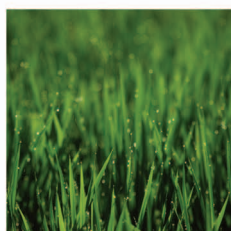
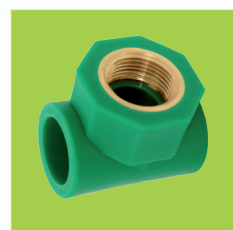


**PP-R**  
cevi i fitting





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**ЗАСТАПНИШТВО ЗА МАКЕДОНИЈА: ПЕШТАН-СРБИЈА**  
**REPRESENTATIVE FOR MACEDONIA: PESTAN-SRBIJA**

**PP-R**  
cevi i fitting

## Cevi i fitting za snabdevanje hladnom i toplom vodom

Sirovine za proizvodnju PP-R cevi definisao je standard SRPS-ISO-EN15874

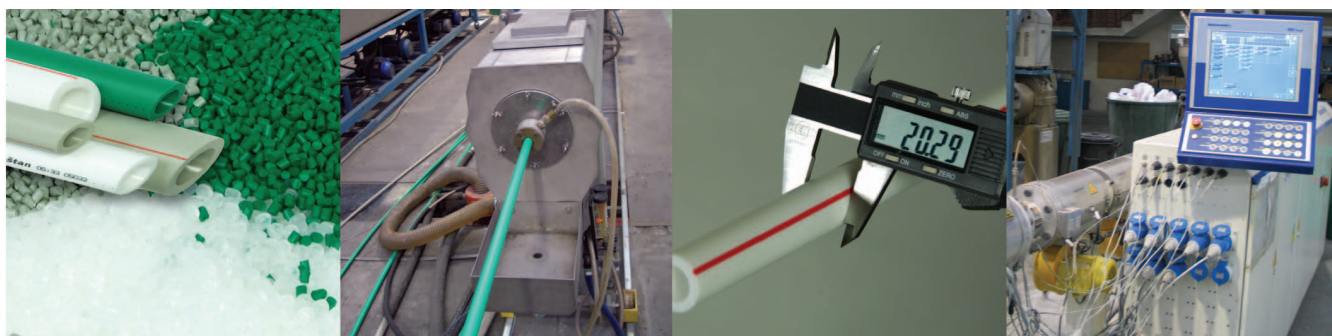
Kvalitet ovog materijala se kontroliše u Institutu za brigu o zdravlju Republike Srbije, kao i nezavisnim-sertifikovanim laboratorijama kao što je Bodycote. Koriste se samo materijali koji imaju dokaz o MRS klasifikaciji i koji su na Evropskoj listi.

### Primena

PP-R cevi se koriste kod instalacija tople i hladne higijensko-sanitarne vode. Mogu u potpunosti da zamene pocinkovane cevi za korišćenje pijaće vode, pa čak i u slučajevima visokog sadržaja kalcijuma (Ca). Takođe se koriste i kod otpreme pijaćih tečnosti, navodnjavanja u staklenicima i baštama, isporuke vazduha pod pritiskom, vakuum instalacija, u hemijskoj industriji kod protoka različitih vrsta tečnosti, kao i kod otpreme morske vode i visoko abrazivnih tečnosti. Često se koriste i kod radijatorskog grejanja, kao i kod podnog grejanja i klima uređaja. Njihova mala težina i visoka tolerancija na vibracije su pogodni za primene u vozovima, brodovima, kamionima, kamp prikolicama, u agresivnom okruženju, kao i na nestabilnom zemljištu.

