

# WIRING PIPES AND ACCESSORIES



## Wiring pipes and accessories

The pipes and accessories are made in compliance with ČSN EN 61 386-1 ed.2 and IEC 61 386-1 ed.2, specifications and approved documentation.

The PVC pipes and accessories passed the test of resistance against spread of flame in compliance with EN IEC 61 386-1. In compliance with ČSN 33 2312 can be used in flammability class A to C3 materials.

Polyethylene pipes of type LPE 1 and LPE 2 with low and very low mechanical resistance can be used only for installing on/into class A non-flammable materials. The pipes are intended for installation to the distribution of low voltage.

Manufacturer recommends the assembling of plastic pipes at the temperature over 0 °C.

The ČSN 64 0090 standard is applicable for storage.

For information on chemical resistance of used material see catalogue pg. 5-4.

### Flexible pipes ..... 3-4

very low mechanical resistance (125 N)

low mechanical resistance (320 N)

medium mechanical resistance (750 N)

The electric installation pipes LPFLEX, MONOFLEX and SUPERMONOFLEX with accessories can be installed in places with explosive risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22, the installation must be done in compliance with ČSN EN 60 079-14.

### Rigid socket pipes ..... 3-9

low mechanical resistance (320 N)

medium mechanical resistance (750 N)

high mechanical resistance (1250 N)

Electric installation rigid pipes 15xx, 40xx, 80xx, 15xxHF with accessories are possible installed in places with explosive risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22, the installation must be done in compliance with ČSN EN 60 079-14.

Standard length of pipes is 3 m with toleration of ±10 mm.

Used labeling on the product, e.g.:

**KOPOS TYP4020 EN 3341 750N PVC**  
*manufacturer type ort code material*

The pipes are made in dimension compliance with EN standards and passed the mechanical resistance test in compliance with: ČSN EN 61 386-1 a IEC 61 386-1.

The pipes of type APAFS, APACS aren't electric installation pipes in compliance with ČSN EN 61 386-1 ed. 2, but are designed to be us as mechanical protectors of cables.

### Optical cable protectors - HDPE ..... 3-12

### Cable protection KOPOFLEX® a KOPODUR® ..... 3-13

### Sectional protection KOPOHALF® ..... 3-15

### Earthen channel KOPOKAN ..... 3-15

### Steel pipes ..... 3-16

### Aluminium pipes ..... 3-21

### Flexible metal pipe ..... 3-22

### Drainage pipe KOPODREN ..... 3-23

























All pipes and accessories (except for Weicon) are in compliance with EU directives.









Flexible pipes of types 14.. and 12.. and rigid pipes of types 15.., 40.., 80.., 15.. HF including elbows and couplings are in compliance with German electric standard.

## Icons - capture





 material	 outside diameter (mm)
 temperature resistance, scope of application (°C)	 inside diameter (mm)
 flammability class of construction material	 length (mm, m)
 mechanical resistance / load limit value (N)	 dimensions - width, height (mm)
 limit of compression strength (kPa)	 dimensions - width (mm)
 port code	 dimensions - inner width (mm)
 IP classification	 dimensions - height (mm)
 color	 dimensions - inner height (mm)
 accessories, additional assortment	 thread
 package (m / kg; pcs / kg)	 minimum bending radius (mm)
 package dimensions (mm)	 arc radius - 90°







### LPFLEX - very low mechanical resistance

					
125 N / 5 cm	11212	grey-white RAL 9002	PVC self-snuffing	-5 - +60 °C	A - C3

For installation into or under the parget.  
Suitable for mounting into plaster walls and ceilings.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.  
The pipes manufactured in the dimensions according to EN may be connected or attached by means of rigid pipe accessories, see page 3-10.




EN					
	conf.				
		mm	mm	m	kg
2316E	H100	16	10,7	100	3,9
	H100D			100	4,3
	H50			50	1,9
	H50D			50	2,1
2320	H100	20	14,1	100	4,6
	H100D			100	5,0
	H25			25	1,2
	H50			50	2,4
2325	H50D	25	18,3	50	3,4
	H50			50	3,6
	H50D			50	3,6
2332	H50	32	24,3	25	5,3
	H50D			50	5,5
2340	H25	40	31,2	25	4,3
	H25D			25	4,4
2350	H25	50	39,6	25	4,7
	H25D			25	4,8

conf.	description
H...	color: grey-white RAL 9002
...100...	package: 100 m
...50...	package: 50 m
...25...	package: 25 m
...D	with draw-through wire





ČSN					
	conf.				
		mm	mm	m	kg
2313	H100	18,7	13,5	100	4,3
	H50			50	2,2
2316	H100	21,2	16	100	4,6
	H50			50	2,4
2323	H100	28,5	22,9	100	8,5
	H50			50	4,8
2329	H50	34,5	28,4	50	6,1
2336	H50	42,2	35,9	50	7,2
2348	H50	54,5	47,7	50	11,0







### MONOFLEX - low mechanical resistance

					
320 N / 5 cm	22212	light grey RAL 7035 white RAL 9010	PVC self-snuffing	-5 - +60 °C	A - C3

For surface installation, into or under parget.  
Suitable for mounting into hollow walls, plaster walls and ceilings.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.  
The pipes manufactured in the dimensions according to EN may be connected or attached by means of rigid pipe accessories, see page 3-10.





EN					
	conf.				
		mm	mm	m	kg
1416E	H50	16	10,7	50	2,0
	K50			50	2,0
	K50D			50	2,2
1420	H50	20	14,1	50	2,6
	K25			25	1,3
	K50			50	2,6
	K50D			50	2,8
1425	H50	25	18,3	50	3,5
	K25			25	1,8
	K50			50	3,5
	K50D			50	3,7
1432	H50	32	24,3	50	5,9
	K15			15	1,9
	K25			25	3,1
	K25D			25	3,2
	K50			50	5,9
1440	H25	40	31,2	25	4,7
	K25			25	4,7
1450	K25	50	39,6	25	5,2




conf.	description
H...	color: white RAL 9010
K...	color: light grey RAL 7035
...100...	package: 100 m
...50...	package: 50 m
...25...	package: 25 m
...15	package: 15 m
...D	with draw-through wire

ČSN					
	conf.				
		mm	mm	m	kg
1413/1	K100	18,7	13,5	100	6,1
1416/1	K100	21,2	16	100	6,8
1423/1	K100	28,5	22,9	100	11,2
1429/1	K50	34,5	28,4	50	6,8
1436/1	K50	42,2	35,9	50	10,2
1448/1	K50	54,5	47,7	50	11,4



### Connections for flexible pipes ČSN




			
white	PVC self-snuffing	-5 - +60 °C	A - C3

ČSN			
			
	pipes mm	pcs	kg
0216	21,2	50; 400	6,1
0223	28,5	300	8,6
0229	34,5	200	5,3



**SUPER MONOFLEX - medium mechanical resistance**

					
750 N / 5 cm	33212	dark grey RAL 7012	PVC self-snuffing	-5 - +60 °C	A - C3







		EN			
	conf.				
		mm	mm	m	kg
<b>1216E</b>	L50	16	10,7	50	3,2
	L50D			50	3,4
<b>1220</b>	L50	20	14,1	50	3,6
	L50D			50	3,8
<b>1225</b>	L50	25	18,3	50	5,4
	L50D			50	5,6
<b>1232</b>	L25	32	24,3	25	4,2
	L25D			25	4,3
<b>1240</b>	L25	40	31,2	25	5,0
	L25D			25	5,1
<b>1250</b>	L25	50	39,6	25	7,0
	L25D			25	7,2




conf.	description
L...	color: dark grey RAL 7012
...50...	package: 50 m
...25...	package: 25 m
...D	with draw-through wire

For surface installation, into or under parget.  
Suitable for mounting into hollow walls, plaster walls, ceilings and into concrete.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.  
The pipes manufactured may be connected or attached by means of rigid pipe accessories, see page 3-10.



**MONOFLEX HFPP - low mechanical resistance**

					
320 N / 5 cm	22322	black RAL 9005	PP self-snuffing	-15 - +90 °C	A - C3

		EN			
	conf.				
		mm	mm	m	kg
<b>1416EHFPP</b>	F100	16	10,7	100	3,1
<b>1420HFPP</b>	F100	20	14,1	100	4,2
<b>1425HFPP</b>	F50	25	18,2	50	2,9
<b>1432HFPP</b>	F50	32	24,2	50	2,6
<b>1440HFPP</b>	F25	40	32,4	25	3,3
<b>1450HFPP</b>	F25	50	41,2	25	3,3




conf.	description
F...	color: black RAL 9005
...100	package: 100 m
...50	package: 50 m
...25	package: 25 m

Flexible halogen-free self-extinguishing pipe made from PP.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.  
It may be used in premises where human resources and valuable property protection, damage minimization in case of fire are insisted on, further on it may be used for machinery, public buildings and railways.  
The pipes manufactured may be connected or attached by means of rigid pipe accessories, see page 3-11.



