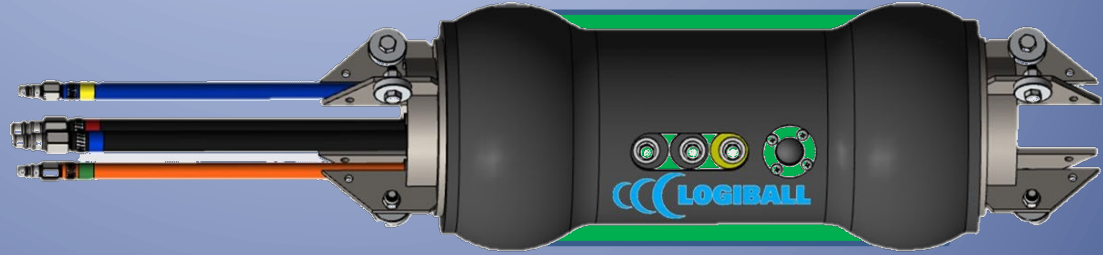
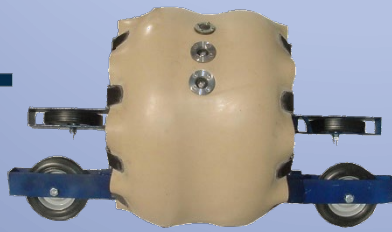




Approximate Void Volumes between the inflated packers in their respective pipes and the inside pipe wall when inflated at the recommended operating pressures.



Logiball Mainline Packers 2001JS Series	Approximate volume of void between inflated packer and inside pipe wall		
	US gal	Liters	Imp gal
6`` 2001JS	0.3	1.2	0.26
8`` 2001JS	0.3	1.2	0.26
9`` 2001JS	0.3	1.2	0.26
10`` 2001JS	0.4	1.5	0.33
12`` 2001JS	0.5	1.9	0.4
15`` 2001JS	0.9	3.3	0.7
18`` 2001JS	1.0	3.78	0.8
20``-21`` 2001JS	1.2	4.5	1



Approximate Void Volumes between the inflated packers in their respective pipes and the inside pipe wall when inflated at the recommended operating pressures.

Logiball Mainline Packers CMP Series	Approximate volume of void between inflated packer and inside pipe wall	
	US gal	Liters
24" CMP	0.45	1.7
27" CMP	0.5	1.9
30" CMP	0.55	2.1
33" CMP	0.61	2.3
36" CMP	0.66	2.5
42" CMP	0.77	2.9
48" CMP	0.87	3.3
54" CMP	0.98	3.7
60" CMP	1.08	4.1
66" CMP	1.19	4.5
72" CMP	1.32	5
78" CMP	1.43	5.4
84" CMP	1.53	5.8



Approximate Void Volumes between the inflated packers in their respective pipes and the inside pipe wall when inflated at the recommended operating pressures.



Logiball Lateral Packer Model	Approximate Volume of void at mainline	Approximate Volume of void in 4" lateral with 4" lateral grouting plug	Approximate Volume of void in 6" lateral with 6" lateral grouting plug	Approximate Volume of void in 6" lateral <i>with 4" lateral grouting plug</i>
4.25-6 2001 LS	0.21 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
5.5-7.5 2001LS	0.60 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
6-8 2001 LS	0.58 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
7.25-10 2001 LS	0.53 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
8.5-12 2001 LS	0.61 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
12-15 2001 LS	0.56 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
15-18 2001 LS	0.53 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
17-21 2001 LS	0.80 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot
20-24 2001LS	1.46 us gal	0.16 us gal /foot	0.24 us gal/foot	0.96 us gal/ foot

3.78 liters per us gallon & 4.54 liters per imperial gallon



Approximate Void Volumes between the inflated packers in their respective pipes and the inside pipe wall when inflated at the recommended operating pressures.



Logiball Flexible Packer Model	Approximate Volume of void in 4" pipe	Approximate Volume of void in 6" pipe
FPTP 4 x 36	0.18 us gal /foot = 0.65 us gal	0.98 us gal/foot = 2.94 us gal
FPTP 6 x 36	<i>Not Applicable</i>	0.26 us gal/foot = 0.78 us gal
FPTP 4 x 48	0.18 us gal /foot = 0.72 us gal	0.98 us gal/foot = 3.92 us gal
FPTP 6 x 48	<i>Not Applicable</i>	0.26 us gal/foot = 1.04 us gal
FPTP 4 x 60	0.18 us gal /foot = 0.9 us gal	0.98 us gal/foot = 4.9 us gal
FPTP 6 X 60	<i>Not Applicable</i>	0.26 us gal/foot = 1.3 us gal

3.78 liters per us gallon & 4.54 liters per imperial gallon



Approximate Void Volumes between the inflated packers in their respective pipes and the inside pipe wall when inflated at the recommended operating pressures.



Logiball Long Span Flexible Packers	Grouting Chamber Length	Approximate Packer/Pipe Volume		
		8"	10"	12"
Packer Approx Length				
80"	36"	3 us gal	3 us gal	5 us gal
106"	60"	5 us gal	5 us gal	8 us gal
138"	84"	7 us gal	7 us gal	11 us gal
166"	108"	9 us gal	9 us gal	14 us gal
202"	138"	11 us gal	12 us gal	18 us gal

3.78 liters per us gallon & 4.54 liters per imperial gallon