Well Construction & Completion

Product Catalogue

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Archer Well Services is a result of merging Coiled Tubing, Oiltools, and Wireline into one division. Our team consists of more than 800 people globally. We have operations in over 40 countries worldwide, with offices in 13 countries. We offer a wide array of downhole technologies for various phases of the well lifecycle, spanning from Well Construction & Completion, Well Intervention & Workover, Well P&A & Slot Recovery, to Surface, Geothermal, and CCUS applications.

Introduction

Our Experience

Archer is one of the most experienced Well Services contractors in the North Sea having successfully completed over 210 wells Permanent Plug and Abandonment (PP&A) wells. We are one of the leading contractors in delivering integrated P&A solutions and P&A technology offerings. No other company provides as comprehensive an intervention service as we do in Archer.

Our People

Archer's personnel are recognized for their experience, expertise and the personal pride they take in performing their work safely and efficiently. We are constantly in search of new ways to deliver outstanding performance, which starts with selecting the right tools to solve customer challenges.

Our Performance

Our pursuit is to perform to the highest standards in safety, conduct, operations, engineering and service. The desire to succeed, the reliability to deliver on what we promise, and the discipline to be consistent in doing so safely, defines Archer's performance.

Our Product Catalogues

Our product portfolio is structured to support the full well lifecycle, aligned with industry standards. To provide clear focus and ease of navigation, our technologies are presented across four dedicated catalogues:

- Well Construction & Completion
- Well Intervention & Workover
- Well P&A and Slot Recovery
- Surface Solutions

Each catalogue highlights technologies engineered for specific operational objectives and deployed using the most effective conveyance methods, including Drill Pipe, Wireline, Coiled Tubing, and Surface-based systems.

This Catalogue

This catalogue focuses on Well Construction & Completion technologies,. The solutions presented are designed to support well integrity, operational efficiency, and seamless integration into construction workflows. Technologies in this catalogue are primarily conveyed via drill pipe and wireline.

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Plugs & Plug Solutions

SPARTAN®

Everyday solution for short or medium term well suspension

The SPARTAN® is designed for well suspension periods of days to months, ensuring easy deployment, a secure seal and safe removal on task completion.

Benefits

- Absolute protection
- Confidence in retrieval
- Easy and rapid deployment
- Reduces operational time
- Safer and lower cost operations
- Flexible set depths and angles

Features

- ISO 14310 V3 to V6 certified seal
- 100% retrieval record; millable
- No set weight needed below
- High differential pressure elements up to 12,500 psi and 95°C
- Seal testable from above and below
- Sizes 7" – 14"

Specifications

Casing sizes	**7" – 14"**
Pressure rating	3,000 – 12,500 psi [207 – 862 bar]
Temperature rating	35 – 248 degF [2 – 120 degC]
ISO 14310 V0 qualified	Yes
Max hangoff	250 klbs [113 tons]
Through-bore diameter	1.96 – 3"
Typical suspension period	Days to Months
Drillpipe connections	NC50 – 6 f/8 FH
Elastomer	HNBR
Ball valve ISO 28781 qualified	Yes

Specifications may be subject to change

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C-SPARTAN®

Everyday solution for permanent suspensions

The C-SPARTAN® is designed for permanent well suspensions and as a fundament for cement. The C-SPARTAN® is designed based on the pioneering LOCK® and SPARTAN® technology and provides the customer with a reliable solution for safe and lower cost operations.

Benefits

- Easy and rapid deployment and installation
- Safer and lower cost operations
- Reduces operational time
- Flexible set depths and deviations
- Easy adaption to suit combined operations

Features

- ISO 14310 V6 rated
- No set weight needed below, limited weight needed above
- Resettable if required

Specifications

Casing sizes	**9 5/8"- 14"**
Pressure rating	3133 – 4000 psi [216 – 276 bar]
Temperature rating	39 – 203 degF [4 – 95 degC]
ISO 14310 qualification	V6
Typical application	Permanent barrier or fundament
Drillpipe connections	NC50 Box
Elastomer	NBR-HNBR
Service provided	Standard

Specifications may be subject to change

Archer

Combi SPARTAN®

Versatile plug for combination runs

The Combi SPARTAN® is a versatile plug for combination runs, offering reliable sealing for well suspensions. It ensures easy deployment and removal, with enhanced features for broader well applications.

Benefits

- Versatile plug for combination runs
- Absolute protection
- Reduces operational time
- Safer and lower cost operations
- Flexible set depths and angles

Features

- ISO 14310 V6 certified seal
- Dress and tag cement
- Combinable with LOCK & LOAD®

Specifications

Casing sizes	**9 ⅝”**
Pressure rating	4,000 psii [276 bar]
Temperature rating	39.2 – 203 degF [4 – 95 degC]
ISO 14310 V6 qualified	Yes
Through-bore diameter	1.299”
Typical suspension period	Permanent
Connections	5.875” - 6 TPI Stub Acme - NC50
Elastomer	NBR

Specifications may be subject to change

TIMELOCK™

Long term suspension and harsh conditions

Archer’s TIMELOCK™ plug is designed for longer-term suspension periods and harsh well conditions. TIMELOCK™ is part of the LOCK® plug series that brings absolute protection, efficiency and flexibility to deliver time and cost savings.

Benefits

- VO protection for extended periods or harsh well conditions
- Confidence in retrieval
- Easy and rapid deployment
- Safer and lower cost operations
- Flexible set depths and angles

Features

- SO 14310 VO certified gas-tight seal with enhanced seal technology
- High performance elastomer (NORSOK M-710 approved)
- 100% retrieval record; millable
- No set weight needed below
- High differential pressure elements
- Seal testable from above and below
- Multiple sets without tripping

Typical Applications

- VO protection for extended periods or harsh well conditions
- Confidence in retrieval

Specifications

Sizes, inch	**7” – 14”**
Pressure rating, psi (bar)	5,000 – 8,850 [345 – 610]
Temperature rating °F (°C)	39 – 311 [4 – 155]
ISO 14310 VO qualified	Yes
Max hangoff klbs [tons]	300 [136]
Through-bore diameter, inch	1.1 – 3
Typical suspension period	Days to Years
Drillpipe connections	Pin NC38 – NC50
Elastomer	HNBR
Ball valve ISO 28781 qualified	Yes

Specifications may be subject to change

Archer

LOCK®+

Inspired by legacy. Engineered for the future.

LOCK®+ inspired by the legacy LOCK® family; Improved- Upgraded- Customized. The LOCK®+ has increased hang-off capacity, both combined loading, and straight-pull, which makes it the ideal solution plug. It has higher pressure rating and is qualified for multiple settings. The LOCK®+ V0 qualified according to ISO 14310 / API 11D1.

More agile, compact, and robust with less moving parts; LOCK®+ is the next generation plug!

Benefits

- V0 protection for extended periods or harsh well conditions
- Confidence in retrieval
- Easy and rapid deployment
- Integrated learnings from close to 9000 operations
- Increased pressure rating

Features

- V0 qualified according to ISO 14310 / API 11D1
- Designed to improve debris management
- More hang off capacity, both combined loading and straight pull
- Increased pressure rating
- Less parts and simplified redress – No make up required

Specifications

	LOCK+	LOCK+ HD
Pressure rating, psi (bar)	7,500 [517]	10, 000 [690]
Temperature rating °F (°C)	39 - 302 [4 – 150]	39 - 302 [4 – 150]
ISO 14310 & API 11D1 V0 qualified	Yes	Yes
Max hangoff klbs [tons]	154,000 [70]	330,000 [150]
Through-bore diameter, inch	2	1.96
Typical suspension period	Days to Years	Days to Years
Drillpipe connections	NC50 BOX x PIN	6 5/8 FH Box x NC50 Pin
Elastomer	HNBR	HNBR
Ball valve ISO 28781 qualified	Yes	Yes

Specifications may be subject to change

STORMLOCK®

Storm, long term suspension and harsh conditions

Engineered to support up to 300 tons of pipe and with enhanced seal technology, STORMLOCK® takes suspension plug performance to its highest peak. Rapidly deployable, reliable and absolutely secure once set, STORMLOCK® delivers V0 protection for short or long suspension periods, harsh well conditions and storms.