**SUPER MONOFLEX HFPP - medium mechanical resistance**

					
750 N / 5 cm	34222	grey RAL 7037 light grey RAL 9018	PP halogen-free self-snuffing	-5 - +90 °C	A - C3

		EN			
	conf.				
		mm	mm	m	kg
<b>1216EHFPP</b>	L100	16	10,7	100	5,1
	K100			100	6,0
<b>1220HFPP</b>	K100D	20	14,1	100	6,9
	L100			100	6,0
<b>1225HFPP</b>	L100	25	18,2	100	14,0
<b>1232HFPP</b>	K50	32	24,2	50	5,2
	L50			50	5,2
<b>1240HFPP</b>	L25	40	32,4	25	5,0
	L50			50	10,0
<b>1250HFPP</b>	L25	50	41,2	25	7,0
	L50			50	14,0

conf.	description
K...	color: light grey RAL 9018
L...	color: grey RAL 7037
...100...	package: 100 m
...50	package: 50 m
...25	package: 25 m
...D	with draw-through wire

Flexible halogen-free self-extinguishing pipe made from PP.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.  
It may be used in premises where human resources and valuable property protection, damage minimization in case of fire are insisted on, further on it may be used for machinery, public buildings and railways.  
The pipes manufactured may be connected or attached by means of rigid pipe accessories, see page 3-11.





**LPE-1 - low mechanical resistance**

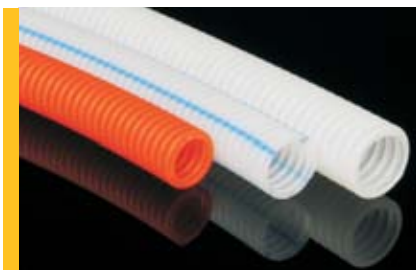
320 N / 5 cm	22422 22423	ČSN - white EN - orange	PE not self-snuffing	-25 - + 90 °C	A

Suitable for direct monolithic concreting or under the parget. Tubes with the dimension ČSN, EN are standardly delivered with color strips for easy identification of individual wiring circuits. It is also possible to deliver tubes of this dimension without the distinctive strips. Dimension EN (not 2340/LPE-1) are available with pull-out wire as well.

EN					
	conf.	mm	mm	m	kg
<b>2316E/LPE-1</b>	A100	16	10,7	100	4,6
	A100D			100	5,0
<b>2320/LPE-1</b>	A100	20	14,1	100	6,0
	A100D			100	6,4
<b>2325/LPE-1</b>	A50	25	18,3	50	4,2
	A100			100	8,5
	A100D			100	8,8
<b>2332/LPE-1</b>	A50	32	24,3	50	5,3
	A50D			50	5,5
<b>2340/LPE-1</b>	A25	40	31	25	3,8

conf.	description
A...	color: orange
H...	color: white
...100...	package: 100 m
...50...	package: 50 m
...25	package: 25 m
...D	with draw-through wire

ČSN EN					
	conf.	mm	mm	m	kg
<b>2316/LPE-1</b>	H100	21,2	16	100	5,6
<b>2323/LPE-1</b>	H100	28,5	22,9	100	10,3
<b>2329/LPE-1</b>	H50	34,5	28,4	50	6,5



**LPE-2 - very low mechanical resistance**

125 N / 5 cm	11422 11423	ČSN - white EN - orange	PE not self-snuffing	-25 - + 90 °C	A

Vhodné pro instalaci v betonových prefabrikátech. Tubes with the dimension ČSN (not 2336/LPE-2) and EN are standardly delivered with color strips for easy identification of individual wiring circuits. It is also possible to deliver tubes of this dimension without the distinctive strips. Dimension EN (not 2340/LPE-2) are available with pull-out wire as well.

EN					
	conf.	mm	mm	m	kg
<b>2316E/LPE-2</b>	A100	16	10,7	100	3,2
	A100D			100	3,6
<b>2320/LPE-2</b>	A100	20	14,1	100	4,5
	A100D			100	4,9
<b>2325/LPE-2</b>	A100	25	18,3	100	7,2
	A100D			100	7,5
<b>2332/LPE-2</b>	A50	32	24,3	50	3,8
	A50D			50	4,0
<b>2340/LPE-2</b>	A25	40	31	25	2,8

conf.	description
A...	color: orange
H...	color: white
...100...	package: 100 m
...50...	package: 50 m
...25	package: 25 m
...D	with draw-through wire

ČSN EN					
	conf.	mm	mm	m	kg
<b>2313/LPE-2</b>	H100	18,7	13,5	100	4,1
<b>2316/LPE-2</b>	H100	21,2	16	100	4,4
<b>2323/LPE-2</b>	H100	28,5	22,9	100	7,4
<b>2329/LPE-2</b>	H50	34,5	28,4	50	4,9
<b>2336/LPE-2</b>	H50	42,2	35,9	50	6,4



**LPE-1 - UV-stabilized**

320 N / 5 cm	22423	black	PE not self-snuffing	-25 - + 90 °C	A

Flexible UV stable pipe to be suitable for outside installations. Connection or tacking of the pipes there is possible to perform by means of accessories for rigid halogen free pipes (conf. FB) page 3-11.

EN					
	conf.	mm	mm	m	kg
<b>2320/LPE-1</b>	F1.U	20	14,1	100	6,0
	F1.DU			100	6,4
<b>2325/LPE-1</b>	F1.U	25	18,3	100	8,5
	F1.DU			100	8,8
<b>2332/LPE-1</b>	F50U	32	24,3	50	5,3
	F50DU			50	5,5

conf.	description
F...	color: black
...1...	package: 100 m
...50...	package: 50 m
...D	with draw-through wire
...U	UV-stabilized



### LPE-2 - UV-stabilized

125 N / 5 cm	11423	black	PE not self-snuffing	-25 - + 90 °C	A

Flexible UV stable pipe to be suitable for outside installations.

Connection or tacking of the pipes there is possible to perform by means of accessories for rigid halogen free pipes (conf. FB) page 3-11.

EN					
	conf.				
		mm	mm	m	kg
<b>2320/LPE-2</b>	F1.U	20	14,1	100	4,5
	F1.DU			100	4,9
<b>2325/LPE-2</b>	F1.U	25	18,3	100	7,2
	F1.DU			100	7,5
<b>2332/LPE-2</b>	F50U	32	24,3	50	3,8
	F50DU			50	4,0

conf.	description
F...	color: black
...1...	package: 100 m
...50...	package: 50 m
...D	with draw-through wire
...U	UV-stabilized



### Connections for flexible pipes ČSN

white	PE not self-snuffing	-25 - + 90 °C	A

ČSN			
	pipes mm	pcs	kg
<b>0216/1</b>	21,2	400	3,1
<b>0223/1</b>	28,5	300	4,5
<b>0229/1</b>	34,5	100; 200	2,8

Couplings are not UV stable.



### SPIROFLEX - low mechanical resistance

320 N / 5 cm	23114	light grey RAL 7035	PVC self-snuffing fireproof	+5 - + 60 °C	A - C3

	conf.				
		mm	mm	m	kg
<b>SF16</b>	K30	20,7	16	30	3,5
<b>SF20</b>	K30	24,7	20	30	4,4
<b>SF25</b>	K30	30,6	25	30	5,6
<b>SF32</b>	K30	38,0	32	30	7,3

conf.	description
K...	color: light grey RAL 7035
...30	package: 30 m

Flexible protective pipe reinforced with hard PVC spiral. Excels in smooth inside surface and very good strength, while the flexibility is guaranteed.



### Conduit bushing SPIROFLEX

IP67	light grey RAL 7035	PVC self-snuffing fireproof	+5 - + 60 °C	A - C3

			type of pipe		
	mm	pipes mm		pcs	kg
<b>SFM20</b>	M20x1,5	16	SF16	25	3,5
<b>SFM25</b>	M25x1,5	20	SF20	25	4,5
<b>SFM32</b>	M32x1,5	25	SF25	10	2,3
<b>SFM40</b>	M40x1,5	32	SF32	10	2,7



**Low mechanical resistance**

320 N / 5 cm	22411	light grey RAL 7035 white RAL 9003	PVC self-snuffing, fireproof	-25 - + 60 °C	A - C3	pg. 3-10

Rigid socket pipes are fireproof-tested.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.

		EN					
conf.							
		mm	mm	m	m	kg	
<b>1516E</b>	KA HA	16	13,7	3	30	2,5	
	KC -			2	20	1,4	
<b>1520</b>	KA HA	20	17,4	3	30	3,3	
	KC -			2	20	2,0	
<b>1525</b>	KA HA	25	22,1	3	30	4,2	
	KC -			2	20	2,8	
<b>1532</b>	KA HA	32	28,6	3	30	6,2	
	KC -			2	20	3,6	
<b>1540</b>	KA HA	40	35,8	3	30	7,3	
	KC -			2	20	4,9	
<b>1550</b>	KA HA	50	45,1	3	30	11,1	
	KC -			2	20	7,3	
<b>1563</b>	KA HA	63	57	3	15	8,0	

conf.	description
K...	color: light grey RAL 7035
H...	color: white RAL 9003
...A	length: 3 m; package: in PE foil
...C	length: 2 m; package: in PE foil



**Medium mechanical resistance**

750 N / 5 cm	33411	dark grey RAL 7012	PVC self-snuffing fireproof	-25 - + 60 °C	A - C3	pg. 3-10

Rigid socket pipes are fireproof-tested.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.

