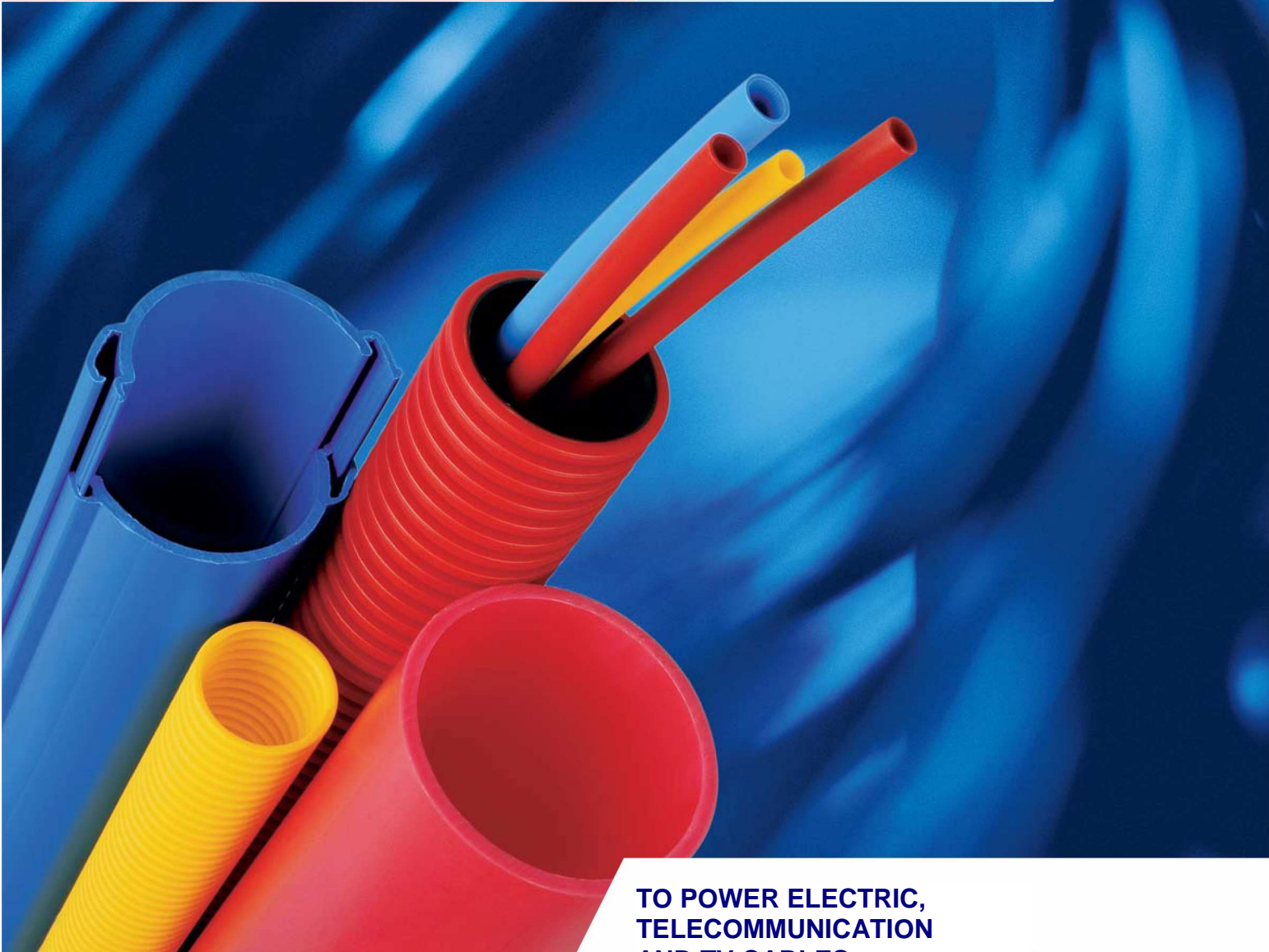


Cable protecting pipes

Product catalogue



**TO POWER ELECTRIC,
TELECOMMUNICATION
AND TV CABLES**



Dear Sirs and Madams,

AROT POLSKA company was founded on April 1st in the year 1995. Since the beginning our main office has been situated in Leszno. In January 2001 AROT POLSKA became a member of an international concern WAVIN which is unchallenged European market leader of a plastic installation systems. The concern employs over 4700 employees in over 30 production facilities all over Europe. Shielding pipes for AROT cables on the Polish market appeared for the first time in 1993. They became almost immediately known among specialists, designers and contractors as a revolutionary and desirable solution on the field of cable protection accessories.

We were also the first company in Poland that had initiated the production of a corrugated shielding pipes and than of a complete cable protection system. Corrugated shielding pipes have become a standard both in electric and telecommunication business. On account of assembling easiness and functionality those products have become commonly used and known as a "AROT type pipes".

Thanks to the support of the WAVIN concern as well as experience and technology exchange we were able to substantiate our position on the shielding pipes for cables market in Poland and enter the international markets.

The work of our team of professionals combined with long term experience as well as automated production process and ISO 9001 quality system allowed us to create products with very good technical parameters and a high and replicable quality. That's why our pipes fulfil high technical and endurance requirements.

Yours sincerely,
THE TEAM OF AROT POLSKA Sp. z o.o.

Top parameter pipes

This catalogue contains a comprehensive list of the AROT POLSKA product range. We present a complete system of cable protecting pipes for power, telecommunications and television networks. The catalogue includes a review of polyethylene pipes intended for both subterranean and open air installation. It consists also complete range of fittings, which facilitate cable installation and drawing.

Considering advanced technology and high quality our products define new standards on a field of cable protection business.



