

DynaSlot™ System

360° Certainty Well Abandonment



SETTING THE STAGE FOR PERFECT ISOLATION

The DynaSlot™ gun system presents a highly compelling alternative to traditional plug and abandonment and conventional cement squeeze operations, as well as costly section milling procedures. By perforating a helical pattern of horizontal rectangular slots in the casing, 360° access to the area behind the tubing or casing is guaranteed.

The slots penetrate into the formation, covering all voids between casing and cement, and between cement and formation. The DynaSlot gun charge provides a far superior starting point to a cement squeeze as compared to conventional big-hole squeeze guns. Oil and gas companies adopting the DynaSlot system will reduce workover costs, as they will avoid having to re-perforate a second or third time because the first attempt was not successful. As a single-gun system, DynaSlot is also substantially less time consuming compared to other 360° access methods such as section milling and slot cutting with abrasives.

THE CHALLENGE OF ACHIEVING PERMANENT ISOLATION

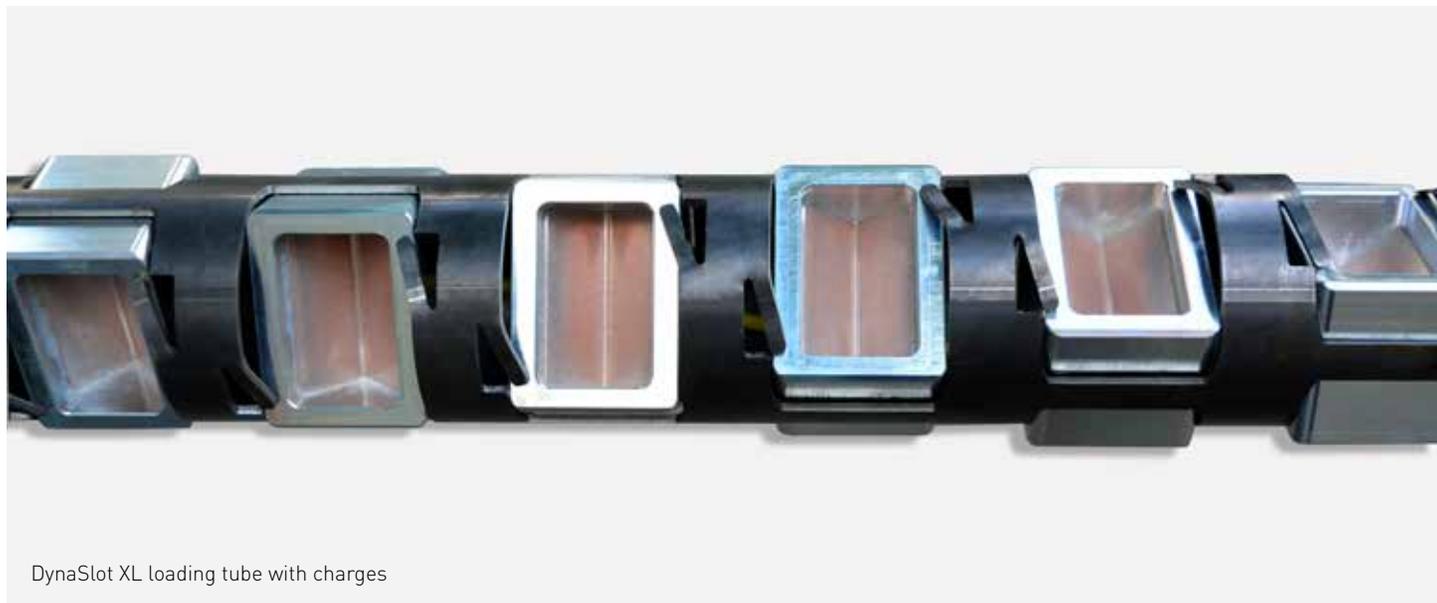
When completing P&A cement squeeze operations, it is essential that the layers of sedimentary rock are pressure isolated. This is especially important for wellbores that pass through freshwater aquifers. Unwanted vertical channels or voids in a previously cemented wellbore annulus can produce migration pathways for fluids or gas, presenting risks associated with leakage, cross-flow and cross-contamination, and environmental impacts.

