WELL CONSTRUCTION

HOMCO® CASING PATCH

Restoring casing integrity with a permanent steel seal

DRILLING & FORMATION EVALUATION
WELL CONSTRUCTION
COMPLETION & STIMULATION
PRODUCTION

Weatherford®

REPAIR DAMAGED CASING WITH A **SIMPLE AND PERMANENT FIX**

The HOMCO casing patch restores casing integrity at any depth in aging wells.

Unwanted perforations, leaks, and connection failures can compromise the integrity of your casing—and your well. Although cement squeezes may provide quick relief, they often break down over time. You need a reliable and predictable solution to restore the integrity in a casing breach.

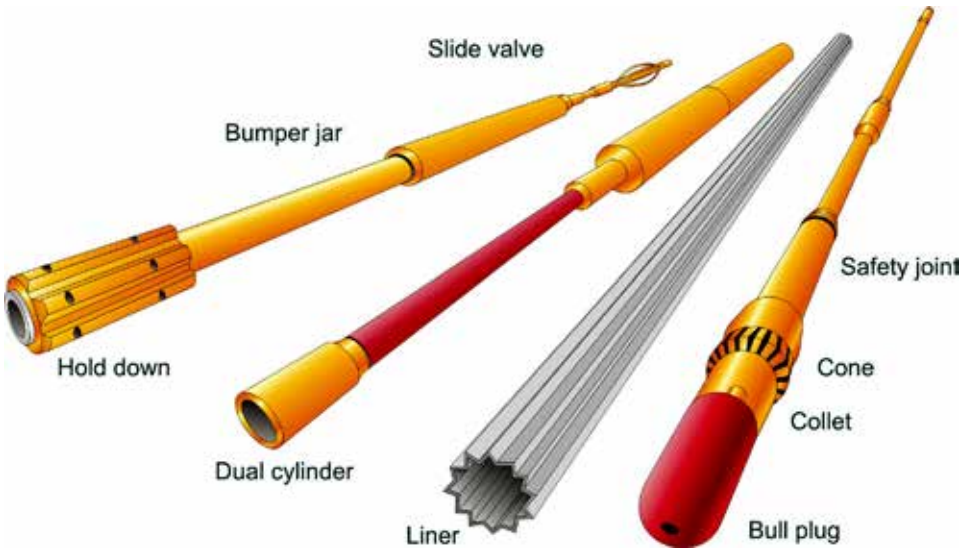
As versatile as it is effective, the Weatherford HOMCO casing patch provides a long-lasting alternative to temporary cement squeezes. Our patch has repeatedly sealed leaks and perforations where cementing efforts have failed, including in production, disposal storage, and injection wells. The patch is permanent yet can be removed by milling.

REMEDIATED INTEGRITY ISSUES IN

12,000+ WELLS

The HOMCO patch provides these well integrity benefits:

- Repairs collar and casing leaks, unwanted perforations, and worn casing
- Provides a secondary barrier after cement squeeze jobs
- Isolates leaking downhole equipment



THE HOMCO CASING PATCH GIVES YOU MULTIPLE ADVANTAGES.

With a seal as true as steel, our HOMCO casing patch can repair most casing weights and sizes from 4-1/2 to 26 in. The patch comes in 20- to 60-ft (6.1- to 18.3-m) lengths and provides different pressure ratings depending on the sizes of the patch and hole. Compared to other sealing methods, the HOMCO patch offers the advantages of flexibility, reliability, and variety.

Flexibility in future operations

After installation, the HOMCO patch gives you a larger ID than conventional casing remediation methods. Our standard 1/8-in. liner reduces the casing diameter by just 0.30 in. (7.62 mm). The resulting larger ID can enhance the operational envelope, enable larger-sized interventions, and increase subsequent production.

