PROFESSIONAL
ENVIRONMENTAL
PROTECTION
PRODUCTS

INDUSTRY, MUNICIPAL SANITARY SEWER

single and multi-size plugs of smaller diameters PLUGY and PLUGSY

They can be used in all types of pipelines. The range of products comprises single-size plugs used for sealing pipes of one diameter and multi-size plugs, in which case one plug size can be used for sealing pipelines of different diameters.

PLUGY sealing plugs are used in sewer pipes to stop flow, or as rear plugs when performing air test. In the rubber part of PLUGSY plugs a vulcanised threaded aluminium pipe is installed to enable flow of sewage through the plug. They are also used as front plugs when performing line acceptance testing with air.

All plugs are made of natural and synthetic rubber compound noted for good non-skid and compression abilities. Since plugs are not reinforced with cord they exhibit excellent stretching and sealing characteristics. They are made of anti-corrosive materials.

Sealing plugs PLUGY and PLUGSY up to size 200 mm are equipped with a tyre inflation valve, which is vulcanised into the plug. A chain fixed to the valve stem and a pear-shaped handle for easier carrying and lowering of a plug can also be of help in preventing slipping of a plug along the pipe.

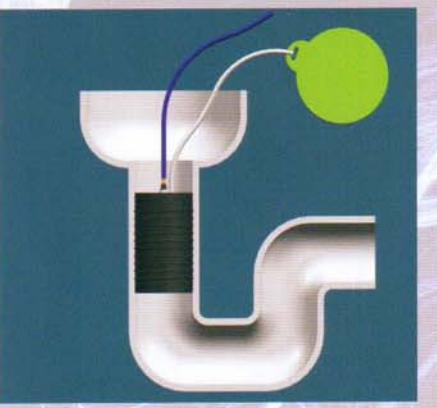
Plugs of other sizes are equipped with an inflation valve, which is easily replaced with a quick action coupling, if required. Eyelet bolts enable lifting and lowering of plugs when a poly-lift line is used.

60010

78905

FOLLOW INSTRUCTIONS

Oil-Resistant Plug
Available are also Plugy plugs up to diameter of 305 mm which are made of Chloroprene rubber and noted for resistance to oil and its derivates.



PLUGY - Blocking plug

Technical data

Part Number	Type PLUGY EU	Size Usage Range		Required Inflation Pressure	Deflated Plug		Product Weight	Eye Bolt	Inflation Valve
		Min. Dia.	Max. Dia.		Diameter	Length		M Thread	Thread Size
		mm	mm	bar	mm	mm	kg		
508123	**Z1**	20	33	2.5	19	98	0.02	/	Vg 8
60022	**Z1 1/2"**	33	40	2.5	32	100	0.07	NA	R 1/4"
78582	**Z2**	46	52	2.5	45	102	0.11	NA	R 1/4"
78603	**Z2-3**	46	77	2.5	45	110	0.11	NA	R 1/4"
76767	**Z3**	71	77	2.5	70	115	0.23	NA	R 1/4"
78604	**Z3-4**	71	102	2.5	70	130	0.25	NA	R 1/4"
76769	**Z4**	86	102	2.5	85	175	0.39	NA	R 1/4"
78605	**Z4-6**	86	153	2.5	85	195	0.42	NA	R 1/4"
76771	**Z6**	143	153	2.5	142	220	1.23	NA	R 1/4"
78606	**Z6-8**	143	204	2.5	142	250	1.32	NA	R 1/4"
60616	**Z8**	175	204	2.5	174	265	2.00	6	R 1/4"
60618	**Z10**	219	254	2.5	218	295	3.50	6	R 1/4"
60619	**Z12**	275	305	2.5	274	335	6.80	6	R 1/4"

PLUGSY - Bypass plug

Technical data

Part Number	Type PLUGSY	Size Usage Range		Required Inflation Pressure	Deflated Plug		Product Weight	Eye Bolt	Inflation Valve	Bypass Diameter (Female)
		Min. Dia.	Max. Dia.		Diameter	Length		M Thread	Thread Size	
		mm	mm	bar	mm	mm	kg			
78607	**S2**	46	52	2.5	45	110	0.17	6	-	1/8"
76768	**S3**	71	77	2.5	70	115	032	6	R 1/8"	1/2"
78614	**S3-4**	71	102	2.5	70	130	0.35	6	R 1/8"	1/2"
76770	**S4**	86	102	2.5	85	175	0.59	6	R 1/8"	1/2"
78609	**S4-6**	86	153	2.5	85	195	0.63	6	R 1/8"	1/2"
76772	**S6**	143	153	2.5	142	220	1.88	6	R 1/8"	1"
78610	**S6-8**	143	204	2.5	142	250	2.03	6	R 1/8"	1"
60621	**S8**	175	204	2.5	174	285	3.41	6	R 1/4"	2"
60622	**S10**	219	254	2.5	218	345	5.30	6	R 1/4"	2"
60623	**S12**	275	305	2.5	274	395	9.25	6	R 1/4"	2"

PLUGSY & PLUGSY - Back pressure measured in dry iron pipe (bar)

PLUGY's Size	Pipe Diameter (mm)								
	25	40	50	75	100	150	200	250	300
1"	**2.2**								
1 1/2"		**2.2**							
2"			**1.8**						
2"- 3"			**2.0**	**1.5**					
3"				**1.5**					
3"- 4"				**1.6**	**1.2**				
4"					**1.9**				
4"- 6"					**1.9**	**1.6**			
6"						**2.2**			
6"- 8"						**2.2**	**1.4**		
8"							**1.3**		
10"								**1.5**	
12"									**1.8**

Accessories

Code	Description	Weight Kg	Weight lbs
78904	Plug inflation hose fi 6 mm, 2 m	0.2	0.4
78905	Plug inflation hose fi 6 mm, 5 m	0.5	1.1
60010	Hand pump, 0 - 6 bar	0.8	1.7

multi-size long plugs PLUGY DC

Owing to their construction plugs can be easily inserted at an angle through connections into a main pipe; efficient sealing of both connections and a main pipe is guaranteed.

Plugs are used for testing tightness of pipes with air or water.

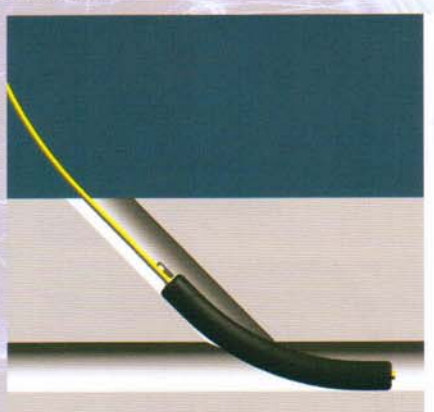
Long plugs are equipped with a 100 cm long supply hose, a chain and a pear-shaped handle.