Achieving a permanent seal is especially significant, given the fact that operators are responsible for an abandoned well in perpetuity. In the event of a seal failure and leakage, the operator remains liable for the problem.

While conventional perf and seal with standard big-hole charges can be affordable, these processes also come with lower rates of success and great uncertainty due to the fact that all microannuli and behind-pipe channels are not always intersected. Section milling guarantees perfect access to the area behind the casing, but this method is also extremely expensive and time consuming.

Certainty and Peace of Mind

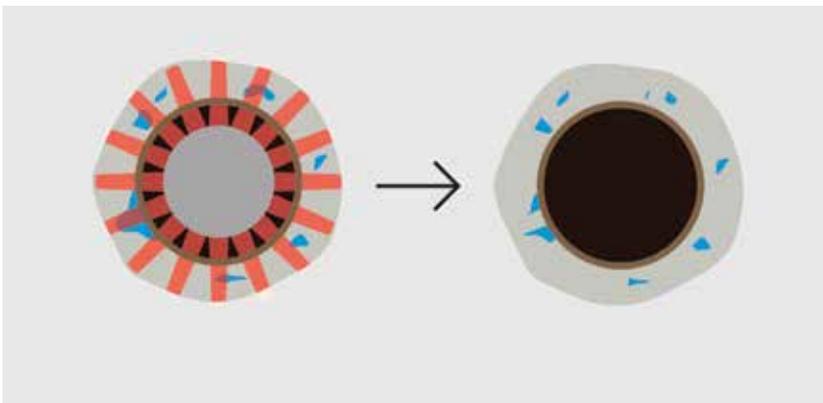
	DynaSlot Gun System	Conventional Big-Hole	Section Milling / Slot Cutting
Single-run cost	Low	Low	High
P&A Certainty	High	Low	High



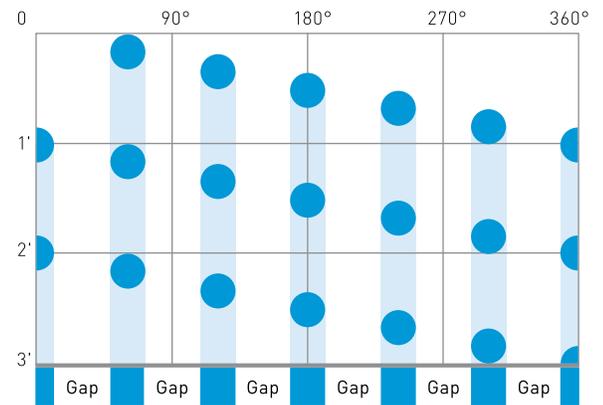
DESIGNED TO ELIMINATE EXPENSIVE “DO-OVERS”

Where conventional perforating guns with standard big-hole charges may not intersect microannuli and channels behind pipe (see figure, below left), the DynaSlot gun system ensures complete coverage. Rectangular slots can be produced in a way to optimize overlap and can be created in the liner or inner casing without damaging the outer casing. DynaSlot guns can be run on wireline or TCP.

CONVENTIONAL CEMENT SQUEEZE GUN

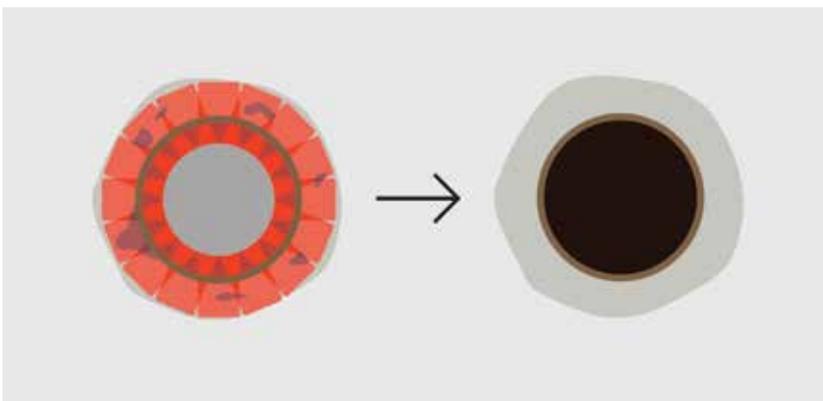


With a conventional cement squeeze gun, not all channels and microannuli may be intersected.