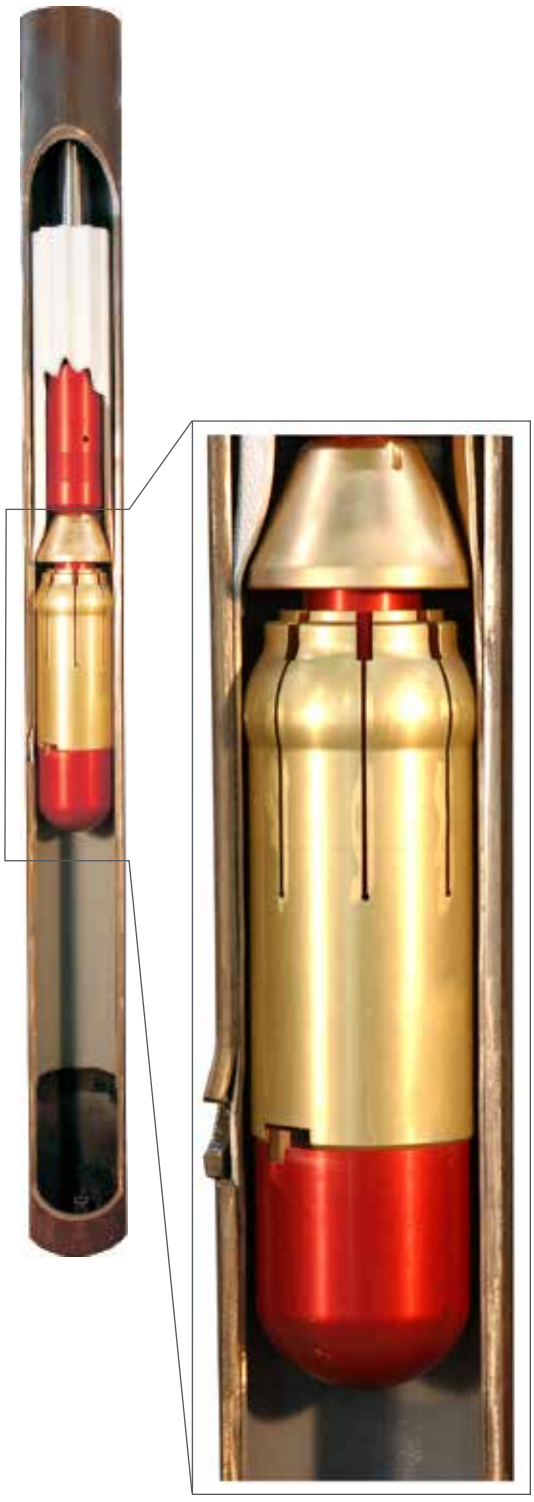
Reliability in field performance

The HOMCO patch makes a reliable seal that resists cracking and crumbling. Epoxy resin—spread on a fiberglass cloth to cover the outside diameter of the patch—acts as a secondary sealing agent that extrudes into the breaches. The setting tool—designed to handle higher forces than required in the operation—also contributes to reliability.