		EN					
conf.							
		mm	mm	m	m	kg	
<b>4016E</b>	LA	16	13	3	30	3,3	
	LC			2	20	1,8	
<b>4020</b>	LA	20	16,9	3	30	3,8	
	LC			2	20	2,5	
<b>4025</b>	LA	25	21,4	3	30	5,4	
	LC			2	20	3,4	
<b>4032</b>	LA	32	27,8	3	30	7,1	
	LC			2	20	4,6	
<b>4040</b>	LA	40	35,4	3	30	9,6	
	LC			2	20	6,5	
<b>4050</b>	LA	50	44,3	3	30	11,0	
<b>4063</b>	LA	63	57	3	15	9,7	

conf.	description
L...	color: dark grey RAL 7012
...A	length: 3 m; package: in PE foil
...C	length: 2 m; package: in PE foil



**High mechanical resistance**

1250 N / 5 cm	44411	black RAL 9005	PVC self-snuffing fireproof	-25 - + 60 °C	A - C3	pg. 3-10

Rigid socket pipes are fireproof-tested.  
Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.

		EN					
conf.							
		mm	mm	m	m	kg	
<b>8016E</b>	FA	16	12,2	3	30	4,1	
	FC			2	20	2,0	
<b>8020</b>	FA	20	15,8	3	30	4,8	
	FC			2	20	3,3	
<b>8025</b>	FA	25	20,6	3	30	6,5	
	FC			2	20	4,1	
<b>8032</b>	FA	32	26,6	3	30	8,9	
	FC			2	20	5,7	
<b>8040</b>	FA	40	34,4	3	30	9,0	
	FC			2	20	7,4	
<b>8050</b>	FA	50	43,2	3	30	15,6	
<b>8063</b>	FA	63	57	3	15	11,2	

conf.	description
F...	color: black RAL 9005
...A	length: 3 m; package: in PE foil
...C	length: 2 m; package: in PE foil

## Rigid pipe accessories made in dimension series in compliance with EN

The accessories is intended for rigid and flexible pipes to be made in EN dimension range.

**Elbows** - precise elbows manufactured using injection have throat on both sides are designed for 90° bend. Bend radius allows to for continual transition and to easily fix the conductors and cables.

**Couplings** - designed for smooth transition in pipe distribution system. Throated pipes decrease usage for realization of distribution system from fixed pipes.

**Clamps** - isolation PVC clamps are designed for fixation of the pipe distribution system onto underlying material. Push the pipe between the clamp jaws to mount the pipe. The clamps are equipped with elements for placing next to each other to create continual row of pipes as well as with grooves for installation in supporting trunkings of 5820/.. series (viz pg. 2-38).

Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.

<b>MAT</b>		
PVC self-snuffing	-25 - + 60 °C	A - C3

conf.	description
K...	color: light grey RAL 7035
H...	color: white RAL 9003
L...	color: dark grey RAL 7012
F...	color: black RAL 9005
...B	package: small 2 - 10 pcs

pipes mm	elbows					couplings					clamps											
	conf.				pcs	kg	90° mm	conf.				pcs	kg	conf.				pcs	kg			
16	4116	KB	HB	LB	FB	10; 480		5,3	55	0216E	KB	HB	LB	FB	10; 1320	8,8	5316E	KB	HB	LB	FB	10; 2500
20	4120	KB	HB	LB	FB	10; 270	5,6	70	0220	KB	HB	LB	FB	10; 840	8,0	5320	KB	HB	LB	FB	10; 1900	13,5
25	4125	KB	HB	LB	FB	10; 140	4,9	85	0225	KB	HB	LB	FB	10; 480	7,6	5325	KB	HB	LB	FB	10; 1280	12,6
32	4132	KB	HB	LB	FB	10; 60	4,6	110	0232	KB	HB	LB	FB	10; 260	6,5	5332	KB	HB	LB	FB	10; 840	11,3
40	4140	KB	HB	LB	FB	5; 35	3,8	135	0240	KB	HB	LB	FB	10; 120	4,6	5340	KB	HB	LB	FB	10; 520	8,8
50	4150	KB	HB	LB	FB	10; 30	5,8	170	0250	KB				10; 180	9,6	5350	KB	HB	LB	FB	10; 420	8,9
										HB	LB	FB	10; 210	10,5								
63									0263	KB	HB	LB	FB	2; 50	4,4	5363	KB				10; 240	7,0
																	HB	LB	FB	10; 300	8,6	

Combination of rigid and flexible pipes and accessories for pipes.



Illustration of connections of different dimensions of clamps for pipes.



## Clamps for flexible pipes ČSN



				pcs	kg	<b>MAT</b>	
	mm	mm	mm				°C
5313	20	30	4,2	1200	10,2	PVC	-5 - + 60
5316	21	31	4,4	1200	11,3		
5321	27	40	4,4	800	9,2		
5329	36	48	4,4	600	9,4		

The clamps are equipped with fastening elements for placing next to each other to create continual row thereof as well as with grooves for installation in supporting trunkings of 5820/.. series (viz pg. 2-38).

To install, push the pipe between the clamp jaws.



**Halogen-free pipes**

320 N / 5 cm 750 N / 5 cm 1250 N / 5 cm	22521 33521 44521	black RAL 9005 light grey RAL 7035	PPO <b>halogen-free</b> self-snuffing fireproof	-45 - + 90 °C	A - C3

conf.	description
F...	color: black RAL 9005
K...	color: light grey RAL 7035
...A	length: 3 m; package: in PE foil

Halogen-free rigid socket pipe suitable for housing and industrial distribution in hospitals, schools, IT centers, etc. Suitable for environments with increased need of people and equipment protection.

The black pipes (FA) are UV-stabilized.

Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.

low mechanical resistance 320 N							medium mechanical resistance 750 N							high mechanical resistance 1250 N								
conf.							conf.							conf.								
mm mm m m kg							mm mm m m kg							mm mm m m kg								
1516EHF	FA	KA	16	13,7	3	30	2,1	4016EHF	FA	KA	16	13	3	30	3,0	8016EHF	FA	16	12,2	3	30	3,7
1520HF	FA	KA	20	17,4	3	30	2,5	4020HF	FA	KA	20	16,9	3	30	3,4	8020HF	FA	20	15,8	3	30	4,3
1525HF	FA	KA	25	22,1	3	30	3,4	4025HF	FA	KA	25	21,4	3	30	4,9	8025HF	FA	25	20,6	3	30	5,9
1532HF	FA	KA	32	28,6	3	30	4,6	4032HF	FA	KA	32	27,4	3	30	6,4	8032HF	FA	32	26,6	3	30	8,0
1540HF	FA	KA	40	35,8	3	30	6,8	4040HF	FA	KA	40	35,4	3	30	8,6	8040HF	FA	40	34,4	3	30	10,1
1550HF	FA	KA	50	45,1	3	30	10,3	4050HF	FA	KA	50	44,3	3	30	9,9	8050HF	FA	50	43,2	3	30	14,0
1563HF	FA	KA	63	57	3	15	6,7	4063HF	FA	KA	63	58	3	15	8,7	8063HF	FA	63	57	3	15	10,0

**Accessories for rigid halogen-free pipes made in dimension series in compliance with EN**

Accessories is intended for rigid and flexible halogen free pipes to be made in EN dimensions range.

**Elbows** - precise elbows to be manufactured by using of injection, have the throat on both sides and are designed for 90° bend. Bend radius allows to for continual transition and to easily fix the conductors and cables.

**Couplings** - designed for smooth transition in pipe distribution system. Throated pipes decrease usage for realization of distribution system from fixed pipes.

**Clamps** - isolation PVC clamps are designed for fixation of the pipe distribution system onto underlying material. Push the pipe between the clamp jaws to mount the pipe. The clamps are equipped with elements for placing next to each other to create continual row of pipes as well as with grooves for installation in supporting trunkings of 5820/.. series (viz pg. 2-38).

Possibility to install in places with risk of flammable gases and vapor – danger zone 2, with explosive risk of dust – danger zone 22.

Elbows, connections and clamps in black colour (FB) are of UV stable.

