

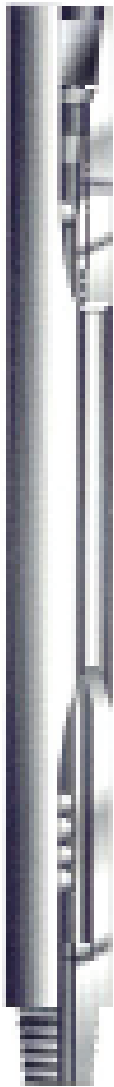
PBL MULTIPLE ACTIVATION BYPASS SYSTEM

The PBL Multiple Activation Bypass System is a simple, reliable tool that can assist you in reducing drilling costs associated with different types of hole conditions. Originally developed to enable the aggressive pumping of LCM materials and to increase circulation rates, the PBL has evolved to benefit many applications in the drilling, completion, and workover phases of a well such as:

- Pumping all types of LCM pills, including aggressive pills and cement squeezes
- Increasing circulation rates for improved hole cleaning resulting in reduced torque and drag, thereby increasing ROP
- Increasing annular velocity in highly deviated and horizontal wellbores where removal of cutting beds and hole cleaning are problematic
- Fluid displacements
- Sub-sea riser/BOP jetting
- Acidizing and stimulation treatments
- Coring applications

In addition, the PBL has several unique features:

- The PBL tool will close when the pumps are shut down minimizing a U tubing effect or possible well control issues that can occur in other tools
- The Autolock option, which allows for pulling a dry workstring or filling the drillstring while tripping in the hole. The Autolock option also provides an option to reverse circulate if necessary
- The PBL can be cycled numerous times in a single trip
- The ball shearing pressure can be set to the operator's preference
- The main body and the catcher sub can be placed in different sections of the BHA to optimize workstring operations



TECHNICAL SPECIFICATIONS FOR DUAL-PORTED PBL



Tool OD (in)	ID Drift (in) ¹	TFA (in ²) ³	Connection Size ²	Number of Cycles
9.5	2.27	3.53	7 5/8 Reg	5
8.25	2.27	3.53	6 5/8 Reg	5
8	2.27	3.53	6 5/8 Reg	5
6.75	1.25	2.45	4 1/2 IF	5
6.5	1.25	2.45	4 1/2 IF or XH	5
6.25	1.25	2.45	4 1/2 IF or XH	5
4.75	1.25	2.45	3 1/2 IF	4
3.5	0.94	1.57	2 3/8 IF	3

¹ IDs listed are standard, larger/smaller IDs available on request

² Connections listed are standard, special connections available on request

³ TFA reduced when Autolock option used