

Insulation

Heat Shrinkable Moulded Shapes

European Product Guide

HellermannTyton



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Moving the market takes more than good ideas.

Developing the product solutions for the future, requires visionary thinking and the passion to turn ideas into reality. When visions become functional products, innovations are generated that benefit our customers.

We create the conditions for this by employing motivated people who are committed to working as a team. When only the best solutions will do, you need dedicated professionals with expert knowledge.

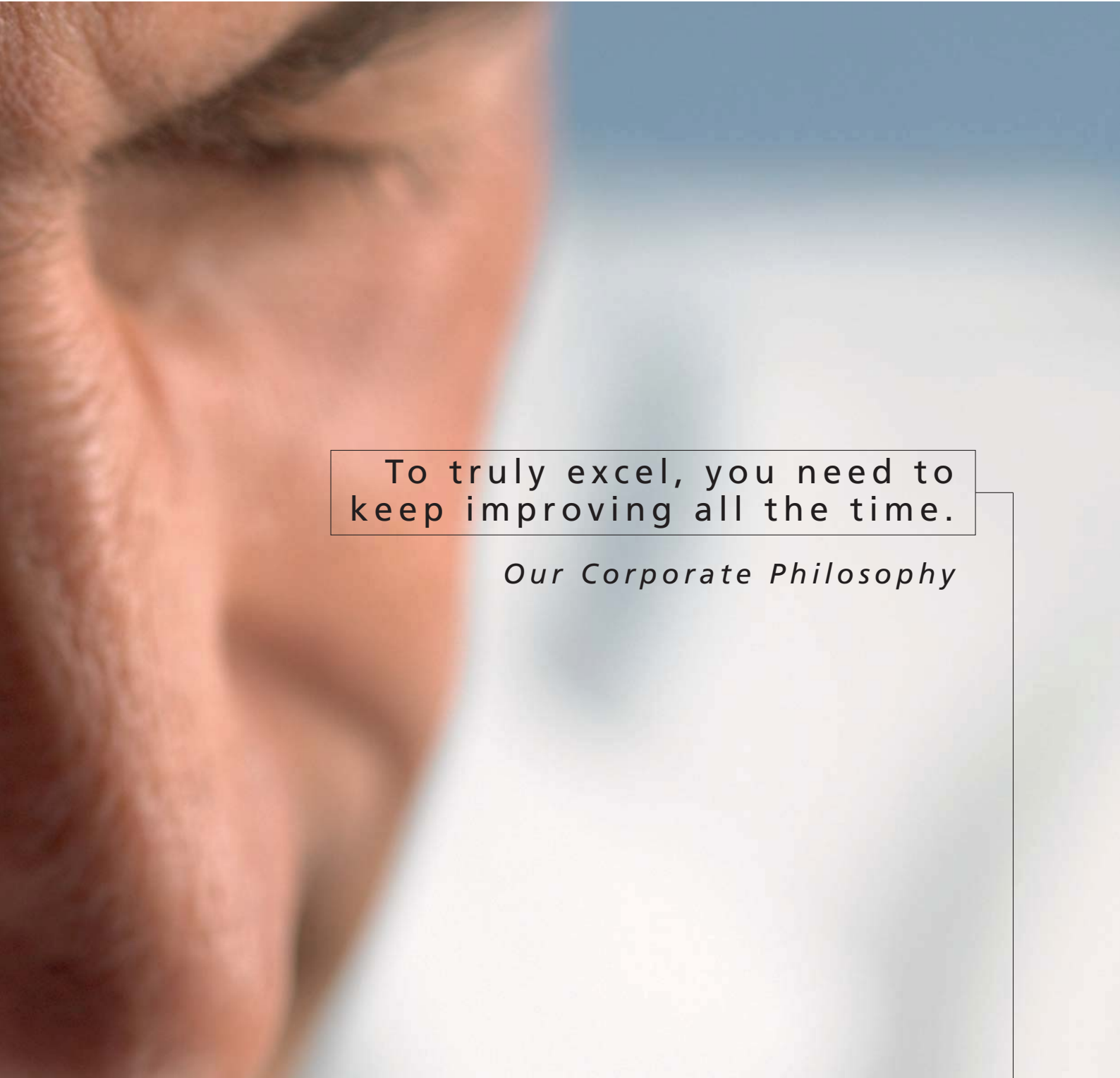
The result is product solutions that not only reshape the market but re-develop it.

We are able to offer product solutions before our customers know they need them.

We maintain good relationships with our customers and also keep a close eye on the latest market developments. This allows us to recognise trends affecting trade and industry at an early stage. And enables us to remain a step ahead of customer requirements at all times.

Meeting high expectations calls for ongoing development.

As well as paying particular attention to communicating with our customers and knowledge of the market, we invest heavily in research and development. To ensure that we can support our customers into the future by offering custom product solutions, we continually optimise our technical and logistical processes.



To truly excel, you need to
keep improving all the time.

Our Corporate Philosophy

At your service wherever – and whenever – you need us.

What use are the best product solutions if they are not available to local markets in a timely way? HellermannTyton's motto is therefore "Think global, act local". For us, this not only means responding to the needs of local markets – we also have a presence there for the benefit of our customers.

Employees on the ground allow us to cater for cultural, market-specific and linguistic factors effectively. In addition, our customers have access to a worldwide distribution network. This adds value that makes us one of the leading providers for trade and industry.

Certified processes and quality, for your security.

HellermannTyton always aim for the highest quality. To live up to this claim we have implemented a quality and environmental management systems.

Our quality management is certified to DIN EN ISO 9001:2008 and DIN EN ISO/TS 16949:2002.

In addition, our environmental management complies with the requirements of DIN EN ISO 14001:2005.

DIN EN ISO
9001:2000

DIN EN ISO/TS
16949:2002

DIN EN ISO
14001:2004

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If you have a particular problem that you would like us to help you with then please contact us.

With our vast experience and practically unlimited technical capabilities we are confident of being able to help you find a solution. Remember, we are a service provider and not just a supplier.

Give us a call! Here are your contacts for enquiries and orders

For all product information please visit our Website www.HellermannTyton.co.uk

Heat Shrinkable Moulded Shapes

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Heat Shrinkable Moulded Shapes Expertise

Heat Shrinkable Moulded Shapes Expertise

HellermannTyton heat shrinkable moulded shapes combine the advantages of quick, easy installation with high electric strength, mechanical toughness and superior chemical and environmental resistance. Our products offer important functional and cost saving benefits for electrical and electronic applications ranging from insulation and protection of individual components to fabrication of complete inter-connecting cable harness assemblies. Strain-relieving boots, transitions and connector backshell covers, as well as other specialised shapes, are available in a wide range of sizes and options. HellermannTyton's extensive product line includes low profile, bulbous and lipped types for use on circular and D-type connectors as well as complex multiway transitions. Only a minimum number of shapes are needed to cover a full range of applications as the products have high shrink ratios of up to 5:1.

Applications

The use of our heat shrinkable moulded shapes in conjunction with our specialist heat shrinkable tubings makes it easy to fabricate complete jacketed wire and cable harnessing and interconnection systems of the highest quality. Heat shrinkable shapes are available for the complete range of electrical and electronic harnessing applications. They can be sealed with our special adhesives and encapsulants to ensure the proper degree of mechanical support, strain relief and environmental protection. Encapsulating the complete harnessing and interconnection system to the desired configuration is easily and neatly accomplished, with minimum weight and bulk.

Choice of Materials

A range of specially formulated materials is available to meet a variety of performance requirements. Material selection can be made according to individual applications. We also have the ability to make customized materials to suit special requirements.

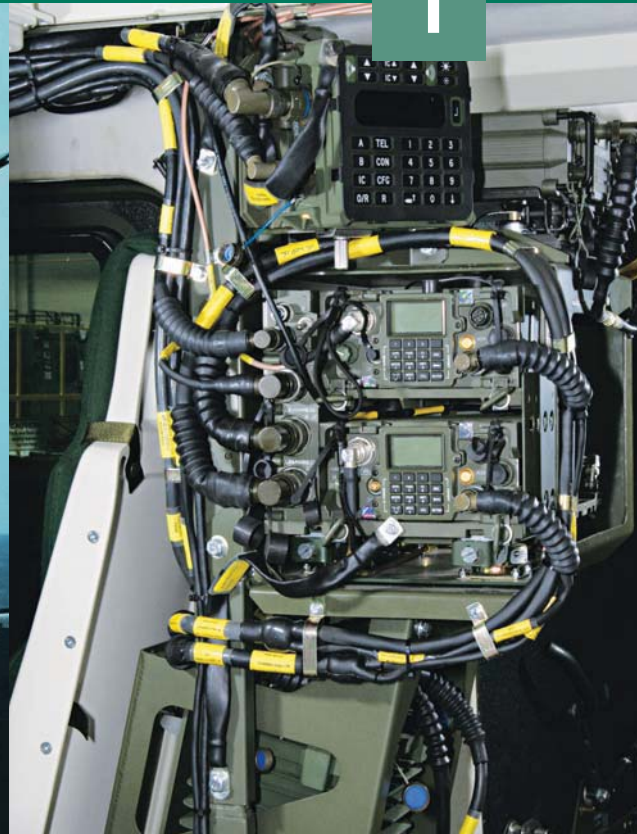
Technical Capabilities

Our materials are formulated in our own laboratory and produced in the HellermannTyton factory. We have experience and knowledge of all major applications and offer full technical support from design through to prototyping, to service.

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This selection guide will help you to find the correct moulded shape for your application:

Step 1. Product Style

Use the Selection Guide Overview on page 12 to quickly select a suitable product profile.

Step 2. Product Size

Choose the correct dimensions to meet your application from our sizes and types table which appears on the relevant product profile page. An example of these tables is shown below:

Sizes and Type Table									
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	non
223-2	33.0	9.4	17.5	4.1	94.0	30.0	1.5	1.2	20.0
216-1	21.0	9.4	9.0	2.8	76.5	20.0	1.6	1.6	15.0

Step 3. Material/ Adhesive

Choose a material and adhesive to meet your application requirements from the tables on page 14/15.

Further combinations are available.

Here is an example:

Combinations "On request"				
Adhesive	Material			
	B7	G	H	B8
W	√	√	√	√
W2	√	√	√	√
V9500	√	√	-	-
HMT200A	√	√	-	√
W21	-	-	√	-
Without Adhesive	√	√	√	√

These symbols denote the material or adhesive availability for each profile type.

In this example the adhesive W21 is not available with the material B7,G, and B8 because of the "-".

But it is available with the material H because of the "√".

3.1 Material

Parts can be supplied in a choice of materials. The "combinations" table on each product page provides a quick and easy material recognition guide for the product profiled.

The standard colour is black but other colours are available on request, please contact us for further information.

On page 14 you will find detailed information on our range of materials.

3.2 Adhesive

To maximise environmental protection and strain relief we recommend the use of an adhesive from our range below.

Pre-lined hot melt adhesive:

- WM250
- W
- W2
- W8
- W21

Component adhesive:

- HMT200A
- W24
- V9500
- TSA-200

For further information on adhesives please refer to page 15.

Step 4. Standard combinations

Standard combinations		To help you with your decision we offer standard combinations for each product type. In this example we offer the Type 223-2 in B8 material and with the adhesive W. 
Article-No.	Type	
402-23058	223-2-B8W	
402-16011	216-1-G	
402-17010	217-1-G	
402-18037	218-1-B8W	
402-20008	220-1-B7	
402-19020	219-2-B8	

5. Special Modifications

Filler ports and drain holes are also available where the injection of potting epoxy is required.

P = Filler ports for potting – 3mm Ø vent and 4.5mm Ø filler.

D = Drain holes 4 offset – 3mm Ø at H end equally spaced 90° apart.

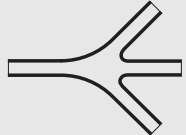
6. Ordering Procedure

When ordering heat shrinkable shapes, it is necessary to give a complete part number to enable efficient processing of your order. Part numbers can be made up of the following typical components:

Example:

154 - 42 - G - P - W8	
	Presence and type of adhesive
	Filler ports add suffix "P"; Drain holes add suffix "D"
	Material reference
	Expansion and special details
	Exact shape

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Materials for Heat Shrinkable Moulded Shapes

Material Specifications			
Description	B7	G	J
Material	Semi-rigid flame retarded polyolefin	Fluid resistant elastomer	Flexible polyolefin
Continuous Operating Temperature °C	-55 to +135	-75 to +150	-55 to +135
Minimum Shrink Temperature °C	+135	+135	+135
Specifications	MIL-I-81765/1 TYPE I DEF 59-97 BSG198 Part 5	VG 95343 Pt6 & Pt18 DEF 59-97 BSG198 Part 5	MIL-1-81765/1 TYPE II DEF 59-97 BSG198 Part 5
Tensile Strength (MPa)	13	15	14
Ultimate Elongation (%)	500	580	610
Dielectric Strength kV/mm	14	14	12
Flammability (Self extinguishing)	Excellent	Excellent	Excellent
Characteristics	Good physical and chemical resistance	Excellent resistance to fuels	Flexible
Typical applications	Military and general high performance harnessing		

Material Specifications			
Description	H	B8	L
Material	Flexible limited fire hazard material	Semi-rigid flame retarded polyolefin	Flexible flame retarded fluoroelastomer
Continuous Operating Temperature °C	-55 to +105	-55 to +100	-55 to +200
Minimum Shrink Temperature °C	+135	+135	+175
Specifications	NAVSEA 5617649 DEF 59-97 VG 95343 Pt29 BSG198 Part 5	EA-TS 09-11	MIL-81765/4 DEF Stan 59-97 BSG198 Part 5
Tensile Strength (MPa)	10	15	12
Ultimate Elongation (%)	450	500	300
Dielectric Strength kV/mm	15	15	8
Flammability (Self extinguishing)	Excellent	Good	Excellent
Characteristics	Low smoke Halogen free	Good physical and reasonable chemical resistance	High temperature excellent chem. resistance
Typical applications	Ships, submarines & railways	Power/utility shapes	Military and high performance harnessing

Material Specifications			
Description	-9	-8	-6
Material	Modified elastomer blend	Modified fluoroelastomer	Flexible flame retarded polyolefin
Continuous Operating Temperature °C	-55 to +120	-55 to +150	-55 to +120
Minimum Shrink Temperature °C	+135	+135	+135
Specifications	SCX15112	SCX15111	MIL-1-81765/1 Type I + II
Tensile Strength (MPa)	12	15	12
Ultimate Elongation (%)	500	450	500
Dielectric Strength kV/mm	20	20	20
Flammability (Self extinguishing)	Excellent	<25mm	Excellent
Characteristics	Good physical and reasonable chemical resistance	Good physical and chemical resistance	Good physical and reasonable chemical resistance
Typical applications	Military and general high performance harnessing		

Adhesives for Heat Shrinkable Moulded Shapes

Adhesive Specifications			
Description	W / W2	WM250	W8
Adhesive	General purpose hot melt adhesive	General purpose hot melt adhesive	EVA, high performance, hot melt adhesive
Operating Temperature Range °C	-55 to +80	-55 to +80	-55 to +105
Softening Point °C	+95	+95	+110
Supplied Form	pre-applied	pre-applied	pre-applied
Shelf Life	5 years	5 years	5 years
Solvent Resistance	Fair under splash conditions		

Adhesive Specifications			
Description	W21	W24	TSA-200
Adhesive	Modified polyamide hot melt adhesive	High performance, pre-coat, 1 part epoxy	Thermoset +125° C
Operating Temperature Range °C	-55 to +120	-75 to +200	-55 to +125
Softening Point °C	+120	-	-
Supplied Form	pre-applied	pre-applied	Tape
Shelf Life	5 years	5 years	5 years
Solvent Resistance	Saline: Very good De-icing fluid: Good Diesel: Excellent Lubricating Oil: Good Hydraulic Oil: Good Aviation Fuel: Good Automotive Fuel: Good	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions

Adhesive Specifications		
Description	V9500	HMT200A
Adhesive	Two part, black, epoxy adhesive	Hot melt adhesive tape
Operating Temperature Range °C	-75 to +150	-55 to +105
Softening Point °C	-	+110
Supplied Form	Cartridge	Tape
Shelf Life	18 months	5 years
Solvent Resistance	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions

Use this table to find the adhesive compatibility for your preferred material.

Material Combinations	Material			
	G	B7	B8	H
Material Description	Fluid resistant elastomer	Semi -rigid flame retarded polyolefin	Semi -rigid flame retarded polyolefin	Flexible limited fire hazard polyolefin
Shape				
Minimum Shrink Temperature °C	+135	+135	+135	+135
Operating Temperature Range °C	-75 to +150	-55 to +135	-55 to +100	-55 to +105
Shelf Life	5 years	5 years	5 years	5 years
Helashrink 100 Series	yes	yes	no	yes
Helashrink 1100 Series	yes	yes	no	yes
Helashrink 200 Series	yes	yes	no	yes
Helashrink 300 Series	yes	yes	no	yes
Helashrink 400 Series	yes	yes	no	yes
Helashrink 1200 Series	yes	yes	no	yes
Helashrink 1300 Series	yes	yes	no	yes
Low Profile Shapes (Series 313, 412, 492, 573)	no	no	no	no
Helashrink 1600 Series	no	no	yes	no
Helashrink In Line Series, low voltage	no	no	yes	no
Adhesive Compatibility	WM250	WM250	WM250	WM250
	W8	W8	W8	W8
	W24	W24		W24
	V9500	V9500		W21
	HMT200A	HMT200A		

Material Combinations	Material			
	L	-9	-6	-8
Material Description	Flexible flame retarded fluoroelastomer	Modified elastomer blend	Flexible flame retarded polyolefin	Fluoro-elastomer polymer blend
Shape		low profile	low profile	low profile
Minimum Shrink Temperature °C	+175	+135	+135	+135
Operating Temperature Range °C	-55 to +200	-55 to +120	-55 to +120	-55 to +150
Shelf Life	5 years			

Helashrink 100 Series	yes	no	no	no
Helashrink 1100 Series	yes	no	no	no
Helashrink 200 Series	yes	no	no	no
Helashrink 300 Series	yes	no	no	no
Helashrink 400 Series	yes	no	no	no
Helashrink 1200 Series	yes	no	no	no
Helashrink 1300 Series	yes	no	no	no
Low Profile Shapes (Series 313, 412, 492, 573)	no	yes	yes	yes
Helashrink 1600 Series	no	no	no	no
Helashrink In Line Series, low voltage	no	no	no	no

Adhesive Compatibility	W24	WM250	WM250	WM250
		W8	W8	W8
		W24	W24	W24
		V9500	V9500	V9500
		HMT200A	HMT200A	HMT200A
		TSA200	TSA200	TSA200

Use this table to find the material compatibility for your preferred adhesive.

Adhesive Combinations	Adhesive			
	W / W2	WM250	W8	W21
Adhesive Description	General purpose hot melt adhesive	General purpose hot melt adhesive	EVA, high performance, hot melt adhesive	Modified polyamide hot melt adhesive
Operating Temperature Range °C	-55 to +80	-55 to +80	-55 to +105	-55 to +120
Softening Point °C	+95	+95	+110	-
Supplied Form	pre-applied	pre-applied	pre-applied	pre-applied
Shelf Life	5 years	5 years	5 years	5 years
Solvent Resistance	Fair under splash conditions	Fair under splash conditions	Fair under splash conditions	Saline: Very good De-icing fluid: Good Diesel: Excellent Lubricating Oil: Good Hydraulic Oil: Good Aviation Fuel: Good Automotive Fuel: Good

Helashrink 100 Series	no	yes	yes	yes
Helashrink 1100 Series	no	yes	yes	yes
Helashrink 200 Series	no	yes	yes	yes
Helashrink 300 Series	no	yes	yes	yes
Helashrink 400 Series	no	yes	yes	yes
Helashrink 1200 Series	no	yes	yes	yes
Helashrink 1300 Series	no	yes	yes	yes
Low Profile Shapes (Series 313, 412, 492, 573)	no	yes	yes	yes
Helashrink 1600 Series	yes	yes	no	no
Helashrink In Line Series, low voltage	yes	yes	no	no

Material Compatibility	B8	G	G	G
		B7	B7	B7
		B8	H	B8
		H	-6	H
		-6	-9	
		-9	-8	
		-8		

Material & Adhesive Combinations Search

Adhesive Combinations	Adhesive			
	W24	TSA-200	V9500	HMT200A
Adhesive Description	High performance, pre-coat, 1 part epoxy	Thermoset +125°C	Two part, black, epoxy adhesive	Hot melt adhesive tape
Operating Temperature Range °C	-75 to +200	-55 to +125	-75 to +150	-55 to +105
Softening Point °C	-	-	-	+ 110
Supplied Form	pre-applied	Tape	Cartridge	Tape
Shelf Life	5 years	5 years	18 months	5 years
Solvent Resistance	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions

Helashrink 100 Series	yes	no	yes	yes
Helashrink 1100 Series	yes	no	yes	yes
Helashrink 200 Series	yes	no	yes	yes
Helashrink 300 Series	yes	no	yes	yes
Helashrink 400 Series	yes	no	yes	yes
Helashrink 1200 Series	yes	no	yes	yes
Helashrink 1300 Series	yes	no	yes	yes
Low Profile Shapes (Series 313, 412, 492, 573)	yes	yes	yes	yes
Helashrink 1600 Series	no	no	no	yes
Helashrink In Line Series, low voltage	no	no	no	yes

Material Compatibility	G	-6	G	G
	B7	-9	B7	B7
	H	-8	H	B8
	L			H
	-6			-6
	-9			-9
	-8			-8



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Heat Shrinkable Moulded Shapes

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Low Profile Convolute Boots

• Helashrink 313C Series, with adapter lip

This style is used with a circular grooved adapter to provide strain relief and, if adhesive is used, excellent environmental sealing can be achieved.

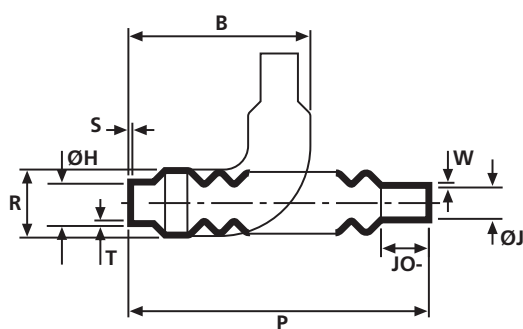
The convoluted design provides the flexibility to accommodate different cable outlet angles.



313C722-774 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R max.	JO ± 10%	W min	B nom.	T ± 0.5	S ± 0.5
313C722	14.2	6.9	11.1	4.8	120.6	21.1	17.3	1.5	62.4	1.3	1.5
313C732	22.4	11.7	17.7	8.1	133.3	26.5	19.8	1.5	67.8	1.3	1.5
313C743	34.0	17.5	26.9	12.7	146.0	32.7	22.3	1.5	73.4	1.3	1.8
313C753	44.2	22.3	36.5	17.5	158.7	37.8	25.4	1.5	78.2	1.3	1.8
313C764	53.8	27.9	45.7	22.3	171.4	42.9	28.4	1.5	82.8	2.0	1.8
313C774	77.2	40.6	54.6	22.8	236.2	62.2	25.4	1.5	138.4	2.0	2.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
W24	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-00001	313C722-9
422-00101	313C732-9
422-00201	313C743-9
422-00302	313C753-9
422-00400	313C764-9
422-00501	313C774-9

Low Profile Shim Boots

- Helashrink 313E Series,
without adapter lip

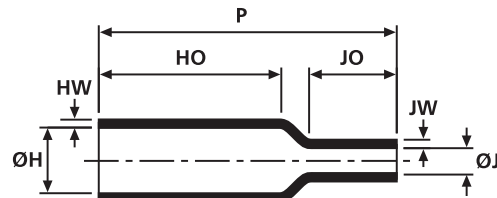
This part is normally used to build up or shim a cable diameter to facilitate a better fit for components in a cable harness.



313E445-457 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table									
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ±10%	HO ± 10%	HW ± 25%	JW ± 25%	JO ± 10%
313E445	12.7	12.7	11.1	3.3	63.5	41.1	1.5	1.5	15.7
313E455	22.1	22.1	11.2	3.3	53.3	27.9	2.3	1.5	15.7
313E447	20.8	14.7	20.6	9.9	63.5	41.1	1.5	1.5	16.5
313E457	22.1	22.1	20.6	9.9	53.3	27.9	2.3	1.5	14.0

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
W24	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-10000	313E445-9
422-10200	313E455-9
422-10100	313E447-9
422-10300	313E457-9

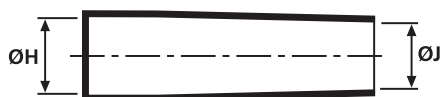
Low Profile Straight Boots

• Helashrink 313F Series, with adapter lip

This boot provides strain relief in applications with partially loaded connectors, resulting in small cable diameters requiring a high shrink ratio.



313F322-396 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table											
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ±10%	R ± 15%	T ± 0.8	JO ± 10%	HW ± 1.5	JW ± 0.8	S ± 1.5
313F322	23.8	9.9	17.2	6.6	105.9	11.6	1.3	86.3	1.5	1.5	1.5
313F332	27.1	13.2	20.8	7.6	121.1	12.1	1.3	98.5	1.5	1.5	1.5
313F343	30.9	18.5	24.3	8.9	138.6	12.1	1.3	112.7	1.7	1.5	1.7
313F353	35.6	22.1	28.7	10.1	159.5	12.1	1.3	130.8	1.7	1.5	1.7
313F364	38.8	28.2	31.4	10.9	177.8	13.9	1.8	142.2	1.7	1.5	1.7
313F374	42.2	32.2	38.3	12.7	203.2	15.2	1.8	163.0	1.7	1.5	1.7
313F385	51.5	45.4	45.4	14.9	203.2	15.2	1.8	157.7	1.7	1.7	1.7
313F396	62.7	45.4	53.3	16.7	228.6	16.0	1.8	153.1	1.7	1.7	1.7

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
W24	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-20000	313F322-9
422-20100	313F332-9
422-20200	313F343-9
422-20300	313F353-9
422-20400	313F364-9
422-20500	313F374-9
422-20600	313F385-9
422-20700	313F396-9

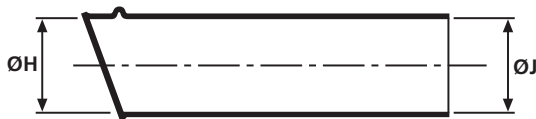
Low Profile Right Angle Boots

- Helashrink 333F Series, with adapter lip, 90° angle

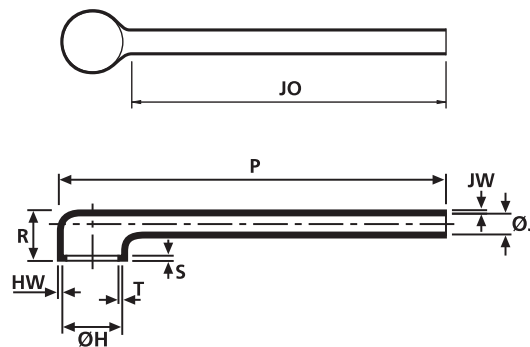
The boot provides connector strain relief in applications with partially loaded connectors, resulting in small cable diameters requiring a high shrink ratio.



