**About Acumen International**

At Acumen International our goal is to be your first and most reliable source for specialized drilling equipment, well service equipment and parts. We have been providing quality oilfield expendables and related products since 1989.

We are a service company first. This attitude and understanding has provided us with advanced insight into the daily challenges of the oilfield industry. We have developed an extensive knowledge of mud and plunger pumps, their operations, and troubleshooting related to operating and performance issues.

We promote and sell only industry-tested, proven and trusted products. Our long term, established partnerships with top manufacturers and distribution partners gives Acumen a competitive advantage in providing superior products.

Our aim is to surpass our customers' needs with integrity, honesty, commitment, and accuracy. We hold our strategically placed distribution partners to the same standard, guaranteeing we create success and growth for our company and yours.

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**Acumen International Line Sheet**

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<td>• Drill Pipe and Casing Protectors</td>
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<td></td>
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</tbody>
</table>

**Handling Tools**

- Tongs, Tools and Elevators
- Tong Pull Back Straps
- Elevator Balancing Straps
- Wire Line Guides and Turnbacks

**Mud Pump Power End and Gear End Parts**

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Patriot Expendables
Novatech Expendables
Quick Release Valve Seat Puller
Aluminum Hydraulic Jack
Zirconia & Chrome Steel Liners
Fluid End Modules and Jewelry
Patriot Piston

Engineered to outperform all other polyurethane pistons in the market today, Patriot Pistons are built to be compatible with and deliver superior performance in today's oil based and synthetic drilling mud.

Longer piston life equates to longer liner life greatly reducing the cost associated with mud pump expendables and the time involved in making the necessary changes.

The Patriot is designed to meet pressures of 7500 psi and temperatures up to 220°F. The Patriot difference is in the solid “Bullnose” lip designed piston head which is composed of two different durometer urethane compounds bonded together for superior performance.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Size</th>
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</table>

FEATURES AND BENEFITS

- Proven, reliable performance in every piston
- Resistant to high pressure, abrasion, heat and extrusion
- Trusted on the largest domestic and international rigs in the world
- Averages 30%+ longer life than other mud pump pistons
- Dual-durometer bonded urethane allows for longer piston life
- “Bullnose” lip design seals for less “squirt” which reduces flush system contamination
- Superior lip and cut back hub design reduces wear on liner dramatically lowering mud pump operating costs

*not suited for clear or sea water uses
Patriot MAX Piston

Tired of changing mud pump pistons? We have your solution. The Patriot MAX will work in all types of drilling fluid including oil based, synthetic and WATER BASED MUDS.

Specifically designed to work in applications with water based mud or when water base mud is used on the top side and oil base mud is used on the bottom side. This eliminates the need for changing the piston midway through the drilling program.

The Patriot MAX has been engineered with a unique friction reducing material bonded into the urethane of the sealing lip. Because the MAX is built to withstand friction in the liner, wear on your parts is minimized and savings is maximized.

The Patriot MAX is also designed to meet pressures of 7500 psi as well as temperatures up to 220°F.

<table>
<thead>
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</table>

**FEATURES AND BENEFITS**

- Built-in lubricant reduces friction within the liner allowing for longer piston and liner life
- Proven, reliable performance in every piston
- Resistant to high pressure, abrasion, heat and extrusion
- Trusted on the largest domestic and international rigs in the world
- Averages 30%+ longer life than other mud pump pistons
- Dual-durometer bonded urethane allows for longer piston life
- “Bull nose” lip design seals for less “squirt” which reduces flush system contamination
- Superior lip and cut back hub design reduces wear on liner dramatically lowering mud pump operating costs
- MAX Piston is designed to withstand all mud conditions allowing it to be used at any point in the drilling process

*not suited for clear or sea water uses
The Patriot EXTREME Piston is designed to perform in the harshest of drilling conditions.

It is compatible with all applications and mud types and will withstand operating temperatures up to 300°F and pressures up to 7500 psi.

Superior design and ultra-durable high temperature urethane allow the Patriot EXTREME to outperform all other "extreme condition" mud pump pistons in the market. If you want to keep your pump performing, don’t settle for the cheap or the familiar - go with a Patriot Piston.

