



Drilling Rams

Maintain well control and seal annular spaces
with trusted, rugged drilling rams



During downhole operations, reliability of equipment components takes on utmost importance. Successful and safe downhole operations depend upon rugged drilling rams to maintain well control. These rams, built to the most exacting performance and safety standards, make it possible to stop drilling operations and prevent a potential blowout.

Operators must have confidence that the rams inside the BOP will shear the pipe and contain the well. Cameron rams are designed to perform—controlling pressure during drilling and closing and sealing around a range of tubulars—while also meeting existing system concerns, such as footprint and operational savings.

Drilling Rams

Applications

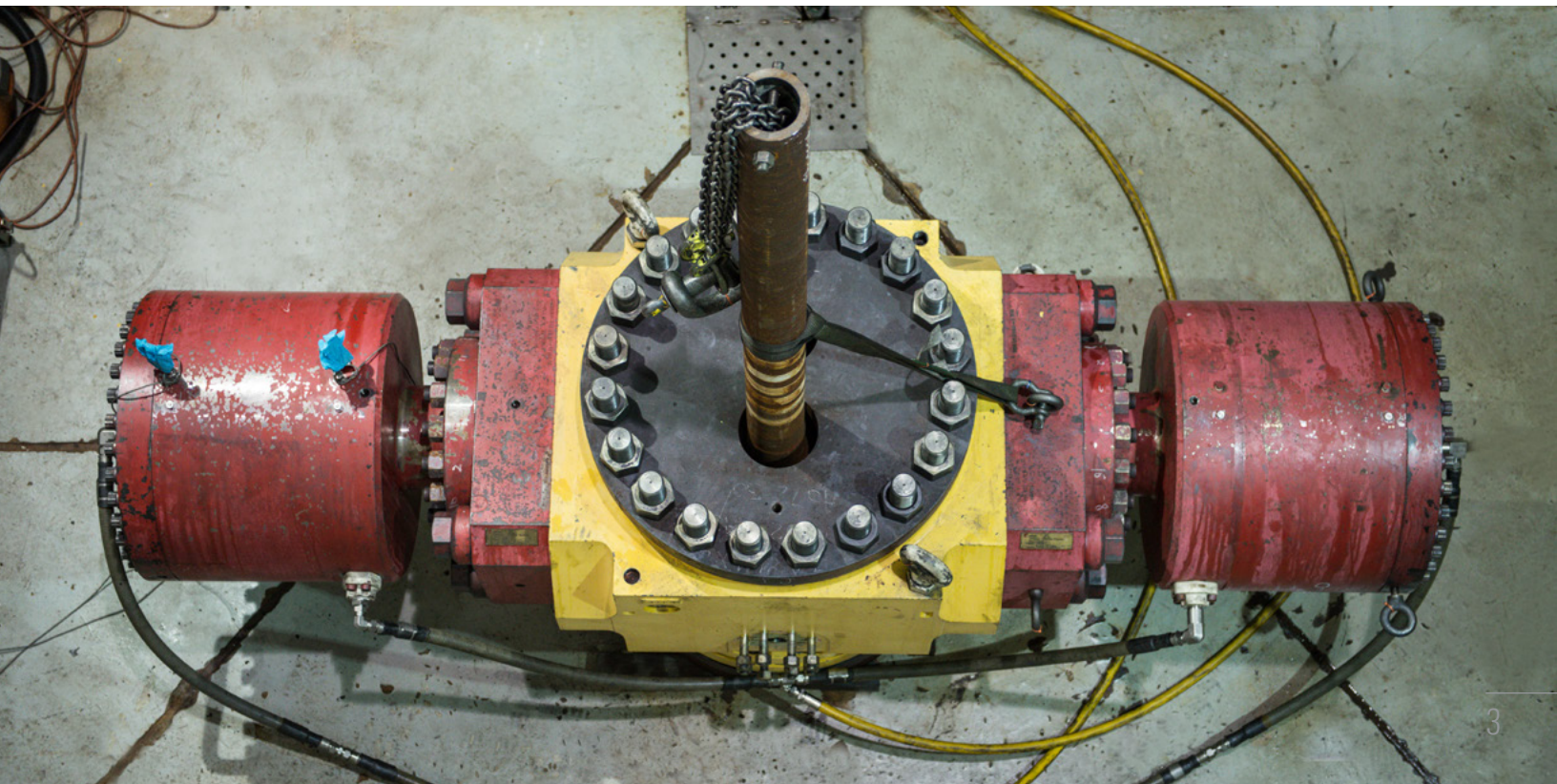
- Drilling and production operations
- Land
- Subsea
- Sour service