PPO <b>halogen-free</b> ; self-snuffing fireproof	-45 - + 90 °C	A - C3

conf.	description
F...	color: black RAL 9005
K...	color: light grey RAL 7035
...B	package: small 2 - 10 pcs

pipes	elbows					couplings					clamps				
mm	conf.		pcs	kg	mm	conf.		pcs	kg	conf.		pcs	kg		
16	4116HF	FB KB	10; 480	4,7	55	0216HF	FB KB	10; 1320	7,4	5316EHF	FB KB	10; 2500	12,3		
20	4120HF	FB KB	10; 100	1,7	70	0220HF	FB KB	10; 840	6,4	5320HF	FB KB	10; 1900	11,2		
25	4125HF	FB KB	10; 140	3,9	85	0225HF	FB KB	10; 480	6,1	5325HF	FB KB	10; 1280	10,5		
32	4132HF	FB KB	10; 60	3,5	110	0232HF	FB KB	10; 260	5,5	5332HF	FB KB	10; 840	9,3		
40	4140HF	FB KB	5; 35	3,2	135	0240HF	FB KB	10; 120	3,8	5340HF	FB KB	10; 520	7,6		
50	4150HF	FB KB	10; 30	6,2	170	0250HF	FB KB	10; 210	8,8	5350HF	FB KB	10; 480	8,5		
63						0263HF	FB KB	2; 50	3,7	5363HF	FB KB	10; 240	5,4		



### Optical cable protectors HDPE

750 N / 20 cm	HDPE	-5 - + 50 °C	A

conf.	description
A...	color: orange
B...	color: red
C...	color: blue
D...	color: green
E...	color: yellow
F...	color: black
K...	color: light grey
L...	color: dark grey
...B	drum
...P	cable harness, pallet
...S100	package: cable harness 100 m
...S300	package: cable harness 300 m

Single-coated pipes designed to protect optical cables.

Cable protectors there is possible to deliver with inner wall to be lubricated by mineral oil.

For larger volumes different color versions (beyond presented versions), labeling, number of differential stripes, denticular inner surface or inner diameter size (material thickness) can be ordered based on customer needs and specifications.

Shock resistance: N (normal, ČSN EN 61 386-24)

Bend resistance: flexible

The minimum bending radius for production and storage is 400 - 500 mm (see the table).

The protectors are tested under pressure of 1,5 MPa for the time of 1 hour.

In bold letters there is marked the inner diameter of standardly manufactured dimensions.

The packaging on wooden drums and pallets for unwinding drums is delivered just upon previous order according to the Customers's specification.

\* upon order

	conf.												
	mm	mm	mm	m	kg								
<b>06025</b>	AS100*	BS100*	CS100*	DS100*	ES100*	FS100*	KS100	LS100*	25	<b>20</b>	400	100	16
<b>06032</b>	AB*	BB*	CB*	DB*	EB*	FB*	KB*	LB*	32	<b>26 / 27</b>	400	1750	642
	AS100	BS100	CS100*	DS100*	ES100	FS100	KS100	LS100				100	26
<b>06040</b>	AB*	BB*	CB*	DB*	EB*	FB*	KB*	LB*	40	<b>33 / 34 / 35</b>	400	1750	844
	AP*	BP*	CP*	DP*	EP*	FP*	KP*	LP*				2000	778
	AS100	BS100	CS100	DS100	ES100	FS100	KS100	LS100				100	39
	AS300*	BS300*	CS300*	DS300*	ES300*	FS300*	KS300*	LS300*				300	116
<b>06050</b>	AB*	BB*	CB*	DB*	EB*	FB*	KB*	LB*	50	<b>41 / 44</b>	500	1250	758
	AP*	BP*	CP*	DP*	EP*	FP*	KP*	LP*				1250	594
	AS100	BS100	CS100	DS100*	ES100*	FS100	KS100	LS100				100	48



### HDPE coupling

-5 - + 50 °C	A

conf.	description
K...	color: grey
...B	package: small 1 pcs

	conf.		pcs	kg
<b>05025</b>	KB	25	1	0,09
<b>05030</b>	KB	32	1	0,16
<b>05040</b>	KB	40	1	0,32
<b>05050</b>	KB	50	1	0,46

Protector coupling of optical cables is designed to join the pipes when tracing and guarantees its perfect connection.



### HDPE terminal

-5 - + 50 °C	A

conf.	description
K...	color: grey
...B	package: small 1 pcs

	conf.		pcs	kg
<b>05024</b>	KB	25	1	0,05
<b>05031</b>	KB	32	1	0,08
<b>05041</b>	KB	40	1	0,15
<b>05051</b>	KB	50	1	0,25

The terminal of optical cableprotector is designed to terminate the tracing.



### HDPE end piece with valve

-5 - + 50 °C	A






conf.	description
K...	color: black
...B	package: small 1 pcs

	conf.		pcs	kg
<b>05032</b>	KB	32	1	0,10
<b>05042</b>	KB	40	1	0,16

The end piece with valve of optical protector pipe is intended for control of leid installation by compressed air.



**KOPOFLEX®** - flexible doublecoat corrugated pipe

				
>450 N / 20 cm	HDPE not self-snuffing halogen-free	storage, fixing: -45 - + 60 °C assembly: -5 -+60 °C	A	pg. 3-14

conf.	description
B...	color: red
C...	color: blue
F...	color: black
E...	color: yellow
...A	package: 50 m
...B	package: 25 m







Double-coated pipe designed for mechanical protection of all kinds of power and data wiring.

The pipes are made in compliance with ČSN EN 61 386-24.

The pipe is available in form of a bar, the coupling is put on one end of it.





Coverage level: IP 40, with sealing ring IP 67.

It is necessary to pay attention, during the mechanical compacting of the layers above the protector, so that the values for the allowed loading of the protector are not exceeded.

										
					mm	mm	mm	cm	m	kg
<b>KF 09040</b>	BA	CA	EA	FA	40	32	230	65 x 30	50	5,4
	-	CB	-	-				50 x 15	25	2,7
<b>KF 09050</b>	BA	CA	EA	FA	50	41	350	90 x 30	50	8,1
	-	CB	-	-				80 x 20	25	4,0
<b>KF 09063</b>	BA	CA	EA	FA	63	52	350	95 x 35	50	12,1
	-	CB	-	-				85 x 30	25	6,1
<b>KF 09075</b>	BA	CA	EA	FA	75	61	350	100 x 45	50	15,7
	-	CB	-	-				105 x 30	25	7,8
<b>KF 09090</b>	BA	CA	-	FA	90	75	400	110 x 45	50	20,5
<b>KF 09110</b>	BA	CA	EA	FA	110	94	400	115 x 65	50	25,4
	BB	CB	-	-				120 x 40	25	12,7
<b>KF 09120</b>	BA	-	-	-	120	100	500	150 x 50	50	35,0
<b>KF 09125</b>	BA	-	-	-	125	108	500	150 x 60	50	39,0
<b>KF 09160</b>	BA	CA	-	FA	160	136	650	160 x 80	50	50,0
	BB	CB			160	136	650	160 x 45	25	25,0
<b>KF 09175</b>	BA	-	-	FA	175	150	700	200 x 65	50	64,0
<b>KF 09200</b>	BB	-	-	FB	200	172	850	170 x 75	25	33,8



**KOPOFLEX®** - UV-stabilized flexible doublecoat corrugated pipe

			
>450 N / 20 cm	HDPE not self-snuffing halogen-free	storage, fixing: -45 - + 60 °C assembly: -5 -+60 °C	A

conf.	description
UV...	UV-stabilized
B...	color: red
C...	color: blue
F...	color: black
...A	package: 50 m

Double-coated pipe designed for mechanical protection of all kinds of power and data wiring.







The pipes are made in compliance with ČSN EN 61 386-24.

There is a tightening wire or string in each scroll and the coupling is put on as well.






Coverage level: IP 40, with sealing ring IP 67.

It is necessary to pay attention, during the mechanical compacting of the layers above the protector, so that the values for the allowed loading of the protector are not exceeded.

\* upon order

	conf.								
				mm	mm	mm	cm	m	kg
<b>KF 09040</b>	UVBA*	UVCA*	UVFA	40	32	230	65 x 30	50	5,3
<b>KF 09050</b>	UVBA*	UVCA*	UVFA	50	41	350	90 x 30	50	8,1
<b>KF 09063</b>	UVBA*	UVCA*	UVFA	63	52	350	90 x 40	50	12,1
<b>KF 09075</b>	UVBA*	UVCA*	UVFA	75	61	350	100 x 45	50	15,7
<b>KF 09090</b>	UVBA*	UVCA*	UVFA	90	75	400	110 x 45	50	20,5
<b>KF 09110</b>	UVBA*	UVCA*	UVFA	110	94	400	115 x 70	50	25,4
<b>KF 09160</b>	UVBA*	UVCA*	UVFA	160	136	650	160 x 80	50	50,0


**KOPODUR®** - rigid doublecoat corrugated pipe

				
>450 N / 20 cm	HDPE not self-snuffing halogen-free	storage, fixing: -45 - +60 °C assembly: -5 -+60 °C	A	pg. 3-14

conf.	description
B...	color: red
C...	color: blue
F...	color: black
...A	package: 6 m (3 m)
...C	package: 6 m

Halogen-free double-coated pipe designed for mechanical protection of all kinds of power and data wiring.






The pipes are made in compliance with ČSN EN 61 386-24.

The pipe is available in form of a bar, the coupling is put on one end of it.

The connection is sealed dust/sand resistant.

Coverage level: IP 40, with sealing ring IP 67.

It is necessary to pay attention, during the mechanical compacting of the layers above the protector, so that the values for the allowed loading of the protector are not exceeded.

