
USA PRODUCT CATALOG

PMA Flexible cable protection systems

For applications with high requirements



PMA

PMA cable protection products from ABB can be used in an extremely wide range of applications. The list is virtually endless, including rail vehicles and infrastructure, industrial machines, electrical systems on ships, solar and wind energy generation installations, telecommunications, construction and medical equipment. Wherever cables are installed and exposed to mechanical stresses and environmental hazards. Today and tomorrow we guarantee best quality regarding products, technical support, service and delivery.

Table of contents

004–007	Introduction
008–036	PMA conduits
038–049	PMAFIX Pro Connectors
050–090	PMAFIX Connectors IP66 IP68 (IP69)
091–094	PMAFIXPlus Connectors IP68 (IP69)
096–099	Special connectors
100–119	Accessories
120–127	PMA JUMBO sizes
128–133	PMA Divisible System
134–143	PMAJACK Plastic and metal braids
144–154	Technical annex
155–171	Index
172	Important information
173	Further information

Introduction

A swiss manufacturer with a global presence

There is no better reference than satisfied customers. PMA cable protection provides customized specific solutions for customers worldwide.

ABB's PMA manufacturing site is located in Uster (Switzerland), close to Zurich. The majority of what we produce for the world market is made at this location. Also our research and development department is located here.

ABB is focused on providing solutions that address the critical issues in every area of operations, allowing customers to focus on plant sustainability, cost, quality, flexibility, safety and regulatory challenges.

Thanks of our large network of professional partners in all of the major industrialised countries around the globe, we are able to guarantee best quality regarding products, technical support, service and fast delivery.





Setting new standards and trends

Customer needs are a top priority at ABB, and we work every day to ensure all our customer requirements are met in our products. We offer cable protection solutions and services that are tailored to meet requirements in every type of application. Our range extends from basic items right up to the most demanding high-tech products. We can develop system solutions and special products that are designed to meet specific customer requirements. Our intensive research and development activities, which include the field of new materials, are a major reason why PMA products from ABB continues to set new standards and trends in the cable protection marketplace. These efforts together with excellent quality and service have helped us build up an outstanding reputation with leading corporations around the world.

From pioneer to market leader

ABB has been developing, producing, and selling top-quality PMA cable protection systems since 1975. Our high-quality Swiss products have rapidly earned us an excellent reputation worldwide and established us as the market leader. Our range of more than 6,500 products gives customers the protection they need in railway, mechanical engineering, and shipbuilding applications worldwide. PMA products are also the solution of choice in automation, building installations and other projects where power and data cables require dependable protection.

Unique benefits of PMA products from ABB

Service to the customer is what motivates us. In addition to series production, PMA can build fittings and conduits to meet individual requirements as a special service to our customers.

- A safe, reliable system that is easy to install
- Vibration-proof connections
- System connection strength
- Ingress protection conforming to recognized test methods
- High impact strength even at low temperatures
- High compression strength (peak load)
- Long-term reversed-bending resistance
- Good chemical resistance
- Fire protection (flammability and smoke generation)
- Good weather resistance
- Long wearing
- ...and much more

Introduction

Areas of applications



Mechanical engineering

A considerable number of PMA cable protection systems are used in mechanical engineering. A few examples illustrate how varied the range of mechanical engineering applications is. You will find our products in machine tools, packaging machines, printing machines, as well as heating, ventilation, conveyer, and filling systems. PMA products also make a vital contribution to the smooth operation of high voltage and emergency power systems, can production machinery and woodworking machines, etc. PMA cable protection solutions safeguard cables, wires and data links against heat, cold, tensile stress, pressure stress, and other external influences in the important mechanical engineering industry.

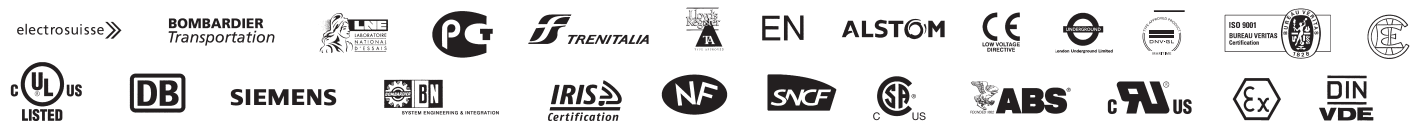
Rail vehicles/Rail infrastructure

PMA products from ABB have proven their dependability in railway construction projects around the world. This is the reason why large corporations including Siemens, Alstom, Bombardier, PESA, CSR/CNR, Deutsche Bahn, and SNCF have chosen us as supplier over a period of many years. Our special railway engineering product line provides protection and safety on signalling systems, couplings, trucks, and gangways, as well as roof, and underfloor equipment.

The range of applications is very extensive. PMA products contribute to the safe operation of trams, locomotives, freight cars, high-speed trains, and even roller coasters.

Worldwide recognitions

All PMA products are rigorously tried and tested to meet the demands of industry worldwide.





Automation/Robotics

In the field of automation, there is a need for products that can withstand the stress of motion-intensive applications. Solutions developed by ABB for the automation industry fully meet these requirements. Special conduit designs, supports and abrasion protection sleeves provide optimal protection along the entire length of all moving elements, enabling engineers to achieve a massive reduction in torsional forces. There is good reason why leading robotics manufacturers rely on ABB technology.















Countless applications

PMA cable protection products from ABB can be used in an extremely wide range of applications. The list is virtually endless and includes industries such as telecommunications, construction equipment and medical equipment. Wherever there is a need for cable protection, the PMA product portfolio provides safe, dependable, forward-looking solutions or will develop them specially for you to meet your individual needs.

PMA conduits

Conduit guide

Products				PMAFLEX Pro			PMAFLEX						
Application areas				PHT	POH	PSX	CYL	ESD	PCL	PCS	PCSL	PEL	PI5/PIH
Machine building 	General applications	static				●		●					
		dynamic	●			●						●	
	Heavy loads	static								●			
		dynamic								●			
	Outdoor applications	static								●	●		●
		dynamic								●	●		●
	Antistatic requirements	static						●					
		dynamic						●					
Traction vehicles 	Outdoor applications with sunlight exposure	static							●	●		●	
		dynamic							●	●		●	
	Outdoor applications	static	●							●	●		●
		dynamic	●							●	●		●
Indoor applications	static		●										
	dynamic		●										
Rail infrastructure 	Outdoor applications with sunlight exposure	static							●	●			
	Indoor and tunnel applications	static		●									
Automation/ Robotics 	Moving systems	dynamic	●				●		●	●		●	
	Systems with extreme movements	dynamic										●	
	Moving systems with antistatic requirements	dynamic					●						
Ship + Off-shore 	Outdoor general applications	static							●	●		●	
		dynamic	●							●	●		●
	Indoor applications	static					●		●	●		●	
		dynamic					●		●	●	●		●
Passenger area	static		●			●		●	●		●		
Energy 	Outdoor applications with sunlight exposure	static							●	●			
	Indoor applications	static		●			●		●		●		
	Exposed to radiation	static			●								
Food & Beverage 	General applications		static										
			dynamic										
Others     	Vehicle building		static	●									
	Telecommunications		indoor					●		●		●	
			outdoor										
	Building constructions		indoor		●								
			outdoor								●		
	Ex hazardous areas (ATEX, IECEx)		static						●				
High temperature applications		static	●		●								

PMA conduits

Conduit guide

Products		PMAFLEX Pro			PMAFLEX							
		PHT	POH	PSX	CYL	ESD	PCL	PCS	PCSL	PEL	PIS/PIH	
Material properties	Ductility											
	Reversed bending resistance											
	Compression resistance											
	Low temperature performance											
	High temperature performance											
	Resistance to weathering											
	Approvals		Bi-National Recognition File UL1696 & CSA C22.2 No. 227.3-05									
CSA C22.2 No. 227.3-05												
Bi-National Listing File UL1660 & CSA C22.2 No. 227.2.1												
Free from halogens, REACH + RoHS compliant												
Non flame propagating EN61386												
		EN 45545-2										
		NFPA 130 (ASTM E162 – ASTM E662)										
		BSS 7239/SMP 800-C ASTM E1354										
		PN-K 2511										
		GOST 12.1.044-89										
	DNV (Type approved)											
	Lloyd's Register (Type approved)											
	Bureau Veritas (Type approved)											
Hazardous		ATEX										
		IECEX										
Food & Beverage		NSF										
		Ecolab										
Temperature range		Continuous operating temperature (acc. to DO 9.21-4510)	Min. (-)	-50	-25	-100	-40	-40	-50	-50	-50	-50
		Max. (+)	135	95	170	105	90	105	95	95	60	95
		Short term max. operating temperature 168h (acc. to DO 9.21-4360)	(+)	180	120	200	160	150	160	150	150	150
Sizes		Nominal width min.	07	10	10	07	07	07	07	07	10	07
		Nominal width max.	48	48	48	125	95	125	95	48	48	125
		Metric size min.	10	12	12	10	10	10	10	10	12	10
		Metric size max.	50	50	50	146	106	146	106	50	50	146
		Page no.	15	15	16	17	17	18	19	19	20	20

PMA conduits

Overview

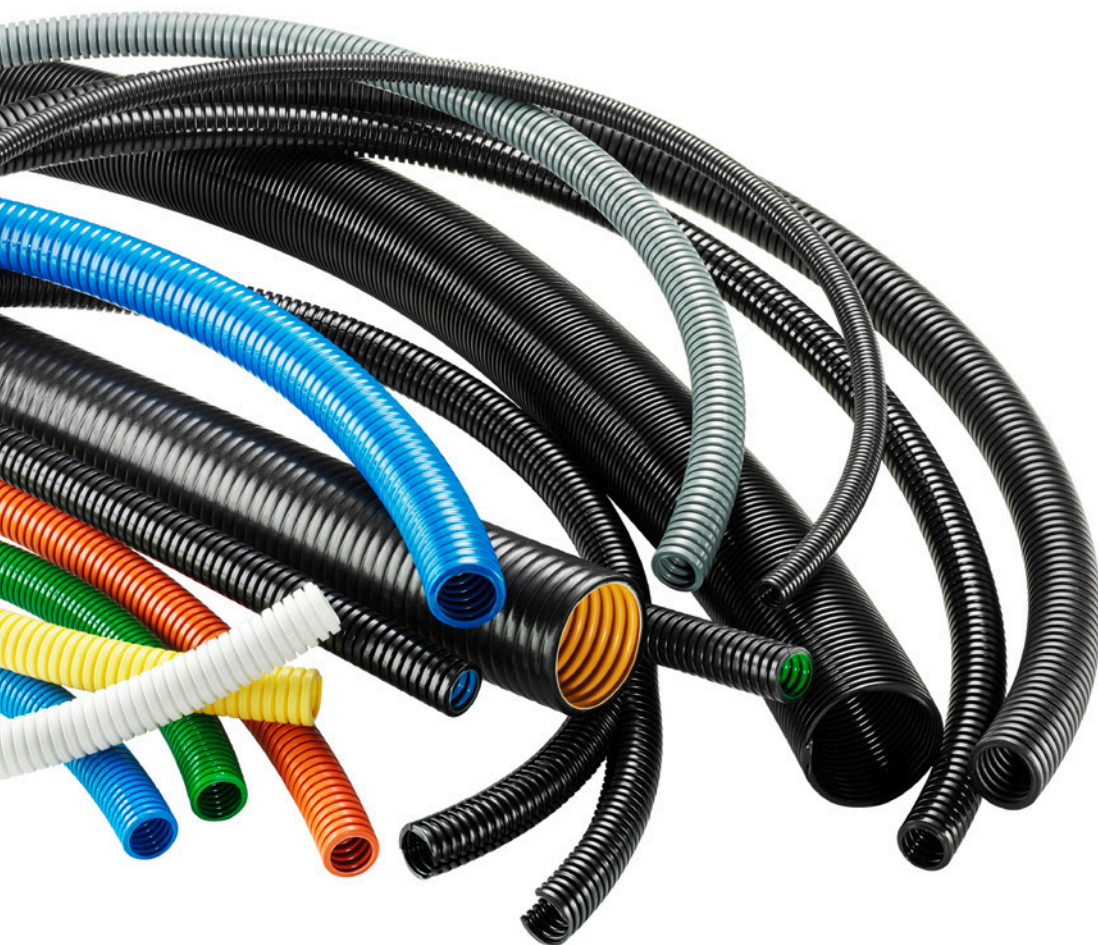
Conduits to protect cables. We offer many different conduit types for diverse applications with various technical requirements.

The product groups:

- PMAFLEX Pro
- PMAFLEX
- PMAFLEX PLus
- PMAFLEX Multilayer
- PMA Divisible System
- PMA Smart Line
- PMA overbraided
- PMA overextruded

Conduit sizes range from 6mm to 125mm Ø, from lightweight to heavyweight, and from pliable to highly flexible. PMA also offers slit and divisible conduits. Standard colours are black and grey.

Many conduits are specially approved, e.g. CSA, UL Recognition, DNV, Lloyds, Bureau Veritas etc. All conduits are REACH and RoHS compliant.



PMA CONDUITS

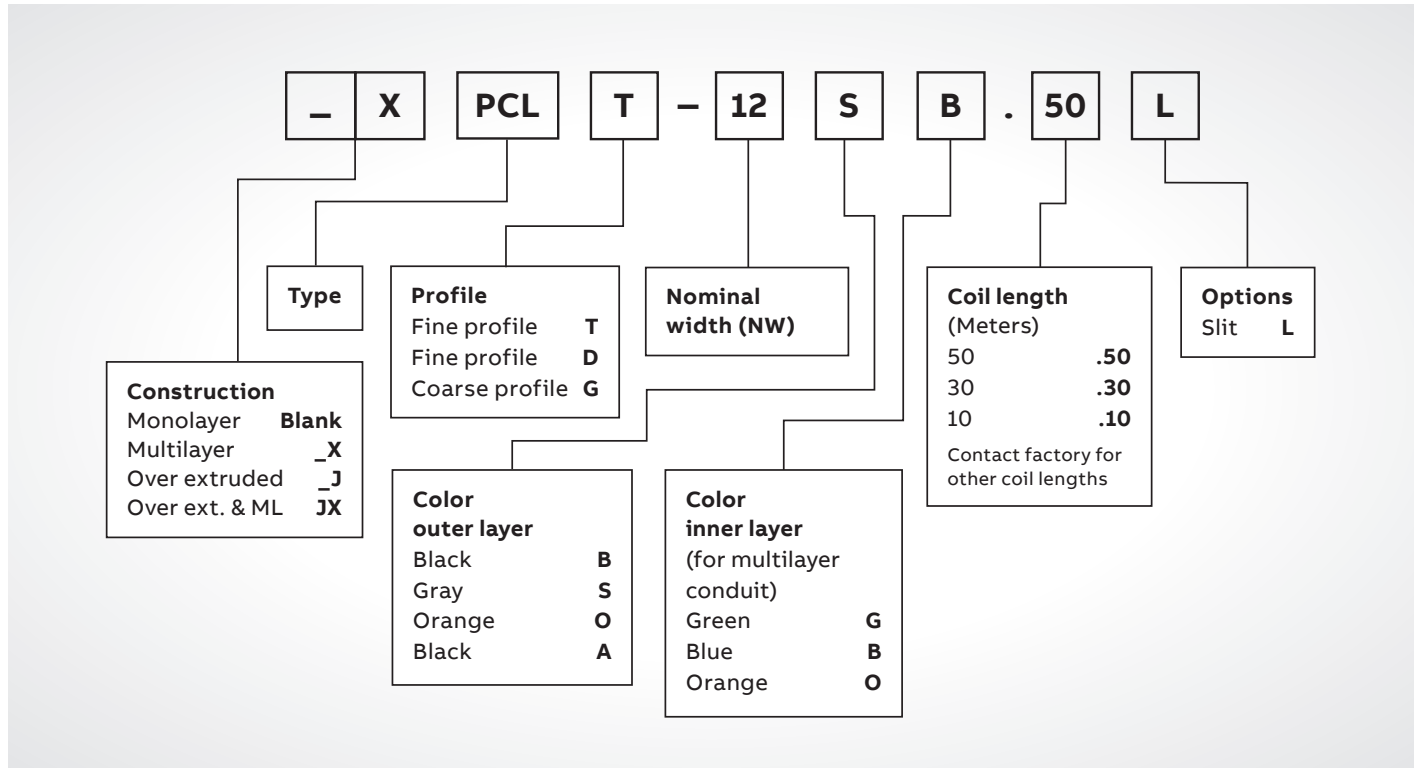
PMA offers a large range of very different mono- and multilayer conduit types which fulfill high technical demands to protect humans and cables.



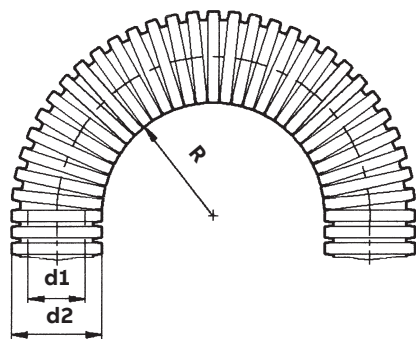
PMA conduits

Part number codes

For part number explanation only, not to be used as a configuration tool.
 Part Numbers printed in **RED** are priority stock items in the US Distribution Center.



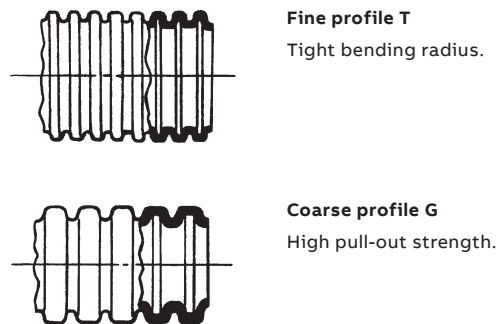
Radius



Stat. radius = Lowest recommended bending radius for static (fixed) installation.

Dyn. radius = Lowest recommended bending radius for dynamic (flexible) installation.


Profile









PMAFLEX Pro

Type PHT & POH conduit

Type PHT - Highly flexible, medium/heavy-duty


	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
	PHTT-07B.50	07	10	1/4	6.2	0.244	10.0	15/40	50
	PHTT-10B.50	10	12	5/16	9.6	0.378	13.0	20/55	50
	PHTT-12B.50	12	16	3/8	12.0	0.472	15.8	30/65	50
	PHTT-17B.50	17	20	1/2	16.2	0.638	21.2	40/70	50
	PHTT-23B.50	23	25	3/4	22.6	0.890	28.5	45/95	50
	PHTG-17B.50	17	20	1/2	15.2	0.598	21.2	40/75	50
	PHTG-23B.50	23	25	3/4	22.0	0.866	28.5	45/100	50
	PHTG-29B.50	29	32	1	27.7	1.091	34.5	55/120	50
	PHTG-36B.30	36	40	1-1/4	35.8	1.409	42.5	60/180	30
	PHTG-48B.30	48	50	1-1/2	46.8	1.843	54.5	70/200	30




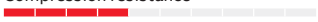

PHT Index		
min.		max.
Ductility		
Fatigue reversed bending		
Compression resistance (PHTT-17B)		
Compression resistance (PHTG-17B)		
Low temperature performance		
Weathering resistance		

Materials	Temperature range	Colour
Specially formulated polyamide elastomer	-50°C to +135°C	Black
Certification	Impact resistance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +180°C Extremely good at low temperatures	High

For applications at high and very low temperatures / dynamic applications
Specially formulated polyamide elastomer. Both excellent flexibility and high compression strength
Enhanced temperature range compared to standard polyamides
High resistance to ultra violet rays and weathering

Type POH - Very flexible, medium-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	POHT-10B.50	POHT-10S.50	10	12	5/16	9.2	0.362	13.0	13.0	50
	POHT-12B.50	POHT-12S.50	12	16	3/8	11.8	0.465	15.8	15.8	50
	POHG-17B.50	POHG-17S.50	17	20	1/2	15.7	0.618	21.2	21.2	50
	POHG-23B.50	POHG-23S.50	23	25	3/4	22.0	0.866	28.5	28.5	50
	POHG-29B.50	POHG-29S.50	29	32	1	27.4	1.079	34.4	34.4	50
	POHG-36B.30	POHG-36S.30	36	40	1-1/4	35.8	1.409	42.4	42.4	30
	POHG-48B.30	POHG-48S.30	48	50	1-1/2	46.8	1.843	54.4	54.5	30

POH Index		
min.		max.
Ductility		
Fatigue reversed bending		
Compression resistance		
Low temperature performance		
Weathering resistance		

Materials	Temperature range	Colour
Specially modified polypropylene	-25°C to +95°C	Black/Grey
Certification	Fire performance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +120°C acc. to BS 6853 1a (interior)	-

For highest fire and passenger safety requirements
Excellent fire safety characteristics acc. to BS 6853 1a (interior)
Good ductility and reversed bending characteristics

PMAFLEX Pro

Type PSX conduit

Type PSX - Flexible, light-duty

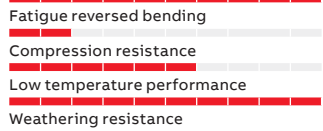


	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
PSX	PSXT-10B.50	10	12	5/16	9.8	0.386	13.0	20	50
	PSXT-12B.50	12	16	3/8	12.2	0.476	15.8	30	50
	PSXT-17B.50	17	20	1/2	16.2	0.638	21.2	35	50
	PSXG-23B.50	23	25	3/4	22.3	0.878	28.5	45	50
	PSXG-29B.50	29	32	1	28.0	1.102	34.5	55	50
	PSXG-36B.30	36	40	1-1/4	36.5	1.437	42.5	60	30
	PSXG-48B.30	48	50	1-1/2	47.5	1.870	54.5	70	30

For applications with highest fire safety performance requirements / with extreme temperature conditions / exposed to radiation.
 Chemical resistance: To oils, fats, acids, alcohols and hot water (good resistance to hydrolysis)
 Excellent high and low temperature properties
 High radiation resistance
 Very good ductility

PSX Index

min. max.
 Ductility




Materials	Temperature range	Colour
Specially modified polyetherimide	-100°C to +170°C	Black
Certification	Fire performance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +200°C Low smoke density and toxicity	-

PMAFLEX

Type CYL & ESD conduit

Type CYL - Very flexible, medium-duty conduit



	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
CYL	CYLT-07B.50	CYLT-07S.50	07	10	1/4	6.2	0.244	10.0	15	50
	CYLT-10B.50	CYLT-10S.50	10	12	5/16	9.6	0.378	13.0	20	50
	CYLT-12B.50	CYLT-12S.50	12	16	3/8	12.0	0.472	15.8	30	50
	CYLT-17B.50	CYLT-17S.50	17	20	1/2	16.2	0.638	21.2	40	50
	CYLT-23B.50	CYLT-23S.50	23	25	3/4	22.6	0.890	28.5	45	50
	CYLT-29B.50	CYLT-29S.50	29	32	1	29.0	1.142	34.5	55	50
	CYLT-36B.30	CYLT-36S.30	36	40	1-1/4	36.5	1.437	42.5	60	30
	CYLT-48B.30	CYLT-48S.30	48	50	1-1/2	47.5	1.870	54.5	70	30
	CYLG-23B.50	CYLG-23S.50	23	25	3/4	21.9	0.862	28.5	45	50
	CYLG-29B.50	CYLG-29S.50	29	32	1	27.6	1.087	34.5	55	50
	CYLG-36B.30	CYLG-36S.30	36	40	1-1/4	36.0	1.417	42.5	60	30
	CYLG-48B.30	CYLG-48S.30	48	50	1-1/2	47.0	1.850	54.5	70	30
	CYLG-56B.30	CYLG-56S.30	56	68	2	56.3	2.217	67.2	120	30
	CYLG-70B.10	CYLG-70S.10	70	80	2-1/2	68.0	2.677	80.0	160	10
	CYLG-95B.10	CYLG-95S.10	95	106	4	91.9	3.618	106.0	210	10
	CYLG-125B.06	CYLG-125S.06	125	146	5	126.5	4.980	146.5	450	06

Approvals




CYL Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For machine building and installation industries / static and slightly dynamic applications
 Very good ductility and good reversed bending characteristics
 Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Materials	Temperature range	Colour
Specially formulated polyamide 6	-40°C to +105°C	Black/Grey
Certification	Short-term to: +160°C	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Self extinguishing	-
	acc. to UL 94 V2	

Type ESD - Very flexible, medium-duty conduit



	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
ESD	ESDT-07B.50	07	10	1/4	6.2	0.244	10.0	15/40	50
	ESDT-10B.50	10	12	5/16	9.6	0.378	13.0	20/50	50
	ESDT-12B.50	12	16	3/8	12.0	0.472	15.8	30/70	50
	ESDT-17B.50	17	20	1/2	16.4	0.646	21.1	40/75	50
	ESDT-23B.50	23	25	3/4	22.6	0.890	28.4	45/90	50
	ESDT-29B.50	29	32	1	29.0	1.142	34.3	55/110	50
	ESDT-36B.30	36	40	1-1/4	36.5	1.437	42.5	60/160	30
	ESDT-48B.30	48	50	1-1/2	47.5	1.870	54.5	70/200	30
	ESDG-56B.30	56	68	2	56.5	2.224	67.0	110/250	30
	ESDG-70B.10	70	80	2-1/2	67.5	2.657	80.0	150/330	10
	ESDG-95B.10	95	106	4	91.5	3.602	106.0	170/440	10

ESD Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	


For dynamic applications in robotics and automation where electrostatic charge and uncontrolled discharge need to be avoided
 Prevents electrostatic charging. For indoor and outdoor use (very good cold temperature performance)

Materials	Temperature range	Colour
Specially modified polyamide 12	-40°C to +90°C	Black
Certification	Short-term to: +150°C	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Fatigue resistance	Excellent
	Excellent fatigue resistance	

PMAFLEX

Type PCL conduit

Type PCL - Very flexible, medium-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	PCLT-07B.50	PCLT-07S.50	07	10	1/4	6.2	0.244	10.0	15	50
	PCLT-10B.50	PCLT-10S.50	10	12	5/16	9.6	0.378	13.0	20	50
	PCLT-12B.50	PCLT-12S.50	12	16	3/8	12.0	0.472	15.8	30	50
	PCLT-17B.50	PCLT-17S.50	17	20	1/2	16.2	0.638	21.2	40	50
	PCLT-23B.50	PCLT-23S.50	23	25	3/4	22.6	0.890	28.5	45	50
	PCLT-29B.50	PCLT-29S.50	29	32	1	29.0	1.142	34.5	55	50
	PCLT-36B.30	PCLT-36S.50	36	40	1-1/4	36.5	1.437	42.5	60	30
	PCLT-48B.30	PCLT-48S.50	48	50	1-1/2	47.5	1.870	54.5	70	30
	PCLG-17B.50	PCLG-17S.50	17	20	1/2	15.3	0.602	21.2	40	50
	PCLG-23B.50	PCLG-23S.50	23	25	3/4	21.9	0.862	28.5	45	50
	PCLG-29B.50	PCLG-29S.50	29	32	1	27.6	1.087	34.5	55	50
	PCLG-36B.30	PCLG-36S.30	36	40	1-1/4	36.0	1.417	42.5	60	30
	PCLG-48B.30	PCLG-48S.30	48	50	1-1/2	47.0	1.850	54.5	70	30
	PCLG-56B.30	PCLG-56S.30	56	68	2	56.3	2.217	67.2	130	30
	PCLG-70B.10	PCLG-70S.10	70	80	2-1/2	67.5	2.650	80.0	160	10
PCLG-95B.10	PCLG-95S.10	95	106	4	91.5	3.602	106.0	210	10	
PCLG-125B.6	PCLG-125S.6	125	146	5	126.5	4.980	146.5	450	6	

Approvals



PCL Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

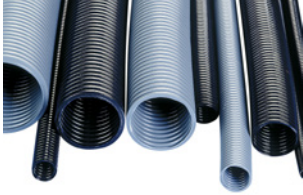
For machine building, installation and vehicle building industries / static and slightly dynamic applications
 Very good ductility and good reversed bending characteristics. Very good long-term properties
 Very good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Materials	Temperature range	Colour
Specially formulated polyamide 6	-50°C to +105°C	Black/Grey
Certification	Self extinguishing	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +160°C acc. to UL 94 V2	-