333F322-385 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ±10%	R ± 15%	T ± 0.8	JO ± 10%	HW ± 1.5	JW ± 0.8	S ± 1.5
333F322	23.8	9.9	17.2	6.6	105.1	18.5	1.3	87.6	1.5	1.5	1.5
333F332	27.1	13.2	20.8	7.6	115.8	19.8	1.3	99.0	1.5	1.5	1.5
333F343	30.9	18.5	24.3	8.9	146.3	20.8	1.3	114.3	1.7	1.5	1.7
333F353	35.3	21.6	28.7	10.1	172.2	21.8	1.3	132.5	1.7	1.5	1.7
333F364	38.8	27.9	31.4	10.9	185.1	24.1	1.8	143.7	1.7	1.5	1.7
333F374	45.2	34.0	38.3	12.1	213.6	27.4	1.8	169.0	1.7	1.5	1.7
333F385	51.5	41.1	44.4	15.0	224.5	29.4	1.7	173.2	1.7	1.7	1.7

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
W24	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-30000	333F322-9
422-30004	333F332-9
422-30100	333F343-9
422-30200	333F353-9
422-30301	333F364-9
422-30400	333F374-9
422-30500	333F385-9

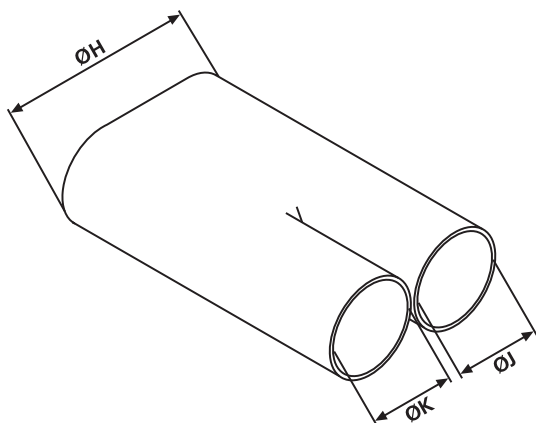
Low Profile Transition Boots

• Helashrink 412H Series, side breakout

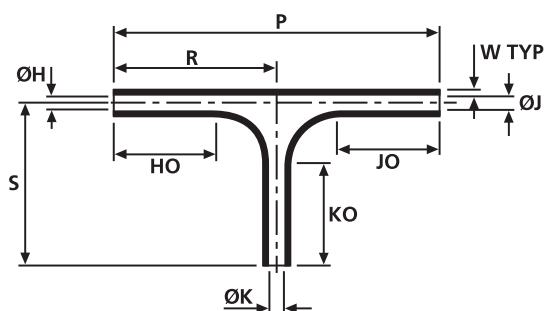
This style provides connector cable strain relief and is used in conjunction with a circular grooved adapter.



412H622-625 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ/K min. a	ØJ/K max. b	HO/JO/KO ± 10%	P nom	W nom	R/S nom
412H622	19.8	6.6	13.2	6.6	25.4	80.7	1.0	40.3
412H623	34.2	11.4	22.8	6.6	41.1	120.3	1.3	60.1
412H624	60.1	20.0	40.1	20.0	63.5	175.7	1.5	87.8
412H625	83.3	33.2	54.8	33.2	88.9	242.3	1.7	121.1

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
W24	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-40000	412H622-9
422-40100	412H623-9
422-40200	412H624-9
422-40300	412H625-9

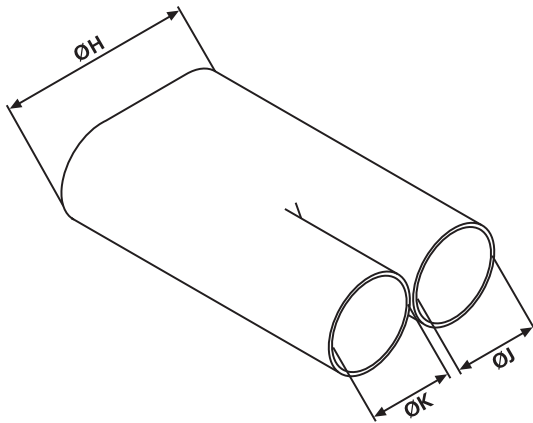
Low Profile Transition Boots

• Helashrink 492H Series, 1 to 2 cables

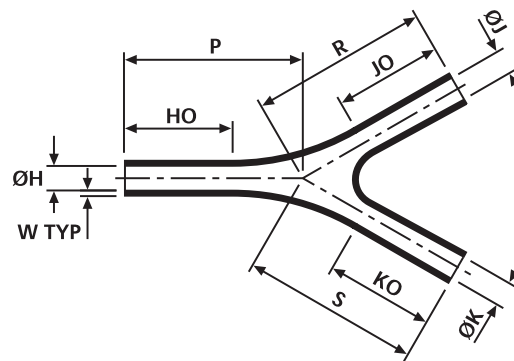
This style provides strain relief, sealing and mechanical protection on cable harness breakouts or transitions.



492H412-415 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ/K min. a	ØJ/K max. b	HO/JO/KO +/- 15%	W nom	P/R/S nom
492H412	19.8	6.6	13.2	6.6	25.4	1.0	40.6
492H413	34.2	11.4	22.8	11.4	41.1	1.3	62.9
492H414	60.1	20.0	40.1	20.0	63.5	1.5	94.7
492H415	83.3	33.2	54.8	33.2	49.7	1.7	133.8

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
W24	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-50000	492H412-9
422-50101	492H413-9
422-50202	492H414-9
422-50302	492H415-9

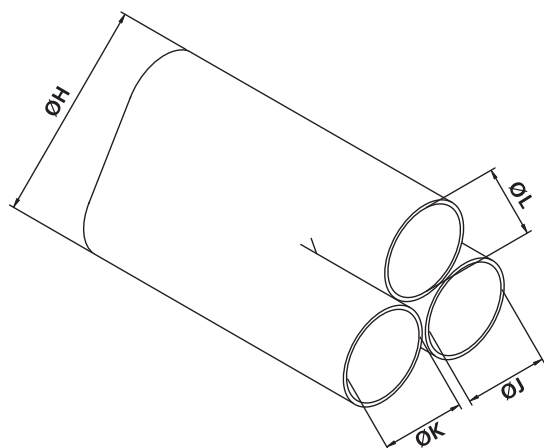
Low Profile Transition Boots

• Helashrink 573H Series, 1 to 3 cables

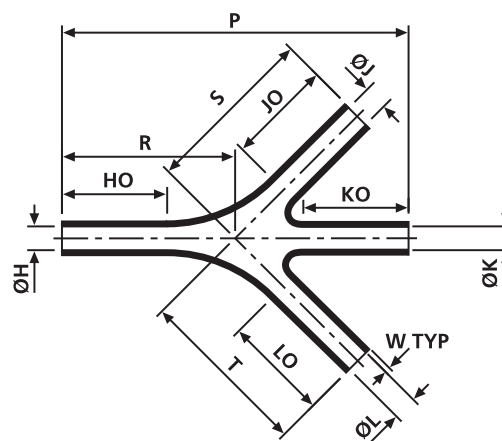
This style provides strain relief, sealing and mechanical protection on cable harness breakouts or transitions.



573H532-535 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ/K/L min. a	ØJ/K/L max. b	P nom	R/S/T nom	W nom	HO/JO/KO/LO ± 15%
573H532	19.8	6.6	13.2	6.6	85.8	42.9	1.0	25.4
573H533	34.2	11.4	20.5	11.4	135.6	67.8	1.3	41.1
573H534	60.1	20.0	36.0	20.0	207.2	103.6	1.5	63.5
573H535	99.8	33.2	54.8	33.2	294.6	147.3	1.7	88.9

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material		
	9	8	6
TSA-200	√	√	√
WM250	√	√	√
W8	√	√	√
V9500	√	√	√
HMT200A	√	√	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
422-60000	573H532-9
422-60100	573H533-9
422-60202	573H534-9
422-60302	573H535-9

Bottle Shapes, VG style

• Helashrink 150 Series, with rib

This style is used in conjunction with a circular grooved adaptor, providing strain relief and environmental sealing. For VG shapes with portholes "P" please refer to product standards tables in the appendix.



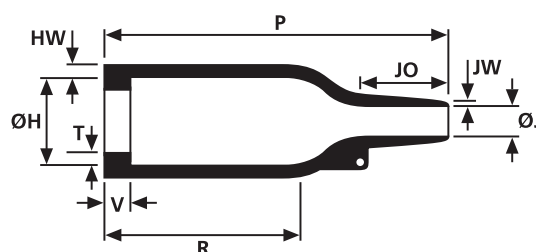
150 Series supplied.



150 Series boot recovered onto a connector.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table												
Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	JO ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 20%
152-42	VG 95343 T06 B 001 A	24.0	10.5	24.0	6.0	38.0	21.0	10.0	1.6	0.5	3.0	1.0
153-42	VG 95343 T06 B 002 A	25.0	14.0	9.0	3.5	55.0	28.0	16.0	1.8	0.5	3.0	1.0
154-42	VG 95343 T06 B 003 A	30.0	14.0	30.0	6.0	55.0	32.0	13.0	1.8	1.0	3.0	1.0
155-42	VG 95343 T06 B 004 A	31.0	18.0	31.0	7.0	67.0	35.0	18.0	1.8	1.0	3.0	1.0
156-42	VG 95343 T06 B 005 A	36.0	22.5	36.0	8.5	80.0	42.0	20.0	2.0	1.0	3.0	1.0
157-43	VG 95343 T06 C 001 A	43.0	28.0	43.0	10.0	99.0	61.0	20.0	2.2	1.0	3.0	1.7
158-43	VG 95343 T06 C 002 A	60.0	35.0	60.0	16.0	130.0	72.0	38.0	3.2	1.5	3.0	1.7
159-43	VG 95343 T06 C 003 A	66.0	45.0	66.0	17.0	171.0	90.0	50.0	3.8	2.0	3.0	2.0
160-43	VG 95343 T06 C 004 A	82.0	58.0	82.0	27.0	213.0	113.0	62.0	3.8	3.8	3.0	2.0
152-41	VG 95343 T06 A 001 A	24.0	10.5	24.0	6.0	26.0	9.0	10.0	1.6	0.5	3.0	1.0
153-41	VG 95343 T06 A 002 A	25.0	14.0	9.0	3.5	40.0	13.0	16.0	1.8	0.5	3.0	1.0
154-41	VG 95343 T06 A 003 A	30.0	14.0	30.0	6.0	43.0	20.0	13.0	1.8	1.0	3.0	1.0
155-41	VG 95343 T06 A 004 A	31.0	18.0	31.0	7.0	47.0	15.0	18.0	1.8	1.0	3.0	1.0
156-41	VG 95343 T06 A 005 A	36.0	22.5	36.0	8.5	60.0	22.0	20.0	2.0	1.0	3.0	1.0
159-41	VG 95343 T06 A 008 A	66.0	45.0	66.0	17.0	130.0	50.0	50.0	3.8	2.0	3.0	2.0
157-42	VG 95343 T06 B 006 A	43.0	28.0	43.0	10.0	79.0	41.0	20.0	2.2	1.0	3.0	1.7
158-41	VG 95343 T06 A 007 A	60.0	35.0	60.0	16.0	90.0	32.0	38.0	3.2	1.5	3.0	1.7
159-41	VG 95343 T06 A 008 A	66.0	45.0	66.0	17.0	130.0	50.0	50.0	3.8	2.0	3.0	2.0
159-42	VG 95343 T06 B 008 A	66.0	45.0	66.0	17.0	150.0	70.0	50.0	3.8	2.0	3.0	2.0
160-41	VG 95343 T06 A 009 A	82.0	58.0	82.0	27.0	137.0	37.0	62.0	3.8	3.8	3.0	2.0
160-42	VG 95343 T06 B 009 A	82.0	58.0	82.0	27.0	158.0	58.0	62.0	3.8	3.8	3.0	2.0

All dimensions in mm. Subject to technical changes.

Bottle Shapes, VG style

- Helashrink 150 Series, with rib



150 Series supplied.



150 Series boot recovered onto a connector.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
W21	√	√	√	√	-
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
401-52880	152-42-G
401-53880	153-42-G
401-54880	154-42-G
401-55880	155-42-G
401-56880	156-42-G
401-57980	157-43-G
401-58980	158-43-G
401-59980	159-43-G
401-60980	160-43-G
401-52780	152-41-G
401-53780	153-41-G
401-54780	154-41-G
401-55780	155-41-G
401-56780	156-41-G
401-59780	159-41-G
401-57880	157-42-G
401-58780	158-41-G
401-59780	159-41-G
401-59880	159-42-G
401-60780	160-41-G
401-60880	160-42-G

Bottle Shapes, MIL style

• Helashrink 100 Series, with rib

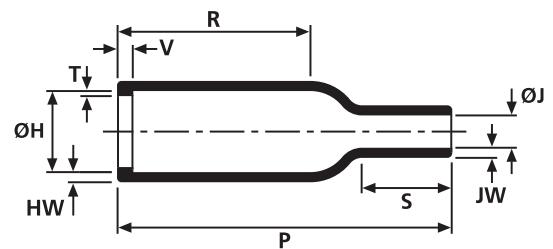
This style is used in conjunction with a circular grooved adaptor providing strain relief and environmental sealing when used in conjunction with one of our complementary adhesives.



104-4 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 20%	S nom
1030-4	12.0	9.8	6.0	2.0	19.0	8.0	1.0	0.5	1.5	0.5	4.6
1031-4	12.0	9.8	6.0	2.0	15.0	4.0	1.0	0.5	1.5	0.5	4.6
1037-4	9.0	5.6	9.0	2.0	19.0	9.0	1.0	0.6	1.5	0.6	4.5
1009-1	9.0	5.6	4.0	3.2	27.0	14.0	1.0	0.5	1.6	0.9	7.5
113-4	10.7	7.9	4.6	2.0	25.4	14.5	1.3	1.0	3.0	1.0	4.6
104-4	16.5	7.9	16.5	3.8	25.4	14.2	1.3	1.3	3.0	1.0	6.9
105-4	23.4	10.4	23.4	5.6	38.1	14.2	1.5	1.5	3.0	1.0	10.2
106-4	31.0	14.2	31.0	6.6	55.4	22.9	1.8	1.8	3.0	1.0	10.2
101-4	31.0	17.8	31.0	7.1	67.0	38.1	2.0	2.0	3.0	1.0	17.8
102-4	36.1	22.4	36.1	8.4	73.7	43.2	1.8	1.8	3.0	1.0	21.0
103-4	42.7	28.2	42.7	9.9	99.1	54.0	2.0	2.0	3.0	1.7	24.0
107-4	51.9	35.1	51.9	15.8	124.5	66.0	3.1	3.1	3.0	1.7	40.6
118-4	66.0	44.4	66.0	20.3	160.5	91.4	3.8	3.8	3.0	2.0	48.3

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
W21	√	√	√	√	-
HMT200A	√	√	√	√	-
V9500	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
410-30480	1030-4-G
410-31001	1031-4-G
410-37001	1037-4-G
410-09001	1009-1-G
401-13480	113-4-G
401-04024	104-4-G
401-05034	105-4-G
401-06036	106-4-G
401-01037	101-4-G
401-02031	102-4-G
401-03041	103-4-G
401-07030	107-4-G
401-18018	118-4-B7

Bottle Shapes

• Helashrink 100 Series, without rib

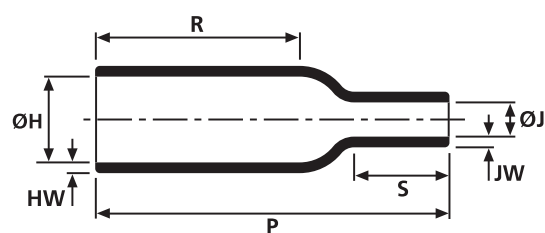
This style provides connector cable strain relief. Can be installed on the connector rear thread or plain shaft and allows easy re-entry for repair when combined with a hot melt adhesive.



109-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table									
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R max.	HW ± 20%	JW ± 30%	S nom
104-1	16.5	7.9	16.5	3.8	25.4	14.2	1.3	1.3	6.9
104-2	10.7	7.9	8.4	3.8	25.4	14.2	1.3	1.3	6.9
105-1	23.4	10.4	23.4	5.6	38.1	22.9	1.5	1.5	10.2
106-1	31.0	14.2	31.0	6.6	55.4	26.5	1.8	1.8	16.5
106-2	19.3	14.2	14.2	6.6	55.4	26.5	1.8	1.8	16.5
101-1	31.0	17.8	31.0	7.1	66.0	38.1	2.0	2.0	17.8
101-2	23.9	17.8	15.5	7.1	66.0	38.1	2.0	2.0	17.8
102-1	36.1	22.4	36.1	8.4	73.7	43.2	1.8	1.8	17.8
102-2	30.0	22.4	18.0	8.4	73.7	43.2	1.8	1.8	17.8
1006-1	40.0	20.0	20.0	6.0	78.8	30.0	1.5	1.0	20.0
103-1	42.7	28.2	42.7	9.9	95.5	54.0	2.0	2.0	24.0
103-2	37.8	28.2	21.3	9.9	95.5	54.0	2.0	2.0	24.0
107-1	51.9	35.1	51.9	15.8	124.5	66.0	3.1	3.1	40.6
107-2	46.9	35.1	35.6	15.8	124.5	66.0	3.1	3.1	40.6
118-1	66.0	44.4	66.0	20.3	150.0	80.0	3.8	3.8	48.3
119-1	86.4	57.2	86.4	26.6	209.6	118.1	4.6	4.6	61.0
113-1	10.7	7.9	4.6	2.0	25.4	14.5	1.3	1.0	4.6
113-2	21.6	7.9	5.8	2.0	25.4	14.5	1.3	1.3	4.6
108-1	13.7	10.4	6.6	3.1	38.1	22.9	1.5	1.0	7.6
108-2	27.9	10.4	7.9	3.1	38.1	22.9	1.5	1.0	7.6
109-1	19.3	14.2	8.1	4.1	53.3	35.6	2.0	1.3	7.6
109-2	38.1	14.2	11.7	4.1	53.3	35.6	2.0	1.3	7.6
110-1	23.9	17.8	11.7	5.6	63.5	38.1	2.5	1.5	12.7
110-2	50.8	17.8	17.0	5.6	63.5	38.1	2.5	1.5	12.7
111-1	30.0	22.4	14.7	7.1	76.2	43.2	3.1	1.8	15.2
111-2	63.5	22.4	21.3	7.1	76.2	43.2	3.1	1.8	15.2
116-1	59.4	44.5	43.7	20.8	158.8	91.4	5.6	4.6	41.9

All dimensions in mm. Subject to technical changes.

Bottle Shapes

- Helashrink 100 Series, without rib



109-1-G supplied / fully recovered.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	-

Standard combinations

Article-No.	Type
401-04006	104-1-G
401-04017	104-2-G
401-05005	105-1-G
401-06005	106-1-G
401-06023	106-2-G
401-01006	101-1-G
401-01026	101-2-G
401-02005	102-1-G
401-02020	102-2-G
410-06006	1006-1-B7
401-03006	103-1-G
401-03024	103-2-B7
401-07006	107-1-G
401-07016	107-2-B7
401-18005	118-1-G
401-19001	119-1-B7
401-13180	113-1-G
401-13011	113-2-G
401-08001	108-1-B7
401-08016	108-2-G
401-09002	109-1-B7
401-09011	109-2-G
401-10005	110-1-G
401-10011	110-2-G
401-11003	111-1-J
401-11011	111-2-G
401-16007	116-1-B7.

For Material / Adhesive selection and other information please refer to page 10.

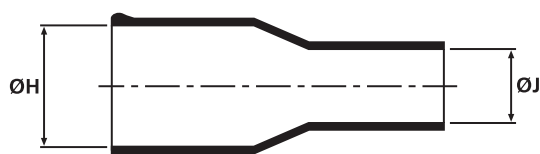
Bottle Shapes

- Helashrink 120 Series,
with and without rib

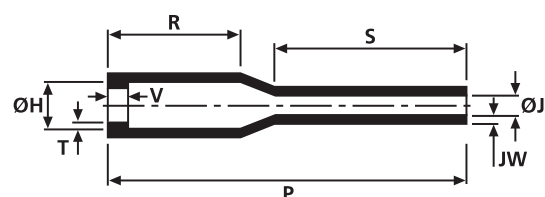
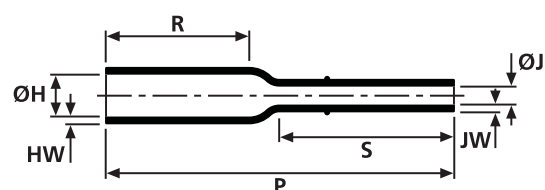
This style has a long tail providing extended strain relief for small diameter wires and can be supplied with or without rib and in various material / adhesive combinations to meet your requirement.



120-42-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	R ± 10%	W ± 20%	P ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 10%	S nom
120-1	16.5	7.0	10.2	3.0	24.0	1.3	60.9	1.3	1.3	—	—	32.0
120-2	20.3	7.0	10.2	3.0	24.0	1.3	60.9	1.3	1.3	—	—	32.0
120-3	16.5	7.0	10.7	3.0	24.0	1.3	38.0	1.3	1.3	—	—	9.1
120-41*	16.5	7.0	10.7	3.0	24.0	1.3	38.0	1.3	1.3	3.0	1.0	32.0
120-42*	16.5	7.0	10.2	3.0	24.0	1.3	60.9	1.3	1.3	3.0	1.0	—

All dimensions in mm. Subject to technical changes.

*Note: 120-41 & 42 are with end ribs.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	-	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
401-20003	120-1-G
401-20014	120-2-G
401-20020	120-3-G
401-20022	120-41-G
401-20026	120-42-G

Long Outlet Shape, VG style

- Helashrink 130 Series,
with rib, low profile

This style is low profile and lightweight.
Typically used on airborne harnesses.
Rib locates on circular backshell. For
VG shapes with portholes "P" please refer to
product standards tables in the appendix.

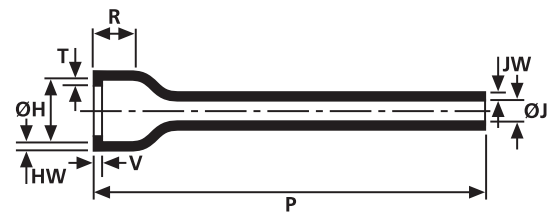


135-1 supplied / fully recovered.

**For Material / Adhesive
selection and other
information please
refer to page 10.**



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 10%
129-1	VG95343T06D001A	22.0	12.0	22.0	6.5	76.0	12.0	1.5	1.1	3.0	1.0
130-1	VG95343T06D002A	25.5	15.0	25.5	7.5	83.0	12.0	1.5	1.1	3.0	1.0
131-1	VG95343T06D003A	29.0	19.0	29.0	8.5	89.0	12.0	1.8	1.1	3.0	1.0
132-1	VG95343T06D004A	34.0	23.0	34.0	10.0	102.0	12.0	1.8	1.1	3.0	1.0
133-1	VG95343T06D005A	37.0	30.0	37.0	11.0	108.0	14.0	2.0	1.1	3.0	1.7
134-1	VG95343T06D006A	43.5	34.0	43.5	12.0	114.0	15.0	2.0	1.1	3.0	1.7
135-1	VG95343T06D007A	50.0	41.0	50.0	14.5	118.0	15.0	2.3	1.4	3.0	1.7
136-1	VG95343T06D008A	62.5	47.0	62.5	18.0	121.0	16.0	2.5	1.4	3.0	2.0
138-1	VG95343T06D009A	69.0	60.0	69.0	20.0	127.0	16.0	2.5	1.4	3.0	2.0
187-1	VG95343T06D010A	81.5	67.0	81.5	23.0	133.0	16.0	2.5	1.4	3.0	2.0
129-4	–	22.3	11.4	22.3	6.5	105.9	11.7	1.5	1.1	3.0	1.0
130-4	–	25.6	15.0	25.6	7.4	121.2	12.2	1.5	1.1	3.0	1.0
131-4	–	29.4	18.8	29.4	8.4	138.7	12.2	1.8	1.1	1.0	1.0
132-2	–	34.0	22.9	34.0	9.7	35.0	12.2	1.8	1.1	3.0	1.0
132-4	–	34.0	22.9	34.0	9.7	159.5	12.2	1.8	1.1	3.0	1.0
133-2	–	37.3	26.9	37.3	10.4	47.0	14.0	2.0	1.1	3.0	1.7
133-3	–	37.3	29.5	37.3	10.4	60.0	14.0	2.0	1.1	3.0	1.7
133-4	–	37.3	26.9	37.3	10.4	177.8	14.0	2.0	1.1	3.0	1.7
134-4	–	43.7	34.0	43.7	12.2	203.2	15.2	2.0	1.1	3.0	1.7
135-4	–	50.0	41.2	50.0	14.2	203.2	15.2	2.3	1.4	3.0	1.7
136-2	–	70.0	47.0	70.0	17.5	125.0	16.0	2.5	1.4	3.0	2.0
136-4	–	62.7	47.0	62.7	17.5	203.2	16.0	2.5	1.4	3.0	2.0

All dimensions in mm. Subject to technical changes.

Long Outlet Shape, VG style

- Helashrink 130 Series, with rib, low profile



135-1 supplied / fully recovered.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
401-29180	129-1-G
401-30180	130-1-G
401-31180	131-1-G
401-32180	132-1-G
401-33180	133-1-G
401-34180	134-1-G
401-35180	135-1-G
401-36180	136-1-G
401-38180	138-1-G
401-87180	187-1-G
401-29025	129-4-G
401-30021	130-4-G
401-31028	131-4-G
401-32014	132-2-G
401-32030	132-4-G
401-33008	133-2-JWM250
401-33036	133-3-B7WM250
401-33021	133-4-G
401-34015	134-4-G
401-35009	135-4-G
401-36024	136-2-JW8
401-36006	136-4-G
401-36008	136-4-J

Long Outlet Shapes

• Helashrink 140 Series, without rib

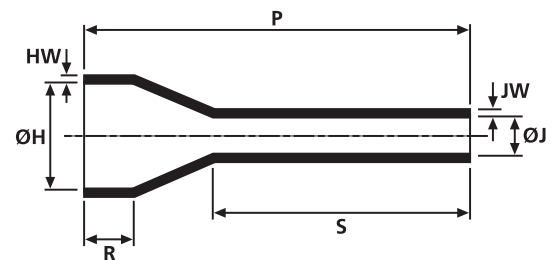
This style is low profile and lightweight, ideally suited to aerospace harness assemblies, the extended tail provides excellent strain relief and flexibility.



146-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	S nom
146-1	20.1	14.5	20.1	5.3	127.0	15.7	2.0	2.0	97.0
146-2	22.3	14.5	10.2	5.3	127.0	15.7	2.0	2.0	97.0
148-1	30.5	18.0	30.5	7.9	146.0	15.7	2.0	2.0	125.0
148-2	30.5	18.0	15.2	7.9	146.0	15.7	2.3	2.3	125.0
149-1	41.2	21.8	41.2	10.2	162.1	22.4	2.3	2.3	—

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	-	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
401-46001	146-1-B7
401-46009	146-2-G
401-48006	148-1-G
401-48016	148-2-J
401-49006	149-1-J

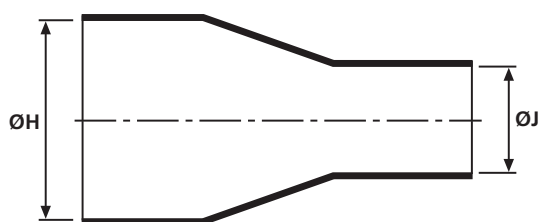
Bottle Shapes

• Helashrink 160 Series, without rib

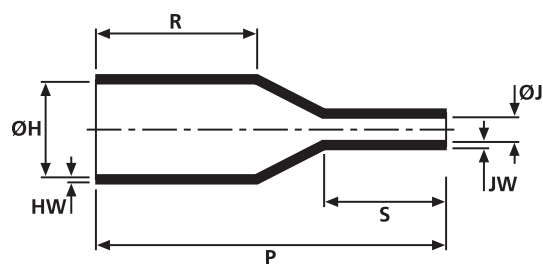
This style is a straight boot used for cable strain relief and environmental protection on many applications and is ideally suited where space is a premium.



162-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom
162-1	22.0	14.2	9.0	4.1	44.0	15.7	1.8	1.8	16.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	√	√	√	√
W8	√	√	√	√
W24	√	√	√	√
V9500	√	√	√	√
HMT200A	√	√	√	√
W21	-	-	-	√
Without Adhesive	√	√	√	√

Standard combinations

Article-No.	Type
401-62180	162-1-G

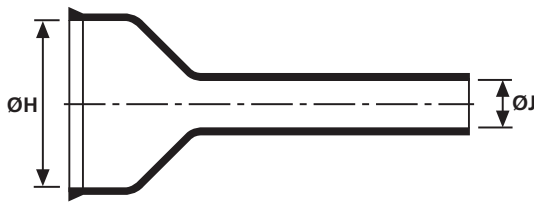
Bottle Shapes, VG style

• Helashrink 170 Series, with rib

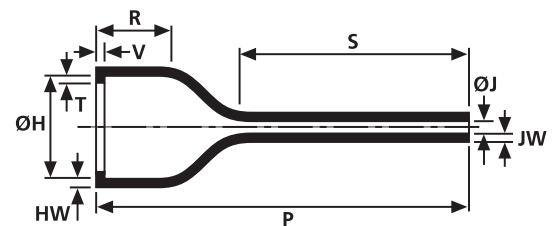
This style provides cable strain relief in applications using partially loaded connectors, resulting in small cable diameters. When used in conjunction with our W24 adhesive, excellent chemical resistance can also be achieved.