Benefits

- V0 protection for storm, extended periods or harsh well conditions
- Confidence in retrieval
- Easy and rapid deployment
- Safer and lower cost operations
- Flexible set depths and angles
- Reduces rig time

Features

- ISO 14310 V0 certified gas-tight seal
- Up to 300 tons hanging capacity
- 100% retrieval record; millable
- No set weight needed below
- High differential pressure elements
- up to 10,000 psi and 150°C
- Seal testable from above and below
- Multiple sets without tripping
- Unrestricted 2" straight-through bore

Specifications

Sizes, inch	10 3/4" – 16"
Pressure rating, psi (bar)	8,000 – 10,000 [551 – 689]
Temperature rating °F (°C)	39 – 302 [4 – 150]
ISO 14310 V0 qualified	Yes
Max hangoff klbs [tons]	551 – 660 [250 – 300]
Through-bore diameter, inch	2
Typical suspension period	Days to Years
Drillpipe connections	6 5/8 in FH
Elastomer	HNBR
Ball valve ISO 28781 qualified	Yes

Specifications may be subject to change

Archer

C-LOCK®

Gas-tight bridge plug for permanent abandonment

C-LOCK® is the latest addition to the LOCK® family and is designed for permanent abandonment. The C-LOCK® is providing a gas tight barrier, validated according to latest industry standards.

Benefits

- V0 protection
- Easy and rapid deployment
- Integrated learnings from 9000+ operations
- Safer and lower cost operations

Features

- V0 qualified according to ISO 14310 / API 11D1
- Less parts and simplified redress
- Gas tight sealing

Specifications

Sizes, inch	**9 ⅝" - 13 ⅜"**
Pressure rating, psi (bar)	5,000 [345]
Temperature rating °F (°C)	59 - 203 [15 – 95]
ISO 14310 & API 11D1 V0 qualified	Yes
Max hangoff klbs [tons]	11 [5]
Typical suspension period	Permanent
Drillpipe connections	NC50
Elastomer	HNBR

Specifications may be subject to change

VAULT®

Dual Plug System

The VAULT® dual plug system enables two barrier plug to be installed in one run. VAULT® streamlines plug operations with the ultimate goal of reducing rig time. The HD VAULT® can be used as a spear for single pulling operation or combined run applications.

Benefits

- Saves operations time
- Saves operational cost
- Reducing rigsite handling, improving safety standards

Features

- Dual plug system
- ISO 14310 certified, available as a V0 rating
- No set weight needed below
- High differential pressure elements

Specifications

Sizes, inch	**9 5/8" – 14"**
Pressure rating, psi (bar)	6,090 – 7,500 [420 – 517]
Temperature rating °F (°C)	39 – 302 [4 – 150]
ISO 14310 qualification	V0
Max hangoff klbs [tons]	300 [154]

Specifications may be subject to change

Archer

HD VAULT®

High tensile strength for single or combined runs

The HD VAULT® provides high tensile strength for single or combined runs. Its ball-activated, rotational lock allows string rotation without setting the plug. V0 qualified, it acts as a barrier during casing removal, and using it as a spear shortens the BHA for easier handling.

Benefits

- Saves operations time
- Saves operational cost
- Reducing rigsite handling, improving safety standards

Features

- Dual plug system
- ISO 14310 certified, V0 certified
- No set weight needed below
- High differential pressure elements
- High pull force for spear applications

Specifications

Sizes, inch	9 ⅝” – 14”
Pressure rating, psi (bar)	6,090 – 7,500 [420 – 517]
Temperature rating °F (°C)	39 – 302 [4 – 150]
ISO 14310 qualification	V0
Max hangoff klbs [tons]	154 [70]
Max pull force klbs [tons]	661 [300]

Specifications may be subject to change

SPEARHEAD®

Strong, extensive hangoff and pull capacity

The SPEARHEAD® system is designed to withstand increased hang off loads, or pull forces, whilst qualifying as a barrier plug. This system allows customers to combine two or more operations, using the SPEARHEAD® as an anchor before or after it has been set as a barrier.

Benefits

- Saves operations time
- Saves operational cost
- Reducing rigsite handling, improving safety standards

Features

- Extensive hangoff capability
- ISO 14310 certified
- Ability to pressure test above and below the plug

Specifications

Sizes, inch	9 5/8” – 14”
Pressure rating, psi (bar)	5,000 – 7,500 [345- 517]
Temperature rating °F (°C)	39 – 302 [4 – 150]
ISO 14310 qualification	V0
Max hangoff klbs [tons]	661 [300]

Specifications may be subject to change

Archer

MARS™ HP

High Pressure Permanent Bridge Plug

The MARS™ is a ISO 14310 V0 qualified permanent bridge plug, deployed on drill pipe or wireline, capable of sealing up to 15.000 psi. The MARS™ plug can be run on a flow activated drill pipe deployed running tool or set up with an adapter kit to suit standard hydraulic wireline setting tool. The MARS™ plug is developed for permanent applications, but millable if required. Two plugs can be milled in the same run if needed.

Benefits

- Flow activated (DP deployed)
- Hydraulic set
- Drill pipe and wireline deployed
- Millable (two plugs in the same run)

Features

- ISO 14310 V0 qualified
- 15.000 psi pressure rating
- Sour Service qualified

Specifications

	6375 MARS™	8375 MARS™
Typical casing size	7 3/4" 46,1#	9 7/8" 62,8# 9 5/8" 53,5# 10 1/8" 75,9#
Pressure rating, psi (bar)	15,000 [1034]	15,000 [1034]
Temperature rating °F (°C)	40- 250 [4- 121]	40- 250 [4- 121]
ISO 14310 qualified	Yes	Yes
Setting range, in [mm]	6,500- 6,696 [165,1- 170,08]	8,500- 8,785 [215,9- 223,14]
Typical application	Permanent plug	Permanent plug
Type of service	Sour Service	Sour Service
Drillpipe connection DP deployed	NC38 BOX	NC38 BOX
Conveyance methods	Drillpipe and wireline	Drillpipe and wireline

Specifications may be subject to change

Cementing Solutions

Cflex®

Improved annulus integrity – Multistage cementing system

Cflex® technology enables high-performancemultistage cementing. Qualified gas tight equivalent to ISO 14998 and with a permanent lock system, Cflex® performs to the highest integrity standard.

Despite advances in cement technology, annulus integrity is one of the biggest challenges facing the industry, both in terms of frequency and impact. The Cflex® cementing system improved annular seal integrity and overcomes the shortcomings of previous stage cementing technology. In designing Cflex®, our engineers focused on four key areas, integrity, flexibility, efficiency and performance.