PMAFLEX

Type PCS & PCSL conduit

Type PCS - Very flexible, heavy-duty conduit

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	PCST-07B.100	PCST-07S.50	07	10	1/4	6.0	0.236	10.0	15/40	100
	PCST-10B.50	PCST-10S.50	10	12	5/16	9.2	0.362	13.0	20/50	50
	PCST-12B.50	PCST-12S.50	12	16	3/8	11.8	0.465	15.8	25/70	50
	PCST-17B.50	PCST-17S.50	17	20	1/2	16.0	0.630	21.2	35/80	50
	PCSG-17B.50	PCSG-17S.50	17	20	1/2	15.2	0.598	21.2	35/85	50
	PCSG-23B.50	PCSG-23S.50	23	25	3/4	21.5	0.846	28.5	40/110	50
	PCSG-29B.50	PCSG-29S.50	29	32	1	27.7	1.091	34.4	50/130	50
	PCSG-36B.30	PCSG-36S.30	36	40	1-1/4	35.8	1.409	42.4	60/180	30
	PCSG-48B.30	PCSG-48S.30	48	50	1-1/2	46.8	1.843	54.4	70/220	30
	PCSG-56B.30	PCSG-56S.30	56	68	2	56.1	2.209	67.2	130/280	30
	PCSG-70B.10	PCSG-70S.10	70	80	2-1/2	66.5	2.618	80.0	170/360	10
	PCSG-95B.10	PCSG-95S.10	95	106	4	91.0	3.583	106.0	250/470	10

For dynamic outside applications in railway vehicles / outdoor applications with highest requirements to UV and weathering resistance

Extensive railway approvals. Very good ductility and good reversed bending characteristics

Very good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Highest reversed bending resistance

Excellent resistance to ultra violet rays and weathering

EN45545-2 HL2 (R22 +R23)

PCS Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials

Specially modified polyamide 12

Certification

Free from halogens, REACH compliant

and RoHS compliant

Temperature range

-50°C to +95°C

Short-term to: +150°C

Fatigue resistance

Excellent fatigue resistance


Colour

Black/Grey

UV Resistance

Excellent

Type PCSL - Highly flexible, medium-duty conduit

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	PCSLT-07B.50	PCSLT-07S.50	07	10	1/4	6.2	0.244	10.0	15/40	50
	PCSLT-10B.50	PCSLT-10S.50	10	12	5/16	9.6	0.378	13.0	20/50	50
	PCSLT-12B.50	PCSLT-12S.50	12	16	3/8	11.9	0.469	15.8	25/65	50
	PCSLT-17B.50	PCSLT-17S.50	17	20	1/2	16.4	0.646	21.1	30/65	50
	PCSLG-17B.50	PCSLG-17S.50	17	20	1/2	15.2	0.598	21.1	30/80	50
	PCSLG-23B.50	PCSLG-23S.50	23	25	3/4	21.7	0.854	28.4	40/100	50
	PCSLG-29B.50	PCSLG-29S.50	29	32	1	27.4	1.079	34.3	50/120	50
	PCSLG-36B.30	PCSLG-36S.30	36	40	1-1/4	35.8	1.409	42.3	60/180	30
	PCSLG-48B.30	PCSLG-48S.30	48	50	1-1/2	46.7	1.839	54.2	70/200	30

For dynamic outside applications in railway vehicles / outdoor applications with highest requirements to UV and weathering resistance

Extensive railway approvals. Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Excellent reversed bending resistance

Excellent resistance to ultra violet rays and weathering

EN45545-2 HL2 (R22 +R23)

PCSL Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials

Specially modified polyamide 12

Certification

Free from halogens, REACH compliant

and RoHS compliant

Temperature range

-50°C to +95°C

Short-term to: +150°C

Fatigue resistance

Excellent fatigue resistance

Colour

Black


UV Resistance

Excellent

PMAFLEX

Type PEL & PIS/PIH conduit

Type PEL - Highly flexible, light-duty, soft

	Order no. (grey)	Order no. (grey, slit)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	PELT-10S.50	PELT-10SL.50	10	12	5/16	9.7	0.382	12.7	20	50
	PELT-12S.50	PELT-12SL.50	12	16	3/8	11.5	0.453	15.5	30	50
	PELT-17S.50	PELT-17SL.50	17	20	1/2	16.0	0.630	20.9	35	50
	PELT-23S.50	PELT-23SL.50	23	25	3/4	22.5	0.886	27.5	40	50
	PELT-29S.30	PELT-29SL.30	29	32	1	28.5	1.122	33.8	50	30
	PELT-36S.30	PELT-36SL.30	36	40	1-1/4	34.0	1.339	41.6	60	30
	PELT-48S.30	PELT-48SL.30	48	50	1-1/2	47.0	1.850	53.2	70	30


PEL Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For electrical cabinets and appliance construction
 Very good ductility
 Suitable for small bending radii
 Good resistance against strong acids and bases

Materials	Temperature range	Colour
Specially modified polyethylene	-50°C to +60°C	Grey
Certification	UV Resistance	
Free from halogens, REACH compliant and RoHS compliant		-

Type PIS/PIH - Highly flexible, medium- and heavy-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø (mm)		Outside Ø (mm)	Stat./dyn. radius (mm)	PU (m)
			NW	Metric	(Inch)	(mm)	(inch)			
	PIST-07B.50	PIST-07S.50	07	10	1/4	6.2	0.244	10.0	15/40	50
	PIST-10B.50	PIST-10S.50	10	12	5/16	9.6	0.378	13.0	20/50	50
	PIST-12B.50	PIST-12S.50	12	16	3/8	11.9	0.469	15.8	25/65	50
	PIST-17B.50	PIST-17S.50	17	20	1/2	16.4	0.646	21.1	30/65	50
	PIST-23B.50	PIST-23S.50	23	25	3/4	22.6	0.890	28.4	35/90	50
	PIST-29B.50	PIST-29S.50	29	32	1	29.0	1.142	34.3	45/110	50
	PIST-36B.30	PIST-36S.30	36	40	1-1/4	36.5	1.437	42.5	60/165	30
	PIST-48B.30	PIST-48S.30	48	50	1-1/2	47.5	1.870	54.5	70/180	30
	PISG-17B.50	PISG-17S.50	17	20	1/2	15.2	0.598	21.1	30/80	50
	PISG-23B.50	PISG-23S.50	23	25	3/4	21.7	0.854	28.4	40/100	50
	PISG-29B.50	PISG-29S.50	29	32	1	27.9	1.098	34.7	50/120	50
	PISG-36B.30	PISG-36S.30	36	40	1-1/4	35.8	1.409	42.3	60/180	30
	PISG-48B.30	PISG-48S.30	48	50	1-1/2	46.7	1.839	54.2	70/200	30
	PIHG-56B.30	PIHG-56S.30	56	68	2	56.3	2.217	67.2	110/270	30
	PIHG-70B.30	PIHG-70S.30	70	80	2-1/2	67.2	2.646	79.6	150/350	30
	PIHG-95B.30	PIHG-95S.30	95	106	4	91.3	3.594	106.0	170/450	30
	PIHG-125B.20	PIHG-125S.20	125	146	5	126.5	4.980	146.5	350/480	20

Approvals



PIS/PIH Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	


For robotics and automation applications. UL 94 V0. Excellent UV resistance and weathering characteristics
 PIS: Medium-wall (Nominal width 07 to 48) / PIH: Heavy-wall (Nominal width 56 to 125)
 Very good reversed bending characteristics. Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Materials	Temperature range	Colour
Specially modified polyamide 12	-50°C to +95°C	Black/Grey
Certification	Weathering characteristics	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +150°C	Excellent
	Excellent	Excellent

PMAFLEX

Type POS & PUE conduit

Type POS - Highly flexible, medium-duty

	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
	POST-10B.50	10	12	5/16	9.6	0.378	13	20/50	50
	POST-12B.50	12	16	3/8	11.9	0.469	15.8	30/70	50
	POST-17B.50	17	20	1/2	16.2	0.638	21.2	35/75	50
	POST-23B.50	23	25	3/4	22.6	0.890	28.5	40/100	50
	POST-29B.50	29	32	1	29	1.142	34.5	50/120	50
	POST-36B.30	36	40	1-1/4	36.5	1.437	42.5	60/180	30
	POST-48B.30	48	50	1-1/2	47.5	1.870	54.5	70/195	30
	POSG-29B.50	29	32	1	27.6	1.087	34.5	50/120	50
	POSG-36B.30	36	40	1-1/4	36	1.417	42.5	60/180	30
	POSG-48B.30	48	50	1-1/2	47	1.850	54.5	70/195	30
	POSG-70B.30	70	80	2-1/2	67.2	2.646	79.6	150/350	30
	POSG-95B.30	95	106	4	91.3	3.594	106	170/450	30


POS Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For automation as well as for machine building and industrial installations, especially where continuous movements occur
Excellent reversed bending performance and flexibility
Good impact resistance. Good resistance against strong acids

Materials	Temperature range	Colour
Specially modified polypropylene	-25°C to +95°C	Black
Certification	Fatigue resistance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +130°C	-

Type PUE - Highly flexible, medium-duty

	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
	PUET-23B.50	23	25	3/4	22.4	0.882	28.5	35/70	50
	PUET-29B.30	29	32	1	28.8	1.134	34.5	40/90	30
	PUET-36B.30	36	40	1-1/4	35.8	1.409	42.4	50/120	30
	PUET-48B.21	48	50	1-1/2	48.6	1.913	54.5	60/130	21
	PUEG-56B.30	56	68	2	56.3	2.217	67.2	90/170	30
	PUEG-70B.30	70	80	2-1/2	68.2	2.685	80.5	100/220	30

PUE Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	


For robotic applications with multi-axial movements
Specially suitable for tight bending-radii
Highest reversed bending resistance
Excellent chafing characteristics

Materials	Temperature range	Colour
Specially formulated polyurethane	-60°C to +50°C	Black
Certification	Fatigue resistance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	-	-

PMAFLEX

Type PVD & VAM conduit

Type PVD - Pliable, medium-duty

	Order no. (transparent)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
	PVDT-10P.50	10	12	5/16	9.5	0.374	12.6	20	50
	PVDT-12P.50	12	16	3/8	11.8	0.465	15.5	30	50
	PVDT-17P.50	17	20	1/2	16.0	0.630	20.8	40	50
	PVDT-23P.50	23	25	3/4	22.6	0.890	28.0	45	50
	PVDT-29P.50	29	32	1	29.0	1.142	34.1	50	50

For long-term high temperature requirements in machine building applications
Excellent chemical resistance also at high temperatures
Very good abrasion resistance
High stiffness

PVD Index

min. max.

Ductility

Fatigue reversed bending

Compression resistance

Low temperature performance

Weathering resistance

Materials

Specially formulated PVDF

Certification

Free from halogens, REACH compliant
and RoHS compliant

Temperature range

-60°C to +150°C

Colour

Transparent


Fire performance

Self-extinguishing / free from cadmium

UV Resistance

Excellent

Type VAM - Flexible, heavy-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	VAMT-10B.50	VAMT-10S.50	10	12	5/16	9.2	0.362	13.0	25	50
	VAMT-12B.50	VAMT-12S.50	12	16	3/8	11.8	0.465	15.8	30	50
	VAMG-17B.50	VAMG-17S.50	17	20	1/2	15.2	0.598	21.2	40	50
	VAMG-23B.50	VAMG-23S.50	23	25	3/4	22.0	0.866	28.5	50	50
	VAMG-29B.50	VAMG-29S.50	29	32	1	27.7	1.091	34.4	60	50
	VAMG-36B.30	VAMG-36S.30	36	40	1-1/4	35.8	1.409	42.4	70	30
	VAMG-48B.30	VAMG-48S.30	48	50	1-1/2	46.8	1.843	54.4	80	30

For high fire and passenger safety requirements in interior applications such as passenger areas or public buildings
HL3 acc. to EN 45545-2
NFPA 130 compliant
High impact and compression strength
High stiffness

VAM Index

min. max.

Ductility

Fatigue reversed bending

Compression resistance

Low temperature performance

Weathering resistance

Materials

Specially formulated polyamide 6

Certification

Free from halogens, REACH compliant
and RoHS compliant

Temperature range

-40°C to +105°C

Short-term to: +160°C

Fire performance

Minimal development of smoke and gases

Colour

Black/Grey

UV Resistance

-

PMAFLEX

Type VAML & VCS conduit

Type VAML - Flexible, medium-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
VAML	VAMLT-10B.50	VAMLT-10S.50	10	12	5/16	9.6	0.378	13.0	20	50
	VAMLT-12B.50	VAMLT-12S.50	12	16	3/8	12.0	0.472	15.8	30	50
	VAMLG-17B.50	VAMLG-17S.50	17	20	1/2	15.3	0.602	21.2	40	50
	VAMLG-23B.50	VAMLG-23S.50	23	25	3/4	22.6	0.890	28.5	45	50
	VAMLG-29B.50	VAMLG-29S.50	29	32	1	27.6	1.087	34.5	55	50
	VAMLG-36B.30	VAMLG-36S.30	36	40	1-1/4	36.0	1.417	42.5	65	30
	VAMLG-48B.30	VAMLG-48S.30	48	50	1-1/2	47.0	1.850	54.5	75	30
	VAMLG-56B.30	VAMLG-56S.30	56	68	2	56.3	2.217	67.2	140	30
	VAMLG-70B.10	VAMLG-70S.10	70	80	2-1/2	67.5	2.657	80.0	160	10
	VAMLG-95B.10	VAMLG-95S.10	95	106	4	91.5	3.602	106.0	210	10
	VAMLG-125B.6	VAMLG-125S.6	125	146	5	126.0	4.961	146.5	450	6

VAML Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For high fire and passenger safety requirements in interior applications such as passenger areas or public buildings
 HL3 acc. to EN 45545-2
 NFPA 130 compliant
 Good flexibility. Good impact strength

Materials	Temperature range	Colour
Specially formulated polyamide 6	-40°C to +105°C	Black/Grey
Certification	Fire performance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +160°C Minimal development of smoke and gases	-

Type VCS - Flexible, heavy-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
VCS	VCST-07B.100	VCST-07S.100	07	10	1/4	6.0	0.236	10.0	20	100
	VCST-10B.50	VCST-10S.50	10	12	5/16	9.2	0.362	13.0	25	50
	VCST-12B.50	VCST-12S.50	12	16	3/8	11.8	0.465	15.8	30	50
	VCST-17B.50	VCST-17S.50	17	20	1/2	16.0	0.630	21.2	40	50
	VCSG-17B.50	VCSG-17S.50	17	20	1/2	15.2	0.598	21.2	40	50
	VCSG-23B.50	VCSG-23S.50	23	25	3/4	22.0	0.866	28.5	50	50
	VCSG-29B.50	VCSG-29S.50	29	32	1	27.7	1.091	34.4	60	50
	VCSG-36B.30	VCSG-36S.30	36	40	1-1/4	35.8	1.409	42.4	70	30
	VCSG-48B.30	VCSG-48S.30	48	50	1-1/2	46.8	1.843	54.4	80	30
	VCSG-56B.30	VCSG-56S.30	56	68	2	56.1	2.209	67.2	150	30
	VCSG-70B.10	VCSG-70S.10	70	80	2-1/2	66.5	2.618	80.0	200	10
	VCSG-95B.10	VCSG-95S.10	95	106	4	91.0	3.583	106.0	300	10

VCS Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For static external installations
 High compression and impact strengths at low temperatures and low humidity
 Good ductility. Very good resistance to ultra violet rays and weathering


Materials	Temperature range	Colour
Specially formulated polyamide 6	-50°C to +105°C	Black/Grey
Certification	Fatigue resistance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +160°C -	Very good



PMAFLEX

Type VOH & PLR conduit

Type VOH - Pliable, very heavy-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø (mm)	Inside Ø (inch)	Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch					
	VOHD-07B.50	VOHD-07S.50	07	10	1/4	5.8	0.228	10.0	30	50
	VOHD-10B.50	VOHD-10S.50	10	12	5/16	9.0	0.354	13.0	35	50
	VOHD-12B.50	VOHD-12S.50	12	16	3/8	11.6	0.457	15.8	40	50
	VOHG-17B.50	VOHG-17S.50	17	20	1/2	14.5	0.571	21.0	60	50
	VOHG-23B.50	VOHG-23S.50	23	25	3/4	21.1	0.831	28.5	70	50
	VOHG-29B.50	VOHG-29S.50	29	32	1	26.6	1.047	34.5	80	50
	VOHG-36B.30	VOHG-36S.30	36	40	1-1/4	35.0	1.378	42.5	90	30
	VOHG-48B.30	VOHG-48S.30	48	50	1-1/2	46.5	1.831	54.5	100	30
	VOHG-56B.10	VOHG-56S.10	56	68	2	55.5	2.185	67.2	135	10
	VOHG-70B.10	VOHG-70S.10	70	80	2-1/2	67.0	2.638	80.0	200	10
	VOHG-95B.10	VOHG-95S.10	95	106	4	90.5	3.563	106.0	300	10
	VOHG-125B.6	VOHG-125S.6	125	146	5	126.0	4.961	146.5	480	6

For applications in heavy machine and plant construction
 High compression resistance
 Highest degree of mechanical protection
 Very good UV and weathering resistance
 Good fire safety characteristics

VOH Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials

Specially modified polyamide 6

Certification

Free from halogens, REACH compliant
 and RoHS compliant

Temperature range

-40°C to +105°C

Short-term to: +160°C

Fire performance

Good


Colour

Black/Grey

UV Resistance

Very good

Type PLR - flexible, medium-wall

	Order no. (black)	Order no. (grey)	Conduit size				Profile	Inside Ø (mm)	Inside Ø (inch)	Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch							
	PLRT-07B.50	PLRT-07S.50	07	10	1/4	T	6.2	0.244	10.0	15	50	
	PLRT-10B.50	PLRT-10S.50	10	12	5/16	T	9.6	0.378	13.0	20	50	
	PLRT-12B.50	PLRT-12S.50	12	16	3/8	T	12.0	0.472	15.8	30	50	
	PLRG-17B.50	PLRG-17S.50	17	20	1/2	G	15.8	0.622	21.2	40	50	
	PLRG-23B.50	PLRG-23S.50	23	25	3/4	G	21.9	0.862	28.5	45	50	
	PLRG-29B.50	PLRG-29S.50	29	32	1	G	27.6	1.087	34.5	55	50	
	PLRG-36B.30	PLRG-36S.30	36	40	1-1/4	G	36.0	1.417	42.5	60	30	
	PLRG-48B.30	PLRG-48S.30	48	50	1-1/2	G	47.0	1.850	54.5	70	30	

In light rail rolling stock applications e.g. Tram, Metro, Monorail
 HL2 acc. to EN 45545-2
 Good pressure resistance
 Very good fire safety characteristics

PLR Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials

Specially modified polyamide 6

Certification

Free from halogens, REACH compliant
 and RoHS compliant

Temperature range

-40°C to +105°C

Short-term to: +160°C

Fire performance

Self-extinguishing / Very good

Colour

Black/Grey


UV Resistance

-

PMAFLEX Multilayer

Type XPCL & XSOL conduit

Type XPCL - Highly flexible, medium-duty

	Order no. (black/blue)	Order no. (grey/blue)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	(mm)	(inch)			
	XPCLT-10BB.50	XPCLT-10SB.50	10	12	5/16	9.6	0.378	13.0	20	50
	XPCLT-12BB.50	XPCLT-12SB.50	12	16	3/8	11.8	0.465	15.6	30	50
	XPCLT-17BB.50	XPCLT-17SB.50	17	20	1/2	16.6	0.654	21.0	40	50
	XPCLG-17BB.50	XPCLG-17SB.50	17	20	1/2	15.6	0.614	20.9	40	50
	XPCLG-23BB.50	XPCLG-23SB.50	23	25	3/4	21.9	0.862	28.5	45	50
	XPCLG-29BB.50	XPCLG-29SB.50	29	32	1	27.6	1.087	34.5	55	50
	XPCLG-36BB.30	XPCLG-36SB.30	36	40	1-1/4	36.0	1.417	42.5	60	30
	XPCLG-48BB.30	XPCLG-48SB.30	48	50	1-1/2	47.0	1.850	54.5	70	30

For machine building and equipment with high requirements
 Allows easy cable insertion due to low friction inner layer
 Very good ductility and good reversed bending characteristics
 Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

XPCL Index


min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials
Outer layer: Specially formulated polyamide 6
Intermediate layer: Specially bonding compound
Inner layer: Specially modified polyethylene
Certification
Free from halogens, REACH compliant and RoHS compliant

Temperature range
-50°C to +105°C
Short-term to: +160°C
Fire performance
Self-extinguishing

Colour
Black/Blue
Grey/Blue
UV Resistance
-

Type XSOL - Highly flexible, medium-duty

	Order no. (black/green)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)	
		NW	Metric	Inch	(mm)	(inch)				
	XSOLT-10BG.50		10	12	5/16	9.6	0.378	13.0	25	50
	XSOLT-12BG.50		12	16	3/8	11.8	0.465	15.6	30	50
	XSOLG-17BG.50		17	20	1/2	15.2	0.598	21.0	40	50
	XSOLG-23BG.50		23	25	3/4	22.0	0.866	28.5	50	50
	XSOLG-29BG.50		29	32	1	27.5	1.083	34.4	60	50
	XSOLG-36BG.30		36	40	1-1/4	35.8	1.409	42.4	70	30
	XSOLG-48BG.30		48	50	1-1/2	46.8	1.843	54.4	80	30

All-purpose, especially in long-term external applications, e.g. energy technology
 Very good resistance to UV and weathering
 Very high ductility and reversed bending resistance
 Very good mechanical strength
 High impact resistance even under extreme conditions, such as low temperatures and low humidity

Approvals



XSOL Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials
Outer layer: Specially formulated polyamide 12
Intermediate layer: Specially bonding compound
Inner layer: Specially modified polyamide 6
Certification
Free from halogens, REACH compliant and RoHS compliant

Temperature range
-50°C to +95°C
Short-term to: +150°C
Fire performance
Good fire safety characteristics Self-extinguishing

Colour
Black/Green
UV Resistance
Very good

PMAFLEX Multilayer

Type XVCS1H & XVCS2H conduit

Type XVCS1H - Flexible, heavy-duty



	Order no. (black/green)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
XVCS1H	XVCS1H-10BG.50	10	12	5/16	9.2	0.362	13.0	25	50
	XVCS1H-12BG.50	12	16	3/8	11.7	0.461	15.5	30	50
	XVCS1H-17BG.50	17	20	1/2	15.2	0.598	21.0	40	50
	XVCS1H-23BG.50	23	25	3/4	21.7	0.854	28.4	50	50
	XVCS1H-29BG.50	29	32	1	27.5	1.083	34.3	60	50
	XVCS1H-36BG.30	36	40	1-1/4	35.8	1.409	42.2	70	30
	XVCS1H-48BG.30	48	50	1-1/2	46.8	1.843	54.3	80	30

For track side applications and other exterior static applications
 Easy layouting through: High conduit ductility and formability / Low friction inner layer facilitates cable insertion
 Excellent impact characteristics at low temperatures

XVCS1H Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials
Outer layer: Specially formulated polyamide 6
Intermediate layer: Specially bonding compound
Inner layer: Specially modified polyolefin
Certification
Free from halogens, REACH compliant and RoHS compliant

Temperature range	Colour
-50°C to +90°C	Black/Green
Short-term to: +120°C	
Atmospheric corrosion resistance	UV Resistance
Very good	Very good

Type XVCS2H - Flexible, heavy-duty



	Order no. (black/green)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
XVCS2H	XVCS2H-10BG.50	10	12	5/16	9.2	0.362	13.0	20	50
	XVCS2H-12BG.50	12	16	3/8	11.7	0.461	15.5	25	50
	XVCS2H-17BG.50	17	20	1/2	15.2	0.598	21.0	35	50
	XVCS2H-23BG.50	23	25	3/4	22.0	0.866	28.4	40	50
	XVCS2H-29BG.50	29	32	1	27.7	1.091	34.3	50	50
	XVCS2H-36BG.30	36	40	1-1/4	35.8	1.409	42.2	60	30
	XVCS2H-48BG.30	48	50	1-1/2	46.8	1.843	54.3	70	30

For track side applications and other exterior static applications with high UV exposure
 Easy layouting through: High conduit ductility and formability / Low friction inner layer facilitates cable insertion
 Excellent impact characteristics at low temperatures

XVCS2H Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	


Materials
Outer layer: Specially formulated polyamide 12
Intermediate layer: Specially bonding compound
Inner layer: Specially modified polyolefin
Certification
Free from halogens, REACH compliant and RoHS compliant

Temperature range	Colour
-50°C to +90°C	Black/Green
Short-term to: +120°C	
Atmospheric corrosion resistance	UV Resistance
Excellent	Excellent

PMAFLEX Multilayer

Type XVCSF & XPCS conduit

Type XVCSF - Flexible, heavy-duty

	Order no. (black/blue)	Profile (T/G)	Conduit size			rec. fitting thread size		Inside Ø		Outside Ø (mm)	Stat. radius (mm)	Weight (kg/100m)	PU (m)
			NW	Metric	Inch	PG	Metric	(mm)	(inch)				
	XVCSFT-10BB.50	T	10	12	5/16	9	M12x1.5	9.6	0.378	12.8	20	3.1	50
	XVCSFT-12BB.50	T	12	16	3/8	11	M16x1.5	11.9	0.469	15.6	25	4.2	50
	XVCSFG-17BB.50	G	17	20	1/2	16	M20x1.5	15.6	0.614	21.0	35	7.5	50
	XVCSFG-23BB.50	G	23	25	3/4	21	M25x1.5	21.6	0.850	28.4	45	12.0	50
	XVCSFG-29BB.50	G	29	32	1	29	M32x1.5	27.5	1.083	34.5	55	15.0	50
	XVCSFG-36BB.30	G	36	40	1-1/4	36	M40x1.5	35.7	1.406	42.4	65	19.0	30
	XVCSFG-48BB.30	G	48	50	1-1/2	48	M50x1.5	46.8	1.843	54.2	85	25.0	30

Multilayer conduit for external rail applications
 Rail static external applications such as under carriage, bogie, etc.
 High compression and impact strengths at low temperature and low humidity
 Good flexibility and very good UV resistance and weathering characteristics
 Compatible with PMAFIX Pro, PMAFIX, PMA Smart Line and accessories
 EN 45545-2 HL2 (R22 & R23)


XVCSF Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials	Certification
Outer layer: Specially formulated polyamide 6 Inner layer: Specially modified polyamide 6	Free from halogens and cadmium RoHS and REACH compliant

Temperature range	Colour	Fire performance	UV Resistance
-50°C to +105°C Short-term to: +160°C	Black/Blue	Self-extinguishing	Very good

Type XPCS - Very flexible, heavy-duty

	Order no. (black/green)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	Dyn. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)				
	XPCST-10BG.50	10	12	5/16	9.2	0.362	13.0	20	50	50
	XPCST-12BG.50	12	16	3/8	11.8	0.465	15.8	25	70	50
	XPCSG-17BG.50	17	20	1/2	15.2	0.598	21.2	35	85	50
	XPCSG-23BG.50	23	25	3/4	21.5	0.846	28.5	40	110	50
	XPCSG-29BG.50	29	32	1	27.7	1.091	34.4	50	130	50
	XPCSG-36BG.30	36	40	1-1/4	35.8	1.409	42.4	60	180	30
	XPCSG-48BG.30	48	50	1-1/2	46.8	1.843	54.4	70	220	30
	XPCSG-56BG.30	56	68	2	56.7	2.232	67.5	110	270	30
	XPCSG-70BG.30	70	80	2-1/2	67.5	2.657	79.0	130	320	30

For dynamic outside applications in railway vehicles
 For outdoor applications with highest requirements to UV and weathering resistance
 Extensive railway approvals
 Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity
 HL2 acc. to EN 45545-2
 NFPA 130 compliant

XPCS Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials	Certification
Outer layer: Specially formulated polyamide 12 Inner layer: Specially formulated polyamide 6	Free from halogens, REACH compliant and RoHS compliant

Temperature range	Colour	Fire performance	UV Resistance
-40°C to +95°C Short-term to: +150°C	Black/Green	Self-extinguishing	Excellent

PMAFLEX Multilayer

Type XPCSF conduit

Type XPCSF - Very flexible, heavy-duty



	Order no. (black/orange)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	Dyn. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)				
XPCSF	XPCSFT-07BO.100	07	10	1/4	0.6	0.236	10.0	15	40	100
	XPCSFT-10BO.50	10	12	5/16	9.2	0.362	13.0	20	50	50
	XPCSFT-12BO.50	12	16	3/8	11.8	0.465	15.8	25	70	50
	XPCSFG-17BO.50	17	20	1/2	15.2	0.598	21.2	35	85	50
	XPCSFG-23BO.50	23	25	3/4	21.5	0.846	28.5	40	110	50
	XPCSFG-29BO.50	29	32	1	27.5	1.083	34.4	50	130	50
	XPCSFG-36BO.30	36	40	1-1/4	35.8	1.409	42.4	60	180	30
	XPCSFG-48BO.30	48	50	1-1/2	46.8	1.843	54.4	70	220	30