177-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	T ± 20%	HW ± 20%	JW nom	V max	S nom
1724-1	–	20.0	16.5	20.0	4.5	42.0	20.0	–	1.0	1.0	3.3	10.0
1738-1	–	20.0	16.5	20.0	4.5	32.0	10.0	–	1.0	1.0	3.3	22.0
176-1	VG95343T06D011A	19.3	13.0	6.3	2.1	60.0	11.7	1.0	1.5	1.1	3.3	38.0
176-2	–	19.0	13.0	6.0	2.0	30.0	11.7	1.0	1.5	1.1	3.3	8.0
176-3	–	25.0	13.0	4.0	2.0	45.0	11.7	1.0	1.5	1.1	3.3	23.0
176-4	–	19.0	13.0	6.0	2.0	60.0	11.7	1.0	1.5	1.1	3.3	38.0
177-1	VG95343T06D012A	26.1	19.1	7.6	2.6	74.0	12.2	1.0	1.8	1.1	3.3	45.0
178-1	VG95343T06D013A	34.2	26.0	9.6	3.1	84.0	12.2	1.0	1.8	1.1	3.3	51.0
179-1	VG95343T06D014A	43.6	34.1	11.4	3.6	100.0	12.2	1.7	1.8	1.1	3.3	58.0

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	✓	✓	✓	✓	-
W8	✓	✓	✓	✓	-
W24	✓	✓	✓	✓	✓
V9500	✓	✓	✓	✓	-
HMT200A	✓	✓	✓	✓	-
W21	-	-	-	✓	-
Without Adhesive	✓	✓	✓	✓	✓

Standard combinations

Article-No.	Type
417-24003	1724-1-B7WM250B
417-38002	1738-1-B8WM250
401-76180	176-1-G
401-76014	176-2-B7
401-76018	176-3-G
401-77023	177-1-G
401-77180	177-1-G
401-78180	178-1-G
401-79180	179-1-G

Bottle Shapes, VG style

- Helashrink 190 Series,
with external ribs

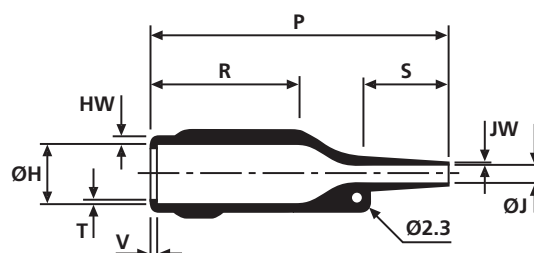
This style was developed specifically for small audio connectors with multiple external ribs to improve grip in harsh conditions.



Recovered 199-4-G, VG style shape for small audio connectors with external ribs for improved grip.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 20%	S nom
199-4	VG 95343 T06 A 010 A	17.5	14.0	7.0	4.3	70.0	35.0	1.8	0.5	1.5	1.0	20.0
199-6	—	18.5	14.0	18.5	4.3	70.0	35.0	1.8	0.5	1.5	1.0	20.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	√	√	√	√
W8	√	√	√	√
W24	√	√	√	√
V9500	√	√	√	√
HMT200A	√	√	√	√
W21	-	-	-	√
Without Adhesive	√	√	√	√

Standard combinations

Article-No.	Type
401-99480	199-4-G
401-99007	199-6-G

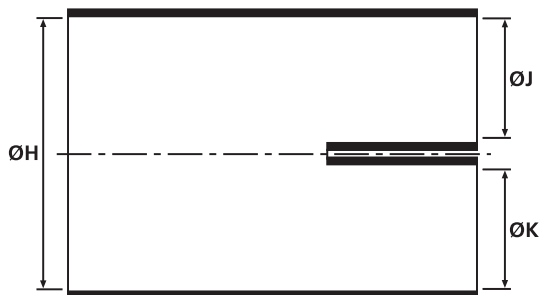
2-Way Outlet Shapes

• Helashrink 200 Series, low profile

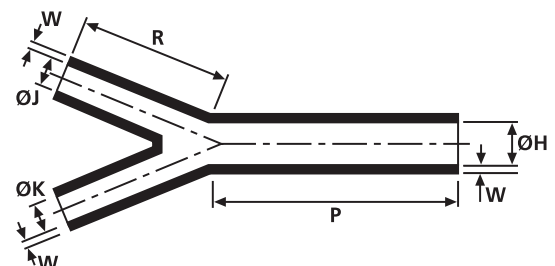
Branching parts are employed for mechanical tension relief in harnesses, where multi core cables are required to be routed out in different directions. High ratio expansion allows for quick and easy installation times.



203-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	W ± 20%
201-1	19.0	9.4	6.4	14.0	6.4	14.0	50.8	30.5	1.5
201-3	24.5	9.4	14.0	6.4	14.0	6.4	50.8	30.5	1.5
202-1	19.0	9.4	7.6	3.8	7.6	3.8	50.8	30.5	1.5
202-2	20.0	9.4	12.5	3.8	12.5	3.8	50.8	30.5	1.5
202-3	24.5	9.4	16.0	3.8	16.0	3.8	50.8	30.5	1.5

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	B8
WM250	√	√	√	√	√
W8	√	√	√	√	-
W24	√	√	√	√	-
V9500	√	√	√	-	-
HMT200A	√	√	√	-	√
W21	-	-	-	-	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
402-01180	201-1-G
402-01020	201-3-G
402-02004	202-1-G
402-02011	202-2-G
402-02019	202-3-G

2-Way Outlet Shapes, VG style

• Helashrink 200 Series

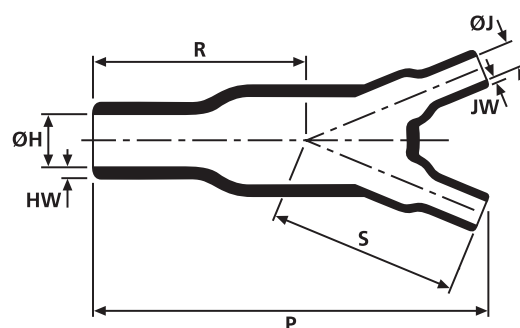
Branching parts are employed for mechanical tension relief in cable harnesses. For VG shapes with portholes "P" please refer to product standards tables in the appendix.



203-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW nom	S nom
206-1	VG95343T08C001A	13.0	6.0	7.0	3.0	41.0	19.0	1.5	1.0	19.0
213-1	—	17.3	7.9	11.1	7.9	140.0	83.1	2.3	1.0	64.0
213-2	—	40.0	8.5	31.8	7.9	140.0	83.1	2.3	2.3	64.0
212-1	VG95343T08C005A	14.5	8.0	8.5	5.5	136.0	83.0	2.3	2.0	63.0
203-1	VG95343T08C002A	27.0	12.0	13.0	6.0	80.0	43.0	2.5	1.5	43.0
204-1	VG95343T08C003A	39.0	18.0	27.0	12.0	131.0	81.0	3.1	2.0	81.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	-	-
HMT200A	√	√	√	-	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
402-06180	206-1-G
402-13180	213-1-G
402-13021	213-2-G
402-12180	212-1-G
402-03180	203-1-G
402-04180	204-1-G

2-Way Outlet Shapes, Breakout Boots

- Helashrink 200 Series, in line, low voltage

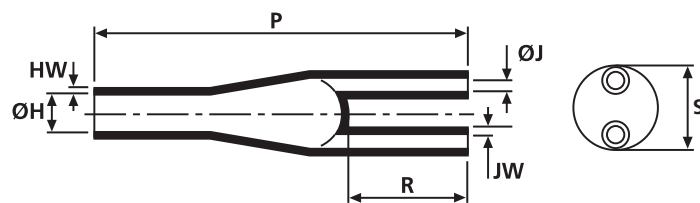
Branching parts are used for easy, time-saving insulation of the branch point of a cable where it is split into single wires. Branching parts with hot melt adhesive also serve to relieve the mechanical tension in cable harnesses.



223-2 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Cable breakouts are available for 2, 3, 4, 5 and 6 core cables.

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom
223-2	33.0	9.4	17.5	4.1	94.0	30.0	1.5	1.2	20.0
216-2	28.0	9.4	12.0	2.8	76.5	20.0	1.6	1.6	—
217-2	31.0	15.2	13.0	4.3	99.5	28.5	2.2	2.2	—
218-2	49.0	22.9	20.0	7.6	119.0	34.0	3.2	3.2	—
220-1	50.0	28.0	23.0	8.0	175.0	100.0	2.5	2.0	33.0
219-2	77.0	38.1	37.0	12.7	141.5	42.5	3.8	3.8	44.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material			
	B7	G	H	B8
W	√	√	√	√
W2	√	√	√	√
V9500	√	√	√	-
HMT200A	√	√	√	√
W21	-	-	√	-
Without Adhesive	√	√	√	√

Standard combinations

Article-No.	Type
402-23058	223-2-B8W
402-16038	216-2-B7WM250
402-17014	217-2-B7
402-18020	218-2-B7
402-20008	220-1-B7
402-19020	219-2-B8

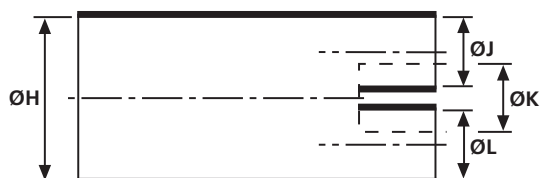
3-Way Outlet Shapes, VG style

• Helashrink 300 Series

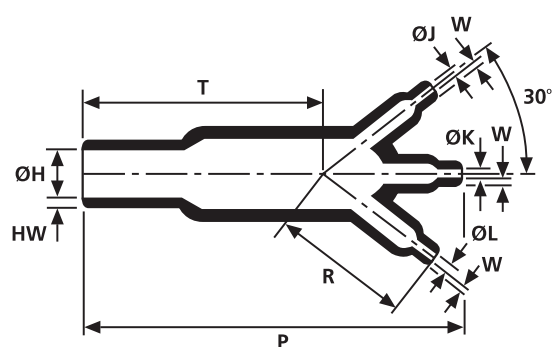
This style provides cable strain relief and mechanical protection at harness transition points, all outlets are clearly marked to aid orientation on installation.



304-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ/K/L min. a	ØJ/K/L max. b	P ± 10%	R ± 10%	HW ± 20%	W ± 20%	T ± 10%
306-1	VG95343T08D001A	13.0	6.5	6.5	3.5	46.0	25.4	1.3	1.0	20.3
304-1	VG95343T08D002A	27.0	13.5	13.0	7.0	93.0	50.3	2.5	1.5	42.9
310-1	VG95343T08D003A	38.5	19.0	19.0	10.0	135.0	73.7	3.1	1.8	61.0
311-1	VG95343T08D004A	55.5	25.5	27.0	12.5	192.0	103.1	4.6	3.1	88.9

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
403-06180	306-1-G
403-04180	304-1-G
403-10180	310-1-G
403-11180	311-1-G

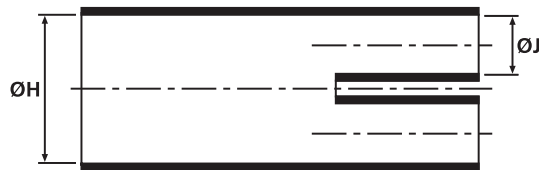
3-Way Outlet Shapes, Breakout Boots

- Helashrink 300 Series, in line, low voltage

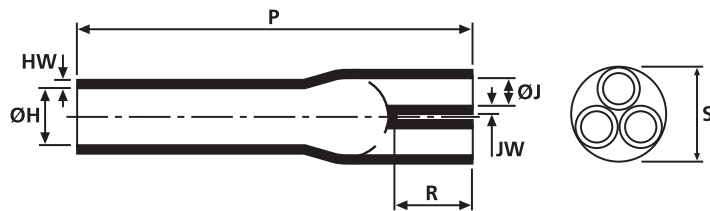
Branching parts are used for easy, time-saving insulation of the branch point of a cable where it is split into single wires. Branching parts with hot melt adhesive also serve to relieve the mechanical tension in cable harnesses.



300 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom
318-1	23.0	9.1	9.0	3.0	76.5	20.0	2.5	2.5	16.0
339-2	39.0	12.7	17.0	4.1	102.0	56.0	2.9	2.9	26.0
319-1	31.0	17.5	13.0	4.6	93.5	28.5	2.9	2.9	23.0
328-2	44.0	22.8	21.0	7.6	99.0	34.0	3.8	3.8	—
342-1	110.0	35.0	40.0	17.5	230.0	45.0	4.0	3.5	65.0
330-2	61.0	35.5	32.0	12.7	144.5	45.5	3.8	3.8	47.0
340-2	82.0	50.8	36.0	19.1	144.5	45.5	4.5	4.5	65.0
341-1	125.0	59.0	50.8	25.4	283.0	71.0	3.8	3.8	75.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	H	B8	J
W	√	√	√	√	√
W2	√	√	√	√	-
WM250	√	√	√	√	√
V9500	√	√	-	-	√
HMT200A	√	√	-	√	√
W21	-	-	√	-	√
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
403-18018	318-1-G
403-39017	339-2-G
403-19022	319-1-G
403-28015	328-2-J
403-42006	342-1-B8W2
403-30014	330-2-B7WM250
403-41005	341-1-B8W2

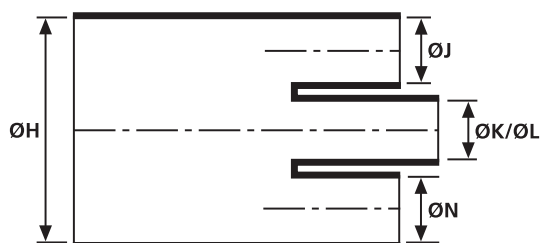
4-Way Outlet Shapes, VG style

• Helashrink 400 Series

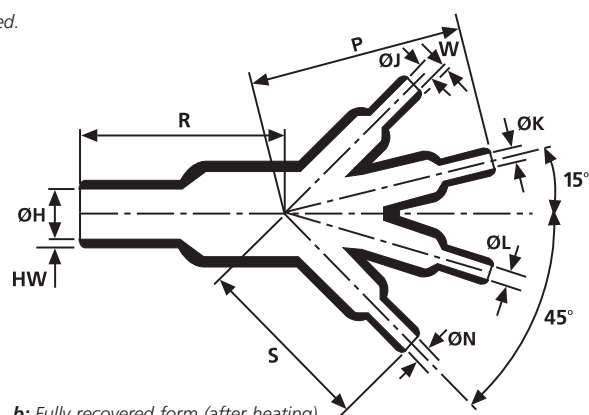
This style provides cable strain relief and mechanical protection at harness transition points, all outlets are clearly marked to aid orientation on installation.



403-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ/K/L/N min. a	ØJ/K/L/N max. b	P ± 10%	R ± 10%	S ± 10%	HW ± 20%	W ± 10%
411-1	VG95343T08E002A	19.0	10.0	9.5	5.5	36.1	35.6	32.0	1.8	1.0
403-1	VG95343T08E004A	27.0	13.0	13.0	7.0	51.8	49.0	45.0	2.5	1.0
413-1	VG95343T08E005A	38.6	19.0	19.0	10.0	74.9	75.0	65.3	1.8	1.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	H	L	J
WM250	√	√	√	-	√
W8	√	√	√	-	√
W24	√	√	√	√	√
V9500	√	√	√	-	-
HMT200A	√	√	√	-	-
W21	-	-	√	-	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
404-11180	411-1-G
404-03180	403-1-G
404-13180	413-1-G

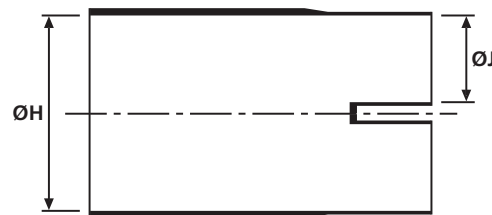
4-Way Outlet Shapes, Breakout Boots

- Helashrink 400 Series, in line, low voltage

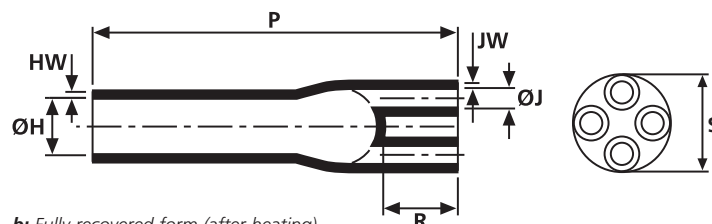
Branching parts are used for easy, time-saving insulation of the branch point of a cable where it is split into single wires. They are manufactured from a tough cross-linked flame retarded polyolefin. Branching parts with hot melt adhesive also serve to relieve the mechanical tension in cable harnesses whilst providing excellent IP ratings.



442-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom
442-1	28.0	9.0	9.0	1.8	78.0	17.0	2.7	2.0	20.0
434-2	23.0	11.0	8.0	2.8	78.0	22.0	1.6	1.6	18.0
443-1	35.0	12.0	15.0	3.0	132.0	26.0	3.0	2.5	22.0
408-2	35.0	12.0	15.0	3.0	95.0	24.0	2.5	2.0	22.0
435-2	32.0	20.3	13.0	4.8	93.5	28.5	2.9	2.9	27.0
409-2	47.4	22.9	21.5	6.4	165.0	38.1	4.1	3.3	38.1
418-4	60.0	22.9	30.0	6.4	202.0	38.1	4.1	3.3	38.1
436-2	45.0	24.9	21.0	7.1	99.0	34.0	4.5	4.5	39.0
437-1	60.0	25.4	26.0	8.9	240.0	48.0	4.5	4.5	43.0
438-2	68.0	35.6	31.0	13.5	141.5	42.5	4.5	4.5	54.0
444-2	35.6	95.0	35.6	12.5	240.0	55.0	4.0	3.5	50.8

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	H	B8	J
W	√	√	√	√	√
W2	√	√	√	√	-
W24	√	√	√	-	√
V9500	√	√	-	-	√
HMT200A	√	√	-	√	√
W21	-	-	√	-	√
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
404-42022	442-1-B8W
404-34017	434-2-G
404-43002	443-1-B8
404-08022	408-2-B8W2
404-35007	435-2-J
404-09021	409-2-B8W2
404-18020	418-4-B8W2
404-37001	437-1-B7
404-38008	438-2-J
404-44022	444-2-B8W2

5-Way Outlet Shapes, Breakout Boots

- Helashrink 500 Series, in line, low voltage

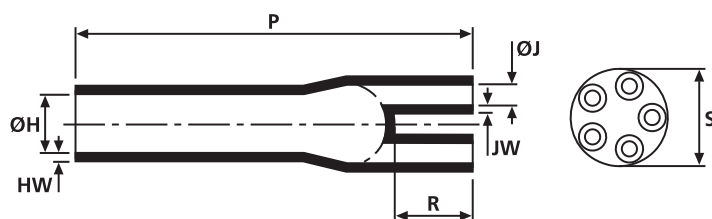
Cable breakout boots are designed for insulating and sealing a cable crotch, or conduit system, and provide excellent resistance to abrasion and weathering.



500 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom
508-1	60.0	24.5	30.0	7.5	180.0	30.0	3.5	3.0	48.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material		
	B7	G	H
W	√	√	√
W2	√	√	-
V9500	√	√	√
HMT200A	√	√	√
W21	-	-	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
405-08021	508-1-B7

6-Way Outlet Shapes, Breakout Boots

- Helashrink 600 Series, in line, low voltage

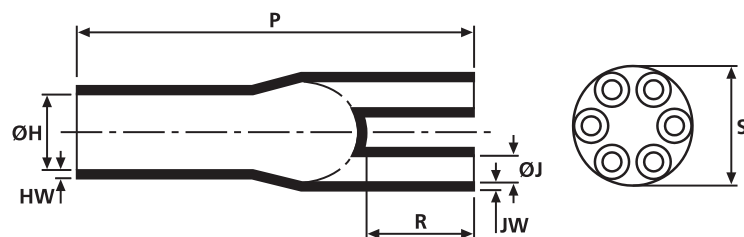
Cable breakout boots are designed for insulating and sealing a cable crotch, or conduit system, and provide excellent resistance to abrasion and weathering.



600 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom
609-1	30.0	16.0	8.2	4.0	75.0	20.0	2.5	1.5	25.0
609-2	40.0	16.0	12.0	4.0	75.0	20.0	2.5	1.5	25.0
608-1	61.0	36.8	21.0	8.9	152.5	56.5	3.1	3.2	50.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material		
	B7	G	H
W	√	√	√
W2	√	√	-
V9500	√	√	-
HMT200A	√	√	√
W21	-	-	√
Without Adhesive	√	√	√

Standard combinations

Article-No.	Type
406-09003	609-1-G
406-09023	609-2-B7
406-08007	608-1-G

Right Angle Shapes, VG style

• Helashrink 1100 Series, with rib

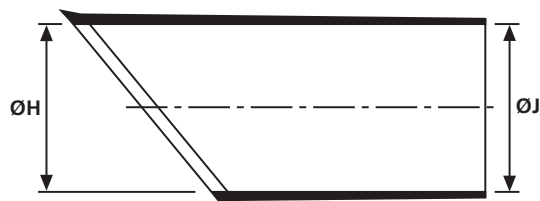
This style provides strain relief for harness systems when used in conjunction with a circular grooved adaptor. For VG shapes with portholes "P" please refer to product standards tables in the appendix.



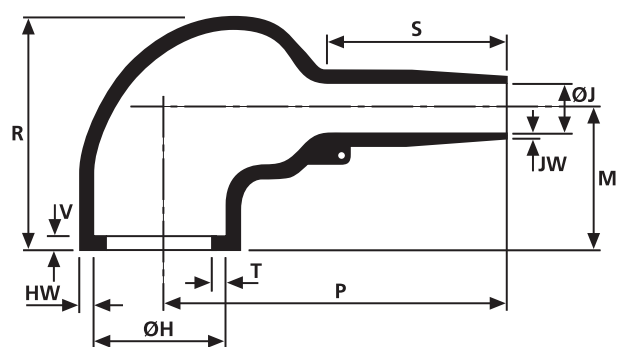
1152-4-G recovered onto a connector.



1155-4 supplied.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 20%	M nom	S nom
1152-4	VG95343T06E001A	24.0	10.5	24.0	6.0	26.0	25.0	1.3	0.5	3.0	1.0	19.0	10.0
1154-4	VG95343T06E002A	30.0	15.5	30.0	6.0	32.0	27.0	1.5	0.8	3.0	1.0	19.0	12.0
1155-4	VG95343T06E003A	31.0	18.0	31.0	7.0	40.0	31.0	1.8	1.0	3.0	1.0	21.0	15.0
1156-4	VG95343T06E004A	36.0	22.5	36.0	8.5	46.0	38.0	1.8	1.0	3.0	1.0	26.0	15.0
1157-4	VG95343T06E005A	43.0	28.5	43.0	10.0	55.0	45.0	2.0	1.0	3.0	1.7	30.0	16.0
1158-4	VG95343T06E006A	60.0	35.0	60.0	16.0	80.0	54.0	3.3	1.5	3.0	1.7	35.0	30.0
1159-4	VG95343T06E007A	66.0	45.0	66.0	17.0	108.0	68.0	3.8	2.0	3.0	2.0	42.0	51.0
1160-4	VG95343T06E008A	82.0	61.0	82.0	25.0	118.0	84.0	4.0	4.0	3.0	2.0	52.0	39.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material					
	B7	G	J	H	B8	L
WM250	√	√	√	√	√	-
W8	√	√	√	√	-	-
W24	√	√	√	√	-	√
V9500	√	√	√	√	-	-
HMT200A	√	√	√	√	√	-
W21	-	-	√	√	-	-
Without Adhesive	√	√	√	√	√	√

Standard combinations

Article-No.	Type
411-52480	1152-4-G
411-54480	1154-4-G
411-55480	1155-4-G
411-56480	1156-4-G
411-57480	1157-4-G
411-58480	1158-4-G
411-59480	1159-4-G
411-60480	1160-4-G

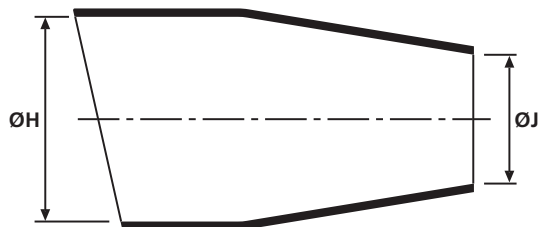
Right Angle Shapes, VG style

- Helashrink 1100 Series, without rib, thick wall

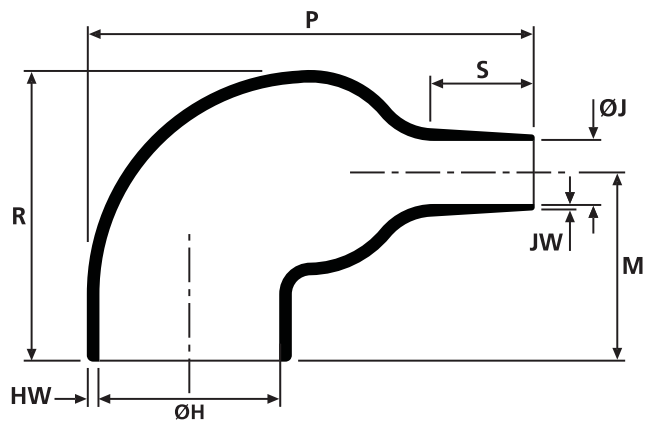
This style provides connector cable strain relief. Can be installed on the connector rear thread or plain shaft, allows easy re-entry for repair when combined with a hot melt adhesive.



1114-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ±20%	R ± 10%	HW ± 30%	JW ± 30%	M nom	S nom
1113-1	VG95343T063003A	19.0	14.5	8.0	4.5	39.0	26.0	2.5	1.8	19.0	8.0
1114-1	VG95343T063004A	23.5	18.0	11.5	5.5	51.0	33.0	3.0	1.0	22.0	9.5
1118-1	VG95343T063008A	59.0	45.0	44.0	21.0	133.0	73.0	7.0	5.0	45.0	40.0

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	√	√	√	√
W8	√	√	√	√
W24	√	√	√	√
V9500	√	√	√	√
HMT200A	√	√	√	√
W21	-	-	-	√
Without Adhesive	√	√	√	√

Standard combinations

Article-No.	Type
411-13002	1113-1-G
411-14004	1114-1-G
411-18001	1118-1-B7

Right Angle Shapes, MIL style

• Helashrink 1100 Series, with rib

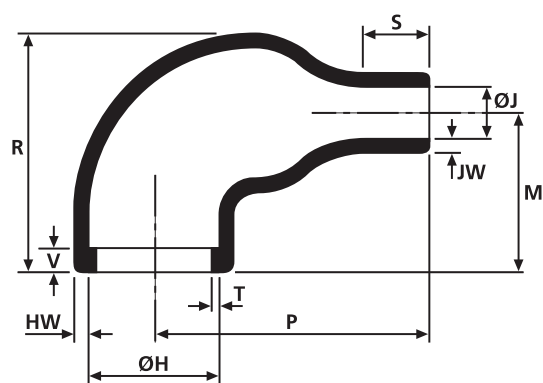
This style provides strain relief for harness systems when used in conjunction with circular grooved adaptor.



1108-4 supplied / fully recovered



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	V max	T ± 20%	M nom	S nom
1181-4	12.0	9.8	6.0	2.0	19.0	13.0	1.0	0.5	1.5	0.6	11.0	6.0
1108-4	16.5	7.9	16.5	2.5	18.3	20.1	1.0	1.6	3.3	1.0	15.2	5.1
1106-4	23.3	10.4	23.3	5.6	20.3	22.9	1.3	1.3	3.3	1.0	15.2	5.8
1107-4	28.4	14.2	28.4	6.3	29.8	28.5	1.5	1.5	3.3	1.0	21.4	7.1
1104-4	30.9	17.8	30.9	7.1	35.6	30.5	1.8	1.8	3.3	1.0	20.6	8.6
1103-4	36.0	22.4	36.0	8.4	43.2	35.6	1.8	1.8	3.3	1.0	22.9	12.7
1101-4	42.6	27.9	42.6	9.7	53.3	43.2	2.0	2.0	3.3	1.7	27.9	15.7
1105-4	51.8	35.1	51.8	15.7	78.7	53.3	3.3	3.3	3.3	1.7	33.0	30.5

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	-	-
HMT200A	√	√	√	√	-
Without Adhesive	√	√	√	√	-

Standard combinations

Article-No.	Type
411-81480	1181-4-G
411-08015	1108-4-B7
411-06019	1106-4-G
411-07020	1107-4-G
411-04032	1104-4-G
411-03024	1103-4-G
411-01020	1101-4-G
411-05019	1105-4-J

Right Angle Shapes

• Helashrink 1100 Series, without rib

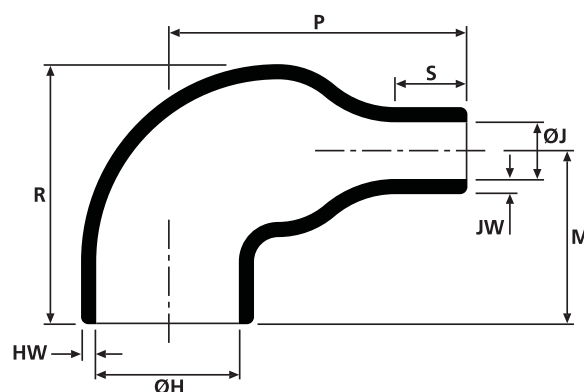
This style provides connector cable strain relief. Can be installed on the connector rear thread or plain shaft, allows easy re-entry for repair when combined with a hot melt adhesive.



