



INSTRUCTION MANUAL

INFLATABLE PACKERS

LP & MP Series

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1 APPLICATIONS

- **Pressure grouting in fractured or unconsolidated formations**
- **Water infusion for dust control in coal mines**
- **Methane gas control and collection in mines**
- **Water sampling testing in rock formations**
- **Permeability testing**
- **Hydraulic fracturing of formations**
- **Sealing elements in soil or rock boreholes**
- **Quality control testing of tubes**



2 DESCRIPTION

The LP, and MP series of inflatable packers are versatile and tough units. They consist of an inflatable gland, fitted with swaged steel collars, mounted on a stainless steel center tube. They can be inflated with a variety of fluids such as water, air, nitrogen, etc., to provide a tight seal in boreholes or casings. The gland flexibility and the range of pressures assure a tight fit against irregular rugged walls. The same size packer will fit a wide range of borehole diameters. Single and double units are available.

The gland element consists of a rubber membrane reinforced with extensible steel fabric, and covered with an additional layer of abrasion resistant rubber. Threaded swaged collars terminate both ends of the gland. The collars are used to thread the gland onto packer heads, which are mounted on the center tube. One of the heads is fixed and contains the inflation port. The other head is free to move, allowing the highly reinforced gland to retract about the center tube as it inflates. A NPT pipe thread terminates the top end of the center tube. An assembly is available for use with wireline equipment.

3 TYPE OF PACKERS

The series include membranes that can be inflated under low (**LP**), or high (**MP**) pressure. The model numbers (e.g. 30-53) refer to the deflated and fully inflated diameters in millimeters.

4 SPECIFICATIONS

A. Types and Dimensions:

Model number	Max OD (Deflated)		Center tube ID		Center tube Connection	Standard Lengths (mm)	
MP/30-53:	30mm	1.18"	10mm	0.39"	3/8"	500	1000
MP/42-79: *1	42mm	1.65"	17mm	0.67"	1/2"	"	"
MP/42-100:	42mm	1.65"	17mm	0.67"	1/2"	"	"
LP/54-120:	54mm	2.13"	26mm	1.02"	1"	"	"
LP/72-160:	72mm	2.83"	40mm	1.57"	1 1/4"	"	"
LP/85-187: *2	85mm	3.35"	40mm	1.57"	1 1/4"	"	"
LP/102-190:	102mm	4.01"	53mm	2.08"	2"	"	"
LP/130-320:	130mm	5.12"	81mm	3.18"	3"	-	"
LP/170-350: *3	170mm	6.69"	81mm	3.18"	3"	-	"

Note: Packer lengths other than standard are available upon special requests. Certain packers can be delivered with an oversized centre tube. Flush joint multiple packer assemblies are available.

*1 Formerly Model VLP 22/39

*2 Formerly Model VLP 60/77

*3 Formerly Model VLP 125/160

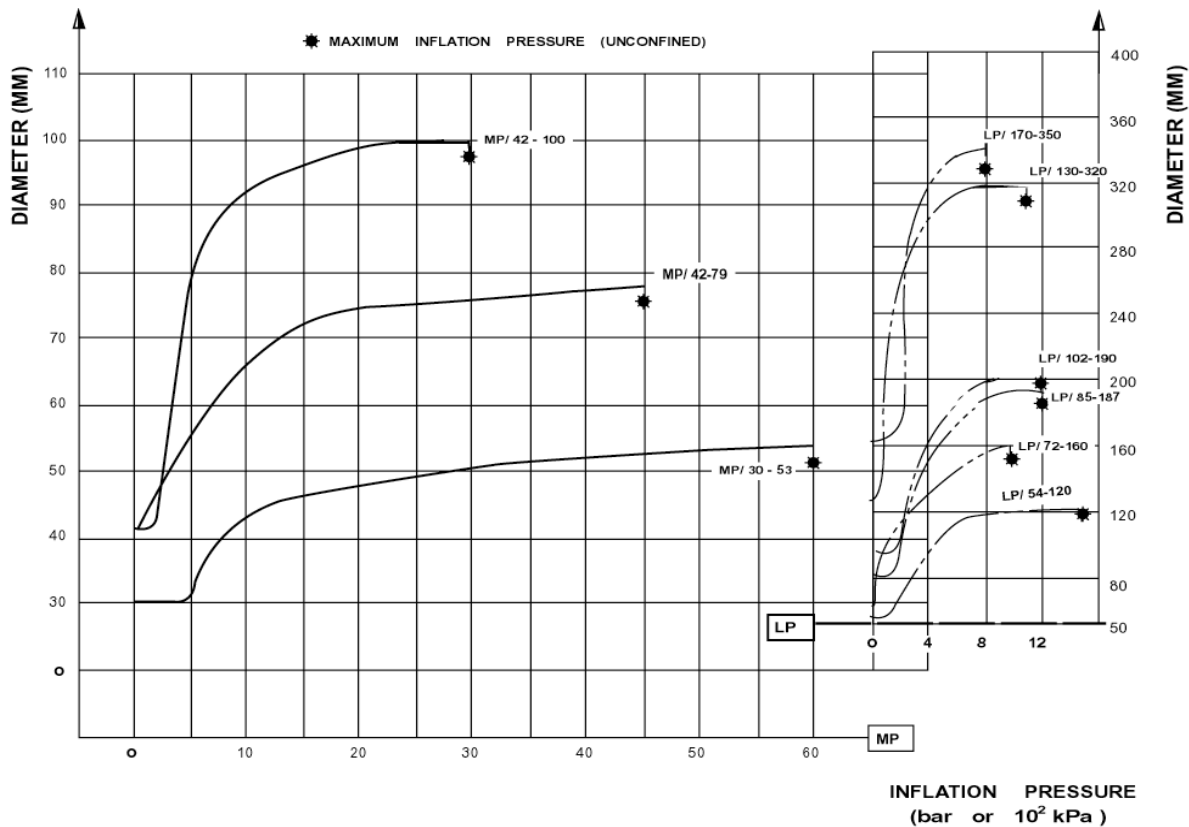
B. Working pressure (confined), in 100 kPa (psi), versus borehole diameter, in millimeters (inches):