CONTENTS

Cable pipes for subterranean installation	4
Type A cable pipes	4
Type KF, KN bends	4
Type SRS cable pipes	5
Type KFS, KNS bends	5
Type SRS-G cable pipes	5
Type OPTO cable pipes	6
Microducts	7
Type FP fireproof cable pipes	7
Type DVK cable pipes	8
Type DKF, DKN bends	8
Type DVK-T cable pipes	9
Type DKF-T, DKN-T bends	9
Type DVR cable pipes	10
Type KR cable pipes	10
Type A PS split cable pipes	11
Type KKHR split cable pipes	11
Cable pipes for open air installation	12
Type BE cable pipes	12
Type SV cable pipes	12
Type VA cable pipes	13
Type F bends	13
Type SVA split cable pipes	13
Type SV-D split cable pipes	13
Fittings	14
Type KF PS bends	14
Type Y PS split pipe laterals	14
Type Y pipe laterals	14
Type ZZA junction containers	15
Type ZSSZ drawing and reserve containers	15
Type KKHRG assembly tool	15
Type M couplers	16
Type MT watertight couplers	16
Type U sealing	16
Type EBM split blow-in sockets	17
Type IM internal couplers	17
Type MO couplers	17
Type E end covers	18
Type TE water-tight end covers	17
Type R reduction couplers	18
Type ET cable drawing caps	19
Type D distance holders	19
Fixing elements	20
Tapes for power networks	21
Tapes for telecommunications networks, warning tapes	21
Data sheet	23
Certificates and attestations	25



Type A cable pipes



For cable protection in regular terrain conditions

- intended for pipe jacking by low load intensity
- smooth wall pipes
- with socket adapter
- length – 6 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
A 50	11 001 28	50 x 46 mm	900 m
A 75	11 001 34	75 x 69 mm	504 m
A 110	11 001 50	110 x 102 mm	240 m
A 160	11 001 62	160 x 150 mm	180 m
A 110/UM*	11 001 50	110 x 102 m	240 m

*) Supplied without socket adapter. To be connected with IM 102 internal coupler or by welding.

Colour: **blue, red**

Type KF, KN bends



Bends for normal terrain conditions

- smooth wall bends
- with socket adapter
- for type A cable pipes

Angle 45°

SYMBOL	PRODUCT CODE	OUT. DIAM.	RADIUS	SET
KF 50/2	13 060 28	50 mm	250 mm	10 pcs.
KF 50	13 060 28	50 mm	550 mm	10 pcs.
KF 75	13 060 34	75 mm	800 mm	5 pcs.
KF 110	13 060 50	110 mm	800 mm	5 pcs.
KF 160	13 060 62	160 mm	800 mm	3 pcs.

Angle 90°

SYMBOL	PRODUCT CODE	OUT. DIAM.	RADIUS	SET
KN 50/2	13 061 28	50 mm	250 mm	10 pcs.
KN 50	13 061 28	50 mm	550 mm	10 pcs.
KN 75	13 061 34	75 mm	800 mm	5 pcs.
KN 110	13 061 50	110 mm	800 mm	5 pcs.
KN 160	13 061 62	160 mm	800 mm	3 pcs.

Colour: **red**

Type SRS cable pipes



For cable protection in heavy terrain conditions

- used for cable laying in difficult terrain conditions, by maximum load intensity
- smooth wall pipes
- with socket adapter
- for pipe jacking and drilling up to 30 m
- length – 6 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
SRS 50	11 002 28	50.0 x 43.0 mm	900 m
SRS 75	11 002 34	75.0 x 66.0 mm	504 m
SRS 110	11 002 50	110.0 x 99.0 mm	240 m
SRS 160	11 002 62	160.0 x 144.0 mm	180 m
SRS 110/UM*	11 002 50	110.0 x 99.0 mm	240 m
SRS 125/UM*	11 002 54	125.0 x 112.4 mm	180 m

*) Supplied without socket adapter. Used with IM 99 internal coupler (SRS 110/UM) or connected by welding.

Colour: **blue, red**

Type KFS, KNS bends



Bends for heavy terrain conditions

- smooth wall bends
- with socket adapter
- for type SRS, SRS-G, BE, SV, VA cable pipes

Angle 45°

SYMBOL	PRODUCT CODE	OUT. DIAM.	RADIUS	SET
KFS 50/2	13 062 28	50 mm	250 mm	10 pcs.
KFS 50	13 062 28	50 mm	550 mm	10 pcs.
KFS 75	13 062 34	75 mm	800 mm	5 pcs.
KFS 110	13 062 50	110 mm	800 mm	5 pcs.
KFS 160	13 062 62	160 mm	800 mm	5 pcs.

Angle 90°

SYMBOL	PRODUCT CODE	OUT. DIAM.	RADIUS	SET
KNS 32	13 063 20	32 mm	250 mm	10 pcs.
KNS 50/2	13 063 28	50 mm	250 mm	10 pcs.
KNS 50	13 063 28	50 mm	550 mm	10 pcs.
KNS 75	13 063 34	75 mm	800 mm	5 pcs.
KNS 110	13 063 50	110 mm	800 mm	5 pcs.
KNS 160	13 063 62	160 mm	800 mm	3 pcs.