For dynamic outside applications in railway vehicles

For outdoor applications with highest requirements to UV and weathering resistance

Extensive railway approvals

Excellent flexibility

Very good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

HL3 acc. to EN 45545-2

XPCSF Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials
Outer layer: Specially formulated polyamide 12
Inner layer: Specially formulated polyamide 12

Certification
Free from halogens, REACH compliant and RoHS compliant


Temperature range	Colour
-40°C to +95°C	Black/Orange
Short-term to: +150°C	

Fire performance	UV Resistance
Self-extinguishing	Excellent

PMA overextruded conduits

Type JFBD & JXPCSF conduit

Type JFBD - Flexible, medium-duty

	Order no.	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	Dyn. radius (mm)	PU (mm)
		NW	Metric	Inch	(mm)	(inch)				
	JFBDT-12C01.50	12	16	3/8	11.8	0.465	16.0	70	100	50
	JFBDG-17C01.50	17	20	1/2	15.6	0.614	21.6	85	125	50
	JFBDG-23C01.50	23	25	3/4	21.7	0.854	28.8	110	160	50
	JFBDG-29C01.50	29	32	1	27.4	1.079	34.7	140	200	50
	JFBDG-36C01.30	32	40	1-1/4	35.8	1.409	42.7	200	260	30
	JFBDG-48C01.30	48	50	1-1/2	46.7	1.839	54.6	230	300	30

Approvals



Smooth easy to clean out layer
 High reversed bending stresses
 Excellent flexibility in combination with high strength
 High resistance to chemicals and cleaning agents
 For indoor food zone – non contact
 Outer layer made from FDA compliant material
 Corrosion free


JFBD Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials
Conduit: made from high-grade, specially formulated polyamide 12
Overextrusion: made from modified polyamide elastomer
Certification
FDA 21 CFR / EU 10/2011 compliant outer layer material; ECOLAB certificate

Colour
Corrugated conduit: blue
Overextrusion: blue, translucent
UV Resistance
-

Type JXPCSF - Highly flexible, heavy-duty

	Order no. (black/orange)	Profile (T/G)	Conduit size			d				Stat. radius (mm)	Dyn. radius (mm)	Weight (kg/100m)	PU (m)
			NW	Metric	Inch	(mm)	(inch)	(mm)	(mm)				
	JXPCSFT-12BO.50	T	12	16	3/8	11.8	0.465	15.8	16	70	100	4.9	50
	JXPCSFG-17BO.50	G	17	20	1/2	15.2	0.598	21.2	21.6	85	125	8.6	50
	JXPCSFG-23BO.50	G	23	25	3/4	21.5	0.846	28.5	28.8	110	160	13.5	50
	JXPCSFG-29BO.50	G	29	32	1	27.7	1.091	34.4	34.8	140	200	16.7	50
	JXPCSFG-36BO.30	G	36	40	1-1/4	35.8	1.409	42.8	42.8	200	260	21.6	30
	JXPCSFG-48BO.30	G	48	50	1-1/2	46.8	1.843	54.4	54.8	230	300	29.4	30

Over-extruded conduit for rail applications designed specifically to prevent the accumulation of ice under extreme climate conditions
 For dynamic or static external applications in railway vehicles - on the roof, between carriages and on bogies
 Excellent flexibility. Smooth outer layer prevents accumulation of ice
 Easy cleaning and high resistance to chemicals and cleaning agents. Compatible with PMAFIX Pro and accessories
 EN 45545-2 HL3 (R22 & R23)

JXPCSF Index

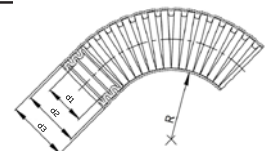
min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials
Multi layer conduit: specially formulated polyamide 12
Overextrusion: specially formulated polyamide 12
Certification
Free from halogens and cadmium RoHS and REACH compliant

Temperature range
-50°C to +95°C Short-term to: +150°C

Fire performance
Self-extinguishing


Colour
Black/Orange
UV Resistance
Excellent



PMA overextruded conduits

Type JLLPA conduit

Type JLLPA - Flexible, heavy-duty

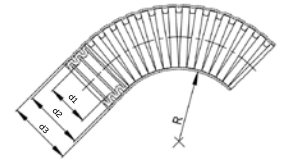
	Order no. (black)	Conduit size			d1			d2	d3	Stat. radius (mm)	Weight (kg/100m)	PU (m)
		NW	Metric	Inch	(mm)	(inch)	(mm)					
	JLLPA-12A.50	12	16	3/8	12.1	0.476	15.6	15.8	40	4.5	50	
	JLLPAG-17A.50	17	20	1/2	15.8	0.622	21.1	21.2	55	7.4	50	
	JLLPAG-23A.50	23	25	3/4	21.9	0.862	28.4	28.5	75	11.4	50	
	JLLPAG-29A.50	29	32	1	27.8	1.094	34.5	34.7	90	15.4	50	
	JLLPAG-36A.30	36	40	1-1/4	36.1	1.421	42.4	42.6	110	18.6	30	
	JLLPAG-48A.30	48	50	1-1/2	46.9	1.846	54.5	54.6	140	27.4	30	

Flexible, smooth over-extruded conduit for applications with cleaning requirements
 For static applications in machine building, installation and construction industries
 For general applications with cleaning requirements
 Smooth outer layer for easy cleaning, good resistance to chemicals and cleaning agents. Corrosion free
 Flexibility in combination with high strength. Compatible with PMAFIX Pro
 UL Recognition according to UL 1696 (file E80294)

JLLPA Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	


Materials	Temperature range	Colour
Conduit: High-grade, specially formulated polyamide 6	-18°C to +105°C	Black
Overextrusion: modified polyamide 6	Short-term to: +160°C	
Certification	Fire performance	UV Resistance
Free from halogens and cadmium	Self-extinguishing	Very good
RoHS and REACH compliant		



PMAFLEX Plus

Type CUS & PUS conduit

Type CUS - Very flexible, medium-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m/ft)
			NW	Metric	Inch	(mm)	(inch)			
	CUSG-17B.31	CUSG-17S.31	17	20	1/2	15.2	0.598	21.2	40	31/100
	CUSG-23B.31	CUSG-23S.31	23	25	3/4	21.9	0.862	28.5	45	31/100
	CUSG-29B.31	CUSG-29S.31	29	32	1	27.6	1.087	34.5	55	31/100
	CUSG-36B.31	CUSG-36S.31	36	40	1-1/4	36.0	1.417	42.5	60	31/100
	CUSG-48B.31	CUSG-48S.31	48	50	1-1/2	47.0	1.850	54.5	70	31/100

For machine building and installation industries
 For electrical installations, especially in the US market
 Inexpensive solution for requirements acc. to UL 1660 (UL Listing)
 Good ductility and reversed bending characteristics

Very good mechanical properties even under extreme conditions, such as low temperatures and low humidity

Approvals




CUS Index

min. max.
Ductility

Fatigue reversed bending	████████████████████
Compression resistance	████████████████████
Low temperature performance	████████████████████
Weathering resistance	████████████████████

Materials	Temperature range	Colour
Specially modified polyamide 6	-40°C to +105°C	Black/Grey
Certification	Short-term to: +160°C	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Fire protection	-
	Self-extinguishing, acc. to UL 94 V2	

Type PUS - Very flexible, heavy-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU (m/ft)
			NW	Metric	Inch	(mm)	(inch)			
	PUSG-17B.31	PUSG-17S.31	17	20	1/2	15.2	0.598	21.2	35/85	31/100
	PUSG-23B.31	PUSG-23S.31	23	25	3/4	22.0	0.866	28.5	40/110	31/100
	PUSG-29B.31	PUSG-29S.31	29	32	1	27.7	1.091	34.4	50/130	31/100
	PUSG-36B.31	PUSG-36S.31	36	40	1-1/4	35.8	1.409	42.4	60/180	31/100
	PUSG-48B.31	PUSG-48S.31	48	50	1-1/2	46.8	1.843	54.4	70/220	31/100

For long-term external applications with approval acc. to UL 1660 (UL Listing)
 For dynamic applications
 Very good reversed bending resistance
 Very good mechanical strength at low temperatures
 Excellent resistance to ultra violet rays and weathering
 cULUS listed

Approvals



PUS Index

min. max.
Ductility


Fatigue reversed bending	████████████████████
Compression resistance	████████████████████
Low temperature performance	████████████████████
Weathering resistance	████████████████████

Materials	Temperature range	Colour
Specially modified polyamide 12	-50°C to +95°C	Black/Grey
Certification	Short-term to: +150°C	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Fire protection	Excellent
	Self-extinguishing, acc. to UL 94 V2	

PMAFLEX Plus

Type VUS conduit

Type VUS - Flexible, heavy-duty

	Order no. (black)	Order no. (grey)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m/ft)
			NW	Metric	Inch	(mm)	(inch)			
	VUSG-17B.31	VUSG-17S.31	17	20	1/2	15.2	0.598	21.2	40	31/100
	VUSG-23B.31	VUSG-23S.31	23	25	3/4	22.0	0.866	28.5	50	31/100
	VUSG-29B.31	VUSG-29S.31	29	32	1	27.7	1.091	34.4	60	31/100
	VUSG-36B.31	VUSG-36S.31	36	40	1-1/4	35.8	1.409	42.4	70	31/100
	VUSG-48B.31	VUSG-48S.31	48	50	1-1/2	46.8	1.843	54.4	80	31/100

For static exterior installations with approval acc. to UL 1660 (UL Listing)
 For applications requiring high compression resistance
 Good ductility
 High mechanical strength even under extreme conditions, such as low temperatures and low humidity
 Very good resistance to ultra violet rays and weathering

Approvals



VUS Index


min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials	Temperature range	Colour
Specially modified polyamide 6	-50°C to +105°C	Black/Grey
Certification	Fire performance	UV Resistance
Free from halogens, REACH compliant and RoHS compliant	Short-term to: +160°C	Very good

PMA Divisible System

Type PACOF & PPCOF conduit

Type PACOF - Flexible, divisible

	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
	PACOF-07B.50	07	10	1/4	5.6	0.220	10.0	30	50
	PACOF-10B.50	10	12	5/16	8.5	0.335	12.8	33	50
	PACOF-12B.50	12	16	3/8	11.0	0.433	15.6	35	50
	PACOF-17B.50	17	20	1/2	15.5	0.610	21.1	45	50
	PACOF-23B.50	23	25	3/4	22.1	0.870	28.4	70	50
	PACOF-29B.50	29	32	1	27.2	1.071	34.5	120	50
	PACOF-36B.30	36	40	1-1/4	32.0	1.260	42.4	145	30
	PACOF-48B.30	48	50	1-1/2	43.9	1.728	54.1	150	30
	PACOF-70B.10	70	80	2-1/2	62.0	2.441	79.0	190	10

HL3 according to EN45545-2

NFPA 130 compliant

For machine building and plant construction

For trouble-free retrofitting and applicable for repairs

Can be opened and closed again in longitudinal direction any time

Good ductility

Good compression resistance

PACOF Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials

Specially modified polyamide 6

Certification

Free from halogens, REACH compliant
and RoHS compliant

Temperature range

-40°C to +105°C

Short-term to: +160°C

Fire performance

-


Colour

Black

UV Resistance

-

Type PPCOF - Flexible, divisible

	Order no. (black)	Conduit size			Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
		NW	Metric	Inch	(mm)	(inch)			
	PPCOF-07B.50	07	10	1/4	5.6	0.220	10.0	25	50
	PPCOF-10B.50	10	12	5/16	8.5	0.335	12.8	28	50
	PPCOF-12B.50	12	16	3/8	11.0	0.433	15.6	35	50
	PPCOF-17B.50	17	20	1/2	15.1	0.594	21.1	45	50
	PPCOF-23B.50	23	25	3/4	22.1	0.870	28.4	60	50
	PPCOF-29B.50	29	32	1	26.6	1.047	34.5	100	50
	PPCOF-36B.30	36	40	1-1/4	31.8	1.252	42.4	120	30
	PPCOF-48B.30	48	50	1-1/2	43.9	1.728	54.1	140	30
	PPCOF-70B.10	70	80	2-1/2	60.5	2.382	78.0	200	10

For machine building and plant construction

For trouble-free retrofitting and applicable for repairs

Can be opened and closed again in longitudinal direction any time

Good reversed bending resistance

PPCOF Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

Materials

Specially modified polypropylene PP

Certification

-

Temperature range

-20°C to +105°C

Short-term to +150°C

Fire performance

-

Colour

Black


UV Resistance

-

PMA Smart Line


Type LLPO & LLPA conduit

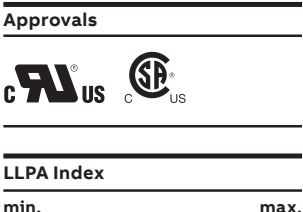
Type LLPO - Very flexible, light-duty

	Order no. (black)	Order no. (grey)	Conduit size				Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	Profile	(mm)	(inch)			
	LLPO-07A.50	LLPO-07S.50	07	10	1/4	T	6.2	0.244	10.0	15	50
	LLPO-10A.50	LLPO-10S.50	10	12	5/16	T	9.6	0.378	13.0	20	50
	LLPO-12A.50	LLPO-12S.50	12	16	3/8	T	12.0	0.472	15.8	30	50
	LLPO-17A.50	LLPO-17S.50	17	20	1/2	T	16.2	0.638	21.2	40	50
	LLPO-23A.50	LLPO-23S.50	23	25	3/4	T	22.6	0.890	28.5	45	50
	LLPO-29A.50	LLPO-29S.50	29	32	1	T	29.0	1.142	34.5	55	50
	LLPO-36A.30	LLPO-36S.30	36	40	1-1/4	T	36.5	1.437	42.5	60	30
	LLPO-48A.30	LLPO-48S.30	48	50	1-1/2	T	47.5	1.870	54.5	70	30

LLPO Index min. max. Ductility Fatigue reversed bending Compression resistance Low temperature performance Weathering resistance	For machine building and installation Excellent reversed bending characteristics Very good resistance against acids and hydrolysis	Materials Specially modified polyolefine	Temperature range -20°C to +90°C Short-term to: +130°C	Colour Black/Grey
		Certification Free from halogens, REACH compliant and RoHS compliant	Fire protection Good flammability	UV Resistance -

Type LLPA - Very flexible, medium-duty

	Order no. (black)	Order no. (grey)	Conduit size				Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	Profile	(mm)	(inch)			
	LLPA-07A.50	LLPA-07S.50	07	10	1/4	T	6.2	0.244	10.0	15	50
	LLPA-10A.50	LLPA-10S.50	10	12	5/16	T	9.6	0.378	13.0	20	50
	LLPA-12A.50	LLPA-12S.50	12	16	3/8	T	12.0	0.472	15.8	30	50
	LLPA-17A.50	LLPA-17S.50	17	20	1/2	T	16.2	0.638	21.2	40	50
	LLPA-23A.50	LLPA-23S.50	23	25	3/4	T	22.6	0.890	28.5	45	50
	LLPA-29A.50	LLPA-29S.50	29	32	1	T	29.0	1.142	34.5	55	50
	LLPA-36A.30	LLPA-36S.30	36	40	1-1/4	T	36.5	1.437	42.5	60	30
	LLPA-48A.30	LLPA-48S.30	48	50	1-1/2	T	47.5	1.870	54.5	70	30

	LLPAG-17A.50	LLPAG-17S.50	17	20	1/2	G	15.8	0.622	21.2	40	50
	LLPAG-23A.50	LLPAG-23S.50	23	25	3/4	G	21.9	0.862	28.5	45	50
	LLPAG-29A.50	LLPAG-29S.50	29	32	1	G	27.6	1.087	34.5	55	50
	LLPAG-36A.30	LLPAG-36S.30	36	40	1-1/4	G	36.0	1.417	42.5	60	30
	LLPAG-48A.30	LLPAG-48S.30	48	50	1-1/2	G	47.0	1.850	54.5	70	30
	LLPAG-56A.30	LLPAG-56S.30	56	68	2	G	56.3	2.217	67.2	120	30
	LLPAG-70A.10	LLPAG-70S.10	70	80	2-1/2	G	68.0	2.677	80.0	160	10
	LLPAG-95A.10	LLPAG-95S.10	95	106	4	G	91.9	3.618	106.0	210	10
LLPAG-125A.06	LLPAG-125S.06	125	146	5	G	126.5	4.980	146.5	450	06	

LLPA Index min. max. Ductility Fatigue reversed bending Compression resistance Low temperature performance Weathering resistance	For machine building, installation and construction industries Good ductility Good mechanical characteristics	Materials Specially modified polyamide 6	Temperature range -40°C to +105°C Short-term to: +160°C	Colour Black/Grey
		Certification Free from halogens, REACH compliant and RoHS compliant	Self extinguishing acc. to UL 94 V2	UV Resistance -

Approvals



PMA Smart Line

Type LLPF

Type LLPF - Very flexible, medium-duty



	Order no. (black)	Order no. (grey)	Conduit size				Inside Ø		Outside Ø (mm)	Stat. radius (mm)	PU (m)
			NW	Metric	Inch	Profile	(mm)	(inch)			
LLPF	LLPF-07A.50	LLPF-07S.50	7	10	1/4	T	6.2	0.244	10.0	15	50
	LLPF-10A.50	LLPF-10S.50	10	12	5/16	T	9.6	0.378	13.0	20	50
	LLPF-12A.50	LLPF-12S.50	12	16	3/8	T	12.0	0.472	15.8	30	50
	LLPF-17A.50	LLPF-17S.50	17	20	1/2	T	16.2	0.638	21.2	40	50
	LLPF-23A.50	LLPF-23S.50	23	25	3/4	T	22.6	0.890	28.5	45	50
	LLPF-29A.50	LLPF-29S.50	29	32	1	T	29.0	1.142	34.5	55	50
	LLPFG-17A.50	LLPFG-17S.50	17	20	1/2	G	15.8	0.622	21.2	40	50
	LLPFG-23A.50	LLPFG-23S.50	23	25	3/4	G	21.9	0.862	28.5	45	50
	LLPFG-29A.50	LLPFG-29S.50	29	32	1	G	27.6	1.087	34.5	55	50
	LLPFG-36A.30	LLPFG-36S.30	36	40	1-1/4	G	36.0	1.417	42.5	60	30
	LLPFG-48A.30	LLPFG-48S.30	48	50	1-1/2	G	47.0	1.850	54.5	70	30

LLPF Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For machine building, installation and construction industries
 For applications with high fire safety requirements
 UL 94 V0
 Good pressure resistance
 Very good fire safety characteristics

Materials
Specially modified polyamide 6
Certification
Free from halogens, REACH compliant and RoHS compliant

Temperature range	Colour
-40°C to +105°C	Black/Grey
Short-term to: +160°C	UV Resistance
Fire protection	-
Self-extinguishing	

PMA overbraided conduits

PMA stainless steel overbraiding for conduits

PMA stainless steel overbraiding for conduits

Order no. (black)	Conduit size		For conduit profile	Fits to metal connector	Braid spec (mm)	d1 Ø (mm)	d2 Ø (mm)	Weight net without conduit (kg/100 m)	PU (m)
	NW	Metric							
xxxT-12x/S.50	12	16	T	MONK-M162	24 x 8 x 0.30	*	17.5	11.9	50
xxxT-17x/S.50	17	20	T	MONK-M207	32 x 7 x 0.30	*	23.0	13.8	50
xxxG-17x/S.50	17	20	G	MONK-M207	32 x 7 x 0.30	*	23.0	13.8	50
xxxG-23x/S.50	23	25	G	MONK-M253	36 x 8 x 0.30	*	31.0	17.8	50
xxxG-29x/S.50	29	32	G	MONK-M329	36 x 10 x 0.30	*	36.0	22.2	50
xxxG-36x/S.30	36	40	G	MONK-M406	36 x 12 x 0.30	*	44.5	26.7	30
xxxG-48x/S.30	48	50	G	MONK-M508	36 x 14 x 0.30	*	58.5	30.7	30



Our customer service or your local distribution partner will be pleased to help you concerning product availability and lead time

Application: in machine and railway construction; for high mechanical loads; in areas with hot swarf and flying sparks

Characteristics: increased mechanical conduit protection; extremely high abrasion resistance

Coverage: > 90%

Suitable for PMAFLEX, PMA Smart Line; Special metal fittings (MONK)

Materials	Temperature range	Colour
Braid made with stainless steel AISI	-70°C to +1000°C	Metal
Certification	Fire performance	UV Resistance
RoHS compliant	-	-



PMAFIX Pro

Introduction

Next generation cable protection. The extremely successful and technically proven PMAFIX System has been developed further to create the PMAFIX Pro product range.

The new generation fittings are the product of experience gained over many years in the most varied application areas. The PMAFIX Pro has two components, an outer body and an inner sealing element. The sealing element functions both as a seal and as a locking mechanism providing all ingress protection grades up to IP68 and IP69 even in applications where there is long term continuous movement. PMAFIX Pro is manufactured by using multiple component injection moulding process.

Key features

- Meets all ingress protection categories up to and including IP68 and IP69 also when the conduit connection is continually in motion
- Manufactured with newest 2-component injection moulding technology
- Fulfills highest international quality and standard requirements
- Intelligent safety locking mechanism
- Allows simple “push-in” installation of conduits
- Due to the integrated conduit supports conduit remains centralised with little deformation even when bent sharply directly at the fitting





PMAFIX Pro

General technical details

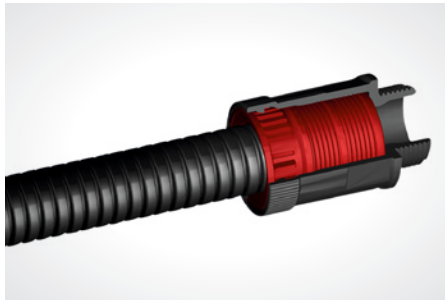
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01 patent
—
02 Up to 100 bar

Material

- Fittings made from specially modified polyamide 6
- Threads made from nickel-plated brass or polyamide 6
- Sealings made from cross linked polyester elastomer
- Self-extinguishing
- Free from halogens, REACH + RoHS compliant
- Temperature range: -50°C to +105°C, short-term to +160°C

Characteristics

- Highest assembly reliability – the fitting only locks when the sealing element is fully inserted
- Highest operational safety assured through visual and acoustic correct assembly controls
- Excellent resistance to ultra violet rays and weathering
- Highest impact resistance through fully closed design
- Highest conduit pull out strength
- Vibration-proof connection to PMA conduits
- Fits conduit profiles – fine (T) and coarse (G)
- To avoid accidental opening, disassembling only possible with a screwdriver



—
01



—
02

—
IP68 + IP69

Static + dynamic

- Highest sealing through fully closed system also in highest dynamic applications
- Extra long ribbed sealing areas (cross linked material)
- 360° locking and sealing element shields against high pressure water jets (up to 100 bar)
- Content of delivery: Locking and sealing element and thread seal for male threads (O-Ring and/or flat gasket)

electrosuisse»

BOMBARDIER
Transportation



EN ALSTOM



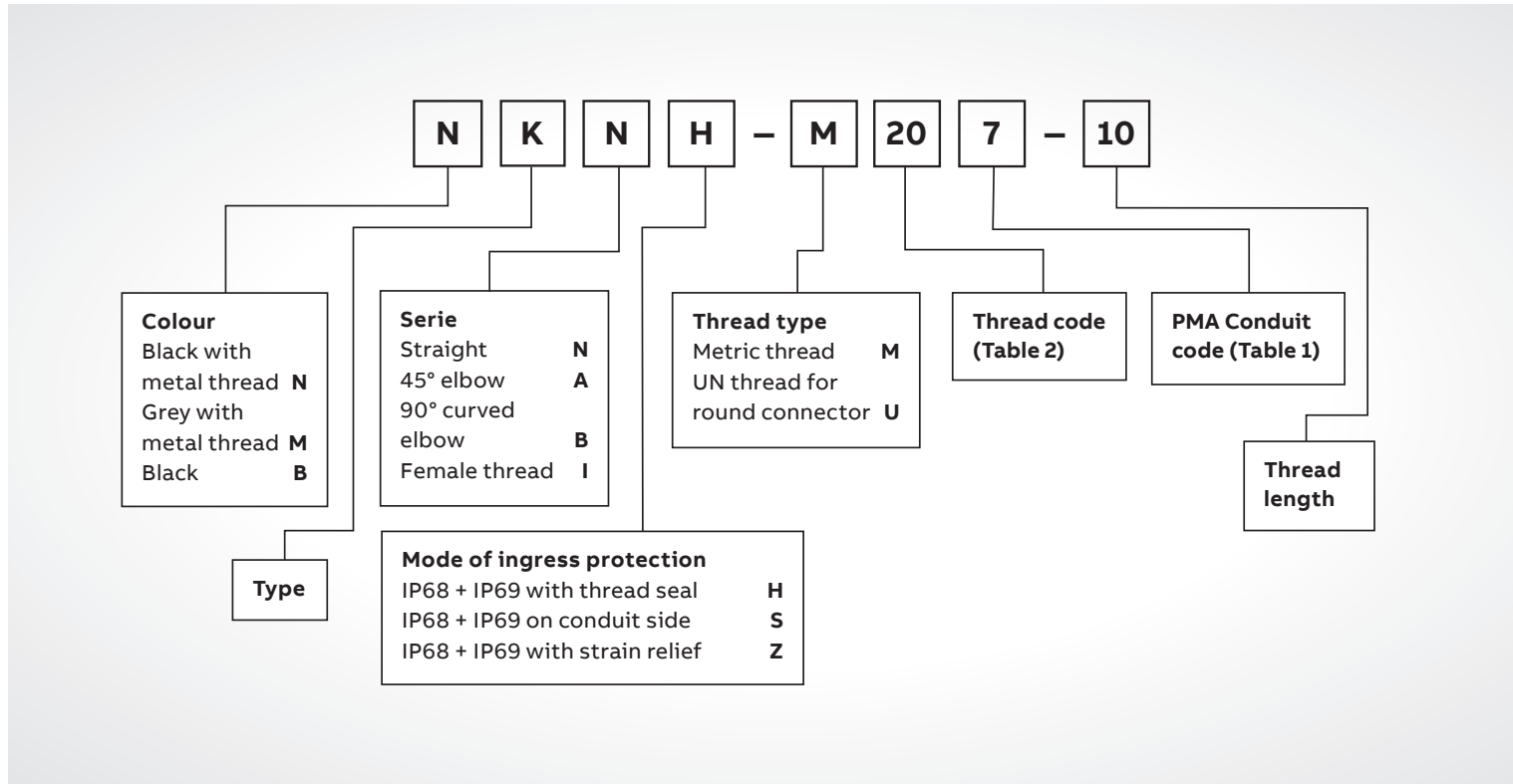
SIEMENS



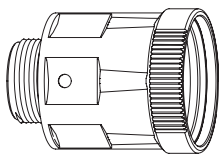
PMAFIX Pro

Part number codes

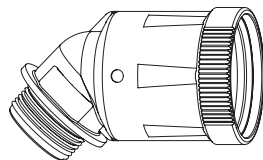
For part number explanation only, not to be used as a configuration tool.
 Part Numbers printed in **RED** are priority stock items in the US Distribution Center.