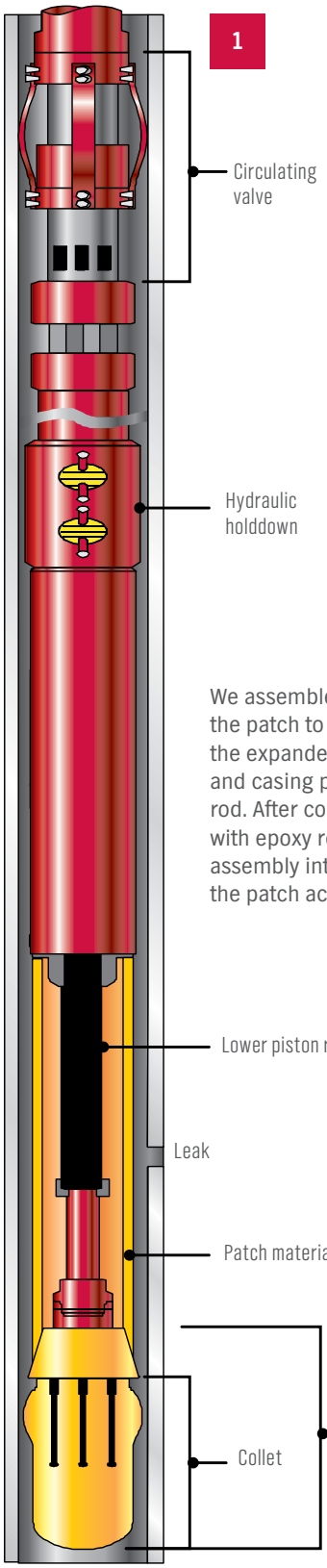
Variety in patch options

Our HOMCO patches come in various lengths, thicknesses, and materials to meet your needs. We offer a standard, 1/8-in. (3-mm) liner thickness for normal patching operations or a heavy-wall thickness for high-pressure operations. We also provide special liner materials to suit highly corrosive conditions or high-temperature wells (600°F, 316°C).

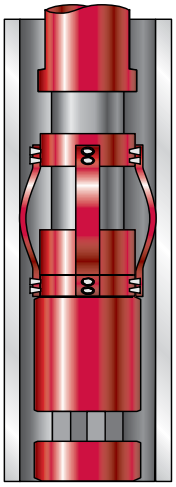
In a single wellbore, we can install multiple patches at different depths. And we can run and set patches below previously installed patches of the same size.



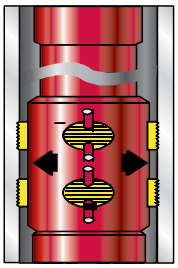
HOW OUR CASING PATCH WORKS



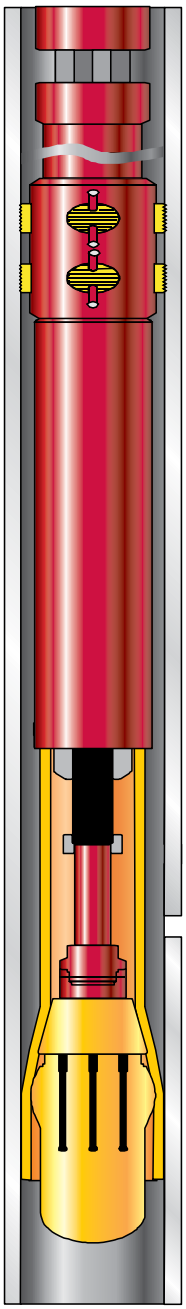
We assemble the setting tool and size the patch to the casing. Then we place the expander assembly, extensions, and casing patch on the lower piston rod. After coating the steel liner patch with epoxy resin, we run the entire tool assembly into the string and position the patch across the leak area.



We raise the tubing to close the slide valve.



We apply hydraulic pressure to force out buttons on the hydraulic holddown, which firmly anchors the cylinder and isolates the workstring from all tensile loads caused by the setting operations.



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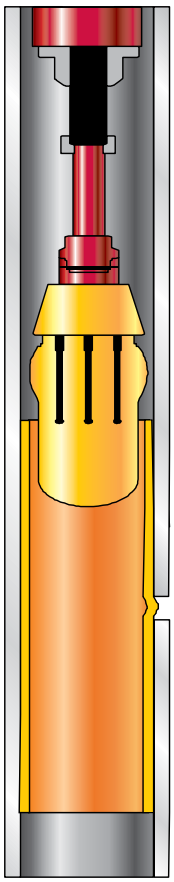
Pressure on the underside of the piston pulls the expander assembly into the bottom of the corrugated patch. Increasing pressure forces the expander assembly farther into the patch, which reforms the patch against the inside of the casing to create a reliable seal. In one stroke, we can expand 5 ft (1.5 m) of patch. We lower the tubing and open the slide valve by telescoping it. We raise the tubing again to pull up the cylinders in relation to the pistons held down by the expander assembly. The friction caused by the compressive hoop stress anchors the section of the patch to the casing wall. After closing the slide valve, we apply hydraulic pressure to the tubing again and then force out the hydraulic holddown buttons to anchor the cylinder in a new, higher position.