1108-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive selection and other information please refer to page 10.

Standard combinations

Article-No.	Type
411-08002	1108-1-B7
411-08011	1108-2-G
411-06003	1106-1-G
411-06051	1106-2-B7
411-07004	1107-1-G
411-07011	1107-2-G
411-04005	1104-1-G
411-04013	1104-2-G
411-03003	1103-1-G
411-03012	1103-2-G
411-01005	1101-1-G
411-01029	1101-1-GW8
411-05005	1105-1-G
411-05010	1105-2-G
411-09004	1109-1-G
411-00001	1100-4-G

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	S nom	M nom
1108-1	16.5	7.9	16.5	2.5	18.3	20.1	1.0	1.6	5.1	15.2
1108-2	10.6	7.9	8.3	2.5	18.3	20.1	1.0	1.6	5.1	15.2
1106-1	23.6	10.4	23.6	5.6	20.3	22.9	1.3	1.3	5.8	15.2
1106-2	13.7	10.4	11.6	5.6	20.3	22.9	1.3	1.3	5.8	15.2
1107-1	28.4	14.2	28.4	6.3	29.8	28.5	1.5	1.5	7.1	18.5
1107-2	19.3	14.2	14.2	6.3	29.8	28.5	1.5	1.5	7.1	18.5
1104-1	24.1	17.8	15.7	7.1	35.6	30.5	1.8	1.8	8.6	20.6
1104-2	31.7	17.8	31.7	7.1	35.6	30.5	1.8	1.8	8.6	20.6
1103-1	38.1	22.4	38.1	8.4	43.2	35.6	1.8	1.8	12.7	22.9
1103-2	30.4	22.4	19.0	8.4	43.2	35.6	1.8	1.8	12.7	22.9
1101-1	43.1	27.9	43.1	9.7	53.3	43.2	2.0	2.0	15.7	27.9
1101-2	38.1	27.9	22.8	9.7	53.3	43.2	2.0	2.0	15.7	27.9
1105-1	52.3	35.1	52.3	15.7	78.7	53.5	3.3	3.3	30.5	33.0
1105-2	46.9	35.1	35.3	15.7	78.7	53.5	3.3	3.3	30.5	33.0
1109-1	66.0	44.5	66.0	20.3	97.5	66.0	3.8	3.8	40.6	41.7
1100-4	26.0	15.5	16.0	4.0	25.0	17.0	1.8	1.0	20.0	17.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Right Angle Shapes, VG style/MIL style

- Helashrink 1100 Series, with rib, low profile

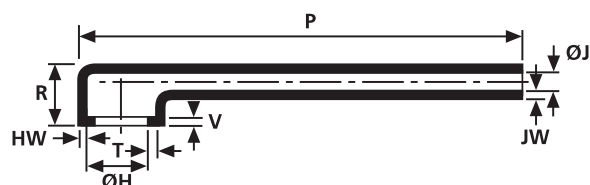
This style is typically used on airborne harnesses to achieve light weight, low profile, compact strain relief and mechanical protection.



1123-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	T ± 10%	V ± 10%
1121-1	VG95343T06F001A	22.0	12.0	22.0	6.5	70.0	19.0	1.5	1.1	1.0	3.0
1122-1	VG95343T06F002A	25.5	15.0	25.0	7.5	79.0	20.0	1.5	1.1	1.0	3.0
1123-1	VG95343T06F003A	29.0	19.0	29.0	8.5	89.0	21.0	1.8	1.1	1.0	3.0
1124-1	VG95343T06F004A	34.0	23.0	34.0	10.0	102.0	22.0	1.8	1.1	1.0	3.0
1125-1	VG95343T06F005A	37.0	30.0	37.0	11.0	108.0	24.0	2.0	1.1	1.7	3.0
1126-1	VG95343T06F006A	43.5	34.0	43.5	12.0	121.0	27.0	2.0	1.1	1.7	3.0
1127-1	VG95343T06F007A	50.0	41.5	50.0	14.5	132.0	30.0	2.3	1.4	1.7	3.0
1128-1	VG95343T06F008A	62.5	47.0	62.5	18.0	133.0	33.0	2.5	1.4	2.0	3.0
1129-1	VG95343T06F009A	69.0	60.0	69.0	20.0	137.0	35.0	2.5	1.4	2.0	3.0
1141-1	VG95343T06F010A	82.0	67.0	82.0	23.0	140.0	45.0	2.5	1.4	2.0	3.0
1121-4	–	22.3	11.4	22.3	6.4	105.2	18.5	1.5	1.1	1.0	3.3
1122-4	–	25.6	15.0	25.6	7.5	124.0	19.8	1.5	1.1	1.0	3.3
1123-4	–	29.4	19.0	29.4	8.5	146.3	20.8	1.8	1.1	1.0	3.3
1124-4	–	34.0	22.9	34.0	10.0	172.2	21.8	1.8	1.1	1.0	3.3
1125-4	–	29.5	37.3	37.3	11.0	185.2	24.4	2.0	1.1	1.7	3.3
1125-2	–	41.2	29.5	41.2	11.0	82.0	24.4	2.0	1.1	1.7	3.3
1126-4	–	43.7	34.0	43.7	12.0	213.6	27.0	2.0	1.1	1.7	3.3
1127-4	–	50.0	41.1	2.3	14.5	224.5	9.5	2.3	1.4	1.7	3.3
1127-3	–	50.0	41.1	2.3	14.5	65.0	29.5	2.3	1.4	1.7	3.3
1128-4	–	62.7	47.0	62.7	18.0	227.3	33.3	2.5	1.4	2.0	3.3
1129-4	–	69.3	59.7	69.3	20.0	233.4	35.1	2.5	1.4	2.0	3.3

All dimensions in mm. Subject to technical changes.

Right Angle Shapes, VG style/MIL style

- Helashrink 1100 Series, with rib, low profile



1123-1-G supplied / fully recovered.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
411-21180	1121-1-G
411-22180	1122-1-G
411-23180	1123-1-G
411-24180	1124-1-G
411-25180	1125-1-G
411-26180	1126-1-G
411-27180	1127-1-G
411-28180	1128-1-G
411-29180	1129-1-G
411-41180	1141-1-G
411-21007	1121-4-G
411-22015	1122-4-G
411-23013	1123-4-G
411-24009	1124-4-G
411-25008	1125-4-G
411-25027	1125-2-G
411-26008	1126-4-G
411-27008	1127-4-G
411-27005	1127-3-B7
411-28002	1128-4-G
411-29001	1129-4-J

For Material / Adhesive selection and other information please refer to page 10.

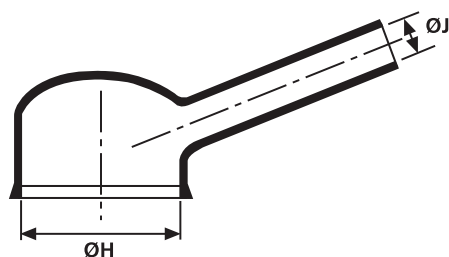
Right Angle Shapes, VG style

- Helashrink 1100 Series, with rib, low profile, high ratio

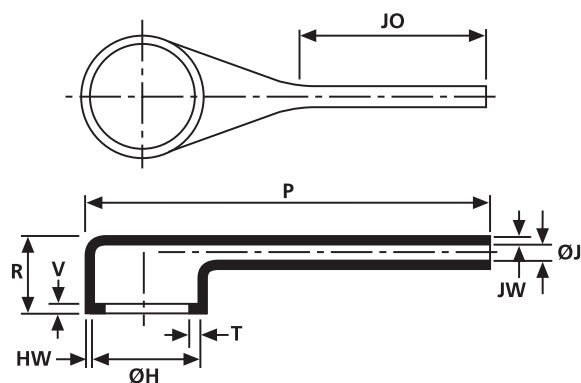
This style provides connector cable strain relief. Used in applications for partially loaded connectors with small cable diameters. The tail is designed to allow easy orientation prior to cooling.



1135-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	JO ± 10%	V ± 10%	T ± 20%
1133-1	VG95343T06F011A	19.0	13.0	6.0	2.0	44.0	16.3	1.5	1.1	21.8	3.0	1.0
1133-2	—	19.0	13.0	6.0	2.0	30.0	16.0	1.5	1.1	1.0	3.3	1.0
1134-1	VG95343T18H001A	26.0	19.0	7.5	2.5	67.0	18.0	1.8	1.1	29.2	3.0	1.0
1135-1	VG95343T06F013A	34.0	26.0	9.5	3.0	81.0	18.8	1.8	1.1	35.3	3.0	1.0
1135-1	VG95343T06F013A	34.0	26.0	9.5	3.0	81.0	18.8	1.8	1.1	35.3	3.0	1.0
1136-1	VG95343T06F014A	43.5	34.0	11.5	3.5	116.0	21.3	1.8	1.1	47.0	3.0	1.7
1182-4	—	12.0	7.6	6.0	2.0	16.8	13.0	1.0	0.5	6.0	1.5	0.3

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
411-33180	1133-1-G
411-33011	1133-2-G
411-34180	1134-1-G
411-35180	1135-1-G
411-35180	1135-1-G
411-36180	1136-1-G
411-82001	1182-4-G

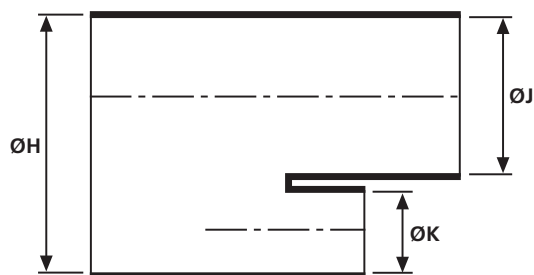
T-Shapes, VG style

• Helashrink 1200 Series

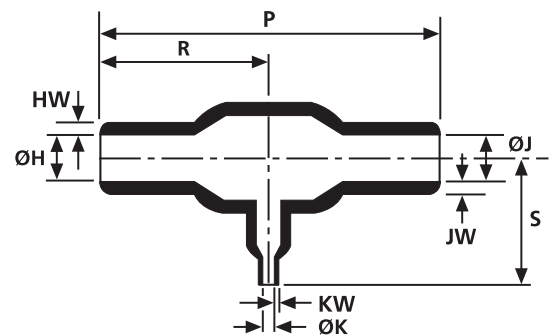
This style provides strain relief, sealing and mechanical protection on cable harnesses. For VG shapes with portholes "P" please refer to product standards tables in the appendix.



1202-1-G recovered onto a cable harness.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH/J min. a	ØH/J max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S ± 10%	KW ± 20%
1206-1	VG95343T08A009A	6.6	3.0	6.6	3.0	29.7	14.7	1.0	1.0	14.7	1.0
1203-1	VG95343T08A001A	13.2	6.0	6.5	3.0	52.0	26.0	1.5	1.5	19.3	1.0
1202-1	VG95343T08A010A	13.2	6.1	13.2	6.1	58.7	29.2	1.5	1.5	29.2	1.5
1205-1	—	17.7	8.9	7.6	3.8	50.8	25.4	1.5	1.5	25.4	1.0
1201-1	VG95343T08A007A	17.7	8.9	10.1	5.1	47.5	23.6	1.5	1.5	23.6	1.0
1209-1	VG95343T08A002A	27.0	12.4	13.2	6.0	108.0	54.0	2.5	2.5	38.6	1.5
1207-1	VG95343T08A011A	26.9	12.4	26.9	12.4	120.1	55.9	2.5	2.5	59.9	2.5
1203-1	—	13.0	6.0	6.5	3.0	52.0	26.0	1.5	1.5	19.3	1.0

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
412-06180	1206-1-G
412-03180	1203-1-G
412-02180	1202-1-G
412-05180	1205-1-G
412-01180	1201-1-G
412-09180	1209-1-G
412-07180	1207-1-G
412-03001	1203-1-B7

T-Shapes

• Helashrink 1200 Series, Offset

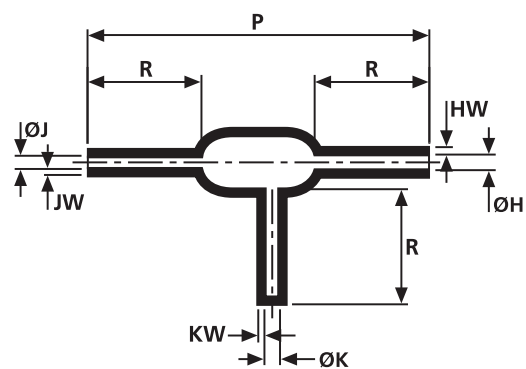
This style provides strain relief, sealing and mechanical protection where a cable transition is required on the harness, it is recommended that an adhesive be used if enviromental sealing is required.



1217-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	KW ± 20%
1217-1	10.0	2.6	6.0	2.2	6.0	2.6	57.0	19.0	1.0	1.0	1.0
1222-1	31.0	15.2	18.0	8.9	25.0	15.0	92.0	52.0	2.3	1.8	2.3
1223-1	29.5	16.3	9.6	5.3	29.5	16.3	93.2	56.6	2.5	1.8	2.5

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
412-17003	1217-1-G
412-22002	1222-1-G
412-23003	1223-1-HP

T-Shapes, VG style

• Helashrink 1200 Series, Offset

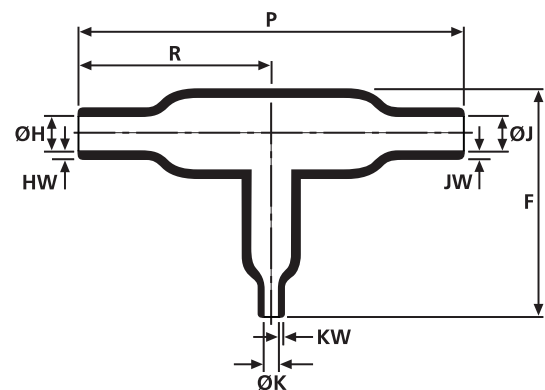
This style provides strain relief, sealing and mechanical protection where a cable transition is required on the harness, it is recommended that an adhesive be used if enviromental sealing is required.



1204-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	KW ± 20%	S ± 10%	F ± 15%
1204-1	VG95343T08A016A	13.0	7.5	6.5	4.0	6.5	4.0	56.0	33.0	1.5	1.0	1.0	—	27.0
1216-1	VG95343T08A017A	33.0	13.0	16.5	6.5	16.5	6.5	97.0	54.0	2.5	1.5	1.5	38.5	—
1226-1	—	30.5	15.2	17.8	8.9	17.8	8.9	81.3	47.5	2.3	1.3	1.3	38.1	—

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	-	-	-	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
412-04180	1204-1-G
412-16180	1216-1-G
412-26002	1226-1-G

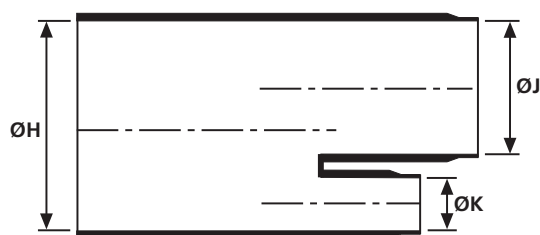
Angled T-Shapes, VG style

• Helashrink 1300 Series, 30° & 45° angle

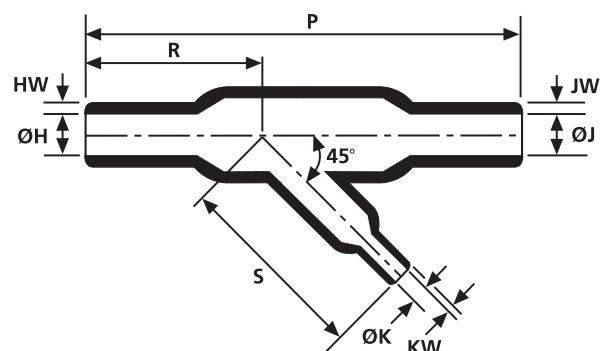
This style provides strain relief, sealing and mechanical protection on cable harnesses. For VG shapes with portholes "P" please refer to product standards tables in the appendix.



1303-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Angle	Designation as per VG-Norm	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 30%	JW ± 30%	KW ± 20%	S ± 10%
1301-1	45°	VG 95343 T08 B 001 A	13.0	7.0	13.0	7.0	7.0	3.5	50.0	23.0	1.5	1.5	1.0	23.0
1302-1	45°	VG 95343 T08 B 004 A	27.0	13.0	27.0	13.0	7.0	3.5	93.0	41.0	2.5	2.5	1.0	36.0
1303-1	45°	VG 95343 T08 B 002 A	27.0	14.0	27.0	14.0	13.0	7.5	145.0	70.0	1.5	1.5	1.5	54.0
1311-1	30°	–	30.4	15.0	30.4	15.0	20.3	10.0	82.6	32.0	2.5	2.5	1.8	51.0
1306-1	45°	VG95343T06B010A	13.0	6.0	6.5	3.0	6.5	3.0	45.0	23.0	1.5	1.0	1.5	21.5
1307-1	45°	VG95343T19B011A	27.0	12.5	13.0	6.0	13.0	6.0	90.0	42.0	2.5	1.5	1.5	43.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
413-01180	1301-1-G
413-02180	1302-1-G
413-03180	1303-1-G
413-11010	1311-1-G
413-06180	1306-1-G
413-07184	1307-1-GW24

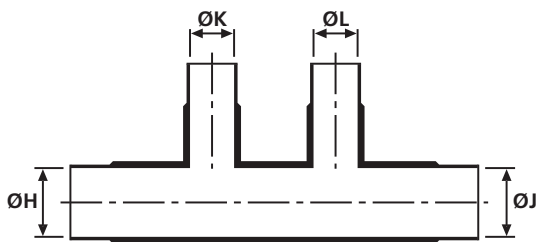
Double T-Shapes

• Helashrink 1310 Series, 30° angle

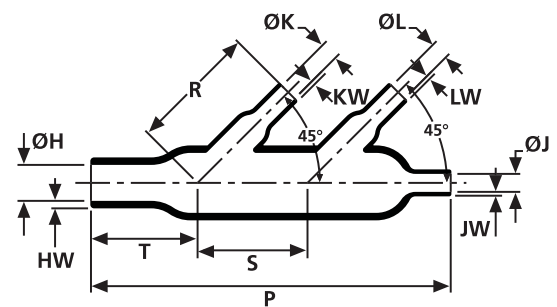
This style provides strain relief, sealing and mechanical protection on cable harnesses where a specialised orientation is required.



1310-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	ØL min. a	ØL max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	KW ± 20%	LW ± 20%	S ± 10%	T ± 10%
1310-1	30.4	15.2	30.4	15.2	12.7	6.4	12.7	6.4	88.9	50.8	2.5	2.5	1.3	1.3	25.4	19.1

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
413-10003	1310-1-G

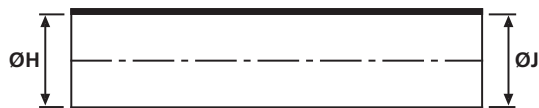
Angle Elbow Shapes

• Helashrink 1400 Series, 90° angle

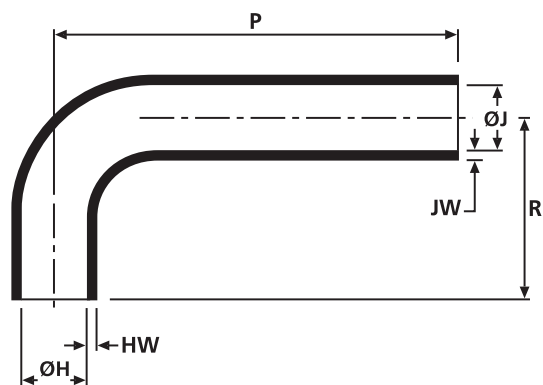
This style provides strain relief and mechanical protection on cable orientations of up to 90°, efficient design and numerous material / adhesive combinations provide quick and easy installation across a range of applications.



1403-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%
1401-1	31.7	15.7	31.7	15.7	88.9	50.8	2.3	2.3
1401-2	38.1	15.7	38.1	15.7	88.9	50.8	2.3	2.3
1403-1	15.7	7.9	15.7	7.9	44.5	25.4	2.3	2.3
1405-1	25.0	7.9	25.0	7.9	30.0	15.0	1.5	1.5
1406-1	20.0	7.9	20.0	7.9	45.0	15.0	1.5	1.5
1408-2	19.0	9.0	19.0	9.0	44.5	44.5	1.8	1.8

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
414-01003	1401-1-G
414-01006	1401-2-G
414-03002	1403-1-G
414-05003	1405-1-G
414-06003	1406-1-G
414-08004	1408-2-G

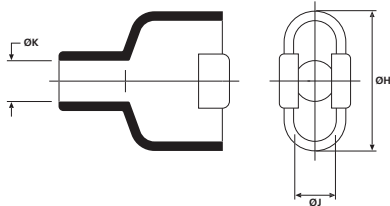
Connector Cover for Min-D Series

• Helashrink 1500 Series, with top entry

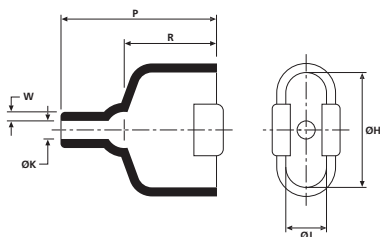
This style provides strain relief and mechanical protection for Min-D series connectors. It's unique design allows perfect orientation on installation, can be supplied with or without lips.



1505-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	W ± 20%
1505-1	20.3	20.3	10.7	10.7	7.8	4.1	33.0	19.1	1.0
1505-2	16.0	20.3	16	10.7	16.0	4.1	33.0	19.1	1.0
1505-7	20.3	20.3	15.0	10.7	2.0	4.1	48.0	19.1	1.0
1506-1	28.1	28.2	10.7	10.7	10.1	5.3	38.9	22.1	1.0
1506-2	19.0	28.2	19.0	10.7	19.0	5.3	38.9	22.1	1.0
1507-1	42.1	42.2	10.7	10.7	13.9	8.1	45.0	25.4	1.0
1507-2	29.2	42.2	29.2	10.7	29.2	8.1	45.0	25.4	1.0
1507-7	55.0	42.2	13.9	10.7	25.0	8.1	45.0	25.4	1.0
1501-1	58.4	58.7	10.6	10.7	17.2	8.6	53.3	28.4	1.0
1501-2	34.2	58.7	34.2	10.7	34.2	8.6	53.3	28.4	1.0
1502-1	37.5	57.9	37.5	13.7	37.5	10.4	61.0	31.8	1.0
1502-2	57.9	57.9	13.7	3.7	19.0	10.4	61.0	31.8	1.0

All dimensions in mm. Subject to technical changes.

These types are with lips.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	W ± 20%
1505-3	21.0	20.3	12.4	10.7	7.8	4.1	33.0	19.1	1.0
1507-3	42.1	42.2	10.7	10.7	13.9	8.1	45.0	25.4	1.0
1501-3	59.6	58.7	12.4	10.7	17.2	8.6	53.3	28.4	1.0
1501-7	58.4	58.7	10.6	10.7	17.2	8.6	53.3	28.4	1.0
1502-3	57.4	57.9	13.7	13.7	19.0	10.4	61.0	31.8	1.0

All dimensions in mm. Subject to technical changes.

These types are without lips.

**For Material / Adhesive
selection and other
information please
refer to page 10.**

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	✓	✓	✓	✓
W8	✓	✓	✓	✓
W24	✓	✓	✓	✓
V9500	✓	✓	✓	✓
HMT200A	✓	✓	✓	✓
W21	-	-	-	✓
Without Adhesive	✓	✓	✓	✓

Standard combinations with lips

Article-No.	Type
415-05004	1505-1-G
415-05011	1505-2-B7
415-05021	1505-7-J
415-05020	1505-7-GW8
415-06005	1506-1-G
415-06012	1506-2-B7
415-07005	1507-1-G
415-07013	1507-2-B7
415-07024	1507-7-G
415-01001	1501-1-B7
415-01010	1501-2-G
415-02005	1502-1-J
415-02009	1502-2-G

Standard combinations without lips

Article-No.	Type
415-05015	1505-3-B7
415-07030	1507-3-G
415-01016	1501-3-J
415-01017	1501-7-B7
415-02020	1502-3-J

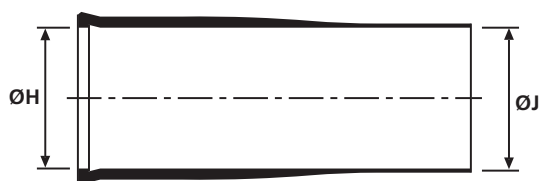
GSR Graduated Strain Relief

• Helashrink 1750 Series, with rib

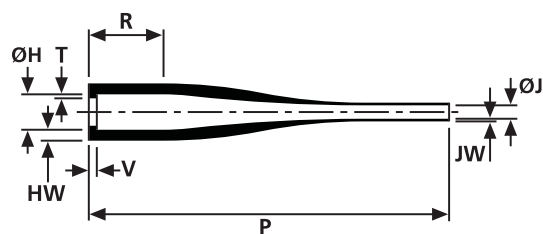
This style is ideally suited for shipboard and railway carriage cabling. The key features are: very robust, superior crush resistance and excellent strain relief. The wall thickness varies with long tail, allowing setting at varying angles through 90°.



1751-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	T ± 10%	V ± 10%
1751-1	25.4	16.5	25.4	8.3	152.4	30.5	4.1	1.5	1.5	3.0
1751-2	33.0	16.5	33.0	8.4	153.0	30.5	4.1	1.5	1.5	3.0
1752-1	33.1	20.3	33.1	10.9	152.4	30.5	4.1	1.5	1.5	3.0
1752-2	43.2	20.3	43.2	10.9	153.0	30.5	4.1	1.5	1.5	3.0
1753-1	43.2	22.8	43.2	14.2	175.3	38.1	4.1	2.0	1.5	3.0
1753-2	53.3	22.9	53.3	14.2	175.3	38.0	4.1	2.0	1.5	3.0
1754-1	53.4	27.9	53.4	17.7	175.3	38.1	4.1	2.0	1.5	3.0
1754-2	72.4	27.9	72.4	17.8	175.3	38.0	4.1	2.0	1.5	3.0
1755-1	72.4	36.8	72.4	24.1	182.9	40.6	4.1	2.5	1.5	3.0
1755-2	87.0	36.8	87.0	24.1	184.0	41.0	4.1	2.5	1.5	3.0

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	√	√	√	√
W8	√	√	√	√
W24	√	√	√	√
V9500	√	√	√	√
HMT200A	√	√	√	√
W21	-	-	-	√
Without Adhesive	√	√	√	√

Standard combinations

Article-No.	Type
417-51001	1751-1-H
417-51009	1751-2-H
417-52001	1752-1-H
417-52005	1752-2-H
417-53001	1753-1-H
417-53005	1753-2-H
417-54001	1754-1-H
417-54005	1754-2-H
417-55001	1755-1-H
417-55005	1755-2-H

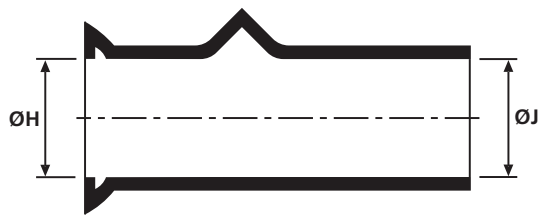
Angle Shapes

- Helashrink 1800 Series, with rib, 30°, 45°, 60° angle

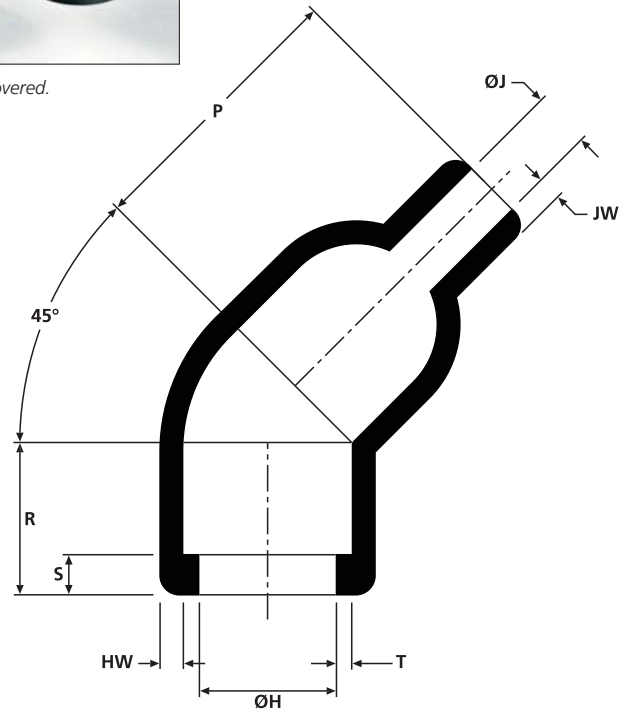
This style provides strain relief and mechanical protection for harness systems when used in conjunction with a circular grooved adaptor. Can be supplied in a range of nominal recovered angles and material / adhesive combinations to suit most applications.