KD	BC	conf.								kg
		-	-	-	mm	mm	m	cm	m	
<b>KD 09040</b>	BC	-	-	-	40	32	6	45 x 45 x 605	432	116
<b>KD 09050</b>	BC	CC	FC	-	50	41	6	82 x 66 x 605	360	119
<b>KD 09063</b>	BC	-	-	-	63	52	6	80 x 52 x 605	312	135
<b>KD 09075</b>	BC	CC	-	-	75	61	6	104 x 88 x 607	312	126
<b>KD 09090</b>	BC	CC	FC	-	90	75	6	120 x 76 x 607	312	185
<b>KD 09110</b>	BC	-	-	-	110	94	6	112 x 95 x 610	462	336
	-	CC	FC	-				77 x 57 x 610	216	163
	-	-	FA	-				107 x 86 x 310	231	168
<b>KD 09120</b>	BC	-	-	-	120	100	6	112 x 128 x 610	612	459
<b>KD 09125</b>	BC	-	-	-	125	108	6	112 x 71 x 610	306	220
	BA	CC	-	-				112 x 71 x 610	288	207
<b>KD 09160</b>	BC	CC	FC	-	160	136	6	117 x 83 x 610	198	251
<b>KD 09175</b>	BA	-	-	-	175	150	6	108 x 126 x 615	306	392
<b>KD 09200</b>	BC	-	-	-	200	175	6	122 x 74 x 615	120	178

**Accessories for corrugated pipes KOPOFLEX® and KOPODUR®**

**Couplings** - slip-over couplings are the same for both types of pipes and are used to join the pipes.








**Sealing rings** - the same for both types of pipes and are used to seal the joint to prevent it against humidity and water.

**Closing plugs** - for blinding of backup lines and for temporary blinding of pipes when installing.

**90° elbows** - rigid elbows for joining pipes in 90° angle. Per order only.

**45° elbows** - rigid elbows for joining pipes in 45° angle. Per order only.

**Distance spacers** - for position fixation of several pipes in one excavation. Distance spacers are for fixation 8 pipes and spacer can be split for fixation 2, 4 and 6 pipes. Per order only.

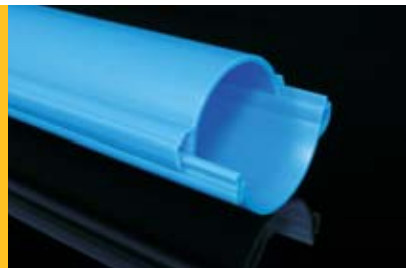
															
	pipes mm	coupling	sealing ring	closing plug	elbows			distance spacer							
					90°	45°									
40	02040	16040	17040												
50	02050	16050	17050	08050/90	08050/45	350	07050/8								
63	02063	16063	17063	08063/90	08063/45	350	07063/8								
75	02075	16075	17075	08075/90	08075/45	350	07075/8								
90	02090	16090	17090	08090/90	08090/45	400	07090/8								
110	02110	16110	17110	08110/90	08110/45	400	07110/8								
120	02120	16120	17120	08120/90	08120/45	500									
125	02125	16125	17125	08125/90	08125/45	500	07125/8								
160	02160	16160	17160	08160/90	08160/45	650	07160/8								
175	02175	16175	17175	08175/90	08175/45	700									
200	02200	16200	17200	08200/90	08200/45	850	07200/8								

Use the connection of IP 40.



Use the connection with sealing rings  
- IP 67.





**KOPOHALF®** - divided cable duct

450 N / 20 cm 750 N / 20 cm	HDPE <b>halogen-free</b> not self-snuffing	storage, fixing: -45 - +75 °C assembly: +5 - +75°C	A

conf.	description
B...	color: red
C...	color: blue
...A...	length: 3 m; package: in dismantled condition
...D	package: at completed size

	conf.								
			N / cm	mm	mm	m	cm	m	kg
<b>06110/2</b>	BA	CA	450 / 20	110	100	3	56 x 85 x 300	162	375
	BAD	CAD					56 x 85 x 300	105	246
<b>06160/2</b>	BA	CA	750 / 20	160	138	3	56 x 60 x 300	72	360
	BAD	CAD					56 x 85 x 300	45	228

A system of divided cable ducts is suitable mainly for a protection of underground cable laying and for a laying-out of the energy and communication lines.

Another possible application is a protection of already installed underground cables.

The protectors consist of two identical parts.

When installing, the cables are put in the bottom part and then the top part is snapped to the bottom one.

The divided cable ducts are manufactured and tested in accordance with standard ČSN EN 61 386-24.

Connecting of protectors is performed by overlapping joined lower parts with an upper part at length of approximately 30 cm.



**KOPOKAN** - earthen channel

PVC - recycled, self-snuffing	-25 - +70°C	A - C2

	mm	mm	m	kPa	m	kg
<b>KOPOKAN 1</b>	100	100	2	483	324	1312
<b>KOPOKAN 2</b>	120	100	2	223	252	847
<b>KOPOKAN 3</b>	130	140	2	285	224	1180
<b>KOPOKAN 4</b>	200	125	2	204	140	883

Earthen channels are intended for mechanical protection of installation of engineering networks to be loaded under ground.

By its technical parameters those fully replace the earlier used concrete channels.

There is possible to use them for additional protection already installed earthen engineering networks.

Earthen channels are delivered including the red lid (KOPOKAN 4 is delivered just in black color).

The connection is via conjunctions.

Strength limit on compression tested on length 300 mm.









**connection for KOPOKAN**

	mm	mm	mm	pcs	kg
<b>SPOJKA K1</b>	120	80	100	10	1,1
<b>SPOJKA K2</b>	138	80	100	10	1,2
<b>SPOJKA K3</b>	151	80	100	10	1,3
<b>SPOJKA K4</b>	221	80	120	10	1,6



### ČSN steel threaded pipes - high mechanical resistance

		
1250 N / 5 cm	44561	steel -60 - + 250 °C

						
	mm	mm	m		m	kg
threaded varnished						
<b>6013</b>	20,4	18,2	3	P13,5	30; 1200	780
<b>6016</b>	22,5	20,3	3	P16	30; 1200	800
<b>6021</b>	28,3	25,7	3	P21	30; 750	680
<b>6029</b>	37	34,4	3	P29	15; 450	561
<b>6036</b>	47	44	3	P36	15; 300	617
<b>6042</b>	54	51	3	P42	15; 225	463
threaded unvarnished						
<b>6013 N</b>	20,4	18,2	3	P13,5	1350	753
<b>6016 N</b>	22,5	20,3	3	P16	1200	742
<b>6021 N</b>	28,3	25,7	3	P21	750	680
<b>6029 N</b>	37	34,4	3	P29	600	728
<b>6036 N</b>	47	44	3	P36	300	531
<b>6042 N</b>	54	51	3	P42	300	613
threaded ZN						
<b>6013 ZN</b>	20,4	18,2	3	P13,5	30; 1200	780
<b>6016 ZN</b>	22,5	20,3	3	P16	30; 1200	800
<b>6021 ZN</b>	28,3	25,7	3	P21	30; 750	680
<b>6029 ZN</b>	37	34,4	3	P29	15; 450	561
<b>6036 ZN</b>	47	44	3	P36	15; 300	617
<b>6042 ZN</b>	54	51	3	P42	15; 225	463
threaded ZNM						
<b>6013 ZNM</b>	20,4	18,2	3	P13,5	30; 1200	780
<b>6016 ZNM</b>	22,5	20,3	3	P16	30; 1200	800
<b>6021 ZNM</b>	28,3	25,7	3	P21	30; 750	680
<b>6029 ZNM</b>	37	34,4	3	P29	15; 450	561
<b>6036 ZNM</b>	47	44	3	P36	15; 300	617
<b>6042 ZNM</b>	54	51	3	P42	15; 225	463

The pipes are suitable for mechanical protection of conductors and cables. The conduits are also available for fire resistance system.

Threaded conduits are supplied with one coupler. While using pipes along with bushing 4813/P - 4842/P and 4913 - 4942 is scope of application only -5 - +60 °C.

Unvarnished: without surface finish, without corrosion resistance, suitable mostly for construction purposes.






Varnished: ZNM material surface-finished using powder technology, black color RAL 9005, medium corrosion resistance - group 2

ZNM: both side hot-galvanized steel bar, zinc layer 10 - 19 µm, replaces shop primer, medium corrosion resistance - group 2






ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4



### Couplers for ČSN steel threaded pipes, extending couplers for ČSN steel pipes

					
Al-alloy	mm		pcs	kg	
	<b>313/1</b>	24,0 x 30	P13,5	10; 540	6,3
	<b>316/1</b>	26,5 x 35	P16	10; 350	6
	<b>321/1</b>	32,0 x 40	P21	10; 240	5,2
	<b>329/1</b>	41,5 x 45	P29	10; 120	5,6
	<b>336/1</b>	51,5 x 55	P36	10; 60	3,9
	<b>342/1</b>	58,5 x 60	P42	10; 100	7,8

					
mm	min mm		pcs	kg	
<b>9813</b>	24,0 x 30	19,3	P13,5	20	0,26
<b>9816</b>	26,5 x 35	21,7	P16	20	0,35
<b>9829</b>	32,0 x 40	35,7	P29	20	0,75

Couplings 3 .../1 are intended for connection of steel pipes and elbows, for mechanical protection of conductors or cables. ČSN couplers are made of Al-alloy.