PLUGY DC - Blocking plug

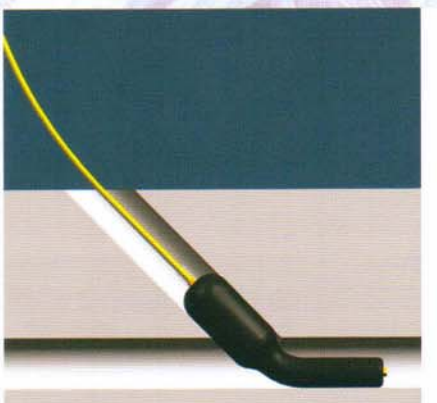
Technical data

Part Number	Type PLUGY	Size Usage Range		Required Inflation Pressure	Deflated Plug		Rubber Body Lenght	Product Weight	Inflation Valve
		Min. Dia.	Max. Dia.		Diameter	Length			
		mm	mm	bar	mm	mm	mm	kg	
60073	**DC 50-75**	50	75	2.5	40	550	490	0.7	TR 15
60074	**DC 75-100**	75	100	2.5	60	610	550	1.2	TR15
60075	**DC 100-150**	100	150	2.5	80	810	750	1.8	TR15
60076	**DC 150**	150	150	2.5	100	790	730	2.6	TR15

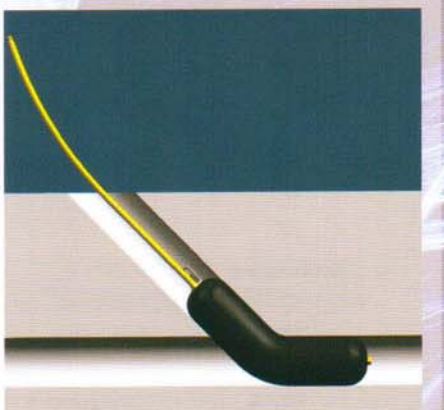
Insert the plug in the middle of a connection.



In the first phase the upper plug part is inflated to prevent liquid spills.



In the second phase the remaining part of the plug is inflated to completely stop the flow.



plugs for testing house connections

These plugs are suitable for testing tightness of plumbing and sewers with air or water in line with the European standard DIN EN 1610. Their use is simple and all the work can be done from one inlet opening gully only.

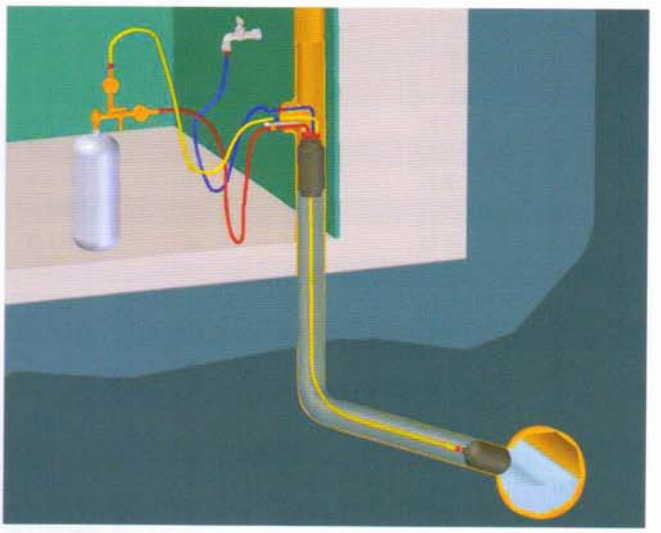
Handling and inflating these plugs runs independently. Plugs are made from natural and synthetic rubber, a combination, which is resistant to high back pressure, deformation and assures low wear. The plugs and hoses are corrosion resistant.

The product is noted for high quality, simple use, reliability and low air requirements.

There are four different sizes of sets for testing pipelines available from diameter 45 mm to 210 mm.

Technical data

Part Number	Type	Size Usage Range		Required Inflation Pressure	Max. Allowable Back Pressure	Diameter	Rubber Body Lenght	Opening for Insertion	Product Weight	Inflation Valve	Test Valve
		Min. Dia.	Max. Dia.								
		mm	mm	bar	bar	mm	mm	mm	kg	TIP	TIP
530333	**2 x G1 50-80**	45	80	3.0	1.0	45	280	35	1.36	26	26
530334	**2 x G2 80-130**	75	130	2.5	1.0	76	360	40	1.50	26	26
530335	**2 x G3 100-160**	100	160	2.0	1.0	98	420	45	1.67	26	26
530336	**2 x G4 150-210**	145	210	2.0	1.0	140	510	50	3.20	26	26



Accessories

Code	Description EU	Length (m)
530562	Push & inflation hose	0.5
530563	Push & inflation hose	1.0
530564	Push & inflation hose	3.0
530565	Push & inflation hose	5.0
530566	Push & inflation hose	10.0

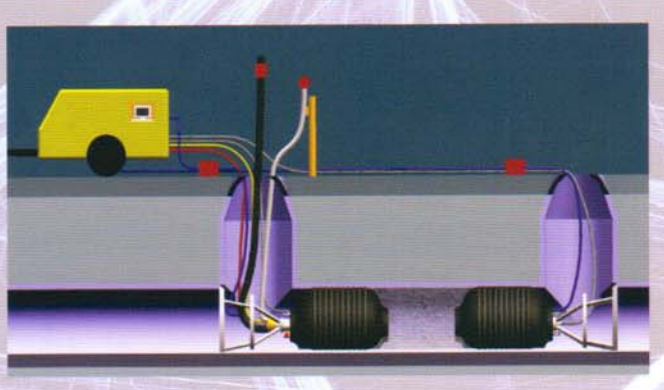
BEFORE INSERTION OF THE PNEUMATIC PLUG THOROUGHLY CLEAN THE PIPELINE

multi-size plugs for larger pipeline diameters PLUGY and PLUGSY

Superior plug surface pattern, proper choice of rubber compound, Rayon-Kevlar reinforcement, suitable length, low weight, excellent sealing ability, anti-corrosive components, a wide range of sizes and guaranteed safety at work are properties united in Sava PLUGY and PLUGSY plugs.

All plugs are equipped with quick action couplings for inflation, larger sizes have two couplings installed. The size and number of eyelet bolts depend on plug size. Plugs can be inserted through gullies of size 600 x 600 mm and since they are flexible, they can easily be bent at an angle up to 90°.

These all-purpose plugs are used for sealing and testing of pipeline tightness with air or water. Multi-size plugs are stretchable therefore only a few plugs are required to cover pipelines of different diameters.



Oil-Resistant Plug
Available are also Plugy & Plugsy plugs up to diameter of 1800 mm which are made of Chloroprene rubber and noted for resistance to oil and its derivates.

ALWAYS PROVIDE SUPPORT

PLUGY - Blocking plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	Deflated Plug		Product Weight	Eye Bolt M Thread	Inflation Valve
		Min. Dia.	Max. Dia.		Diameter	Length			
		mm	mm	bar	mm	mm	kg		Thread Size
519423	40-70	40	70	2.5	35	195	0.3	6	R 1/4"
519424	70-150	70	150	2.5	68	335	0.6	6	R 1/4"
60417	100-200	100	200	2.5	92	535	1.1	6	R 1/4"
526850	150-200	150	200	2.5	142	385	1.8	8	R 1/4"
60418	150-300	150	300	2.5	142	575	1.9	8	R 1/4"
60419	200-400	200	400	2.5	192	635	3.0	8	R 1/4"
60599	300-525	300	525	2.5	272	675	6.0	8	R 1/4"
60422	350-600	350	600	2.5	322	865	8.4	10	R 1/4"
60606	375-750	375	750	2.5	342	1085	10.9	10	R 1/4"
60453	500-800	500	800	2.5	472	1185	17.3	10	R 1/4"
60425	500-1000	500	1000	1.5	472	1185	17.3	10	R 1/4"
523941	600-1200	600	1200	1.5	574	1500	39.0	10	2 x R 3/8"
78959	750-1500	750	1500	1.0	600	2300	65.0	10	2 x R 1/4"
535881	800-1800	800	1800	1.0	600	2960	105	10	2 x R 1/4"