### Part Number

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**FEATURES AND BENEFITS**

- Proven, reliable performance in every piston
- Resistant to high pressure, abrasion, heat and extrusion
- Trusted on the largest domestic and international rigs in the world
- Averages 30%+ longer life than other mud pump pistons
- “Bull nose” lip design seals for less “squirt” which reduces flush system contamination
- Superior lip and cut back hub design reduces wear on liner dramatically lowering mud pump operating costs
- Designed to withstand extreme drilling conditions in all applications
- EXTREME Piston will perform in all types of drilling mud allowing it to be used at any point in the drilling process

*not suited for clear or sea water uses*
Using the highest grade urethane available and introducing new technologies extends Patriot HD operating hours and reduces downtime.

Self-lubricating properties with abrasion resistant additives makes the Patriot HD the ultimate in performance and longest running piston in the market.

Guaranteed to keep your pumps stroking when trying to achieve total depth

The Patriot HD is designed to meet pressures of 7500 psi and temperatures up to 300°F

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### FEATURES AND BENEFITS

- Proven, reliable performance in every piston
- Trusted on the largest domestic and international rigs
- Resistant to high pressure, abrasion, heat and extrusion
- “Bull nose” lip design seals for less “squirting” which reduces flush system contamination
- Superior lip and cut back hub design reduce wear on liner
- Designed to withstand the harshest drilling conditions in all applications
- Patriot HARSH DUTY Piston will perform in all types of drilling fluids allowing it to be used at any point in the drilling process

*not suited for clear or sea water uses

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### Part Number | Size
---|---
A40HK14/15HD | 4”
A44HB14/15HD | 4 1/2”
A50HB14/15HD | 5”
A52HB14/15HD | 5 1/4”
A54HB14/15HD | 5 1/2”
A56HB14/15HD | 5 3/4”
A60HB14/15HD | 6”
A62HL14/15HD | 6 1/4”
A64HL14/15HD | 6 1/2”
A66HL14/15HD | 6 3/4”
A70HL14/15HD | 7”
A74HL14/15HD | 7 1/2”
A80HL14/15HD | 8”
The Patriot Harsh Duty Valve is a bonded urethane valve that will hold up in the most extreme drilling environment. The Patriot HD offers the strongest urethane bond of any valve for increased service life and a stronger seal.

Superior Performance, Long Run Life, Excellent Abrasion Resistance and Sealing Surface coupled with the highest rated chemically resistant urethane make the Patriot HD Valve an excellent choice for any drilling application.

### API-6 Part Number

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<td>S-API8-WRT</td>
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### FEATURES AND BENEFITS

- Extreme temperature bonded urethane insert, 300°F
- Precision machined, carburized and heat treated
- Industry tested with the highest quality control
- Increased extrusion and abrasion resistance
- Excellent resistance to chemical attack
- Unique urethane bonding anchor
- Full open, API 6 – 8 available
- Pressure rating of 7500+ psi
Weir Novatech™ leads the ways in Full Open Valve and Seat Technology.

Design innovation has been the driving force for Weir Novatech and its rigid full open seat valve technologies available for all major well service and mud pumps. Novatech™ valves are manufactured by combining the advantages of a forged alloy steel upper body to assure impact strength, with the advantages of precision casting to minimize flow restrictions and fluid turbulence at the guide legs. Additionally, the full open seat technology maintains a uniform contact area to eliminate premature washouts and extend the life of your fluid end or module.

All Novatech™ valves and seats are manufactured to rigid quality control standards that include: CNC machining for exact dimensional tolerance control, heat treat carburizing with a deep hard wear case, full metallurgical laboratory tests on every furnace load, and seat tapers that are 100% gage inspected to meet pump manufacturer’s exact dimensional specifications. Valve inserts feature a high strength, abrasion-resistant polyurethane; all inserts are machined after molding to exact thickness tolerances.

Novatech™ manufactures a wide variety of valves, seats, and caged assemblies for almost all pumps and applications; including work-over, cementing, acidizing, fracturing and drilling.