Couplings 98 ... are intended for connection of flexible metal pipes of 33 range (page 3-22) with steel threaded pipes.

From one hand side there is inner PG thread, from another hand side there is covering notch for fixing of flexible metal pipes.



### Elbows for ČSN steel threaded pipes - high mechanical resistance

		
1250 N / 5 cm	44561	steel -60 - + 250 °C

							
	pipes mm	mm	mm	pcs	kg		
<b>6113</b>	<b>6113 ZNM</b>	<b>6113 ZN</b>	20,4	P13,5	80	25	4,4
<b>6116</b>	<b>6116 ZNM</b>	<b>6116 ZN</b>	22,5	P16	100	25	5,5
<b>6121</b>	<b>6121 ZNM</b>	<b>6121 ZN</b>	28,3	P21	120	20	7,5
<b>6129</b>	<b>6129 ZNM</b>	<b>6129 ZN</b>	37	P29	155	20	11,0
<b>6136</b>	<b>6136 ZNM</b>	<b>6136 ZN</b>	47	P36	185	5	5,0
<b>6142</b>	<b>6142 ZNM</b>	<b>6142 ZN</b>	54	P42	200	5	6,9

The elbows are also available for fire resistance system.

Threaded elbows are supplied with one coupler.

Varnished: ZNM surface-finished material using powder technology, black color RAL 9005, medium corrosion resistance - group 2

ZNM: both side hot-galvanized steel bar, zinc layer 10 - 19 µm, replaces shop primer, medium corrosion resistance - group 2

ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4



### ČSN steel unthreaded pipes - high mechanical resistance

1250 N / 5 cm	44561	steel	-60 - + 250 °C

						kg
	mm	mm	m		m	
unvarnished						
<b>6216 N</b>	22,5	20,3	3		1200	735
<b>6221 N</b>	28,3	25,7	3		750	678
<b>6229 N</b>	37	34,4	3		600	713
<b>6236 N</b>	47	44	3		300	520
<b>6242 N</b>	54	51	3		300	605
ZN						
<b>6213 ZN</b>	20,4	18,2	3		1350	745
<b>6216 ZN</b>	22,5	20,3	3		1200	735
<b>6221 ZN</b>	28,3	25,7	3		30; 750	678
<b>6229 ZN</b>	37	34,4	3		15; 450	535
<b>6236 ZN</b>	47	44	3		300	520
<b>6242 ZN</b>	54	51	3		15; 225	454
ZNM						
<b>6213 ZNM</b>	20,4	18,2	3		1350	745
<b>6216 ZNM</b>	22,5	20,3	3		1200	735
<b>6221 ZNM</b>	28,3	25,7	3		750	678
<b>6229 ZNM</b>	37	34,4	3		600	713
<b>6236 ZNM</b>	47	44	3		300	520
<b>6242 ZNM</b>	54	51	3		300	605

The pipes are suitable for mechanical protection of conductors and cables.

While using pipes along with bushing 4813/P - 4842/P and 4913 - 4942 is scope of application only -5 - +60 °C.

Unvarnished: without surface finish, without corrosion resistance, suitable mostly for construction purposes.

ZNM: both side hot-galvanized steel bar, zinc layer 10 - 19 µm, replaces shop primer, medium corrosion resistance - group 2

ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4



### Slip-on couplers for ČSN steel pipes

steel

	mm	min mm	pcs	kg
<b>313/2</b>	22,6	20,4	10	0,3
<b>316/2</b>	24,7	22,5	10	0,4
<b>321/2</b>	30,9	28,3	10	0,6
<b>329/2</b>	39,6	37	10	0,7
<b>336/2</b>	50	47	10	1,1
<b>342/2</b>	57	54	10	1,3

The couplers are designed to join steel pipes and elbows or to protect conductors and cables mechanically.

They are fitted with throats on both ends and are designed to join unthreaded armature pipes.

The couplers are made of hoops by welding.

ČSN couplers are made with ZnCr and GMT surface finish.



### Double-sided clamps for ČSN steel pipes

	mm	mm	mm	pcs	kg	
<b>5213 PC</b>	20,4	46,5 x 10	4,3	1500	7,4	galvanized steel sheet
<b>5216 PC</b>	22,5	48,5 x 10	4,3	1500	7,8	
<b>5221 PC</b>	28,3	56,5 x 10	4,3	1000	8,6	
<b>5229 PC</b>	37	71 x 15	5,3	500	8,3	
<b>5236 PC</b>	47	87 x 15	5,3	250	6,5	
<b>5242 PC</b>	54	96 x 15	5,3	200	4,8	

5213 PC - 5242 PC - to fix ČSN steel pipes on the pad.






Steel strap width: dimension 13 - 21 = 0,8 mm  
dimension 29 - 42 (48) = 1.1 mm

Pipes according to ČSN dimensions there is possible to fix by help of OMEGA Clamps (page 3-19).



### EN steel threaded pipes - high mechanical resistance

		
1250 N / 5 cm	44561	steel -45 - + 250 °C

						
varnished	ZN	mm	mm	m		m kg
<b>6016E</b>	<b>6016E ZN</b>	16	12,6	3	M16x1,5	30; 600 306
<b>6020</b>	<b>6020 ZN</b>	20	16,2	3	M20x1,5	30; 600 450
<b>6025</b>	<b>6025 ZN</b>	25	21,2	3	M25x1,5	30; 600 600
<b>6032</b>	<b>6032 ZN</b>	32	28,2	3	M32x1,5	21; 420 533
<b>6040</b>	<b>6040 ZN</b>	40	36,2	3	M40x1,5	15; 150 247
<b>6050</b>	<b>6050 ZN</b>	50	46,2	3	M50x1,5	15; 150 302
<b>6063</b>	<b>6063 ZN</b>	63	58,8	3	M63x1,5	15; 150 424

The pipes are suitable for mechanical protection of conductors and cables. The conduits are also available for fire resistance system.

Threaded conduits are supplied with one coupler.

Varnished: smooth steel material to be varnished by both sides black colour, medium corrosive resistance - group 2

ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4





### Couplers for EN steel threaded pipes


steel

Couplers are designed to join steel pipes and elbows or to protect conductors and cables mechanically.





EN couplers are made of steel with varnish or ZN surface finish.

			
varnished	ZN		pcs kg
<b>316E/1</b>	<b>316E/1 ZN</b>	M16x1,5	25 1,2
<b>320/1</b>	<b>320/1 ZN</b>	M20x1,5	50 2,5
<b>325/1</b>	<b>325/1 ZN</b>	M25x1,5	50 3
<b>332/1</b>	<b>332/1 ZN</b>	M32x1,5	50 3,5
<b>340/1</b>	<b>340/1 ZN</b>	M40x1,5	25 2
<b>350/1</b>	<b>350/1 ZN</b>	M50x1,5	10 1
<b>363/1</b>	<b>363/1 ZN</b>	M63x1,5	5 0,6



### Elbows for EN steel threaded pipes - high mechanical resistance

	
steel	-45 - + 250 °C

					
threaded		pipes mm		mm	pcs kg
varnished	ZN				
<b>6116E</b>	<b>6116E ZN</b>	16	M16x1,5	55	15 3,2
<b>6120</b>	<b>6120 ZN</b>	20	M20x1,5	70	25 6,8
<b>6125</b>	<b>6125 ZN</b>	25	M25x1,5	115	25 8,8
<b>6132</b>	<b>6132 ZN</b>	32	M32x1,5	125	20 9,8
<b>6140</b>	<b>6140 ZN</b>	40	M40x1,5	140	15 8,3
<b>6150</b>	<b>6150 ZN</b>	50	M50x1,5	170	5 3,5
<b>6163</b>	<b>6163 ZN</b>	63	M63x1,5	210	3 2,3

The elbows are also available for fire resistance system.






Threaded elbows are supplied with one coupler.