1821-42 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	Angle	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	T ± 10%	S ± 10%
1820-4	30°	36.0	21.4	36.0	8.3	46.0	26.0	1.8	1.0	8.6	26.0
1807-4	45°	35.6	18.0	35.6	7.4	43.2	10.2	1.8	1.8	1.0	3.0
1805-4	45°	40.0	18.8	40.0	7.0	28.0	11.0	1.5	1.5	1.0	3.0
1806-4	45°	42.6	27.9	42.6	9.7	85.0	17.8	2.0	2.0	1.7	3.0
1821-42	45°	20.0	14.2	20.0	4.1	24.0	10.0	2.3	1.8	1.1	3.0
1819-4	60°	43.0	28.2	43.0	9.9	55.0	18.0	2.0	1.0	3.0	18.0

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
418-20001	1820-4-G
418-07003	1807-4-G
418-05003	1805-4-G
418-06002	1806-4-G
418-21013	1821-42-G
418-19001	1819-4-G

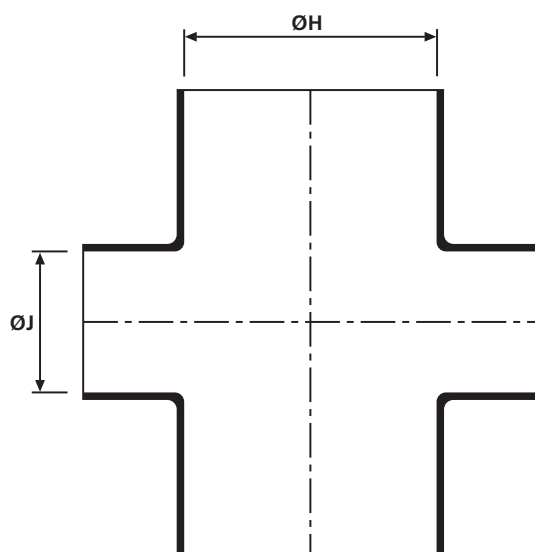
Right Angle Cross Shapes

• Helashrink 2000 Series, T-Joint

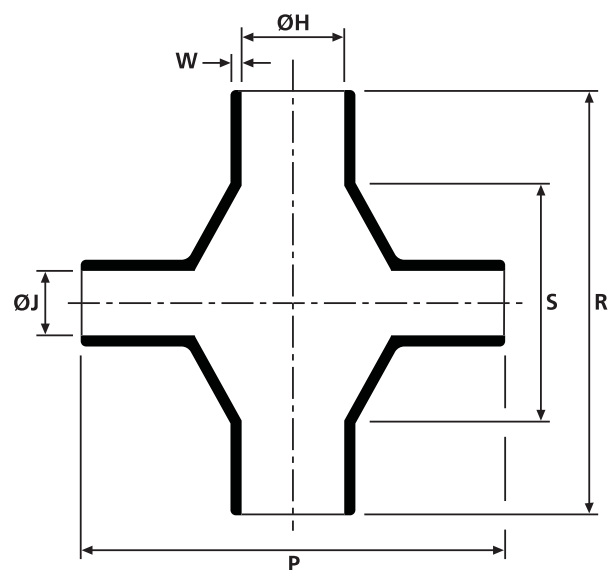
This style allows wires to be routed in four 90° directions, whilst providing strain relief and mechanical protection. Environmental sealing can be achieved when used in conjunction with one of our extensive range of adhesives.



2003-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	R ± 10%	P ± 10%	S ± 10%	W ± 20%
2003-1	19.3	9.7	13.2	9.7	38.1	38.1	22.1	1.1

All dimensions in mm. Subject to technical changes.

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	√	√	√	√
W8	√	√	√	√
W24	√	√	√	√
V9500	√	√	√	√
HMT200A	√	√	√	√
W21	-	-	-	√
Without Adhesive	√	√	√	√

Standard combinations

Article-No.	Type
420-03002	2003-1-G

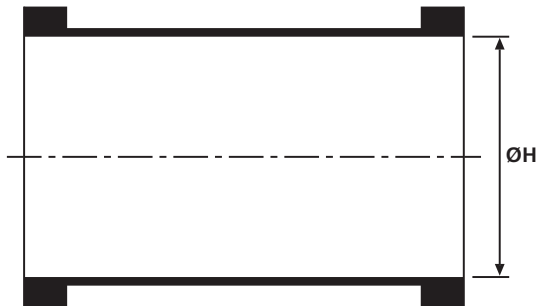
Locating Bushes

• Helashrink 1760, 1790, 1820 Series

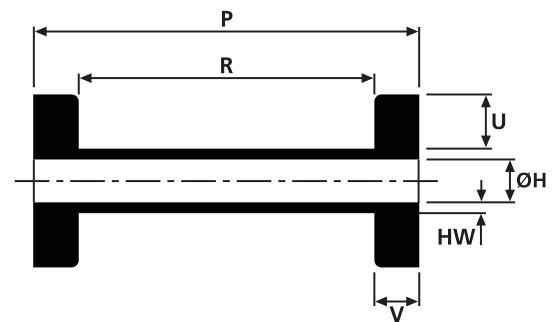
This product style provides location, cushioning, shimming and protection on cable runs through bulk head or enclosure entry points. Available in a range of materials and adhesives for most applications.



1793-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Sizes and Type Table

Type	ØH min. a	ØH max. b	R ± 10%	P ± 10%	HW ± 20%	V ± 10%	U ± 20%
1793-1	20.0	9.5	25.0	35.0	1.5	5.0	3.0
1794-1	30.0	18.0	25.0	35.0	2.0	5.0	3.0
1795-1	26.0	12.7	25.0	35.0	2.0	5.0	3.0
1796-1	15.0	6.4	24.0	29.0	1.5	2.5	2.0
1822-1	12.0	5.9	24.0	30.0	6.1	3.0	2.0
1823-1	16.0	7.8	24.0	32.0	6.2	4.0	2.0

All dimensions in mm. Subject to technical changes.

For Material / Adhesive selection and other information please refer to page 10.

Combinations "On request"

Adhesive	Material				
	B7	G	J	H	L
WM250	√	√	√	√	-
W8	√	√	√	√	-
W24	√	√	√	√	√
V9500	√	√	√	√	-
HMT200A	√	√	√	√	-
W21	√	√	√	√	-
Without Adhesive	√	√	√	√	√

Standard combinations

Article-No.	Type
417-93001	1793-1-G
417-94002	1794-1-L
417-95001	1795-1-G
417-96001	1796-1-G
418-22001	1822-1-G
418-23001	1823-1-G

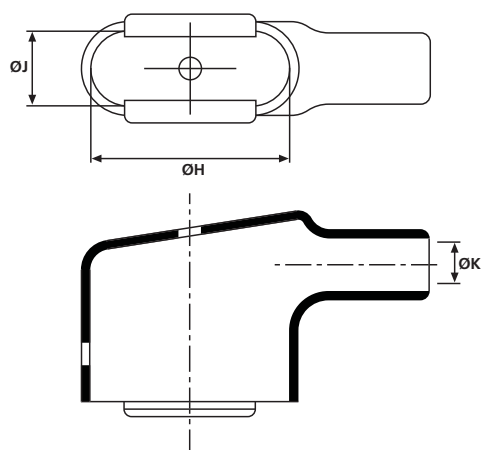
Connector Cover for Min-D Series

• Helashrink 2100 Series, with 90° entry

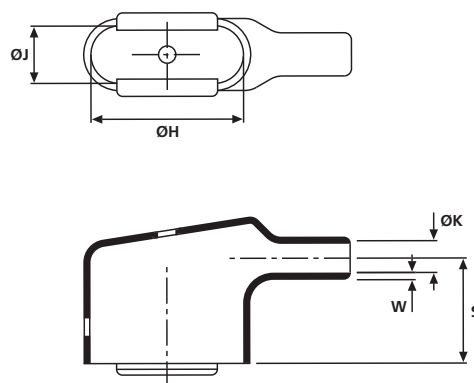
This style provides strain relief and mechanical protection for Min-D series connectors. Its unique design allows perfect 90° orientation on installation. It can be supplied with or without lips in a range of material and adhesive combinations to suit most applications.



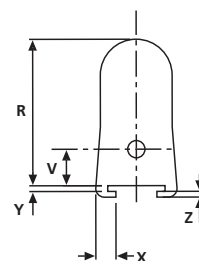
2101-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)



Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	R ± 10%	W ± 20%	V ± 10%	S ± 10%	X ± 10%	Y ± 10%	Z ± 10%
2101-1	20.3	20.3	10.7	10.7	7.8	4.1	21.6	1.0	15.0	15.2	3.0	3.0	1.1
2101-2	16.0	20.3	10.0	16.0	16.0	4.1	21.6	1.0	15.0	15.2	3.0	3.0	1.1
2102-1	28.1	28.2	10.6	10.7	10.1	5.3	24.6	1.0	15.0	18.5	3.0	3.0	1.1
2102-2	19.0	28.2	19.0	10.7	19.0	5.3	24.6	1.0	15.0	18.5	3.0	3.0	1.1
2103-1	42.1	42.2	10.6	10.7	13.9	7.4	27.9	1.1	15.0	22.1	3.0	3.0	1.1
2103-2	29.2	42.2	29.2	10.7	29.2	7.4	27.9	1.1	15.0	22.1	3.0	3.0	1.1
2104-1	58.6	58.7	10.6	10.7	17.2	8.6	30.5	1.0	15.0	25.4	3.0	3.0	1.1
2105-1	57.9	57.9	13.7	13.7	19.0	10.7	32.3	1.0	15.0	25.4	3.0	3.0	1.1
2105-2	37.5	57.9	37.5	13.7	37.5	10.7	32.3	1.0	15.0	25.4	3.0	3.0	1.1

All dimensions in mm. Subject to technical changes.

These are with lips.

Sizes and Type Table

Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	R ± 10%	W ± 20%	V ± 10%	S ± 10%	X ± 10%	Y ± 10%	Z ± 10%
2103-3	42.9	42.2	12.4	10.7	13.9	7.4	27.9	1.1	15.0	22.1	—	—	—

All dimensions in mm. Subject to technical changes.

These are without lips.

Combinations "On request"

Adhesive	Material			
	B7	G	J	H
WM250	✓	✓	✓	✓
W8	✓	✓	✓	✓
W24	✓	✓	✓	✓
V9500	✓	✓	✓	✓
HMT200A	✓	✓	✓	✓
W21	-	-	-	✓
Without Adhesive	✓	✓	✓	✓

Standard combinations with lips

Article-No.	Type
421-01004	2101-1-G
421-01010	2101-2-G
421-02004	2102-1-G
421-02009	2102-2-B7
421-03004	2103-1-G
421-03014	2103-2-G
421-04005	2104-1-G
421-05003	2105-1-G
421-05010	2105-2-J

Standard combinations without lips

Article-No.	Type
421-03019	2103-3-J



Cable Management Products

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2-Way Outlet Shapes, Breakout Boots

- Helashrink 200 Series, in line, low voltage

Features and Benefits

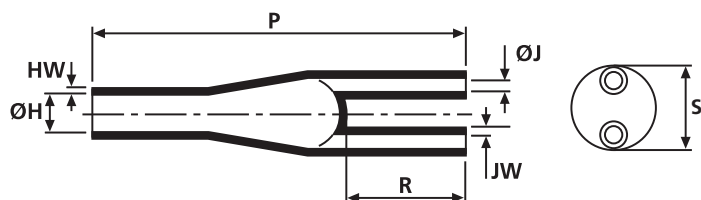
Branching parts are used for easy, time-saving insulation of the branch point of a cable where it is split into single wires. Branching parts with adhesive also serve to relieve the mechanical tension in cable harnesses whilst providing excellent IP ratings.



Breakout boot for two-core cable.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Cable breakouts are available for 2, 3, 4, 5 and 6 core cables.

Material Data

Material	Polyolefin, chemically cross linked (POX)
Colour	Black (BK)
Shrink Ratio	up to 3:1
Dielectric Strength	15 kV/mm
Min. Shrink Temperature	+135 °C
Operating Temperature	-55 °C to +100 °C
Flammability	ASTM D635



Article-No.	Type	Recomm. application (mm ²)		ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	Recovered				
		from	to					P ± 10%	R ± 10%	S nom	HW ± 20%	JW ± 20%
402-16039	216-3-B8W	2.5	10.0	21.0	9.4	9.0	2.79	76.5	20.0	4.0	1.59	1.59
402-23058	223-2-B8W	4.0	35.0	33.0	9.4	17.5	4.1	94.0	30.0	20.0	1.5	1.2
402-18051	218-2-B8W	50.0	150.0	49.0	22.9	20.0	7.6	119.0	34.0	30.0	3.2	3.2
402-19032	219-2-B8W	185	400	87.0	38.1	43.0	12.7	141.5	42.5	44.0	3.8	3.8

All Dimensions in mm, except for "mm²". Subject to technical changes.

3-Way Outlet Shapes, Breakout Boots

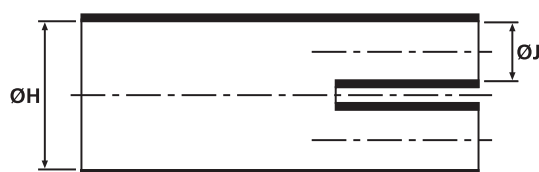
- Helashrink 300 Series, in line, low voltage

Features and Benefits

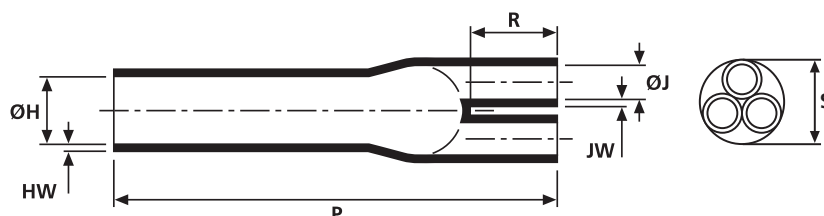
Cable breakout boots are designed for insulating and sealing of cable crutches and provide excellent resistance from abrasion and weathering. They are manufactured from a tough cross-linked flame retarded polyolefin, Branching parts with adhesive also serve to relieve the mechanical tension in cable harnesses whilst providing excellent IP ratings.



300 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Cable breakouts are available for 2, 3, 4, 5 and 6 core cables.

Material Data

Material	Polyolefin, chemically cross linked (POX)
Colour	Black (BK)
Shrink Ratio	up to 3:1
Dielectric Strength	15 kV/mm
Min. Shrink Temperature	+135 °C
Operating Temperature	-55 °C to +100 °C
Flammability	ASTM D635



Technical Table

Article-No.	Type	Recomm. application (mm ²)		ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	Recovered				
		from	to					P ± 10%	R ± 10%	S nom	HW ± 20%	JW ± 20%
403-54004	354-1-B8W	16.0	45.0	45.0	10.0	16.0	4.0	100.0	25.0	–	3.0	2.0
403-20012	320-1-B8W	50.0	150.0	55.8	22.5	30.4	9.0	180.0	44.0	37.0	3.0	2.0
403-55005	355-1-B8W	150	240	100.0	28.0	40.0	13.0	210	50.0	–	3.5	2.5
403-24016	324-1-B8W	150	300.0	90.0	35.5	35.0	14.5	200.0	50.0	54.0	3.0	2.0
403-42006	342-1-B8W2	185	400	110.0	35.0	40.0	17.5	230.0	45.0	65.0	4.0	3.5
403-41005	341-1-B8W2	240	400.0	125.0	59.0	50.8	25.4	283.0	71.0	–	3.8	3.8

All Dimensions in mm, except for "mm²". Subject to technical changes.

4-Way Outlet Shapes, Breakout Boots

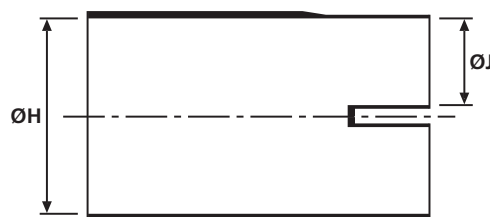
- Helashrink 400 Series, in line, low voltage

Features and Benefits

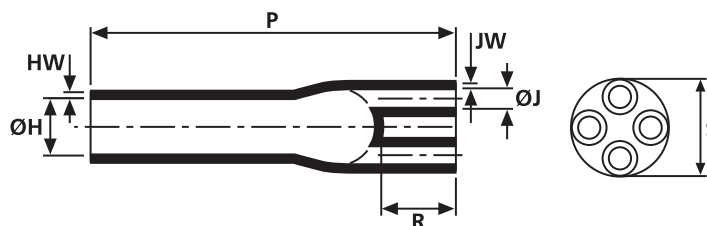
Branching parts are used for easy, time-saving insulation of the branch point of a cable where it is split into single wires. They are manufactured from a tough cross-linked flame retarded polyolefin, branching parts with hot melt adhesive also serve to relieve the mechanical tension in cable harnesses whilst providing excellent IP ratings.



442-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Cable breakouts are available for 2, 3, 4, 5 and 6 core cables.

Material Data

Material	Polyolefin, chemically cross linked (POX)
Colour	Black (BK)
Shrink Ratio	up to 3:1
Dielectric Strength	15 kV/mm
Min. Shrink Temperature	+135 °C
Operating Temperature	-55 °C to +100 °C
Flammability	ASTM D635



Technical Table

Article-No.	Type	Recomm. application (mm ²)		ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	Recovered				
		from	to					P ±10%	R ±10%	S nom	HW ±20%	JW ±20%
404-42022	442-1-B8W	2.5	10.0	28.0	9.0	9.0	1.8	78.0	17.0	20.0	2.7	2.0
404-08022	408-2-B8W2	4.0	35.0	35.0	12.0	15.0	3.0	95.0	24.0	22.0	2.5	2.0
404-09021	409-2-B8W2	35.0	70.0	47.4	22.9	21.5	6.4	165.0	38.1	22.0	4.1	3.3
404-18020	418-4-B8W2	70.0	150.0	60.0	22.9	30.0	6.4	202.0	38.1	38.1	4.1	3.3
404-44010	444-1-B8W2	150	400.0	95.0	35.6	45.0	12.5	240.0	55.0	50.8	4.0	3.5

All Dimensions in mm, except for "mm²". Subject to technical changes.

End Caps

• Helashrink 1600 Series, low voltage

Features and Benefits

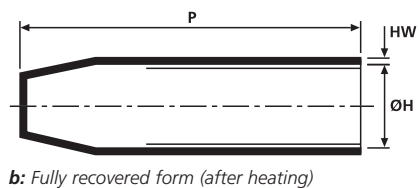
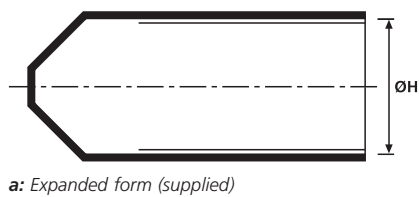
End caps are used to seal cables during storage or transportation. Helashrink 1600 Series end caps can be used as an insulating cap for live LV cables (0.6/1kV). The adhesive lined end caps provide an excellent environmental seal. The outer end seal is marked with lightning flashes to indicate a live circuit. End caps can be fitted with air valves for certain pressurised cable applications. The high shrink ratio end caps minimise the number of end cap sizes needed.

Application

End caps are suitable for use on both polymeric and paper insulated, lead jacketed cables which may include aluminium or steel armouring.



The appropriate end cap for any diameter and type of cable.



Material Data

Material	Polyolefin, chemically cross linked (POX)
Colour	Black (BK)
Shrink Ratio	up to 3:1
Min. Shrink Temperature	+135 °C
Operating Temperature	-55 °C to +100 °C
Dielectric Strength	15 kV/mm
Flammability	ASTM D635



Technical Table

		Recomm. application		ØH min. a	ØH max. b	Fully recovered	
Article-No.	Type	from	to			P ±10%	HW ± 20%
Standard Range							
416-12046	1612-1-B8W	4.0	8.0	10.0	4.0	33.5	2.0
416-13054	1613-1-B8W	6.5	16.0	20.0	6.0	55.3	2.3
416-14047	1614-1-B8W2	16.0	32.0	40.0	15.0	90.0	3.0
416-15035	1615-1-B8W2	26.0	51.0	63.0	25.0	143.0	3.3
416-17033	1617-1-B8W2	32.0	61.0	76.0	30.0	158.0	4.0
416-16053	1616-1-B8W2	48.0	80.0	100.0	45.0	162.0	4.0
416-09000	1609-1-B5W2	65.0	110.0	120.0	60.0	150.0	4.0
Special Range							
416-01013	1601-1-B8W	10.0	19.0	23.8	9.4	89.0	2.0
416-20025	1620-1-B5W2	13.0	28.0	35.0	12.7	185.0	3.5
416-10000	1610-1-B5W2	90.0	135.0	160.0	82.0	146.0	4.0

All dimensions in mm. Subject to technical changes.

Pinched End Caps

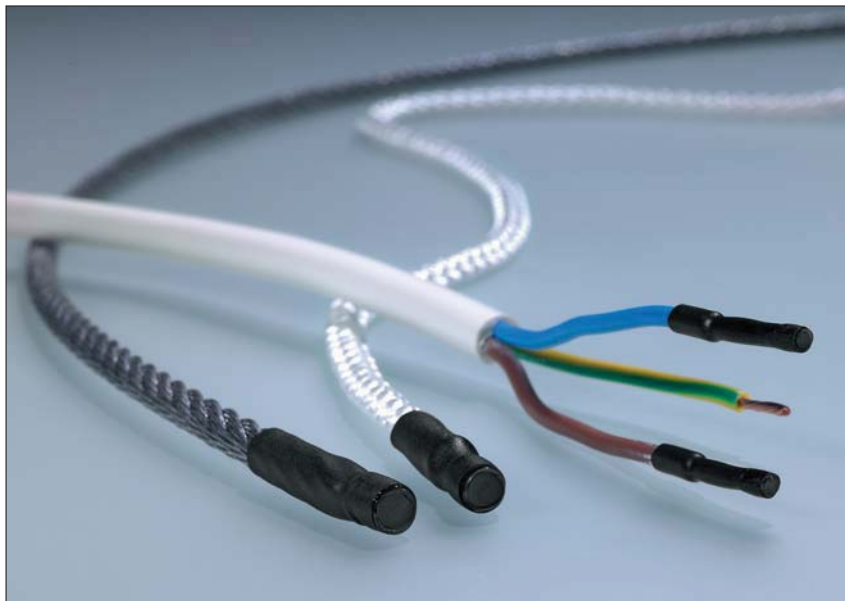
• Helashrink PEC Series, low voltage

Features and Benefits

The PEC-Series can be applied quickly and easily like a standard heat shrinkable tube. The inner adhesive liner and the adhesive plug provide excellent bond and protection from water ingress. The optimal shrink ratio of 3:1 and different diameters allow a wide range of applications. Other diameters and lengths are available on request.

Application

Pinched End Caps can be used for mechanical and environmental protection of stub splices in electrical harnesses. Due to the quick and easy installation, these caps can be used for non-electrical applications as well.



The appropriate end cap for any diameter and type of cable.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Material Data

Material	Polyolefin, cross-linked (POX)
Colour	Black (BK)
Shrink Ratio	3:1
Min. Shrink Temperature	+120 °C
Operating Temperature	-45 °C to +125 °C
Dielectric Strength	15 kV/mm according to IEC 684 P2
Flammability	self extinguishing in 30 seconds according to SAE-AMS-DTL-23053/4



Technical Table

Article-No.	Type	ØH min. a	ØH max. b	HW ± 20%	P nom	P2 nom	Pack Cont.
416-00000	PEC-3/1	3.0	1.0	1.0	25.0	20.0	50
416-00003	PEC-4.8/1.5	4.8	1.5	1.0	30.0	25.0	50
416-00001	PEC-6/2	6.0	2.0	1.0	30.0	25.0	50
416-00002	PEC-9/3	9.0	3.0	1.4	35.0	27.0	50

All dimensions in mm. Subject to technical changes.

Heat Shrinkable Tubing 2:1 - Fluororubber

• Viton®-E

Features and Benefits

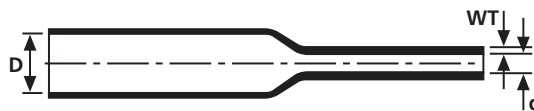
Viton®-E is a fluoroelastomeric heat shrinkable tubing. It remains flexible even at very low temperatures. It has extremely high resistance to chemicals and maintains its excellent mechanical strength and flexibility even after long term exposure to high temperatures. Viton®-E tubing is approved to VG 95343/5E.

Application

Viton®-E is used for reliable protection against aggressive chemicals in high temperature environments like engine compartments and turbines. It is also used when protective tubings are required to remain flexible at low temperatures.



Viton®-E for flexibility and protection against aggressive chemicals.



Viton®-E

Cut lengths available on request. Please contact us!

Material Data	
Material	Fluoropolymer cross-linked (FPMX)
Colour	Black (BK)
Shrink Ratio	2:1
Longitudinal change after shrinkage	-10% max.
Min. Shrink Temperature	+175 °C
Operating Temperature	-55 °C to +200 °C
Dielectric Strength	15 kV/mm
Flammability	VG 95343
Specification	VG 95343



Technical Table

Article-No.	Type	Designation as per VG-Norm	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
330-00320	VITON®-E-3.2/1.6	VG 95343 T 05 E 001 A	3.2	1.6	0.7	50
330-00480	VITON®-E-4.8/2.4	VG 95343 T 05 E 002 A	4.8	2.4	0.8	50
330-00640	VITON®-E-6.4/3.2	VG 95343 T 05 E 003 A	6.4	3.2	0.9	50
330-00950	VITON®-E-9.5/4.8	VG 95343 T 05 E 004 A	9.5	4.8	1.0	50
330-01270	VITON®-E-12.7/6.4	VG 95343 T 05 E 005 A	12.7	6.4	1.2	25
330-01900	VITON®-E-19.0/9.5	VG 95343 T 05 E 006 A	19.0	9.5	1.4	25
330-02540	VITON®-E-25.4/12.7	VG 95343 T 05 E 007 A	25.4	12.7	1.8	25
330-03810	VITON®-E-38.0/19.0	VG 95343 T 05 E 008 A	38.0	19.0	2.4	15
330-05080	VITON®-E-50.8/25.4	VG 95343 T 05 E 009 A	50.8	25.4	2.8	15

All dimensions in mm. Subject to technical changes.