Benefits

- Improved annulus integrity and zonal isolation
- Security and confidence in gas tight sealing capability and mechanical integrity
- Easy installation and single-trip operation of multiple Cflex® devices
- Precise and conclusive operation for open, close and lock; no risk of accidental lock
- Improved operational efficiency and effectiveness
- Versatility and flexibility for multiple applications
- Slim design minimises ECD effects
- Large flow area ports maximise possible flow rate

Features

- Sealing system qualified to ISO 14998 V0 equivalent
- High burst, collapse, torque and tensile ratings
- Full bore ID matches casing ID and slim OD
- Closing utilising push/pull movement
- Permanent close function
- Unlimited number can be installed in liner or casing string
- Can be shifted with high differential pressure without damaging seal
- Large port flow area; 4.4 sq.in. minimum
- Inner sleeve hard coated to reduce wear; anti-rotation system
- Suits all type of premium casing threads
- Wide range of sizes, materials available

Specifications

Casing sizes	**7 – 16”**
Temprature rating	40-350 degF [4-150 degC]
Standard material	Per application
Elastomer material	Per application
Permanent lock feature	Yes
Max. flow	14 BPM
Qualification	14998 V0

Cflex® multifunction operating tool controls Cflex® selecively and precisley

Cflex® dart catcher

Cflex® F

Enhanced well integrity – Multistage cementing system, cement placement control

The Cflex® F incorporates a flexible annulus cement base designed to deliver high-performance multistage cementing. It provides cement placement control and aims to enable a desired cementing height when performing a stage cementing job.

The Cflex® F cementing system includes a flexible annular cement base, which improves annular seal integrity and overcomes the shortcomings of previous stage cementing technology.. This particular Cflex®'s built-in fundament is activated during the opening of the cement ports, so it prevents a mixture of fluids and creates a solid base for the cement. Qualified gas tight, tested according to ISO 14998, and with a permanent lock system, Cflex® F performs to the highest integrity standards.

With this Cflex®, it is possible to activate permanent lock with hydraulic pressure. Its fundament prevents cement contamination and can hold differential pressure. It is mechanically activated, so there is no need to pressure the well to activate the fundament.

Benefits

- Provides cement direction control
- Improved method of retaining cement
- Minimizes cement contamination
- No extra operation needed to activate the cement fundament

Features

- Cement valve included in an ISO 14310/14998 V0 Cflex stage cementing valve, which ensures no bubbles
- Steel enforced rubber ring that is expanded to the ID of the next casing/open hole
- The cement fundament eliminates the need to use additional equipment such as ICP or “basket type” to form a fundament for the cement
- The fundament is fully mechanical, will always be activated when the valve is opened

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MCAP®

Mechanical Casing Annulus Packer

The MCAP® is a mechanically set packer designed to seal off the annulus between two casings. It is activated by a drill pipe deployed activation tool, having over pull when latched into the MCAP®.

The MCAP® is qualified as a gas barrier according to ISO 14998/14310, pressure rating up to 10.000 psi. The MCAP® can be used as a stand alone tool for isolation of the annulus between two casing and also in combination with a Cflex where the MCAP® will create a fundament for placing cement above.

Benefits

- Mechanically activated
- Un-restricted ID compared to casing string
- High pressure rating
- High temperature rating
- High tensile and compression ratings

Features

- ISO14310 V0 qualified
- 10.000 psi pressure rating
- Sour Service qualified

Specifications

Tool OD inches- mm)	9 5/8" x 13 5/8"	13 5/8" x 18 5/8"
Pressure rating burst-collapse, psi (bar)	10000-9732 (690-671)	6422-3976 (443-274)
Temperature rating °F (°C)	68- 350 (20 - 177)	68-266 (20-130)
ISO 14310 V0 qualified	Yes	Yes
Setting range element, in	12 – 12,594	17,249 – 17,981
Typical application	Casing / Tieback Annulus Isolation Packer	Casing / Tieback Annulus Isolation Packer
Type of service	Sour Service / Standard	Sour Service
Elastomer	Aflas / HNBR	Aflas
Conveyance methods	MCAP® run as part of the casing, activation tool run on drill pipe	MCAP® run as part of the casing, activation tool run on drill pipe

Contact your Archer Representative for more technical information.

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Remote Controlled Cement Head

Safe and efficient well cementing

Designed to the highest standards of safety, consistency and reliability, Archer's Remote Controlled Cement Head (RCCH) allows the controlled release of setting balls and drillpipe darts without the need to stop circulation or rotation, or break connections.

Benefits

- Fully compatible with drilling/cementing kelly and top drive systems
- No man riding
- Controlled flushing eliminates any cement residues in all areas
- Multiple operations can be completed without the need for redress
- High pump rate during washing and clean-up
- No externally mounted valves and manifolds
- Large plug holder I.D. minimizes plug wadding
- Can be stored safely in the derrick

Features

- 10 kpsi maximum operating pressure
- 1500 klbs load capacity and 50 kft/lbs torque
- Large 4 in internal diameter

Typical Applications

- Casing and liner cementing
- Expandable screen deployment
- Perforating and squeezing cement
- Cement injection

Specifications

Tool size		2 valve	3 valve
Nominal OD, in [mm]		13 [330]	13 [330]
Minimal OD, in [mm]		4 [102]	4 [102]
OAL, in [mm]		98.74 [2508]	130.61 [3,317]
Rated torque, ft lbs [N.m]		50,000 [67,91]	50,000 [67,91]
Max. Hook load, lbs [kg]		1,594,000 [723,026]	1,594,000 [723,026]
Max. Hook load at rated torque, lbs [kg]		1,496,000 [678,574]	1,496,000 [678,574]
Working pressure, psi [bar]		10,000 [689]	10,000 [689]
Test pressure, psi [bar]		15,000 [1,034]	15,000 [1,034]
Chamber sizes, psi [bar]		15 [381] 24 [610] 25 [635]	15 [381] 24 [610] 25 [635]
Make-up torque, ft lbs [N.m]	Upper connection	50,000 [67,91]	50,000 [67,91]
	Lower connection	50,000 [67,91]	50,000 [67,91]

Specifications may be subject to change.

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Wireless Controlled Cement Head

Safe and efficient well cementing

Designed to the highest standards of safety, consistency and reliability, Archer's Wireless Controlled Cement Head (WCCH) allows the controlled release of setting balls and drillpipe darts without the need to stop circulation, rotation, or break connections.

Benefits

- Fully compatible with drilling/cementing kelly and top drive systems
- No man riding
- Controlled flushing eliminates any cement residues in all areas
- Multiple operations can be completed without the need for redress
- High pump rate during washing and clean-up
- No externally mounted valves and manifolds
- Large plug holder I.D. minimizes plug wadding
- Can be stored safely in the derrick

Features

- 10 kpsi maximum operating pressure
- 1500 klbs load capacity and 50 kft/lbs torque
- Large 4 in internal diameter

Typical Applications

- Casing and liner cementing
- Expandable screen deployment
- Perforating and squeezing cement
- Cement injection

Specifications

Tool size		2 valve	3 valve
Nominal OD, in [mm]		13 [330]	13 [330]
Minimal OD, in [mm]		4 [102]	4 [102]
OAL, in [mm]		98.74 [2508]	130.61 [3,317]
Rated torque, ft lbs [N.m]		50,000 [67,91]	50,000 [67,91]
Max. Hook load, lbs [kg]		1,594,000 [723,026]	1,594,000 [723,026]
Max. Hook load at rated torque, lbs [kg]		1,496,000 [678,574]	1,496,000 [678,574]
Working pressure, psi [bar]		10,000 [689]	10,000 [689]
Test pressure, psi [bar]		15,000 [1,034]	15,000 [1,034]
Chamber sizes, psi [bar]		15 [381] 25 [635]	15 [381] 24 [610] 25 [635]
Make-up torque, ft lbs [N.m]	Upper connection	50,000 [67,91]	50,000 [67,91]
	Lower connection	50,000 [67,91]	50,000 [67,91]

Specifications may be subject to change.