PLUGSY - Bypass plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation pressure	Deflated Plug		Product Weight	Eye Bolt M Thread	Inflation Valve Thread Size	Bypass Diameter (Female)
		Min. Dia.	Max. Dia.		Diameter	Length				
		mm	mm	bar	mm	mm	kg			
526849	70-150	70	150	2.5	68	350	1.7	6	R 1/4"	1/2"
60429	100-200	100	200	2.5	92	550	2.6	6	R 1/4"	1"
526851	150-200	150	200	2.5	142	420	3.2	8	R 1/4"	1"
60432	150-300	150	300	2.5	142	590	4.4	8	R 1/4"	1"
60434	200-400	200	400	2.5	192	635	6.3	8	R 1/4"	2"
60630	300-525	300	525	2.5	272	675	11.9	8	R 1/4"	2"
60440	350-600	350	600	2.5	322	865	16.6	10	R 1/4"	2"
60632	375-750	375	750	2.5	342	1085	19.7	10	R 1/4"	2"
60454	500-800	500	800	2.5	472	1185	31.3	10	R 1/4"	2"
60442	500-1000	500	1000	1.5	472	1185	31.3	10	R 1/4"	2"
523942	600-1200	600	1200	1.5	574	1500	46.0	10	2 x R 3/8"	4"
78960	750-1500	750	1500	1.0	600	2300	75.0	10	2 x R 1/4"	4"
535882	800-1800	800	1800	1.0	600	2960	117	10	2 x R 1/4"	4"

PLUGY & PLUGSY - Back pressure measured in dry iron pipe (bar)

Size	Pipe Diameter (mm)																		
	40	70	100	150	200	250	300	350	400	500	600	800	1000	1200	1300	1400	1500	1600	1700	1800
40-70	2.0	1.2																		
70-150		2.2	1.7	1.3																
100-200			2.2	1.7	1.3															
150-200				2.0	1.5															
150-300				2.2	2.0	1.4	1.2													
200-400					2.2	2.0	1.7	1.5	1.2											
300-525							2.0	1.7	1.5	1.2										
350-600								2.1	1.9	1.6	1.3									
375-750									2.0	1.7	1.4									
500-800										1.8	1.4	1.1								
500-1000										1.0	0.8	0.6	0.5							
600-1200											1.0	0.7	0.6	0.5						
750-1500												1.0	0.9	0.7	0.6	0.5	0.4			
800-1800												1.0	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.4

Accessories

Code	Description	Weight (kg)	Weight (lbs)
71248	Plug inflation hose with quick coupling and nipple, fi 8 mm, 10 m, blue	1.20	2.65
78070	Pressure read back hose with quick coupling and nipple, fi 8 mm, 10 m	1.30	2.87
60452	Air supply hose fi 19 mm, 5 m, to pressurize the pipe	1.40	3.09
76684	Air supply hose fi 8 mm, 5 m, to pressurize the pipe	0.70	1.54
60449	Adapter for air testing R1	0.50	1.10
60450	Adapter for air testing R2	0.60	1.32
60443	Adapter for air testing R4	1.50	2.65
60310	Single controller with pressure gauge, relief and ball valve; 2.5 bar	0.90	1.98
74609	Single controller with pressure gauge, relief and ball valve; 1.5 bar	0.90	1.98
74653	Single controller with pressure gauge, relief and ball valve; 1.0 bar	0.90	1.98
519442	Deadman 2.5 bar, single	1.20	2.65
60958	Polly lift hose 10 m	1.85	4.07

PROTECTIVE SLEEVES

Protective sleeves are available for larger diameter pipe plugs. They reduce the possibility of plug damage due to sharp objects or debris from damaged pipes. In coastal zones, barnacles and shells are a common problem that can cause punctures in pipe plugs if the pipes are not cleaned properly.

Eight standard sizes of protective sleeves are available. Handles on both sides facilitate pulling the sleeve over the plug.

Protective sleeves prevent superficial cuts on the plug surface. They do not affect the performance or back pressure values of the plugs. They extend the service life of a plug and are especially suitable for frequent users such as rental operations.

Part Number	Size Usage range mm	Lenght mm	Thickness mm	Product Weight kg
531489	100-200	400	2	0.3
525342	150-300	500	3	1
515570	200-400	600	4	1.6
536435	300-525	620	4	2.8
510395	350-600	800	4	3.5
510396	375-750	1000	4	4.6
510397	500-1000	1100	4	5.5
527496	600-1200	1300	6	18.6
510399	750-1500	2100	6	24.5
535884	800-1800	2300	6	29.7

BEFORE INSERTION OF THE PNEUMATIC PLUG THOROUGHLY CLEAN THE PIPELINE

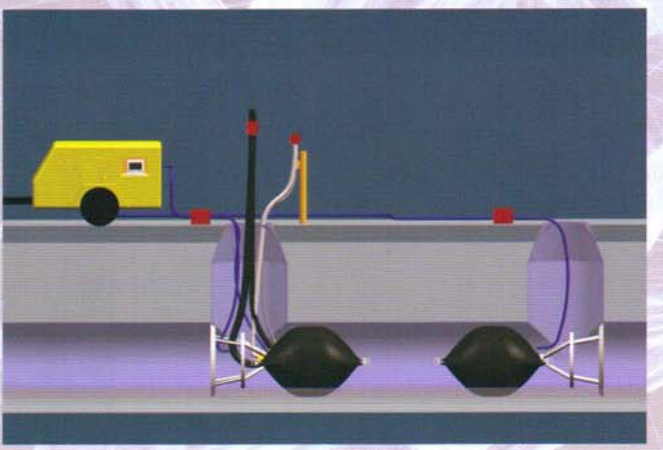
1. PNEUMATIC PIPE PLUGS

multi-size pillow-type plugs PLUGY and PLUGSY

Due to simple construction and high-quality materials these plugs are light and flexible during use and storage. The largest plugs for diameters up to 2000 mm can be inserted through a standard gully of 600 x 600 mm.

Handling these plugs is quick and simple both in round as well as oval or elliptical pipelines. They seal well all types of materials (concrete, plastics and iron). A special rubber compound is highly resistant to wear and ageing. A flexible 2" hose, which is easily replaced, is built in a by-pass plug. The plugs of this type are used for blocking water flow in pipelines and sewage systems as well as for air-tightness tests.

RELEASE BACK PRESSURE BEFORE DEFLATING



PLUGY PILLOW - Blocking plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	Maximum Allowable Back Pressure		Deflated Plug			Product Weight	Eye Bolt M Thread	Inflation Valve Thread Size
		Min. Dia.	Max. Dia.		Air Pressure	Water Head	Diameter	Width	Length			
		mm	mm	bar	bar	m	mm	mm	mm	kg		
529411	600 -1000	600	1000	1.0	0.7	7	580	910	2100	18	NA	2 x R 1/2"
529412	800 -1200	800	1200	0.9	0.6	6	780	1230	2500	29	NA	2 x R 1/2"
529413	1200 -1600	1200	1600	0.8	0.5	5	1170	1830	3200	51	NA	2 x R 1/2"
529414	1600-2000	1600	2000	0.6	0.4	4	1560	2450	4000	86	NA	2 x R 1/2"
529491	1900-2200	1900	2200	0.5	0.3	3	1850	2910	4800	100	NA	2 x R 1/2"