Benefits

- Enhanced certainty
- Optimized HSE profile
- Maximized sealing durability
- Improved operational efficiency and flexibility
- Increased reliability

Features

- Compatibility with field-proven Cameron ram-type BOPs
- Availability in all common pipe sizes
- Sealing on a wide range of pipe diameters
- Annular sealing independent of well flow
- Shearing rams with blades that are integral to the body
- Options for high-temperature and sour service
- Options for shearing braided cable, wireline, higher-grade pipe, and thick-wall casing

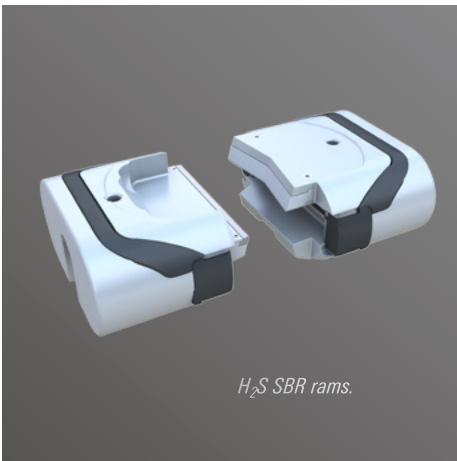




Shearing blind rams.

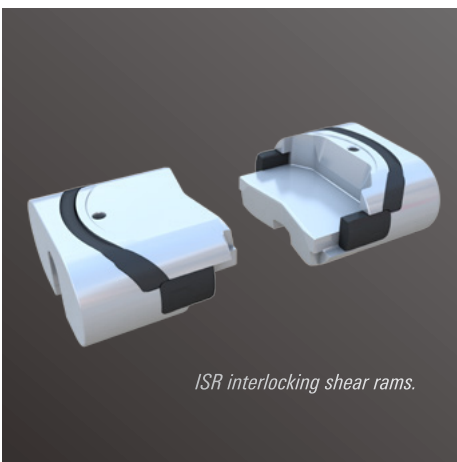
Shearing Rams

The Cameron portfolio of shearing rams feature solutions for operations involving high H₂S content, high-grade and thick-wall pipe, large-diameter casing, tool joint hardbanding, off-center tubulars, wireline, and braided cable.

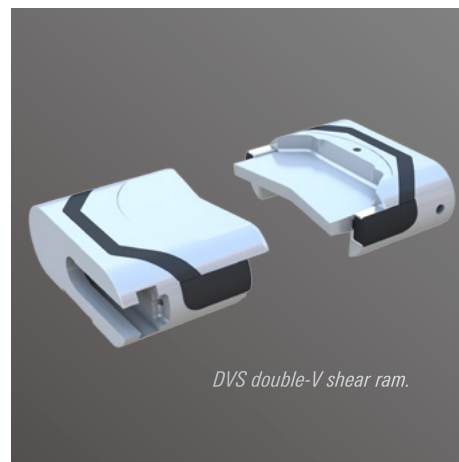


H₂S SBR rams.

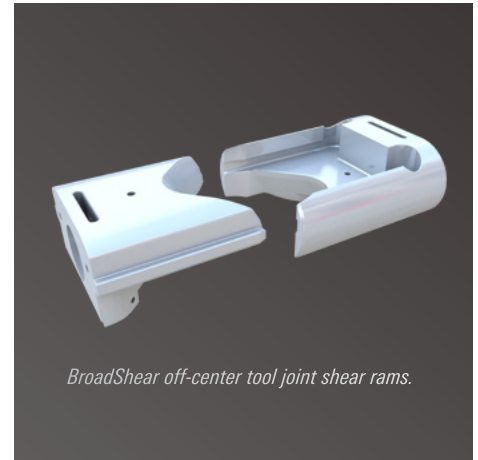
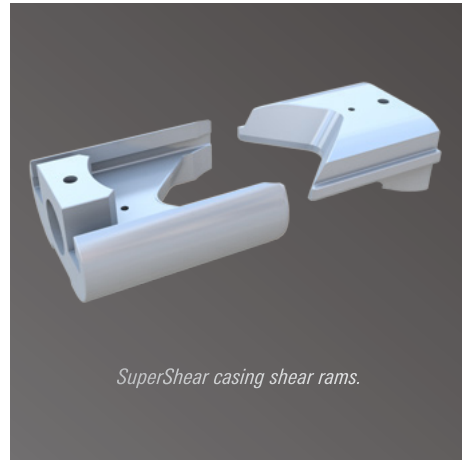
- **Shearing blind rams (SBRs)**—Blind shear rams are designed to cut drillpipe and shut in the well in an emergency well control situation.
- **H₂S SBR* hydrogen sulfide shearing blind rams**—Similar in design to standard SBRs, this offering features specifically designed blade inserts for H₂S service.
- **ISR* interlocking shear rams**—Developed to shear multiple tubing strings, ISRs interlock in the last inch of travel, keeping the blade seals in the upper ram in contact with the lower sealing surface.
- **DVS* double-V shear rams**—Upper and lower DVS rams feature a “V” shape butting edge to reduce the required shear force.