Novatech™ is the leader in full open valve and seat technology. Providing the first drilling valves and seats in the industry rated for continuous service at 7500 psi. The Novatech™ design incorporated many features including the following improvements:

- Massive, rigid full open seat design, results in reduced fluid end cracking and washouts! Uniform seat loads against the fluid end deck eliminate washouts from web seats, inherent to the non-uniform web seat loads.
- Extra large seat bearing area spreads valve load over a larger area, reducing metal wear, and increasing valve and seat life.
- Cast-N-Place™ insert design locks insert in groove and eliminates underside insert washes, the most frequent cause of premature insert failures. Cast-N-Place™ process reduces stress on the valve insert during insert molding and curing, increasing insert life. Ideal for LCM muds.
- Heavy-duty puller head pulls seats in the most difficult of conditions.
- Available in API 4, 5, 6, 7, and 8 sizes, plus seats for National pumps.
- High Temperature Inserts available rated to 300°F

Acumen is Novatech’s™ International distributor and has a thirty plus year relationship as their leading distributor. We have the experience, ability and material on hand to handle all your valve and seat requirements.
Novatech™ Full Open Drilling Valve and Seat

Full Open Valve Design

- Streamlined guide legs
- Hemispherical dome stores fluid energy
- Smoother flow and pump operation
- Operating pressure rated at 7500 psi
- Maximum bearing area reduces metal wear
- Unique inertia-welded one-piece valve body combines advantages of a forging for strength with advantages of a casting for smooth streamlined flow

Cast-N-Place™ Insert

- Assures perfectly round inserts for quick sealing in all environments
- Serrations in valve insert groove lock insert in place, reduces insert swelling and movement
- Casting Insert directly onto valve body eliminates insert residual molding stress
- Longer insert life
- Serves to eliminate premature insert seal failures
- Inserts for all applications
- High pressure – High temperature Inserts

Full Open Seat Design

- Largest metal-to-metal bearing area in industry extends valve seat life
- Provides uniform fluid end loading
- Reduces fluid end stress
- Reduces seat taper wear
- Serves to eliminate washouts
- Heavy-duty puller head
Novatech™ introduced its uniquely designed inserts to drilling valves which are now known as Cast-N-Place™. These valves have met with great success and are widely acclaimed by drilling contractors for their superior and reliable performance. Today, approximately 80% of Novatech™ drilling valves are manufactured with Cast-N-Place™ inserts.

The Novatech™ Cast-N-Place™ Valve uses a one-piece valve body proven stronger than valves with independent retainer plates. On one-piece valve bodies, the insert retention groove acts as a circular channel beam to add tremendous rigidity to the valve body. One-piece valve bodies are less expensive to manufacture than valves with independent retainer plates. Traditional one-piece valve bodies use Snap-On style inserts, therein lies the problem. Snap-On inserts never quite perfectly fit the insert groove because of machining tolerances, insert molding tolerances, and unpredictable heat treat warpage to the valve insert groove. As a result, the insert will torsionally twist in the groove as the valve opens and closes against the seat. This twisting in the groove actually pumps fluid around the backside of the insert. Eventually, a seal leak develops, and the insert washes out. This type of failure, which causes a wash to initiate between the bottom of the insert and the inside of the groove, is fairly common with Snap-On replaceable inserts. Additionally, replaceable inserts can allow mud debris to seep behind and in extreme cases force the insert completely off the valve body.

Cast-N-Place™ inserts solve the problem of traditional Snap-On inserts by molding the insert directly on the valve body. During the casting process, the urethane insert material is poured directly around the serrations, mirroring the shape of the serrations and the valve body groove. The insert is locked in place and cannot move, leak, or be forced from the groove!

Traditional Snap-On inserts are installed by stretching the insert over the valve, which adds hoop tensile stress to the insert. On valves with screw-on retainer plates, the insert is forced onto serrations on the top of the valve body flange. The serrations cut into the insert, which weakens or adds stress to the insert.

The Cast-N-Place™ process eliminates stress by molding the insert around the serrations. Also, the Cast-N-Place™ insert is molded into a true round position on the valve that assures quick sealing with the seat. Inserts can be forced out-of-round during installation by the screw-on retainer plate or a valve with an imperfect Snap-On insert or groove.
Metal-to-Metal Bearing Area - Design of the Novatech™ Uni-body Inertia-welded Valve

Why is metal-to-metal bearing area so important?