PLUGSY PILLOW - Bypass plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	Maximum Allowable Back Pressure		Deflated Plug			Product Weight	Eye Bolt M Thread	Inflation Valve Thread Size	Bypass Diameter (Female)
		Min. Dia.	Max. Dia.		Air Pressure	Water Head	Diameter	Width	Length				
		mm	mm	bar	bar	m	mm	mm	mm	kg			
529415	600-1000	600	1000	1.0	0.7	7	590	920	1900	23	NA	2 x R 1/2"	2"
529416	800-1200	800	1200	0.9	0.6	6	790	1250	2300	34	NA	2 x R 1/2"	2"
529417	1200-1600	1200	1600	0.8	0.5	5	1190	1870	2850	57	NA	2 x R 1/2"	2"
529418	1600-2000	1600	2000	0.6	0.4	4	1590	2500	3700	92	NA	2 x R 1/2"	2"
529492	1900-2200	1900	2200	0.5	0.3	3	1850	2910	4800	100	NA	2 x R 1/2"	2"

519817

504061

Accessories

Code	Description	Weight (kg)	Weight (lbs)
519817	Plug inflation hose with GEKA coupling, fi 19 mm, 10 m, yellow	3.00	6.60
504061	Double controller with pressure gauge, relief and ball valve, 1 bar	2.00	4.40

1. PNEUMATIC PIPE PLUGS

multi-size plugs with larger flows PLUGSY VP

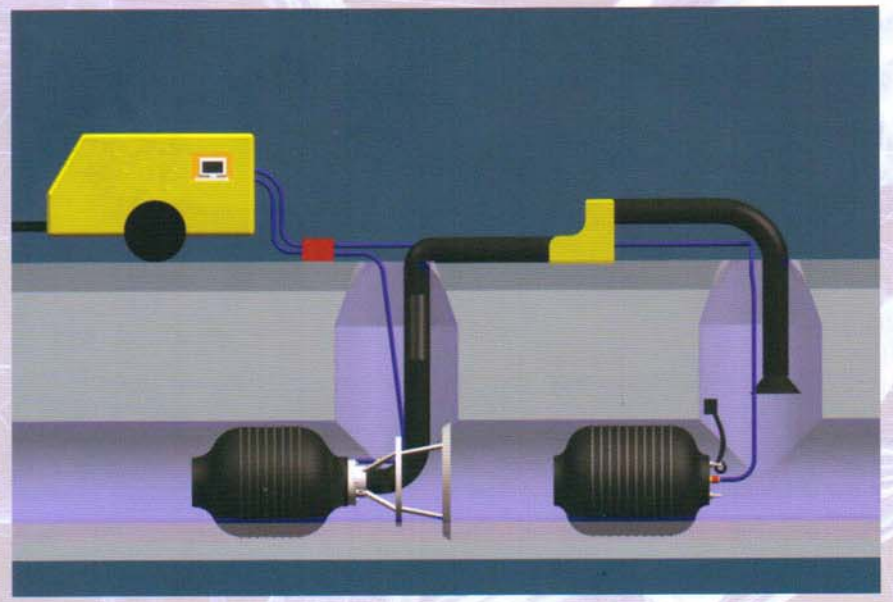
These plugs cover the range from 100 to 1800 mm. Replaceable rubber sleeve and installed material do not corrode. They are reinforced with Kevlar cord and assure safe and simple handling.

The construction itself ensures flow of larger amounts of sewage through the plug. Use of plugs for testing tightness with air or water is also possible.

By-pass plug is made of PPH hose and equipped with a threaded aluminium flange on the front side. The aluminium flange can easily be replaced to adjust the flow to the actual situation and requirements.

All plugs are equipped with quick action couplings for inflation. The number and size of installed eyelet bolts depend on the plug size.

DEFLATE PLUG BEFORE REMOVAL



PLUGSY VP - Bypass plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	Deflated Plug		Product Weight	Eye Bolt M Thread	Inflation Valve Thread Size	Bypass Diameter (Female)
		Min. Dia.	Max. Dia.		Diameter	Length				
		mm	mm	bar	mm	mm	kg			
516942	100-150	98	150	2.5	96	410	2.1	6	Not removable	2"
516943	150-250	148	250	2.0	146	560	4.8	6	Not removable	3" (2")
516944	200-300	198	300	2.0	194	610	8.3	6	Not removable	4" (2")
60967	150-300	150	300	1.5	142	605	4.3	8	-	2"
60968	200-400	200	400	1.5	192	670	7.0	8	-	4" (2")
533539	300-525	300	525	1.5	272	710	12.6	10	R 1/4"	6" (4", 2")
60970	350-600	350	600	1.5	322	910	20.0	10	R 1/4"	6" (4", 2")
60971	500-1000	500	1000	1.5	472	1230	41.0	10	R 1/4"	8" (6", 4" ,2")
535873	600-1200	600	1200	1.5	570	1450	59.0	12	2 x R 1/2"	6"
535874	600-1200	600	1200	1.5	570	1450	66.0	12	2 x R 1/2"	8"
535876	750-1500	750	1500	1.0	600	2300	79.0	12	2 x R 1/2"	6"
535878	750-1500	750	1500	1.0	600	2300	83.0	12	2 x R 1/2"	8"
535879	800-1800	800	1800	1.0	600	2960	121.0	12	2 x R 1/2"	6"
535880	800-1800	800	1800	1.0	600	2960	125.0	12	2 x R 1/2"	8"

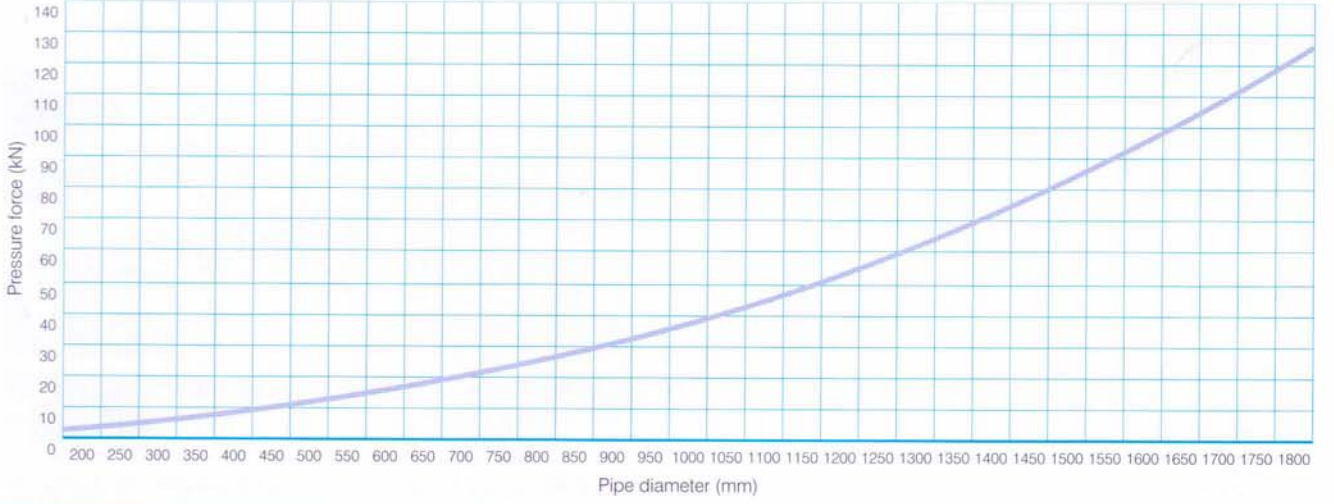
Back pressure measured in dry iron pipe (bar)