Varnished: smooth steel material to be varnished by both sides black colour, medium corrosive resistance - group 2

ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4



### Double-sided clamps for EN steel pipes

EN							
varnished	ZN					kg	galvanized steel sheet
<b>5220 PC</b>	<b>5220 PC ZN</b>	20	45 x 10	5,3	100	0,8	
<b>5225 PC</b>	<b>5225 PC ZN</b>	25	50 x 10	5,3	100	1	
<b>5232 PC</b>	<b>5232 PC ZN</b>	32	57 x 12	5,3	100	1,6	
<b>5240 PC</b>	<b>5240 PC ZN</b>	40	70 x 12	5,3	50	1	
<b>5250 PC</b>	<b>5250 PC ZN</b>	50	85 x 12	5,3	50	1,4	
<b>5263 PC</b>	<b>5263 PC ZN</b>	63	96 x 12	5,3	50	2	

5220 PC - 5263 PC - to fix EN varnished steel pipes on the pad.

5220 PC ZN - 5263 PC ZN - to fix EN ZN steel pipes on the pad.



**ČSN steel unthreaded pipes - high mechanical resistance**

4000 N / 5 cm	55561	steel	-45 - + 250 °C

		mm	mm	m	m	kg
varnished	ZN					
<b>6216E</b>	<b>6216E ZN</b>	16	14	3	30; 600	234
<b>6220</b>	<b>6220 ZN</b>	20	18	3	30; 600	294
<b>6225</b>	<b>6225 ZN</b>	25	22,6	3	30; 600	445
<b>6232</b>	<b>6232 ZN</b>	32	29,6	3	21; 420	404
<b>6240</b>	<b>6240 ZN</b>	40	37,6	3	15; 150	182
<b>6250</b>	<b>6250 ZN</b>	50	47,6	3	15; 150	228
<b>6263</b>	<b>6263 ZN</b>	63	60,6	3	15; 150	290

The pipes are suitable for mechanical protection of conductors and cables.

Varnished: smooth steel material to be varnished by both sides black colour, medium corrosive resistance - group 2

ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4



**Slip-on couplers for EN steel pipes**

steel

		min mm	pcs	kg
varnished	ZN			
<b>316E/2</b>	<b>316E/2 ZN</b>	16	25	1,2
<b>320/2</b>	<b>320/2 ZN</b>	20	50	2,5
<b>325/2</b>	<b>325/2 ZN</b>	25	50	3
<b>332/2</b>	<b>332/2 ZN</b>	32	50	3,5
<b>340/2</b>	<b>340/2 ZN</b>	40	25	2
<b>350/2</b>	<b>350/2 ZN</b>	50	10	1
<b>363/2</b>	<b>363/2 ZN</b>	63	5	0,6

The couplers are designed to join steel pipes and elbows or to protect conductors and cables mechanically. They are fitted with throats on both ends and are designed to join unthreaded armature pipes.

The couplers are made of hoops by welding.

Couplers are made with varnish or ZN surface finish.



**Elbows for EN steel unthreaded pipes - high mechanical resistance**

1250 N / 5 cm	44561	steel	-45 - + 250 °C

unthreaded						
		pipes mm		mm	pcs	kg
varnished	ZN					
<b>6316E</b>	<b>6316E ZN</b>	16	M16x1,5	55	15	3,2
<b>6320</b>	<b>6320 ZN</b>	20	M20x1,5	70	25	6,8
<b>6325</b>	<b>6325 ZN</b>	25	M25x1,5	115	25	8,8
<b>6332</b>	<b>6332 ZN</b>	32	M32x1,5	125	20	9,8
<b>6340</b>	<b>6340 ZN</b>	40	M40x1,5	140	15	8,3
<b>6350</b>	<b>6350 ZN</b>	50	M50x1,5	170	5	3,5
<b>6363</b>	<b>6363 ZN</b>	63	M63x1,5	210	3	2,3

The elbows are also available for fire resistance system. Threaded elbows are supplied with one coupler.

Varnished: smooth steel material to be varnished by both sides black colour, medium corrosive resistance - group 2

ZN: after steel bar welding hot-galvanized using immersion, zinc layer 50 - 100 µm, high corrosion resistance - group 4



**Clamps OMEGA for steel pipes**

steel

	pipes mm	EN pipes	ČSN pipes	pcs	kg
<b>5216E ZNM</b>	16	6016E,6216E		250	7,0
<b>5220 ZNM</b>	20	6020,6220	6013,6213,6016,6216	250	7,5
<b>5225 ZNM</b>	25	6025,6225	6021,6221	250	10,0
<b>5232 ZNM</b>	32	6032,6232,6040,6240	6029,6229	125	5,5
<b>5250 ZNM</b>	50	6050,6025	6036,6236	100	6,0
<b>5263 ZNM</b>	63	6063,6263	6042,6242	100	7,7

In order to facilitate the assembly the clip is fitted with a groove for insertion, during the assembly it is not necessary to entirely separate the upper part of the clip.

The screws with dowels, the screws into concrete or anchors are recommended to be used for fixing this holders.



The bushings are designed to mechanically protect the conductors or cables coming from the steel pipe.  
Plug the bushing from outside on the end of pipe before installing cables.

### Straight bushing for steel pipes - outer

<b>MAT</b>		
PE self-snuffing	-5 - + 60 °C	A - C2

	EN				
	pipes mm	mm	input mm	pcs	kg
<b>4816E</b>	16	20	12	50	0,15
<b>4820</b>	20	22	16	50	0,2
<b>4825</b>	25	27	21	400	2,4
<b>4832</b>	32	33	28	250	2,5
<b>4840</b>	40	39	35	100	1,2
<b>4850</b>	50	47	43	50	0,8
<b>4863</b>	63	59	57	20	0,6

	ČSN				
	pipes mm	mm	input mm	pcs	kg
<b>4813/P</b>	20,4	14	15	500; 3000	9
<b>4816/P</b>	22,5	16	17	100; 1200	5,6
<b>4821/P</b>	28,3	21	22	100; 1000	4,5
<b>4829/P</b>	37	27	30	100; 400	4,9
<b>4836/P</b>	47	27	38	100; 300	3,3
<b>4842/P</b>	54	27	44	75; 150	4



The bushings are designed to mechanically protect the conductors or cables coming from the the steel pipe.  
Plug the bushing from inside on the end of pipe before installing cables.

### Straight bushing for steel pipes - inner

<b>MAT</b>		
PE self-snuffing	-5 - + 60 °C	A - C2

	ČSN				
	pipes mm	mm	input mm	pcs	kg
<b>4913</b>	18,2	22	13	400; 3200	8,0
<b>4916</b>	20,3	22	16	400; 2000	5,6
<b>4921</b>	25,7	22	21	250; 1500	4,8
<b>4929</b>	34,4	22	30	150; 700	3,3
<b>4936</b>	44	22	39	80; 400	2,8
<b>4942</b>	51	22	46	60; 360	3,0



### WEICON 375

Corrosion protection for galvanized surfaces.  
To eliminate defective and damaged places on galvanized surface.



**Aluminium pipes - high mechanical resistance**

The pipes are proper for mechanical protection of conductors and cables. They can be used for industrial installations, high anticorrosive ability – class 4.

1250 N / 5 cm	44561	Al Mg Si 0,5-F 22

unthreaded	EN				
	mm	mm	m	m	kg
<b>6216E AL</b>	16	14	3	30; 600	58
<b>6220 AL</b>	20	18	3	30; 600	77
<b>6225 AL</b>	25	23	3	30; 600	98
<b>6232 AL</b>	32	30	3	30; 300	73
<b>6240 AL</b>	40	38	3	15; 150	51
<b>6250 AL</b>	50	47	3	15; 150	65
<b>6263 AL</b>	63	59,8	3	15; 150	106



**Elbows for aluminium pipes - high mechanical resistance**

Per order only.

1250 N / 5 cm	44561	Al Mg Si 0,5-F 22

unthreaded	EN		
	pipes mm	pcs	kg
<b>6316E AL</b>	16	10	0,24
<b>6320 AL</b>	20	10	0,44
<b>6325 AL</b>	25	10	0,68
<b>6332 AL</b>	32	10	1,48
<b>6340 AL</b>	40	5	0,76
<b>6350 AL</b>	50	5	1,36
<b>6363 AL</b>	63	5	1,81



**Slip-on couplers for aluminium pipes**

Al Mg Si 0,5-F 22

unthreaded	EN		
	pipes mm	pcs	kg
<b>316E/2 AL</b>	16	50	0,2
<b>320/2 AL</b>	20	50	0,3
<b>325/2 AL</b>	25	50	0,7
<b>332/2 AL</b>	32	50	1,2
<b>340/2 AL</b>	40	25	0,7
<b>350/2 AL</b>	50	25	1,2
<b>363/2 AL</b>	63	25	1,7



**Clamps for aluminium pipes**

Al





	EN		
	pipes mm	pcs	kg
<b>AL</b>			
<b>5216E PC AL</b>	16	100	0,004
<b>5220 PC AL</b>	20	100	0,02
<b>5225 PC AL</b>	2	100	0,009
<b>5232 PC AL</b>	32	50	0,015
<b>5240 PC AL</b>	40	25	0,019
<b>5250 PC AL</b>	50	25	0,026
<b>5263 PC AL</b>	63	5	0,038




	EN		
	pipes mm	pcs	kg
<b>AL</b>			
<b>5216E AL</b>	16	250	3,5
<b>5220 AL</b>	20	250	3,8
<b>5225 AL</b>	25	250	4,6
<b>5232 AL</b>	32	125	2,7
<b>5240 AL</b>	40	100	2,4
<b>5250 AL</b>	50	100	2,8
<b>5263 AL</b>	63	100	3,2

In order to facilitate the assembly the clip is fitted with a groove for insertion, during the assembly it is not necessary to entirely separate the upper part of the clip. The screws with dowels, the screws into concrete or anchors are recommended to be used for fixing this holders.