As today’s drilling pressures continue to rise, mud pump valves generate tremendous impact energy against the valve seat. The valve insert only absorbs a very small portion of this energy; the primary function of the insert is to seal rather than absorb energy. Today, most drilling valves and seats are manufactured from similar steel with similar heat treatment for wear resistance. Flow area is necessary to ensure smooth operation of the pump, however, additional flow area does not improve valve and seat life. The proper insert material is necessary to withstand the stress of rapid cyclic loading, high temperatures and other problems. However, the size or type of the insert does not increase valve life. Improvements in valve and seat life can then only be achieved by increasing the metal-to-metal bearing area between the valve and seat. The greater this area, the greater the area to absorb the high impact energy from valve closing. In the drawings on this page, Metal-to-Metal Bearing Area is shown in orange, the impact forces are shown as green arrows.

Generally, the web seat / stem guided valve design maximizes bearing area because the valve flange is designed to bear on top of the webs in addition to the seating bevel on the inside of the seat, as illustrated in the image below left.

The performance of this design is due to the maximization of the seat bearing area and the heavy-duty design of the 4-web seat. The success of this design has resulted in the design becoming the de facto standard in the industry, now copied by most all manufacturers. Previous full open valve and seat designs have suffered from a lack of bearing area. Primarily because the valves of these designs used guide legs that were forged into the main valve body as shown on the valve shown middle left. Because of forging limitations, these types of guide legs are large and thus restrict flow area. To recover the necessary flow area, the throat in the seat is increased, which reduces bearing area and thus limits the performance of this style of valve and seat.

To solve the above problem, Novatech™ pioneered the design of a new style of valve body; one in which the guide legs are inertia welded to the machined valve body forging as illustrated in red in the drawing to the middle right. The unique inertia welded one-piece valve body combines advantages of a forging for strength with advantages of a casting for smooth streamlined flow. This new one-piece valve body, with its hemispherical dome and Channel-Beam groove design, is incredibly strong and capable of withstanding today’s highest drilling pressures. Most important, the streamlined guide legs of the new design do not limit flow area; valuable metal-to-metal bearing area is regained. When the Novatech™ Uni-Body Inertia Welded Valve is combined with Novatech™ Cast-N-Place™ inserts, as shown in the drawing below right, a valve of superior performance is achieved for today’s stringent drilling requirements.
Novatech™ Full Open Valve Inserts

**All Purpose**

- Originally developed insert compound rated to 160°F.
- Proven over time to be the most reliable insert in the industry.
- Best all around insert for most drilling applications.
- Distinguished by the Insert’s Solid Yellow Color.
- Cast-N-Place™ Insert assures perfectly round inserts for quick sealing in all environments.
- Serrations in valve insert groove lock insert in place, reduce insert swelling and movement.
- Operating pressure rated at 7500 psi.

**Extreme**

- Newly developed insert compound rated to 300°F.
- Distinguished by the Insert's Translucent Amber Color.
- Cast-N-Place™ Insert assures perfectly round inserts for quick sealing in all environments.
- Serrations in valve insert groove lock insert in place, reduce insert swelling and movement.
- Very hard insert can produce exceptional performance when combined with attentive pump maintenance.
- Operating pressure rated at 7500 psi.
Novatech™ pistons utilize Novatech’s proprietary black high-temperature polyurethane material with a traditional flex-lip design.

This high-temperature polyurethane is a developed compound, rated to 300°F and available only through Novatech™.

The Novatech™ piston uses a single durometer material, as opposed to traditional dual durometer designs. Because of the high strength of the polyurethane at elevated temperatures, a dual durometer material is not necessary. Dual durometer materials increase cost and introduce another potential failure mode in the bond between the two materials. To eliminate this weak point, reduce costs and produce a more reliable piston, Novatech™ pistons are single durometer polyurethane.

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<td>4 1/2”</td>
</tr>
<tr>
<td>SA-5.0-BU-H</td>
<td>5”</td>
</tr>
<tr>
<td>SA-5.5-BU-H</td>
<td>5.5”</td>
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<tr>
<td>SA-6.0-BU-H</td>
<td>6”</td>
</tr>
<tr>
<td>SA-6.5-BU-H</td>
<td>6 1/2”</td>
</tr>
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Quick Release Valve Seat Puller

The Quick Release Valve Seat Puller is designed to be safer, faster, stronger and more user friendly than any other valve seat puller.