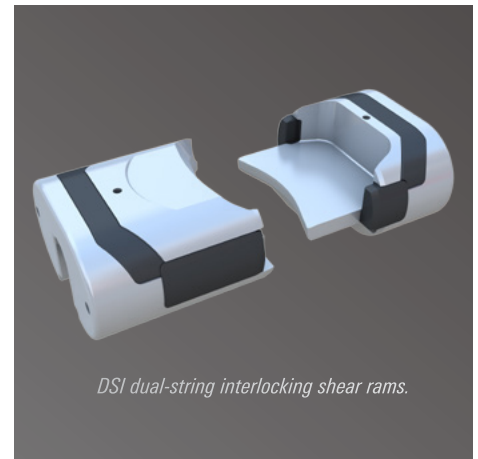
ISR interlocking shear rams.



DVS double-V shear ram.



- **CDVS-II* cable double-V shear rams**—Featuring increased shear blade width and an interlocking mechanism, CDVS-II rams provide the ability to shear wireline, cable, and tubulars with larger wall thicknesses.
- **SuperShear* casing shear rams**—SuperShear rams do not require milling off a preparation on the sheared pipe, eliminating an additional trip downhole.
- **BroadShear* off-center tool joint shear rams**—The enhanced shearing action of BroadShear rams extends shearing capabilities to tool joint hardbanding and off-center tubulars, enabling compliance with BSEE regulations for Gulf of Mexico drilling and production.
- **DSI* dual-string interlocking shear rams**—These rams are used to shear wireline and braided cable and maintain the seal with zero tension in the line.

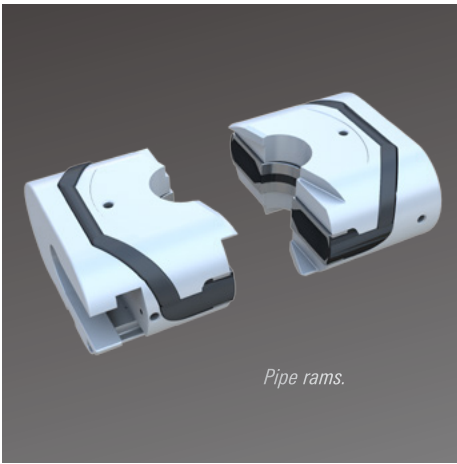


Ram Selection Chart

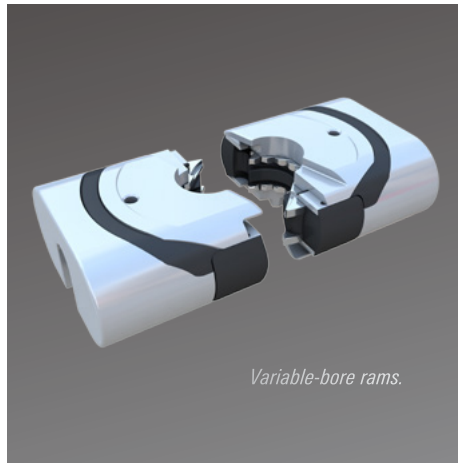
		Ram-Type BOP Models				
		EVO* Compact, Offshore Ram-Type BOP	TL* Offshore Ram-Type BOP	U* Surface Ram-Type BOP	UII* Subsea Ram-Type BOP	UM* Convertible- Bonnet Ram-Type BOP
Shearing	Shearing blind rams (SBRs)	●	●	●	●	●
	H ₂ S SBR rams	●	●	●	●	●
	ISR rams	—	●	● †	—	● †
	DVS rams	—	● †	● †	—	● †
	CDVS-II rams	●	●	—	● †	—
	SuperShear rams [†]	●	●	—	—	—
	BroadShear rams [†]	●	●	—	—	—
	DSI rams	—	—	● †	—	●

[†] Nonsealing ram; does not contain elastomeric material.