PLUGSY	Pipe Diameter (mm)												
	100	150	200	250	300	350	400	500	600	700	800	900	1000
Size													
100-150	**1.0**	**0.8**											
150-250		**1.0**	**0.8**	**0.6**									
200-300			**1.0**	**0.8**	**0.6**								
150-300		**1.0**	**0.8**	**0.7**	**0.6**								
200-400			**1.1**	**0.9**	**0.7**	**0.6**	**0.6**						
300-525					**1.0**	**0.9**	**0.7**	**0.5**					
350-600						**0.9**	**0.8**	**0.7**	**0.6**				
500-1000								**1.1**	**0.9**	**0.8**	**0.7**	**0.6**	**0.6**

Back pressure measured in dry iron pipe (bar)

PLUGSY	Pipe Diameter (mm)									
	600	800	1000	1200	1300	1400	1500	1600	1700	1800
Size										
600-1200	**1.0**	**0.7**	**0.6**	**0.5**						
750-1500		**1.0**	**0.9**	**0.7**	**0.6**	**0.5**	**0.4**			
800-1800		**1.0**	**1.0**	**0.8**	**0.7**	**0.6**	**0.5**	**0.5**	**0.4**	**0.4**

Force in plug as result of back pressure 0.5 bar



plugs for gully (manholes) testing PLUGSY VJ

501841

Common size of gullies is 610 mm.

For testing tightness of such gullies Sava offers a special plug distinguished for simple handling. The plug is relatively short and light, equipped with three eyelet bolts for simple vertical positioning of a plug during insertion procedure.

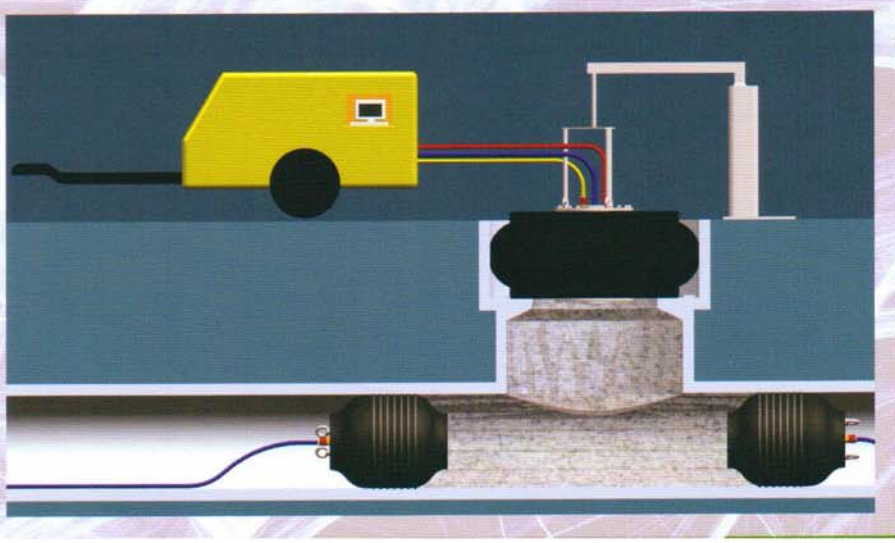
Standard accessories compatible with other Sava plugs are available for testing tightness with air.

538201
535889
535890

PLUGSY VJ - Bypass plug

Technical data

Type PLUGSY	Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	Deflated Plug		Product Weight	Inflation Valve	Bypass Diameter
			Min. Dia.	Max. Dia.		Diameter	Lenght			
			mm	mm	bar	mm	mm	kg		
VJ 600-650	**501841**	600-650	600	650	1.5	560	360	16	R 1/4"	R 2"
VJ 600	**538201**	600	590	600	0.5	582	200	3.70	R 1/4"	R 2"
VJ 800	**535889**	800	780	800	0.5	770	200	5.00	R 1/4"	R 2"
VJ 1000	**535890**	1000	980	1000	0.5	970	200	6.50	R 1/4"	R 2"



NEVER CLEAN WITH SOLVENTS AND OTHER AGRESSIVE AGENTS

multi-size high-pressure plugs PLUGY HP 6 and 12 bar

These plugs are reinforced with Kevlar cord. Special reinforcements on the top and bottom of plugs as well as a double layer of cord fabric with 12 bar plugs assure safety at higher pressure.

These plugs are used for sealing pipelines where higher back pressure appears and therefore cannot be sealed with ordinary plugs.

Five sizes of plugs are available for both 6 bar and 12 bar plugs. All plugs are equipped with eyelet bolts as well as quick action couplings for inflating and deflating.

PLUGY HP 6 bar - Blocking plug

Technical data

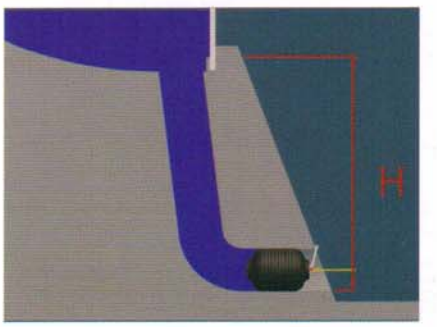
Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	MAX Alow. Back Pressure Air Pressure	Deflated Plug		Product Weight	Eye Bolt M Thread	Inflation Valve Thread Size
		Min. Dia.	Max. Dia.			Diameter	Length			
		mm	mm	bar	bar	mm	mm	kg		
60887	100-150	100	150	6	3	92	535	1.2	6	R 1/4"
60907	150-200	150	200	6	3	142	575	2.0	8	R 1/4"
60908	200-300	200	300	6	3	192	635	3.2	8	R 1/4"
60909	350-500	350	500	6	3	322	865	8.7	8	R 1/4"
60924	500-600	500	600	6	3	472	1185	18.0	10	R 1/4"

PLUGY HP 12 bar - Blocking plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	MAX Alow. Back Pressure Air Pressure	Deflated Plug		Product Weight	Eye Bolt M Thread	Inflation Valve Thread Size
		Min. Dia.	Max. Dia.			Diameter	Length			
		mm	mm	bar	bar	mm	mm	kg		
518561	100-125	100	125	12	10	92	540	1.5	6	R 1/4"
518562	150	150	150	12	10	142	580	2.7	8	R 1/4"
518563	200-250	200	250	12	10	192	640	4.3	8	R 1/4"
518564	300-350	300	350	12	10	272	670	8.0	8	R 1/4"
518565	400	400	400	12	10	322	870	11.5	10	R 1/4"
518566	500	500	500	12	10	472	1190	24.1	10	R 1/4"

PNEUMATIC PLUG MAY NOT SPACE OUT OF THE PIPE



multi-size high-pressure plugs PLUGY HP 30 bar

Requests for higher back pressure rates especially for small pipe diameters lead Sava to design and manufacture four different sizes of high pressure inflatable plugs. Plugs are used for sealing and testing of pipeline tightness with air or water. All plugs are steel reinforced, having all metal parts in stainless steel.

Plugy HP 30 bar - Blocking plug

Technical data

Code Bypass plugs	Dimension	Size usage range	Working pressure	Back pressure	Total length	Length rubber sleeve	Weight
		mm	bar	bar	mm	mm	kg
538625	Ø 54x400	55-75	30	16	615	400	3
533837	Ø 73x400	75-100	30	16	600	400	3,5
533838	Ø 88x400	100-150	30	16	614	400	6
533839	Ø122x400	150-200	30	16	621	400	112

PLUGSY HP 30 bar - Bypass plug

Technical data

Code Bypass plugs	Dimension	Size usage range	Required Inflation Pressure	MAX Alow. Back Pressure Air Pressure	Flow through	Bypass	Total length	Length rubber sleeve	Weight
		mm	bar	bar	mm	thread ["]	mm	mm	kg
537553	Ø 54x400	55-75	30	16	10	3/8	615	400	3,6
537661	Ø 73x400	75-100	30	16	15	1/2	600	400	5,7
537323	Ø 88x400	100-150	30	16	20	3/4	614	400	9
537672	Ø122x400	150-200	30	16	25	1	621	400	15,2

DEFLATE PLUG BEFORE REMOVAL

multi-size plugs PLUGY G and PLUGSY GM

These plugs are used for sealing and testing of pipelines and gas pipelines with a restricted inlet area.