With unmatched safety, ease of operation and superior tensile strength, it is unlike any other seat puller in the market.

If the jack has enough power, the Acumen Quick Release Valve Seat Puller has the ability to extract both washed and distorted valve seats.

Replacement parts available.

**FEATURES AND BENEFITS**
- Compatible with Series 4 & 5 full open well service valve seats
- Compatible with API 4 – 8 full open drilling valve seats
- Alloy shaft, 2” – 4.5 TPI, multiple lengths available
- Plug & play with existing puller parts
- Quick release pull ring

**IMPROVED SAFETY**
- ZERO pinch points, no hands in fluid end
- Reduced HSE risk

**INCREASED EFFICIENCY**
- No assembly and disassembly
- One person operation
- 50% - 70% faster

**ENHANCED DURABILITY**
- 360° valve seat pulling surface
- Increased usable service life
- Heavy duty alloy steel

*Patent Pending*
Finally, a light weight hydraulic jack designed and manufactured to withstand today's rugged oilfield environment.

With a self-retracting piston and half the weight of standard steel jacks, our aluminum jack allows for safe lifting practices when the job needs to be done fast.

Aluminum Jack has the longest stroke in the market to ensure valve seat is fully extracted from the seat deck on the first try, every time. Exclusive stroke limit valve is utilized to avoid over-travel of piston while operating and maintaining full pressure.

Replacement seal kit available.

FEATURES AND BENEFITS
• Single acting cylinder
• Capacity range up to 120 ton
• Operable with 1” to 2” puller shafts
• Designed for 10,000 psi operating pressure
• Compatible with existing puller parts and equipment

SAFETY
• Piston Blow-Out Protection
• 50% less weight than steel jacks
• Ergonomic handles integrated into top cover system

EFFICIENCY
• Full 1” Piston Stroke
• Automatic Piston Retraction
• Light weight allows rapid movement from one seat to the next

DURABILITY
• Element Resistant Seals
• Load Tested at 125% of nominal capacity
• Introduced wiper seal reduces contamination
• Hard-Anodized Coating protects against wear and corrosion

Patent Pending
Zirconia Mud Pump Liners

Zirconia Liners are ultimate in liner performance and durability. The offshore industry has made the Zirconia Ceramic liner the new industry standard.

A Zirconia Ceramic liner is a proprietary zirconium based matrix that has significantly improved and superior mechanical characteristics. This translates to cost saving, better performance and significantly longer service hours than those of the more commonly used alumina ceramics.

Zirconia liners have three important property advantages compared to alumina ceramic liners.

- Zirconia exhibits superior impact strength
- Zirconia is harder than alumina ceramic
- Zirconia can be honed to finer surface finishes than other ceramics. Finished to 4RMS, this Zirconia liner provides a surface finish that is three to four times finer than other ceramics

All three of these property advantages translate to lower operating costs. This improved wear directly extends the service life of the sleeve, while improved impact strength cuts down on the significant cost of replacing cracked liners in the field. Additionally, the improved and finer surface finish means less friction with the pump pistons, which in turn reduces heat and improves piston life.

FEATURES AND BENEFITS

- HP design – prevents sleeve slippage
- Reduced liner and piston wear
- Increased impact characteristics
- Higher Thermal ratings
- Tighter I.D. tolerances: +.10/-0.000
- Surface finish: 4-8RMS
- Hardness = HV 0.3 KG/MM – 1100/1200 (92-94RC)
- Good heat dissipation in Hi-Temperature applications
Chrome Steel Mud Pump Liners

Chrome Steel Liners are manufactured using only the highest grade materials. The outer shell is manufactured from high strength carbon or alloy steel and heat treated to provide optimum mechanical properties. Liners are manufactured by advanced technology, with metallurgical control and rigid inspection to ensure its highest quality. The outer hull, or body, of the liner is a high strength forging.

The liner sleeve is manufactured from a proprietary high chrome content iron alloy that offers excellent resistance to wear. The sleeve is centrifugally cast in the manufacturing facility by skilled craftsmen. This results in a sleeve that has excellent abrasion, erosion and corrosion resistance. The sleeve is manufactured to the bore tolerance specified by API or better to provide longer life by reducing gaps between the liner bore and piston.

