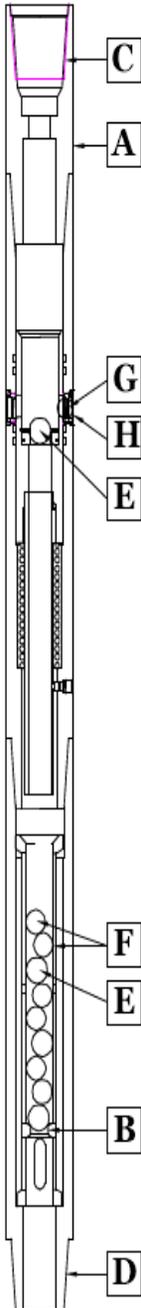


**4 3/4" PBL BALL LOCK BYPASS SYSTEM  
TECHNICAL SHEET**



SERIAL #  
 A - TOOL O.D.  
 B - TOOL I.D.  
 FLOW AREA THROUGH TOOL  
 C - BOX CONNECTION  
 D - PIN CONNECTION  
 E - ACTIVATION BALL/# TO ACTIVATE  
     DIAMETER  
     MATERIAL  
 H - SHEARING PRESSURE  
 F - DEACTIVATION BALL/# TO DEACT.  
     DIAMETER  
     MATERIAL  
 G - LOCKING BALL/# TO LOCK OPEN  
     DIAMETER  
     MATERIAL  
     SHEARING PRESSURE  
 H - SIZE OF PORT  
 NUMBER OF PORTS  
 TFA WHEN TOOL IS OPEN  
 NUMBER OF CYCLES  
 OVERALL LENGTH  
 WEIGHT  
 F - TENSILE STRENGTH  
 E - TORSIONAL STRENGTH  
 MAX. MAKE UP TORQUE  
 OPTIMUM MAKE UP TORQUE  
 B - MIN. MAKE UP TORQUE

SERIAL #	
A - TOOL O.D.	4.75"
B - TOOL I.D.	1.27"
FLOW AREA THROUGH TOOL	1.67 SQ.IN.
C - BOX CONNECTION	3 1/2 IF
D - PIN CONNECTION	3 1/2 IF
E - ACTIVATION BALL/# TO ACTIVATE	1
DIAMETER	1 1/2"
MATERIAL	Torlon
H - SHEARING PRESSURE	As Desired
F - DEACTIVATION BALL/# TO DEACT.	2
DIAMETER	1 3/8"
MATERIAL	Steel
G - LOCKING BALL/# TO LOCK OPEN	1
DIAMETER	1 1/8"
MATERIAL	Torlon
SHEARING PRESSURE	As Desired
H - SIZE OF PORT	1.1"
NUMBER OF PORTS	2
TFA WHEN TOOL IS OPEN	1.901 SQ.IN
NUMBER OF CYCLES	4
OVERALL LENGTH	7 - 9 FT
WEIGHT	300 LBS
F - TENSILE STRENGTH	1,000,000 LBS
E - TORSIONAL STRENGTH	49,500 FT/LBS
MAX. MAKE UP TORQUE	11,500 FT/LBS
OPTIMUM MAKE UP TORQUE	10,743 FT/LBS
B - MIN. MAKE UP TORQUE	9,986 FT/LBS

NOTES  
 \* **NO THRU DRIFT WHEN BALLS ARE IN TOOL**  
 \* Tool is rated to operate in temp up to 420 degrees F