Six different dimensions cover a range from 50 to 500mm. Owing to their innovative design and flexibility plugs are easy to handle and insert. Plugs are noted for their resistance to a high back pressure, quality make and a long service life.

All metal parts are made of stainless and non-sparking materials. If a measuring and a sealing plug are connected, pipelines can be tested with water or air. Simple use assures quality work from one inlet opening only.

There are two types of gas plugs available: a sealing and a measuring plug.

PLUGY G - Blocking plug

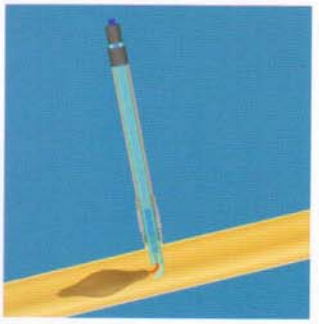
Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	MAX Alow. Back Pressure	Deflated Plug		Opening for Insertion	Product Weight	Inflation Valve
		Min. Dia.	Max. Dia.			Diameter	Length			
		mm	mm	bar	bar	mm	mm	mm	kg	
511807	50 - 80	45	80	3.0	1.0	45	280	35	0.29	R 1/4"
511808	80 - 130	75	130	2.5	1.0	76	360	40	0.37	R 1/4"
511809	100 - 160	100	160	2.0	1.0	98	420	45	0.56	R 3/8"
511810	150 - 210	145	210	2.0	1.0	140	510	50	0.78	R 3/8"
511811	200 - 315	200	315	2.0	1.0	200	730	70	1.25	R 3/8"
519420	315 - 500	315	500	1.5	0.8	315	950	90	1.45	R 3/8"

PLUGSY GM - Bypass plug

Technical data

Part Number	Nominal Size EU	Size Usage Range		Required Inflation Pressure	MAX Alow. Back Pressure	Deflated Plug		Opening for Insertion	Product Weight	Inflation Valve	Bypass Diameter (Female)
		Min. Dia.	Max. Dia.			Diameter	Length				
		mm	mm	bar	bar	mm	mm	mm	kg		mm
511812	50 - 80	45	80	3.0	1.0	45	490	35	0.71	R 1/4"	5
511813	80 - 130	75	130	2.5	1.0	76	570	40	0.79	R 1/4"	5
511814	100 - 160	100	160	2.0	1.0	98	645	45	1.01	R 3/8"	7
511815	150 - 210	145	210	2.0	1.0	140	760	50	1.22	R 3/8"	7
511816	200 - 315	200	315	2.0	1.0	200	1060	70	1.72	R 3/8"	7
519421	315 - 500	315	500	1.5	0.8	315	1280	90	1.90	R 3/8"	7



FLEXIBLE PACKERS

Suitable for repair of damaged pipeline sections and joints. In combination with resins and reinforcement materials they assure tightness and proper static strength of a pipeline.

Sava packers are made of special, cord-reinforced rubber, which provides excellent stretching characteristic and is wear resistant.

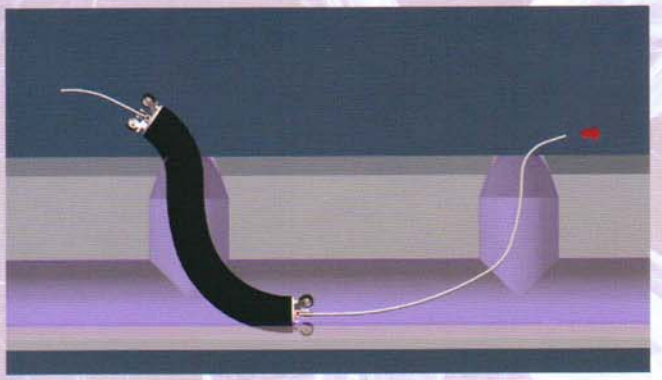
All installed parts are resistant to corrosion.

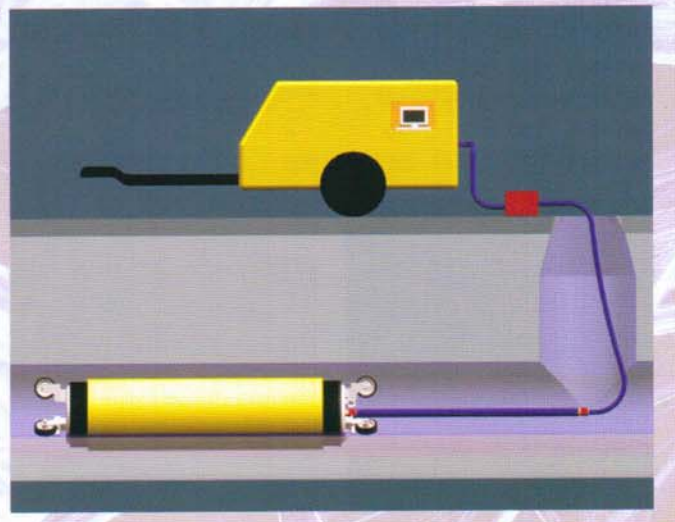
On each side of a packer there are three wheels attached at an angle of 120° to ensure stability and prevent tipping over while moved along the pipe.

Design of all packers assures a maximum flow, except a 10-15 packer, which does not have a by-pass installed.

Packers are flexible and can be inserted at an angle. They are available in a variety of sizes and cover pipe diameters from 100 mm to 1200 mm. The effective packer length ranges from 600 mm to 4500 mm.

ALWAYS CHOOSE THE PROPER SIZE OF PNEUMATIC PACKER





FLEXIBLE PACKERS

Technical data

Part Number	Nominal Size EU		Size Usage Range		Required Inflation Pressure	Product Weight	Deflated Packer		Bypass Diameter Female	Rubber Body Length
			Min. Dia.	Max. Dia.			Length	Diameter		
	EU	m	mm	mm	bar	kg	mm	mm		mm
78214	10-15	1.0	100	150	2.5	2.1	1080	65	NA	1000
78266	10-15	2.0	100	150	2.5	3.5	1980	65	NA	1900
78218	10-15	2.5	100	150	2.5	3.6	2580	65	NA	2500
78231	10-15	3.0	100	150	2.5	4.2	3080	65	NA	3000
78244	10-15	4.0	100	150	2.5	5.0	4080	65	NA	4000
78283	10-15	5.0	100	150	2.5	6.0	4980	65	NA	4900
77240	15-25	1.0	150	250	2.0	8.3	1210	112	2"	1000
77614	15-25	2.0	150	250	2.0	11.0	2110	112	2"	1900
60846	15-25	2.5	150	250	2.0	12.7	2710	112	2"	2500
60497	15-25	3.0	150	250	2.0	13.9	3210	112	2"	3000
60556	15-25	4.0	150	250	2.0	17.4	4210	112	2"	4000
60585	15-25	5.0	150	250	2.0	20.5	5110	112	2"	4900
77241	30-40	1.0	300	400	1.5	18.0	1370	210	3"	1120
77680	30-40	2.0	300	400	1.5	22.0	2340	210	3"	2120
60525	30-40	2.5	300	400	1.5	25.0	2810	210	3"	2620
60587	30-40	3.0	300	400	1.5	27.0	3300	210	3"	3120
60593	30-40	4.0	300	400	1.5	32.0	4280	210	3"	4120
60594	30-40	5.0	300	400	1.5	37.0	5060	210	3"	4880
77242	45-60	1.0	450	600	1.2	33.0	1350	340	3"	1120
78718	45-60	2.0	450	600	1.2	43.0	2240	340	3"	2020
60526	45-60	2.5	450	600	1.2	48.0	2790	340	3"	2620
78860	45-60	3.0	450	600	1.2	53.0	3060	340	3"	2880
65027	60-80	1.5	600	800	1.0	50.0	1840	400	3"	1620
60120	60-80	2.0	600	800	1.0	55.0	2240	400	3"	2020
60527	60-80	2.5	600	800	1.0	61.0	2790	400	3"	2620
60598	60-80	3.0	600	800	1.0	65.0	3060	400	3"	2880
78015	80-100	1.5	800	1000	1.0	63.3	1780	535	3"	1540
79186	100-120	2.0	1000	1200	1.0	70.0	2180	535	3"	1960

