



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

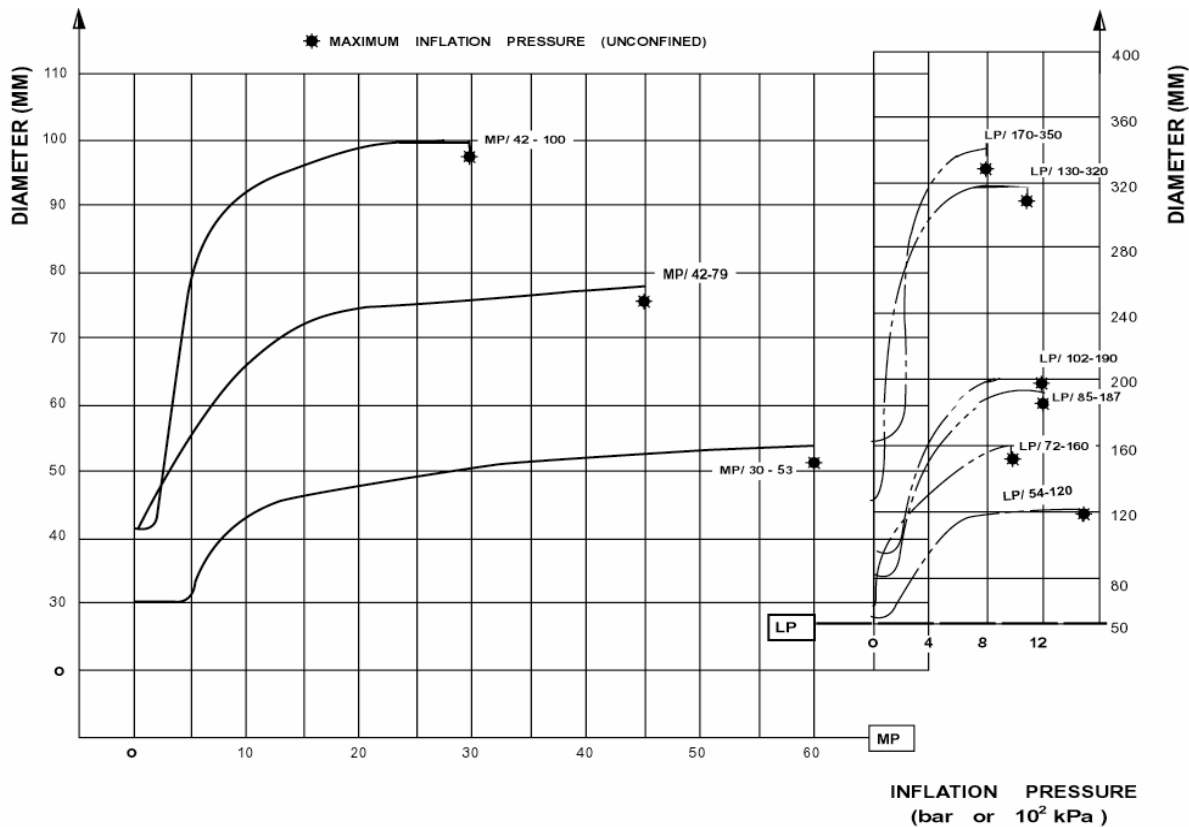
B. Working pressure (confined), in 100 kPa (psi), versus borehole diameter, in millimeters (inches):

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						
	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