Chrome Steel liners are available in sizes to fit most major manufactured mud pumps that are currently in service today. The cost effective steel liner offers outstanding durability and strength when dealing with today’s harsh drilling environments. The Chrome Steel liner is rated to match the pressure rating of the pump per liner size.

FEATURES AND BENEFITS

- Rated for all drilling operations up to 5,000 psi and above
- Bore hardness is 62 - 69 Rockwell
- HP-Design to prevent sleeve slippage
- Extremely long service life
Fluid End Modules and Jewelry

All modules and fluid end components offered by Acumen are of high-strength, premium forged alloy steel, heat treated for a long working life, machined to perfection and packaged for delivery with anti-corrosion protection. Products are rated for all drilling operations up to 7,500 psi.

Manufacturing utilizes the latest technologies to produce accurate and uniform parts. Quality has always been of the utmost importance to us, if we do not offer a quality line of parts we cannot expect to stay competitive in the 21st Century.

All products offered are either OEM or completely interchangeable with OEM.

All fluid end accessories are available for most of the popular triplex and duplex mud pumps.

Associated items include:

- Discharge & suction manifolds
- Valve and cylinder head plugs
- Valve and cylinder head thread rings
- Valve and cylinder head locks
- Valve guides
- Studs and nuts
- Strainers
- Rods – Piston, Extension, Sub
- Rod Clamps
- Gaskets

MADE IN USA
SPECIALTY ITEMS

Centrifugal Pumps and Parts
M&M Oil Tools
Patriot Urethane Pulsation Dampner Bladders
Patriot Urethane Type F Test Cups
Patriot Urethane Stabilizer Bushings
NOV Mission Centrifugal Pumps and Parts

Proven to be the best centrifugal design for handling abrasive mud, the NOV Mission Centrifugal pump line offers a broad selection of innovative features for a variety of routine, demanding, abrasive and corrosive applications.

Pumps are designed for a wide range of flow rates, from a few gallons per minute to thousands of gallons per minute.

Acumen has been aligned with NOV-Mission in excess of 25 years and we have the ability to offer their complete Mission product line.
Since 1944, M&M Oil Tools has developed a trusted line of durable, high quality tools backed by exceptional service. With custom engineered solutions for maximum wellbore cleaning, and accurate, on-time deliveries, our business is built on repeat customers.

M&M tools are precision machined in a new, state-of-the-art factory with the latest CNC machines, utilizing LEAN manufacturing processes. M&M Oil Tool products conform to API and ISO 9001 QMS requirements; each item can be provided with full traceability including mill certificates.

For eight decades, M&M Oil Tools has continued to push for innovation—always striving for enhanced downhole reliability and simplified servicing. Our commitment is to provide innovative, quality products and excellent service to our international customer base.

M&M Oil Tools product line consist of the following:

**Casing Scrapers:**
Regardless if you are drilling a new well or reworking an old one, mechanical cleaning of the casing ID is recognized to be a critical part of successful completion operations. Its staggered blades provide 360-degree coverage to insure 100% removal of rust, cement sheath, perforation burrs, scale buildup, or other debris adhering to the ID of the casing. The robust design of M&M Oil Tools scraper can withstand the roughest high-speed rotation and reciprocation in vertical, deviated or horizontal wells.

**Casing Brushes:**
M&M Oil Tools casing brush tool's 360-degree contact does not require rotation, works RIH and POH and can reach into corrosion pits and coupling recesses that cannot be cleaned by casing scrapers.
Hydrostatic Bailers:
Removing unwanted debris from a wellbore can be challenging. In wells where circulation is not possible, mechanically operated sand pumps and wireline bailers can remove limited amounts of debris; these tools often require a number of trips to clear it all. When full well circulation is possible, fines and similar materials that are easily loosened can be circulated to surface. M&M Oil Tools hydrostatic bailer provides a more powerful and effective means to remove fill and debris from the wellbore.

Carbide Mills:
M&M Oil Tools has developed a broad line of tungsten carbide faced mills that will handle almost any well clean-up application. Our mills are made using precision-machined, high strength alloy steel. Cutting surfaces are dressed with tungsten carbide particles sized for optimum metal removal and long life. The carbide mills most commonly used include: Junk Mills, Deep Throat Mills, Watermelon or String Mills, Pilot Mills, Tapered Mills, Piranha Mills, Concave or Cone Buster Mills and Diamond Point.