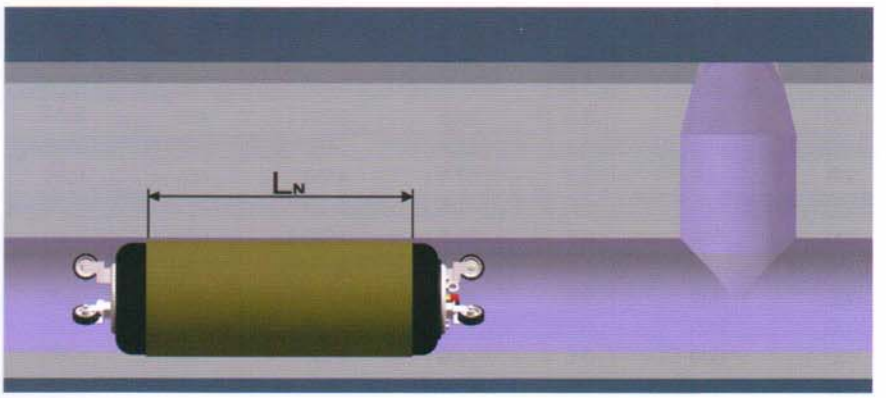
How to calculate the contact area of the packer

Flex packers

Size	
10-15:	$Ln = Lg - (\pi * (D - (d - 15))/2) - 140$
15-25:	$Ln = Lg - (\pi * (D - (d - 22))/2) - 180$
30-40, 45-60, 60-80:	$Ln = Lg - (\pi * (D - (d - 25))/2) - 60$
80-100, 100-120:	$Ln = Lg - (\pi * (D - (d - 15))/2) - 210$

Legend

Ln ... contact length (mm)
Lg ... packer rubber body length (sleeve) (mm)
D ... pipeline diameter, for which contact length is calculated (mm)
d ... deflated packer diameter (mm)



LONG PACKERS

LONG PACKERS

These packers are distinguished for the most economical construction. On each side of a rubber sleeve rubber flanges are mounted equipped with quick action couplings for inflating and deflating, as well as two eyelet bolts on each side for fixing a rope for insertion, transporting and pulling out. These packers are not equipped with wheels or by-pass.

Available are packers for use in pipes with diameter 200 to 800 mm. The effective packer length is between 1000 mm and 4500 mm.

ALWAYS PROTECT THE PACKER AGAINST CHEMICALS

LONG PACKERS

Technical data

Part Number	Nominal Size		Size Usage Range		Required Inflation Pressure	Product Weight	Deflated Packer		Rubber Body Length
			Min. Dia.	Max. Dia.			Length	Diameter	
	EU	m	mm	mm	bar	kg	mm	mm	mm
78256	20-30	1.5	200	300	1.5	4.3	1600	145	1500
67042	20-30	2.0	200	300	1.5	5.1	2100	145	2000
78257	20-30	2.5	200	300	1.5	5.8	2600	145	2500
77386	20-30	3.0	200	300	1.5	6.6	3100	145	3000
78258	20-30	4.0	200	300	1.5	8.0	4100	145	4000
77237	20-30	5.0	200	300	1.5	9.5	5000	145	4900
78259	30-40	1.5	300	400	1.5	9.0	1600	245	1500
77925	30-40	2.0	300	400	1.5	10.1	2100	245	2000
77926	30-40	2.5	300	400	1.5	11.1	2600	245	2500
78260	30-40	3.0	300	400	1.5	12.3	3100	245	3000
78261	30-40	4.0	300	400	1.5	14.4	4100	245	4000
78262	30-40	5.0	300	400	1.5	16.7	5000	245	4900
78263	40-50	1.5	400	500	1.0	17.3	1650	340	1500
77553	40-50	2.0	400	500	1.0	18.8	2150	340	2000
77239	40-50	2.5	400	500	1.0	20.6	2650	340	2500
78264	40-50	3.0	400	500	1.0	22.4	3050	340	2900
78265	40-50	4.0	400	500	1.0	28.5	4150	340	4000
77238	40-50	5.0	400	500	1.0	32.5	5050	340	4900
60179	50-60	1.5	500	600	0.8	24.2	1650	405	1500
67040	50-60	2.0	500	600	0.8	27.0	2150	405	2000
60190	50-60	2.5	500	600	0.8	29.8	2650	405	2500
70072	50-60	3.0	500	600	0.8	33.3	3150	405	3000
70218	50-60	4.0	500	600	0.8	37.5	4150	405	4000
70066	50-60	5.0	500	600	0.8	41.8	5050	405	4900
60758	60-80	1.5	600	800	0.6	38.5	1650	535	1500
60759	60-80	2.0	600	800	0.6	42.3	2050	535	1900
60760	60-80	2.5	600	800	0.6	45.8	2650	535	2500
60761	60-80	3.0	600	800	0.6	49.0	3150	535	3000
60763	60-80	4.0	600	800	0.6	56.0	4150	535	4000
60764	60-80	5.0	600	800	0.6	63.0	5050	535	4900

LATERAL PACKERS

PACKER HP-K

Sava lateral packers are suitable for repairs of pipes with smaller diameters, especially in house connection installations. These packers are rounded on both ends in order to simplify handling and slipping past bends. They are equipped with quick couplings and eyelet bolts. Five sizes are available: for pipes of diameter 35-50 mm, 50-75 mm, 70-100 mm, 100-150 mm and 150-200 mm.