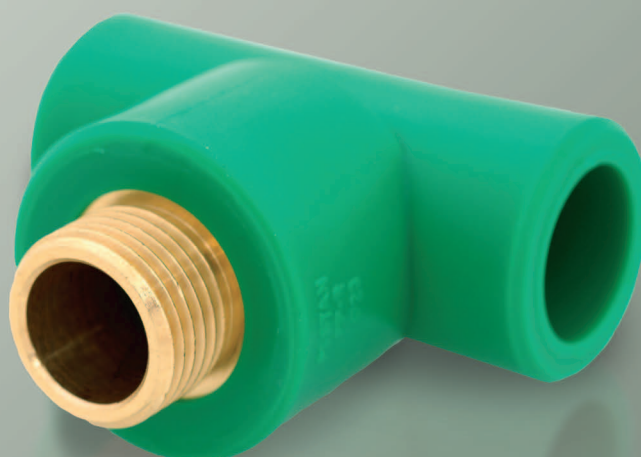
### Osnovne prednosti

- Dug vek trajanja zahvaljujući njihovom otporu na uticaj sredine; ne korodira
- Nemogućnost probijanja usled nepredviđenih struja (tokova)
- Niski gubici pritiska zbog glatke površine, koja ne dozvoljava taloženje na zidovima cevi, kao i turbulencije i trenja.
- Ne sadrže otrovne sastojke i u potpunosti su u skladu sa standardom za protok pijaće vode
- Veliki termo i zvučni izolator
- Smanjuju rizik kondenzacije na minimum, što je karakteristika metalnih instalacija
- Ušteda energije
- Svi umeci koji se ugrađuju u fitting napravljeni su od MS šipke garantovanog hemijskog sastava
- Izuzetna sposobnost zavarivanja. Svi delovi se mogu povezivati aparatom za zavarivanje ili električnom mufom.
- Mala težina (9 puta su lakši od čelika) što olakšava transport i rukovanje.

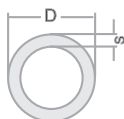


Fizičke karakteristike	Metod testiranja	Vrednost	Jedinica
Gustina	ISO 1183	0,897	g/cm <sup>3</sup>
Brzina protoka rastopa (MFR)	ISO 1133		
190°C/5.0kg		0,55	g/10min
230°C/2.16kg		0,30	g/10min
230°C/5.0kg		1,30	g/10min
Mehaničke karakteristike	Metod testiranja	Vrednost	Jedinica
Sekantni modul elastičnosti	ISO 527-2/1	850	MPa
Čvrstoća na granici razvlačenja (23°C)	ISO 527-2/50	24,0	MPa
Izduženje pri kidanju (23°C)	ISO 527-2/50	10	%
Modul istezanja	ISO 899-1		
1hr		650	MPa
1000hr		350	MPa
Udarne čvrstoća	Metod testiranja	Vrednost	Jedinica
Udarne čvrstoća sa zarezom (Charpy)	ISO 179		
-30°C		2,50	kJ/m <sup>2</sup>
0°C		4,00	kJ/m <sup>2</sup>
23°C		22,00	kJ/m <sup>2</sup>
Udarne čvrstoća bez zareza (Charpy)	ISO 179		
-30°C		43,00	kJ/m <sup>2</sup>
0°C		bez pucanja	kJ/m <sup>2</sup>
23°C		bez pucanja	kJ/m <sup>2</sup>
Tvrdoća	Metod testiranja	Vrednost	Jedinica
Tvrdoća (Shore D, 3sec)	ISO 868	65	
Tvrdoća sa kuglom	ISO 2039-1	48,0	N/mm <sup>2</sup>
Termičke karakteristike	Metod testiranja	Vrednost	Jedinica
Temperatura topljenja	ISO 3146	147	°C
Termička koduktivnost (20°C)	DIN 52612	0,24	W/mK
Koeficijent linearne ekspanzije	DIN 53752	1.5·10 <sup>-4</sup>	K <sup>-1</sup>
Temperatura omekšavanja (Vicat)			
(A50(50°C/h, 10N))	ISO 306/A50	132	°C
(B50(50°C/h, 50N))	ISO 306/B50	69,0	°C
Električne karakteristike	Metod testiranja	Vrednost	Jedinica
Zapreminska otpornost	DIN 53482	>10 <sup>17</sup>	Ω*cm
Površinska otpornost	DIN VDE 0303, T3	>10 <sup>14</sup>	Ω
Dielektrična konstanta	DIN 53483	2,3	10 <sup>6</sup> Hz
Otpornost na frekvenciju	DIN 53483	<5*10 <sup>-4</sup>	10 <sup>6</sup> Hz
Dielektrična krutost	DIN 53481	500/650	kV/cm