Colour: **black**

Type SRS-G cable pipes (RHDPEp)



For pipe jacking and drilling

- used for cable laying in heavy terrain conditions, by maximum load intensity
- for pipe jacking and drilling over 30 m
- smooth wall pipes
- supplied without socket adapter, connected by welding
- length – 12 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
SRS-G 110/6.3	11 003 50	110.0 x 97.4 mm	480 m
SRS-G 125/7.1	11 003 56	125.0 x 110.8 mm	360 m
SRS-G 125/11.4	11 003 58	125.0 x 102.2 mm	360 m
SRS-G 140/8.0	11 003 60	140.0 x 124.0 mm	312 m
SRS-G 160/9.1	11 003 62	160.0 x 141.8 mm	360 m

Colour: **black**

Type OPTO cable pipes (RHDPE)



For optic-fibre cable protection

- for the construction of secondary telecommunications duct systems and cable ducts
- available in standard black colour with multi-colour stripes on the outside
- the inside of the pipe has sliding grooves which facilitate cable drawing
- delivered in 250 m coils
- it is possible to customise pipes in another colour

SYMBOL	PRODUCT CODE	OUT. DIAM.	WALL THICKNESS	SET
OPTO 32/2	11 040 24	32.0 mm	2.0 mm	250 pcs.
OPTO 32	11 040 20	32.0 mm	2.9 mm	250 pcs.
OPTO 40	11 040 26	40.0 mm	3.7 mm	250 pcs.
OPTO 50	11 040 28	50.0 mm	4.6 mm	250 pcs.

Colour: **black**



Microducts



For the construction of telecommunications networks

- for construction of telecommunications duct systems for new generation optical cables (microcables)
- enable multiplying of existing telecommunications ducts
- prelubricated facilitating cable drawing
- low friction coefficient allows diameter optimization for appropriate cable fit
- air-tight up to 12 bar
- multicoloured
- delivered in coils
- available prefabrication in bundles
- you find information in our brochure

SYMBOL	PRODUCT CODE	OUT. DIAM.	WALL THICKNESS
NOVOMICRO 4	11 051 02	4 mm	0.50 mm
NOVOMICRO 5	11 051 04	5 mm	0.60 mm
NOVOMICRO 7	11 051 03	7 mm	0.75 mm
NOVOMICRO 10	11 051 08	10 mm	1.00 mm
NOVOMICRO 12	11 051 10	12 mm	1.20 mm
NOVOMICRO 15	11 051 12	15 mm	1.50 mm

Type FP cable pipes



Fireproof cable pipes

- fireproof customizing is available for most of the pipes
- to be used on bridges, overbridges and as a building terminals
- technical parameters compatible with EN-50086-1 requirements
- marked by FP symbol, e.g. SRS 75 FP

Colour: **black**

Type DVK cable pipes



Double-wall corrugated cable protecting pipes

- cable pipe with corrugated outside and smooth inside
- high ring stiffness value
- must be used only for open cut installation as culverts under roads, streets and rail tracks
- delivered with the type M coupler
- length – 6 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DVK 50	11 020 28	50 x 42 mm	720 m
DVK 75	11 020 34	75 x 63 mm	504 m
DVK 110	11 020 50	110 x 95 mm	300 m
DVK 125	11 020 54	125 x 108 mm	306 m
DVK 160	11 020 62	160 x 136 mm	144 m
DVK 232	11 020 68	232 x 200 mm	138 m

Colour: blue, red

Type DKF, DKN bends



Bends

- delivered with the type M coupler
- bending radius – 800 mm
- for type DVK cable pipes

Angle 45°

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DKF 50	13 064 28	50 x 42 mm	5 pcs.
DKF 75	13 064 34	75 x 63 mm	5 pcs.
DKF 110	13 064 50	110 x 95 mm	5 pcs.
DKF 125	13 064 54	125 x 108 mm	5 pcs.
DKF 160	13 064 62	160 x 136 mm	5 pcs.
DKF 232	13 064 68	232 x 200 mm	1 pcs.

Angle 90°

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DKN 50	13 065 28	50 x 42 mm	5 pcs.
DKN 75	13 065 34	75 x 63 mm	5 pcs.
DKN 110	13 065 50	110 x 95 mm	5 pcs.
DKN 125	13 065 54	125 x 108 mm	5 pcs.
DKN 160	13 065 62	160 x 136 mm	5 pcs.
DKN 232	13 065 68	232 x 200 mm	1 pcs.

Colour: blue, red

Type DVK-T cable pipes



Double-wall corrugated cable protecting pipes with watertight coupler

- made and used in the same way as DVK pipes, but supplied with watertight coupler
- delivered with the type MT coupler
- length – 6 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DVK 50T	11 021 28	50 x 42 mm	720 m
DVK 75T	11 021 34	75 x 63 mm	504 m
DVK 110T	11 021 50	110 x 95 mm	300 m
DVK 125T	11 021 54	125 x 108 mm	306 m
DVK 160T	11 021 62	160 x 136 mm	144 m

Colour: **blue, red**

Type DKF-T, DKN-T bends



Bends with watertight coupler

- delivered with the type MT coupler
- bending radius – 800 mm
- to be used with type DVK-T cable pipes

Angle 45°

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DKF 50T	13 066 28	50 x 42 mm	5 pcs.
DKF 75T	13 066 34	75 x 63 mm	5 pcs.
DKF 110T	13 066 50	110 x 95 mm	5 pcs.
DKF 125T	13 066 54	125 x 108 mm	5 pcs.
DKF 160T	13 066 62	160 x 136 mm	5 pcs.

Angle 90°

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DKN 50	13 067 28	50 x 42 mm	5 pcs.
DKN 75	13 067 34	75 x 63 mm	5 pcs.
DKN 110	13 067 50	110 x 95 mm	5 pcs.
DKN 125	13 067 54	125 x 108 mm	5 pcs.
DKN 160	13 067 62	160 x 136 mm	5 pcs.