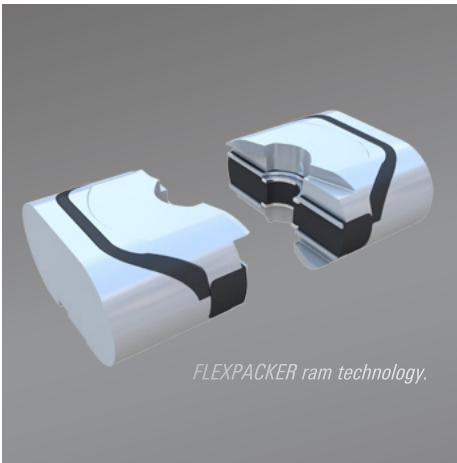
[‡] Contact your local Cameron representative to learn more about specific sizes.



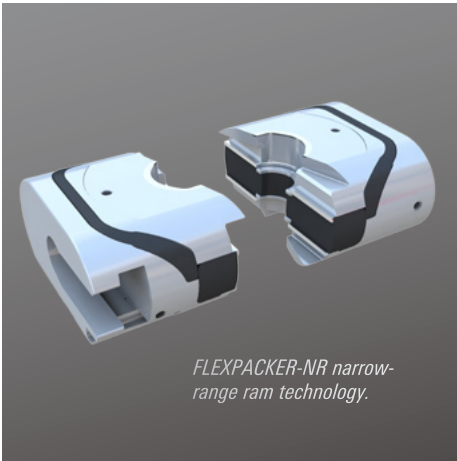
Pipe rams.



Variable-bore rams.



FLEXPACKER ram technology.



FLEXPACKER-NR narrow-range ram technology.

Nonshearing Rams

Sealing the annular space around drillpipe is also crucial to operations taking place inside the wellbore. Cameron offers pipe rams that seal around pipe to close the annular space as well as variable-bore rams (VBRs) to match drillpipe size.

- **Pipe rams**—The rams are designed so that the packer, top seal, and ram body act in unison to form one half of a ram cavity’s seal.
- **Variable-bore rams (VBRs)**—Cameron VBRs feature a large reservoir of packer rubber to ensure a long-lasting seal under all conditions.
- **FLEXPACKER* ram technology**—This multibore sealing device uses radially moving, stacked antiextrusion segments to retain wellbore pressure.
- **FLEXPACKER-NR* narrow-range ram technology**—Designed for use with tapered drillstrings, this technology provides economical sealing that is not compromised by well flow.

Ram Selection Chart

		Ram-Type BOP Models						
		EVO* Compact, Offshore Ram-Type BOP	TL* Offshore Ram-Type BOP	U* Surface Ram-Type BOP	UII* Subsea Ram-Type BOP	UM* Convertible- Bonnet Ram-Type BOP	T-81* Small-Bore Compact Ram-Type BOP	T-82* Compact Ram-Type BOP
Pipe	Standard service	●	●	●	●	●	●	●
	High-temperature service	●	●	●	●	●	●	—
Variable bore	VBR rams	● †	● †	● †	● †	● †	—	—
	FLEXPACKER technology	● †	● †	● †	—	● †	●	—
	FLEXPACKER-NR technology	● †	● †	● †	●	● †	—	—

* Nonsealing ram; does not contain elastomeric material.

† Contact your local Cameron representative to learn more about specific sizes.

Elastomer Technology

One of the ways to differentiate Cameron drilling products from those of other manufacturers is the elastomers used in critical sealing areas, such as ram packers and top seals.