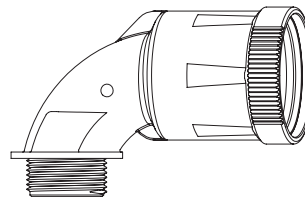
Connector series IP68 + IP69



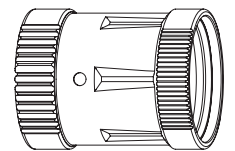
01



02



03



04

- 01 Straight (N)
- 02 45° elbow (A)
- 03 90° curved elbow (B)
- 04 Female thread (I)

PMAFIX Pro

Size codes, installation

Table 1: Conduit codes

Nominal width	Metric size	PMA code
10	12	0
12	16	2
17	20	7
23	25	3
29	32	9
36	40	6
48	50	8

Table 2: Thread codes

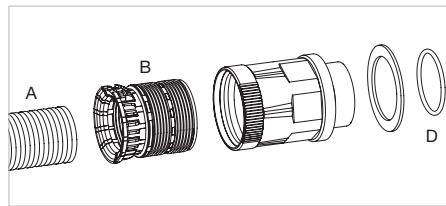
Thread Metric	PMA code
M12x1.5	M12
M16x1.5	M16
M20x1.5	M20
M25x1.5	M25
M32x1.5	M32
M40x1.5	M40
M50x1.5	M50
M63x1.5	M63

Thread UN	PMA code
7/8-20 UNEF	U21
1-20 UNEF	U24
1 3/16-18 UNEF	U29
1 7/16-18 UNEF	U35
1 3/4-18 UNS	U43
2-18 UNS	U50
2 3/4-16 UN	U56

Additional code for female thread connectors

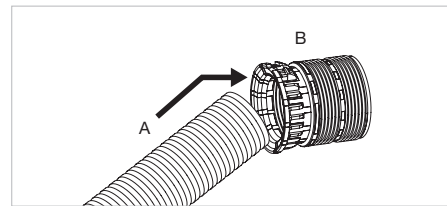
Type	PMA code
With O-ring groove (MIL C 5015)	G

Installation IP68 + IP69



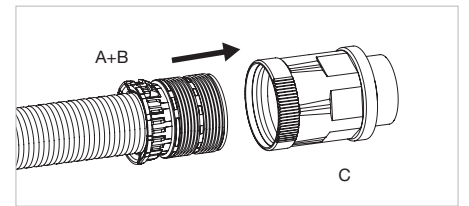
01

A = Corrugated conduit
 B = Sealing and locking element
 C = Fitting body
 D = Thread seal (O-ring or flat gasket*)



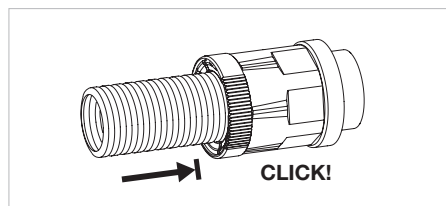
02

Place corrugated conduit (A) at a slight angle against the sealing element (B), then push right into the end.



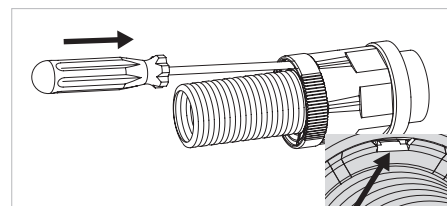
03

Push the conduit and sealing element (A+B) together into the outer body of the fitting (C). Water or a lubricating agent can help facilitate the push-in process.



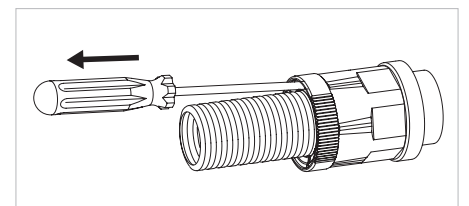
04

The locking mechanism engages when the sealing element is pushed in fully.



05

To disengage the locking mechanism introduce a size 1 screwdriver parallel to the conduit into the opening shown in the detail drawing.

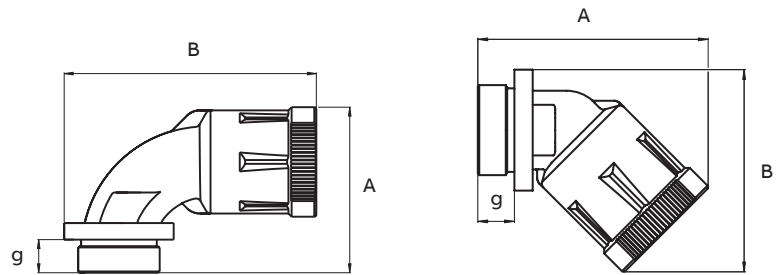


06

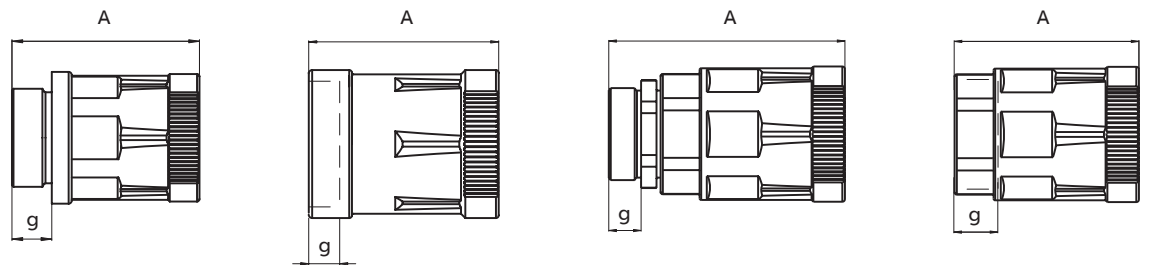
Pull the conduit and screwdriver out of the fitting together keeping the screwdriver parallel to the conduit.

PMAFIX Pro

Connectors metric, metal thread



g = Thread length
A x B = External dimensions



g = Thread length
A = Overall length

Type KNH - Connector straight, metric metal thread

	Order no. black IP68 + IP69	Order no. grey IP68 + IP69	Thread metric	Fits to conduit size		Thread length (mm)	Overall length (mm)
				NW	Metric		
	NKNH-M120-10	MKNH-M120-10	M12 x 1.5	10	12	10.0	45.0
	NKNH-M160-10	MKNH-M160-10	M16 x 1.5	10	12	10.0	45.0
	NKNH-M162-10	MKNH-M162-10	M16 x 1.5	12	16	10.0	50.5
	NKNH-M202-10	MKNH-M202-10	M20 x 1.5	12	16	10.0	50.5
	NKNH-M207-10	MKNH-M207-10	M20 x 1.5	17	20	10.0	56.0
	NKNH-M257-11	MKNH-M257-11	M25 x 1.5	17	20	11.0	57.0
	NKNH-M253-11	MKNH-M253-11	M25 x 1.5	23	25	11.0	59.5
	NKNH-M323-13	MKNH-M323-13	M32 x 1.5	23	25	13.0	61.5
	NKNH-M329-13	MKNH-M329-13	M32 x 1.5	29	32	13.0	67.0
	NKNH-M409-13	MKNH-M409-13	M40 x 1.5	29	32	13.0	68.5
	NKNH-M406-13	MKNH-M406-13	M40 x 1.5	36	40	13.0	74.0
	NKNH-M506-14	MKNH-M506-14	M50 x 1.5	36	40	14.0	75.0
	NKNH-M508-14	MKNH-M508-14	M50 x 1.5	48	50	14.0	81.0
	NKNH-M638-14	MKNH-M638-14	M63 x 1.5	48	50	14.0	81.0

Approvals




For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Connectors metric, metal thread

Type KNZ

Type KNZ - Connector straight with strain relief, metric metal thread



	Order no. IP68 + IP69 Compl., black	Order no. fitting*	Order no. insert	Thread metric	Fits to conduit size		Terminal range (mm)	Thread length (mm)	Overall length (mm)
					NW	Metric			
 KNZ, patent	NKNZ-M120/P1	NKNZ-M120R/P	EK 150p7	M12 x 1.5	10	12	4.0–6.5	5.0	53.5
	NKNZ-M120/P2		EK 150p8	M12 x 1.5	10	12	5.0–8.0	5.0	53.5
	NKNZ-M120/P3		EK 150p9	M12 x 1.5	10	12	6.5–9.5	5.0	53.5
	NKNZ-M160/P1	NKNZ-M160R/P	E 150p7	M16 x 1.5	10	12	4.0–6.5	6.0	54.5
	NKNZ-M160/P2		E 150p8	M16 x 1.5	10	12	5.0–8.0	6.0	54.5
	NKNZ-M160/P3		E 150p9	M16 x 1.5	10	12	6.5–9.5	6.0	54.5
	NKNZ-M202/P1	NKNZ-M202R/P	E 152p7	M20 x 1.5	12	16	4.0–6.5	6.5	60.5
	NKNZ-M202/P3		E 152p9	M20 x 1.5	12	16	6.5–9.5	6.5	60.5
	NKNZ-M202/P4		E 152p11	M20 x 1.5	12	16	7.0–10.5	6.5	60.5
	NKNZ-M207/P3	NKNZ-M207R/P	E 152p9	M20 x 1.5	17	20	6.5–9.5	6.5	66.5
	NKNZ-M207/P4		E 152p11	M20 x 1.5	17	20	7.0–10.5	6.5	66.5
	NKNZ-M207/P5		E 152p13	M20 x 1.5	17	20	9.0–13.0	6.5	66.5
	NKNZ-M257/P4	NKNZ-M257R/P	E 153p11	M25 x 1.5	17	20	7.0–10.5	7.5	67.5
	NKNZ-M257/P5		E 153p13	M25 x 1.5	17	20	9.0–13.0	7.5	67.5
	NKNZ-M257/P6		E 153p16	M25 x 1.5	17	20	11.5–15.5	7.5	67.5
	NKNZ-M253/P5	NKNZ-M253R/P	EK 154p13	M25 x 1.5	23	25	9.0–13.0	7.5	75.0
	NKNZ-M253/P6	NKNZ-M253R1/P	EK 154p16	M25 x 1.5	23	25	11.5–15.5	7.5	75.0
	NKNZ-M323/P2	NKNZ-M323R/P	E 154p13	M32 x 1.5	23	25	9.0–13.0	8.0	76.0
	NKNZ-M323/P4		E 154p18	M32 x 1.5	23	25	14.0–18.0	8.0	76.0
	NKNZ-M323/P5	NKNZ-M323R1/P	E 154p20	M32 x 1.5	23	25	17.0–20.5	8.0	76.0
	NKNZ-M329/P2	NKNZ-M329R/P	EK 155p18	M32 x 1.5	29	32	14.0–18.0	8.0	83.0
	NKNZ-M329/P3		EK 155p20	M32 x 1.5	29	32	17.0–20.5	8.0	83.0
	NKNZ-M329/P4		EK 155p25	M32 x 1.5	29	32	20.0–25.0	8.0	83.0
	NKNZ-M409/P1	NKNZ-M409R/P	E 155p16	M40 x 1.5	29	32	11.5–15.5	8.0	83.0
	NKNZ-M409/P2		E 155p18	M40 x 1.5	29	32	14.0–18.0	8.0	83.0
	NKNZ-M409/P3		E 155p20	M40 x 1.5	29	32	17.0–20.5	8.0	83.0
	NKNZ-M409/P4		E 155p25	M40 x 1.5	29	32	20.0–25.0	8.0	83.0
	NKNZ-M409/P5		E 155p28	M40 x 1.5	29	32	24.0–28.0	8.0	83.0
	NKNZ-M406/P1	NKNZ-M406R/P	E 156p25HF	M40 x 1.5	36	40	20.0–25.0	9.0	87.5
	NKNZ-M406/P2		EK 156p28	M40 x 1.5	36	40	24.0–28.0	9.0	87.5
	NKNZ-M506/P1	NKNZ-M506R/P	E 156p32	M50 x 1.5	36	40	27.0–32.0	10.0	90.0
	NKNZ-M506/P3		E 156p36	M50 x 1.5	36	40	32.0–36.0	10.0	90.0
	NKNZ-M508/P2	NKNZ-M508R/P	E 157p36HF	M50 x 1.5	48	50	32.0–36.0	10.0	100.0
NKNZ-M508/P3		E 157p40HF	M50 x 1.5	48	50	36.0–40.0	10.0	100.0	
NKNZ-M638/P1	NKNZ-M638R/P	E 158pm1x35	M63 x 1.5	48	50	32.0–35.0	10.0	100.0	
NKNZ-M638/P2		E 158p44	M63 x 1.5	48	50	39.0–44.0	10.0	100.0	

* without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C

Note: For several conductors multiple sealing inserts MDE are available. R/P version of fitting has to be used in combination with multiple sealing inserts

Approvals




Connectors metric, metal thread

Type KNZ

Type KNZ - Connector straight with strain relief, metric long metal thread



	Order no. IP68 + IP69 Compl., black	Order no. fitting*	Order no. insert	Thread metric	Fits to conduit size		Terminal range (mm)	Thread length (mm)	Overall length (mm)
					NW	Metric			
	NKNZ-M160/P1-L	NKNZ-M160R/P-L	E 150p7	M16 x 1.5	10	16	4.0–6.5	15.0	63.5
	NKNZ-M160/P2-L		E 150p8	M16 x 1.5	10	16	5.0–8.0	15.0	63.5
	NKNZ-M160/P3-L		E 150p9	M16 x 1.5	10	16	6.5–9.5	15.0	63.5
	NKNZ-M202/P1-L	NKNZ-M202R/P-L	E 152p7	M20 x 1.5	12	20	4.0–6.5	15.0	69.0
	NKNZ-M202/P3-L		E 152p9	M20 x 1.5	12	20	6.5–9.5	15.0	69.0
	NKNZ-M202/P4-L		E 152p11	M20 x 1.5	12	20	7.0–10.5	15.0	69.0
	NKNZ-M207/P3-L	NKNZ-M207R/P-L	E 152p9	M20 x 1.5	17	20	6.5–9.5	15.0	75.0
	NKNZ-M207/P4-L		E 152p11	M20 x 1.5	17	20	7.0–10.5	15.0	75.0
	NKNZ-M207/P5-L		E 152p13	M20 x 1.5	17	20	9.0–13.0	15.0	75.0
	NKNZ-M257/P5-L	NKNZ-M257R/P-L	E 153p13	M25 x 1.5	17	25	9.0–13.0	15.0	75.0
	NKNZ-M257/P6-L		E 153p16	M25 x 1.5	17	25	11.5–15.5	15.0	75.0
	NKNZ-M323/P2-L	NKNZ-M323R/P-L	E 154p13	M32 x 1.5	23	32	9.0–13.0	15.0	83.0
	NKNZ-M323/P4-L		E 154p18	M32 x 1.5	23	32	14.0–18.0	15.0	83.0
	NKNZ-M323/P5-L	NKNZ-M323R1/P-L	E 154p20	M32 x 1.5	23	32	17.0–20.5	15.0	83.0
	NKNZ-M329/P2-L	NKNZ-M329R/P-L	EK 155p18	M32 x 1.5	29	32	14.0–18.0	15.0	90.0
	NKNZ-M329/P3-L		EK 155p20	M32 x 1.5	29	40	17.0–20.5	15.0	90.0
	NKNZ-M409/P3-L	NKNZ-M409R/P-L	E 155p20	M40 x 1.5	29	40	17.0–20.5	15.0	90.0
	NKNZ-M409/P4-L		E 155p25	M40 x 1.5	29	40	20.0–25.0	15.0	90.0
	NKNZ-M409/P5-L		E 155p28	M40 x 1.5	29	50	24.0–28.0	15.0	90.0
	NKNZ-M506/P1-L	NKNZ-M506R/P-L	E 156p32	M50 x 1.5	36	50	27.0–32.0	15.0	95.0
	NKNZ-M506/P3-L		E 156p36	M50 x 1.5	36	50	32.0–36.0	15.0	95.0
	NKNZ-M508/P2-L	NKNZ-M508R/P-L	E 157p36HF	M50 x 1.5	48	50	32.0–36.0	15.0	105.0
	NKNZ-M508/P3-L		E 157p40HF	M50 x 1.5	48	50	36.0–40.0	15.0	105.0
	NKNZ-M638/P1-L	NKNZ-M638R/P-L	E 158pm1x35	M63 x 1.5	48	63	32.0–35.0	15.0	105.0
	NKNZ-M638/P2-L		E 158p44	M63 x 1.5	48	63	39.0–44.0	15.0	105.0

* without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C

Note: For several conductors multiple sealing inserts MDE are available. R/P version of fitting has to be used in combination with multiple sealing inserts


Approvals



Connectors metric, metal thread

Type KAH & KBH

Type KAH - Connector 45° elbow, metric metal thread


	Order no. black IP68 + IP69	Order no. grey IP68 + IP69	Thread metric	Fits to conduit size		Thread length (mm)	External dimensions (mm)
				NW	Metric		
KAH, patent 	NKAH-M120-10	MKAH-M120-10	M12 x 1.5	10	12	10.0	55.5 x 43.0
	NKAH-M160-10	MKAH-M160-10	M16 x 1.5	10	12	10.0	55.5 x 45.0
	NKAH-M162-10	MKAH-M162-10	M16 x 1.5	12	16	10.0	62.5 x 50.0
	NKAH-M202-10	MKAH-M202-10	M20 x 1.5	12	16	10.0	62.5 x 52.0
	NKAH-M207-10	MKAH-M207-10	M20 x 1.5	17	20	10.0	71.0 x 59.5
	NKAH-M257-11	MKAH-M257-11	M25 x 1.5	17	20	11.0	72.0 x 62.5
	NKAH-M253-11	MKAH-M253-11	M25 x 1.5	23	25	11.0	80.0 x 68.0
	NKAH-M323-13	MKAH-M323-13	M32 x 1.5	23	25	13.0	82.0 x 72.0
	NKAH-M329-13	MKAH-M329-13	M32 x 1.5	29	32	13.0	93.0 x 79.5
	NKAH-M409-13	MKAH-M409-13	M40 x 1.5	29	32	13.0	94.5 x 85.5
	NKAH-M406-13	MKAH-M406-13	M40 x 1.5	36	40	13.0	105.5 x 93.5
	NKAH-M506-14	MKAH-M506-14	M50 x 1.5	36	40	14.0	106.5 x 98.5
	NKAH-M508-14	MKAH-M508-14	M50 x 1.5	48	50	14.0	120.0 x 111.0
	NKAH-M638-14	MKAH-M638-14	M63 x 1.5	48	50	14.0	120.0 x 114.0

Approvals



For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Type KBH - Connector 90° curved elbow, metric metal thread

	Order no. black IP68 + IP69	Order no. grey IP68 + IP69	Thread metric	Fits to conduit size		Thread length (mm)	External dimensions (mm)
				NW	Metric		
KBH, patent 	NKBH-M120-10	MKBH-M120-10	M12 x 1.5	10	12	10.0	44.0 x 62.5
	NKBH-M160-10	MKBH-M160-10	M16 x 1.5	10	12	10.0	44.0 x 64.5
	NKBH-M162-10	MKBH-M162-10	M16 x 1.5	12	16	10.0	47.5 x 72.0
	NKBH-M202-10	MKBH-M202-10	M20 x 1.5	12	16	10.0	47.5 x 74.0
	NKBH-M207-10	MKBH-M207-10	M20 x 1.5	17	20	10.0	53.0 x 81.0
	NKBH-M257-11	MKBH-M257-11	M25 x 1.5	17	20	11.0	54.0 x 84.0
	NKBH-M253-11	MKBH-M253-11	M25 x 1.5	23	25	11.0	63.0 x 92.0
	NKBH-M323-13	MKBH-M323-13	M32 x 1.5	23	25	13.0	65.0 x 96.0
	NKBH-M329-13	MKBH-M329-13	M32 x 1.5	29	32	13.0	75.0 x 108.0
	NKBH-M409-13	MKBH-M409-13	M40 x 1.5	29	32	13.0	76.5 x 114.0
	NKBH-M406-13	MKBH-M406-13	M40 x 1.5	36	40	13.0	87.5 x 126.0
	NKBH-M506-14	MKBH-M506-14	M50 x 1.5	36	40	14.0	88.5 x 131.0
	NKBH-M508-14	MKBH-M508-14	M50 x 1.5	48	50	14.0	101.0 x 145.5
	NKBH-M638-14	MKBH-M638-14	M63 x 1.5	48	50	14.0	101.0 x 148.5

Approvals




For applications in railway vehicles and heavy machine construction
High thread and system connection strength
Smooth elbow allows easy threading of wires and cables

Connectors, female polyamide UNEF thread

Type KIHG

Type KIHG - Connector straight, UN female thread for MIL-C5015

	Order no. black IP68 + IP69	Thread UN	Shell size MIL	Fits to conduit size		Thread length (mm)	Overall length (mm)
				NW	Metric		
	BKIHG-U212	7/8"-20 UNEF	16	12	16	9.0	47.0
	BKIHG-U217	7/8"-20 UNEF	16	17	20	9.0	52.5
	BKIHG-U242	1"-20 UNEF	18	12	16	9.0	47.0
	BKIHG-U247	1"-20 UNEF	18	17	20	9.0	52.5
	BKIHG-U243	1"-20 UNEF	18	23	23	9.0	55.5
	BKIHG-U292	1 3/16"-18 UNEF	20	12	16	9.0	50.5
	BKIHG-U297	1 3/16"-18 UNEF	20	17	20	9.0	52.5
	BKIHG-U293	1 3/16"-18 UNEF	20	23	25	9.0	55.5
	BKIHG-U299	1 3/16"-18 UNEF	20	29	32	9.0	61.0
	BKIHG-U357	1 7/16"-18 UNEF	24	17	20	9.0	58.0
	BKIHG-U353	1 7/16"-18 UNEF	24	23	25	9.0	55.5
	BKIHG-U359	1 7/16"-18 UNEF	24	29	32	9.0	61.0
	BKIHG-U433	1 3/4"-18 UNS	32	23	25	10.0	62.5
	BKIHG-U439	1 3/4"-18 UNS	32	29	32	10.0	62.0
	BKIHG-U503	2"-18 UNS	36	23	25	10.0	67.0
	BKIHG-U509	2"-18 UNS	36	29	32	10.0	67.5
	BKIHG-U506	2"-18 UNS	36	36	40	10.0	67.0
	BKIHG-U508	2"-18 UNS	36	48	50	10.0	73.5
	BKIHG-U566	2 1/4"-16 UN	40	36	40	10.0	72.0
	BKIHG-U568	2 1/4"-16 UN	40	48	50	10.0	73.5

Approvals




For applications in railway vehicles and heavy machine construction
Suitable for MIL connector, series C5015

Connectors metric, female metal thread

Type KIS

Type KIS - Connector straight, metric metal female thread

	Order no. black IP68 + IP69	Thread metric	Fits to conduit size		Thread length (mm)	Overall length (mm)
			NW	Metric		
	NKIS-M162	M16 x 1.5	12	16	9.0	49.0
	NKIS-M207	M20 x 1.5	17	20	10.5	56.0
	NKIS-M253	M25 x 1.5	23	25	10.5	58.5
	NKIS-M329	M32 x 1.5	29	32	11.0	65.5
	NKIS-M406	M40 x 1.5	36	40	13.5	72.0
	NKIS-M508	M50 x 1.5	48	50	15.0	83.0
	NKIS-M638	M63 x 1.5	48	50	17.5	84.0

Approvals




For applications in railway vehicles and heavy machine construction
 High thread and system connection strength
 No seal on female thread side

Connectors nylon straight fitting

Type JKNH & JKBH

Type JKNH - Connector two-piece, straight, IP69, metric thread


	Order no. blue	Thread size metric	Fits to conduit size		Dimensions						
			NW	Inch	g (mm)	Ø ID (mm)	Ø D (mm)	L max. (mm)	sw (mm)	Weight kg/100 pcs	Packing unit/pcs
	JKNH-M162	M16 x 1.5	12	3/8	11.0	11.0	28.5	47.5	25	0.8	10
	JKNH-M202	M20 x 1.5	12	3/8	12.5	11.0	28.5	47.5	25	0.9	10
	JKNH-M207	M20 x 1.5	17	1/2	14.5	11.0	35.0	53.5	32	1.4	10
	JKNH-M257	M25 x 1.5	17	1/2	16.5	12.0	35.0	54.5	32	1.5	10
	JKNH-M253	M25 x 1.5	23	3/4	19.0	12.0	42.0	57.0	38	1.7	10
	JKNH-M323	M32 x 1.5	23	3/4	23.0	15.0	43.0	60.5	38	2.0	10
	JKNH-M329	M32 x 1.5	29	1	26.0	15.0	51.5	65.5	46	3.2	10
	JKNH-M409	M40 x 1.5	29	1	29.0	19.0	51.5	69.5	46	3.7	10
	JKNH-M406	M40 x 1.5	36	1-1/4	32.0	19.0	65.0	75.0	60	5.9	10
	JKNH-M506	M50 x 1.5	36	1-1/4	37.5	19.0	65.0	75.0	60	6.2	10
	JKNH-M508	M50 x 1.5	48	1-1/2	42.0	19.0	75.0	81.0	70	7.5	10
	JKNH-M638	M63 x 1.5	48	1-1/2	48.5	19.0	75.0	81.0	70	7.8	10

Approvals



Very high impact resistance - easy push-in assembly
Corrosion-free
Excellent conduit pull-out strength
IP69 system protection for indoor splash zone areas

Type JKBH - 90° curved elbow, IP69, metric thread

	Order no. blue	Thread size metric	Fits to conduit size NW	Dimensions									Weight kg/100 pcs	Packing unit/pcs
				g (mm)	d1 (mm)	d2 (mm)	d3 (mm)	SW (mm)	A (mm)	B (mm)	R (mm)			
	JKBH-M162	M16 x 1.5	12	11	8.0	28.5	24.0	15.0	44.5	72.0	28.0	1.5	10	
	JKBH-M202	M20 x 1.5	12	11	11.8	28.5	28.0	15.0	44.5	74.0	28.0	1.3	10	
	JKBH-M207	M20 x 1.5	17	11	11.5	35.0	29.0	20.0	50.0	81.0	29.5	2.5	10	
	JKBH-M257	M25 x 1.5	17	12	16.5	35.0	35.0	20.0	51.0	84.0	29.5	2.2	10	
	JKBH-M253	M25 x 1.5	23	12	16.0	43.0	35.0	26.0	59.5	92.0	35.0	3.9	10	
	JKBH-M323	M32 x 1.5	23	15	22.5	43.0	40.0	26.0	63.0	94.5	35.0	3.2	10	
	JKBH-M329	M32 x 1.5	29	15	23.0	51.5	43.0	33.0	73.0	108.0	41.5	6.8	10	
	JKBH-M409	M40 x 1.5	29	19	28.5	51.5	51.0	33.0	77.0	112.0	41.5	6.0	10	
	JKBH-M406	M40 x 1.5	36	19	29.5	60.5	55.0	41.0	87.5	126.0	49.0	11.0	10	
	JKBH-M506	M50 x 1.5	36	19	37.0	60.5	59.0	41.0	87.5	128.0	49.0	9.0	10	
	JKBH-M508	M50 x 1.5	48	19	38.5	73.0	69.0	46.0	100.5	145.5	55.5	18.0	10	
	JKBH-M638	M63 x 1.5	48	19	48.0	73.0	75.0	55.0	100.5	148.5	55.5	14.0	10	

Approvals



Very high impact resistance - easy push-in assembly
Corrosion-free
Excellent conduit pull-out strength
IP69 system protection for indoor splash zone areas

PMAFIX IP66, IP68 (IP69)

General technical details

PMAFIX connectors. The designation PMAFIX describes a very large range of connectors for PMA conduits with the patented PMA safety clip system.

Connectors are available for degrees of ingress protection IP66 and IP68 according to IEC 60529. IP66 connectors are fitted with a pre-installed universal safety clip which ensures a quick “push-in” installation. IP68 connectors for increased requirements will be delivered with a special conduit seal cap. The new PMAFIX IP68GT fittings combine simplest push-in assembly with highest sealing performance. It is also possible to upgrade to IP69 by retrofitting water impact protection.