Colour: **blue, red**

Type DVR cable pipes



Flexible double-wall cable protecting pipes

- cable pipes with corrugated outside; with inside facilitating cable drawing
- intended for the construction of cable duct systems in areas with low external loads, e.g. pavements and green areas
- recommended for the telecommunications cable duct systems construction, ensure the tightness of duct systems sections
- delivered in coils with type M couplers
- can be also connected with type MT couplers
- provided with pulling thread

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DVR 50/25	11 022 28	50 x 42 mm	25 m
DVR 50/50	11 022 28	50 x 42 mm	50 m
DVR 50	11 022 28	50 x 42 mm	100 m
DVR 75/25	11 022 34	75 x 64 mm	25 m
DVR 75/50	11 022 34	75 x 64 mm	50 m
DVR 75	11 022 34	75 x 64 mm	100 m
DVR 110/25	11 022 50	110 x 95 mm	25 m
DVR 110/50	11 022 82	110 x 95 mm	50 m
DVR 110	11 022 50	110 x 95 mm	100 m
DVR 160	11 022 62	160 x 136 mm	25 m

Colour: blue, red, black, orange

Type KR cable pipes



Flexible single-wall cable protecting pipes

- for cable protection in low external load areas
- inside and outside corrugated
- used as flexible bends
- delivered in coils with type M couplers
- provided with pulling thread

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
DVR 50/50	11 023 28	50 x 42 mm	50 m
DVR 50	11 023 28	50 x 42 mm	100 m
DVR 75/50	11 023 34	75 x 64 mm	50 m
DVR 75	11 023 34	75 x 64 mm	100 m
DVR 110/50	11 023 82	110 x 95 mm	50 m
DVR 110	11 023 50	110 x 95 mm	100 m

Colour: blue, red, black

Type A PS cable pipes



Split cable protecting pipes

- for protection of existing cables and repairs of damaged cable pipes
- can be used under roads, streets and railway tracks
- length – 3 meters, 5 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	LENGT H	SET
A 58 PS	11 030 30	58 x 50 mm	5 m	550 m
A 83 PS	11 030 36	83 x 75 mm	3 m	180 m
A 110 PS	11 030 50	110 x 100 mm	3 m	162 m
A 120 PS	11 030 52	122 x 110 mm	3 m	144 m
A 160 PS	11 030 62	160 x 141 mm	3 m	72 m

Colour: **blue, red, black**

Type KKHR cable pipes



Tight split cable protecting pipes

- for the closure of blow-in locations of cable ducts with optic-fibre cable inside
- specific lock construction provides air- and watertightness up to 10 bar
- made of PVC-U
- length – 2 meters
- have to be connected only with the EBM blow-in sockets
- for the proper montage KKHRG tool required

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	LENGT H	SET
KKHR 32	11 033 20	32.0 x 28.4 mm	2 m	1 pcs.
KKHR 40	11 033 26	40.0 x 36.2 mm	2 m	1 pcs.
KKHR 50	11 033 28	50.0 x 44.8 mm	2 m	1 pcs.

Colour: **black**

Black cable pipes for open air installation, flammable, protected against the influence of UV radiation.

Type BE cable pipes



Smooth wall cable pipes in 6m sections

- supplied with a socket connector
- intended to cable protection in open air installations in on pillars, rocks, walls, bridge and overbridge structures
- dimensions compatible with PN 10 type series
- fixed with type VF, SF, ŽF holders and type FR frames
- connected with type KNS and KFS bends
- length – 6 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
BE 32*	12 004 20	32 x 26 mm	60 m
BE 50	12 004 28	50 x 40 mm	900 m
BE 75	12 004 34	75 x 61 mm	504 m
BE 110	12 004 50	110 x 90 mm	240 m
BE 160**	12 004 62	160 x 131 mm	180 m

*) Delivered with type M coupler
 **) Supplied without socket adapter.

Colour: **black**

Type SV cable pipes



Smooth wall cable pipes in 2.5m sections

- supplied without socket connector
- used similar to type BE cable pipes, for the protection of cables on pillars and walls
- fixed with type VF, SF, ŽF holders and type FR frames
- length – 2.5 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
SV 32	12 005 20	32 x 26 mm	20 pcs.
SV 50	12 005 28	50 x 40 mm	150 pcs.
SV 75	12 005 34	75 x 61 mm	84 pcs.
SV 110	12 005 50	110 x 90 mm	40 pcs.

Colour: **black**

Type VA cable pipes



Flexible smooth wall cable pipes

- provided with pulling thread
- fixed with type VF, SF, ŽF holders and type FR frames
- delivered in coils

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
VA 32	12 006 20	32 x 26 mm	100 m
VA 50	12 006 28	50 x 40 mm	100 m
VA 75	12 006 34	75 x 61 mm	50 m

Colour: **black**

Type F bends



Bends 180°, UV resistant

- smooth wall pipes
- with a lengthen socket connector
- for pipes BE, SV, VA type
- with pipe-ends protection against rainwater penetration

SYMBOL	PRODUCT CODE	OUT. DIAM.	RADIUS	SET
F 50	13 079 28	50 mm	150 mm	5 pcs.
F 75	13 079 34	75 mm	150 mm	5 pcs.

Colour: **black**

Type SVA cable pipes



Split cable protecting pipes

- for the protection of existing cables and repairs of damaged cable pipes
- length – 3 meters, 5 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	LENGT H	SET
SVA 58	12 031 30	58 x 50 mm	5 m	550 m
SVA 83	12 031 36	83 x 75 mm	3 m	180 m
SVA 110	12 031 50	110 x 100 mm	3 m	162 m
SVA 120	12 031 52	122 x 110 mm	3 m	144 m
SVA 160	12 031 62	160 x 141 mm	3 m	72 m

Colour: **black**

Type SV-D cable pipes



Split cable pipes for heavy terrain conditions

- for the protection of existing cables installed on the ground surface, on pillars and walls
- special lock construction prevents opening by unauthorised persons
- fixed with type VF, SF, ŻF holders and type FR frames
- length – 2.5 meters

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
SV-D 50	12 032 28	50 x 30 mm	150 pcs.
SV-D 75	12 032 34	75 x 50 mm	48 pcs.
SV-D 110	12 032 50	110 x 80 mm	54 pcs.

