



Elastomers

For High-Performance Pressure Control

R E D E F I N I N G R E L I A B I L I T Y™



Genuine Hydril Replacement Parts

Setting the Standard and Surpassing It

Hydril develops and manufactures elastomer expendables and metal parts for its pressure control products, setting and surpassing the standards for high performance in today's oil field. Independent parts producers and general line rubber manufacturers cannot match the quality, durability and service that come from decades of Hydril innovation and OEM experience.

Hydril's integrated elastomer research and manufacturing facility and expert staff produce the best elastomer products for the drilling industry, manufacturing our own rubber from both standard rubber formulations and custom-designed compounds. Testing has proven that Hydril parts outperform other replacement parts.

Only Genuine Hydril Replacement Parts are designed specifically to improve performance and extend the life of your Hydril equipment, maximizing uptime and reducing insurance costs in the process.





AIR UNION TUBES | Install plain-end pipes between tanks and pumps quickly and easily regardless of tank spacing. Hydril's Air Union Tubes also absorb pulsations to help prolong the life of your system.

**ANNULAR BOP/
DIVERTER PACKING UNITS** | Hydril invented the annular blowout preventer and elastomer packing unit in the 1930s. Every Hydril packing unit is factory-tested in a BOP/Diverter at full pressure on pipe and 50 percent of pressure on open hole. Every unit is marked with our Genuine Hydril Certified Test Label, and certifications of additional testing are also provided. In addition, your unit will be protected by moisture and sunlight-resistant packaging inside a reinforced crate to ensure that your packing unit is ready to perform when you are ready for it.

GK® The genuine Hydril GK packing unit defines the phrase, "field proven," having demonstrated its world-class dependability and quality for over 60 years. It is specifically designed for surface applications on land and offshore platforms with pressure capabilities up to 20,000 psi. Repeated testing shows that genuine Hydril OEM packing units extend the life of your GK. The Hydril GK Packing Unit can hold full rated working pressure and will close on an open hole. A 13 5/8" 5,000 psi GK LL (Long Life) packing unit model is also available that is designed to provide greater fatigue life without comprising the stripping performance and operating characteristics of the Hydril GK.

GL® Hydril's GL Packing Unit is known for its unsurpassed performance and durability. We attribute its remarkable performance to a revolutionary asymmetrical insert design and these features:

- High quality elastomers resistant to tears, cuts and abrasions.
- Superior bonding of elastomers to metal.
- A large volume of tough, feedable packing material.

GX® One packing unit can do it all. The industry leading GX packing unit has provided continuous service for as long as a year, has passed the API pressure test at 270° F, and has held pressure in the field after 328 closing cycles plus stripping. Pressure capabilities to 15,000 psi. The GX produces extra uptime from a significantly larger reservoir of natural or nitrile rubber, and a BOP design that precisely controls the position of unique, flanged steel inserts.

FS™/FSP™/MSP™ Our diverter packing units use the same basic design and materials as our high pressure annular BOP packing units. They are designed for large bore sizes of 21" - 500 psi, 21 1/4" - 2,000 psi, 28" - 2,000 psi, 29 1/2" - 500 psi or 30" - 1,000 psi.



Air Union Tubes



GK®



GL®



GX®



MSP™

| **BOAT SNUBBER** | Made from durable, ozone-resistant compound, Hydril's Boat Snubber is a unique and powerful snubbing device suitable for all heavy ocean-going vessels. Rubber stretches 100%—then 84" cables take over, absorbing shock from sudden surges of the ship. Features include:

- Extra heavy-duty pendant and shock cord design
- 7,200 lb. lifting strength at 100% stretch (approximately 84").
- Available in four-unit and six-unit assemblies.

| **CHANNEL ISOLATORS** | To protect the wearing of metal parts and cut vibrations on the rig floor, consider Hydril's Channel Isolators. These vibration absorbers fit on the shale shakers, are compounded for both ozone and oil resistance and are effective on all rig types.

| **DIVERTERS** | **Seal-All™ Diverter Insert** The Seal-All™ Diverter Insert greatly improves drilling rig safety during completion and workover operations. Our insert provides radical improvement in sealing capabilities, reduces wear and tear on auxiliary lines and works effectively despite the heave and rotation of floating rigs when used in any diverter or annular BOP. Additionally:

- The insert's custom-compounded elastomers are derived from Hydril's proprietary, high-performance technology.
- 8-ft long diverter inserts can be stacked to match any expected heave intervals—even 40 ft or greater.
- Internal molding and conical end caps prevent slipping on drill pipe.
- Elastomer inserts can be designed quickly for custom fit on any line/pipe combination.
- Inserts have been pressure-tested to 500 psi and tested to 500 heave cycles without slippage or failure.