Boot Baskets:
Boot baskets are an essential tool in proper wellbore cleaning operations. They are used to capture debris and cuttings that are too large to circulate from the well. The robust design of M&M Oil Tools boot basket can withstand the roughest high-speed rotation and reciprocation in vertical, deviated or horizontal wells. The tool can be run by itself or in combination with other tools such as Casing scrapers, Carbide mills, drill bits, etc., for maximum wellbore cleaning.
Patriot Urethane Pulsation Dampner Bladders

Able to withstand pump pressures up to 7500 psi, the Patriot urethane pulsation bladder sets a new standard for today’s high pressure drilling.

New synthetic and oil based muds can wreak havoc on traditional rubber type bladders. Patriot’s industry leading urethane compound is proven to outlast rubber bladders up to three times longer than the competition.

Offering greater durability at high pressures and rated to withstand temperatures of 180°F, the Patriot urethane pulsation bladder provides longer service life, more reliable mud motor performance and greatly reduces the frequency of changes. Urethane bladder is also available with a 220°F temperature rated urethane for high-temperature conditions. The Patriot bladder will increase productivity and safety during pump operations.

FEATURES AND BENEFITS

- Made from high-quality urethane
- Resistant to oil based and synthetic mud
- More reliable mud motor performance
- Longer service and superior durability
- Greater than 7500 psi
- 180°F temperature rating
- High temperature bladder available
- Greatly reduces frequency of changes
- Complete spare parts available

Urethane Pulsation Bladders

K-20 Urethane Bladder  PD-55 Urethane Bladder  PD-45 Urethane Bladder
Stabilizers and Accessories

Complete Kits

K-20 Complete Kit
Urethane Bladder, Stabilizer, Plate, Bolt, Lock Washer, Bottom Plate Gasket, Charging Valve and Pressure Gauge

PD-55 Complete Kit
Urethane Bladder, Stabilizer, Plate, Bolt, Lock Washer, Bottom Plate Gasket, Charging Valve and Pressure Gauge

Mini Kits

K-20 Mini Kit
Urethane Bladder, Stabilizer, Plate, Bolt and Lock Washer Assembly

PD-55 Mini Kit
Urethane Bladder, Stabilizer, Plate, Bolt and Lock Washer Assembly
Patriot Urethane Type F Test Cups

Patriot Urethane Type F Test Cups are made from the highest quality urethane available. This urethane is 3-4 times stronger than Nitrile rubber. The superior urethane used in our product allows for greater service life and durability.

Looking for something unique? We can manufacture Test Cups to meet any size and casing weight. If you need a specific connection or custom length mandrel or sub, we will work to customize your parts to suit your requirements. We also specialize in complete Cup Tester Assemblies which include Mandrels, Subs and Test Cups.

FEATURES AND BENEFITS

• Operating pressures up to 15,000 psi
• Excellent resistance to oil based and synthetic oil based mud
• High quality urethane compounds for longer service life
• Superior durability compared to the leading Type F Test Cups
• Operating temperatures up to 220°F
Patriot Urethane Stabilizer Bushing

FEATURES AND BENEFITS

• Made from high quality urethane
• Galvanized steel cable w/ protective rubber sleeve
• Longer service and superior durability
• Resistant to oil-based mud
• 8" and 6 ¾" ID available
• Greatly reduces noise on drilling floor
• Protects master bushing, rotary table & pipe
• Recommended for all top drive rigs
• Split version available
M&M INTERNATIONAL

Kelly Valves
Safety Valves
Inside Blow Out Preventers (IBOPs)
Top Drive Valves
Integral Side Entry Subs
Subs
M&M International (M&M) is an Original Equipment Manufacturer (OEM) of well control valves and inside blowout preventers (IBOPs), as well as subs, swivels and other oilfield equipment.

M&M incorporated their patented Canister Guard™ technology into the valve design, which makes M&M products the most reliable valves in the business. M&M began manufacturing drill string, well control valves and IBOPs in 1980. Over the years they have developed a wide variety of valves, IBOPs and other related products. M&M also has mechanical engineers on staff, committed to solving the most common, and uncommon, problems associated with other aspects of the petroleum industry.

