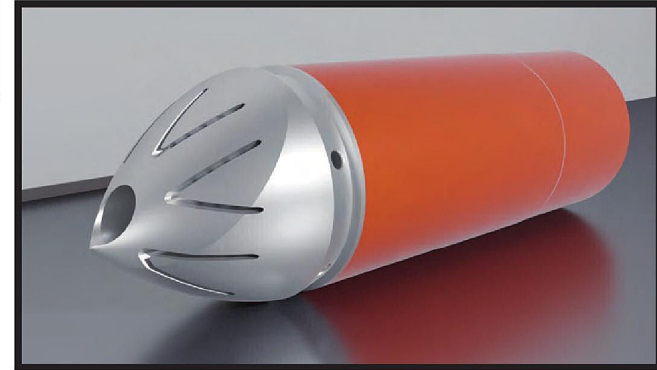
- High strength Eccentric Well bore seeking nose.
- Profiled nose design reduces drill-out times whilst maintaining unit strength and integrity.
- Flow Ports offer 360° flow area coverage aiding hole cleaning and cement placement.
- Right hand blade design offers a more aggressive reaming action.
- Optimized cutting structure offers the capability to ream past obstructions with rotation or by reciprocation.
- Tungsten Carbide cutting structure.
- High Flow 5Kpsi & 10Kpsi Valve exceeding API 10F IIC certification.
- Single, Double & Auto-Fill Valve options available.
- Various cutting structure options available.
- Nose available in Aluminium or Phenolic, Concentric or Spade.
- Fully drillable with PDC & Rollercone bits.

"THE NEXT GENERATION"

PROBE : GS

The Next Generation in Reaming & Guide Shoe Technology

A sophisticated range of Reamer & Guide Shoes designed to assist casing/liner/screen running when difficult hole conditions are anticipated.



- High strength Eccentric Well bore seeking nose.
- Profiled nose design reduces drill-out times whilst maintaining unit strength and integrity.
- Flow Ports offer 360° flow area coverage aiding hole cleaning and cement placement.

- Slick Body allow for easy passage through swelling / collapsed wellbores
- Slick Body eliminates pack off potential

- High Flow 5Kpsi & 10Kpsi Valve exceeding API 10F IIIC certification.
- Single, Double & Auto-Fill Valve options available.
- Various cutting structure options available.
- Nose available in Aluminium or Phenolic, Concentric or Spade.
- Fully drillable with PDC & Rollercone drill bits.

PATENT PENDING

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VULCAN PREMIUM FLOAT EQUIPMENT

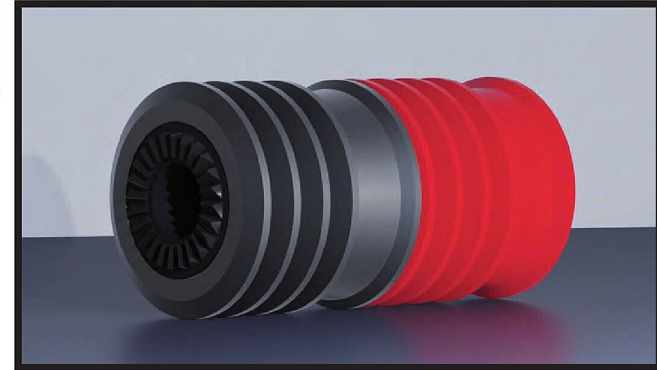
A full range of guide shoes and premium float equipment, that surpasses API 10F IIIC and manufactured in accordance to API 5CT. Suitable for applications such as full casing strings and close tolerance liners.



- Durable Eccentric & Concentric Profiled Nose available in standard Aluminium. Cement or Phenolic.
- Up Jet / Down Jet side ports available.
- Back Pressure 5,000psi & 10,000psi.
- Temperature Rating up to 400° F.
- Single, Double & Auto-Fill Valve options available.
- Ball Catcher/Deflector options available.
- Fully drillable by PDC & Roller Cone drill bits.
- Conventional and Non-Rotating Cement Plugs available.

"THE NEXT GENERATION"

VULCAN PREMIUM CEMENT PLUGS



A full range of premium cementing plugs that surpasses API 10 TR6.



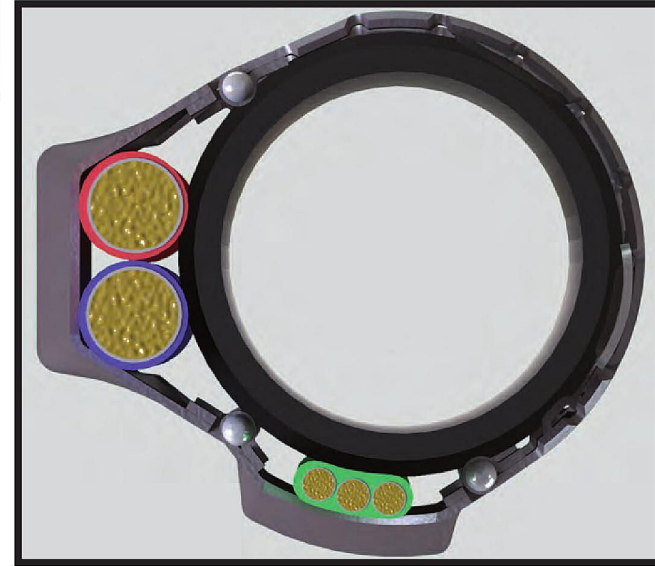
- Conventional and Non-Rotating Cement Plugs.
- Five fin for superior clean casing wipe.
- Sure-Lok anti-rotational design eliminates potential for drill out issues.
- Tapered insert and receptacle for secure plug landing.
- High Bump Pressure options available up to 10ksi.
- Operating range up to 400°F.
- Rupture Disk rating as per Operators requirements. 300psi – 800psi.
- Fully drillable by PDC & Roller Cone drill bits.
- Compatible with all common downhole WB and OB fluid types.

"THE NEXT GENERATION"

KLING-ON™

The Next Generation in Control Line Protection

The KLING-ON range provides downhole cables and control lines with protection during RIH, both across the coupling and at mid joint on the pipe.



- Engineered cross coupling control line protector.
- Supports and protects cables & control during trips in and out of wellbore.
- Long channel design eliminates crimping /damage to the control lines/cable. This effectively increases the life cycle of the downhole equipment.
- Eight point holding force system - allowing for Max – Min API pipe tolerances.
- Tapered holding points offer greater holding force without damaging the control line/cables.
- Carbon or Stainless Steel construction with galvanized coating.
- Single/Dual/Mid joint options available.
- Custom designs available for all configurations.