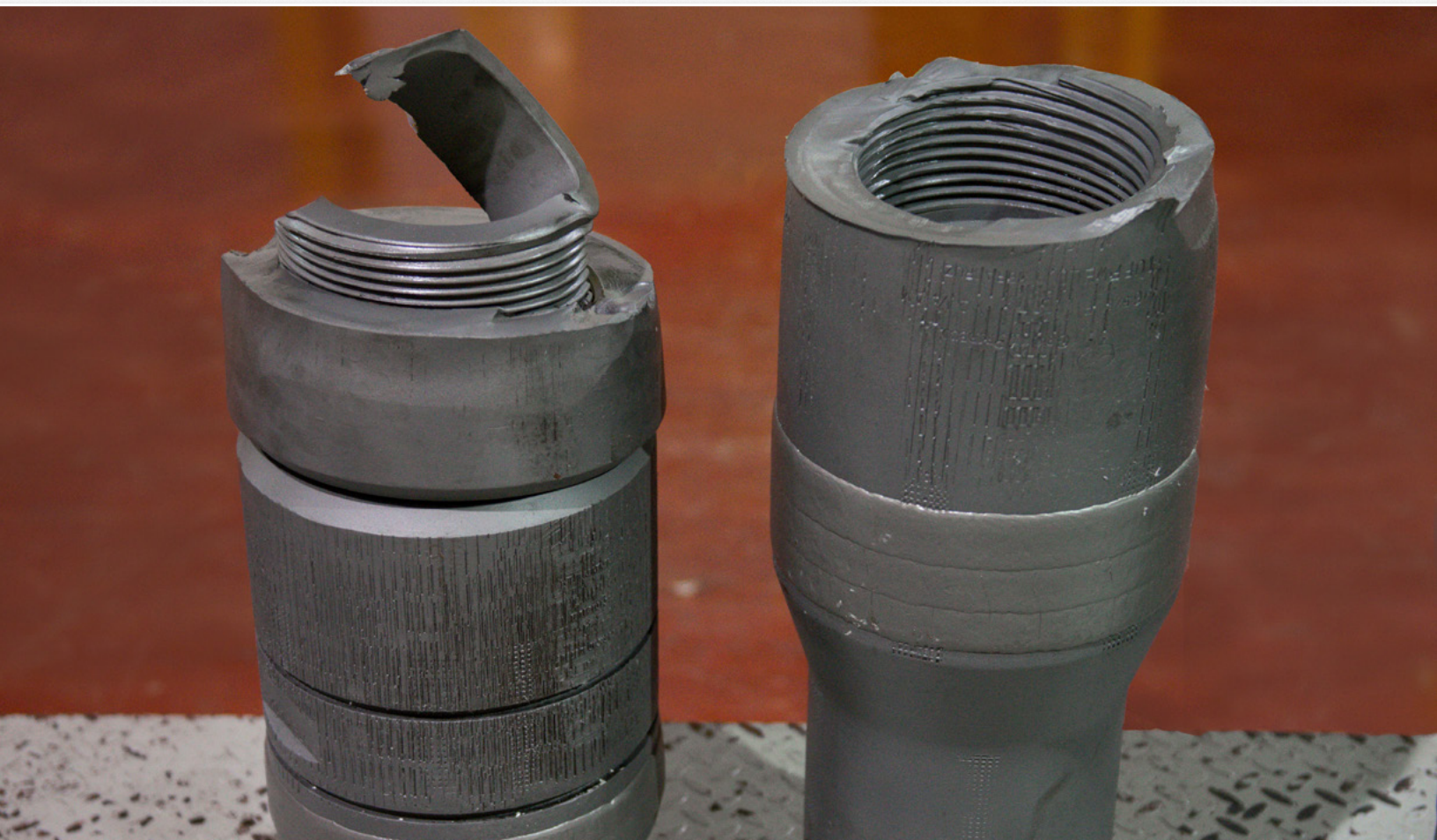
Cameron drilling products exclusively feature proprietary elastomers designed and manufactured by our facility in Katy, Texas. Cameron provides engineered solutions to elastomeric material problems, and for drilling applications, we have developed a range of elastomer technology to meet the rigorous demands of the oil field:

- CAMRAM* elastomer technology
- CAMRAM 350* high-temperature elastomer technology, which is rated to 350 degF [177 degC]
- CAMULAR* annular elastomer technology
- DUROCAM* subsea elastomer technology.

When used with Cameron BOPs, these technologies help to improve performance, extend service life, reduce downtime, and lower operating costs. Elastomer components are in-house engineered technology with required API qualification testing as with all other pressure control equipment.



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