Boat Snubber



Channel Isolators



Seal-All™ Diverter Insert

| **DRILL PIPE PROTECTORS** | For nearly 50 years, drilling contractors and operators have relied on Hydril's Drill Pipe Protectors. By pioneering the one-piece, corrugated Marcel spring steel cage, we provided a product with greater gripping power—redefining reliability for customers previously accustomed to ordinary spring steel or plain mild steel cages. Look to Hydril for Drill Pipe Protectors that offer:

- No-movement performance. Hydril Drill Pipe Protectors eliminate tool joint abrasion on the casing and stripping off in the well that can cause expensive shutdowns.
- Resistance to temperature and chemical attacks.
- Minimal oil absorption.
- A shorter, tapered key to prevent scar casing or break off.
- More holding power. The steel cage is compressed onto the drill pipe by means of a clamping tool, putting more force into the holding power of the protector.

| **SPLIT-SMOOTH PROTECTORS** | In industry-wide drill pipe/casing protector tests, Hydril's Split-Smooth Protectors set the standard for best wear performance. Featuring a low coefficient of friction in our rubber compound and a 'living' hinge for easy opening and fast installation, our Split-Smooth Protectors are the best choice for applications in which circulation is not a problem.

| **SPLIT-FLUTED PROTECTORS** | In selecting the outside diameter (O.D.) of a drill pipe protector to run in a casing, the space available for fluid passage between the O.D. of the protector and the interior diameter of the casing is always a consideration.

Offering more annulus space for fluid passage and greater protection for the tool joint and casing, Hydril's Split-Fluted Protectors enable the operator to use a larger protector than would be possible otherwise. As an example, it is possible to install a fluted 4 1/2" x 7 1/4" protector on pipe inside 9 5/8" casing and be assured of more fluid passage space than with a solid protector measuring 6 3/4" O.D. Count on Hydril's Split-Fluted Protectors for freer circulation.



Drill Pipe Protectors



Split-Smooth Protectors



Split-Fluted Protectors

| **STRETCH-ON PROTECTORS** | Suitable for drill pipe or kelly subs, Hydril Stretch-On Protectors should be used anytime a high percentage of oil emulsion or diesel oil is added to the drilling fluid. Our Nitrile elastomer Stretch-On Protectors are highly resistant to chemical and temperature attacks; feature the high tensile strength and long-lasting pipe-gripping qualities of natural rubber and are effectively lubricated by oil-based drilling fluid.

| **DRILL PIPE PROTECTOR COMPOUNDS** | No matter the environment, Hydril offers a Drill Pipe Protector Compound. Choose from five application environments:

- Oil base muds (nitrile)
- Oil and water base muds (nitrile)
- Sour gas service (NBR)
- Highly abrasive service (XNBR—Carboxylated)
- H₂S-CO₂ Service, 300°F temp

| **DRILL PIPE PROTECTOR INSTALLATION AND REMOVAL TOOLS** |

Drive-It, Installation Tool, Pin Remover, Spare Pin

For quick, easy, one-person installation and removal, count on Hydril's Drill Pipe Protector Installation and Removal Tools.

| **DRILL PIPE WIPERS** | Made of a specially engineered rubber compound, Hydril Drill Pipe Wipers offer extreme resilience and resistance to cutting, tearing and abrasion, as well as water and oil-based muds. Hydril Drill Pipe Wipers should be placed over or around the drill pipe just below the rotary table. As the pipe is removed from the well, the wiper will "wipe" the mud from the pipe and return it to the casing.

| **WELL SEALS** | Use Hydril Well Seals along with Hydril Drill Pipe Wipers to prevent objects from falling into the wellbore while running pipe or casing.

| **KELLY WIPERS** | Hydril Kelly Wipers are produced from abrasion resistant rubber with a bonded steel reinforcing ring for extra strength and wear. Installed just below the driving element or on the lower part of the housing, Hydril Kelly Wipers extend the life of kelly bushing by keeping it clear of mud and abrasives. Available in square and hexagonal shapes to fit bushings.

| **LINK BUMPERS** | Easy-to-install Hydril Link Bumpers save wear and tear on link swivels and swivel bails. Mounted on the links at swivel height, they prevent contact between links and swivel bail, muffling noise and reducing the likelihood of damage to these vital parts of the rig.

Install one per link, and extend the life of your Hydril Link Bumpers by simply loosening the clamps to rotate the bumper on the link.



Stretch-On Protectors



Drill Pipe Protector Installation and Removal Tools



Drill Pipe Wipers



Well Seals



Kelly Wipers



Link Bumpers

| PULSATION DAMPENERS | Elastomeric Diaphragms (Bladders)

A Hydril Elastomeric Diaphragm, also known as a “bladder”, is designed for maximum service life. While conventional diaphragms are spliced using pre-vulcanized sections, the Hydril Elastomeric Diaphragm is molded as a single unit. It fills the body cavity and, while flexing, tends to fold rather than wrinkle—reducing points of stress concentration and virtually eliminating elastomeric fatigue. A steel insert molded into the middle of the diaphragm prevents extrusion through the bottom flange connection.

Hydril’s standard nitrile diaphragm is suitable for water and most hydrocarbons with a continuous operating range of -25° to 210°F.