Material

- Fittings made from specially formulated polyamide 6
- Threads made from nickel-plated brass or polyamide 6
- Self-extinguishing
- Free from halogens, REACH + RoHS compliant
- Very good chemical properties
- Temperature range: -40°C to +105°C, short-term to +160°C
-

Characteristics

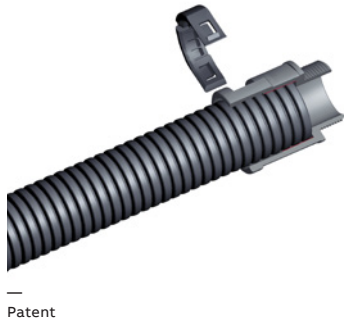
- Excellent conduit pull-out strength
- High impact resistance
- Vibration-proof connection to PMA corrugated conduits
- Fits conduit profiles – fine (T) and coarse (G)
- To avoid accidental opening, disassembly is only possible with a screwdriver





PMAFIX

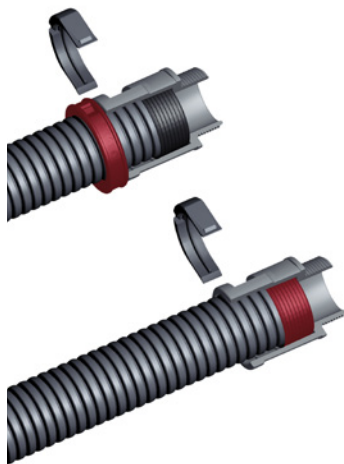
General technical details



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Patent



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Patent



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Patent

IP66

IP66 static

IP54 dynamic

- One piece fitting
- Conical sealing method
- Easy “push-in” installation
- Pre-installed safety clip AFN2
- Content of delivery: Connector with pre-installed safety clip

IP68GT

IP68, IP69 static

IP67, IP69 dynamic

- The single piece PMAFIX IP68GT fitting with integrated sealing cap and pre-installed locking clip
- Simple push-in assembly (as with the proven PMAFIX IP66 system)
- The extra long sealing cap guarantees the highest level of ingress protection
- Identical approvals as for the PMAFIX IP68 system component version
- Fast modification of specification drawings through simple addition of ,GT‘ to the existing order number (e.g. BVNV-M257 → BVNV-M257GT)
- Additional water protection ring WPS for IP69 ingress protection in conjunction with the IP68 system to be applied right after the IP68 connector onto the conduit
- Content of delivery: Connector with integrated sealing cap, pre-installed safety clip and thread seal for male thread (O-ring and/or flat gasket)

IP68

IP68, IP69 static

IP67, IP69 dynamic

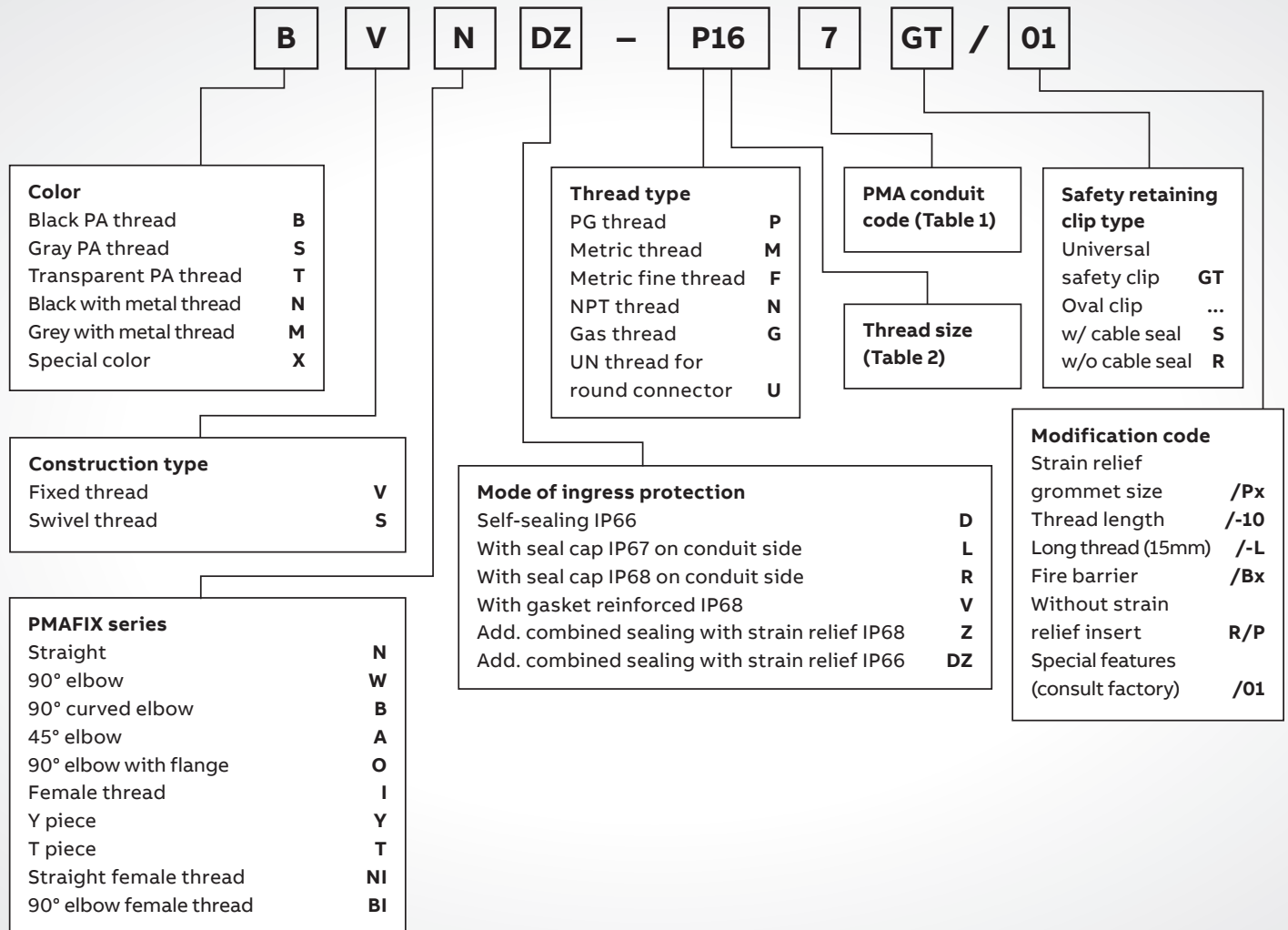
- High sealing through additional seal cap
- For highest dynamic applications
- Additional water protection ring WPS for IP69 ingress protection in conjunction with the IP68 system to be applied right after the IP68 connector onto the conduit
- Content of delivery: Connector with sealing cap, safety clip and thread seal for male thread (O-ring and/or flat gasket)

PMAFIX connectors

Part number codes

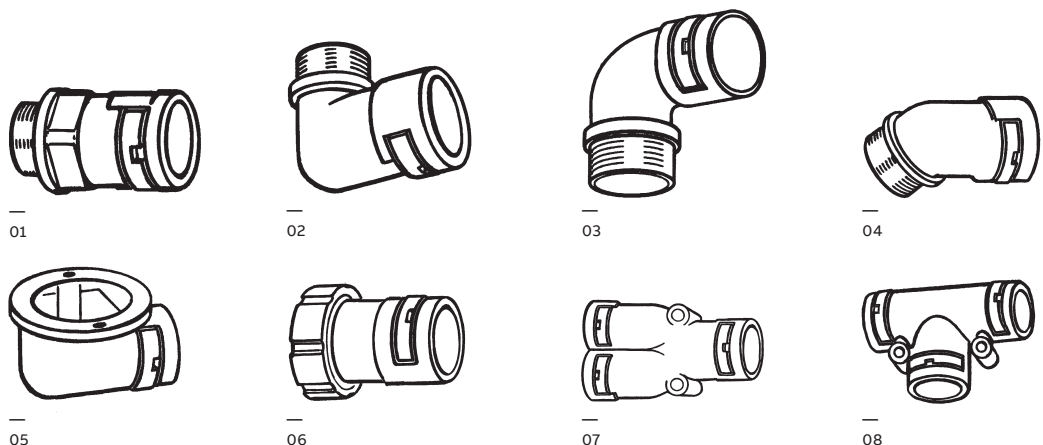
For part number explanation only, not to be used as a configuration tool.

Part Numbers printed in **RED** are priority stock items in the US Distribution Center.



Connector series

- 01 Serie N
- 02 Serie W
- 03 Serie B
- 04 Serie A
- 05 Serie O
- 06 Serie I
- 07 Serie Y
- 08 Serie T



PMAFIX

Size codes

Table 1: Conduit codes

Nominal width	Metric size	Inch	PMA code
07	10	1/4	M
10	12	5/16	0
12	16	3/8	2
17	20	1/2	7
23	25	3/4	3
29	32	1	9
36	40	1-1/4	6
48	50	1-1/2	8

Additional code for female thread connectors

Type	PMA code
AMP	A
Souriau (ex Burndy) UTG 6	B
With O-ring groove (MIL C 5015)	G
Souriau UTO/UTS	S

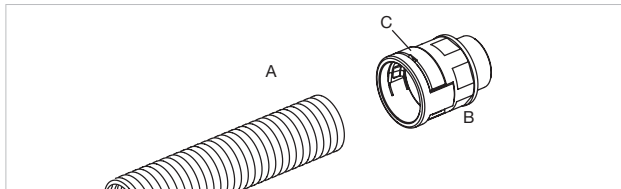
Table 2: Thread codes

Thread metric	PMA code	Thread PG	PMA code	Thread Gas	PMA code	Thread NPT	PMA code	Thread UN	PMA code
		PG07	P07	G 1/4	G00				
M12 x 1.5	M12	PG09	P09	G 3/8	G01				
M16 x 1.5	M16	PG11	P11	G 1/2	G02	N 1/2	N02	1/2-28 UNEF	U12
M20 x 1.5	M20	PG13.5	P13	G 3/4	G04	N 3/4	N04	9/16-24 UNEF	U13
		PG16	P16	G 1	G06	N 1	N06	5/8-24 UNEF	U15
M25 x 1.5	M25	PG21	P21	G 1 1/4	G07	N 1 1/4	N07	1 1/16-24 UNEF	U16
M32 x 1.5	M32	PG29	P29	G 1 1/2	G08	N 1 1/2	N08	3/4-20 UNEF	U18
M40 x 1.5	M40	PG36	P36	G 2	G09	N 2	N09	1 3/16-20 UNEF	U20
M50 x 1.5	M50	PG42	P42	G 2 1/4	G10			7/8-20 UNEF	U21
M63 x 1.5	M63	PG48	P48	G 2 1/2	G11			1 5/16-20 UNEF	U23
								1-20 UNEF	U24
								1 1/16-18 UNEF	U26
M 8 x 1.0	F08							1 3/16-18 UNEF	U29
M12 x 1.0	F12							1 1/4-18 UNEF	U30
M18 x 1.0	F18							1 5/16-18 UNEF	U32
								1 3/8-18 UNEF	U34
								1 7/16-18 UNEF	U35
								1 5/8-18 UNEF	U40
								1 3/4-18 UNS	U43
								2-18 UNS	U50
								2 1/4-16 UN	U56
								2 3/8-12 UN	U57
								2 1/2-12 UN	U62

PMAFIX

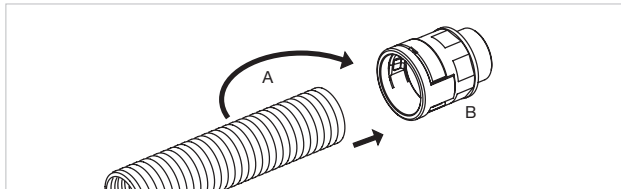
Installation

Installation IP66



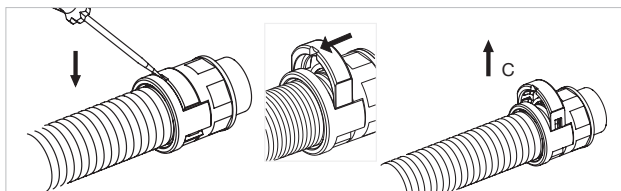
01

A = Conduit
B = Fitting
C = Universal safety clip



02

Push in the conduit (A) with a slight twist until the stop.



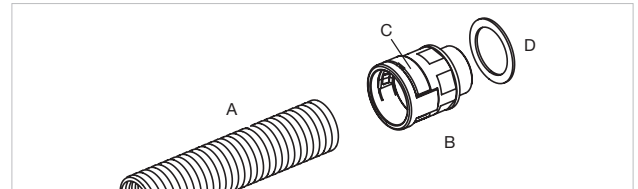
03

To re-open use a screwdriver.
The screwdriver slot in the oval clip (C) should be on the conduit side.

Locking clip pre-installed in all IP66 connectors.

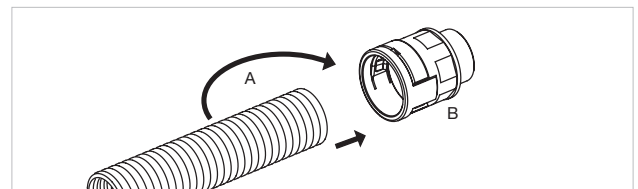
* Ensure to follow
O-ring manufacturers
guidelines when
using O-rings for
sealing purposes.

Installation IP68GT



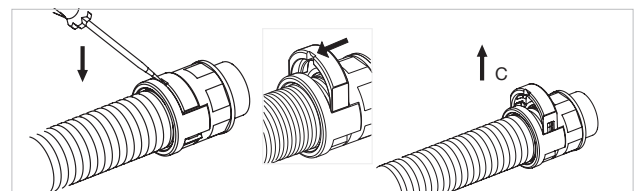
01

A = Conduit
B = Fitting with integrated sealing cap
C = Universal safety clip
D = Thread seal (either O-ring or flat gasket*, not both)



02

Push in the conduit (A) right into the end of the fitting (B) with a slight twist. Additional insertion resistance will be felt when the end of the fitting has been reached.



03

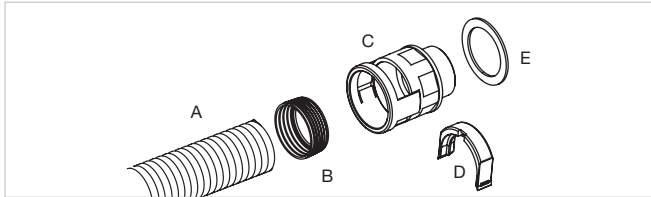
To re-open use a screwdriver.
The screwdriver slot in the oval clip (C) should be on the conduit side.

Pre-installed sealing cap and locking clip in all IP68GT connectors.

PMAFIX

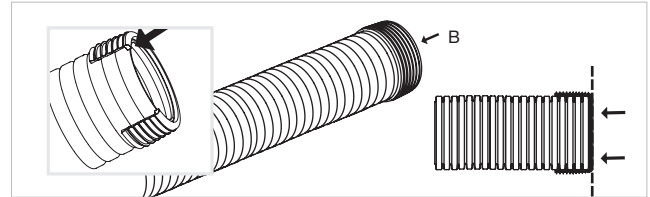
Installation

Installation IP68 (IP69)



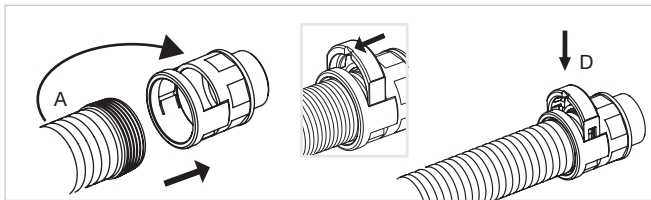
01

- A = Conduit
- B = Sealing cap
- C = Fitting
- D = Oval clip
- E = Thread seal (O-ring or flat seal*)



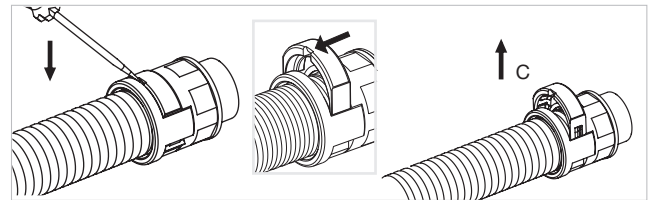
02

Push sealing cap (B) completely onto the conduit in order to achieve IP68.



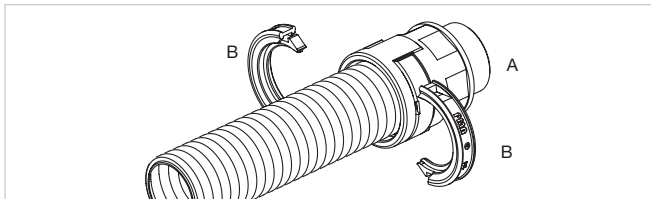
03

Push in the conduit (A) with a slight twist until the stop. Insert oval clip (D) in the locking element window and click into place. Screwdriver slot in the oval clip should be on conduit side.



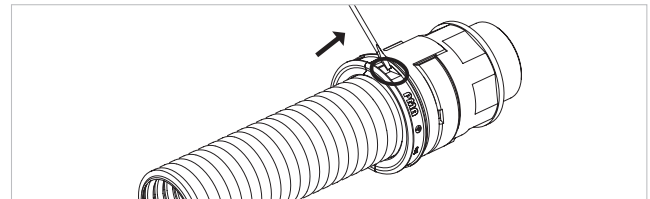
04

To re-open use a screwdriver.



05

- For IP69:
- Based on IP68 System
- A = Conduit with IP68 fitting
- B = WPS half shells



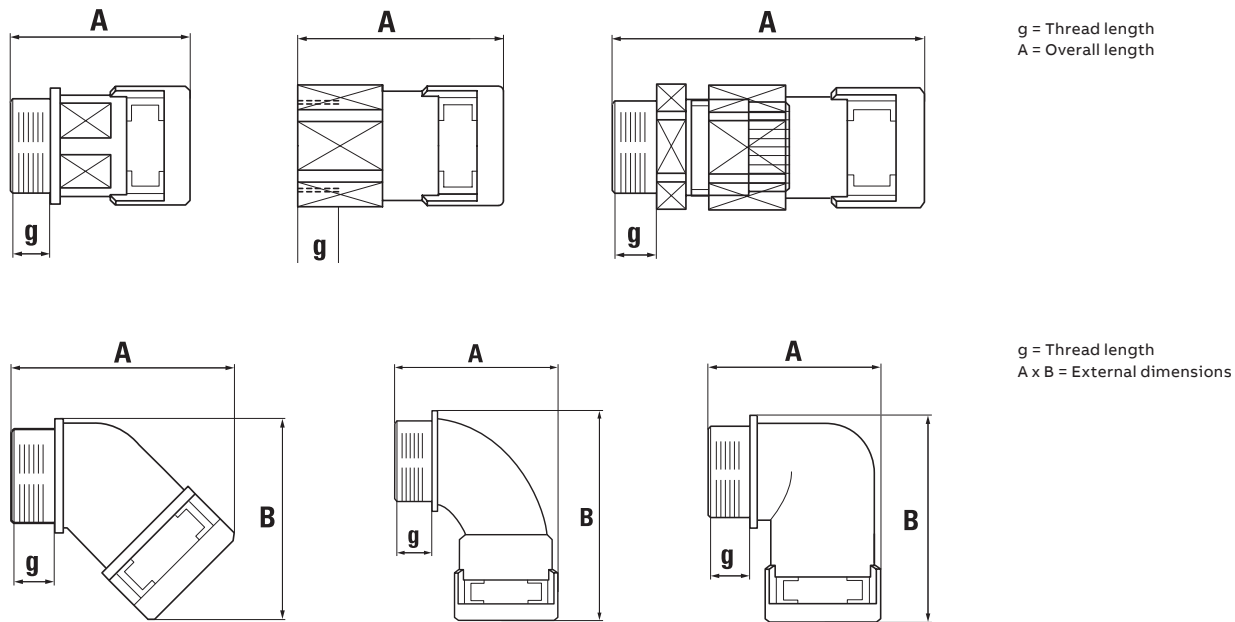
06

To re-open use a screwdriver.

* For safety reasons, oval clip will not fit if seal cap is not fully installed.

Ensure to follow O-ring manufacturers guidelines when using O-rings for sealing purposes.

Fitting dimensions



PMAFIX

Connectors metric, polyamide thread

Type VN - Connector straight, metric thread

	Order no. IP66 ①	Order no. IP68* ①	Fits to conduit size			Thread metric	Thread length (mm)	Overall length (mm)
			NW	Metric	Inch			
	BVND-M12MGT	BVNV-M12M	07	10	1/4	M12 x 1.5	11.0	34.5
	BVND-M120GT	BVNV-M120	10	12	5/16	M12 x 1.5	11.0	36.5
	BVND-M160GT	BVNV-M160	10	12	5/16	M16 x 1.5	11.0	36.5
	BVND-M162GT	BVNV-M162	12	16	3/8	M16 x 1.5	11.0	39.5
	BVND-M200GT	BVNV-M200	10	12	5/16	M20 x 1.5	11.0	36.5
	BVND-M202GT	BVNV-M202	12	16	3/8	M20 x 1.5	11.0	39.5
	BVND-M207GT	BVNV-M207	17	20	1/2	M20 x 1.5	11.0	47.5
	BVND-M203GT	BVNV-M203	23	25	3/4	M20 x 1.5	11.0	51.0
	BVND-M257GT	BVNV-M257	17	20	1/2	M25 x 1.5	12.0	48.5
	BVND-M253GT	BVNV-M253	23	25	3/4	M25 x 1.5	12.0	52.0
	BVND-M323GT	BVNV-M323	23	25	3/4	M32 x 1.5	15.0	55.5
	BVND-M329GT	BVNV-M329	29	32	1	M32 x 1.5	15.0	56.0
	BVND-M409GT	BVNV-M409	29	32	1	M40 x 1.5	19.0	60.0
	BVND-M406GT	BVNV-M406	36	40	1-1/4	M40 x 1.5	19.0	72.5
	BVND-M506GT	BVNV-M506	36	40	1-1/4	M50 x 1.5	19.0	72.0
	BVND-M508GT	BVNV-M508	48	50	1-1/2	M50 x 1.5	19.0	72.5
BVND-M638GT	BVNV-M638	48	50	1-1/2	M63 x 1.5	19.0	72.0	

Approvals




For cable protection systems in a wide range of applications

① Please replace "B" for black with "S" for grey in front of the order no.

Connectors metric, polyamide thread

Type VNDZ/VNZ & VA

Type VNDZ/VNZ - Connector straight with strain relief, metric thread

	Order no. IP66 ①	Order no. IP68 ①	Thread metric	Fits to conduit size			Terminal range	Thread length (mm)	Overall length (mm)
				NW	Metric	Inch			
	BVNDZ-M160GT	–	M16 x 1.5	10	12	5/16	5.0–10.0	8.0	62.0
	BVNDZ-M162GT	BVNZ-M162S	M16 x 1.5	12	16	3/8	5.0–10.0	8.0	62.0
	BVNDZ-M207GT	BVNZ-M207S	M20 x 1.5	17	20	1/2	10.0–14.0	8.0	72.0
	BVNDZ-M253GT	BVNZ-M253S	M25 x 1.5	23	25	3/4	13.0–18.0	8.0	81.0
	BVNDZ-M329GT	BVNZ-M329S	M32 x 1.5	29	32	1	18.0–25.0	10.0	85.0
	BVNDZ-M406GT	BVNZ-M406S	M40 x 1.5	36	40	1-1/4	22.0–32.0	10.0	108.5
	BVNDZ-M508GT	BVNZ-M508S	M50 x 1.5	48	50	1-1/2	30.0–38.0	12.0	119.5
	BVNDZ-M638GT	BVNZ-M638S	M63 x 1.5	48	50	1-1/2	34.0–44.0	12.0	119.5

For machine and plant construction


For separation of damp and dry areas

Integrated strain relief optimally holds and seals cables

If several conductors are used with the connector multiple sealing inserts should be considered

Note: For several conductors multiple sealing inserts MDE are available

Type VA - Connector 45° elbow, metric thread

	Order no. IP66 ①	Order no. IP68 ①	Thread metric	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	BVAD-M120GT	–	M12 x 1.5	10	12	5/16	11.0	43.5 x 37.0
	BVAD-M160GT	BVAV-M160	M16 x 1.5	10	12	5/16	11.0	43.5 x 38.0
	BVAD-M162GT	BVAV-M162	M16 x 1.5	12	16	3/8	11.0	48.0 x 40.0
	BVAD-M202GT	BVAV-M202	M20 x 1.5	12	16	3/8	11.0	48.0 x 41.5
	BVAD-M207GT	BVAV-M207	M20 x 1.5	17	20	1/2	11.0	55.5 x 51.5
	BVAD-M253GT	BVAV-M253	M25 x 1.5	23	25	3/4	12.0	65.0 x 58.5
	BVAD-M329GT	BVAV-M329	M32 x 1.5	29	32	1	15.0	73.5 x 66.5
	BVAD-M406GT	BVAV-M406	M40 x 1.5	36	40	1-1/4	19.0	92.5 x 85.5
	BVAD-M506GT	BVAV-M506	M50 x 1.5	36	40	1-1/4	19.0	92.5 x 89.5
	BVAD-M508GT	BVAV-M508	M50 x 1.5	48	50	1-1/2	19.0	100.0 x 96.0
	BVAD-M638GT	BVAV-M638	M63 x 1.5	48	50	1-1/2	19.0	100.0 x 104.0

Approvals




① Please replace “B” for black with
“S” for grey in front of the order no.

Connectors metric, polyamide thread

Type VB & VW

Type VB - Connector 90° curved elbow, metric thread

	Order no. IP66 ①	Order no. IP68 ①	Thread metric	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVBD-M207GT	BVBV-M207	M20 x 1.5	17	20	1/2	11.0	47.5 x 73.0
	BVBD-M257GT	BVBV-M257	M25 x 1.5	17	20	1/2	12.0	48.5 x 76.0
	BVBD-M253GT	BVBV-M253	M25 x 1.5	23	25	3/4	12.0	57.5 x 83.0
	BVBD-M323GT	BVBV-M323	M32 x 1.5	23	25	3/4	15.0	61.0 x 87.5
	BVBD-M329GT	BVBV-M329	M32 x 1.5	29	32	1	15.0	70.5 x 93.0
	BVBD-M409GT	BVBV-M409	M40 x 1.5	29	32	1	19.0	74.5 x 98.5
	BVBD-M406GT	BVBV-M406	M40 x 1.5	36	40	1-1/4	19.0	85.0 x 121.0
	BVBD-M506GT	BVBV-M506	M50 x 1.5	36	40	1-1/4	19.0	85.0 x 125.0
	BVBD-M508GT	BVBV-M508	M50 x 1.5	48	50	1-1/2	19.0	98.5 x 130.0
	BVBD-M638GT	BVBV-M638	M63 x 1.5	48	50	1-1/2	19.0	98.5 x 138.0


Approvals



For cable protection systems in a wide range of applications
Smooth elbow allows easy threading of wires and cables

Note: For smaller conduit sizes NW 10 to NW 12 appropriate standard elbows of type VW are also available

Type VW - Connector 90° elbow, metric thread

	Order no. IP66 ①	Order no. IP68 ①	Thread metric	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVWD-M12MGT	BVWV-M12M	M12 x 1.5	07	10	1/4	11.0	32.0 x 35.0
	BVWD-M120GT	BVWV-M120	M12 x 1.5	10	12	5/16	11.0	34.0 x 39.5
	BVWD-M160GT	BVWV-M160	M16 x 1.5	10	12	5/16	11.0	34.0 x 40.5
	BVWD-M200GT	-	M20 x 1.5	10	12	5/16	11.0	34.0 x 42.5
	BVWD-M162GT	BVWV-M162	M16 x 1.5	12	16	3/8	11.0	38.5 x 46.0
	BVWD-M202GT	BVWV-M202	M20 x 1.5	12	16	3/8	11.0	38.5 x 47.5
	BVWD-M207GT	BVWV-M207	M20 x 1.5	17	20	1/2	11.0	43.5 x 58.5
	BVWD-M253GT	BVWV-M253	M25 x 1.5	23	25	3/4	12.0	54.0 x 65.0
	BVWD-M329GT	BVWV-M329	M32 x 1.5	29	32	1	15.0	64.5 x 73.0
	BVWD-M406GT	BVWV-M406	M40 x 1.5	36	40	1-1/4	19.0	78.0 x 96.0
	BVWD-M508GT	BVWV-M508	M50 x 1.5	48	50	1-1/2	19.0	91.5 x 106.0

Approvals



For cable protection systems in a wide range of applications


Note: For sizes NW 17 to NW 48 curved elbows of type VB are also available

① Please replace "B" for black with
"S" for grey in front of the order no.