Viton® is a registered trademark of DuPont.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 2:1 - Elastomer

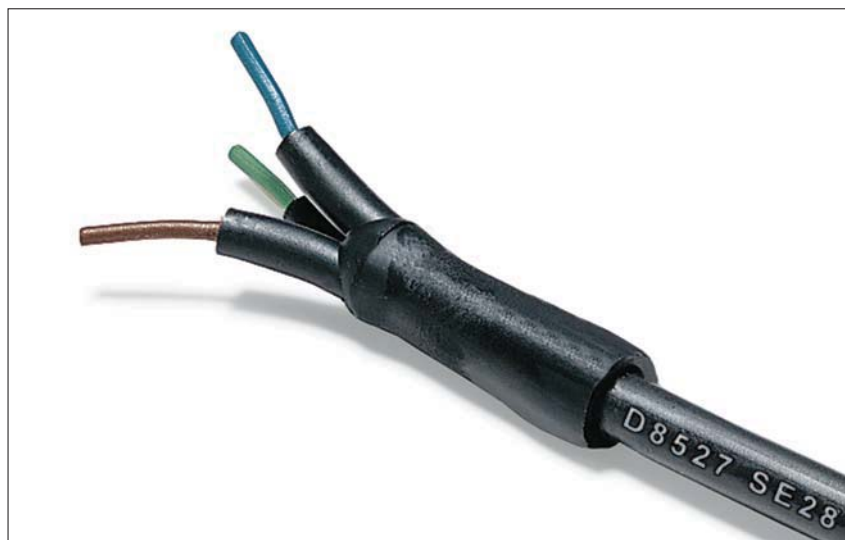
• SE28

Features and Benefits

SE28 is a flexible, high performance elastomeric tubing. This tubing is used in aerospace, defence, railway and automotive applications. SE28 is resistant to diesel fuel, aviation and hydraulic fluids. It provides reliable protection against abrasion and mechanical damage and is very suitable for protecting cables and wire harnesses.

Application

SE28 is used for long-term protection of cables and wire harnesses in military equipment, motor sports, and aviation.



SE28 tubing with breakout boot.



SE28

Material Data	
Material	Elastomer, cross-linked (POA)
Colour	Black (BK)
Shrink Ratio	2:1
Longitudinal change after shrinkage	-10% max
Min. Shrink Temperature	+170 °C
Operating Temperature	-75 °C to +150 °C
Dielectric Strength	20 kV/mm
Flammability	VG 95343
Certification	VG 95343, SAE - AMS - DTL-23053

Cut lengths available on request. Please contact us!



Technical Table

Article-No.	Type	Designation as per VG-Norm	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
342-20000	SE28 3,2/1,6	VG 95343 T 05 D 001 A	3.2	1.6	0.7	150
342-20010	SE28 4,8/2,4	VG 95343 T 05 D 002 A	4.8	2.4	0.8	60
342-20020	SE28 6,4/3,2	VG 95343 T 05 D 003 A	6.4	3.2	0.9	60
342-20030	SE28 9,5/4,8	VG 95343 T 05 D 004 A	9.5	4.8	1.0	60
342-20040	SE28 12,7/6,4	VG 95343 T 05 D 005 A	12.7	6.4	1.2	60
342-20050	SE28 19,0/9,5	VG 95343 T 05 D 006 A	19.0	9.5	1.4	30
342-20060	SE28 25,4/12,7	VG 95343 T 05 D 007 A	25.4	12.7	1.8	30
342-20070	SE28 38,0/19,0	VG 95343 T 05 D 008 A	38.0	19.0	2.4	30
342-20080	SE28 51,0/25,4	VG 95343 T 05 D 009 A	51.0	25.4	2.8	30
342-20090	SE28 76,0/38,0	VG 95343 T 05 D 010 A	76.0	38.0	3.2	15
342-20100	SE28 101,2/51,0	VG 95343 T 05 D 011 A	102.0	51.0	3.5	10

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 2:1 - Elastomer

• TE28 - light weight

Features and Benefits

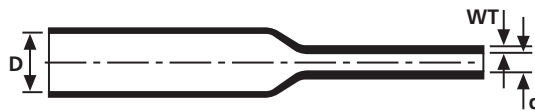
The benefit of the thin walled and very flexible TE28 tubing is in its lighter weight. It is used in areas where weight is a key factor, for example in aerospace applications or motorsport.

Application

TE28 is used for long-term protection of cables and wire harnesses in military equipment, motor sports, and aviation



Thin wall TE28 tubing with a boot.



TE28

Material Data

Material	Elastomer, cross-linked (POA)
Colour	Black (BK)
Shrink Ratio	2:1
Longitudinal change after shrinkage	-10% max.
Min. Shrink Temperature	+170 °C
Operating Temperature	-75 °C to +150 °C
Dielectric Strength	20 kV/mm
Flammability	VG 95343
Certification	VG 95343

Cut lengths available on request. Please contact us!



Technical Table

Article-No.	Type	Designation as per VG-Norm	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
342-30000	TE28 2,4/1,2	VG 95343 T 05 D 012 A	2.4	1.2	0.5	150
342-30010	TE28 3,2/1,6	VG 95343 T 05 D 013 A	3.2	1.6	0.5	150
342-30020	TE28 4,8/2,4	VG 95343 T 05 D 014 A	4.8	2.4	0.5	60
342-30030	TE28 6,4/3,2	VG 95343 T 05 D 015 A	6.4	3.2	0.6	60
342-30040	TE28 9,5/4,8	VG 95343 T 05 D 016 A	9.5	4.8	0.6	60
342-30050	TE28 12,7/6,4	VG 95343 T 05 D 017 A	12.7	6.4	0.6	60
342-30060	TE28 19,0/9,5	VG 95343 T 05 D 018 A	19.0	9.5	0.8	30
342-30070	TE28 25,4/12,7	VG 95343 T 05 D 019 A	25.4	12.7	0.9	30
342-30080	TE28 38,0/19,0	VG 95343 T 05 D 020 A	38.0	19.0	1.0	30
342-30090	TE28 51,0/25,4	VG 95343 T 05 D 022 A	51.0	25.4	1.1	30

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing up to 4:1 - 1 m lengths

- MU47 - medium wall unlined
- MA47 - medium wall adhesive lined

Features and Benefits

MA47 has been designed to protect cable joints and terminations in low voltage applications. The adhesive lining makes it especially suitable for cable applications above and below ground.

This medium wall tubing is flexible yet has robust insulation characteristics. MA47 tubing is coated with a thermoplastic adhesive on the inside, which protects against humidity and other kinds of environmental impacts after shrinking.

Application

Insulation and protection of low voltage cable joints and terminations above and below ground.



MA47 and MU47 medium wall tubing - lined and unlined.

Material Data

Material	Polyolefin, cross-linked (POX)
Colour	Black (BK)
Shrink Ratio	up to 4:1
Operating Temperature	MA47-55 °C to +110 °C MU47-55 °C to +110 °C
Min. Shrink Temperature	+120 °C
Softening Point Adhesive	+85 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	20 kV/mm



Technical Table

Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Length (L) (m)
MA47 - medium wall adhesive lined					
323-20120	MA47-12/3	12.0	3.0	2.0	1.0
323-20190	MA47-19/6	19.0	6.0	2.5	1.0
323-20300	MA47-30/8	30.0	8.0	2.5	1.0
323-20400	MA47-40/12	40.0	12.0	2.5	1.0
323-20500	MA47-50/16	50.0	16.0	2.7	1.0
323-20630	MA47-63/19	63.0	19.0	2.8	1.0
323-20750	TREDUX-MA47-75/22	75.0	22.0	3.0	1.0
323-20950	MA47-95/30	95.0	30.0	3.0	1.0
323-21150	MA47-115/34	115.0	34.0	3.0	1.0
323-21400	MA47-140/42	140.0	42.0	3.0	1.0
MU47 - medium wall unlined					
323-10120	MU47-12/3	12.0	3.0	2.0	1.0
323-10190	MU47-19/6	19.0	6.0	2.2	1.0
323-10300	MU47-30/8	30.0	8.0	2.5	1.0
323-10400	MU47-40/12	40.0	12.0	2.5	1.0
323-10500	MU47-50/16	50.0	16.0	2.7	1.0
323-10630	MU47-63/19	63.0	19.0	2.8	1.0
323-10750	MU47-75/22	75.0	22.0	3.0	1.0
323-10950	MU47-95/30	95.0	30.0	3.0	1.0
323-11150	MU47 115/34	115.0	34.0	3.0	1.0
323-11400	MU47-140/42	140.0	42.0	3.0	1.0

All dimensions in mm. Subject to technical changes.



MA47, MU47

**Cut lengths available on
request. Please contact us!**

Constant Force Spring Adaptor

• Zetalok

Features and Benefits

Zetalok is a unique re-enterable termination system for connecting a cable shielding braid to a circular connector. When used in conjunction with our Heatshrink moulded shape, a sealed enviromental termination system is achieved. The main feature is that the termination can be re-entered when required. It is there by possible to effect repairs to connector pins/sockets without the need to discard any part of the shielding system. Due to the self-tensioning nature of the spring, it provides excellent resistant to vibration and shock.

Application

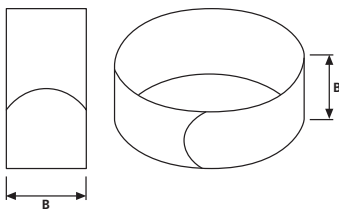
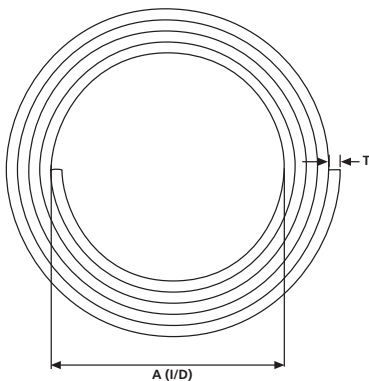
Predominantly used in the Aerospace, Defence and Professional Electronics sectors.



The various spring sizes.



Zetalok installation system.



Material Data

Material	Stainless Steel (SS)
Colour	Silver (SR)

Technical Table

Article-No.	Type	Inside Ø (A)	Material Width (B)	Length (L)	Thickness (T)
425-00002	HE-050	7.34	9.53	107.9	0.1016
425-00003	HE-050-2	7.14	6.53	108.0	0.1016
425-00004	HE-100-1	9.10	9.53	119.0	0.1016
425-00005	HE-200-2	14.40	9.53	127.0	0.1775
425-00007	HE-300-4	18.51	9.53	232.0	0.2540
425-00008	HE-300-3	18.64	6.35	260.3	0.2540
425-00009	HE-400-4	24.86	9.53	217.5	0.3048

All dimensions in mm. Subject to technical changes.

Two-component Adhesive for Heat Shrinkable Tubing and Shapes

• V9500 Dosing Gun

The V9500 dosing gun allows for clean processing and individual metering. It is employed in conjunction with the dual cartridges 627-95002. The V9500 lockable cartridges are available with or without the processing set. The processing set is available in two versions (see table for contents). The cartridges can be re-used, even after a lapse of several days, because the closure prevents the adhesive from hardening.



Two-component epoxy adhesive V9500.

Material Data		
Material	Epoxy resins (EP)	
Colour	Black (BK)	
Curing Temperature	+135 °C	
Curing Time	24 hours at +25 °C, 2 hours at +85 °C	
Operating Temperature	-75 °C to +150 °C	
Specification	VG 95343 T15 DA	



• V9500

This high performance, VG-approved, two part epoxy adhesive has been developed to meet the military requirements associated with heat shrinkable components for wire and cable harnesses. It has very good resistance to most solvents and fuels, even at higher temperatures. The two part epoxy adhesive is available in two different packages.

When heat is applied during the shrinking of the moulded shape, the two part components react, producing a high performance bond.



The V9500 applicator gun guarantees the clean and precise coating of special fittings.

Technical Table			
Article-No.	Type	Designation as per VG-Norm	Content
627-95001	V9500 epoxy adhesive kit	VG 95343 T15 A 001 A	1 x dual cartridge (50g), 5 x mixing pots, 5 x mixing sticks, 5 x emery papers
627-95002	V9500 Duo pack	VG 95343 T15 A	Two component adhesive cartridge
627-95003	V9500 Applicator gun	VG 95343 T15 DA	Applicator gun
627-95004	V9500 Nozzle	VG 95343 T15 MA	Mixing nozzle

Subject to technical changes.



Please note! Not all products listed on this page may have this approval.
For product specific approvals please refer to the Appendix.

Hot Melt Tape for Heat Shrinkable Tubing and Shapes

• HMT200A

Features and Benefits

The hot melt tape flows when heated and provides permanent airtight and watertight seals.

Application

Designed for use with heat shrinkable sleeving and mouldings.

Application Method

- 1. Clean and prepare the bonding areas.*
- 2. Wrap the tape around the part and overlap.*
- 3. Put the tubing or heat shrinkable shape over the tape and shrink down.*

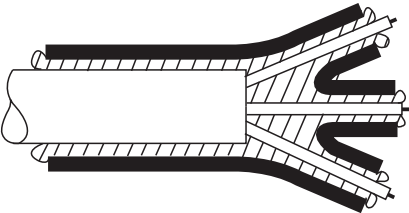
*As per installation guide



HMT200A tape.



Adhesive tape HMT200A for sealing against humidity.



HMT200A

Material Data	
Material	Ethylenevinylacetate (EVA)
Colour	Transparent (CL)
Operating Temperature	-55 °C to +105 °C
Melting Point	starting from +95 °C



Technical Table				
Article-No.	Type	Thickness (T)	Width (W)	Reel Length (m)
354-02259	HMT200A	0.25	25.0	50
354-02260	HMT200A	0.25	25.0	10

All dimensions in mm. Subject to technical changes.

High Temperature Hot Melt Adhesive Tape for Low Profile Products

• TSA-200

Features and Benefits

A high temperature hot melt adhesive that bonds well to polyethylene and metals. Compliments -9 and -8 material (SCX15112 and SCX15111) whilst having good resistance to water ingress. The hot melt tape flows when heated to provide a permanent environmental seal. Store below 40°C and away from direct sunlight.

Application

Designed for use with our -9 and -8 heat shrinkable materials.

Application Method

1. Clean and prepare bonding areas.*
2. Wrap the tape around the part and overlap.*
3. Put the tubing or heat shrinkable shape over the tape and shrink down.*

* As per installation guide



Hot melt adhesive TSA-200.

Material Data

Material	Polyester blend
Colour	Black (BK)
Operating Temperature	-55 °C to +125 °C



Technical Table

Article-No.	Type	Thickness (T)	Width (W)	Reel Length (m)
354-03000	TSA-200	0.6	22.0	25

All dimensions in mm. Subject to technical changes.

DEF STAN

VG

MIL

Appendix

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HellermannTyton Product Standards

Standards for HellermannTyton Heat Shrinkable Tubing and Heat Shrinkable Moulded Shapes according to VG Norm

Description VG-Norm	Description HellermannTyton
VG 95343 T05 D 001 A	SE28 3,2/1,6
VG 95343 T05 D 002 A	SE28 4,8/2,4
VG 95343 T05 D 003 A	SE28 6,4/3,2
VG 95343 T05 D 004 A	SE28 9,5/4,8
VG 95343 T05 D 005 A	SE28 12,7/6,4
VG 95343 T05 D 006 A	SE28 19,0/9,5
VG 95343 T05 D 007 A	SE28 25,4/12,7
VG 95343 T05 D 008 A	SE28 38,0/19,0
VG 95343 T05 D 009 A	SE28 51,0/25,4
VG 95343 T05 D 010 A	SE28 76,0/38,0
VG 95343 T05 D 011 A	SE28 101,2/51,0
VG 95343 T05 D 012 A	TE28 2,4/1,2
VG 95343 T05 D 013 A	TE28 3,2/1,6
VG 95343 T05 D 014 A	TE28 4,8/2,4
VG 95343 T05 D 015 A	TE28 6,4/3,2
VG 95343 T05 D 016 A	TE28 9,5/4,8
VG 95343 T05 D 017 A	TE28 12,7/6,4
VG 95343 T05 D 018 A	TE28 19,0/9,5
VG 95343 T05 D 019 A	TE28 25,4/12,7
VG 95343 T05 D 020 A	TE28 38,0/19,0
VG 95343 T05 D 022 A	TE28 51,0/25,4
VG 95343 T05 E 001A	VITON®-E-1/8-BK
VG 95343 T05 E 002A	VITON®-E-3/16-BK
VG 95343 T05 E 003A	VITON®-E-1/4-BK
VG 95343 T05 E 004A	VITON®-E-3/8-BK
VG 95343 T05 E 005A	VITON®-E-1/2-BK
VG 95343 T05 E 006A	VITON®-E-3/4-BK
VG 95343 T05 E 007A	VITON®-E-1-BK
VG 95343 T05 E 008A	VITON®-E-1.1/2-BK
VG 95343 T05 E 009A	VITON®-E-2-BK
VG 95343 T06 A 001 A	152-41-G
VG 95343 T06 A 002 A	153-41-G
VG 95343 T06 A 003 A	154-41-G
VG 95343 T06 A 004 A	155-41-G
VG 95343 T06 A 005 A	156-41-G
VG 95343 T06 A 006 A	157-41-G
VG 95343 T06 A 007 A	158-41-G
VG 95343 T06 A 008 A	159-41-G
VG 95343 T06 A 009 A	160-41-G
VG 95343 T06 A 010 A	199-4-G
VG 95343 T06 B 001 A	152-42-G
VG 95343 T06 B 002 A	153-42-G
VG 95343 T06 B 003 A	154-42-G
VG 95343 T06 B 004 A	155-42-G
VG 95343 T06 B 005 A	156-42-G
VG 95343 T06 B 006 A	157-42-G
VG 95343 T06 B 007 A	158-42-G
VG 95343 T06 B 008 A	159-42-G
VG 95343 T06 B 009 A	160-42-G
VG 95343 T06 C 001 A	157-43-G
VG 95343 T06 C 002 A	158-43-G
VG 95343 T06 C 003 A	159-43-G
VG 95343 T06 C 004 A	160-43-G
VG 95343 T06 D 001 A	129-1-G
VG 95343 T06 D 002 A	130-1-G
VG 95343 T06 D 003 A	131-1-G
VG 95343 T06 D 004 A	132-1-G
VG 95343 T06 D 005 A	133-1-G
VG 95343 T06 D 006 A	134-1-G
VG 95343 T06 D 007 A	135-1-G
VG 95343 T06 D 008 A	136-1-G

Description VG-Norm	Description HellermannTyton
VG 95343 T06 D 009 A	138-1-G
VG 95343 T06 D 011 A	176-1-G
VG 95343 T06 D 012 A	177-1-G
VG 95343 T06 D 013 A	178-1-G
VG 95343 T06 D 014 A	179-1-G
VG 95343 T06 E 001 A	1152-4-G
VG 95343 T06 E 002 A	1154-4-G
VG 95343 T06 E 003 A	1155-4-G
VG 95343 T06 E 004 A	1156-4-G
VG 95343 T06 E 005 A	1157-4-G
VG 95343 T06 E 006 A	1158-4-G
VG 95343 T06 E 007 A	1159-4-G
VG 95343 T06 E 008 A	1160-4-G
VG 95343 T06 F 001 A	1121-1-G
VG 95343 T06 F 002 A	1122-1-G
VG 95343 T06 F 003 A	1123-1-G
VG 95343 T06 F 004 A	1124-1-G
VG 95343 T06 F 005 A	1125-1-G
VG 95343 T06 F 006 A	1126-1-G
VG 95343 T06 F 007 A	1127-1-G
VG 95343 T06 F 008 A	1128-1-G
VG 95343 T06 F 009 A	1129-1-G
VG 95343 T06 F 010 A	1141-1-G
VG 95343 T06 F 011 A	1133-1-G
VG 95343 T06 F 012 A	1134-1-G
VG 95343 T06 F 013 A	1135-1-G
VG 95343 T06 F 014 A	1136-1-G
VG 95343 T06 J 001 A	1111-1-G
VG 95343 T06 J 002 A	1112-1-G
VG 95343 T06 J 003 A	1113-1-G
VG 95343 T06 J 004 A	1114-1-G
VG 95343 T06 J 006 A	1116-1-G
VG 95343 T06 J 007 A	1117-1-G
VG 95343 T06 J 008 A	1118-1-G
VG 95343 T06 K 001 A	1505-1-G
VG 95343 T06 K 002 A	1506-1-G
VG 95343 T06 K 003 A	1507-1-G
VG 95343 T06 K 004 A	1501-1-G
VG 95343 T06 K 005 A	1502-2-G
VG 95343 T06 K 006 A	1502-2-G
VG 95343 T06 K 007 A	1506-2-G
VG 95343 T06 K 008 A	1507-2-G
VG 95343 T06 K 009 A	1501-2-G
VG 95343 T06 K 010 A	1502-1-G
VG 95343 T06 L 001 A	2101-1-G
VG 95343 T06 L 002 A	2102-1-G
VG 95343 T06 L 003 A	2103-1-G
VG 95343 T06 L 004 A	2104-1-G
VG 95343 T06 L 005 A	2105-1-G
VG 95343 T06 L 006 A	2101-2-G
VG 95343 T06 L 007 A	2102-2-G
VG 95343 T06 L 008 A	2103-2-G
VG 95343 T06 L 009 A	2105-2-G
VG 95343 T07 A 001 A	152-41-GP
VG 95343 T07 A 002 A	153-41-GP
VG 95343 T07 A 003 A	154-41-GP
VG 95343 T07 A 004 A	155-41-GP
VG 95343 T07 A 005 A	156-41-GP
VG 95343 T07 A 006 A	157-41-GP
VG 95343 T07 A 007 A	158-41-GP
VG 95343 T07 A 008 A	159-41-GP
VG 95343 T07 A 009 A	160-41-GP

Description VG-Norm	Description HellermannTyton
VG 95343 T07 B 001 A	152-42-GP
VG 95343 T07 B 002 A	153-42-GP
VG 95343 T07 B 003 A	154-42-GP
VG 95343 T07 B 004 A	155-42-GP
VG 95343 T07 B 005 A	156-42-GP
VG 95343 T07 B 006 A	157-42-GP
VG 95343 T07 B 007 A	158-42-GP
VG 95343 T07 B 008 A	159-42-GP
VG 95343 T07 B 009 A	160-42-GP
VG 95343 T07 C 001 A	157-43-GP
VG 95343 T07 C 002 A	158-43-GP
VG 95343 T07 C 003 A	159-43-GP
VG 95343 T07 C 004 A	160-43-GP
VG 95343 T07 D 001 A	129-1-GP
VG 95343 T07 D 002 A	130-1-GP
VG 95343 T07 D 003 A	131-1-GP
VG 95343 T07 D 004 A	132-1-GP
VG 95343 T07 D 005 A	133-1-GP
VG 95343 T07 D 006 A	134-1-GP
VG 95343 T07 D 007 A	135-1-GP
VG 95343 T07 D 008 A	136-1-GP
VG 95343 T07 D 009 A	138-1-GP
VG 95343 T07 D 010 A	187-1-GP
VG 95343 T07 E 001 A	1152-4-GP
VG 95343 T07 E 002 A	1154-4-GP
VG 95343 T07 E 003 A	1155-4-GP
VG 95343 T07 E 004 A	1156-4-GP
VG 95343 T07 E 005 A	1157-4-GP
VG 95343 T07 E 006 A	1158-4-GP
VG 95343 T07 E 007 A	1159-4-GP
VG 95343 T07 E 008 A	1160-4-GP
VG 95343 T07 F 002 A	1122-1-GP
VG 95343 T07 F 003 A	1123-1-GP
VG 95343 T07 F 004 A	1124-1-GP
VG 95343 T07 F 005 A	1125-1-GP
VG 95343 T07 F 006 A	1126-1-GP
VG 95343 T07 F 007 A	1127-1-GP
VG 95343 T07 F 008 A	1128-1-GP
VG 95343 T07 F 009 A	1129-1-GP
VG 95343 T07 F 010 A	1141-1-GP
VG 95343 T08 A 001 A	1203-1-G
VG 95343 T08 A 002 A	1209-1-G
VG 95343 T08 A 007 A	1201-1-G
VG 95343 T08 A 009 A	1206-1-G
VG 95343 T08 A 010 A	1202-1-G
VG 95343 T08 A 011 A	1207-1-G
VG 95343 T08 A 016 A	1204-1-G
VG 95343 T08 A 017 A	1216-1-G
VG 95343 T08 B 001 A	1301-1-G
VG 95343 T08 B 002 A	1303-1-G
VG 95343 T08 B 003 A	1311-1-G
VG 95343 T08 B 004 A	1302-1-G
VG 95343 T08 B 005 A	1304-1-G
VG 95343 T08 B 006 A	1305-1-G
VG 95343 T08 B 007 A	1312-1-G
VG 95343 T08 B 008 A	1316-1-G
VG 95343 T08 B 009 A	1313-1-G
VG 95343 T08 B 010 A	1306-1-G
VG 95343 T08 B 011 A	1307-1-G
VG 95343 T08 B 012 A	1308-1-G
VG 95343 T08 C 001 A	206-1-G
VG 95343 T08 C 002 A	203-1-G

HellermannTyton Product Standards

Description VG-Norm	Description HellermannTyton
VG 95343 T08 C 003 A	204-1-G
VG 95343 T08 C 004 A	211-1-G
VG 95343 T08 C 005 A	212-1-G
VG 95343 T08 D 001 A	306-1-G
VG 95343 T08 D 002 A	304-1-G
VG 95343 T08 D 003 A	310-1-G
VG 95343 T08 D 004 A	311-1-G
VG 95343 T08 E 002 A	411-1-G
VG 95343 T08 E 004 A	403-1-G
VG 95343 T08 E 005 A	413-1-G
VG 95343 T09 A 001 A	1203-1-GP
VG 95343 T09 A 002 A	1209-1-GP
VG 95343 T09 A 003 A	1214-1-GP
VG 95343 T09 B 001 A	1301-1-GP
VG 95343 T09 B 002 A	1303-1-GP
VG 95343 T09 B 003 A	1311-1-GP
VG 95343 T09 C 001 A	206-1-GP
VG 95343 T09 C 002 A	203-1-GP
VG 95343 T09 C 003 A	204-1-GP
VG 95343 T15 A 001 A	V9500 PK
VG 95343 T15 A 002 B	V9500 B
VG 95343 T15 A	V9500 P
VG 95343 T15 DA	P9500
VG 95343 T15 MA	M9500
VG 95343 T18 A 001 A	152-41-GW24
VG 95343 T18 A 002 A	153-41-GW24
VG 95343 T18 A 003 A	154-41-GW24
VG 95343 T18 A 004 A	155-41-GW24
VG 95343 T18 A 005 A	156-41-GW24
VG 95343 T18 A 006 A	157-41-GW24
VG 95343 T18 A 007 A	158-41-GW24
VG 95343 T18 A 008 A	159-41-GW24
VG 95343 T18 A 009 A	160-41-GW24
VG 95343 T18 A 010 A	199-41-GW24
VG 95343 T18 E 001 A	1505-1-GW24
VG 95343 T18 E 002 A	1506-1-GW24
VG 95343 T18 E 003 A	1507-1-GW24
VG 95343 T18 E 004 A	1501-1-GW24
VG 95343 T18 E 005 A	1502-2-GW24
VG 95343 T18 E 006 A	1505-2-GW24
VG 95343 T18 E 007 A	1506-2-GW24
VG 95343 T18 E 008 A	1507-2-GW24
VG 95343 T18 E 009 A	1501-2-GW24
VG 95343 T18 E 010 A	1502-1-GW24
VG 95343 T18 B 001 A	152-42-GW24
VG 95343 T18 B 002 A	153-42-GW24
VG 95343 T18 B 003 A	154-42-GW24
VG 95343 T18 B 004 A	155-42-GW24
VG 95343 T18 B 005 A	156-42-GW24
VG 95343 T18 B 006 A	157-42-GW24
VG 95343 T18 B 007 A	158-42-GW24
VG 95343 T18 B 008 A	159-42-GW24
VG 95343 T18 B 009 A	160-42-GW24
VG 95343 T18 C 001 A	157-43-GW24
VG 95343 T18 C 002 A	158-43-GW24
VG 95343 T18 C 003 A	159-43-GW24
VG 95343 T18 C 004 A	160-43-GW24
VG 95343 T18 D 001 A	1152-4-GW24
VG 95343 T18 D 002 A	1154-4-GW24
VG 95343 T18 D 003 A	1155-4-GW24
VG 95343 T18 D 004 A	1156-4-GW24
VG 95343 T18 D 005 A	1157-4-GW24