Colour: **black**

Type KF PS bends



45° angle split bends

- to be used for the protection of existing cables
- based on type A PS split cable pipes
- angle 45°
- connect two bends to get 90° angle

SYMBOL	PRODUCT CODE	OUT. DIAM. X INS. DIAM.	SET
KF 110 PS	13 068 50	110 x 100 mm	1 pcs.
KF 120 PS	13 068 52	122 x 110 mm	1 pcs.
KF 160 PS	13 068 62	160 x 141 mm	1 pcs.

Colour: **blue, red**

Type Y PS pipe laterals



Split pipe laterals

- intended to make pipe laterals at building entrances
- to be used instead of building branch wells

SYMBOL	PRODUCT CODE	DIAMETERS	SET
Y 110/32 PS	13 141 80	110 x 110 x 32 mm	1 pcs.
Y 110/40 PS	13 141 81	110 x 110 x 40 mm	1 pcs.
Y 110/50 PS	13 141 82	110 x 110 x 50 mm	1 pcs.
Y 120/32 PS	13 141 85	122 x 122 x 32 mm	1 pcs.
Y 120/40 PS	13 141 86	122 x 122 x 40 mm	1 pcs.
Y 120/50 PS	11 141 52	122 x 122 x 50 mm	1 pcs.

Colour: **black**

Type Y pipe laterals



Pipe laterals

- intended to make pipe laterals at building entrances
- to be used instead of building branch wells

SYMBOL	PRODUCT CODE	DIAMETERS	SET
Y 40/32	13 140 74	40 x 40 x 32 mm	5 pcs.
Y 40/40	13 140 75	40 x 40 x 40 mm	5 pcs.
Y 50/40	13 140 77	50 x 50 x 40 mm	5 pcs.
Y 50/50	13 140 28	50 x 50 x 50 mm	5 pcs.
Y 110/40	13 140 81	110 x 110 x 40 mm	5 pcs.
Y 110/50	13 140 82	110 x 110 x 50 mm	5 pcs.
Y 110/110	11 140 79	110 x 110 x 110 mm	5 pcs.

Colour: **black**

Type ZZA containers



Junction containers

- used in telecommunications networks for holding cable coupling-boxes and emergency reserve of optic-fibre cables
- main shank made of polypropylene (PP)
- top cover made of high density polyethylene (HDPE)

SYMBOL	PRODUCT CODE	OUT. DIAM.	HEIGHT	SET
SHANK ZZA-1	13 130 72	920 mm	640 mm	1 pcs.
SHANK ZZA-2	13 130 72	920 mm	840 mm	1 pcs.
COVER EZ 800	13 112 72	-	-	1 pcs.
CYLINDER	13 139 72	-	-	1 pcs.
SEPARATOR	13 139 72	-	-	1 pcs.

Colour: **black**

Type ZSZZ containers



Drawing and junction containers

- to be used in telecommunications networks for holding emergency reserve of optic-fibre cables
- main shank made of polypropylene (PP)
- top cover made of high density polyethylene (HDPE)

SYMBOL	PRODUCT CODE	OUT. DIAM.	HEIGHT	SET
SHANK ZSZZ-1	13 131 72	920 mm	440 mm	1 pcs.
SHANK ZSZZ-2	13 131 72	920 mm	640 mm	1 pcs.
COVER EZ 800	13 112 72	-	-	1 pcs.
CYLINDER	13 139 72	-	-	1 pcs.
SEPARATOR	13 139 72	-	-	1 pcs.

Colour: **black**

Type KKHRG tool



Assembly tool for type KKHRG split ducting pipes

- made of galvanized steel

SYMBOL	PRODUCT CODE	SET
KKHRG 32	14 034 20	1 pcs.
KKHRG 40	14 034 26	1 pcs.
KKHRG 50	14 034 28	1 pcs.

Type M couplers



Couplers for cable protecting pipes

- used with all types of cable protecting pipes, excluding split pipes
- IP54 tightness class

SYMBOL	SET	SET
M 32	13 080 20	100 pcs.
M 50	13 080 28	100 pcs.
M 75	13 080 34	50 pcs.
M 110	13 080 50	50 pcs.
M 125	13 080 54	50 pcs.
M 160	13 080 62	25 pcs.
M 232	13 080 68	10 pcs.

Colour: **black**

Type MT couplers



Water-tight couplers for cable pipes

- water-tight couplers for corrugated cable protecting pipes
- delivered with two rubber sealing
- IP67 water-tightness class

SYMBOL	PRODUCT CODE	SET
M 50 T	13 081 28	50 pcs.
M 75 T	13 081 34	50 pcs.
M 110 T	13 081 50	50 pcs.
M 125 T	13 081 54	25 pcs.
M 160 T	13 081 62	25 pcs.

Colour: **black**

Type U seal



Rubber sealing for the watertight couplers

- used with type MT couplers and TE end covers

SYMBOL	PRODUCT CODE	SET
U 50	13 150 25	50 pcs.
U 75	13 150 34	50 pcs.
U 110	13 150 50	50 pcs.
U 125	13 150 54	25 pcs.
U 160	13 150 62	25 pcs.

Colour: **black**

Type EBM blow-in sockets



Split blow-in sockets for type KKHR cable pipes

- made of PVC-U
- split couplers
- air-tight up to 10 bar

SYMBOL	PRODUCT CODE	PIPE TYPE	SET
EBM 32	13 085 20	KKHR 32	5 pcs.
EBM 40	13 085 26	KKHR 40	5 pcs.
EBM 50	13 085 28	KKHR 50	5 pcs.

Colour: **black**

Type IM couplers



Internal couplers

- intended to internal connection of pipes in pipe jacking installations

SYMBOL	PRODUCT CODE	PIPE TYPE	SET
IM 99	13 083 44	SRS 110	27 pcs.
IM 102	13 083 48	A 110	45 pcs.