LATERAL PACKERS

Technical data

Part Number	Nominal Size		Size Usage Range		Required Inflation Pressure	Product Weight	Deflated Packer		Bypass Diameter Female	Rubber Body Length
			Min. Dia.	Max. Dia.			Length	Diameter		
	EU	m	mm	mm	bar	kg	mm	mm		mm
529897	3.5 - 5	0.7	35	50	2.5	0.40	765	26	NA	700
530785	3.5 - 5	1.0	35	50	2.5	0.55	1065	26	NA	1000
530786	3.5 - 5	1.5	35	50	2.5	0.80	1565	26	NA	1500
530787	3.5 - 5	2.0	35	50	2.5	1.00	2065	26	NA	2000
542187	5- 7.5	0.7	50	75	3.0	0.60	765	30	NA	700
281246	5- 7.5	1.0	50	75	3.0	0.70	1065	30	NA	1000
543422	5- 7.5	1.5	50	75	3.0	1.00	1565	30	NA	1500
543423	5- 7.5	2.0	50	75	3.0	1.50	2065	30	NA	2000
543423	5- 7.5	3.0	50	75	3.0	2.00	3065	30	NA	3000
60052	7-10	0.6	70	100	2.5	0.50	720	45	NA	600
60053	7-10	1.0	70	100	2.5	0.60	1120	45	NA	1000
60059	7-10	1.5	70	100	2.5	0.70	1620	45	NA	1500
60060	7-10	2.0	70	100	2.5	0.90	2120	45	NA	2000
60061	7-10	3.0	70	100	2.5	1.30	3120	45	NA	3000
60069	7-10	4.0	70	100	2.5	1.60	4120	45	NA	4000
60081	7-10	5.0	70	100	2.5	1.90	5020	45	NA	4900
60307	10-15	0.6	100	150	2.5	0.95	720	65	NA	600
60308	10-15	1.0	100	150	2.5	1.20	1120	65	NA	1000
60309	10-15	1.5	100	150	2.5	1.55	1620	65	NA	1500
60311	10-15	2.0	100	150	2.5	1.95	2120	65	NA	2000
60461	10-15	3.0	100	150	2.5	2.65	3120	65	NA	3000
60492	10-15	4.0	100	150	2.5	3.55	4120	65	NA	4000
60298	10-15	5.0	100	150	2.5	4.15	5020	65	NA	4900
60314	15-20	0.6	150	200	2.5	1.30	720	85	NA	600
60330	15-20	1.0	150	200	2.5	1.70	1120	85	NA	1000
60331	15-20	1.5	150	200	2.5	2.20	1620	85	NA	1500
60343	15-20	2.0	150	200	2.5	2.70	2120	85	NA	2000
60516	15-20	3.0	150	200	2.5	3.70	3120	85	NA	3000
60955	15-20	4.0	150	200	2.5	4.70	4120	85	NA	4000
60005	15-20	5.0	150	200	2.5	5.80	5020	85	NA	4900

PACKER HP-T90°

Thanks to an excellent choice of rubber compound and the packer construction we make repairs in bent parts of pipelines which run at an angle of 45, 60 and 90° possible. Having in mind problems that arise at inserting and pushing packers through pipeline bends the rigid parts of packer ends are made as short as possible

PACKER HP-T90°

PACKER HP-T90°

Technical data

Part Number	Nominal Size		Size Usage Range		Required Inflation Pressure	Product Weight	Deflated Packer		Contact Area		Rubber Body Length
			Min. Dia.	Max. Dia.			Length	Diameter	Length	Diameter	
	EU	m	mm	mm	bar	kg	mm	mm	mm	mm	mm
525957	70-80	1.0	70	80	2	1.1	1120	45	800	750	1000
525960	100-125	1.0	100	125	2	2.1	1120	65	800	750	1000
525963	150-165	1.0	150	165	2	3.2	1120	85	800	750	1000
525959	180-205	1.0	180	205	2	5.5	1120	105	800	750	1000

How to calculate the contact area of the packer

Long packers

Size

$Ln = Lg - (\pi * (D - (d - 15))/2) - 210$

Lateral packers

Size

7 - 10: $Ln = Lg - (\pi * (D - (d - 15))/2) - 120$

10 - 15: $Ln = Lg - (\pi * (D - (d - 15))/2) - 140$

15 - 20: $Ln = Lg - (\pi * (D - (d - 15))/2) - 180$

Legend

Ln ... contact length (mm)
Lg ... packer rubber body length (sleeve) (mm)
D ... pipeline diameter, for which contact length is calculated (mm)
d ... deflated packer diameter (mm)

ALWAYS PROTECT THE PACKER AGAINST CHEMICALS

SHORT PACKERS

Short packers have a replaceable double-layer rubber sleeve mounted on a PPH tube. All other parts installed in a packer are made of corrosion resistant materials.

On each side of the packer three wheels are attached at an angle of 120° to prevent tipping over while transported along the pipeline.

The effective packer length is 600 mm therefore they are suitable for repair of pipeline joints or repair of shorter pipeline sections along with insertion of stainless steel shells.

SHORT PACKERS

Technical data

Part Number	Nominal Size	Size Usage Range		Required Inflation Pressure	Product Weight	Deflated Packer		Bypass Diameter	Rubber Body Length
		Min. Dia.	Max. Dia.			Length	Diameter		
		mm	mm	bar	kg	mm	mm		mm
76646	15-20	150	200	2.0	6.2	960	115	80	800
76647	25-30	250	300	2.0	12.6	1010	205	160	800
76821	30-35	300	350	1.5	16.9	1010	250	200	800
76648	35-40	350	400	1.5	19.2	1010	305	260	800
76649	45-50	450	500	1.5	29.8	1010	380	325	800
78247	60-70	600	700	1.0	50.2	1180	465	390	970

How to calculate the contact area of the packer

Short packers

Size

$$Ln = Lg - (\pi * (D - (d - 25))/4) - 80$$

Legend

- Ln ... contact length (mm)
- Lg ... packer rubber body length (sleeve) (mm)
- D ... pipeline diameter, for which contact length is calculated (mm)
- d ... deflated packer diameter (mm)

FOLLOW INSTRUCTIONS FOR POSITIONING OF WHEELS

MATERIALS AND TABLE OF RESISTANCE

MATERIALS AND TABLE OF RESISTANCE BUIL-IN MATERIALS

Product type	Rubber	Reinforcement	Other components
Pneumatic plug, rehabilitation packer	A	None, Rayon, Kevlar cord	Aluminium, steel, brass, hot galvanized iron
Pneumatic plug resistant to oil	B	Rayon, Kevlar cord	Brass

TABLE OF RESISTANCE

Chemical	Conc %	Temp C	A	B
Acetone		RT	0	-
Acetylene			+	+
Ammonium Hydroxide	10	RT	+	+
	conc	RT	+	0
Aniline		RT	0	-
		100	-	-
Benzene		RT	-	-
Boric Acid	10	100	+	+
Brake Fluid (Vegetable)		50	+	-
Butanol		50	+	+
		100	-	+
Butyric Acid		RT		-
Calcium Hydroxide		100	+	0
Calcium Hypochlorite	15	RT	+	-
Chloric Acid	20	RT		-
Diesel Oil			-	+
Ethanol		50	+	+
Ether		RT	-	0
Formaldehyde	40	RT	+	+
	40	70		-
Glycerol (Glycerine)		100	+	+
Hexanol		RT	+	0
Hydrogen Peroxide	30	RT	-	-
	90	RT	-	-
Kerosene		70	-	+
Methanol		50	+	+
Methyl Chloride			-	-
Milk			+	+
Mineral Oil No. 1		100	-	+
Mineral Oil No. 2		100	-	+
Mineral Oil No. 3		100	-	+
Naphtha		RT	-	+
Natural Gas			-	+
Nitric Acid Diluted	10	50	0	0
Ozone	50 pphm	40	-	-
Phenol		100	-	-
Phosphoric Acid	60	50	0	-
Propanol		50	+	0
Sodium Hydroxide	12	100	+	+
	25	100	+	-
Sodium Hypochlorite	10	50	0	-
Sulfur Hexafluoride				-
Sulfuric Acid	10	100	+	-
	20	RT	+	+
	50	100	+	+
	60	100	-	-
	75	100	-	-
	96	RT	-	-
Toluene		RT	-	-

+ Resistant, 0 Conditionally resistant, - non-resistant