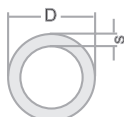


**PP-R**  
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DIN 8077-  
8078



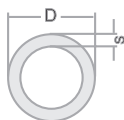
BELA	ZELENA	L	d	s min
10000006	10000001	100m	16	1,8
10000007	10000002	100m	20	1,9
10000008	10000003	4m	25	2,3
10000009	10000004	4m	32	2,9
10000054	10000024	4m	40	3,7
10000055	10000025	4m	50	4,6
10000056	10000026	4m	63	5,8
10000057	10000027	4m	75	6,8
10000058	10000028	4m	90	8,2
10000059	10000029	4m	110	10,0

Cev PN 16 bari



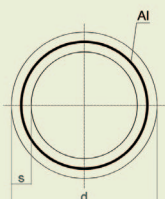
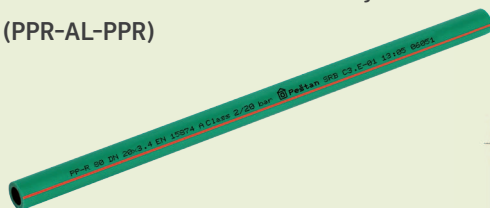
BELA	ZELENA	d	s min
10099090	10099080	16	2,2
10099091	10099081	20	2,8
10099092	10099082	25	3,5
10099093	10099083	32	4,4
10099094	10099084	40	5,5
10099095	10099085	50	6,9
10099096	10099086	63	8,6
10099097	10099087	75	10,3
10099098	10099088	90	12,3
10099099	10099089	110	15,1

Cev PN 20 bari



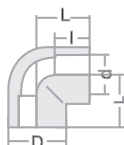
BELA	ZELENA	d	s min
10000041	10000011	20	3,4
10000042	10000012	25	4,2
10000043	10000013	32	5,4
10000044	10000014	40	6,7
10000045	10000015	50	8,3
10000046	10000016	63	10,5
10000047	10000017	75	12,5
10000048	10000018	90	15,0
10000049	10000019	110	18,3

Cev PN 20 bari sa Aluminijumom  
(PPR-AL-PPR)



BELA	ZELENA	d	s min
100100010	10010000	20	3,4
100100011	10010001	25	4,2
100100012	10010002	32	5,4
100100013	10010003	40	6,7
100100014	10010004	50	8,3
100100015	10010005	63	10,5

Koleno 90°



BELA	ZELENA	d	D	I	L
10000230	10000200	20	29	16,1	26,5
10000231	10000201	25	34	18,2	31,5
10000232	10000202	32	41,7	20,2	38
10000233	10000203	40	57,2	21,7	46
10000234	10000204	50	67,3	25,5	52
10000235	10000205	63	83,3	28,5	62
10000810	10000800	20/25	34,3	16/19	31,7

BELA	ZELENA	d	D	l	L
10000120	10000100	20	29,2	16,4	35,2
10000121	10000101	25	34	18	39,5
10000122	10000102	32	44	20	46,5
10000123	10000103	40	52,5	22	54
10000124	10000104	50	69,7	25,1	62,1
10000125	10000105	63	82	29,1	85,4

BELA	ZELENA	d	D	l	L	w
10001821	10001801	20	28	16,1	54	26,4
10001822	10001802	25	34,1	18,3	61,8	31
10001823	10001803	32	44	19,8	74,6	38,8
10001824	10001804	40	57	22,5	86	44
10001825	10001805	50	67,2	25,5	104,2	51,8
10001826	10001806	63	82,5	28,3	125,9	62,3
10002132	10002102	20/25	34,4	15,7/18,4	63,2	31,45
10002134	10002104	25/20	34,4	17,9/15,9	63,2	31,45
10002136	10002106	32/20	44	20,4/20	74	38,3
10002137	10002107	32/25	44	20,4/16,1	74	38,3
10002139	10002109	40/20	57	22,6/14,7	86,9	42,5
10002140	10002110	40/25	57	22,6/17,4	86,9	42,5

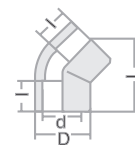
BELA	ZELENA	d	D	l	L
10001220	10001200	16	23,8	16	37,1
10001221	10001201	20	27,1	16	36
10001222	10001202	25	34	18	40
10001223	10001203	32	44	20,3	44,7
10001224	10001204	40	57	21,5	48
10001225	10001205	50	67	25,2	55,9
10001226	10001206	63	87,7	29	70
10001227	10001207	75	-	-	-
10001228	10001208	90	-	-	-
10001229	10001209	110	-	-	-