Connectors metric, metal thread

Type VNV

Type VNV - Connector straight, metric metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread metric	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	NVNV-M120-10	MVNV-M120-10	M12 x 1.5	10	12	5/16	10.0	40.0
	NVNV-M120-5	MVNV-M120-5	M12 x 1.5	10	12	5/16	5.0	35.0
	NVNV-M160-10	MVNV-M160-10	M16 x 1.5	10	12	5/16	10.0	40.0
	NVNV-M160-5	MVNV-M160-5	M16 x 1.5	10	12	5/16	5.0	35.0
	NVNV-M162-10	MVNV-M162-10	M16 x 1.5	12	16	3/8	10.0	43.0
	NVNV-M162-5	MVNV-M162-5	M16 x 1.5	12	16	3/8	5.0	38.0
	NVNV-M202-10	MVNV-M202-10	M20 x 1.5	12	16	3/8	10.0	43.0
	NVNV-M202-6	MVNV-M202-6	M20 x 1.5	12	16	3/8	6.0	39.0
	NVNV-M207-10	MVNV-M207-10	M20 x 1.5	17	20	1/2	10.0	51.0
	NVNV-M207-6	MVNV-M207-6	M20 x 1.5	17	20	1/2	6.0	47.0
	NVNV-M257-11	MVNV-M257-11	M25 x 1.5	17	20	1/2	11.0	52.0
	NVNV-M257-7	MVNV-M257-7	M25 x 1.5	17	20	1/2	7.0	48.0
	NVNV-M253-11	MVNV-M253-11	M25 x 1.5	23	25	3/4	11.0	54.0
	NVNV-M253-7	MVNV-M253-7	M25 x 1.5	23	25	3/4	7.0	50.0
	NVNV-M323-13	MVNV-M323-13	M32 x 1.5	23	25	3/4	13.0	56.0
	NVNV-M323-8	MVNV-M323-8	M32 x 1.5	23	25	3/4	8.0	51.0
	NVNV-M329-13	MVNV-M329-13	M32 x 1.5	29	32	1	13.0	57.3
	NVNV-M329-8	MVNV-M329-8	M32 x 1.5	29	32	1	8.0	52.3
	NVNV-M409-13	MVNV-M409-13	M40 x 1.5	29	32	1	13.0	57.3
	NVNV-M409-8	MVNV-M409-8	M40 x 1.5	29	32	1	8.0	52.3
NVNV-M406-13	MVNV-M406-13	M40 x 1.5	36	40	1-1/4	13.0	71.4	
NVNV-M406-8	MVNV-M406-8	M40 x 1.5	36	40	1-1/4	8.0	66.4	
NVNV-M506-14	MVNV-M506-14	M50 x 1.5	36	40	1-1/4	14.0	72.4	
NVNV-M506-9	MVNV-M506-9	M50 x 1.5	36	40	1-1/4	9.0	67.4	
NVNV-M508-14	MVNV-M508-14	M50 x 1.5	48	50	1-1/2	14.0	72.4	
NVNV-M508-9	MVNV-M508-9	M50 x 1.5	48	50	1-1/2	9.0	67.4	
NVNV-M638-14	MVNV-M638-14	M63 x 1.5	48	50	1-1/2	14.0	72.4	
NVNV-M638-10	MVNV-M638-10	M63 x 1.5	48	50	1-1/2	10.0	68.4	

Approvals




For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Connectors NPT, metal thread

Type VNV

Type VNV - Connector straight, metric metal thread

	Order no. IP68, black	Thread NPT	Fits to conduit size		Thread length (mm)	Overall length (mm)	
			NW	Metric			Inch
	NVNV-N022	½"	12	16	3/8	15.4	48.1
	NVNV-N027	½"	17	20	1/2	15.4	56.4
	NVNV-N043	¾"	23	25	3/4	15.7	58.7
	NVNV-N069	1"	29	32	1	19.6	63.9
	NVNV-N076	1¼"	36	40	1-1/4	20.2	78.6
	NVNV-N088	1½"	48	50	1-1/2	20.6	79.0
	NVNV-N098	2"	48	50	1-1/2	21.4	79.8

Approvals




For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Connectors with strain relief, metric, metal thread

Type VNZ

Type VNZ - Connector straight with strain relief, metric metal thread



	Order no. IP68 Compl., black	Order no. fitting*	Order no. insert	Thread metric	Fits to conduit size			Terminal range (mm)	Thread length (mm)	Overall length (mm)
					NW	Metric	Inch			
	NVNZ-M120S/P1	NVNZ-M120R/P	EK 150p7	M12 x 1.5	10	12	5/16	4.0–6.5	5.0	48.5
	NVNZ-M120S/P2		EK 150p8	M12 x 1.5	10	12	5/16	5.0–8.0	5.0	48.5
	NVNZ-M120S/P3		EK 150p9	M12 x 1.5	10	12	5/16	6.5–9.5	5.0	48.5
	NVNZ-M160S/P1	NVNZ-M160R/P	E 150p7	M16 x 1.5	10	12	5/16	4.0–6.5	6.0	49.5
	NVNZ-M160S/P2		E 150p8	M16 x 1.5	10	12	5/16	5.0–8.0	6.0	49.5
	NVNZ-M160S/P3		E 150p9	M16 x 1.5	10	12	5/16	6.5–9.5	6.0	49.5
	NVNZ-M202S/P1	NVNZ-M202R/P	E 152p7	M20 x 1.5	12	16	5/16	4.0–6.5	6.0	54.0
	NVNZ-M202S/P3		E 152p9	M20 x 1.5	12	16	5/16	6.5–9.5	6.0	54.0
	NVNZ-M202S/P4		E 152p11	M20 x 1.5	12	16	5/16	7.0–10.5	6.0	54.0
	NVNZ-M207S/P3	NVNZ-M207R/P	E 152p9	M20 x 1.5	17	20	1/2	6.5–9.5	6.5	60.0
	NVNZ-M207S/P4		E 152p11	M20 x 1.5	17	20	1/2	7.0–10.5	6.5	60.0
	NVNZ-M207S/P5		E 152p13	M20 x 1.5	17	20	1/2	9.0–13.0	6.5	60.0
	NVNZ-M253S/P5	NVNZ-M253R/P	EK 154p13	M25 x 1.5	23	25	3/4	9.0–13.0	7.5	72.5
	NVNZ-M253S/P6		EK 154p16	M25 x 1.5	23	25	3/4	11.5–15.5	7.5	72.5
	NVNZ-M257S/P4	NVNZ-M257R/P	E 153p11	M25 x 1.5	17	20	1/2	7.0–10.5	7.5	61.5
	NVNZ-M257S/P5		E 153p13	M25 x 1.5	17	20	1/2	9.0–13.0	7.5	61.5
	NVNZ-M257S/P6		E 153p16	M25 x 1.5	17	20	1/2	11.5–15.5	7.5	61.5
	NVNZ-M323S/P4	NVNZ-M323R/P	E 154p18	M32 x 1.5	23	25	3/4	14.0–18.0	8.0	73.0
	NVNZ-M323S/P5	NVNZ-M323R1/P	E 154p20	M32 x 1.5	23	25	3/4	17.0–20.5	8.0	73.0
	NVNZ-M329S/P2	NVNZ-M329R/P	EK 155p18	M32 x 1.5	29	32	1	14.0–18.0	8.0	73.0
	NVNZ-M329S/P3		EK 155p20	M32 x 1.5	29	32	1	17.0–20.5	8.0	73.0
	NVNZ-M329S/P4		EK 155p25	M32 x 1.5	29	32	1	20.0–25.0	8.0	73.0
	NVNZ-M406S/P1	NVNZ-M406R/P	E 156p25HF	M40 x 1.5	36	40	1-1/4	20.0–25.0	9.0	87.0
	NVNZ-M406S/P2		EK 156p28	M40 x 1.5	36	40	1-1/4	24.0–28.0	9.0	87.0
	NVNZ-M409S/P1	NVNZ-M409R/P	E 155p16	M40 x 1.5	29	32	1	11.5–15.5	8.0	73.0
	NVNZ-M409S/P2		E 155p18	M40 x 1.5	29	32	1	14.0–18.0	8.0	73.0
	NVNZ-M409S/P3		E 155p20	M40 x 1.5	29	32	1	17.0–20.5	8.0	73.0
	NVNZ-M409S/P4		E 155p25	M40 x 1.5	29	32	1	20.0–25.0	8.0	73.0
	NVNZ-M409S/P5		E 155p28	M40 x 1.5	29	32	1	24.0–28.0	8.0	73.0
	NVNZ-M506S/P1	NVNZ-M506R/P	E 156p32	M50 x 1.5	36	40	1-1/4	27.0–32.0	9.0	89.5
	NVNZ-M506S/P3		E 156p36	M50 x 1.5	36	40	1-1/4	32.0–36.0	9.0	89.5
	NVNZ-M508S/P2	NVNZ-M508R/P	E 157p36HF	M50 x 1.5	48	50	1-1/2	32.0–36.0	9.0	92.0
NVNZ-M508S/P3		E 157p40HF	M50 x 1.5	48	50	1-1/2	36.0–40.0	9.0	92.0	
NVNZ-M638S/P1	NVNZ-M638R/P	E 158pm1x35	M63 x 1.5	48	50	1-1/2	32.0–35.0	10.0	90.5	
NVNZ-M638S/P2		E 158p44	M63 x 1.5	48	50	1-1/2	39.0–44.0	10.0	90.5	

*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C


Note: For several conductors multiple sealing inserts MDE are available. R/P version of fitting has to be used in combination with multiple sealing inserts

Fire barrier connectors with strain relief, metric, metal thread

Type VNZ

Type VNZ - Fire barrier connector straight with strain relief, metric metal thread



	Order no. IP68 Compl., black	Thread metric	Fits to conduit size			Terminal range (mm)	Thread length (mm)	Overall length (mm)
			NW	Metric	Inch			
	NVNZ-M120S/B1	M12 x 1.5	10	12	5/16	4.0–6.5	5.0	48.5
	NVNZ-M120S/B2	M12 x 1.5	10	12	5/16	5.0–8.0	5.0	48.5
	NVNZ-M120S/B3	M12 x 1.5	10	12	5/16	6.5–9.5	5.0	48.5
	NVNZ-M160S/B1	M16 x 1.5	10	12	5/16	4.0–6.5	6.0	49.5
	NVNZ-M160S/B2	M16 x 1.5	10	12	5/16	5.0–8.0	6.0	49.5
	NVNZ-M160S/B3	M16 x 1.5	10	12	5/16	6.5–9.5	6.0	49.5
	NVNZ-M202S/B1	M20 x 1.5	12	16	3/8	4.0–6.5	6.0	54.0
	NVNZ-M202S/B3	M20 x 1.5	12	16	3/8	6.5–9.5	6.0	54.0
	NVNZ-M202S/B4	M20 x 1.5	12	16	3/8	7.0–10.5	6.0	54.0
	NVNZ-M207S/B1	M20 x 1.5	17	20	1/2	4.0–6.5	6.5	60.0
	NVNZ-M207S/B2	M20 x 1.5	17	20	1/2	5.0–8.0	6.5	60.0
	NVNZ-M207S/B3	M20 x 1.5	17	20	1/2	6.5–9.5	6.5	60.0
	NVNZ-M207S/B4	M20 x 1.5	17	20	1/2	7.0–10.5	6.5	60.0
	NVNZ-M207S/B5	M20 x 1.5	17	20	1/2	9.0–13.0	6.5	60.0
	NVNZ-M253S/B5	M25 x 1.5	23	25	3/4	9.0–13.0	7.5	72.5
	NVNZ-M253S/B6	M25 x 1.5	23	25	3/4	11.5–15.5	7.5	72.5
	NVNZ-M257S/B4	M25 x 1.5	17	20	1/2	7.0–10.0	7.5	61.5
	NVNZ-M257S/B5	M25 x 1.5	17	20	1/2	9.0–13.0	7.5	61.5
	NVNZ-M257S/B6	M25 x 1.5	17	20	1/2	11.5–15.5	7.5	61.5
	NVNZ-M323S/B4	M32 x 1.5	23	25	3/4	14.0–18.0	8.0	73.0
	NVNZ-M323S/B5	M32 x 1.5	23	25	3/4	17.0–20.5	8.0	73.0
	NVNZ-M329S/B2	M32 x 1.5	29	32	1	14.0–18.0	8.0	73.0
	NVNZ-M329S/B3	M32 x 1.5	29	32	1	17.0–20.5	8.0	73.0
	NVNZ-M329S/B4	M32 x 1.5	29	32	1	20.0–25.0	8.0	73.0
	NVNZ-M406S/B1	M40 x 1.5	36	40	1-1/4	20.0–25.0	9.0	87.0
	NVNZ-M406S/B2	M40 x 1.5	36	40	1-1/4	24.0–28.0	9.0	87.0
	NVNZ-M409S/B1	M40 x 1.5	29	32	1	11.5–15.5	8.0	73.0
	NVNZ-M409S/B2	M40 x 1.5	29	32	1	14.0–18.0	8.0	73.0
	NVNZ-M409S/B3	M40 x 1.5	29	32	1	17.0–20.5	8.0	73.0
	NVNZ-M409S/B4	M40 x 1.5	29	32	1	20.0–25.0	8.0	73.0
	NVNZ-M409S/B5	M40 x 1.5	29	32	1	24.0–28.0	8.0	73.0
	NVNZ-M506S/B1	M50 x 1.5	36	40	1-1/4	27.0–32.0	9.0	89.5
NVNZ-M506S/B3	M50 x 1.5	36	40	1-1/4	32.0–36.0	9.0	89.5	
NVNZ-M508S/B2	M50 x 1.5	48	50	1-1/2	32.0–36.0	9.0	92.0	
NVNZ-M508S/B3	M50 x 1.5	48	50	1-1/2	36.0–40.0	9.0	92.0	
NVNZ-M638S/B1	M63 x 1.5	48	50	1-1/2	32.0–35.0	10.0	90.5	
NVNZ-M638S/B2	M63 x 1.5	48	50	1-1/2	39.0–44.0	10.0	90.5	

*without insert

Fire barrier function, according to standard EN45545-2/-3

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from T80S

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C

Note: For several conductors multiple sealing inserts MDE are available.


R/P version of fitting has to be used in combination with multiple sealing inserts

Connectors with strain relief, metric, long metal thread

Type VNZ

Type VNZ - Connector straight with strain relief, metric long metal thread



	Order no. IP68 Compl., black	Order no. fitting*	Order no. insert	Thread metric	Fits to conduit size			Terminal range (mm)	Thread length (mm)	Overall length (mm)
					NW	Metric	Inch			
	NVNZ-M120S/P1-L	NVNZ-M120R/P-L	EK 150p7	M12 x 1.5	10	12	5/16	4.0–6.5	15.0	66.5
	NVNZ-M120S/P3-L			M12 x 1.5	10	12	5/16	6.5–9.5	15.0	66.5
	NVNZ-M160S/P1-L	NVNZ-M160R/P-L	E 150p7	M16 x 1.5	10	12	5/16	4.0–6.5	15.0	58.5
	NVNZ-M160S/P2-L		E 150p8	M16 x 1.5	10	12	5/16	5.0–8.0	15.0	58.5
	NVNZ-M160S/P3-L		E 150p9	M16 x 1.5	10	12	5/16	6.5–9.5	15.0	58.5
	NVNZ-M202S/P1-L	NVNZ-M202R/P-L	E 152p7	M20 x 1.5	12	16	3/8	4.0–6.5	15.0	62.5
	NVNZ-M202S/P3-L		E 152p9	M20 x 1.5	12	16	3/8	6.5–9.5	15.0	62.5
	NVNZ-M202S/P4-L		E 152p11	M20 x 1.5	12	16	3/8	7.0–10.5	15.0	62.5
	NVNZ-M207S/P3-L	NVNZ-M207R/P-L	E 152p9	M20 x 1.5	17	20	1/2	6.5–9.5	15.0	68.5
	NVNZ-M207S/P4-L		E 152p11	M20 x 1.5	17	20	1/2	7.0–10.5	15.0	68.5
	NVNZ-M207S/P5-L		E 152p13	M20 x 1.5	17	20	1/2	9.0–13.0	15.0	68.5
	NVNZ-M257S/P5-L	NVNZ-M257R/P-L	E 153p13	M25 x 1.5	17	20	1/2	9.0–13.0	15.0	69.0
	NVNZ-M257S/P6-L		E 153p16	M25 x 1.5	17	20	1/2	11.5–15.5	15.0	69.0
	NVNZ-M323S/P4-L	NVNZ-M323R/P-L	E 154p18	M32 x 1.5	23	25	3/4	14.0–18.0	15.0	80.0
	NVNZ-M323S/P5-L	NVNZ-M323R1/P-L	E 154p20	M32 x 1.5	23	25	3/4	17.0–20.5	15.0	80.0
	NVNZ-M329S/P2-L	NVNZ-M329R/P-L	E 155p18	M32 x 1.5	29	32	1	14.0–18.0	15.0	91.0
	NVNZ-M329S/P3-L		E 155p20	M32 x 1.5	29	32	1	17.0–20.5	15.0	91.0
	NVNZ-M409S/P3-L	NVNZ-M409R/P-L	E 155p20	M40 x 1.5	29	32	1	17.0–20.5	15.0	80.0
	NVNZ-M409S/P4-L		E 155p25	M40 x 1.5	29	32	1	20.0–25.0	15.0	80.0
	NVNZ-M409S/P5-L		E 155p28	M40 x 1.5	29	32	1	24.0–28.0	15.0	80.0
	NVNZ-M506S/P1-L	NVNZ-M506R/P-L	E 156p32	M50 x 1.5	36	40	1-1/4	27.0–32.0	15.0	94.5
	NVNZ-M506S/P3-L		E 156p36	M50 x 1.5	36	40	1-1/4	32.0–36.0	15.0	94.5
	NVNZ-M508S/P2-L	NVNZ-M508R/P-L	E 157p36HF	M50 x 1.5	48	50	1-1/2	32.0–36.0	15.0	97.0
	NVNZ-M508S/P3-L		E 157p40HF	M50 x 1.5	48	50	1-1/2	36.0–40.0	15.0	97.0
	NVNZ-M638S/P1-L	NVNZ-M638R/P-L	E 158pm1X35	M63 x 1.5	48	50	1-1/2	32.0–35.0	15.0	95.5
	NVNZ-M638S/P2-L		E 158p44	M63 x 1.5	48	50	1-1/2	39.0–44.0	15.0	95.5

*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C


Note: For several conductors multiple sealing inserts MDE are available

R/P version of fitting has to be used in combination with multiple sealing inserts

Connectors metric, metal thread

Type VAV

Type VAV - Connector 45° elbow, metric metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread metric	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	NVAV-M120-10	MVAV-M120-10	M12 x 1.5	10	12	5/16	10.0	48.5 x 37.0
	NVAV-M120-5	MVAV-M120-5	M12 x 1.5	10	12	5/16	5.0	43.5 x 37.0
	NVAV-M162-10	MVAV-M162-10	M16 x 1.5	12	16	3/8	10.0	53.0 x 40.5
	NVAV-M162-5	MVAV-M162-5	M16 x 1.5	12	16	3/8	5.0	48.0 x 40.5
	NVAV-M207-10	MVAV-M207-10	M20 x 1.5	17	20	1/2	10.0	60.5 x 51.5
	NVAV-M207-6	MVAV-M207-6	M20 x 1.5	17	20	1/2	6.0	56.5 x 51.5
	NVAV-M253-11	MVAV-M253-11	M25 x 1.5	23	25	3/4	11.0	70.0 x 60.5
	NVAV-M253-7	MVAV-M253-7	M25 x 1.5	23	25	3/4	7.0	66.0 x 60.5
	NVAV-M329-13	MVAV-M329-13	M32 x 1.5	29	32	1	13.0	77.0 x 68.0
	NVAV-M329-8	MVAV-M329-8	M32 x 1.5	29	32	1	8.0	72.0 x 68.0
	NVAV-M406-13	MVAV-M406-13	M40 x 1.5	36	40	1-1/4	13.0	94.0 x 87.5
	NVAV-M406-8	MVAV-M406-8	M40 x 1.5	36	40	1-1/4	8.0	89.0 x 87.5
	NVAV-M508-14	MVAV-M508-14	M50 x 1.5	48	50	1-1/2	14.0	102.0 x 101.0
	NVAV-M508-9	MVAV-M508-9	M50 x 1.5	48	50	1-1/2	9.0	97.0 x 101.0
	NVAV-M638-14	MVAV-M638-14	M63 x 1.5	48	50	1-1/2	14.0	102.0 x 104.0
	NVAV-M638-10	MVAV-M638-10	M63 x 1.5	48	50	1-1/2	10.0	98.0 x 104.0

Approvals




For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Connectors metric, metal thread

Type VBV

Type VBV - Connector 90° curved elbow, metric metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread metric	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	NVBV-M207-10	MVBV-M207-10	M20 x 1.5	17	20	1/2	10.0	51.0 x 73.0
	NVBV-M207-6	MVBV-M207-6	M20 x 1.5	17	20	1/2	6.0	47.0 x 73.0
	NVBV-M257-11	MVBV-M257-11	M25 x 1.5	17	20	1/2	11.0	52.0 x 76.0
	NVBV-M257-7	MVBV-M257-7	M25 x 1.5	17	20	1/2	7.0	48.0 x 76.0
	NVBV-M253-11	MVBV-M253-11	M25 x 1.5	23	25	3/4	11.0	62.5 x 85.0
	NVBV-M253-7	MVBV-M253-7	M25 x 1.5	23	25	3/4	7.0	58.5 x 85.0
	NVBV-M323-13	MVBV-M323-13	M32 x 1.5	23	25	3/4	13.0	64.5 x 89.0
	NVBV-M323-8	MVBV-M323-8	M32 x 1.5	23	25	3/4	8.0	59.5 x 89.0
	NVBV-M329-13	MVBV-M329-13	M32 x 1.5	29	32	1	13.0	74.0 x 94.5
	NVBV-M329-8	MVBV-M329-8	M32 x 1.5	29	32	1	8.0	69.0 x 94.5
	NVBV-M409-13	MVBV-M409-13	M40 x 1.5	29	32	1	13.0	75.5 x 100.5
	NVBV-M409-8	MVBV-M409-8	M40 x 1.5	29	32	1	8.0	70.5 x 100.5
	NVBV-M406-13	MVBV-M406-13	M40 x 1.5	36	40	1-1/4	13.0	86.5 x 123.0
	NVBV-M406-8	MVBV-M406-8	M40 x 1.5	36	40	1-1/4	8.0	81.5 x 123.0
	NVBV-M506-14	MVBV-M506-14	M50 x 1.5	36	40	1-1/4	14.0	87.5 x 130.0
	NVBV-M506-9	MVBV-M506-9	M50 x 1.5	36	40	1-1/4	9.0	82.5 x 130.0
	NVBV-M508-14	MVBV-M508-14	M50 x 1.5	48	50	1-1/2	14.0	100.5 x 135.0
NVBV-M508-9	MVBV-M508-9	M50 x 1.5	48	50	1-1/2	9.0	95.5 x 135.0	
NVBV-M638-10	MVBV-M638-10	M63 x 1.5	48	50	1-1/2	14.0	100.5 x 138.0	
NVBV-M638-14	MVBV-M638-14	M63 x 1.5	48	50	1-1/2	10.0	96.5 x 138.0	

Approvals



For applications in railway vehicles and heavy machine construction

High thread and system connection strength


Smooth elbow allows easy threading of wires and cables

Note: Appropriate standard elbows of type VW are available for smaller conduit sizes NW 10 to NW 12

Connectors metric, metal thread

Type VWV

Type VWV - Connector 90° elbow, metric metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread metric	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	NVWV-M120-10	MVWV-M120-10	M12 x 1.5	10	12	5/16	10.0	37.5 x 39.5
	NVWV-M120-5	MVWV-M120-5	M12 x 1.5	10	12	5/16	5.0	32.5 x 39.5
	NVWV-M160-10	MVWV-M160-10	M16 x 1.5	10	12	5/16	10.0	37.5 x 41.5
	NVWV-M160-5	MVWV-M160-5	M16 x 1.5	10	12	5/16	5.0	32.5 x 41.5
	NVWV-M162-10	MVWV-M162-10	M16 x 1.5	12	16	3/8	10.0	42.0 x 46.5
	NVWV-M162-5	MVWV-M162-5	M16 x 1.5	12	16	3/8	5.0	37.0 x 46.5
	NVWV-M202-10	MVWV-M202-10	M20 x 1.5	12	16	3/8	10.0	42.0 x 49.0
	NVWV-M202-6	MVWV-M202-6	M20 x 1.5	12	16	3/8	6.0	38.0 x 49.0
	NVWV-M207-10	MVWV-M207-10	M20 x 1.5	17	20	1/2	10.0	47.0 x 58.5
	NVWV-M207-6	MVWV-M207-6	M20 x 1.5	17	20	1/2	6.0	43.0 x 58.5
	NVWV-M253-11	MVWV-M253-11	M25 x 1.5	23	25	3/4	11.0	59.0 x 67.0
	NVWV-M253-7	MVWV-M253-7	M25 x 1.5	23	25	3/4	7.0	55.0 x 67.0
	NVWV-M329-13	MVWV-M329-13	M32 x 1.5	29	32	1	13.0	68.0 x 74.5
	NVWV-M329-8	MVWV-M329-8	M32 x 1.5	29	32	1	8.0	63.0 x 74.5
	NVWV-M406-13	MVWV-M406-13	M40 x 1.5	36	40	1-1/4	13.0	80.5 x 98.0
	NVWV-M406-8	MVWV-M406-8	M40 x 1.5	36	40	1-1/4	8.0	75.5 x 98.0
NVWV-M508-14	MVWV-M508-14	M50 x 1.5	48	50	1-1/2	14.0	95.5 x 111.0	
NVWV-M508-9	MVWV-M508-9	M50 x 1.5	48	50	1-1/2	9.0	90.5 x 111.0	
NVWV-M638-14	MVWV-M638-14	M63 x 1.5	48	50	1-1/2	14.0	94.5 x 114.0	
NVWV-M638-10	MVWV-M638-10	M63 x 1.5	48	50	1-1/2	10.0	90.5 x 114.0	

Approvals



For applications in railway vehicles and heavy machine construction

High thread and system connection strength


Note: Curved elbows of type VB are also available for sizes NW 17 to NW 48

Connectors with strain relief, metric, metal thread

Type VWZ

Type VWZ - Connector 90° elbow with strain relief, metric metal thread



	Order no. IP68 Compl., black	Order no. fitting*	Order no. insert	Thread metric	Fits to conduit size			Terminal range (mm)	Thread length (mm)	Overall length (mm)
					NW	Metric	Inch			
	NVWZ-M160S/P1	NVWZ-M160R/P	E 150p7	M16 x 1.5	10	12	5/16	4.0–6.5	8.0	65.0
	NVWZ-M160S/P2	–	E 150p8	M16 x 1.5	10	12	5/16	5.0–8.0	8.0	65.0
	NVWZ-M160S/P3	–	E 150p9	M16 x 1.5	10	12	5/16	6.5–9.5	8.0	65.0
	NVWZ-M202S/P1	NVWZ-M202R/P	E 127p7	M20 x 1.5	12	16	3/8	4.0–6.5	8.0	74.5
	NVWZ-M202S/P3	–	E 152p7	M20 x 1.5	12	16	3/8	6.5–9.5	8.0	74.5
	NVWZ-M202S/P4	–	E 152p11	M20 x 1.5	12	16	3/8	7.0–10.5	8.0	74.5
	NVWZ-M207S/P1	NVWZ-M207R/P	E 152p7	M20 x 1.5	17	20	1/2	4.0–6.5	8.0	81.0
	NVWZ-M207S/P3	–	E 152p9	M20 x 1.5	17	20	1/2	6.5–9.5	8.0	81.0
	NVWZ-M207S/P4	–	E 152p11	M20 x 1.5	17	20	1/2	7.0–10.5	8.0	81.0
	NVWZ-M207S/P5	–	E 152p13	M20 x 1.5	17	20	1/2	9.0–13.0	8.0	81.0
	NVWZ-M257S/P5	NVWZ-M257R/P	E 153p13	M25 x 1.5	17	20	1/2	9.0–13.0	8.0	84.0
	NVWZ-M257S/P6	–	E 153p16	M25 x 1.5	17	20	1/2	11.5–15.5	8.0	84.0

*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Straight connector: Specially formulated polyamide 6

90° elbow: Zinc diecast

Female thread and locknut: Nickel-plated brass

Pflitsch sealing insert: TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: –40°C to +135°C

Connectors PG, polyamide thread

Type VN

Type VN - Connector straight, PG thread

VN



C
R
US

	Order no. IP66 ①	Order no. IP68 ①	Thread PG	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVND-P07MGT-11	BVNV-P07M	07	07	10	1/4	11.0	34.5
	BVND-P07MGT-8	-	07	07	10	1/4	8.0	31.5
	BVND-P070GT-11	BVNV-P070	07	10	12	5/16	11.0	36.5
	BVND-P070GT-8	-	07	10	12	5/16	8.0	33.5
	BVND-P072GT-11	BVNV-P072	07	12	16	3/8	11.0	39.0
	BVND-P072GT-8	-	07	12	16	3/8	8.0	36.0
	BVND-P09MGT-11	BVNV-P09M	09	07	10	1/4	11.0	34.5
	BVND-P09MGT-8	-	09	07	10	1/4	8.0	31.5
	BVND-P090GT-11	BVNV-P090	09	10	12	5/16	11.0	36.5
	BVND-P090GT-8	-	09	10	12	5/16	8.0	33.5
	BVND-P092GT-11	BVNV-P092	09	12	16	3/8	11.0	39.0
	BVND-P092GT-8	-	09	12	16	3/8	8.0	36.0
	BVND-P097GT-11	BVNV-P097	09	17	20	1/2	11.0	47.5
	BVND-P097GT-8	-	09	17	20	1/2	8.0	44.5
	BVND-P11MGT-11	BVNV-P11M	11	07	10	1/4	11.0	34.5
	BVND-P11MGT-8	-	11	07	10	1/4	8.0	31.5
	BVND-P110GT-11	BVNV-P110	11	10	12	5/16	11.0	36.5
	BVND-P110GT-8	-	11	10	12	5/16	8.0	33.5
	BVND-P112GT-11	BVNV-P112	11	12	16	3/8	11.0	39.0
	BVND-P112GT-8	-	11	12	16	3/8	8.0	36.0
	BVND-P117GT-11	BVNV-P117	11	17	20	1/2	11.0	47.5
	BVND-P117GT-8	-	11	17	20	1/2	8.0	44.5
	BVND-P13MGT-11	BVNV-P13M	13.5	07	10	1/4	11.0	34.5
	BVND-P13MGT-8	-	13.5	07	10	1/4	8.0	31.5
	BVND-P130GT-11	BVNV-P130	13.5	10	12	5/16	11.0	36.5
	BVND-P130GT-8	-	13.5	10	12	5/16	8.0	33.5
	BVND-P132GT-11	BVNV-P132	13.5	12	16	3/8	11.0	39.0
	BVND-P132GT-8	-	13.5	12	16	3/8	8.0	36.0
	BVND-P137GT-11	BVNV-P137	13.5	17	20	1/2	11.0	47.5
	BVND-P137GT-8	-	13.5	17	20	1/2	8.0	44.5
	BVND-P160GT-11	-	16	10	12	5/16	11.0	36.5
	BVND-P160GT-8	-	16	10	12	5/16	8.0	33.5
	BVND-P162GT-11	BVNV-P162	16	12	16	3/8	11.0	39.0
	BVND-P163GT-11	BVNV-P163	16	23	25	3/4	11.0	51.0
	BVND-P163GT-8	-	16	23	25	3/4	8.0	48.0
	BVND-P167GT-11	BVNV-P167	16	17	20	1/2	11.0	47.5
	BVND-P167GT-8	-	16	17	20	1/2	8.0	44.5
	BVND-P213GT	BVNV-P213	21	23	25	3/4	12.0	52.0
	BVND-P296GT	BVNV-P296	29	36	40	1-1/4	12.0	67.5
	BVND-P299GT	BVNV-P299	29	29	32	1	12.0	53.0
	BVND-P366GT	BVNV-P366	36	36	40	1-1/4	13.0	66.0
	BVND-P368GT	BVNV-P368	36	48	50	1-1/2	13.0	68.5
	BVND-P428GT	BVNV-P428	42	48	50	1-1/2	13.0	68.5
	BVND-P488GT	BVNV-P488	48	48	50	1-1/2	13.0	66.5

Approvals




① Please replace "B" for black with "S" for grey in front of the order no.