Colour: **black**

Type MO couplers



Couplers for type OPTO cable pipes (RHDPE)

- made of polypropylene (PP)
- water- and air-tight up to 10 bar

SYMBOL	PRODUCT CODE	SET
MO 32	13 082 20	5 pcs.
MO 40	13 082 26	5 pcs.
MO 50	13 082 28	5 pcs.
MO 40/32	13 082 74	5 pcs.
MO 50/40	13 082 77	5 pcs.

Colour: **black**

Type E end covers



End covers

- end covers for all types of cable pipes, excluding split pipes

SYMBOL	PRODUCT CODE	SET
E 32	13 110 20	100 pcs.
E 40	13 110 26	100 pcs.
E 50	13 110 28	100 pcs.
E 75	13 110 34	50 pcs.
E 110	13 110 50	150 pcs.
E 125	13 110 54	50 pcs.
E 160	13 110 62	40 pcs.
E 232	13 110 68	10 pcs.

Colour: **black, red**

Type TE end covers



Water-tight end covers

- water-tight end covers for corrugated cable pipes
- supplied with type U rubber sealing

SYMBOL	PRODUCT CODE	SET
TE 50	13 111 28	100 pcs.
TE 75	13 111 34	50 pcs.
TE 110	13 111 50	150 pcs.
TE 125	13 111 54	50 pcs.
TE 160	13 111 62	40 pcs.

Colour: **black**

Type R couplers



Reduction couplers

- for the connection of pipes with different outside diameters

SYMBOL	PRODUCT CODE	SET
R 75/50	13 084 34	50 pcs.
R 110/50	13 084 82	50 pcs.
R 110/75	13 084 83	50 pcs.
R 110/100	13 084 46	25 pcs.
R 125/110	13 084 87	15 pcs.
R 160/110	13 084 88	15 pcs.

Colour: **black**

Type ET caps



Cable drawing caps

- prevent the damage of cable protective layer while drawing into cable pipe

SYMBOL	PRODUCT CODE	SET
ET 50	13 120 28	50 pcs.
ET 75	13 120 34	50 pcs.
ET 110	13 120 50	30 pcs.
ET 125	13 120 54	20 pcs.
E 160*	13 120 62	18 pcs.

*) already gashed

Colour: **black**

Type D distance holders



Distance holders

- for fixing of pipes in multi-pipe ducts

SYMBOL	PRODUCT CODE	SET
D 50/80	13 090 28	10 pcs.
D 75/8	13 090 34	10 pcs.
D 110/4	13 090 50	36 pcs.
D 110/8	13 090 50	36 pcs.
D 125/8	13 090 54	50 pcs.
D 160/4	13 090 62	10 pcs.
D 160/8	13 090 62	10 pcs.

Type ŻF holders



Holders for reinforced concrete rods

SYMBOL	PRODUCT CODE	SET
ŻF 50	13 104 28	2 pcs.
ŻF 75	13 104 34	2 pcs.
ŻF 110	13 104 50	2 pcs.
ŻF 160	13 104 62	2 pcs.

Type VF holders



Wall holders with screws

SYMBOL	PRODUCT CODE	SET
VF 32	13 102 20	30 pcs.
VF 50	13 102 28	30 pcs.
VF 75	13 102 34	30 pcs.
VF 110	13 102 50	30 pcs.

Type SF holders



Holders for wooden pillars

SYMBOL	PRODUCT CODE	SET
SF 32	13 103 20	30 pcs.
SF 50	13 103 28	30 pcs.
SF 75	13 103 34	30 pcs.
SF 110	13 103 50	30 pcs.

Type FR frames



Frames FR for spun rods

SYMBOL	PRODUCT CODE	SET
SF 32	13 103 20	30 pcs.
SF 50	13 103 28	30 pcs.
SF 75	13 103 34	30 pcs.
SF 110	13 103 50	30 pcs.

Blue tapes



Blue tapes

- marking tape for low voltage feeder cables up to 1 kV
- basic width – 200 mm
- length – 200 meters.

SYMBOL	PRODUCT CODE	THICKNESS
TO-ENN/20/08	13 150 16	0.08 mm
TO-ENN/20/12	13 150 16	0.12 mm
TO-ENN/20/16	13 150 16	0.16 mm
TO-ENN/20/40	13 150 16	0.40 mm
TO-ENN/20/45	13 150 16	0.45 mm
TO-ENN/20/50	13 150 16	0.50 mm
TO-ENN/30/08	13 150 16	0.08 mm
TO-ENN/30/12	13 150 16	0.12 mm
TO-ENN/30/16	13 150 16	0.16 mm
TO-ENN/30/40	13 150 16	0.40 mm
TO-ENN/30/45	13 150 16	0.45 mm
TO-ENN/30/50	13 150 16	0.50 mm
TO-ENN/40/08	13 150 16	0.08 mm
TO-ENN/40/12	13 150 16	0.12 mm
TO-ENN/40/16	13 150 16	0.16 mm
TO-ENN/40/40	13 150 16	0.40 mm
TO-ENN/40/45	13 150 16	0.45 mm
TO-ENN/40/50	13 150 16	0.50 mm

Available with "CAUTION! CABLE" inscription

Red tapes



Red tapes

- marking tape for medium and high voltage feeder cables over 1 kV
- basic width – 200mm
- length – 200 meters