Well Cleaning Solutions

Tornar® BOP Cleaner

Advanced vortex cleaning technology for BOPs

The Tornar® BOP Cleaner removes wellbore debris from BOP cavities safely, rapidly and reliably. Tornar® flow ports create a high-velocity fluid vortex which combines powerful proprietary magnets to extract debris from ram and annular cavities - without harming the BOP.

Debris management is a industry challenge that drives operational difficulties and maintenance costs for BOPs. Drilling debris, mud solids, and metallic junk from milling operations can accumulate in BOP cavities, causing malfunctions. Cleaning debris from BOP cavities is especially challenging, as traditional methods may force debris further into the BOP workings, making it critical that cleaning is performed safely and efficiently. Even small debris can jeopardize well control, posing serious risks to people, the environment, and surface assets..

The Tornar® BOP Cleaner combines Tornar® flow ports with powerful proprietary magnets to ensure the maximum extraction of harmful debris from BOP cavities and the well. The Tornar® BOP Cleaner can be configured to suit operational requirements to maximize debris retrieval.

Benefits

- Rapid and effective BOP cleaning
- Reduced BOP maintenance and NPT
- High success rate and efficient operations
- Cleans even deep cavities
- Fishing magnet can be added for further cleaning assurance

Features

- Powerful vortex suction effect
- Maximum metallic debris extraction
- Configured to suit BOP requirements
- Standard drill pipe connection
- One piece mandrels
- Non-rotating stabilizer and magnet

Specifications

Cleaner string size, inch [mm]	13.375 [339.7]	17.45 [443.2]
BOP size, inch [mm]	13.625 [346]	18.75 [476.3]
Recommended pump rate	6,500	6,500
Min. recommended pump rate, lpm.	3,500	3,500
Material (main body)	AISI 4145M	AISI 4145M
Max. working temp degC [degF]	150[302]	150[302]
Max. OD, inch [mm]	13.375 [339.7]	17.45 [443.2]
Drift ID, inch [mm]	2.83 [71.9]	3.5 [88.9]
Tool joint OD, inch [mm]	6.535 [166]	7.25 [184.2]
Connections	NC50 b/p	5 1/2" FH b/p
Magnet rods	6 pcs @ 360º	8 pcs @ 360º

Specifications may be subject to change.

Tornar® Switchable BOP Magnet

Clean and solids-free Wellbore

The Tornar® Switchable BOP Magnet can easily be turned off for cleaning between runs. This minimizes the time to clean the powerful magnets compared to existing magnet designs.

Valuable rig time is no longer needed to clean BOP magnets for a secondary run. The combination of switchable magnet design, large flow paths and non-rotating design creates a powerful and effective tool that clears ferrous debris from any wellbore and minimizes rig time.

The magnets can be turned off by one hand on the rig floor for effortless cleaning. An indication pin clearly shows the magnet status. The debris can easily be brushed off and magnetic field can be turned back on for re-run. The one-piece body rotates through the nonrotating stabilizers and compact magnet design to avoid wear or damage to the BOP and Riser during operation.

Benefits

- Saves rig time
- Effortless cleaning of magnets
- Eliminates damages to BOP and Riser
- Multiple runs possible
- Withstands drilling and milling operations

Features

- Archer Switchable magnet design
- Magnet status indication
- Non-rotating stabilizers
- High capacity magnets
- No external nuts or bolts
- Standard drillpipe connections
- Extra-large bypass areas for eliminating flow restrictions

Specifications

Cleaner string OD, inch [mm]	17.45 [443.2]
BOP size, inch [mm]	18.75 [476.3]
Max working temp, degC [DegF]	150 [302]
Drift ID, inch [mm]	3.5 [88.9]
Tool joint OD, inch [mm]	7.25 [184.2]
Max. working temp degC [degF]	150[302]
Max. OD, inch [mm]	17.45 [443.2]
Drift ID, inch [mm]	3.5 [88.9]
Tool joint OD, inch [mm]	7.25 [184.2]
Connections	5 1/2" FH b/p
Magnet rods	8 pcs @ 360º

Specifications may be subject to change.

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Tornar® Sub Sea BOP Cleaner

Clean and solids-free BOP and riser

The Tornar® Sub Sea BOP Cleaner removes wellbore debris from blow out preventer and marine riser cavities safely, rapidly and reliably. Tornar® flow ports create a high-velocity fluid vortex, which combines with powerful proprietary magnets to extract debris — whilst maintaining full well control.

Debris management is a serious oilfield challenge and is responsible for many of the operational difficulties and costs of maintaining BOPs. Drilling debris and mud solids can accumulate within BOP cavities causing them to malfunction; and milling operations generate an abundance of metallic junk and other particles that can seriously hinder the correct operation of the BOP. Even small objects can jeopardize well control, with potentially hazardous consequences to people, the environment and surface assets.

Cleaning debris from BOP cavities is especially challenging, Traditional cleaning methods may force debris further in to the BOP workings, and it is critical that cleaning operations are performed safely and efficiently. Archer's Tornar® BOP Cleaner combines Tornar® flow ports with powerful proprietary magnets to ensure the maximum extraction of harmful debris from BOP cavities and the well.

The Tornar® BOP Cleaner can be configured to suit operational requirements to maximize debris retrieval.

Benefits

- Rapid and effective single-trip BOP and riser cleaning
- Reduced BOP maintenance and non-productive time
- Higher success rate and efficiency of BOP performance testing
- Allows short tripping with wellbore clean-up string
- Cleans even deep cavities

Features

- Tornar® technology creates powerful vortex suction effect
- 3-stage circulation ports enable full well control
- Tornar® Extreme magnets ensure maximum metallic debris extraction
- Easily configured to suit BOP and riser requirements
- Premium drill pipe connection
- One piece mandrels
- Non-rotating stabilizer and magnet.
- Built-in junk basket; spring-loaded self-adjusting dual brush
- Optional fishing magnet can be fitted to bottom of string

Applications

- Clearing debris from BOP's and marine risers

Specifications

Cleaner string size, inch [mm]	17.45 [443.2]
BOP size, inch [mm]	18.75 [476.3]
Recomended pumprate	6,500
Min. recommended pump rate, lpm	3,500
Material (main body)	AISI 4145M
Max working temp, degC [degF]	150 [302]
Max. OD, inch [mm]	17.45 [443.2]
Drift ID, inch [mm]	2.637 [67]
Tool joint OD, inch [mm]	7.252 [184.2]
Connections	5 1/2" FH b/p or VX-57 b/p

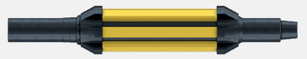
BOP magnet

Max. OD, inch [mm]	17.45 [443.2]
Drift ID, inch [mm]	3.5 [88.9]
Tool joint OD, inch [mm]	7.252 [184.2]
Magnet rods	8pcs @ 360°
Connections	5 1/2" FH b/p or VX-57 b/p

Riser magnet

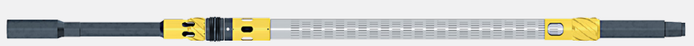
Max. stabilizer OD, inch [mm]	17.45 [443.2]
Brush OD, inch [mm]	18.75 to 20 [476.3 to 508]
Brush segment	8 rows, dual brush strips
Bristle type	Straigh flat wire
Magnet rods	8 pcs @ 360°
Junk bucket OD, inch [mm]	16 [406.4]

Riser Brush Magnet



BOP Magnet

3-Stage Tornar® BOP Cleaner



Well Filter

Tornar® Wash Magnet

Tornar® Grab Magnet

Reliable well cleaning

The Tornar® Grab Magnet retrieves magnetic object debris from the wellbore rapidly and reliably. With its combination of Tornar® flow ports and the most powerful magnetic elements, it can remove irregular shaped objects such as bearings, bit cones and lost tools simply and effectively.