### Flexible metal pipe

				
750 N / 5 cm	33522	steel	-45 - + 90 °C	pg. 3-14, 3-16




				
	mm	mm	m	kg
<b>3313</b>	18,9	13,5	100	18,7
<b>3316</b>	21,4	16	100	23,2
<b>3323</b>	28,9	23	50	16,4
<b>3329</b>	35,2	29	50	22,3
<b>3336</b>	43	36	25	14,8
<b>3348</b>	54,9	48	25	18,3

The pipes are suitable for mechanical protection of conductors and cables inside halls (indoor).  
The pipes are made of galvanized steel bar at the top (zinc layer 3 - 4 µm) and isolation layer inside.  
Flexible metal pipes may be connected to steel threaded pipes by means of couplings of 98xx series (pg. 3-16).



### Couplers for flexible metal pipes


Al-alloy






				
	mm	mm	pcs	kg
<b>9613</b>	24 x 35	19,3	20	0,25
<b>9616</b>	26,5 x 40	21,7	20	0,35

The couplers are designed to join flexible metal pipes 33... using inner clipping nick.






### Double-sided clamps

3613 A - 3648 A - to fix flexible metal pipes on the pad

	ČSN					
						
	mm	mm	mm	pcs	kg	
<b>3613 A</b>	18,7	44,5 x 10	4,3	1500	7,2	galvanized steel sheet
<b>3616 A</b>	21,2	47 x 10	4,3	1500	7,8	
<b>3623 A</b>	28,3	56,5 x 10	4,3	1000	6,4	
<b>3629 A</b>	34,5	70,5 x 15	5,3	500	8,1	
<b>3636 A</b>	42,2	80 x 15	5,3	400	8,2	
<b>3648 A</b>	54	96 x 15	5,3	200	4,7	


**KOPODREN** - drainage pipe

	
yellow	PE

	 mm	 m	 m	kg
<b>KOPODREN 50</b>	50	50	50	7
<b>KOPODREN 65</b>	65	50	50	10
<b>KOPODREN 80</b>	80	50	50	15,5
<b>KOPODREN 100</b>	100	50	50	21
<b>KOPODREN 125</b>	125,5	50	50	30,5
<b>KOPODREN 160</b>	159,5	50	50	49
<b>KOPODREN 200</b>	199,5	45	45	55,8

KOPODREN pipeline is used in all areas of drain technics, e.g. draining of buildings, deep engineering constructions, sport places building, in agriculture, gardens, to drain areas of use, or to temporary draining of work sites.


The pipes have low weight and high chemical resistance.

The construction of the pipe ensures high flexibility. This is a major advantage when installing as well as meeting the requirement of small bend radius.

The pipe joints are protected against pull-off and are designed to join using a snap.

Accessories per order only.

**KOPODREN drainage pipe accessories**

 pipes mm	reducer	coupling	branch pipe 45°	bend 90°	elbow 90°	T-piece	plug	terminal flap
50	KN-R 65/50	KN-S 50	KN-OD45 50	KN-OB90 50		KN-T 50	KN-Z 50	KN-KK 50
65	KN-R 80/65	KN-S 65	KN-OD45 65	KN-OB90 65		KN-T 65	KN-Z 65	KN-KK 65
80	KN-R 100/80	KN-S 80	KN-OD45 80	KN-OB90 80	KN-K90 80	KN-T 80	KN-Z 80	KN-KK 80
100	KN-R 125/100	KN-S 100	KN-OD45 100	KN-OB90 100	KN-K90 100	KN-T 100	KN-Z 100	KN-KK 100
125,5	KN-R 160/125	KN-S 125	KN-OD45 125		KN-K90 125	KN-T 125	KN-Z 125	KN-KK 125
159,5	KN-R 200/160	KN-S 160	KN-OD45 160		KN-K90 160	KN-T 160	KN-Z 160	KN-KK 160
199,5		KN-S 200	KN-OD45 200		KN-K90 200	KN-T 200	KN-Z 200	KN-KK 200

## Wiring pipes - number of cables to put in

		CYKY 2 x 1,5	CYKY 3 x 1,5	CYKY 4 x 1,5	CYKY 3 x 2,5	CYKY 5 x 1,5	CYKY 4 x 2,5	CYKY 5 x 2,5	CYKY 4 x 4	CYKY 5 x 4	CYKY 4 x 6	CYKY 5 x 6
cable diameter (mm)	6	8,3	8,7	9,5	10	10,3	10,9	12,3	13,2	14,4	14,4	16
FLEXIBLE PIPES												
XX16E - EN	1	1	1	X	X	X	X	X	X	X	X	X
XX20 - EN	2 (3)	1	1	1	1	1	1	X	X	X	X	X
XX25 - EN	4	2	2	1	1	1	1	1	1	1	1	X
XX32 - EN	8	4	4	3	3	3	2	1	1	1	1	1
XX40 - EN	13	7	6	5	5	4	4	3	3	2	2	1
XX50 - EN	21	11	10	8	7	7	6	5	4	4	4	3
XX13 - ČSN	2	1	1	1	1	1	1	X	X	X	X	X
XX16 - ČSN	3	1 (2)	1	1	1	1	1	1	1	X	X	X
XX23 - ČSN	7	4	3	3	2	2	1 (2)	1	1	1	1	1
XX29 - ČSN	11	6	5	4	4	4	3	3	2	1	1	1
XX36 - ČSN	17	9	8	7	6	6	5	4	3	3	3	2
SF16	3	1	1	1	1	1	1	1	1	X	X	X
SF20	5	3	2	1 (2)	1	1	1	1	1	1	1	1
SF25	8	4	4	3	3	3	2 (3)	1 (2)	1	1	1	1
SF32	13	7	6	5	5	5	4	3	3	2 (3)	2 (3)	1 (2)
KF 09040	13	7	6	5	5	5	4	3	3	2	2	2
KF 09050	22	11	10	9	8	7	7	5	5	4	4	3
KF 09063	35	18	17	14	13	12	11	8	7	6	6	5
KF 09075	49	25	23	19	18	17	15	12	10	8	8	7
KF 09090	74	38	35	29	27	25	22	18	15	13	13	10
KF 09110	116	60	55	46	42	39	35	28	24	20	20	16
KF 09120	131	68	62	52	47	44	40	31	27	23	23	18
KF 09125	153	80	73	61	55	52	46	36	32	27	27	21
KF 09160	242	127	115	97	87	82	73	58	50	42	42	34
KF 09175	295	154	140	117	106	100	89	70	61	51	51	41
RIGID PIPES												
XX16E - EN	1 (2)	1	1	1	1	1	X	X	X	X	X	X
XX20 - EN	2 (3)	1	1	1	1	1	1	1	1	X	X	X
XX25 - EN	6	3	3	2	1 (2)	1 (2)	1	1	1	1	1	1
XX32 - EN	9	5	4	4	3	3	23	2	1	1	1	1
XX40 - EN	15	8	7	6	6	5	5	4	3	3	3	1 (2)
XX50 - EN	24	13	12	10	9	8	7	6	5	4	4	3
XX63 - EN	43	22	20	17	15	14	13	10	9	7	7	6
6013 - ČSN	4	2	1 (2)	1	1	1	1	1	1	1	1	X
6016 - ČSN	2 (3)	3	3	1 (2)	1	1	1	1	1	1	1	1
6021 - ČSN	9	5	4	3	3	3	3	1 (2)	1	1	1	1
6029 - ČSN	15	8	7	6	6	5	5	4	3	3	3	2
6036 - ČSN	25	13	12	10	9	9	8	6	5	4	4	4
6042 - ČSN	34	18	16	14	12	12	10	8	7	6	6	5
6016E - EN	3	1	1	1	1	1	1	1	X	X	X	X
6020 - EN	4	2	1 (2)	1	1	1	1	1	1	1	1	X
6025 - EN	7	3	3	3	2	2	1	1	1	1	1	1
6032 - EN	11	6	5	5	4	4	3	3	2	1	1	1
6040 - EN	19	10	9	7	7	6	6	4	4	3	3	3
6050 - EN	30	15	14	12	11	10	9	7	6	5	5	4
6063 - EN	48	25	23	19	17	16	15	11	10	8	8	7
KD 09040	13	7	6	5	5	5	4	3	3	2	2	2
KD 09050	22	11	10	9	8	7	7	5	5	4	4	3
KD 09063	35	18	17	14	13	12	11	8	7	6	6	5
KD 09075	49	25	23	19	18	17	15	12	10	8	8	7
KD 09090	74	38	35	29	27	25	22	18	15	13	13	10
KD 09110	116	60	55	46	42	39	35	28	24	20	20	16
KD 09120	131	68	62	52	47	44	40	31	27	23	23	18
KD 09125	153	80	73	61	55	52	46	36	32	27	27	21
KD 09160	242	127	115	97	87	82	73	58	50	42	42	34
KD 09175	295	154	140	117	106	100	89	70	61	51	51	41
KD 09200	401	209	191	160	144	136	121	95	83	70	70	56

The table is based on 60% cross-section usage of the pipes.