BELA	ZELENA	D	d	l	L
10002531	10002501	20	25	16	39
10002532	10002502	20	32	16	39
10002533	10002503	25	32	18	45
10002535	10002505	25	40	-	-
10002536	10002506	32	40	20	51
10002540	10002510	40	50	20,5	58
10002543	10002513	50	63	23,5	69
-	-	63	75	27,4	66

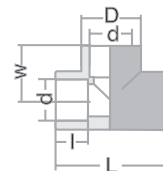
BELA	ZELENA	d	D	l	l <sub>1</sub>	L
10002631	10002601	25	20	18,2	16,1	40,2
10002632	10002602	32	20	18,8	16	40,5
10002633	10002603	32	25	18,8	17,4	40,5
10002634	10002604	40	20	21,4	16	46,9
10002635	10002605	40	25	21,4	16	46,9

BELA	ZELENA	D	d	h
10003134	10003104	20	40	33,6
10003135	10003105	20	50	36,1
10003136	10003106	20	63	37,7
10003137	10003107	25	40	35,8
10003138	10003108	25	50	36,8
10003139	10003109	25	63	39,4

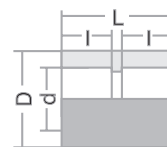
Koleno 45°



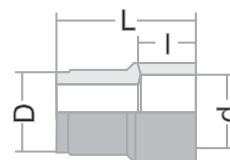
T-komad



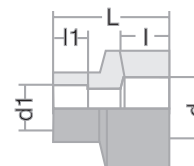
Muf



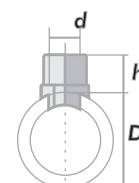
Reducir

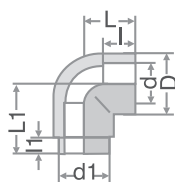


Neposredni reducir



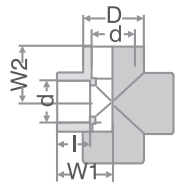
Naknadni sedlasti priključak





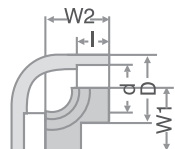
ZELENA	d	D	l	d <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>
10001100	20	30,5	16,8	20	26,4	33,9	16

Krstasti T-komad



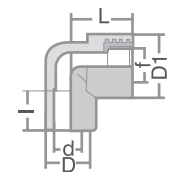
BELA	ZELENA	d	D	l	W <sub>1</sub>	W <sub>2</sub>
10002420	10002400	20	29	16	27,5	27,5
10002421	10002401	25	34	18	32	32

Trograno koleno



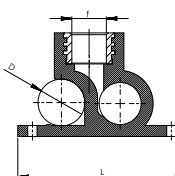
BELA	ZELENA	d	D	l	W <sub>1</sub>	W <sub>2</sub>
10000320	10000300	20	29	16	27	27
10000321	10000301	25	34	18	32	32

Koleno 90° - UN



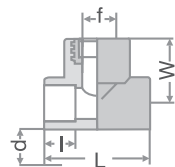
BELA	ZELENA	d	D	f(°)	l	L	D <sub>1</sub>
10000420	10000400	20	28,7	1/2	16,5	35,2	37,5
10000421	10000401	25	34	3/4	19,1	36,2	43,8
10000422	10000402	32	44	1	20,5	40,5	55,3
10000920	10000900	20/25	34	3/4	16,5	36,5	43,8
10000921	10000901	25/20	34	1/2	19,1	36,5	43,8

Ekscentrični T-komad



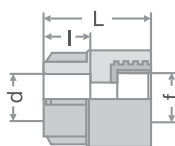
BELA	ZELENA	SIVA	D	f(°)	L
10012180	10002180	10022180	20	1/2	80
10012190	10002190	10022190	25	1/2	92

T-komad UN



BELA	ZELENA	d	D	f(°)	l	L	D <sub>1</sub>
10001914	10001901	20	16	1/2	34	52,6	28
10001915	10001902	25	18	3/4	36,3	73	34,4
10001916	10001903	32	20,2	1	45,6	75,9	44
10002232	10002202	20/25	15,9	3/4	36,3	73	34,4
10002234	10002204	25/20	17,8	1/2	36,3	73	34,4