SYMBOL	PRODUCT CODE	THICKNESS
TO-ENC/20/08	13 151 16	0.08 mm
TO-ENC/20/12	13 151 16	0.12 mm
TO-ENC/20/16	13 151 16	0.16 mm
TO-ENC/20/40	13 151 16	0.40 mm
TO-ENC/20/45	13 151 16	0.45 mm
TO-ENC/20/50	13 151 16	0.50 mm
TO-ENC/30/08	13 151 16	0.08 mm
TO-ENC/30/12	13 151 16	0.12 mm
TO-ENC/30/16	13 151 16	0.16 mm
TO-ENC/30/40	13 151 16	0.40 mm
TO-ENC/30/45	13 151 16	0.45 mm
TO-ENC/30/50	13 151 16	0.50 mm
TO-ENC/40/08	13 151 16	0.08 mm
TO-ENC/40/12	13 151 16	0.12 mm
TO-ENC/40/16	13 151 16	0.16 mm
TO-ENC/40/40	13 151 16	0.40 mm
TO-ENC/40/45	13 151 16	0.45 mm
TO-ENC/40/50	13 151 16	0.50 mm

Available with "CAUTION! CABLE" inscription

Warning tapes



Warning tapes

- warning tape for telecommunications networks
- length – 100 meters

SYMBOL	PRODUCT CODE	WIDTH	TEXT
TO-Tkt/10	13 152 08	100 mm	*
TO-Tkt/15	13 152 12	150 mm	*
TO-Tkt/20	13 152 16	200 mm	*
TO-Tkt/25	13 152 18	250 mm	*
TO-Opt/10	13 153 08	100 mm	**
TO-Opt/15	13 153 34	150 mm	**
TO-Opt/25	13 153 18	250 mm	**

*) CAUTION! TELECOMMUNICATIONS CABLE
 **) CAUTION! OPTIC-FIBRE CABLE

Warning and locating tapes



Warning and locating tapes

- a steel insert enables the no-digging location of the optic-fibre cable route
- the type TOL-6/Z tape can be used in cable laying ploughs

SYMBOL	PRODUCT CODE	WIDTH	TEXT
TOL-Opt/10	13 154 08	100 mm	*
TOL-Opt/20	13 154 16	150 mm	*
TOL-Opt/25	13 154 18	250 mm	*
TOL-6/Z	13 155 05	60 mm	NONE

*) CAUTION! TELECOMMUNICATIONS CABLE

Warning and separating tapes



Warning and separating tapes

- used for the protection of dangerous places and construction sites
- length – 200 meters

SYMBOL	PRODUCT CODE	WIDTH
TOO-BC/8	13 156 06	80 mm
TOO-BC/10	13 156 08	100 mm
TOO-BC/15	13 156 12	150 mm
TOO-ZC/10	13 157 08	100 mm
TOO-BN/10	13 158 08	100 mm
TOO-BN/15*	13 158 12	150 mm
TOO-BN/10**	13 158 08	100 mm

*) Available with "TP SA" inscription
 **) Available with "POLICE, SAFEGUARD, CAUTION EXCAVATION, ROAD WORK" inscription

Minimal bending radius for different pipe types and diameters

The mean deflection factor is determined on the assumption that the pipe is deflected on circle section. Supporting the pipe being bent, for example in one point along its length, changes the factor.

Pipes delivered in straight sections

Pipe type	Temperature	Outside surface	Mean value of deflection factor (factor x outside diameter = minimal bending radius)
A	+20°C	smooth	40
A	0°C	smooth	70
DVK, DVK-T	+20°C	corrugated	25
DVK, DVK-T	0°C	corrugated	35
SRS	+20°C	smooth	30
SRS	0°C	smooth	55
SRS-G	+20°C	smooth	30
SRS-G	0°C	smooth	45
BE, SV	+20°C	smooth	25
BE, SV	0°C	smooth	45

Example: The bending radius of type A 110 smooth wall pipe at +20°C is: 40 x 110, approx. 4500 mm – 4.5 m. The bending radius of type SRS 110 pipe at 0°C is: 55 x 110, approx. 6100 mm – 6.1 m.

Pipes delivered in coils

Pipe type	Bending radius
KR 50	0.35 m
KR 75	0.35 m
KR 110	0.35 m
DVR 50	0.35 m
DVR 75	0.35 m
DVR 110	0.35 m
DVR 160	0.35 m
VA 32	0.60 m
VA 50	0.65 m
VA 75	0.90 m
OPTO 32/2	0.60 m
OPTO 32	0.65 m
OPTO 40	0.65 m
OPTO 50	0.65 m

The bending radius values are given at +20°C.

Polyethylene is resistant to the influence of most acids, alkalies, salt solutions and organic solvents.

Abbreviated table of the chemical resistance of polyethylene

Chemicals or products	Concentration	Temperature of + 20°C	Temperature of + 60°C
Acetone	100%	O	O
Petrol		S	O
Methyl alcohol	100%	S	S
Nitric acid	25%	S	S
Nitric acid	50%	O	N
Nitric acid	75%	N	N
Hydrochloric acid	Concentrated	S	S
Oils and fats		S	O
Mineral oils		S	O
Sulphuric acid	100%	S	S
Beer		S	S
Hydrogene sulphide	100%	S	S
Sodium chloride	Saturated solution	S	S
Sodium hydroxide	40%	S	S

- S – satisfactory resistance of polyethylene to the influence of chemicals; the test results are recognised as satisfactory by most countries participating in the tests
- L – limited resistance of polyethylene to the influence of chemicals; the test results are recognised as limited by most countries participating in the tests
- N – non-satisfactory resistance of polyethylene to the influence of chemicals; the test results are recognised as non-satisfactory by most countries participating in the tests.

Recommended selection of cable pipes for underground installation depending on the application

TYPE	OPEN CUT		PIPE JACKING, DRILLING		PROTECTION OF EXISTING CABLE, REPAIR OF DUCT
	TRAFFIC LOAD		TRAFFIC LOAD		
	YES	NO	YES	NO	
A		+		+	
SRS	+		+	+	
SRS-G	+		+	+	
DVK	+	+			
DVK-T	+	+			
DVR		+			
KR		+			
OPTO	+	+			
PS	+	+			+
KKHR		+			+

Recommended selection of cable pipes for open air installation depending on the application

TYPE	PIPE ON BUILDING, PILLAR		RIVER CROSSING, PIPE ON ROCK, BRIDGE, OVERBRIDGE	PROTECTION OF EXISTING CABLE, REPAIR OD DUCT
	≤ 2.0 m	> 2.0 m		
VA			+	
VB		+	+	
SV	+			
SVA				+
SV-D				+

Colour

In case of pipes for subterranean installation it is possible to produce these pipes in different colour than mentioned in description of the product.