For cable protection systems in a wide range of applications

Connectors PG, polyamide thread

Type VNDZ/VNZ & VA

Type VNDZ/VNZ - Connector straight with strain relief, PG thread

	Order no. IP66 ①	Order no. IP68 ①	Thread PG	Fits to conduit size			Terminal range	Thread length (mm)	Overall length (mm)
				NW	Metric	Inch			
	BVNDZ-P090GT	BVNZ-P090S	09	10	12	5/16	4.0–8.0	7.5	56.0
	BVNDZ-P112GT	BVNZ-P112S	11	12	16	3/8	5.0–10.0	8.0	60.5
	BVNDZ-P132GT	BVNZ-P132S	13.5	12	16	3/8	6.0–12.0	9.0	62.0
	BVNDZ-P137GT	BVNZ-P137S	13.5	17	20	1/2	6.0–12.0	9.0	69.0
	BVNDZ-P167GT	BVNZ-P167S	16	17	20	1/2	10.0–14.0	10.0	72.0
	BVNDZ-P163GT	BVNZ-P163S	16	23	25	3/4	10.0–14.0	10.0	79.0
	BVNDZ-P213GT	BVNZ-P213S	21	23	25	3/4	13.0–18.0	11.0	82.0
	BVNDZ-P299GT	BVNZ-P299S	29	29	32	1	18.0–25.0	11.0	85.0
	BVNDZ-P366GT	BVNZ-P366S	36	36	40	1-1/4	22.0–32.0	13.0	112.0
	BVNDZ-P488GT	BVNZ-P488S	48	48	50	1-1/2	34.0–44.0	14.0	112.0

For machine and plant construction


For separation of damp and dry areas

Integrated strain relief optimally holds and seals cables

If several conductors are used with the connector multiple sealing inserts should be considered

Note: For several conductors multiple sealing inserts MDE are available

Type VA - Connector 45° elbow, PG thread

	Order no. IP66 ①	Order no. IP68 ①	Thread PG	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	BVAD-P090GT	BVAV-P090	09	10	12	5/16	11.0	43.5 x 37.0
	BVAD-P112GT	BVAV-P112	11	12	16	3/8	11.0	48.0 x 40.0
	BVAD-P132GT	BVAV-P132	13.5	12	16	3/8	11.0	48.0 x 41.5
	BVAD-P137GT	BVAV-P137	13.5	17	20	1/2	11.0	55.5 x 51.5
	BVAD-P167GT	BVAV-P167	16	17	20	1/2	11.0	55.5 x 51.5
	BVAD-P213GT	BVAV-P213	21	23	25	3/4	11.0	63.0 x 58.0
	BVAD-P299GT	BVAV-P299	29	29	32	1	12.0	69.0 x 66.0
	BVAD-P366GT	BVAV-P366	36	36	40	1-1/4	13.0	86.0 x 86.0
	BVAD-P488GT	BVAV-P488	48	48	50	1-1/2	13.0	94.0 x 100.0

Approvals




For cable protection systems in a wide range of applications

① Please replace "B" for black with "S" for grey in front of the order no.

Connectors PG, polyamide thread

Type VB

Type VB - Connector 90° curved elbow, PG thread

	Order no. IP66 ①	Order no. IP68 ①	Thread PG	Fits to conduit size		Thread length (mm)	External dimensions (mm)	
				NW	Metric			
	BVBD-P167GT	BVBV-P167	16	17	20	1/2	11.0	47.5 x 73.0
	BVBD-P213GT	BVBV-P213	21	23	25	3/4	12.0	57.5 x 85.0
	BVBD-P299GT	BVBV-P299	29	29	32	1	12.0	67.5 x 96.0
	BVBD-P366GT	BVBV-P366	36	36	40	1-1/4	13.0	79.0 x 123.0
	BVBD-P488GT	BVBV-P488	48	48	50	1-1/2	13.0	92.5 x 135.0

Approvals




For cable protection systems in a wide range of applications
 Smooth elbow allows easy threading of wires and cables
Note: For smaller conduit sizes NW 07 to NW 12 appropriate standard elbows of type VW are also available

① Please replace "B" for black with
 "S" for grey in front of the order no.

Connectors PG, polyamide thread

Type VW

Type VW - Connector 90° elbow, PG thread

	Order no. IP66 ①	Order no. IP68 ①	Thread PG	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVWD-P07MGT-11	BVWV-P07M	07	07	10	1/4	11.0	32.0 x 35.0
	BVWD-P07MGT-8	–	07	07	10	1/4	8.0	29.0 x 35.0
	BVWD-P070GT-11	BVWV-P070	07	10	12	5/16	11.0	34.0 x 39.5
	BVWD-P070GT-8	–	07	10	12	5/16	8.0	31.0 x 39.5
	BVWD-P072GT-11	BVWV-P072	07	12	16	3/8	11.0	38.5 x 44.5
	BVWD-P072GT-8	–	07	12	16	3/8	8.0	35.5 x 44.5
	BVWD-P09MGT-11	BVWV-P09M	09	07	10	1/4	11.0	32.0 x 36.5
	BVWD-P09MGT-8	–	09	07	10	1/4	8.0	29.0 x 36.5
	BVWD-P090GT-11	BVWV-P090	09	10	12	5/16	11.0	34.0 x 39.5
	BVWD-P090GT-8	–	09	10	12	5/16	8.0	31.0 x 39.5
	BVWD-P092GT-11	BVWV-P092	09	12	16	3/8	11.0	38.5 x 44.5
	BVWD-P092GT-8	–	09	12	16	3/8	8.0	35.5 x 44.5
	BVWD-P11MGT-11	BVWV-P11M	11	07	10	1/4	11.0	32.0 x 38.0
	BVWD-P11MGT-8	–	11	07	10	1/4	8.0	29.0 x 38.0
	BVWD-P110GT-11	BVWV-P110	11	10	12	5/16	11.0	34.0 x 41.0
	BVWD-P110GT-8	–	11	10	12	5/16	8.0	31.0 x 41.0
	BVWD-P112GT-11	BVWV-P112	11	12	16	3/8	11.0	38.5 x 46.0
	BVWD-P112GT-8	–	11	12	16	3/8	8.0	35.5 x 46.0
	BVWD-P13MGT-11	BVWV-P13M	13.5	07	10	1/4	11.0	32.0 x 39.5
	BVWD-P13MGT-8	–	13.5	07	10	1/4	8.0	29.0 x 39.5
	BVWD-P130GT-11	BVWV-P130	13.5	10	12	5/16	11.0	34.0 x 42.5
	BVWD-P130GT-8	–	13.5	10	12	5/16	8.0	31.0 x 42.5
	BVWD-P132GT-11	BVWV-P132	13.5	12	16	3/8	11.0	38.5 x 47.5
	BVWD-P132GT-8	–	13.5	12	16	3/8	8.0	35.5 x 47.5
	BVWD-P137GT-11	BVWV-P137	13.5	17	20	1/2	11.0	43.5 x 58.5
	BVWD-P137GT-8	–	13.5	17	20	1/2	8.0	40.5 x 58.5
	BVWD-P167GT-11	BVWV-P167	16	17	20	1/2	11.0	43.5 x 58.5
	BVWD-P167GT-8	–	16	17	20	1/2	8.0	40.5 x 58.5
	BVWD-P213GT	BVWV-P213	21	23	25	3/4	12.0	54.0 x 67.0
	BVWD-P299GT	BVWV-P299	29	29	32	1	12.0	61.5 x 74.5
BVWD-P366GT	BVWV-P366	36	36	40	1-1/4	13.0	72.0 x 98.0	
BVWD-P488GT	BVWV-P488	48	48	50	1-1/2	13.0	85.5 x 111.0	

For cable protection systems in a wide range of applications

Note: For sizes NW 17 to NW 48 curved elbows of type VB are also available

Approvals




① Please replace "B" for black with "S" for grey in front of the order no.

Connectors PG, metal thread

Type VNV

Type VNV - Connector straight, PG metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread PG	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	NVNV-P090	MVNV-P090	09	10	12	5/16	12.0	42.0
	NVNV-P112	MVNV-P112	11	12	16	3/8	12.0	45.0
	NVNV-P137	MVNV-P137	13.5	17	20	1/2	13.0	54.0
	NVNV-P167	MVNV-P167	16	17	20	1/2	13.0	54.0
	NVNV-P213	MVNV-P213	21	23	25	3/4	14.0	57.0
	NVNV-P293	MVNV-P293	29	23	25	3/4	14.0	57.0
	NVNV-P299	MVNV-P299	29	29	32	1	14.0	58.5
	NVNV-P366	MVNV-P366	36	36	40	1-1/4	17.0	75.5
	NVNV-P488	MVNV-P488	48	48	50	1-1/2	17.0	75.5

Approvals



For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Connectors PG, with strain relief, metal thread

Type VNZ

Type VNZ - Connector straight with strain relief, PG metal thread



	Order no. IP68 Compl., black	Order no. fitting*	Order no. insert	Thread PG	Fits to conduit size			Terminal range (mm)	Thread length (mm)	Overall length (mm)
					NW	Metric	Inch			
	NVNZ-P090S/P1	NVNZ-P090R/P	E 150p7	09	10	12	5/16	4.0–6.5	6.0	49.5
	NVNZ-P090S/P3	–	E 150p9	09	10	12	5/16	6.5–9.5	6.0	49.5
	NVNZ-P110S/P1	NVNZ-P110R/P	E 151p7	11	10	12	5/16	4.0–6.5	6.0	52.0
	NVNZ-P110S/P3	–	E 151p9	11	10	12	5/16	6.5–9.5	6.0	52.0
	NVNZ-P112S/P1	NVNZ-P112R/P	E 151p7	11	12	16	3/8	4.0–6.5	6.0	53.5
	NVNZ-P112S/P3	–	E 151p9	11	12	16	3/8	6.5–9.5	6.0	53.5
	NVNZ-P112S/P4	–	E 151p11	11	12	16	3/8	7.0–10.5	6.0	53.5
	NVNZ-P160S/P1	NVNZ-P160R/P	E 152p11	16	10	12	5/16	4.0–6.5	6.5	52.5
	NVNZ-P167S/P3	NVNZ-P167R/P	E 153p9	16	17	20	1/2	6.5–9.5	6.5	61.0
	NVNZ-P167S/P4	–	E 153p11	16	17	20	1/2	7.0–10.5	6.5	61.0
	NVNZ-P167S/P5	–	E 153p13	16	17	20	1/2	9.0–13.0	6.5	61.0
	NVNZ-P167S/P6	–	E 153p16	16	17	20	1/2	11.5–15.5	6.5	61.0
	NVNZ-P213S/P1	NVNZ-P213R/P	E 154p11	21	23	25	3/4	7.0–10.5	7.0	72.0
	NVNZ-P213S/P4	–	E 154p18	21	23	25	3/4	14.0–18.0	7.0	72.0
	NVNZ-P213S/P5	NVNZ-P213R1/P	E 154p20	21	23	25	3/4	17.0–20.5	7.0	72.0
	NVNZ-P299S/P3	NVNZ-P299R/P	E 155p20	29	29	32	1	17.0–20.5	8.0	73.5
	NVNZ-P299S/P4	–	E 155p25	29	29	32	1	20.0–25.0	8.0	73.5
	NVNZ-P299S/P5	–	E 155p28	29	29	32	1	24.0–28.0	8.0	73.5
	NVNZ-P366S/P1	NVNZ-P366R/P	E 156p32	36	36	40	1-1/4	27.0–32.0	9.0	88.0
	NVNZ-P366S/P2	–	E 156p34	36	36	40	1-1/4	29.0–34.0	9.0	88.0
NVNZ-P366S/P3	–	E 156p36	36	36	40	1-1/4	32.0–36.0	9.0	88.0	
NVNZ-P488S/P1	NVNZ-P488R/P	E 158pm 1x35	48	48	50	1-1/2	32.0–35.0	10.0	90.5	
NVNZ-P488S/P2	–	E 158p44	48	48	50	1-1/2	39.0–44.0	10.0	90.5	

*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: –40°C to +135°C


Note: For several conductors multiple sealing inserts MDE are available

R/P version of fitting has to be used in combination with multiple sealing inserts

Connectors PG, metal thread

Type VAV & VBV

Type VAV - Connector 45° elbow, PG metal thread


	Order no. IP68, black	Order no. IP68, grey	Thread PG	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	NVAV-P090	MVAV-P090	09	10	12	5/16	12.0	50.5 x 37.0
	NVAV-P112	MVAV-P112	11	12	16	3/8	12.0	55.0 x 40.5
	NVAV-P137	MVAV-P137	13.5	17	20	1/2	13.0	63.5 x 50.0
	NVAV-P167	MVAV-P167	16	17	20	1/2	13.0	63.5 x 50.0
	NVAV-P213	MVAV-P213	21	23	25	3/4	14.0	73.0 x 60.5
	NVAV-P299	MVAV-P299	29	29	32	1	14.0	78.0 x 68.0
	NVAV-P366	MVAV-P366	36	36	40	1-1/4	17.0	98.0 x 87.5
	NVAV-P488	MVAV-P488	48	48	50	1-1/2	17.0	105.0 x 101.0

Approvals



For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Type VBV - Connector 90° curved elbow, PG metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread PG	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	NVBV-P167	MVBV-P167	16	17	20	1/2	13.0	54.0 x 73.0
	NVBV-P213	MVBV-P213	21	23	25	3/4	14.0	65.5 x 85.0
	NVBV-P299	MVBV-P299	29	29	32	1	14.0	75.0 x 96.0
	NVBV-P366	MVBV-P366	36	36	40	1-1/4	17.0	90.5 x 123.0
	NVBV-P488	MVBV-P488	48	48	50	1-1/2	17.0	103.5 x 135.0

Approvals



For applications in railway vehicles and heavy machine construction
High thread and system connection strength


Smooth elbow allows easy threading of wires and cables

Note: For smaller conduit sizes NW 10 to NW 12 appropriate standard elbows of type VW are also available

Connectors PG, metal thread

Type VWV

Type VWV - Connector 90° elbow, PG metal thread

	Order no. IP68, black	Order no. IP68, grey	Thread PG	Fits to conduit size		Thread length (mm)	External dimensions (mm)	
				NW	Metric			
	NVWV-P090	MVWV-P090	09	10	12	5/16	12.0	39.5 x 39.5
	NVWV-P112	MVWV-P112	11	12	16	3/8	12.0	45.5 x 45.0
	NVWV-P137	MVWV-P137	13.5	17	20	1/2	13.0	50.0 x 58.5
	NVWV-P167	MVWV-P167	16	17	20	1/2	13.0	50.0 x 58.5
	NVWV-P213	MVWV-P213	21	23	25	3/4	14.0	62.0 x 67.0
	NVWV-P299	MVWV-P299	29	29	32	1	14.0	69.0 x 74.5
	NVWV-P366	MVWV-P366	36	36	40	1-1/4	17.0	83.5 x 98.0
	NVWV-P488	MVWV-P488	48	48	50	1-1/2	17.0	96.5 x 111.0

Approvals




For applications in railway vehicles and heavy machine construction
High thread and system connection strength

Note: Curved elbows of type VB are also available for sizes NW 17 to NW 48

Connectors GAS, polyamide thread


Type VN & VW

Type VN - Connector straight, GAS thread

	Order no. IP66 ①	Order no. IP68 ①	Thread GAS	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	BVND-G00MGT	BVNV-G00M	¼"	07	10	1/4	11.0	34.5
	BVND-G000GT	BVNV-G000	¼"	10	12	5/16	11.0	36.5
	BVND-G010GT	BVNV-G010	⅜"	10	12	5/16	11.0	36.5
	BVND-G012GT	BVNV-G012	⅜"	12	16	3/8	11.0	39.0
	BVND-G022GT	BVNV-G022	½"	12	16	3/8	13.0	41.0
	BVND-G027GT	BVNV-G027	½"	17	20	1/2	13.0	49.5
	BVND-G043GT	BVNV-G043	¾"	23	25	3/4	14.0	54.0
	BVND-G069GT	BVNV-G069	1"	29	32	1	15.0	56.0
	BVND-G076GT	BVNV-G076	1¼"	36	40	1-1/4	18.0	71.0
	BVND-G088GT	BVNV-G088	1½"	48	50	1-1/2	18.0	71.5
	BVND-G098GT	BVNV-G098	2"	48	50	1-1/2	18.0	71.5

For cable protection systems in a wide range of applications

Type VW - Connector 90° elbow, GAS thread

	Order no. IP66 ①	Order no. IP68 ①	Thread GAS	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVWD-G00MGT	BVWV-G00M	¼"	07	10	1/4	11.0	32.0 x 36.5
	BVWD-G000GT	BVWV-G000	¼"	10	12	5/16	11.0	34.0 x 39.5
	BVWD-G010GT	BVWV-G010	⅜"	10	12	5/16	11.0	34.0 x 40.5
	BVWD-G012GT	BVWV-G012	⅜"	12	16	3/8	11.0	38.5 x 46.0
	BVWD-G022GT	BVWV-G022	½"	12	16	3/8	13.0	40.5 x 47.5
	BVWD-G027GT	BVWV-G027	½"	17	20	1/2	13.0	45.5 x 58.5
	BVWD-G043GT	BVWV-G043	¾"	23	25	3/4	14.0	56.0 x 66.5
	BVWD-G069GT	BVWV-G069	1"	29	32	1	15.0	64.5 x 73.5
	BVWD-G076GT	BVWV-G076	1¼"	36	40	1-1/4	18.0	77.0 x 96.0
	BVWD-G088GT	BVWV-G088	1½"	48	50	1-1/2	18.0	90.5 x 106.0
	BVWD-G098GT	BVWV-G098	2"	48	50	1-1/2	18.0	90.5 x 111.0


For cable protection systems in a wide range of applications

① Please replace "B" for black with "S" for grey in front of the order no.

Connectors NPT, polyamide thread

Type VN & VA

Type VN - Connector straight, NPT thread


	Order no. IP66 ①	Order no. IP68 ①	Thread NPT	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	BVND-N022GT	BVNV-N022	½"	12	16	3/8	13.0	41.5
	BVND-N027GT	BVNV-N027	½"	17	20	1/2	13.0	49.5
	BVND-N043GT	BVNV-N043	¾"	23	25	3/4	14.0	54.0
	BVND-N069GT	BVNV-N069	1"	29	32	1	15.0	56.0
	BVND-N076GT	BVNV-N076	1¼"	36	40	1-1/4	18.0	71.0
	BVND-N088GT	BVNV-N088	1½"	48	50	1-1/2	18.0	71.5
	BVND-N098GT	BVNV-N098	2"	48	50	1-1/2	18.0	71.5

Approvals



For cable protection systems in a wide range of applications

Type VA - Connector 45° elbow, NPT thread

	Order no. IP66 ①	Order no. IP68 ①	Thread NPT	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVAD-N022GT	BVAV-N022	½"	12	16	3/8	13.0	50.0 x 41.5
	BVAD-N027GT	BVAV-N027	½"	17	20	1/2	13.0	57.5 x 51.5
	BVAD-N043GT	BVAV-N043	¾"	23	25	3/4	14.0	67.0 x 60.0
	BVAD-N069GT	BVAV-N069	1"	29	32	1	15.0	73.5 x 67.0
	BVAD-N076GT	BVAV-N076	1¼"	36	40	1-1/4	18.0	91.5 x 85.5
	BVAD-N088GT	BVAV-N088	1½"	48	50	1-1/2	18.0	99.0 x 96.0
	-	BVAV-N098	2"	48	50	1-1/2	18.0	99.0 x 101.0

Approvals




For cable protection systems in a wide range of applications

① Please replace "B" for black with "S" for grey in front of the order no.

Connectors NPT, polyamide thread

Type VW

Type VW - Connector 90° elbow, NPT thread

	Order no. IP66 ①	Order no. IP68 ①	Thread NPT	Fits to conduit size			Thread length (mm)	External dimensions (mm)
				NW	Metric	Inch		
	BVWD-N022GT	BVWV-N022	½"	12	16	3/8	13.0	40.5 x 47.5
	BVWD-N027GT	BVWV-N027	½"	17	20	1/2	13.0	45.5 x 58.5
	BVWD-N043GT	BVWV-N043	¾"	23	25	3/4	14.0	56.0 x 66.5
	BVWD-N069GT	BVWV-N069	1"	29	32	1	15.0	64.5 x 73.5
	BVWD-N076GT	BVWV-N076	1¼"	36	40	1-1/4	18.0	77.0 x 96.0
	BVWD-N088GT	BVWV-N088	1½"	48	50	1-1/2	18.0	90.5 x 106.0
	BVWD-N098GT	BVWV-N098	2"	48	50	1-1/2	18.0	90.5 x 111.0

Approvals




For applications in railway vehicles and heavy machine construction
 High thread and system connection strength
Note: Curved elbows of type VB are also available for sizes NW 17 to NW 48

① Please replace "B" for black with
 "S" for grey in front of the order no.

Swivel connectors, metric/PG/NPT metal thread

Type SBV & SWV/SBV

Type SBV - Swivel connector 90° curved elbow, metric/PG metal thread

	Order no. IP68, black	Thread metric	Fits to conduit size			Thread length (mm)	External dimensions (mm)
			NW	Metric	Inch		
	NSBV-M207-10	M20 x 1.5	17	20	1/2	10.0	62.5 x 74.5
	NSBV-M253-11	M25 x 1.5	23	25	3/4	11.0	73.0 x 87.5
	NSBV-M329-13	M32 x 1.5	29	32	1	13.0	86.5 x 98.0
	NSBV-M406-13	M40 x 1.5	36	40	1-1/4	13.0	98.5 x 127.5
	NSBV-M409-13	M40 x 1.5	29	32	1	13.0	86.5 x 98.0
	NSBV-M508-14	M50 x 1.5	48	50	1-1/2	14.0	113.5 x 139.0
	NSBV-M638-14	M63 x 1.5	48	50	1-1/2	14.0	110.0 x 139.0


Approvals



	Order no. IP68, black	Thread PG	Fits to conduit size			Thread length (mm)	External dimensions (mm)
			NW	Metric	Inch		
	NSBV-P167-6.5	16	17	20	1/2	6.5	58.0 x 74.5
	NSBV-P213-7	21	23	25	3/4	7.0	69.0 x 87.5
	NSBV-P299-8	29	29	32	1	8.0	80.0 x 98.0
	NSBV-P366-9	36	36	40	1-1/4	9.0	91.5 x 127.5
	NSBV-P488-10	48	48	50	1-1/2	10.0	106.0 x 139.0

For applications with high technical requirements mainly in machine building
 Suitable for occasional rotation
 Thread and integrated swivel adapter made from nickel-plated brass
 High thread and system connection strength
 Smooth elbow allows easy threading of wires and cables

Type SWV/SBV - Swivel connector 90° curved elbow, NPT metal thread

	Order no. IP68, black	Thread NPT	Fits to conduit size			Thread length (mm)	External dimensions (mm)
			NW	Metric	Inch		
	NSWV-N022/01	1/2"	12	16	3/8	15.4	57.0 x 48.5
	NSBV-N027/01	1/2"	17	20	1/2	15.4	66.5 x 74.5
	NSBV-N043/01	3/4"	23	25	3/4	15.7	77.5 x 87.5
	NSBV-N069/01	1"	29	32	1	19.6	92.0 x 98.0
	NSBV-N076/01	1 1/4"	36	40	1-1/4	20.2	104.5 x 125.5
	NSBV-N088/01	1 1/2"	48	50	1-1/2	20.6	118.5 x 138.5
	NSBV-N098/01	2"	48	50	1-1/2	21.4	119.5 x 138.5

Approvals




For applications with high technical requirements mainly in heavy machine building and rail applications
 Suitable for occasional rotation
 Thread and integrated swivel adapter made from colourless anodized aluminium
 High thread and system connection strength
 Smooth elbow allows easy threading of wires and cables

Swivel connectors, metric/NPT metal thread

Type SNV

Type SNV - Swivel connector, straight, IP68 metric metal thread


	Order no. IP68, black	Thread metric	Fits to conduit size			Thread length (mm)	Overall length (mm)
			NW	Metric	Inch		
	NSNV-M120-10	M12 x 1.5	10	12	5/16	10.0	50.5
	NSNV-M162-10	M16 x 1.5	12	16	3/8	10.0	53.5
	NSNV-M207-10	M20 x 1.5	17	20	1/2	10.0	62.5
	NSNV-M253-11	M25 x 1.5	23	25	3/4	11.0	67.5
	NSNV-M329-13	M32 x 1.5	29	32	1	13.0	72.0
	NSNV-M329-7	M32 x 1.5	29	32	1	7.0	66.0
	NSNV-M406-13	M40 x 1.5	36	40	1-1/4	13.0	85.5
	NSNV-M406-7	M40 x 1.5	36	40	1-1/4	7.0	79.5
	NSNV-M409-13	M40 x 1.5	29	32	1	13.0	72.0
	NSNV-M508-14	M50 x 1.5	48	50	1-1/2	14.0	87.5
	NSNV-M638-14	M63 x 1.5	48	50	1-1/2	14.0	84.0

Approvals



For applications in railway vehicles and heavy machine construction
 Specially formulated polyamide 6
 Thread and integrated swivel adapter made from nickel-plated brass
 Very high impact resistance. High thread and system connection strength. Suitable for occasional rotation
 Easy introduction of wires and cables
 Vibration-proof connection to PMAFLEX conduits
 Very good chemical properties
 Free from halogens and cadmium
 Fits both conduit profiles – fine (T) and coarse (G)
 IP68, IP69

Type SNV - Swivel connector, straight, NPT metal thread

	Order no. IP68, black	Thread NPT	Fits to conduit size			Thread length (mm)	Overall length (mm)
			NW	Metric	Inch		
	NSNV-N022/01	½ "	12	16	3/8	15.4	58.0
	NSNV-N027/01	½ "	17	20	1/2	15.4	66.5
	NSNV-N043/01	¾ "	23	25	3/4	15.7	72.0
	NSNV-N069/01	1 "	29	32	1	19.6	77.5
	NSNV-N076/01	1¼ "	36	40	1-1/4	20.2	91.5
	NSNV-N088/01	1½ "	48	50	1-1/2	20.6	92.0
	NSNV-N098/01	2 "	48	50	1-1/2	21.4	93.0