The Tornar® Grab Magnet is equipped with the strongest magnetic elements – with a lifting capacity of over 1000 kg with full contact. To ensure that full contact is established and maintained, its unique Tornar® flow ports create a powerful cyclone effect, clearing away cuttings and other debris that may interfere with or prevent contact with the magnet.

Benefits

- Tornar® flow ports clear particle debris to ensure full contact
- Up to 1200 kg lifting capacity
- No limitations in running speed
- No run in hole restrictions

Features

- Tornar® flow ports
- One piece mandrel
- Stabilizer blades for support on low side
- Up to 150 rpm rotation
- Multi-magnet element
- Drill pipe connection

Specifications

Casing size, in	4 1/2”	5 1/2”	7”	9 5/8”
Casing range, lb/ft	9.5 – 21.6	13 – 28.4	17 – 38	32.3 – 58.4
Max running speed in casing	No limit	No limit	No limit	No limit
Nozzle diameter, mm	Ø9mm x 6	Ø9mm x 6	Ø14mm x 12	Ø20mm x 12
Max pump rate, LPM	2800	3200	3200	5500
Min recommended pump rate, LPM	1000	1500	2800	3200
Max set down weight on magnet, kg	500	500	2000	3000
Max magnet lift capacity, kg	100	150	up to 950	up to 950
Max rotation speed, RPM	150	150	150	150
Max OD, in	3.30	4.40	5.787	8.300
Min OD, in	1	1	2.687	3.0
Connection	2 3/8” Reg box	2 3/8” Reg box	NC38 Boxup	NC50 Boxup
Temperture rating, °C	4 - 150	4 - 150	4 - 150	4 - 150

Specifications may be subject to change.

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Tornar® Circulation Magnet

Reliable well cleaning

The Tornar® Circulation Magnet retrieves magnetic objects and particle debris from the wellbore rapidly and reliably. Its unique design utilizes the most powerful magnetic elements, combined with thru-magnet Tornar® flow ports, for fishing and wellbore cleaning operations.

Designed to remove magnetic objects and accumulated debris from the wellbore rapidly and efficiently, the Tornar® Circulation Magnet is equipped with the strongest magnetic elements available – with a lifting capacity of over 1000 kg with full contact. Its unique thru-magnet Tornar® flow ports create a powerful cyclone effect around objects and the surrounding wellbore, ensuring full contact with the magnet and optimal debris extraction.

Benefits

- Thru magnet Tornar® flow ports clear particle debris to ensure full contact
- Up to 1000 kg lifting capacity
- No limitations in running speed
- No run in hole restrictions

Features

- Thru-magnet Tornar® flow ports
- One piece mandrel
- Stabilizer blades for support on low side
- Up to 75 rpm rotation
- Multi-magnet element
- Drill pipe connection

Specifications

Casing Size, in [mm]	9 5/8” [244.5] and up
Max running speed in casing	No limit
Nozzle diameter, in [mm]	0.79 [20] x 12
Max pump rate, gal/min [l/min]	1,453 [5,500]
Min Recommended pump rate, gal/min [l/min]	845 [3,200]
Max set down weight on magnet, lb [kg]	6,614 [3,000]
Max magnet lift capacity, lb [kg]	3086 [1400]
Max roration speed, rpm	75
Max OD, in [mm]	8.30 [210.8]
Connection	NC50 Boxup
Temperture rating, °F [°C]	39 – 302 [4 – 150]

12 x 12 circulation ports in magnet nose sub

Archer

Tornar® Express

Compact wellbore cleanup

Tornar® Express is a cost-efficient solution that quickly removes mud solids, cement sheath, scale, and perforation burrs in any wellbore. It is ideal for fast and effective clean-up before displacement, side-tracks, drilling, or post-perforation operations. The tool can be rotated and reciprocated without risk of damage to the casing or the tool itself, thanks to its rugged design and the absence of external bolts that could loosen under extreme conditions.

Tornar® Express consists of a magnet, brush, and scraper attached to a one-piece body supported by non-rotating stabilisers for self-centralisation. Its rough and flexible design provides the force needed to clean 360 degrees without rotation, while the one-piece body rotates through the non-rotating stabilisers and compact cleaning components to avoid wear or damage to the casing during drill string rotation.

Benefits

- Saves rig time
- Cleans 360 degrees without rotation
- Eliminates casing wear
- Multiple runs are possible
- Withstands drilling and milling operations

Features

- One piece mandrel
- Non-rotating stabilizers
- Non-rotating sleeve assembly
- No external nuts or bolts
- Standard drillpipe connections
- Extra large bypass areas for eliminating flow restrictions

Specifications

Casing sizes	**9 5/8" and 10 3/4"**
Thread	API and Premium
ID	76,2 mm / 3.00"
Max. rotation speed	150 rpm
Working temprature	150°C / 302°F
Max. trip speed in casing	Limited by rig equipment
Max. pump rate	Limited only by surface equipment
Material (main body)	AISI 4145M 125 KSI

Specifications may be subject to change.

Tornar® Balanced Circulation Valve

Clean and solids-free Wellbore

The Tornar® Balanced Circulation Valve (TBCV) is a circulating sub for wellbore clean-up and displacement applications, boosting annular velocity in the casing and liner annulus. It can be included in a complete wellbore cleaning tool string used during displacement before running completion. The TBCV increases the flow rate pumped up the production casing, circulating through the liner and production casing to achieve balanced fluid velocity in the wellbore annulus during displacement. The valve can isolate lower drill string rotation during circulation. When run in hole, it is in the first position, allowing torque transmission to both upper and lower drill string while circulating 100% of the flow through the tool with the velocity booster ports closed.

When activated, the TBCV opens velocity booster ports to the annulus, allowing a higher flow rate to be pumped up the production casing than normally possible. This balances fluid velocity between different wellbore sizes during displacement. The tool is used for displacement operations, post-perforating, pre-fracturing, multi-zone completions, milling, burning, fishing, and smart completions.

Benefits

- Operation at maximum parameters
- Heavy duty clutch assembly
- Simple to run
- Multiple run possible

Features

- Fluid velocity balance in different size wellbores
- No external nuts or bolts
- High strength mandrel

Specifications

Typical casing sizes	**9 5/8" and up**
Tensile Yield	NC 50BOX / PIN
Torsional strength	50,8 mm / 2"
Max. rotation speed	150 rpm
Working temprature	150°C / 302°F
Max. trip speed in casing	45m/min 150ft/min
Max. operational pressure	345 bar - 5000 psi
Material (main body)	AISI 4145M 110 KSI/ 125 KSI
Force to open	87 kN - 348 kN / 20 000 - 80 000 lbs.

Specifications may be subject to change.

Archer

Tornar® Circulation Valve

Clean and solids-free Wellbore

The Tornar® Circulation Valve removes debris from the wellbore rapidly and reliably. Its unique design utilizes Tornar® flow ports to create a powerful cyclone to clean and optimize well fluid velocity.

