

## **AUTO-LOCK PBL BYPASS SYSTEM**

### **Activation Instructions**

Activate PBL as per PBL Operating Instructions

#### **Auto-Lock Activation Procedure**

1. After activating the PBL and prior to dropping locking ball, **Record Pump Pressure \_\_\_\_\_ and Pump Strokes \_\_\_\_\_**. This will be used as a reference to confirm when PBL is locked open.
  2. Calculate the fluid displacement **volume and time** in the drillstring to estimate when the locking ball will reach the Bypass Tool. Break drillstring at floor and drop one (1) vinyl locking ball. Refer to chart below to determine proper size.
  3. It is then recommended to maintain normal drilling pump rates, keeping the pressure 500 psi below the locking ball shearing pressure as indicated on the Tool Order. Displace 70% of the volume inside the drillstring, and then reduce the pump rate to 50% until the ball lands in the port. The vinyl ball may seat sooner than the calculated pump strokes. The vinyl locking ball has an equivalent density of 11.2 PPG drilling fluid. **NOTE: Care should be taken when pumping the vinyl ball down. Pumping the locking ball into port at high fluid rates or pressures may cause the locking ball to blow through the port.**
  4. When the locking ball lands into port, one of the two bypass ports will be blocked and a **pressure increase** might be noted. Compare the pump pressure and pump strokes recorded in step one to determine if the ball is into the port. The pumps may now be switched off and the tool is locked open. Fluid will drain or fill through the one open port. Use caution not to over pump after tool is locked open, causing the locking ball to shear.
- Rotating and reciprocating the drillstring is good practice while activating the PBL Multiactivated Bypass Circulating Sub.

#### **De-Activation Procedure**

Follow Same De-Activation Procedures as per PBL Operating Instructions

Should there be any questions regarding the operational procedures of the PBL tool please contact BICO Drilling Tools or visit our website at: [www.bicodrilling.com](http://www.bicodrilling.com)

Date Issued: 07/01/2014	Revision Number: 0	Page 1 of 2
Issued By: Richard Earle	Revision Date: NA	

**LOCKING BALL SIZES**

3 1/2" PBL	0.70" (Torlon)
4 3/4" PBL	1 1/8" (Torlon)
6 1/4", 6 1/2", 6 3/4", 7 1/4" PBL	1 1/8" (Ertalyte)
8", 8 1/4", 9 1/2" PBL	1 3/8" (Ertalyte)

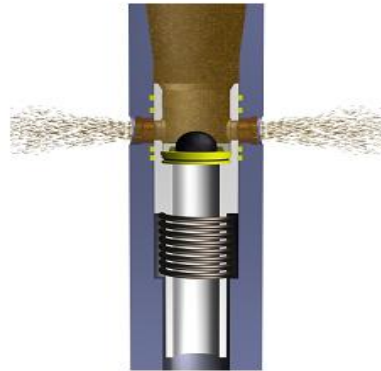
**PBL AUTO-LOCK OPERATIONAL SEQUENCE**



**Drilling Mode  
FLOW to BIT**



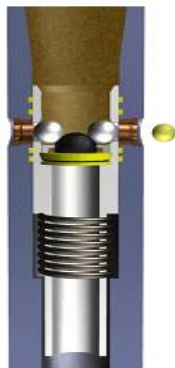
**Activation Ball  
Seated**



**Open Position  
FLOW thru PORTS**



**Pump Down Locking Ball  
LOCK OPEN PORT  
Trip Dry Pipe / Fill Pipe**



**Tool can be hydraulically reset (unlocked)  
downhole by dropping 2 steel deactivation balls.  
Locking Ball and Activation Ball will Shear and  
FLOW to BIT resumed.**