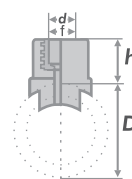
Muf UN



BELA	ZELENA	d	l	f(°)	L
10001326	10001306	16	16,5	1/2	40,9
10001320	10001300	20	16,1	1/2	42
10001321	10001301	25	17,6	3/4	42,4
10001322	10001302	32	20,2	1	53,6
10001323	10001303	40	21,5	5/4	77,4
10001324	10001304	50	26,7	6/4	71,6
10001325	10001305	63	29	2	78,5
10001621	10001601	20/25	17,9	3/4	43
10001622	10001602	25/20	18,3	1/2	43

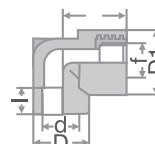


BELA	ZELENA	d	f(“)	D	h
10003234	10003204	20	1/2	40	27,4
10003236	10003206	20	1/2	50	27,4
10003238	10003208	20	1/2	63	27,4
10003235	10003205	25	3/4	40	29,2
10003237	10003207	25	3/4	50	29,2
10003239	10003209	25	3/4	63	29,2



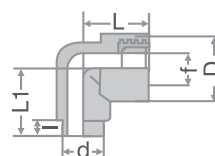
Koleno 90° su ušicama UN

BELA	ZELENA	d	D	I	f(“)	L	L <sub>1</sub>
10000620	10000600	20	28,8	16,4	1/2	30,4	36,6



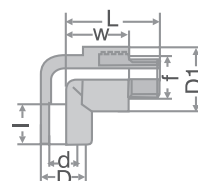
Koleno 90° muško/žensko UN

BELA	ZELENA	d	D	I	f(“)	L	L <sub>1</sub>
10001140	10001110	20	38	15,5	1/2	46,6	38,8



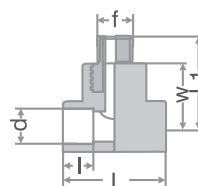
Koleno 90° SN

BELA	ZELENA	d	D	I	W	f(“)	L	L <sub>1</sub>
10000520	10000500	20	29	16,2	35	1/2	46,3	37
10000521	10000501	25	34,5	19,3	36,1	3/4	19,6	43,9
10000522	10000502	32	44	20,5	40,5	1	48	55
10001020	10001000	20/25	29	16,2	35	1/2x3/4	46,3	37
10001021	10001001	25/20	34,5	19,3	36,1	1/2	47,4	43,9



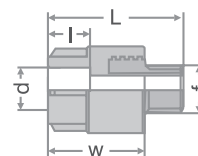
T-komad SN

BELA	ZELENA	d	I	W	f(“)	L	L <sub>1</sub>
10002014	10002001	20	16,4	34,5	1/2	63	45,5
10002015	10002002	25	17,5	36	3/4	72,6	49,6
10002016	10002003	32	20,2	45,6	1	75,6	58,2
10002332	10002302	20/25	16,4	36	1/2x3/4	72,6	49,3
10002334	10002304	25/20	17,8	36,4	1/2	73	48

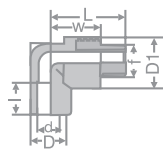


Muf SN

BELA	ZELENA	d	I	W	f(“)	L
10001220	10001406	16	16,5	41	1/2	52
10001420	10001400	20	17,5	42,1	1/2	52,7
10001421	10001401	25	17,8	42,1	3/4	55,3
10001422	10001402	32	20,2	53,3	1	67,3
10001423	10001403	40	21,5	77,3	5/4	94,5
10001424	10001404	50	26,2	70,2	6/4	89,7
10001425	10001405	63	29	77,4	2	102
10001721	10001701	20/25	16,1	42,3	1/2x3/4	53,2
10001722	10001702	25/20	18	42,3	1/2	53,2

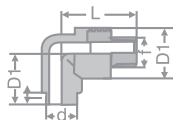


Koleno 90° sa usicama SN



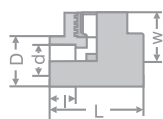
BELA	ZELENA	d	D	l	f(“)	L	D <sub>1</sub>
10000720	10000700	20	28,8	16	1/2	41,9	36,6
10000721	10000701	20	28,8	18	3/4	41,4	36,6