M&M has built a reputation on valves that contain the reliable and patented Canister Guard™. As an oilfield product, the Canister Guard™ is unique. Its modular construction, reliability and fail-safe assembly features make it an incomparable industry product. No special tool or equipment is required for easy field or shop disassembly and reassembly. Main sealing components are self-contained and pretested to assure accuracy and complete integrity.

Another M&M innovation involves solving two of the most important deficiencies of all other known Kelly Valves. 1. Improved ability to close under significant flow. 2. Easily operated under high-balanced pressure conditions. The use of M&M’s Lite-Torc™ offers the ability to close the Canister Guard™ valve while under significant flow and allows the valve to be easily opened or closed under high-balanced pressure (approximately equal pressure both above and below the ball). Tests performed at Louisiana State University’s Petroleum Engineering Research and Technology Transfer Laboratory indicated that utilization of M&M International’s Lite-Torc™ system drastically improves the ability of a valve to be closed under heavy flow, enabling the closing of the Canister Guard™ valve by one man with a standard 12” valve wrench. This innovation has enormous potential to save lives, property and money for a modest additional cost.

M&M’s products are manufactured in the USA and the majority of parts are manufactured in-house with the use of CNC machines. M&M takes great pride in the ability of their experienced members to maintain the tight tolerances required by their engineered products. As well, all parts are critically inspected with strict guidelines enforced by the quality department. M&M adheres to exacting procedures and products are manufactured to precise standards with each being thoroughly inspected to ensure high quality is maintained. Quality is paramount and M&M has been API licensed since 1992. Their quality management system is well established and continually monitored for potential improvement. M&M holds a current API Specification 7-1 license as well as API-QR (API Q-1 and ISO 9000:2008) certification for its quality management system.
One-Piece and Two-Piece Canister Guard™ Kelly Valves

Our one-piece Canister Guard™ Kelly valves are extremely versatile and can be utilized in multiple drill stem applications including use as upper/lower Kelly cocks, upper/lower top drive valves, stabbing valves, or as mudsaver valves.

One-piece Canister Guard™ Kelly valves are available with inside ball diameters ranging from 1.75” through 4.00” and in many outside diameter and length combinations.

Two-Piece Canister Guard Safety Valves

M&M International designs and manufactures our two-piece Canister Guard™ safety valves, with tubing, casing or drill pipe connections with inside ball diameters ranging from 1.75” to 8.75” and in many outside diameter and length combinations.

Two-piece safety valves generally consist of a larger middle body that tapers down to a smaller OD at each end nearer the connections.

One-Piece and Two-Piece Inside Blow-Out Preventers

M&M's one-piece IBOP offers all of the same functionality of a two-piece design but offers several key benefits. A one-piece design allows the IBOP to be shorter, creates a possibility for smaller outside diameters and eliminating the service break allows for quicker disassembly because there are no torquing issues or torquing requirements because there is no service break.

One-piece IBOP's require less manufacturing time and therefore a faster delivery is possible. Upon request, two-piece IBOPs can be designed and manufactured to meet any industry standard as applicable.

Top Drive Canister Guard Valves

M&M manufactures a variety of top drive valves that are compatible with various different top drives. These top drive valves typically include all of the Canister Guard™ technologies.

Top drive Canister Guard™ valves are available with inside diameters ranging from 1.75” to 4.00”.

Integral Single and Double Side-Entry Subs

M&M stocks the large rough forgings we use to make our single and dual side-entry subs. Forgings create a stronger product than normal hot-rolled bar. Making side-entry subs from forgings results in shorter lead times because it allows manufacturing to begin when the material is closer to its finished size while removing the need for post heat treating.

Our integral double side-entry sub does not have a through bore that runs from the box connection to the pin connection; this isolates the two connections allowing for testing in either direction independent of the other.

Our integral side-entry subs are preferred over welded non-integral side-entry subs due to their quality and strength. With ample room for recuts and your choice of hammer union, these subs are good for years of service. Custom options are possible with these products.

Pump-In, Crossover and Saver Subs

M&M offers pump-in subs made to order with your choice of hammer union. M&M stocks several common saver and crossover subs but we also make saver and crossover subs to suit our customers’ requirements and specifications.