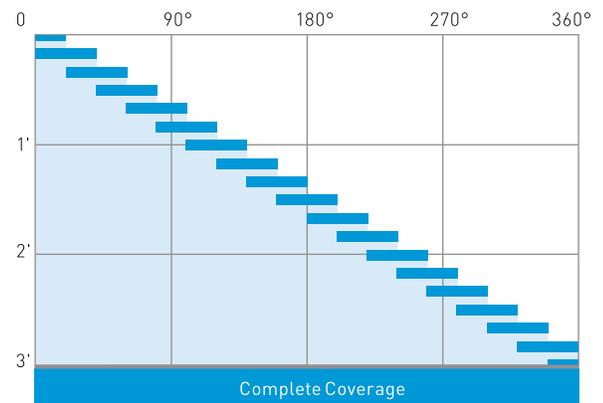


Conventional perforating leaves gaps in the access to the area behind the casing.

DYNASLOT SHOT



The DynaSlot shot pattern provides 360° coverage with overlapping rectangular slots that enhance P&A perforating and squeeze jobs.



DynaSlot eliminates gaps with 360° coverage achieved with 18 shots and 50% overlap.



5-1/2" casing perforated with the DynaSlot system

DYNASLOT GUN SYSTEM

Compared to conventional round-shaped charges, the DynaSlot system uses charges that are rectangular. Overlapping these charges by 50% in a complete circumferential-vertical cross section, you can be certain that 360° coverage is achieved. The DynaSlot system integrates with standard perforating hardware for a convenient and easy solution.



DynaSlot XL and DynaSlot shaped charges

DynaSlot System Summary

Gun OD in Inches	Shot Density in spf	Phasing	# of Helix	# of Charges	Gun length in Inches	Charge	Application	Average Slot Dimensions in Inches	Average Area Open to Flow (AOF) in Inches ²
3-1/8"	2	90	N/A*	4	31	32g DynaSlot	4-1/2" Tubing/Casing, #11.6 to #16.9, up to P110	0.26 x 1.24	1.3
3-1/8"	2	20	1	18	115	32g DynaSlot	4-1/2" Tubing/Casing, #11.6 to #16.9, up to P110	0.26 x 1.24	5.8
3-1/8"	2	20	2	36	223	32g DynaSlot			11.6
3-3/8"	4	20	1	18	64	32g DynaSlot	5" to 5-1/2" Tubing/Casing, #11.5 to #23.2, up to P110	0.30 x 1.45	7.8
3-3/8"	4	20	2	36	118	32g DynaSlot			15.7
3-3/8"	4	20	3	54	172	32g DynaSlot			23.5
3-3/8"	4	20	4	72	226	32g DynaSlot			31.3
5"	4	22.5	1	16	58	61g DynaSlot XL	7" Casing, #17 to #32, up to P-110	0.40 x 1.75	11.2
5"	4	22.5	2	32	99	61g DynaSlot XL			22.4
5"	4	22.5	3	48	154	61g DynaSlot XL			33.6
5"	4	22.5	4	64	202	61g DynaSlot XL			44.8
7"	8 (B2B**)	22.5	2	32	58	61g DynaSlot XL	9-5/8" Casing, #32 to #53, up to P110	0.32 x 1.6	16.4
7"	8 (B2B**)	22.5	4	64	106	61g DynaSlot XL			32.8

*Circulation gun, not a full helix, DynaSlot Puncher only

**Charges are loaded back to back creating a double helix

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Compare the Impact of DynaEnergetics perforating systems against conventional options, and we guarantee that you'll see a measurable difference in performance, reliability and well productivity.

Contact us from anywhere on the globe at performance@dynaenergetics.com or visit us online at dynaenergetics.com, and we'll show you how.