Koleno 90° muško/žensko SN



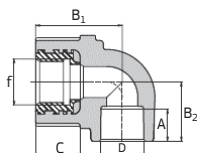
BELA	ZELENA	d	D	l	f(“)	L	L <sub>2</sub>
10001150	10001120	20	38	15,5	1/2	35,9	38,6

Telo ventila



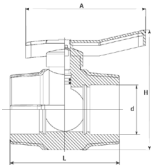
BELA	ZELENA	d	D	L	l	w
10002720	10002700	20	27,2	65	16	112,2
10002721	10002701	25	34,2	71	18	109,8
10002722	10002702	32	43,3	98,5	18,7	128

Koleno "Rigips"



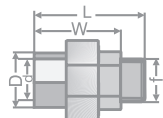
BELA	ZELENA	D	A	f(“)	B <sub>1</sub>	B <sub>2</sub>	C
10000360	10000350	20	15	1/2	44	27	25

Kugla ventil



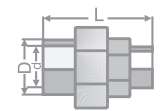
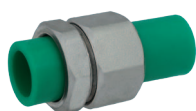
BELA	ZELENA	d	L	H	A
30101502	30101500	20	73,5	74	84,5
30101505	30101503	25	77,5	74	84,5
30101508	30101506	32	89	92	108
30101521	30101519	40	97,5	105	108
30101524	30101522	50	112	114	108
30101527	30101525	63	131,5	150	150

Holender metal plastika SN



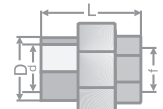
BELA	ZELENA	tip	d	D	f(“)	W	L	ok
10003430	10003410	C	20	26,6	1/2	56,1	71,5	36/27
10003431	10003411	C	25	33,7	3/4	62,4	78,5	46/32

Holender plastika-plastika



BELA	ZELENA	tip	d	D	L	ok
10003330	10003310	A	20	26,6	77	36/27
10003331	10003311	A	25	33,7	77	46/32

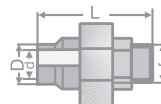
Holender metal-plastika UN



BELA	ZELENA	tip	d	D	f(“)	L	ok
10003430	10003400	B	20	36,6	1/2	56,4	36/27
10003431	10003401	B	25	33,7	3/4	62,4	46/32
10003450	10003420	P	25	33,7	1/2	62,4	46/32

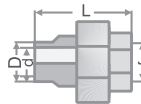
Univerzalni holender metal/plastika SN

BELA	ZELENA	d	D	f(“)	L	ok
10003550	10003520	16	20	1/2	71,5	36/27



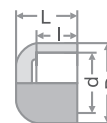
Univerzalni holender metal-plastika UN

BELA	ZELENA	d	l	f(“)	L	ok
10003540	10003510	16	20	1/2	65	36/27
10003541	10003511	16	20	3/4	65	36/27
10003542	10003512	16	20	1	65	36/27



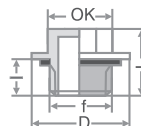
Završna kapa

BELA	ZELENA	d	D	l	L
10002821	10002801	20	29	16	21,5
10002822	10002802	25	33,6	18,1	23,1
10002823	10002803	32	43,8	20	26,5
10002824	10002804	40	56,4	21,2	34,1
10002825	10002805	50	66	23,5	38
10002826	10002806	63	87,5	28,5	41



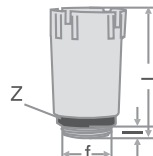
Čep sa navojem kraći

BELA	ZELENA	CRVENA	PLAVA	d	D	f(“)	L	ok
10002910	10002900	10002930	10002920	20	27,4	1/2	23,5	20
10002911	10002901	10002931	10002921	25	31,7	3/4	24,2	11



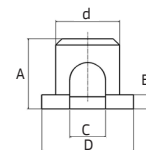
Čep sa navojem duži

BELA	ZELENA	CRVENA	PLAVA	d	D	f(“)	ok
10099533	10099530	10099539	10099536	20	1/2	68	20,5x27x5,5
10099534	10099531	10099540	10099537	25	3/4	68	26,5x31x5,8