The Tornar® Circulation Valve can be integrated as a part of a complete wellbore cleaning string used during displacement process for optimum fluid velocity and cleaning. Improper cleaning can possibly damaging or plugging the productive zone, and impeding the running of the completion assembly. Proper cleaning contributes to a successful completion and reduces the potential for wellbore contamination.

The Tornar® Circulation Valve can also be integrated as a part of the Tornar® Sub Sea BOP cleaning string for cleaning Wellhead areas prior to cleaning BOP and Riser. The Tornar® Circulation Valve is then positioned bellow the Tornar® BOP Cleaner. You can now clean the Wellhead and BOP in one run.

Benefits

- Secure wellbore integrity
- Reduced downtime
- One run BOP and wellhead cleaning
- Large flow areas
- Cyclone effect keeps solids afloat
- Increased fluid pressure for more effective cleaning
- No limitations on running speed
- No run in hole restrictions

Features

- Optional flow split sleeve
- Tornar® flow ports
- Stabilizer blades for support on low side
- Drill pipe or premium connection
- One piece mandrels. No parts lost in hole
- Up to 75 rpm rotation
- Large flow by area
- High circulation rates (6500lpm)

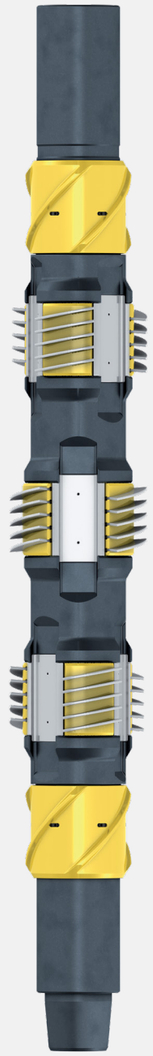
Specifications

Size, in [mm]	8.30	Min recommended rump rate	3,500 lpm
Max OD, in	8.30	Max rotation speed	75 rpm
Drift ID,, in	2.25	Max allowed Tensile (lbs)]	1,175,450 lbs
Tool Joint OD	6 5/8	Torsional strength (ft. lbs)	116,206 ft. lbs
Nozzle diameter, mm	Ø18mm x 12]	Pressure rating- shifting sleeve*	1200 - 1700 psi
Max tripping speed in casing	200 ft/min	Shifting method	2 3/4" steel ball
Recommended cleaning speed in casing	0.5 ft/min	Max working temp	150°C
Recommended rotation speed while cleaning	15 rpm	Material main body	AISI 4145M
Max pump rate	6,500 lpm	Connection	NC-50 box/pin]

* can be used without the shifting sleeve

Tornar® Casing Brush (Non-Rotating)

Clean and solids-free Wellbore



Tornar® Casing Brush is a mechanical tool for clean and polishes the casing or liner ID to remove mud solids, cement sheath and scale in any wellbore. The Tornar® Casing Brush can be part of a complete wellbore cleaning tool string during the displacement process prior to running a completion. It can be rotated and reciprocated without damaging the casing or tool. Rotation up to 150 rpm may be applied to create a turbulent flow and remove the cutting bed. The non-rotating stabilizers on the Tornar Brush provide a standoff and a generous flow area for fluid by-pass around the tool.

A Tornar® Casing Brush tool consists of a one-piece Body, non-rotating Stabiliser and Brush assembly. The main mandrel rotates through the stabiliser and Brush assembly to avoid wear or damage to the casing during drill string rotation. The Brush assembly is self-centralising inside the casing or liner to ensure equal cleaning at all well conditions. It's also rough, flexible and has the force needed remove and clean 360 degrees without rotation. The tool is suitable for HPHT wells and can withstand chemical or acid attack.

Benefits

- Clean 360 degrees without rotation
- Eliminates casing wear
- High strength mandrel
- Simple to run
- Multiple run possible
- Withstand drilling and milling operations

Features

- One piece mandrel
- Non rotating stabilizers
- Non rotating center sleeve
- No external nuts or bolts
- Extra large bypass areas for eliminating flow restriction
- Fluted spiral stabilizer sleeves for generous fluid and debris bypass

Specifications

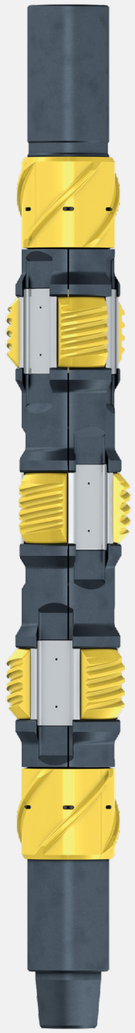
Casing Sizes	**4 1/2" - 14"**
Thread	API and Premium
ID	1 3/4" to 4"
Max. rotation speed	150 rpm
Working temperature degC [degF]	150°C / 302°F
Max. trip speed in casing	Limited by rig equipment
Max. pump rate	Limited only by surface equipment
Material (main body)	AISI 4145M 110 KSI
Burst pressure	690 bar - 10 000 psi

Specifications may be subject to change.

Archer

Tornar® Casing Scraper (Non-Rotating)

Clean and solids-free Wellbore



Tornar® Casing Scraper is a mechanical tool for cleaning and polishes the casing or liner ID to remove mud solids, cement sheath, scale and perforation burrs in any wellbore.

The Tornar® Casing Scraper can be integrated as a part of a complete wellbore cleaning tool string used during the displacement process prior to running completion. It can be rotated and reciprocated without fear of damage to casing or tool due to the rugged design and the fact that it doesn't contain external bolts that could work loose under extreme conditions.

A Tornar® Casing Scraper tool consists of a onepiece Body, non-rotating Stabiliser and Scraper assembly. The main mandrel rotates through the stabiliser and Scraper assembly to avoid wear or damage to the casing during drill string rotation. The Scraper assembly is self-centralising inside the casing or liner to ensure equal cleaning at all well conditions. It's also rough, flexible and has the force needed remove and clean 360 degrees without rotation.

Benefits

- Clean 360 degrees without rotation
- Eliminates casing wear
- High strength mandrel
- Simple to run
- Multiple run possible
- Withstand drilling and milling operations
- Suitable for HP wells and can withstand chemical or acid attack

Features

- One piece mandrel
- Non rotating stabilizers
- Non rotating center sleeve
- No external nuts or bolts
- Extra large bypass areas for eliminating flow restriction
- Standard drill pipe connections

Specifications

Casing Sizes	**4 1/2" - 14"**
Thread	API and Premium
ID	1 3/4" to 4"
Max. rotation speed	150 rpm
Working temperature degC [degF]	150°C / 302°F
Max. trip speed in casing	Limited by rig equipment
Max. pump rate	Limited only by surface equipment
Material (main body)	AISI 4145M 110 KSI
Burst pressure	690 bar - 10 000 psi

Specifications may be subject to change.

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Tornar® WellFilter

Clean and solids-free Wellbore

The Tornar® WellFilter validates effectiveness of the displacement operation by filtering well fluids while pulling out of hole. It is designed to remove debris from any wellbore.

The Tornar® WellFilter can be integrated as a part of a complete wellbore cleaning tool string used during displacement process prior to running completion. The WellFilter is positioned in the casing below the wellhead during BOP and Riser cleaning. This creates a wellbore debris barrier. The same applies for running a combination of Tornar® BOP Cleaner and LOCK® where the WellFilter create a barrier for debris to fall on top of the LOCK®.

As the wellbore cleanup string with the Tornar® WellFilter is run in hole, the wiper cup cleans and removes debris from the casing ID. The Tornar® WellFilter is equipped with an automatic by-pass valve for fluid by-pass when running in hole. This valve eliminates swab, surge and debris to bypass the filter.