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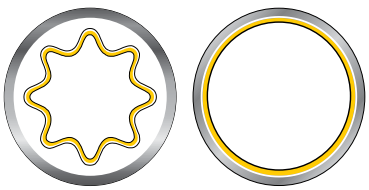
We force the expander assembly through the corrugated patch again, which seals it against the inside of the casing. We continue this procedure until the entire patch is set. The epoxy resin coating (applied in step 1) is extruded into any leaks or cavities in the casing wall and acts as a gasket and additional sealing agent. Required setting time is normally less than 30 minutes for a 20-ft (6.1-m) patch. We then remove the tool assembly from the hole and pressure test the patch as required.



The HOMCO casing patch is an internal steel liner corrugated longitudinally to provide clearance for running inside casing. Covered with a fiberglass mat and coated with epoxy resin, the patch creates a reliable seal against the casing bore. The standard 1/8-in. liner reduces the casing diameter by just 0.30 in. (7.62 mm), and the heavy-wall liner reduces the diameter by only 0.48 in. (12.20 mm).

Our qualified personnel use special setting tools and techniques to install the HOMCO internal steel liner casing patch.

REAL-WORLD CASES OF **RESTORED INTEGRITY**

Available worldwide through all Weatherford service locations, the HOMCO internal steel liner casing patch is recognized as a cost-effective casing remediation system. Our skilled personnel have used special setting tools and techniques to install more than 12,000 patches around the globe to date.

USA

ACHIEVED DEEPEST HOMCO INSTALLATION TO DATE TO ENABLE FRACTURING THROUGH CASING in an extended-lateral onshore well

Weatherford ran a 30-ft (9.1-m) HOMCO patch through a 16.91°/100 ft (30.5 m) dogleg into a well lateral and pressure tested it to 9,500 psi (65.5 MPa) after expansion. The patch permanently isolated four unwanted perforations and enabled perforation guns and frac plugs to pass through and reach the lower zone for fracturing through the casing approximately 4,000 ft (1,219 m) beyond the patch.

Canada

ISOLATED 3 PERFORATED INTERVALS WITHIN 15 HOURS with minimal ID reduction

In a steam-injector well with a downhole temperature of 360°F (183°C), Weatherford deployed three casing patches and a setting tool with Viton® elastomeric seals. The patches isolated three perforated zones within the 5 1/2-in. liner in one trip and with no drillout needed. The post-expansion ID of 4.592 in. (117 mm) and the drift of 4.476 in. (114 mm) resulted in minimal loss of ID.

Germany

RESTORED AND ISOLATED 60-FT INTERVAL WITHIN 24 HOURS in an onshore gas-storage well

After thoroughly cleaning and preparing the 9 5/8-in. casing string for remediation, Weatherford ran a 60-ft (18.3-m) casing patch to permanently isolate one of the longest patched intervals in Europe in one trip. The patch remediated daily fluid losses of 86.95 m^3/s, re-established well integrity, and saved the well from abandonment.