Description VG-Norm	Description HellermannTyton
VG 95343 T18 D 006 A	1158-4-GW24
VG 95343 T18 D 007 A	1159-4-GW24
VG 95343 T18 D 008 A	1160-4-GW24
VG 95343 T18 G 001 A	2101-1-GW24
VG 95343 T18 G 003 A	2102-1-GW24
VG 95343 T18 G 005 A	2103-1-GW24
VG 95343 T18 G 006 A	2104-1-GW24
VG 95343 T18 G 007 A	2105-1-GW24
VG 95343 T18 G 008 A	2101-2-GW24
VG 95343 T18 G 010 A	2102-2-GW24
VG 95343 T18 G 012 A	2103-2-GW24
VG 95343 T18 G 014 A	2105-2-GW24
VG 95343 T18 H 001 A	1133-2-GW24
VG 95343 T18 H 002 A	1133-1-GW24
VG 95343 T19 A 001 A	1203-1-GW24
VG 95343 T19 A 002 A	1209-1-GW24
VG 95343 T19 A 003 A	1214-1-GW24
VG 95343 T19 A 004 A	1210-1-GW24
VG 95343 T19 A 006 A	1212-1-GW24
VG 95343 T19 A 007 A	1201-1-GW24
VG 95343 T19 A 008 A	1213-1-GW24
VG 95343 T19 A 009 A	1206-1-GW24
VG 95343 T19 A 010 A	1202-1-GW24
VG 95343 T19 A 011 A	1207-1-GW24
VG 95343 T19 A 012 A	1208-1-GW24
VG 95343 T19 A 016 A	1204-1-GW24
VG 95343 T19 A 017 A	1216-1-GW24
VG 95343 T19 A 018 A	1220-1-GW24
VG 95343 T19 E 002 A	411-1-GW24
VG 95343 T19 E 003 A	412-1-GW24
VG 95343 T19 E 004 A	403-1-GW24
VG 95343 T19 E 005 A	413-1-GW24
VG 95343 T19 E 009 A	414-1-GW24
VG 95343 T19 B 001 A	1301-1-GW24
VG 95343 T19 B 002 A	1303-1-GW24
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VG 95343 T19 B 004 A	1302-1-GW24
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VG 95343 T19 B 007 A	1312-1-GW24
VG 95343 T19 B 008 A	1316-1-GW24
VG 95343 T19 B 009 A	1313-1-GW24
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VG 95343 T19 B 011 A	1307-1-GW24
VG 95343 T19 B 012 A	1308-1-GW24
VG 95343 T19 C 001 A	206-1-GW24
VG 95343 T19 C 002 A	203-1-GW24
VG 95343 T19 C 003 A	204-1-GW24
VG 95343 T19 C 004 A	211-1-GW24

Description VG-Norm	Description HellermannTyton
VG 95343 T19 C 005 A	212-1-GW24
VG 95343 T19 D 001 A	306-1-GW24
VG 95343 T19 D 002 A	304-1-GW24
VG 95343 T19 D 003 A	310-1-GW24
VG 95343 T19 D 004 A	311-1-GW24
VG 95343 T19 D 005 A	312-1-GW24
VG 95343 T29 A 001 A	152-61-HW21
VG 95343 T29 A 002 A	153-61-HW21
VG 95343 T29 A 003 A	154-61-HW21
VG 95343 T29 A 004 A	155-61-HW21
VG 95343 T29 A 005 A	156-61-HW21
VG 95343 T29 A 006 A	157-61-HW21
VG 95343 T29 B 001 A	152-62-HW21
VG 95343 T29 B 002 A	153-62-HW21
VG 95343 T29 B 003 A	154-62-HW21
VG 95343 T29 B 004 A	155-62-HW21
VG 95343 T29 B 005 A	156-62-HW21
VG 95343 T29 B 006 A	157-62-HW21
VG 95343 T29 B 007 A	158-62-HW21
VG 95343 T29 C 001 A	157-63-HW21
VG 95343 T29 C 002 A	158-63-HW21
VG 95343 T29 D 001 A	1152-6-HW21
VG 95343 T29 D 002 A	1154-6-HW21
VG 95343 T29 D 003 A	1155-6-HW21
VG 95343 T29 D 004 A	1156-6-HW21
VG 95343 T29 D 005 A	1157-6-HW21
VG 95343 T29 D 006 A	1158-6-HW21
VG 95343 T30 A 001 A	1203-1-HW21
VG 95343 T30 A 002 A	1209-1-HW21
VG 95343 T30 A 007 A	1201-1-HW21
VG 95343 T30 A 009 A	1206-1-HW21
VG 95343 T30 A 010 A	1202-1-HW21
VG 95343 T30 A 011 A	1207-1-HW21
VG 95343 T30 A 016 A	1204-1-HW21
VG 95343 T30 A 017 A	1216-1-HW21
VG 95343 T30 B 001 A	1301-1-HW21
VG 95343 T30 B 002 A	1303-1-HW21
VG 95343 T30 B 003 A	1311-1-HW21
VG 95343 T30 B 004 A	1302-1-HW21
VG 95343 T30 C 001 A	206-1-HW21
VG 95343 T30 C 002 A	203-1-HW21
VG 95343 T30 C 003 A	204-1-HW21
VG 95343 T30 C 004 A	211-1-HW21
VG 95343 T30 C 005 A	212-1-HW21
VG 95343 T30 D 001 A	306-1-HW21
VG 95343 T30 D 002 A	304-1-HW21
VG 95343 T30 D 003 A	310-1-HW21
VG 95343 T30 D 004 A	311-1-HW21

Standards for HellermannTyton Heat Shrinkable Tubing

Type	VG 95343 T05
SE28	●
TE28	●
Viton®-E	●

VG Style/MIL Specification Style Cross Reference

Products listed below in VG style or MIL specification style can be substituted with each other, to achieve similar fit and function.

VG Parts	MIL Specification Parts
152-42	105-4
153-42	N/A
154-42	106-4
155-42	101-4
156-42	102-4
157-43	103-4
158-43	107-4
159-43	118-4
1152-4	1106-4
1154-4	1107-4
1155-4	1104-4
1156-4	1103-4
1157-4	1101-4
1158-4	1105-4
1159-4	1109-4
129-1	129-4*
130-1	130-4*
131-1	131-4*
132-1	132-4*
133-1	133-4*
134-1	134-4*
135-1	135-4*
136-1	136-4*
138-1	138-4*
187-1	187-4*
1122-1	1122-4*
1123-1	1123-4*
1124-1	1124-4*
1125-1	1125-4*
1126-1	1126-4*
1127-1	1127-4*
1128-1	1128-4*
1129-1	1129-4*
1141-1	1141-4*

* Note: These have a longer overall length than VG parts

HellermannTyton Shapes for use with circular MIL Specification Connectors MS 5015 AB

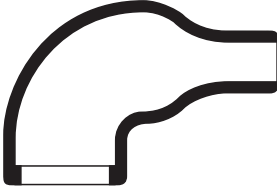
Connector Shell Size	Knurl Dia (mm)	Orientation		Cable Dia (mm)	
		Straight	90°	Min	Max
10 SL*	15.7	153-42	1152-4/1106-4*	4.2	7.7
14 S	19.3	154-42/106-4	1154-4/1107-4	7.2	10.6
16 S	24.1	155-42/101-4	1155-4/1104-4	8.4	13.5
16	24.1	155-42/101-4	1155-4/1104-4	8.4	13.5
18	24.1	155-42/101-4	1155-4/1104-4	8.4	14.6
20	29.8	156-42/102-4	1156-4/1103-4	10.2	18.7
22	29.8	156-42/102-4	1156-4/1103-4	10.2	20.8
24	38.0	157-43/103-4	1157-4/1101-4	12.0	24.6
28	38.0	157-43/103-4	1157-4/1101-4	12.0	27.0
32	48.0	158-43/107-4	1158-4/1105-4	19.2	33.3
36	48.0	158-43/107-4	1158-4/1105-4	19.2	38.5

* Note: Shell 10 SL for 90° moulded part min cable diameter 6.6 mm

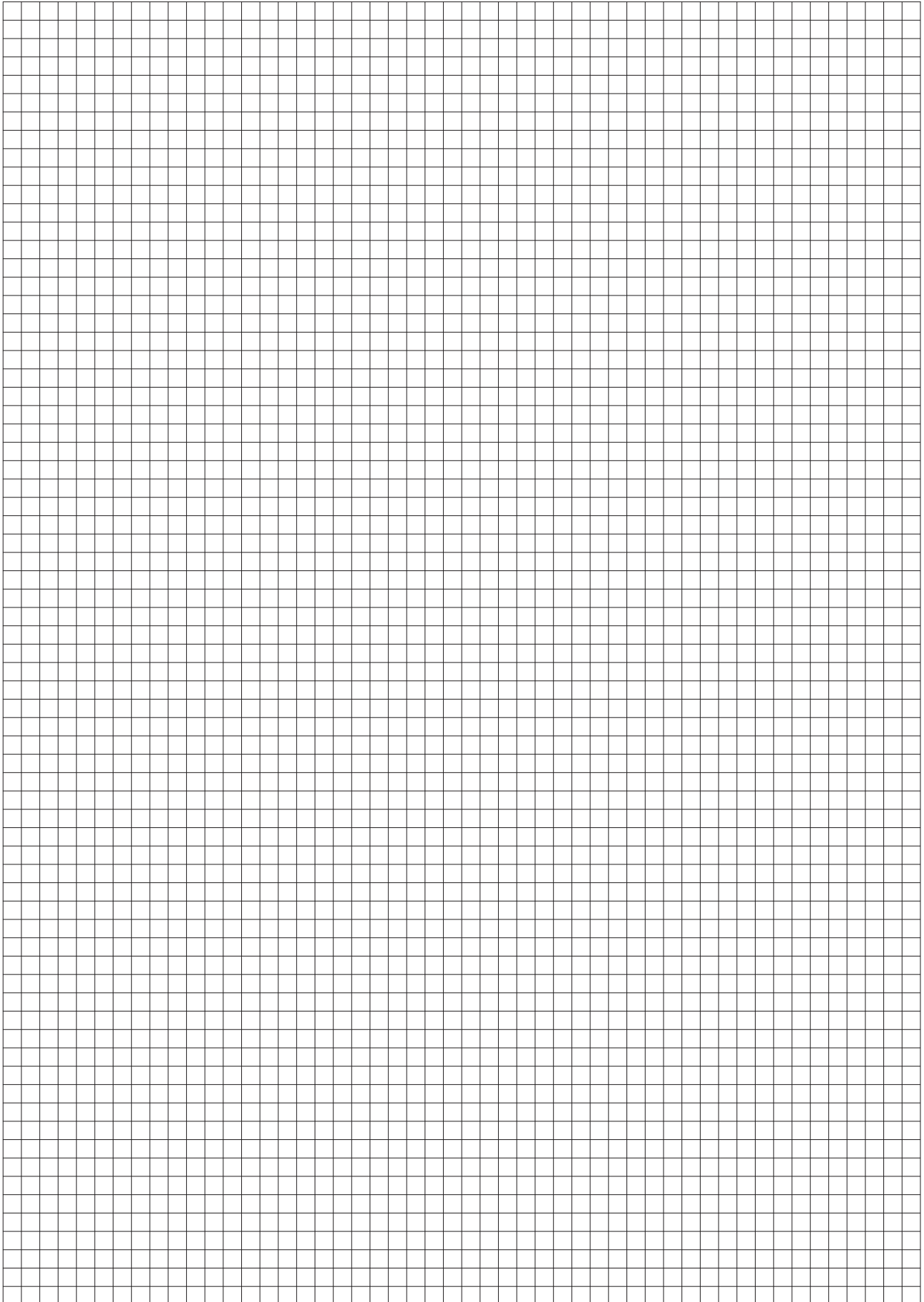
HellermannTyton Shapes for use with MIL-C-26482-I/II and 38999/Series I, II, III, IV

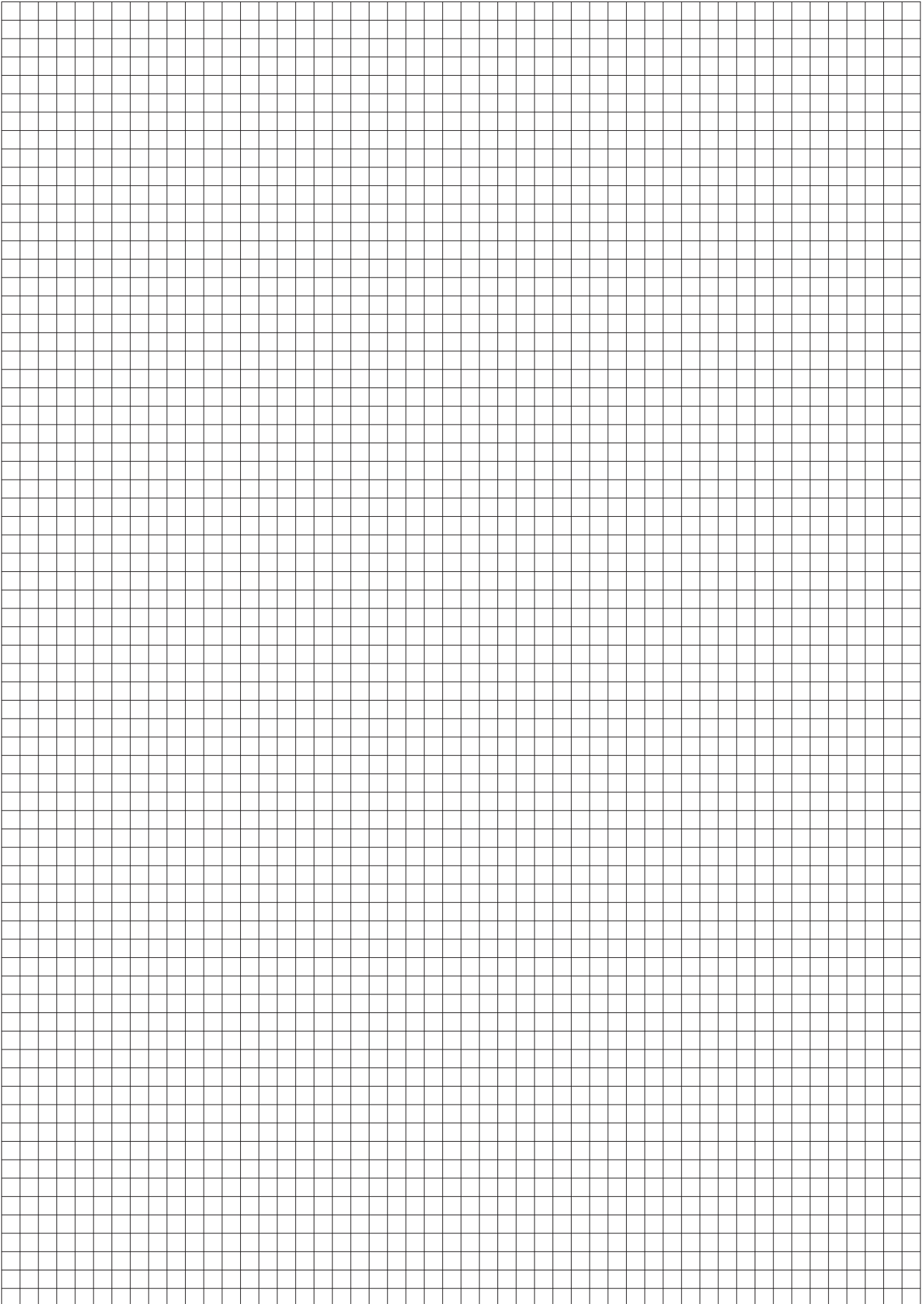
Connector Shell Size	Knurl Dia (mm)	Orientation		Cable Dia (mm)	
		Straight	90°	Min	Max
8/9	13.0	152-42/105-4	1152-4/1106-4	7.2	7.0
10/11	15.0	152-42/105-4	1152-4/1106-4	7.2	10.0
10/12	15.0/19.0	153-42/NA	-	7.2	10.0/13.5
12/13	19.0	154-42/106-4	1154-4/1107-4	7.2	13.5
14/15	21.0	155-42/101-4	1155-4/1104-4	8.4	16.5
16/17	24.0	155-42/101-4	1155-4/1104-4	8.4	19.5
18/19	26.5	156-42/102-4	1156-4/1103-4	10.2	22.0
20/21	30.5	156-42/102-4	1156-4/1103-4	10.2	25.0
22/23	34.0	157-43/103-4	1157-4/1101-4	12.0	28.5
24/25	36.0	157-43/103-4	1157-4/1101-4	12.0	31.0

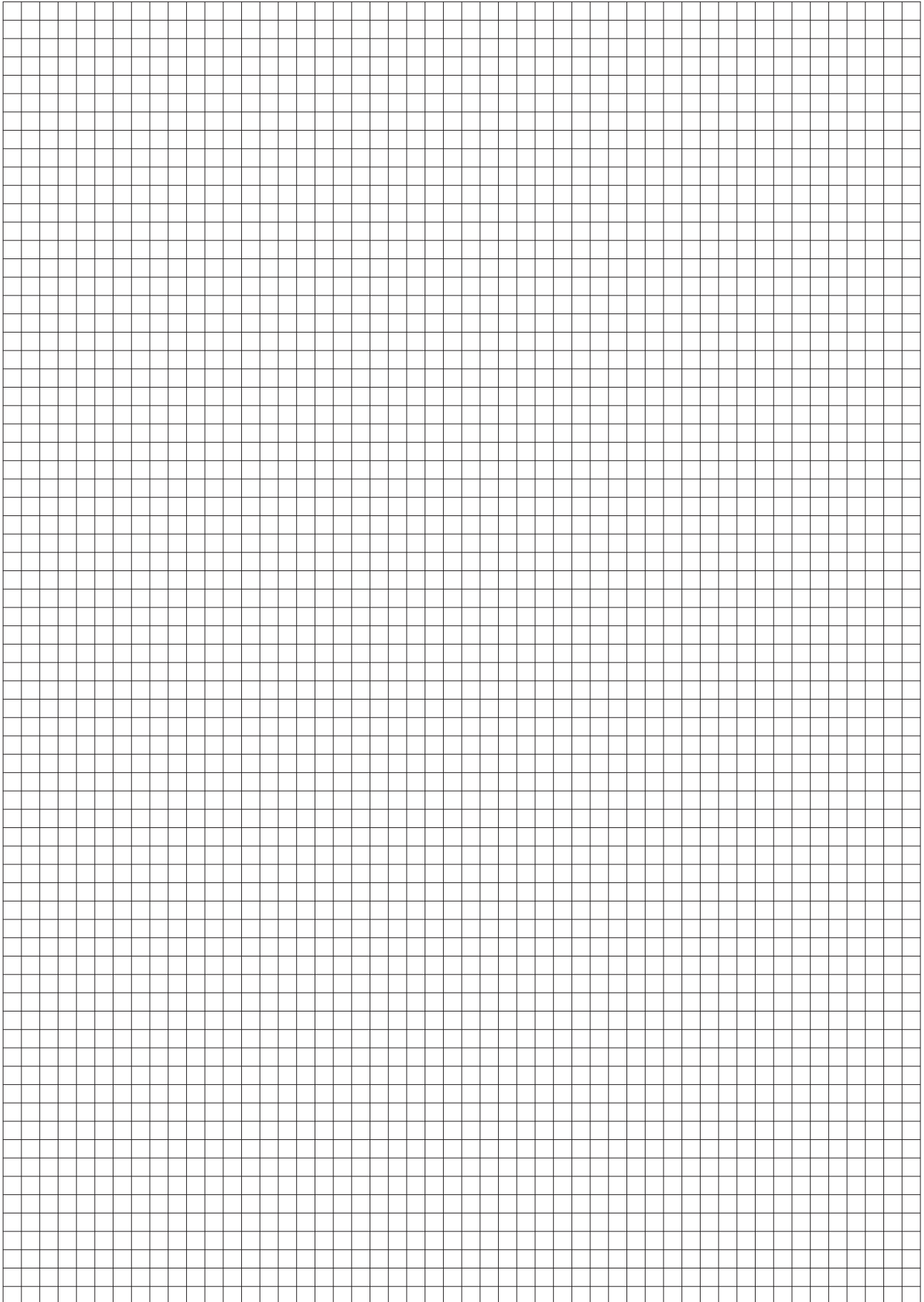
MIL Specification Slash Sheet Cross Reference

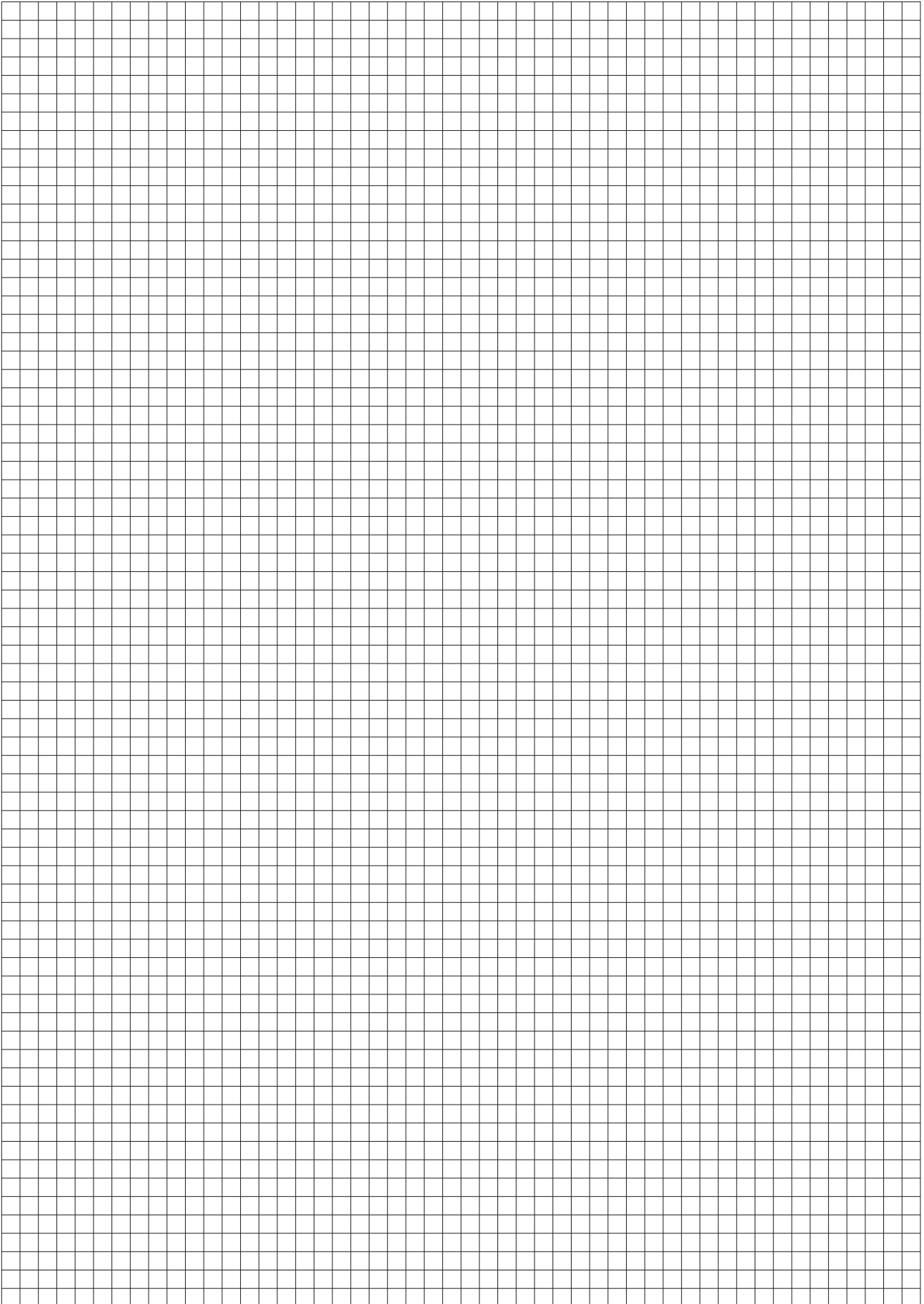
HellermannTyton	MS3109	Description	Style
105-4-JL	-11AU	Bottle Shapes with rib "J" or "B7" material J = Red stripe B7 = White stripe Optional drainholes (D)	
105-4-B7L	-11BU		
106-4-JL	-12AU		
106-4-B7L	-12BU		
101-4-JL	-13AU		
101-4-B7L	-13BU		
102-4-JL	-14AU		
102-4-B7L	-14BU		
103-4-JL	-15AU		
103-4-B7L	-15BU		
107-4-JL	-16AU		
107-4-B7L	-16BU		
118-4-JL	-17AU		
118-4-B7L	-17BU		
129-4-JDL	-01AU	Low profile long outlet bottle shape with rib "J" or "B7" material J = Red stripe B7 = White stripe Supplied with drainholes (D)	
129-4-B7DL	-01BU		
130-4-JDL	-02AU		
130-4-B7DL	-02BU		
131-4-JDL	-03AU		
131-4-B7DL	-03BU		
132-4-JDL	-04AU		
132-4-B7DL	-04BU		
133-4-JDL	-05AU		
133-4-B7DL	-05BU		
134-4-JDL	-06AU		
134-4-B7DL	-06BU		
135-4-JDL	-07AU		
135-4-B7DL	-07BU		
136-4-JDL	-08AU		
136-4-B7DL	-08BU		
138-4-JDL	-09AU		
138-4-B7DL	-09BU		
187-4-JDL	-10AU	Right angle shape with rib "J" or "B7" material J = Red stripe B7 = White stripe Optional drainholes (D)	
187-4-B7DL	-10BU		
1106-4-JL	-11AU		
1106-4-B7L	-11BU		
1107-4-JL	-12AU		
1107-4-B7L	-12BU		
1104-4-JL	-13AU		
1104-4-B7L	-13BU		
1103-4-JL	-14AU		
1103-4-B7L	-14BU		
1101-4-JL	-15AU		
1101-4-B7L	-15BU		
1105-4-JL	-16AU		
1105-4-B7L	-16BU		
1109-4-JL	-17AU		
1109-4-B7L	-17BU		
1121-4-JDL	-01AU	Right angle shapes Low profile with rib "J" or "B7" material J = Red stripe B7 = White stripe Supplied with drainholes (D)	
1121-4-B7DL	-01BU		
1122-4-JDL	-02AU		
1122-4-B7DL	-02BU		
1123-4-JDL	-03AU		
1123-4-B7DL	-03BU		
1124-4-JDL	-04AU		
1124-4-B7DL	-04BU		
1125-4-JDL	-05AU		
1125-4-B7DL	-05BU		
1126-4-JDL	-06AU		
1126-4-B7DL	-06BU		
1127-4-JDL	-07AU		
1127-4-B7DL	-07BU		
1128-4-JDL	-08AU		
1128-4-B7DL	-08BU		
1129-4-JDL	-09AU		
1129-4-B7DL	-09BU		
1141-4-JDL	-10AU		
1141-4-B7DL	-10BU		

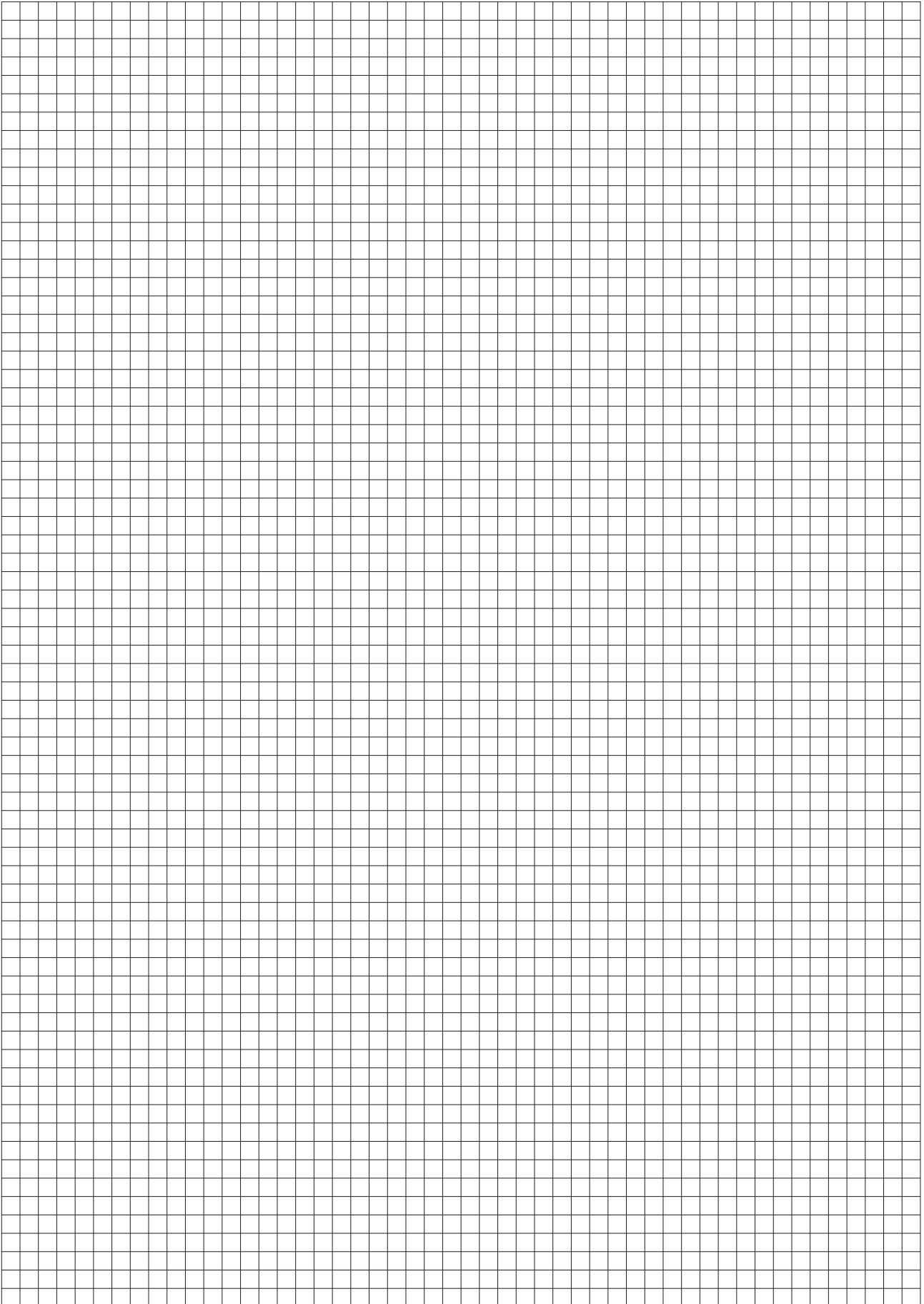
L denotes the MIL Specification Stripes.