Benefits

- Easy to empty debris window
- Verification of a clean wellbore
- High strength mandrel
- Simple to run
- Large debris capacity
- One piece mandrel
- Multiple run possible
- Withstand drilling and milling operations

Features

- Verification and capture of debris
- Automatically close filter bypass valve
- Diverter cup for debris risk management
- Supported diverter load bearing
- Rupture disk to prevent swabbing
- One piece mandrel for higher strength
- No external nuts or bolts
- Large bypass areas for limiting flow restrictions

Specifications

Typical casing sizes	**From 7 5/8" to 10 3/4"**
Max tripping speed	Limited by equipment
Temperature rating °F (°C)	68-266 (20-130)
Debris volume	Up to 30 liters/ 7.9 usgal
Burst discs	4 with 0.60 in² area each
Maximum operational rotation	120 rpm
Max working Temperature	120°C / 248°F
Material (main body)	AISI 4130 125 KSI
Connections	Premium

Specifications may be subject to change.

Archer

Tornar® String Magnet (Non-Rotating)

Clean and solids-free Wellbore

Tornar® String Magnet is a mechanical tool designed to collect metallic debris from casing or liner IDs in any wellbore while maintaining large flow volumes. It can be integrated into a complete wellbore cleaning tool string during displacement prior to running completion and can be rotated and reciprocated without damaging the casing or tool, due to its rugged design and absence of external bolts.

As the tool is run in hole, high-capacity magnets remove debris from the casing ID and drilling fluid. Non-rotating stabilizers provide standoff, generous fluid bypass, and reduced casing wear, while the non-rotating magnet sleeve prevents debris from being washed away during rotation. Rotation up to 150 rpm may be applied to create turbulent flow and remove cutting beds. The Tornar® String Magnet is recommended when significant ferrous debris may be present.

Benefits

- Large debris capacity
- High strength single pole magnets
- Eliminates casing wear
- High strength mandrel
- Simple to run
- Multiple run possible
- Withstand drilling and milling operations

Features

- One piece mandrel
- Non rotating stabilizers
- Non rotating magnet sleeve
- No external nuts or bolts
- Extra Large bypass areas for eliminating flow restrictions
- Fluted spiral stabilizer sleeves for generous fluid and debris bypass

Specifications

Casing/liner sizes	**4 1/2" to 14"**
Thread	API and Premium
ID	1 3/4" to 4"
Maxi. rotation speed	150 rpm
Working temperature	150°C / 302°F
Max. trip speed in casing	Limited by rig equipment
Max. pump rate	Limited only by surface equipment
Material (main body)	AISI 4145M 110 KSI
Burst pressure	690 bar - 10 000 psi
Debris capacity	Up to 94 kg / 207 lbs
Magnet force	Up to 1850 kg

Specifications may be subject to change.

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Tornar® Ditch Magnet

Clean and solids-free Wellbore

The Tornar® Ditch Magnet is a leader in magnetic capture and hold power. The Tornar® Ditch Magnet features a unique magnetic circuit that provides extremely high magnetic field strength in an optimum alignment. The magnet is designed to recover the maximum amount of ferrous contaminants from the fluid stream in all drilling and milling operations, yet remains easy to clean.

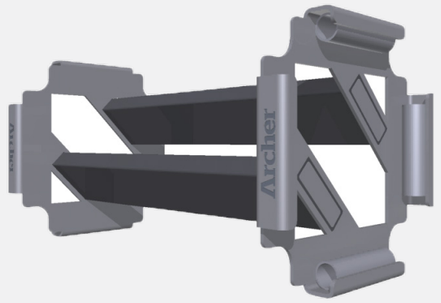
The Tornar® Ditch Magnets are a modular system that can be built together into many shapes for optimum alignment in the fluid stream, and no specialized or costly modification is required. Each magnetic section is equipped with a quick look system on all sides so that the magnets can be built to fit any flow line while still clearly showing debris build-up. Each of the Tornar® Ditch Magnets' sections has a small nonmagnetic area at the bottom that allows easier cleaning with a special design cleaning tool. The light weight magnetic sections are built to comply with all HS&E manual handling requirements.

Benefits

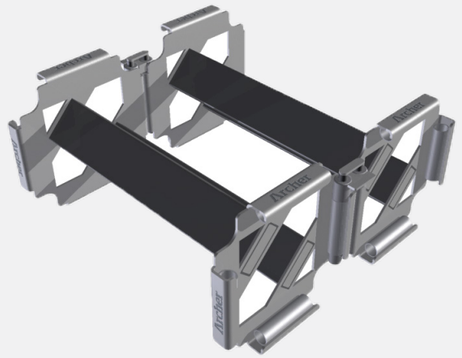
- Light weight modules for better HS&E
- Fits any flow line
- Can be stacked or fitted stand alone
- Easy to clean

Features

- Advanced magnetic circuit design
- High strength Rare Earth magnet technology
- Stainless Steel housing
- Large flow areas for unlimited flow restrictions
- Quick Look System



Single Ditch Magnet



Double Ditch Magnet

Archer

Tornar® Drilling Magnet

Clean and solids-free Wellbore

The Tornar® Drilling Magnet is especially designed to capture larger volume of metallic debris in one run while maintaining large flow volumes. The Tornar® Drilling Magnet is especially designed to capture larger volume of metallic debris in one run while maintaining large flow volumes.

Improper cleaning can cause debris to fall into the wellbore, possibly damaging or plugging the productive zone, and impeding the running of the completion assembly. Proper cleaning contributes to a successful completion and reduces the potential for wellbore contamination.

Benefits

- Simple to run
- High debris capacity
- High strenght single pole magnets
- Multiple runs possible
- Withstand drilling and milling operations

Features

- One piece mandrel
- Non rotating stabilizers
- Non rotating magnet sleeve
- No external nuts or bolts
- Extra large bypass areas for eliminating flow restrictions
- High strenght mandrel

Typical Applications

- Displacements
- Post-perforating
- Pre-fracturing
- Multi-zone completions
- Milling
- Fishing and Smart Completions.

Specifications

Typical casing sizes	**9 5/8" x 10 3/4"**
Thread	API and Premium
Drift ID	69,8 mm / 2.750"
Maximum rotation speed	150 rpm
Working temprature	150°C / 302°F
Max. trip speed in casing	Limited by rig equipment
Max. pump rate	Limited only by surface equipment
Material (main body)	AISI 4145M 110 KSI
Burst pressure	Up to 2 268 bar / 32,891 psi
Debris capacity	Up to 150 kg/ 330 lbs.

Specifications may be subject to change.

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Flowhead

Swarf & drilling fluid returns to the surface

Archer's Flowhead is designed to allow Drilling Fluid and Swarf returns to the drill floor level mitigating the risk of potential swarf blockages in the rig diverter housing and flowline. This enables a gravity feed to be diverted via 12" flexible hoses into the swarf handling system.

Benefits

- Designed to enable connections during milling
- Inspection hatch for easy access
- Inspection hatch can be fitted with sensors for both gas and flow
- WWL 181000 (Kg)
- Can be used with a false Rotary Table for Bowls and Slips
- Low working height 900 (mm)
- Continuous annual velocity
- Reducing the risk of swarf blockages within the diverter housing

Features

- Rig bespoke flanged tailpipe
- Inspection hatch
- High Working Load Limit (WLL)
- C-Plate guide pins
- Internal flow enhancement

Specifications

Liquid Flow Capability	1500 GPM
Swarf Removal	2000 kg/hr
Dimensions	1237 x 2218 x 1520 mm (W+ L + H)
Gross Transport Weight	2300 kg
WLL	181000 kg
Tie-in points Inlet	Rotary Table
Tie-in points outlet	12" ANSI 150 Flange

Archer

Packer Management System

Mitigates risk of accidental spillage

The Slip Joint Packer Management System has been developed to immediately detect and eliminate leaks of circulating fluids. The Packer Management System can be applied on floating semi-submersible rigs, platforms and drill ships to eliminate spills of well fluid to the ocean.