Saudi Arabia

ISOLATED CORRODED CASING WITHIN 24 HOURS with just a 3.4% ID reduction

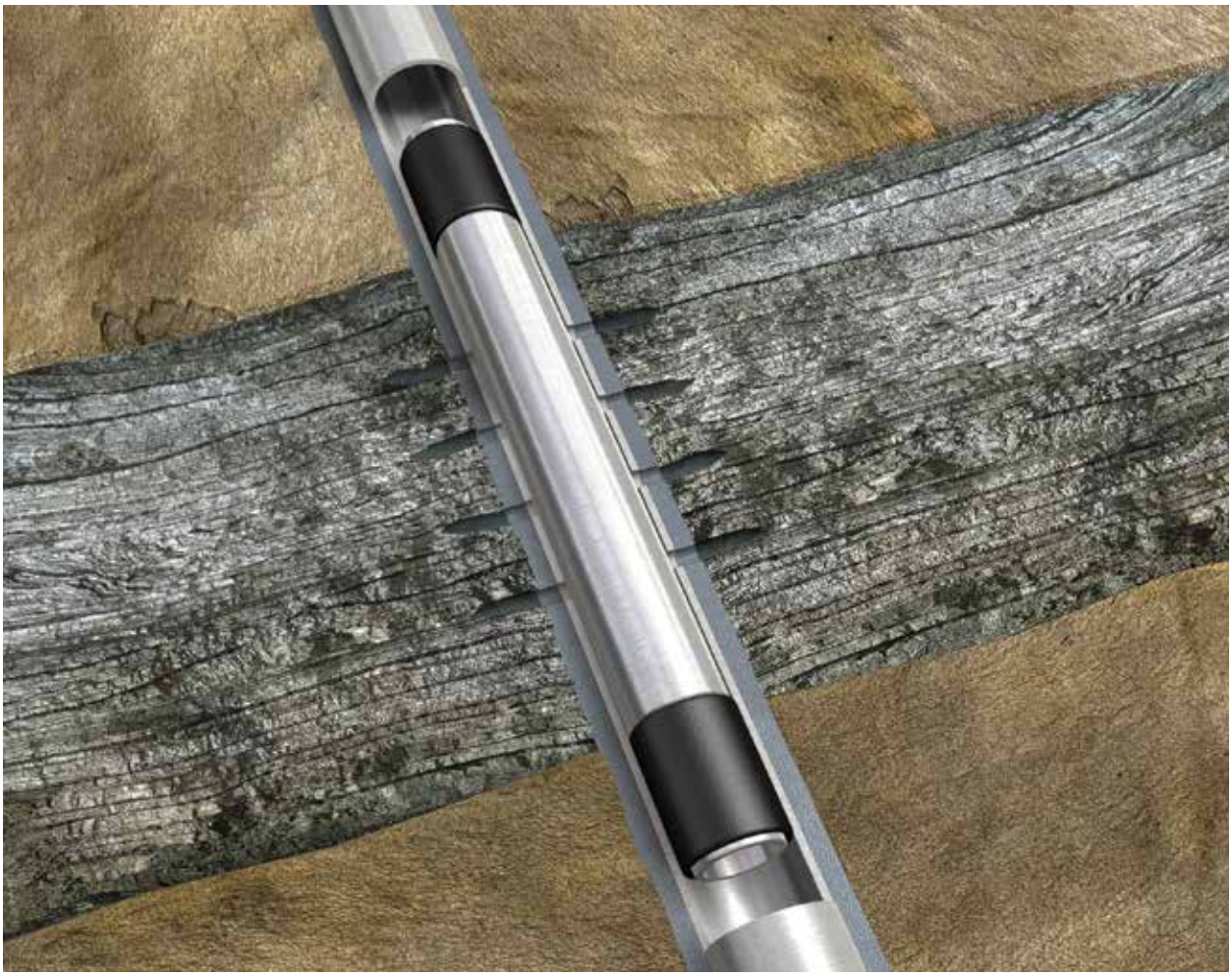
Weatherford ran a 20-ft (6-m) × 1/8-in. steel casing patch to permanently isolate a section of 9 5/8-in. corroded casing. The one-trip operation reduced the original ID of 8.921 in. to 8.621 in.—a reduction of 3.4% compared to 38% using conventional methods—for a quick return to production with minimal impact on flow.

EXPAND YOUR OPTIONS WITH
A SOLID SOLUTION

Our MetalSkin® system offers another alternative to unpredictable and often short-term cement squeezes.

The MetalSkin cased-hole liner system provides high pressure ratings and multiple running lengths using proprietary expandable connections. As a result, you can isolate a large range of well integrity problems—including small casing leaks and perforations, parted casing, and long sections of corroded casing.

Like the HOMCO casing patch, the MetalSkin liner system provides single-trip installation without a dedicated drillout run. Compared to conventional casing repair solutions such as straddle packers and conventional liners, the highly reliable and robust MetalSkin system results in a larger inside diameter to increase the operational envelope, enable running larger completion tools, and optimize production.



Visit **weatherford.com** to learn more about our complete well remediation portfolio to repair casing and restore integrity.

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