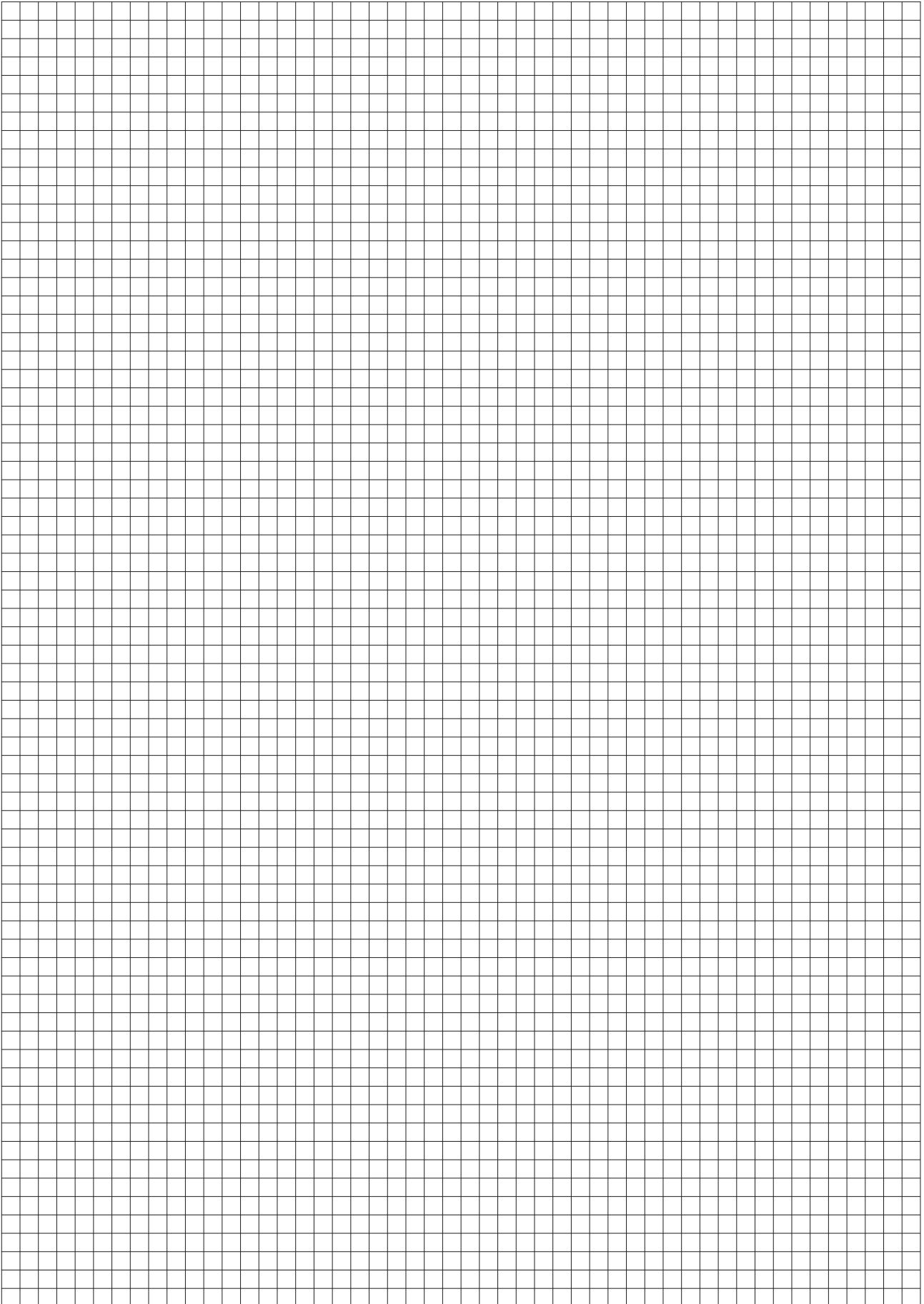












1. Interpretation

1.1 In these Conditions:

"ACKNOWLEDGEMENT OF ORDER" shall mean the document by which the Seller's authorised representative accepts the Order.

"BUYER" shall mean the purchaser of the Goods from the Seller.

"CONDITIONS" means the terms and conditions of sale set out herein and includes any special terms and conditions included in the Acknowledgement of Order.

"CONTRACT" shall mean the contract for the sale and purchase of the Goods made pursuant to these Conditions.

"DELIVERY" shall mean delivery of the Goods or any part of them in accordance with clause 6.1 of these Conditions.

"DELIVERY DATE" shall mean the date or period for Delivery set out in an Acknowledgement of Order or which is otherwise agreed by the Seller and the Buyer.

"FORCE MAJEURE" shall mean any circumstances beyond the reasonable control of the Seller.

"GOODS" shall mean the goods which the Seller has agreed to supply to the Buyer pursuant to these Conditions.

"INFORMATION" shall mean any and all IPR, technical or commercial data, know-how, show-how, formulae, processes, designs, photographs, drawings, specifications, samples, details of customers and suppliers, pricing information, samples, prototypes and other sensitive business information and any other information of a confidential nature together with any experimental or test data and results produced by the Seller as a result of it carrying out necessary tests for the purposes of performing the Contract which either directly or indirectly is disclosed by or on behalf of the Seller to the Buyer or to any person on behalf of the Buyer orally, in writing, by physical embodiment, by data transmission or in any other way.

"INTELLECTUAL PROPERTY RIGHTS" ("IPR") shall mean all patents, trade marks, service marks, design rights (whether patentable, registrable or otherwise), applications for any of the foregoing copyright, know-how, trade or business names, rights in databases, topography rights and other similar rights or obligations whether registrable or not in any country (including, but not limited to the United Kingdom). "LOSS" shall mean all actions, claims, demands, losses (direct, indirect, consequential or otherwise), expenses, costs, actions and proceedings.

"ORDER" shall mean the Buyer's order for Goods.

"SELLER" shall mean Hellermann Tyton, a Division of Spirent PLC, a company registered in England and Wales under company number 470893 and having its registered office at Crawley Business Quarter, Fleming Way, Crawley, West Sussex RH10 9QL.

"SPECIFICATION" shall mean the description of the Goods set out in the Acknowledgement of Order pursuant to clause 3.4.

1.2 Any reference in these Conditions to any provision of a statute shall be construed as a reference to that provision as amended re-enacted or extended at the relevant time.

1.3 The headings in these Conditions are for convenience only and shall not affect their interpretation.

1.4 In these Conditions "Incoterms" means the international rules for the interpretation of trade terms of the International Chamber of Commerce 2000. Unless the Contract otherwise requires any terms or expression which is defined in or given a particular meaning by the provisions of Incoterms shall have the same meaning in these Conditions, but if there is any conflict between the provisions of Incoterms and these Conditions the latter shall prevail.

2. Basis of Sale

2.1 These Conditions together with the Seller's Acknowledgement of Order apply to all Contracts between the Seller and the Buyer and shall prevail and be effective notwithstanding any variations or additions whether contained or referred to in the Buyer's order, or other document submitted by the Buyer including without limitation any standard conditions of purchase of the Buyer, acceptance of quotation or in correspondence or elsewhere, or implied by trade, custom, practice or course of dealing, and shall supersede all other and any prior promises, representations or undertakings.

2.2 No variation to these Conditions shall be binding unless agreed in writing by an authorised representative of the Seller.

2.3 The Seller's employees or agents are not authorised to make any representations or recommendations concerning the Goods unless confirmed by a duly authorised representative of the Seller in writing. In entering into the Contract the Buyer acknowledges that it does not rely on and waives any claim for breach of any such representations which are not so confirmed. For the avoidance of doubt, nothing herein contained shall be deemed to exclude the Seller's liability due to fraudulent misrepresentation.

2.4 Any typographical clerical or other error or omission in any sales literature quotation price list Acknowledgement of Order invoice or other documentation or information issued by the Seller shall be subject to correction without any liability on the part of the Seller.

3. Orders and Specifications

3.1 Every acceptance by the Buyer of any quotation given by the Seller shall be deemed an offer by the Buyer to purchase Goods from the Seller and will not be deemed to be accepted by the Seller until a duly authorised representative of the Seller has provided an Acknowledgement of Order in relation to such offer by the Buyer.

3.2 No Order submitted by the Buyer shall be deemed to be accepted by the Seller unless and until confirmed by an Acknowledgement of Order.

3.3 The Buyer shall be responsible to the Seller for ensuring the accuracy of the terms of any Order (including any applicable specification) submitted by the Buyer and for giving the Seller any necessary information relating to the Goods within a sufficient time to enable the Seller to perform the Contract in accordance with its terms.

3.4 The quantity quality and description of and any specification for the Goods shall be those set out in the Seller's Acknowledgement of Order.

3.5 If the Goods are to be manufactured by the Seller in accordance with a specification or instructions submitted by the Buyer:

3.5.1 The Buyer shall indemnify the Seller against all Loss suffered by the Seller in connection with any claim by a third party that the manufacture and/or supply of the Goods to such specification or instructions infringes the rights of any third party; and

3.5.2 The Buyer shall be responsible for supplying reliable and accurate information to the Seller (including, without limitation, drawings, plans and designs) to enable the Seller to manufacture the Goods. The Seller shall be entitled to assume that all information supplied by the Buyer is true, accurate, complete and fit for the purpose for which it is supplied and that the Seller can rely on the same. The Seller shall not be liable for any Loss or delay in Delivery of the Goods which directly or indirectly arises from the Buyer's failure to supply accurate information at all or on time.

3.6 The Seller reserves the right to make any changes in the Specification of the Goods which are required to conform with any applicable UK safety or other statutory requirements and/or where such changes do not materially affect the quality or performance of the Goods. For the avoidance of doubt and subject to clause 10.1, the Seller provides no implied warranties in relation to Goods supplied to the Buyer's specification.

3.7 No Order which has been accepted by the Seller by an Acknowledgement of Order may be cancelled by the Buyer except with the agreement in writing of the Seller and on terms that the Buyer shall indemnify the Seller in full against all Loss incurred by the Seller as a result of cancellation.

4. Price of the Goods

4.1 The price shall be the price in the Acknowledgement of Order ("Price").

4.2 The Seller reserves the right by giving notice to the Buyer at any time before Delivery to increase the Price to reflect any increase in the cost to the Seller which is due to any factor beyond the control of the Seller (such as without limitation any foreign exchange fluctuation, currency regulation alteration of duties significant increase in the costs of labour materials or other costs of manufacture), any change in Delivery Dates quantities or specifications for the Goods which is requested by the Buyer or any delay caused by any instructions of the Buyer or failure of the Buyer to give the Seller adequate information or instructions.

4.3 Except as otherwise stated in an Acknowledgement of Order all prices are given by the Seller for Delivery as defined in clause 6.1. Where the Seller agrees to deliver the Goods otherwise than as defined in clause 6.1 the Buyer shall be liable to pay the Seller's charges for transport packaging and insurance where requested.

4.4 The price is exclusive of any applicable value added tax (which will be applied in accordance with the legislation in force at the tax point date) and which the Buyer shall be additionally liable to pay to the Seller.

5. Terms of Payment

5.1 Subject to any special terms agreed in an Acknowledgement of Order the Seller shall be entitled to invoice the Buyer for the Price on Delivery immediately the Goods have been despatched, when they are ready for despatch but are prevented or delayed from being

despatched due to Force Majeure or the day the Goods are put out ready for collection (whichever event occurs the earliest).

5.2 The Buyer shall pay the Price without deduction within 30 days of the date of the Seller's invoice notwithstanding that Delivery may not have taken place and the property in the Goods has not passed to the Buyer. The time of payment of the Price shall be of the essence of the Contract. Receipts for payment will be issued only upon request.

5.3 If the Buyer fails to make any payment in accordance with clause 5.2 then without prejudice to any other right or remedy available to the Seller the Seller shall be entitled to:-

5.3.1 Cancel the contract or suspend any Deliveries to the Buyer;

5.3.2 Appropriate any payment made by the Buyer to such of the Goods (or the goods supplied under any other contract between the Buyer and the Seller) as the Seller may think fit (notwithstanding any purported appropriation by the Buyer);

5.3.3 Charge the Buyer interest on the amount unpaid at the rate of 3 percent per annum above HSBC Bank base rate from time to time until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest); and

5.3.4 Demand payment of all outstanding balances from the Buyer whether due or not and/or cancel all outstanding Orders and/or decline to make further Deliveries (under this or any other contract between the Buyer and the Seller) or provision of services.

5.4 Except where insolvency laws provide otherwise the Buyer shall not be entitled to withhold or set off payment for Goods for any reason whatsoever. All Goods for which payment has not been made in accordance with clause 5.2 and which are held by the Seller at its premises are so held at the Buyer's risk.

6. Delivery

6.1 Except as otherwise stated in an Acknowledgement of Order delivery shall take place when the Seller places the Goods at the disposal of the Buyer at the Seller's premises and not loaded on any collecting vehicle.

6.2 Any Delivery Date is approximate only. The Seller shall not be liable for any Loss arising from any failure to deliver the Goods on the Delivery Date howsoever caused. Time for delivery shall not be of the essence unless previously agreed by the Seller in writing. The Goods may be delivered by the Seller in advance of the quoted delivery date upon giving reasonable notice to the Buyer.

6.3 The Buyer shall not be entitled to change the Delivery Date without the consent of a duly authorised representative of the Seller.

6.4 Where delivery of the Goods is to be made by the Seller, the Seller reserves the right to deliver up to 10 per cent more or 10 per cent less than the quantity ordered provided that there is a pro rata adjustment to the Price to reflect the Goods actually delivered and the quantity so delivered shall be deemed to be the quantity ordered. Goods delivered in excess of such tolerance may be rejected by the Buyer provided that it serves notice of rejection within 10 working days of Delivery.

6.5 Where the Goods are to be delivered in installments each delivery shall constitute a separate contract and failure by the Seller to deliver any one or more of the installments in accordance with these Conditions or any claim by the Buyer in respect of any one or more installments shall not entitle the Buyer to treat the Contract as a whole as repudiated.

6.6 Subject to clause 10.6 if the Seller fails to deliver the Goods for any reason other than Force Majeure or the Buyer's fault and the Seller is accordingly liable to the Buyer the Seller's only liability shall be limited to the excess (if any) of the cost to the Buyer (having used its best endeavours to replace the Goods by purchasing them in the cheapest available market) of purchasing similar goods to replace those not delivered.

6.7 If the Buyer fails to take Delivery on the Delivery Date then without prejudice to any other right or remedy available to the Seller the Seller may:

6.7.1 store the Goods until actual delivery and charge the Buyer for the costs (including insurance) of storage; or

6.7.2 treat the Contract as repudiated by the Buyer and without prejudice to any other right it may have against the Buyer the Seller shall be entitled to resell the Goods and be indemnified by the Buyer for any Loss which it suffers.

7. Risk and Property

7.1 Risk of damage to or loss of the Goods shall pass to the Buyer on Delivery of the Goods;

7.2 Notwithstanding Delivery and the passing of risk in the Goods or any other provision of these Conditions the property in the Goods shall remain with the Seller until the Seller has received in cash or cleared funds payment in full of the Price and any other monies due to the Seller in respect of the Goods and all other goods agreed to be sold by the Seller to the Buyer for which payment is then due under the Contract or any other contract between the Seller and the Buyer (including without limitation costs of Delivery).

7.3 Until such time as the property in the Goods passes to the Buyer the Buyer shall hold the goods as the Seller's fiduciary agent and bailee and shall keep the Goods separate from those of the Buyer and third parties and properly stored protected and insured and identified as the Seller's property.

7.4 Until such time as the property in the Goods passes to the Buyer the Buyer shall be entitled to resell or use the Goods in the ordinary course of its business but shall account to the Seller for the proceeds of sale or otherwise of the Goods whether tangible or intangible including insurance proceeds and shall keep all such proceeds separate from any monies or property of the Buyer and third parties and in the case of tangible proceeds properly stored protected and insured.

7.5 If the Goods are prior to sale by the Buyer made up or incorporated in or mixed with other goods, then if they remain separately identifiable the Seller shall retain property and title thereof and if they do not remain separately identifiable the Seller shall become a joint owner of the goods in or which the Goods are incorporated or mixed in such proportion as the value of the Goods bears to the value of the Goods in which the Goods are so incorporated or mixed.

7.6 If the Buyer sells the Goods or the goods in which the Goods have been incorporated or mixed the sale shall be on behalf of the Seller as the joint owner thereof as the case may be and the proceeds of any such sale for the Seller's share thereof if the sale is of jointly owned property shall be held on trust for the Seller and in a separate identified account.

7.7 Until such time as the property in the Goods passes to the Buyer (and provided the Goods are still in existence and have not been resold) the Seller shall be entitled at

any time to require the Buyer to deliver up the Goods to the Seller and if the Buyer fails to do so forthwith to enter the premises of the Buyer or any third party where the Goods are stored and take possession of any Goods in which property remains in the Seller and remove and dispose of them as the Seller thinks fit. The Seller shall apply the proceeds of disposal (after deduction of all expenses) in discharge of the amount unpaid by the Buyer.

7.8 The Buyer shall not be entitled to pledge or in any way charge by way of security for any indebtedness any of the Goods which remain the property of the Seller without the Seller's consent but if the Buyer does so all moneys owing by the Buyer to the Seller shall (without prejudice to any other right or remedy of the Seller) forthwith become due and payable.

8. Confidentiality and IPR

8.1 The Buyer agrees and undertakes that it will keep confidential and will not disclose or use for any purpose (other than to perform its obligations under the Contract) any Information. Any Information supplied to the Buyer by the Seller shall at all times remain the property of the Seller. The Buyer shall not acquire any rights in the Information, which shall be returned to the Seller immediately upon request.

8.2 Unless otherwise agreed in writing all IPR in relation to the Goods including without limitation their method of manufacture shall vest in the Seller and remain the property of the Seller notwithstanding the purchase of the Goods by the Buyer and the Buyer undertakes to do all acts and/or enter into such agreements or deeds as the Seller shall require to vest any such IPR in the Seller.

8.3 Unless otherwise agreed in writing and notwithstanding that the Buyer may have contributed towards the costs of such items all tooling (and all IPR in relation to such tooling) produced or acquired by the Seller in relation to the manufacture of the Goods shall be and remain the property of the Seller.

9. Lien

9.1 In addition to any other right or lien to which the Seller may by law or pursuant to these Conditions be entitled, the Seller shall be entitled to a general lien on all the goods and the property of the Buyer in the Seller's possession and a right of sale of such goods and property at the Seller's sole discretion for any unpaid money due under the terms of the same or any other Contract between the Seller and the Buyer.

9.2 In addition and without prejudice to its other rights, the Seller shall have the right on fourteen days notice to the Buyer to put any goods or property over which it has a lien into a saleable state by any means whatsoever and (without prior notice to the Buyer) to sell such goods and shall be deemed the Buyer's agent for the purposes of effecting such sale. Out of the proceeds of the sale the Seller shall be entitled to retain a sum equivalent to all unpaid monies due to it from the Buyer as aforesaid together with the cost of putting the goods into a saleable state and the expenses of sale without prejudice to the Seller's right to recover the balance thereof from the Buyer.

10. Warranties and Liability

10.1 The Seller warrants that at Delivery the Goods will be free from defect in materials, workmanship and design (where designed by the Seller) provided that subject as aforesaid and expressly provided in these Conditions, and except where the Goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties conditions or other terms implied by statute and/or common law are excluded to the fullest extent permitted by law.

10.2 Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Buyer are not affected by these Conditions.

10.3 Any specification supplied by the Seller in any estimate or quotation shall be approximate only and for information and guidance only and shall not form part of the Contract.

10.4 Any claim based upon the quality or condition of the Goods or any failure of the Goods to meet the Specification ("Claim") by the Buyer shall (whether or not delivery is refused by the Buyer) be notified to the Seller in writing within 7 days from the date of delivery or (where the defect or failure was not apparent on reasonable inspection) within one month after discovery of the defect or failure. If delivery is not refused and the Buyer does not notify the Seller accordingly, the Buyer shall not be entitled to reject the Goods and the Seller shall have no liability in respect of such a Claim and the Buyer shall be bound to pay the Price as if the Goods had been delivered in accordance with the Contract. The Buyer shall not be entitled to make any Claim after the expiration of six months from the date of Delivery of the Goods.

10.5 Where any valid Claim in respect of any of the Goods is notified to the Seller in accordance with clause 10.4 the Seller shall be entitled to replace the Goods (or the part in question) free of charge or at the Seller's sole discretion refund to the Buyer the Price (or a proportionate part of the Price) but the Seller shall have no further liability to the Buyer and the Buyer shall have no other remedy.

10.6 The Seller shall have no liability to the Buyer in relation to non-delivery or short delivery of the Goods unless such non-delivery or short delivery is notified to the Seller in writing within fourteen days of the Delivery Date.

10.7 Where any valid claim in respect of the Goods is notified to the Seller in accordance with clause 10.6 the Seller shall be entitled to deliver the Goods or the shortfall of the Goods, but the Buyer shall have no other remedy

10.8 Except in respect of death or personal injury caused by the Seller's negligence the Seller's total liability to the Buyer under these Conditions shall not exceed the total price of all Goods supplied hereunder.

10.9 The Seller shall have no liability to the Buyer under or arising out of or otherwise in connection with the Contract or the supply of Goods by the Seller to the Buyer and/or their use or resale by the Buyer in contract tort (including negligence or breach of statutory duty) or otherwise for loss of profit, business, contracts, revenues or anticipated savings or for any special indirect or consequential damage or loss of any nature or for the costs of recall of any Goods except as may otherwise be expressly provided for in these Conditions.

10.10 Notwithstanding any provision of these Conditions the Seller shall have no liability to the Buyer in respect of any defect in the quality of the Goods or the failure of the Goods to meet Specification where the defect or failure has arisen as a result of improper storage or any act or omission of the Buyer.

10.11 For the avoidance of doubt nothing herein contained shall be deemed to exclude or restrict the Seller's liability for death or personal injury arising due to the Seller's negligence.

10.12 Where any claim is made under this clause 10 the Buyer grants the Seller or its agents the right to enter upon the Buyer's premises to inspect the Goods Unless and until the Seller has been afforded an opportunity to examine the Goods no claim will be accepted.

10.13 The Seller shall not be liable to the Buyer or be deemed to be in breach of the

Contract by reason of any delay in performing or any failure to perform any of the Seller's obligations in relation to the Goods if the delay or failure was due to Force Majeure.

10.14 The Buyer shall indemnify the Seller against all Loss suffered by the Seller which arises as a result of the breach by the Buyer of any provision of the Contract or the negligence of the Buyer or any of its representatives.

11. Insolvency of Buyer

11.1 In the event that:

11.1.1 The Buyer makes any voluntary arrangement with its creditors or becomes subject to an administration order or (being an individual or firm) becomes bankrupt or (being a company) goes into liquidation (otherwise than for the purposes of amalgamation or reconstruction);

11.1.2 An encumbrancer takes possession or a receiver or administrator is appointed of any of the property or assets of the Buyer;

11.1.3 the Buyer ceases or threatens to cease to carry on business;

11.1.4 the Seller reasonably apprehends that any of the events mentioned above is about to occur in relation to the Buyer and notifies the Buyer accordingly; or

11.1.5 if the Buyer's jurisdiction is not in England and Wales any events similar to those described in clauses 11.1.1 to 11.1.4 occur then without prejudice to any other right or remedy available to the Seller the Seller shall be entitled to suspend further performance of the Contract for such time as it shall in its absolute discretion see fit or treat the Contract as wrongfully repudiated by the Buyer and forthwith terminate the Contract (either with or without notice to the Buyer) without any liability to the Buyer and if the Goods have been delivered but not paid for the Price shall become immediately due and payable notwithstanding any previous agreement or arrangement to the contrary.

12. Export Terms

12.1 Where the Goods are supplied for export from the United Kingdom the provision of this clause 12 shall (subject to any special and the Seller) terms agreed in writing between the Buyer apply notwithstanding any other provision of these Conditions.

12.2 The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties thereon. In particular, if any licence or consent of any government or other authority shall be required for

the acquisition, carriage or use of the Goods by the Buyer the Buyer shall obtain the same at its own expense and if necessary produce evidence of the same to the Seller on demand. Failure to do so shall not entitle the Buyer to withhold or delay payment of the Price. Any additional expenses or charges incurred by the Seller resulting from such failure shall be for the Buyer's account.

12.3 Unless otherwise agreed in writing between the Buyer and the Seller the Goods shall be delivered ex-works and the Seller shall be under no obligation to give the Buyer notice under section 32(3) of the Sale of Goods Act 1979.

12.4 Notwithstanding clause 5.2 payment of all amounts due to the Seller shall be made by irrevocable letter of credit opened by the Buyer in favour of the Seller and confirmed by a bank in the United Kingdom acceptable to the Seller or if the Seller has agreed in writing on or before acceptance of the Buyer's order to waive this requirement for any other agreed method of payment

13. General

13.1 The Seller shall be entitled to assign or subcontract all or any of its rights and obligations hereunder. The Buyer shall not be entitled to assign, transfer, subcontract or otherwise delegate any of its rights or obligations hereunder.

13.2 Any notice required or permitted to be given by either party to the other under these Conditions shall be given in writing at its registered office or principal place of business or such other address as may be notified for such purpose to the party giving notice.

13.3 No waiver by the Seller of any breach of Contract by the Buyer shall be considered as a waiver of any subsequent breach of the same or any other provision.

13.4 If any provision of these Conditions is held by any competent authority to be invalid or unenforceable in whole or in part the validity of the other provisions of these Conditions and the remainder of the provision in question shall not be affected thereby.

13.5 The parties hereto intend that no term of the Contract may be enforced by any person, entity or body that is not a party to the Contract.

13.6 The Contract shall be governed by the laws of England and Wales and the Buyer and the Seller hereby submit to the exclusive jurisdiction of the English Courts save with respect to enforcement where their jurisdiction shall be non-exclusive.

HT UK Cond of Sale
June 2002

W24 - High performance one part epoxy adhesive

W24 - Features

- Operating Temperature -75°C to +200°C
- Can be factory pre-coated into all HellermannTyton range of small electronic Heatshrink shapes
- W24 is a low tack gel, and does not need excessive initial heating in order to melt the adhesive, before surface wetting and subsequent bonding
- W24 is not susceptible to moisture absorption, therefore delamination from the surface will not take place
- Product does not need to be kept in sealed packaging

W24 - Benefits

- Handling strength achieved after initial recovery 80% cure. Cable can be bent when cool at 90° around mandrel 6 x dia of cable
- Harness can be moved immediately, ultimate properties in 7 days
- Stored at normal temperatures, and away from direct sunlight W24 adhesive lined shapes have a 5 year shelf life
- W24 also flows when the shape is shrunk, enabling the customer to form a smooth fillet of adhesive between the tail of the heatshrink shape and jacket



Visible adhesive flow



För mer information kontakta

06/2011

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