DIAMETER TYPE	35 1-3/8		40 1-37/64		45 1-25/32		50 1-31/32		60 2-23/63		70 2-3/4		80 3-9/64		100 3-15/16		120 4-23/32		140 5-1/2		160 6-19/64		180 7-3/32		200 7-7/8		220 8-21/32		240 9-7/16		260 10-15/64		280 11-1/32		300 11-13/16		320 12-19/32		340 13-3/8										
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in									
MP/30-53	110	1595	90	1300	70	1000	55	8000																																									
MP/42-79					130	1900	110	1600	70	1000	60	870																																					
MP/42-100					130	1900	105	1520	65	940	50	730	30	440																																			
LP/54-120									130	1900	90	1300	65	940	30	440																																	
LP/72-160													80	1160	50	725	30	440	20	290																													
LP/85-187															100	1500	70	1050	40	600	30	440																											
LP/102-190															95	1380	75	1090	55	800	45	650																											
LP/130-320															75	1090	55	800	45	650	35	510	25	360	20	290	15	220																					
LP/170-350																				60	870	50	725	40	580	35	510	30	440	25	360	20	290	15	220														

Diameter in **millimeters** and inches

Pressure in **100 kPa** and psi

C. Curves of packer inertia when inflated in unconfined condition:



5 NOTICE ON PACKER USE

1. Packer failure is often due to a misapplication. Verify that the packer is designed for the specific application in the field. Refer to inflation chart above.
2. Check that the pipe string is strong enough to handle the packer and any other attached equipment. The hanging weight should be known before setting the packers. If joint failure occurs, then the packer string can be lost down the hole.
3. The sliding end of a sliding-end packer always goes down for a single packer. If the sliding end is accidentally placed up and lowered into the hole, the packer may not come out of the hole. The sliding-end could catch or jam and then the element would act as a compression packer.
4. Since the packer normally pulls down when inflating, allow the support pipe to move. The amount of movement is dependent on the packer size, construction, and borehole size. Failure to allow this movement can cause the element to pull out from its end, or pull a joint apart.

5. When using compressed gas to inflate packers, properly chain the cylinder and install a regulator rated for the desired inflation pressure. Before attaching the regulator, "crack" (quickly open and close) the cylinder valve to clean out any foreign matter. **Wear safety glasses.** Be aware of the initial cylinder pressure (usually 2 200 psi to 6 000 psi) and check that all fittings, valves and inflation tubing have a pressure rating above the desired inflation pressure. **Never inflate a packer in the open air.** Also, never exceed the maximum differential pressure rating or maximum inflation pressure and **never stand over the borehole or tube in which the packer is installed.**

	To From	Convert To	Multiply By
LENGTH	Microns	Inches	3.94E-05
	Millimeters	Inches	0.0394
	Meters	Feet	3.2808
AREA	Square millimeters	Square inches	0.0016
	Square meters	Square feet	10.7643
VOLUME	Cubic centimeters	Cubic inches	0.06101
	Cubic meters	Cubic feet	35.3357
	Liters	U.S. gallon	0.26420
	Liters	Can-Br gallon	0.21997
MASS	Kilograms	Pounds	2.20459
	Kilograms	Short tons	0.00110
	Kilograms	Long tons	0.00098
FORCE	Newtons	Pounds-force	0.22482
	Newtons	Kilograms-force	0.10197
	Newtons	Kips	0.00023
PRESSURE AND STRESS	Kilopascals	Psi	0.14503
	Bars	Psi	14.4928
	Inches head of water*	Psi	0.03606
	Inches head of Hg	PsI	0.49116
	Pascal	Newton / square meter	1
	Kilopascals	Atmospheres	0.00987
	Kilopascals	Bars	0.01
	Kilopascals	Meters head of water*	0.10199
TEMPERATUR E	Temp. in °F = (1.8 x Temp. in °C) + 32		
	Temp. in °C = (Temp. in °F - 32) / 1.8		

* at 4 °C

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Conversion Factors