Benefits

- Mitigates risk of accidental spillage.
- Provides on-site event log
- Full auditable register to provide key information
- Automatically inflates packer when packer fails
- Fully automated in case of power failure
- Easy to read facia with interchangeable language instructions
- Visual and audible electrical status alarms
- Maintenance-friendly design and layout
- Can operate with air and/or hydraulic systems
- Detailed USB manual for rig staff
- Full 12 month system warranty
- Suitable for zone 1 and safe areas

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ROMAR® SS1000 +

Highly Compact Swarf Handling Unit

The ROMAR® SS1000+ high capacity swarf handling unit is used for the removal of ferrous based (steel) swarf and debris from milling/drilling fluids during down-hole milling operations that have high pumping rates and generate large volumes of swarf.

The system is suitable for use in zone 1 areas and encompasses a two stage magnetic separation process and can be further enhanced to a three phase separation system with the addition of the Scalper unit.

Specifications

Ratings	ZONE 1
Liquid flow capability	1500 GPM [5675 LMP]
Swarf removal capability	2000 kg/hr
Dimension	1327 x 4500 x 1135mm (W x L x H)
Dimension c/w walkways	3327 x 4500 x 2135mm (W x L x H)
Gross transport weight	3500 kg
Gross transport weight frame	2000 kg
Operating weight	4900 kg
Deck loading (standalone)	821 kg/m2
Deck loading (mounted)	1041 kg/m2
Power requirements	1 x HPU
Tie-in points inlet	1 x 12" ANSI 150 Flange
Oulet	5 x 6" ANSI 150 Flange

Metal cuttings (Swarf) should be evenly distributed within the milling fluid, cuttings that tend to produce bird nests are not recommended. Fibrous fluid sweeps should be avoided as they tend to bind with the swarf debris which results in a solid mat at the surface inhibiting the surface equipment performance.

ROMAR® SS1000 MODULAR

Highly Compact Swarf Handling Unit

The ROMAR® SS1000 Modular is a highly compact swarf handling unit. It is used for the removal of ferrous based (steel) swarf and debris from milling/ drilling fluids during down-hole milling operations. The system is suitable for use in zone 1 areas and encompasses a one stage magnetic separation process and can be further enhanced to a two phase separation system with the addition of EZ-CLEAN MAGNOROD® ditch magnet. The unit can be mounted standalone within rig mud circulating flowlines before the drilling mud is returned to the shaker system.

The Romar SS1000 Modular also has a greatly reduced shipping weight and size for rapid deployment on short notice applications.

Specifications

Ratings	ZONE 1
Liquid flow capability	800 GPM [3025 LPM]
Swarf removal capability	650 kg/hr
Dimension	920 x 2770 x 2800m (W x L x H)
Gross weight SS1000	960 kg
Gross transport weight	3000 kg
Gross transport weight frame & unit	1800 kg
Operating weight	1000 kg
Power requirements	1 x HPU
Tie-in points	Rig flowline > 28" wide

Metal cuttings (Swarf) should be evenly distributed within the milling fluid, cuttings that tend to produce bird nests are not recommended. Fibrous fluid sweeps should be avoided as they tend to bind with the swarf debris which results in a solid mat at the surface inhibiting the surface equipment performance.

ROMAR® SS1000

Highly Compact Swarf Handling Unit

The ROMAR® SS1000 swarf handling unit is used for the removal of ferrous based (steel) swarf and debris from milling/drilling fluids during down-hole milling operations.

The system is suitable for use in zone 1 areas and encompasses a two stage magnetic separation process and can be further enhanced to a three phase separation system with the addition of the Scalper unit.

Specifications

Ratings	ZONE 1
Liquid flow capability	1200 GPM [4540 LPM]
Swarf removal capability	1150 kg/hr
Dimension	1327 x 4500 x 1135mm (W x L x H)
Gross weight SS1000	3200 kg
Operating weight	4500 kg
Deck loading	745 kg m2
Power requirements	1 x HPU
Tie-in points inlet/ outlet	1 x 12" ANSI 150 / 4 x6" ANSI 150 Flange

Metal cuttings (Swarf) should be evenly distributed within the milling fluid, cuttings that tend to produce bird nests are not recommended. Fibrous fluid sweeps should be avoided as they tend to bind with the swarf debris which results in a solid mat at the surface inhibiting the surface equipment performance.

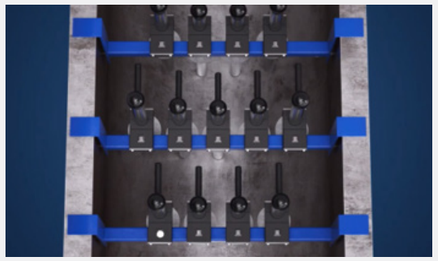
Archer

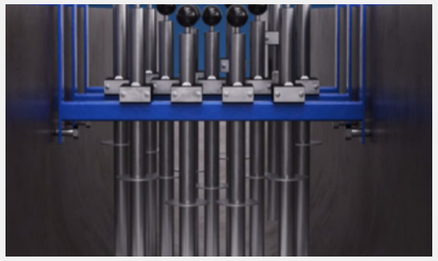
EZ-CLEAN MAGNOROD®

Ditch Magnet System

The EZ-CLEAN MAGNOROD® ditch magnet system places a network of rods across the full width and depth of the fluid path. Each MAGNOROD® can be removed from position with minimum effort by the operator. Any metal debris attracted can be discharged into a collection bin by simply lifting the handle on each rod. Unlike conventional bar magnets, personnel do not have to contact sharp metal debris, a major safety advantage. Mounting frames can be made-to-measure for all flow ditches, including round bottomed and sloped fluid channels.

The system is highly flexible, the number of frames and rods can be optimised for the application and the expected weight of debris.





Benefits

- Reduction in personnel manual handling.
- Bespoke support frames and modular support frame availability
- No physical contact with sharp metal debris, a major safety advantage
- Faster wellbore clean-up, leading to reduced operator cost
- Increased efficiency of debris collection
- Better protection of downhole and surface equipment from wear, erosion and plugging
- More realistic statistics on metal debris recovered
- More accurate measure of casing wear, reduced operational risk and cost

Specifications

- Stainless Steel Casing
- Magnetic Field at face 10-11,000 Gauss
- Temperature Rating - 80°C 176°F with the option of HT 150°C 302°F
- Each rod weighs less than 4 kg.

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MAGNOGRID®

Fork Ditch Magnets

MAGNOGRID® fork ditch magnets can be easily and rapidly inserted into flowlines or shaker header boxes to recover metallic debris from circulating fluid.

The MAGNOGRID® forks can be quickly deployed before bottoms up is circulated to surface resulting in faster and more efficient wellbore clean-up.

Benefits

- Faster wellbore clean-up, reduced operator cost
- Increased efficiency of debris collection
- Better protection of downhole and surface equipment from wear, erosion and plugging
- More realistic statistics on metal debris recovered
- More accurate measure of casing wear, reduced operational risk and cost

Applications

- Cased hole
- Sidetracks
- Whipstock exits
- Small milling jobs

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