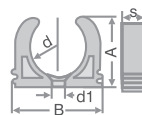
Zaštitna kapa

BELA	ZELENA	d	D	A	B	C
10099020	10099021	50	72	55	11	28



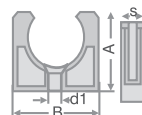
Niska objumica

BELA	ZELENA	d	d <sub>1</sub>	A	B	S
10003721	10003701	20	5,5	24	31,6	13,6
10003722	10003702	25	5,5	30,7	38	13,7

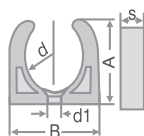


Objumica

BELA	ZELENA	d	d <sub>1</sub>	A	B	S
10003621	10003601	20	6	31,3	32,6	15,2
10003622	10003602	25	6	37	38	15,5
10003623	10003603	32	6	44,4	46,7	15,4
10003624	10003604	40	6	51,8	58	15



Obujmica "PESTAN"



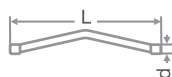
BELA	ZELENA	d	d <sub>1</sub>	A	B	S
10003761	10003751	20	5,5	26,3	28,2	13,5

Metalna obujmica sa gumenom oblogom



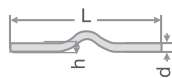
ZELENA	d
10003801	20
10003802	25
10003803	32
10003804	40
10003805	50
10003806	63
10003807	75
10003808	90
10003809	110

Zaobilazni luk (Brizgani)



BELA	ZELENA	d	h	L
10004031	10004011	20	24	158
10004032	10004012	25	33	199
10004033	10004013	32	40	250

Zaobilazni luk (Savijeni)



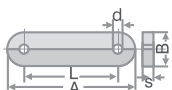
BELA	ZELENA	d	h	L
10004021	10004001	20	24	158
10004022	10004002	25	33	199
10004023	10004003	32	40	250

Čep za popravku



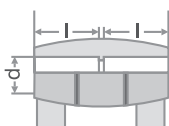
BELA	ZELENA	d <sub>1</sub>	d <sub>2</sub>	l	L <sub>1</sub>	L <sub>2</sub>
10099013	10099001	7	10	10	30	20

Podloška za koleno sa ušicama



BELA	ZELENA	A	B	S	D	L
10099010	10099000	52,8	19,5	5	4,8	39,1

Električni muf

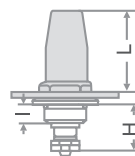


ZELENA	D	I	L
10099501	20	27	56
10099502	25	38,7	77,4
10099503	32	42,6	85,2



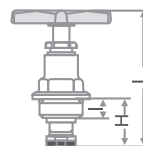
Ventil sa kapom i rozetnom

ZELENA	tip	d	f(“)	H	L
10099515	B	20	1/2	19,5-22,5	74
10099516	B	25	3/4	20-27,5	74



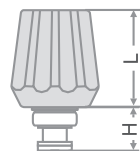
Ventil sa točkom

ZELENA	tip	d	H	f(“)	I	L
10099518	A	20	19-32	1/2	9	74
10099519	A	25	19-32	3/4	9	74
10099520	A	32	21-36	1	11	78



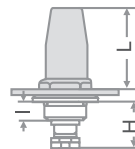
Ventil sa ručicom

ZELENA	d	f(“)	H	L
10099522	20	1/2	19-22,5	43,5
10099523	25	3/4	20-27,5	43,5



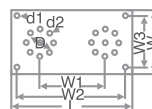
Nadgradnja za telo ventila (kapa)

ZELENA	tip	I	d	f(“)	H	L
10099522	A	9	20	1/2	19-32	45,2
10099523	A	9	25	3/4	19-32	45,2



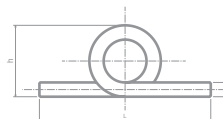
Pocinkovani odstojnik (šablon)

BELA	L	W	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	d <sub>1</sub>	d <sub>2</sub>	D
10099050	242,1	53	153,1	224,1	33,8	6,8	4,8	40,1



Kompenzator

ZELENA	d	h	L
10004060	20	200	340



Montažer

ZELENA	D	G	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>2*</sub>	L <sub>2**</sub>	L <sub>3</sub>	I
10099515	19	1/2	227	29	152	137	102	37	15,5