Polyethylene characteristics

All kinds of pipes produced by AROT POLSKA are made of high density polyethylene (HDPE).

Polyethylene is a polymer. Translated from Greek it means "many parts" (poly = many, mer = parts). The production of polyethylene is a chemical process, in which molecules consisting of carbon and hydrogen are connected in long chains that may contain tens of thousands of carbon atoms.

There are different types of polyethylene

1. LDPE (also called PEL) is a low density polyethylene (high-pressure, soft). It means that the plastic is soft and flexible.
2. MDPE (also called PEM) is a medium density polyethylene (medium-pressure). It means that the plastic is more stiff than LDPE, but softer than HDPE.
3. HDPE (also called PEH) is a high density polyethylene (low-pressure, hard). It's the stiffest type of polyethylene.

Resistant to impact and shock

Polyethylene pipes are resistant to impact and shock, e.g. during transport, storage, etc. as well as during underground installation. Apart from this, polyethylene pipes are lightweight and/so in case of the most common diameters it is not necessary to use special lifting equipment.

Resistant to chemical factors

Many different chemical factors occur both in the natural environment and in industry. Polyethylene pipes are resistant to all kinds of these factors. The pipes do not corrode, do not conduct electricity and they are not susceptible to the chemical aggressiveness of the ground.

Long life

Polyethylene pipes are characterised by a very long life – at least 50 years. It has been confirmed in many pressure tests, which have been performed both in normal working temperature and in increased temperature. Most of the pipes will endure for much longer periods than required by standards.

Resistant to high and low temperature

First of all, polyethylene pipes may be installed in all weather conditions and second of all, they do not become more susceptible to damage even in very low temperatures.

Dig out our polyethylene pipes after 50 years and you will believe that time has stopped.

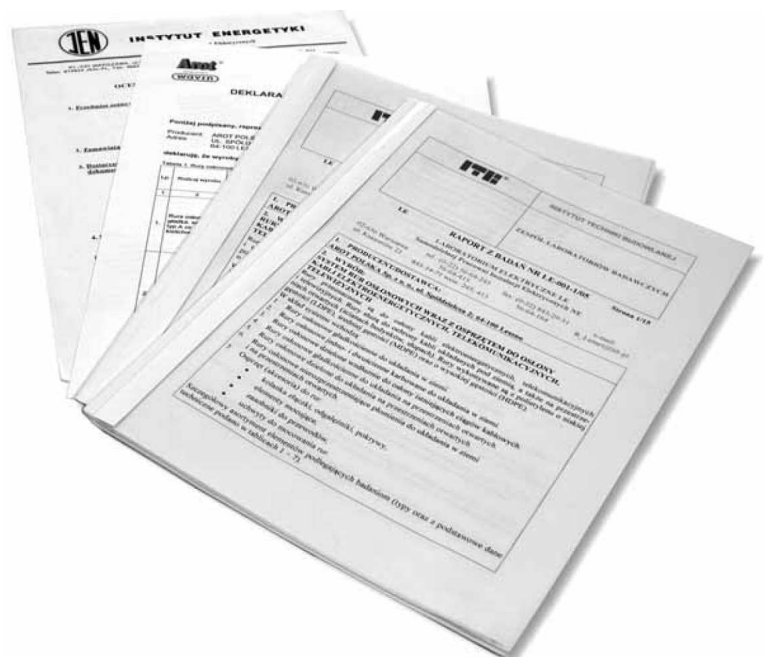


Certificate ISO 9001:2000

Our Customers' expectations and satisfaction define the high quality of our products and services. This high quality is contributed by all of our employees who dare create today what the Customer will start to expect tomorrow.

Cable pipes provided for underground laying are compatible with PN-EN 50086-2-4 basing on EU Declaration.

Pipes have „CE” mark because the standard is harmonised with EU Directive 73/23/EEC. Compatibility of our products with the Directive is confirmed by independent Laboratory of Building Research Institute in Test Reports, Nos LE-001-1/05 and LE-001-2/05.





Cable protecting pipes

Product catalogue



AROT POLSKA – the Offer

Our offer includes a complete system of protective pipes for electrical, power, telecommunication, and television cables, as well as sets of accessories that are necessary for cable laying and cable pulling. This assortment of goods comprises:

- smooth-wall protective pipes type: A, SRS, SRS-G, OPTO;
- single and double corrugated protective pipes type: KR, DVR, DVK, DVK-T;
- split protective pipes: A PS, KKHR;
- protective pipes for use in open areas: BE, SV, VA;
- flame non-propagating protective pipes, elbows, pipe connectors, branch-joints, covers, fixing elements;
- optical fibre cable containers;
- warning tapes and location tapes.



We, AROT POLSKA are continuously developing and perfecting their products. Therefore, we reserve ourselves the right to modify or alter our product specifications without notice. All information included in this publication was prepared in good faith and with deep conviction that, as for the day of submission of the material for printing, it is up-to-date and irreproachable. This catalogue does not constitute a commercial quotation in the understanding of the stipulations as set forth within the Civil Code. Rather than that, it merely is an overview of the products offered by AROT POLSKA.



AROT POLSKA Sp. z o.o.

ul. Spółdzielcza 2

64-100 Leszno

POLSKA

Tel. +48 65 525 25 25

Fax +48 65 529 27 27

e-mail: office@arot.com.pl

www.arot.com.pl