Bladder Kits

Hydril Bladder Kits include your new bladder and these components needed for assembly:

- Charging Valve
- Diaphragm Stabilizer
- Diaphragm Stabilizer Plate and Backing Plate
- Pressure Gauge
- Stabilizer

| **C-PASAFE™** | Hydril PASAFE pulsation dampeners extend pump life and enhance piping system performance by controlling pressure and flow pulsations. Virtually maintenance-free, PASAFE discharge dampeners and suction stabilizers are engineered specifically to handle abrasive, corrosive, high-temperature and high-pressure fluids in the most extreme environments. The flow-through design of every C-PASAFE unit effectively reduces flow and acceleration-induced pulsations in reverse-osmosis applications. In addition, C-PASAFE units are:

- Manufactured, tested and ‘U’ stamped in accordance with ASME Boiler and Pressure Vessel Code.
- Available in a variety of materials, including carbon steel, stainless steel, duplex stainless steel, HDPE or others.
- Available in a broad capacity range—from ¼ to 80 gallons.

| **R TUBES** | Designed for Hydril’s C-PASAFE™ dampeners, Hydril’s R Tubes are manufactured to withstand high temperature or chemical applications that would cause compatibility problems with elastomers, including industrial and oil and gas drilling applications.



Elastomeric Diaphragms



Bladder Kits



C-PASAFE™



R Tubes

| **S-PASAFE™ - CARTRIDGES** | S-PASAFE combination units—with both a large liquid volume and a gas volume—are particularly well suited for slurry and mine dewatering applications. Easy change-out, top-loading S-PASAFE Cartridges maximize your unit’s performance.

| **RAM PACKER** | Hydril is working to redefine reliability by developing critical ram BOP components, including ram packers and others, which operate successfully at emerging pressure and temperature extremes. Hydril ram packers are also known for their strength and versatility which contribute to the packers’ ability to endure the harsh completion and drilling fluids they come in contact with during drilling operations. Hydril is able to meet all of these increasing environmental demands through successful development and testing programs like the HPHT program for ram and annular BOPs. Typical results for these types of tests for our production packers include:

- Blind/Shear Rams: passed API temperature testing from 20 - 350°F.
- 5” Fixed Bore Rams: passed API temperature tests from 20 - 500°F.

All ram packers are qualified per API 16A and can be ordered in a variety of sizes including:

- Pipe: 2 7/8” – 13 5/8”
- HVR: 3 1/2” – 5 1/2”
4 1/2” – 7”
5 1/2” – 7 5/8”

| **HYDRIL VARIABLE RAM PACKER (HVR)** | Hydril Variable Ram Packers are designed to seal wellbore pressure on a wide range of pipe diameters. When closing pressure is applied, the rubber in the HVR flexes and flows around the pipe to form a secure seal.

| **SEALS** | The seal rings for Hydril blowout preventers are manufactured from special synthetic rubber for long trouble-free sealing service. Basic care is simple: To prevent seal damage, use clean, light petroleum hydraulic oil or water with soluble oil added—not synthetic fluids—for hydraulic operating fluid in the hydraulic operating system. In cold climates, add anti-freeze to prevent freezing.

| **POD WEDGE SEAL** | Found on Hydril’s deepwater multiplex pod, this custom-designed elastomer product creates the seal between the pod wedge and the receiver. It is designed to resist extrusion in service, and it will energize and seal at low pressures.



S-PASAFE™ Cartridges



Ram Packer



Hydril Variable Ram Packer



Seal Kit

| **QUIK-LOQ™ SEALS** | Hydril's custom-designed seals for the Quik-Loq Ram BOP are some of the industry's most advanced seals. They are made to endure the harshest environments of wellbore fluids and chemicals while working together for true bidirectional sealing at full-rated temperature and pressure. These seals are pressure energized to expand as pressure increases to repeatedly seal through numerous pressure cycles. Further reliability is achieved with secondary seals fully capable of maintaining pressure should the primary seal no longer function thus creating a second barrier to the environment. With these seal designs, there is no extrusion thus preventing failure. Finally, lengthy disassembly of the operator is not required to change the seals as part of a preventive maintenance program. The seals are contained in a seal plate that can be removed from the front without taking the operator down or disassembling anything from the back end.

| **RAM BOP BONNET SEAL** | Hydril's Bonnet Seal overcomes bonnet gap problems caused by high pressures. Designed with a set of special compound O-rings installed in a seal ring carrier, our Bonnet Seal is particularly effective at high pressures and high temperatures of up to 500°F.

| **LATERAL T SEAL** | Hydril's Lateral T Seal, used in the 18-3/4" – 15,000 shear ram as well as the 18-3/4" – 10,000 shear ram, has provided excellent sealing performance at low temperatures and during high temperature excursions since 1991. Performance-tested in accordance with API Specification 16A, Hydril's Lateral T Seal meets all API requirements and is compatible with a wide variety of drilling fluids.

Other seals offered:

Non-extrusion ring

O-Ring

Top Seal



Ram BOP Bonnet Seal



Lateral T Seal





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