Approvals




For applications with high technical requirements mainly in machine building
 Specially formulated polyamide 6
 Thread and integrated swivel adapter made from colourless anodized aluminium
 Very high impact resistance. High thread and system connection strength. Suitable for occasional rotation
 Easy introduction of wires and cables
 Vibration-proof connection to PMAFLEX conduits
 Very good chemical properties
 Free from halogens and cadmium
 Fits both conduit profiles – fine (T) and coarse (G)
 IP68, IP69

Swivel connectors with female NPT metal thread

Type SNIV & SBIV

Type SNIV - Swivel connector straight, female NPT metal thread, IP68


	Order no. black	Thread		Fits to conduit size		Thread length (mm)	Overall length (mm)
		NPT	NW	Metric	Inch		
	NSNIV-N022/01	½"	12	16	3/8	13.6	59.0
	NSNIV-N027/01	½"	17	20	1/2	13.6	67.0
	NSNIV-N043/01	¾"	23	25	3/4	14.1	72.5
	NSNIV-N069/01	1"	29	32	1	16.8	76.5
	NSNIV-N076/01	1¼"	36	40	1-1/4	17.3	91.5
	NSNIV-N088/01	1½"	48	50	1-1/2	17.3	93.5
	NSNIV-N098/01	2"	48	50	1-1/2	17.8	93.0

Approvals



For applications with high technical requirements mainly in machine building

Type SBIV - 360° Swivel connector, 90° curved elbow, IP68, female NPT metal thread

	Order no. IP68, black ④	Thread		Fits to conduit size		Thread length (mm)	Overall length (mm)
		NPT	NW	Metric	Inch		
	NSWIV-N022/01	½"	12	16	3/8	13.6	48.5 x 46.5
	NSBIV-N027/01	½"	17	20	1/2	13.6	67.0 x 74.5
	NSBIV-N043/01	¾"	23	25	3/4	14.1	78.0 x 87.5
	NSBIV-N069/01	1"	29	32	1	16.8	91.0 x 98.0
	NSBIV-N076/01	1¼"	36	40	1-1/4	17.3	104.5 x 125.5
	NSBIV-N088/01	1½"	48	50	1-1/2	17.3	119.5 x 138.5
	NSBIV-N098/01	2"	48	50	1-1/2	17.8	119.0 x 138.5

Approvals




Technical requirements mainly in heavy machine building and rail applications
 Suitable for occasional rotation
 Specially formulated polyamide 6
 Thread and integrated swivel adapter made from colourless anodized aluminium
 Very high impact resistance
 High thread and system connection strength
 Suitable for occasional rotation
 Easy introduction of wires and cables
 Vibration-proof connection to PMAFLEX conduits
 Very good chemical properties
 Free from halogens and cadmium
 Fits both conduit profiles – fine (T) and coarse (G)
 IP68, IP69

Flanges, connectors with female, metric thread


Type VO & VI

Type VO - Flange 90°

	Order no. IP66 ①	Order no. IP68 ①	Fits to conduit size			Width x Length x Depth (mm)	Screw sizes
			NW	Metric	Inch		
	BVOD-P167GT	BVOV-P167	17	20	1/2	46.0 x 66.0 x 35.5	2 x M5
	BVOD-P213GT	BVOV-P213	23	25	3/4	65.5 x 70.0 x 43.0	2 x M6
	BVOD-P299GT	BVOV-P299	29	32	1	67.0 x 78.0 x 49.5	4 x M6
	BVOD-P366GT	BVOV-P366	36	40	1-1/4	85.0 x 102.0 x 65.5	4 x M6
	BVOD-P488GT	BVOV-P488	48	50	1-1/2	86.0 x 119.0 x 77.5	4 x M6

For cable protection systems in a wide range of applications
 Flange seal FGO4 made from EPDM, flange seal FGO4/01 made from NBR
 Temperature range with FGO4: -40°C to +105°C
 Temperature range with FGO4/01: -25°C to +70°C

Type VI - Connector straight, female metric thread

	Order no. IP66, black	Order no. IP68, black	Thread metric	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	BVID-M12MGT	-	M12 x 1.5	07	10	1/4	8.0	32.0
	BVID-M160GT	BVIR-M160	M16 x 1.5	10	12	5/16	8.0	33.5
	BVID-M162GT	BVIR-M162	M16 x 1.5	12	16	3/8	8.0	36.5
	-	BVIR-M202	M20 x 1.5	12	16	3/8	8.0	36.5
	BVID-M207GT	BVIR-M207	M20 x 1.5	17	20	1/2	8.0	44.5
	BVID-M253GT	BVIR-M253	M25 x 1.5	23	25	3/4	8.0	48.5
	-	BVIR-M257	M25 x 1.5	17	20	1/2	8.0	44.5
	BVID-M329GT	BVIR-M329	M32 x 1.5	29	32	1	10.0	51.5
	BVID-M406GT	BVIR-M406	M40 x 1.5	36	40	1-1/4	10.0	65.5
	BVID-M508GT	BVIR-M508	M50 x 1.5	48	50	1-1/2	10.0	65.5
	BVID-M638GT	BVIR-M638	M63 x 1.5	48	50	1-1/2	10.0	65.5

Approvals




For cable protection systems in a wide range of applications
 VID: IP66 static/IP54 dynamic, conduit side
 VIR: IP68 static/IP67 dynamic, conduit side
 No seal on female thread side

① Please replace "B" for black with "S" for grey in front of the order no.

Connectors with female, metric metal thread

Type VIR

Type VIR - Connector straight, female metric metal thread

	Order no. IP68, black	Thread metric	Fits to conduit size			Thread length (mm)	Overall length (mm)
			NW	Metric	Inch		
	NVIR-M120	M12 x 1.5	10	12	5/16	7.5	35.0
	NVIR-M160	M16 x 1.5	10	12	5/16	9.0	40.5
	NVIR-M162	M16 x 1.5	12	16	3/8	9.0	42.0
	NVIR-M207	M20 x 1.5	17	20	1/2	10.0	50.0
	NVIR-M253	M25 x 1.5	23	25	3/4	10.0	56.0
	NVIR-M329	M32 x 1.5	29	32	1	11.0	55.5
	NVIR-M406	M40 x 1.5	36	40	1-1/4	13.0	71.0
	NVIR-M508	M50 x 1.5	48	50	1-1/2	15.0	75.0
	NVIR-M638	M63 x 1.5	48	50	1-1/2	17.5	76.0

Approvals




For applications in railway vehicles and heavy machine construction
 High thread and system connection strengths
 VIR: IP68 static/IP67 dynamic, conduit side
 No seal on female thread side

Connector straight, PG female thread

Type FIL/VIR & VIZR

Type FIL/VIR - Connector straight, female PG thread

	Order no. IP67, black	Order no. IP68, black	Thread PG	Fits to conduit size		Thread length (mm)	Overall length (mm)	
				NW	Metric			
	BFIL-P07M	–	07	07	10	1/4	8.0	29.0
	BFIL-P070	–	07	10	12	5/16	8.0	34.5
	–	BVIR-P070	07	10	12	5/16	8.0	33.5
	BFIL-P090	–	09	10	12	5/16	8.0	32.5
	–	BVIR-P090	09	10	12	5/16	8.0	33.5
	BFIL-P112	–	11	12	16	3/8	8.0	32.5
	–	BVIR-P112	11	12	16	3/8	8.0	36.5
	BFIL-P117	–	11	17	20	1/2	8.0	35.0
	BFIL-P132	–	13.5	12	16	3/8	8.0	32.5
	BFIL-P137	–	13.5	17	20	1/2	8.0	33.5
	BFIL-P160	–	16	10	12	5/16	7.0	37.0
	BFIL-P167	–	16	17	20	1/2	8.0	33.5
	–	BVIR-P167	16	17	20	1/2	8.0	44.5
	BFIL-P217	–	21	17	20	1/2	10.5	35.5
	BFIL-P213	–	21	23	25	3/4	8.0	39.0
	BFIL-P293	–	29	23	25	3/4	9.0	42.0
	BFIL-P299	–	29	29	32	1	9.0	43.0
	BFIL-P369	–	36	29	32	1	16.0	52.0
	BFIL-P366	–	36	36	25	1-1/4	13.0	64.0
	BFIL-P488	–	48	48	50	1-1/4	13.0	65.0


For cable protection systems in a wide range of applications

VIR: IP68 static/IP67 dynamic, conduit side

FIL: IP67 static/IP65 dynamic, conduit side

No seal on female thread side

Type VIZR - Connector straight, female PG metal thread

	Order no. IP68, black	Thread PG	Fits to conduit size		Thread length (mm)	Overall length (mm)	
			NW	Metric			
	NVIZR-P07M	07	07	10	1/4	6.0	35.0
	NVIZR-P090	09	10	12	5/16	9.0	38.5
	NVIZR-P110	11	10	12	5/16	9.0	41.0
	NVIZR-P112	11	12	16	3/8	9.0	42.0
	NVIZR-P137	13.5	17	20	1/2	8.0	46.5
	NVIZR-P167	16	17	20	1/2	9.5	48.0
	NVIZR-P213	21	23	25	3/4	10.0	58.0
	NVIZR-P299	29	29	32	1	12.5	57.0
	NVIZR-P366	36	36	40	1-1/4	13.0	76.0
	NVIZR-P488	48	48	50	1-1/2	14.0	75.0

For applications in railway vehicles and heavy machine construction

High thread and system connection strengths


VIZR: IP68 static/IP67 dynamic, conduit side

No seal on female thread side

Connectors with female UNEF thread

Type VI

Type VI - Connector straight, UNEF female thread for AMP connectors

	Order no. IP66, black	Order no. IP68, black	Thread UNEF	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
	BVIDA-U15MGT	BVIRA-U15M	5/8" -24	07	10	1/4	8.0	31.5
	BVIDA-U150GT	BVIRA-U150	5/8" -24	10	12	5/16	8.0	33.5
	BVIDA-U152GT	BVIRA-U152	5/8" -24	12	16	3/8	8.0	36.5
	BVIDA-U180GT	BVIRA-U180	3/4" -20	10	12	5/16	8.0	33.5
	BVIDA-U182GT	BVIRA-U182	3/4" -20	12	16	3/8	8.0	36.5
	BVIDA-U187GT	BVIRA-U187	3/4" -20	17	20	1/2	8.0	44.5
	BVIDA-U232GT	BVIRA-U232	1 5/16" -20	12	16	3/8	8.0	38.5
	BVIDA-U237GT	BVIRA-U237	1 5/16" -20	17	20	1/2	8.0	46.5
	BVIDA-U233GT	BVIRA-U233	1 5/16" -20	23	25	3/4	8.0	48.5
	BVIDA-U347GT	BVIRA-U347	1 3/8" -18	17	20	1/2	8.0	46.5
	BVIDA-U343GT	BVIRA-U343	1 3/8" -18	23	25	3/4	8.0	48.5
	BVIDA-U402GT	BVIRA-U402	1 5/8" -18	12	16	3/8	7.0	55.5
	BVIDA-U407GT	BVIRA-U407	1 5/8" -18	17	20	1/2	7.0	61.5
	BVIDA-U403GT	BVIRA-U403	1 5/8" -18	23	25	3/4	7.0	60.5


For cable protection systems in a wide range of applications

Suitable for the AMP connector serie CPC

VIDA: IP66 static/IP54 dynamic, conduit side. VIRA: IP68 static/IP67 dynamic, conduit side

No seal on female thread side

Type VI - Connector straight, UNEF female thread for Souriau connectors

	Order no. IP66, black	Order no. IP68, black	Thread UNEF	Fits to conduit size		Shell size UTG-6	Thread length (mm)	Overall length (mm)
				NW	Inch			
	BVIDB-U162GT	BVIRB-U162	1 1/16" -24	12	3/8	12-8	4.0	43.5
	BVIDB-U202GT	BVIRB-U202	1 3/16" -20	12	3/8	14-12	4.5	44.0
	BVIDB-U232GT	BVIRB-U232	1 5/16" -20	12	3/8	16-19	4.5	49.0
	BVIDB-U237GT	BVIRB-U237	1 5/16" -20	17	1/2	16-19	4.5	52.0
	BVIDB-U267GT	BVIRB-U267	1 1/16" -18	17	1/2	18-23	4.5	52.0
	BVIDB-U297GT	BVIRB-U297	1 3/16" -18	17	1/2	20-28	6.5	55.5
	BVIDB-U293GT	BVIRB-U293	1 3/16" -18	23	3/4	20-28	6.5	52.0
	BVIDB-U323GT	BVIRB-U323	1 5/16" -18	23	3/4	22-35	6.5	52.0
	BVIDB-U357GT	BVIRB-U357	1 7/16" -18	17	1/2	24-48	6.5	58.5
	BVIDB-U353GT	BVIRB-U353	1 7/16" -18	23	3/4	24-48	6.5	54.0
	BVIDB-U359GT	BVIRB-U359	1 7/16" -18	29	1	24-48	6.5	50.5

For cable protection systems in a wide range of applications

Suitable for the Souriau connector series UTG-6/ITT Cannon Trident

VIDB: IP66 static/IP54 dynamic, conduit side. VIRB: IP68 static/IP67 dynamic, conduit side

No seal on female thread side

	Order no. IP68, black	Thread UNEF	Fits to conduit size		Shell size UTG-6	Thread length (mm)	Overall length (mm)
			NW	Inch			
	BVIRS-U162	1 1/16" -24	12	3/8	12	9.4	47.5
	BVIRS-U202	1 3/16" -20	12	3/8	14	9.4	47.5
	BVIRS-U237	1 5/16" -20	17	1/2	16	10.0	56.0
	BVIRS-U267	1 1/16" -18	17	1/2	18	9.2	55.5
	BVIRS-U293	1 3/16" -18	23	3/4	20	9.8	56.0
	BVIRS-U323	1 5/16" -18	23	3/4	22	9.8	56.0
	BVIRS-U359	1 7/16" -18	29	1	24	9.7	55.5

For cable protection systems in a wide range of applications

Suitable for the Souriau connector series UTO and UTS

VIRS: IP68 static/IP67 dynamic, conduit side. No seal on female thread side

Connectors with female UN thread

Type VI

Type VI - Connector straight, UN female thread for MIL-C5015



	Order no. IP66, black	Order no. IP68, black	Thread UN	Fits to conduit size			Thread length (mm)	Overall length (mm)
				NW	Metric	Inch		
VI	–	BVIVG-U152*	5/8"–24 UNEF	12	16	3/8	8.0	36.5
	–	BVIVG-U187*	3/4"–20 UNEF	17	20	1/2	9.0	46.5
	–	BVIVG-U210*	7/8"–20 UNEF	10	07	5/16	9.0	37.0
	BVIDG-U212GT	BVIVG-U212*	7/8"–20 UNEF	12	16	3/8	9.0	38.5
	BVIDG-U217GT	BVIVG-U217*	7/8"–20 UNEF	17	20	1/2	9.0	46.5
	BVIDG-U242GT	BVIVG-U242*	1"–20 UNEF	12	16	3/8	9.0	40.5
	–	BVIVG-U243*	1"–20 UNEF	23	25	3/4	9.0	55.0
	BVIDG-U247GT	BVIVG-U247*	1"–20 UNEF	17	20	1/2	9.0	47.5
	–	BVIVG-U292*	1 1/8"–18 UNEF	12	16	3/8	9.0	40.5
	BVIDG-U293GT	BVIVG-U293*	1 1/8"–18 UNEF	23	25	3/4	9.0	55.0
	BVIDG-U297GT	BVIVG-U297*	1 1/8"–18 UNEF	17	20	1/2	9.0	47.5
	–	BVIVG-U299*	1 3/8"–18 UNEF	29	32	1	9.0	47.0
	–	BVIVG-U349*	1 3/8"–18 UNEF	29	32	1	9.0	52.0
	–	BVIVG-U352*	1 7/8"–18 UNEF	12	16	3/8	9.0	39.0
	BVIDG-U353GT	BVIVG-U353*	1 7/8"–18 UNEF	23	25	3/4	9.0	52.0
	–	BVIVG-U356*	1 7/8"–18 UNEF	36	40	1-1/4	9.0	63.0
	BVIDG-U357GT	BVIVG-U357*	1 7/8"–18 UNEF	17	20	1/2	9.0	46.5
	BVIDG-U359GT	BVIVG-U359*	1 7/8"–18 UNEF	29	29	1	9.0	52.0
	BVIDG-U433GT	BVIVG-U433*	1 3/4"–18 UNS	23	25	3/4	10.0	52.0
	BVIDG-U436GT	BVIVG-U436*	1 3/4"–18 UNS	36	40	1-1/4	10.0	62.5
	–	BVIVG-U437*	1 3/4"–18 UNS	17	20	1/2	10.0	46.5
	BVIDG-U439GT	BVIVG-U439*	1 3/4"–18 UNS	29	32	1	10.0	51.5
	–	BVIVG-U503*	2"–18 UNS	23	25	3/4	10.0	51.5
	BVIDG-U506GT	BVIVG-U506*	2"–18 UNS	36	40	1-1/4	10.0	62.5
	–	BVIVG-U508*	2"–18 UNS	48	50	1-1/2	10.0	64.5
	BVIDG-U509GT	BVIVG-U509*	2"–18 UNS	29	32	1	10.0	55.0
	–	BVIVG-U563*	2 1/4"–16 UN	23	25	3/4	10.0	51.0
	BVIDG-U566GT	BVIVG-U566*	2 1/4"–16 UN	36	40	1-1/4	10.0	62.0
	–	BVIVG-U568*	2 1/4"–16 UN	48	50	1-1/2	10.0	64.0
	BVIDG-U569GT	BVIVG-U569*	2 1/4"–16 UN	29	32	1	10.0	51.0
	–	BVIVG-U628*	2 1/2"–16 UN	48	50	1-1/2	10.0	64.0

Approvals



For applications in machine, vehicle and traction building industries

Suitable for MIL connector series C5015

VIDG: IP66 static/IP54 dynamic, conduit- and thread side

VIVG: IP68 static/IP67 dynamic, conduit- and thread side


No seal on female thread side

* UL Recognition according to UL 1619

Y, T pieces, conduit adapters

Type VY & VT

Type VY - Y piece


	Order no. IP66 ①	Order no. IP68 ①	1 x conduit size			2 x conduit size		
			NW	Metric	Inch	NW	Metric	Inch
	BVYD-100707GT	BVYR-100707	10	12	5/16	07	10	1/4
	BVYD-121010GT	BVYR-121010	12	16	3/8	10	12	5/16
	BVYD-171212GT	BVYR-171212	17	20	1/2	12	16	3/8
	BVYD-231717GT	BVYR-231717	23	25	3/4	17	20	1/2
	BVYD-292323GT	BVYR-292323	29	32	1	23	25	3/4
	BVYD-362929GT	BVYR-362929	36	40	1-1/4	29	32	1
	BVYD-483636GT	BVYR-483636	48	50	1-1/2	36	40	1-1/4

Approvals



Sizes can be adapted with AV conduit adapters to fit smaller conduit dimensions

Type VT - T piece

	Order no. IP66 ①	Order no. IP68 ①	3 x conduit size		
			NW	Metric	Inch
	BVTD-101010GT	BVTR-101010	10	12	5/16
	BVTD-121212GT	BVTR-121212	12	16	3/8
	BVTD-171717GT	BVTR-171717	17	20	1/2
	BVTD-232323GT	BVTR-232323	23	25	3/4
	BVTD-292929GT	BVTR-292929	29	32	1
	BVTD-363636GT	BVTR-363636	36	40	1-1/4
	BVTD-484848GT	BVTR-484848	48	50	1-1/2

Approvals




Sizes can be adapted with AV conduit adapters to fit smaller conduit dimensions

① Please replace "B" for black with "S" for grey in front of the order no.

Y, T pieces, conduit adapters

Type AV

Type AV - Conduit adapter

	Order no. IP66, black	Order no. IP68, black	Fits to fitting for			Fits to fitting size			Overall length (mm)
			NW	Metric	Inch	NW	Metric	Inch	
AV	–	BAVR-10/07	10	12	5/16	07	10	1/4	43.0
	BAVD-12/10GT	BAVR-12/10	12	16	3/8	10	12	5/16	46.0
	BAVD-17/10GT	BAVR-17/10	17	20	1/2	10	12	5/16	53.0
	BAVD-17/12GT	BAVR-17/12	17	20	1/2	12	16	3/8	54.0
	BAVD-23/10GT	BAVR-23/10	23	25	3/4	10	12	5/16	54.0
	BAVD-23/12GT	BAVR-23/12	23	25	3/4	12	16	3/8	53.0
	BAVD-23/17GT	BAVR-23/17	23	25	3/4	17	20	1/2	62.0
	BAVD-29/10GT	BAVR-29/10	29	32	1	10	12	5/16	56.5
	BAVD-29/12GT	BAVR-29/12	29	32	1	12	16	3/8	55.0
	BAVD-29/17GT	BAVR-29/17	29	32	1	17	20	1/2	61.0
	BAVD-29/23GT	BAVR-29/23	29	32	1	23	25	3/4	64.0
	BAVD-36/29GT	BAVR-36/29	36	40	1-1/4	29	32	1	81.0
	BAVD-48/36GT	BAVR-48/36	48	50	1-1/4	36	40	1-1/4	88.5

Allows conduit size reduction of PMA connectors, particularly of T and Y pieces


Approvals



Connections, connection splices, metric, PG

Type VNR-REM & VSG


Type VNR-REM - Connection to solid metal tube, metric/PG

	Order no. IP66 without clamp ①	Order no. IP68 with clamp ①	Fits to conduit size			Steel tube metric	Inside Ø (mm)	Overall length (mm)
			NW	Metric	Inch			
	BVNR-REM162	BVNR-REM162-24	12	16	3/8	M16	16.0	54.0
	BVNR-REM187	BVNR-REM187-28	17	20	1/2	M18	18.5	65.0
	BVNR-REM207	BVNR-REM207-28	17	20	1/2	M20	20.0	65.0
	BVNR-REM253	BVNR-REM253-32	23	25	3/4	M25	26.0	71.0
	BVNR-REM329	BVNR-REM329-44	29	32	1	M32	32.0	71.0
	BVNR-REM406	BVNR-REM406-50	36	40	1-1/4	M40	40.0	90.0
	BVNR-REM508	BVNR-REM508-65	48	50	1-1/2	M50	50.0	90.0

	Order no. IP66 without clamp ①	Order no. IP68 with clamp ①	Fits to conduit size			Steel tube PG	Inside Ø (mm)	Overall length (mm)
			NW	Metric	Inch			
	BVNR-RE12	BVNR-RE12-24	12	16	3/8	PG11	18.5	56.0
	BVNR-RE1317	BVNR-RE1317-28	17	20	1/2	PG13	20.4	65.0
	BVNR-RE17	BVNR-RE17-28	17	20	1/2	PG16	22.5	65.0
	BVNR-RE23	BVNR-RE23-32	23	25	3/4	PG21	28.5	71.0
	BVNR-RE29	BVNR-RE29-44	29	32	1	PG29	37.0	71.0
	BVNR-RE36	BVNR-RE36-50	36	40	1-1/4	PG36	47.0	84.0
	BVNR-RE48	BVNR-RE48-65	48	50	1-1/2	PG48	59.3	90.0

Quick connection of solid metal tubes with flexible PMA conduits
 Jubilee clip made of galvanised bright steel
 Available with or without jubilee clip
 IP68 on corrugated conduit side, on tube side up to IP68 with sealant

Type VSG - Connection splice for flexible conduits

	Order no. IP66 ①	Order no. IP68 ①	Fits to conduit size			Inside Ø (mm)	Overall length (mm)
			NW	Metric	Inch		
	BVSGD-1212GT	BVSGR-1212	12	16	3/8	23.5	66.0
	BVSGD-1717GT	BVSGR-1717	17	20	1/2	29.5	87.0
	BVSGD-2323GT	BVSGR-2323	23	25	3/4	37.0	103.0
	BVSGD-2929GT	BVSGR-2929	29	32	1	44.0	100.0
	BVSGD-3636GT	BVSGR-3636	36	40	1-1/4	53.5	130.0
	BVSGD-4848GT	BVSGR-4848	48	50	1-1/2	66.0	133.0

Approvals




Designed for optimal connection of PMA conduits

① Please replace "B" for black with "S" for grey in front of the order no.

PMA FIXPlus fittings with metric threads

Type UNV-M-UL & UAV-M-UL

Type UNV-M-UL - Connector straight, metric thread


	Order no. black	Order no. grey	Thread metric	Fits to conduit size		Thread length (mm)	Outside Ø (mm)	Overall length (mm)
				NW	Inch			
	BUNV-M207-UL	SUNV-M207-UL	M20 x 1.5	17	1/2	11.0	29.5	47.5
	BUNV-M257-UL	SUNV-M257-UL	M25 x 1.5	17	1/2	12.0	32.0	48.5
	BUNV-M253-UL	SUNV-M253-UL	M25 x 1.5	23	3/4	12.0	37.0	52.0
	BUNV-M323-UL	SUNV-M323-UL	M32 x 1.5	23	3/4	15.0	43.0	55.5
	BUNV-M329-UL	SUNV-M329-UL	M32 x 1.5	29	1	15.0	44.0	56.0
	BUNV-M409-UL	SUNV-M409-UL	M40 x 1.5	29	1	19.0	49.0	60.0
	BUNV-M406-UL	SUNV-M406-UL	M40 x 1.5	36	1-1/4	19.0	55.0	72.5
	BUNV-M506-UL	SUNV-M506-UL	M50 x 1.5	36	1-1/4	19.0	59.0	72.0
	BUNV-M508-UL	SUNV-M508-UL	M50 x 1.5	48	1-1/2	19.0	69.0	72.5
	BUNV-M638-UL	SUNV-M638-UL	M63 x 1.5	48	1-1/2	19.0	75.0	72.0

Approvals



Extremely high impact resistance
 Vibration-resistant connection to PMA FLEXPlus conduits
 Easy installation
 High conduit pull-out strength
 Very good chemical properties
 Free from halogens and cadmium
 Fits conduit profile coarse (G)
 Lock nut delivered with the fitting

Type UAV-M-UL - Connector 45° elbow, metric thread

	Order no. black	Order no. grey	Thread metric	Fits to conduit size		Thread length (mm)	Outside Ø (mm)	Overall length (mm)	Overall height (mm)
				NW	Inch				
	BUAV-M207-UL	SUAV-M207-UL	M20 x 1.5	17	1/2	11.0	29.5	55.5	51.5
	BUAV-M253-UL	SUAV-M253-UL	M25 x 1.5	23	3/4	12.0	37.0	65.0	58.5
	BUAV-M329-UL	SUAV-M329-UL	M32 x 1.5	29	1	15.0	44.0	73.5	66.5
	BUAV-M406-UL	SUAV-M406-UL	M40 x 1.5	36	1-1/4	19.0	53.5	92.5	85.5
	BUAV-M506-UL	SUAV-M506-UL	M50 x 1.5	36	1-1/4	19.0	53.5	92.5	89.5
	BUAV-M508-UL	SUAV-M508-UL	M50 x 1.5	48	1-1/2	19.0	66.0	100.0	96.0
	BUAV-M638-UL	SUAV-M638-UL	M63 x 1.5	48	1-1/2	19.0	66.0	100.0	104.0

Approvals



Extremely high impact resistance
 Vibration-resistant connection to PMA FLEXPlus conduits
 Easy installation
 High conduit pull-out strength
 Very good chemical properties
 Free from halogens and cadmium
 Fits conduit profile coarse (G)
 Lock nut delivered with the fitting

PMA FIXPLus fittings with metric threads

Type UWV-M-UL

Type UWV-M-UL - Connector 90° elbow, metric thread

	Order no. black	Order no. grey	Thread metric	Fits to conduit size		Thread length (mm)	Outside Ø (mm)	Overall length (mm)	Overall height (mm)
				NW	Inch				
UNV-M-UL	BUWV-M207-UL	SUWV-M207-UL	M20 x 1.5	17	1/2	11.0	29.5	58.5	43.5
	BUWV-M253-UL	SUWV-M253-UL	M25 x 1.5	23	3/4	12.0	37.0	65.0	54.0
	BUWV-M329-UL	SUWV-M329-UL	M32 x 1.5	29	1	15.0	44.0	73.0	64.5
	BUWV-M406-UL	SUWV-M406-UL	M40 x 1.5	36	1-1/4	19.0	53.5	69.0	78.0
	BUWV-M508-UL	SUWV-M508-UL	M50 x 1.5	48	1-1/2	19.0	66.0	106.0	91.5



Approvals




Extremely high impact resistance
 Vibration-resistant connection to PMA FLEXPLus conduits
 Easy installation
 High conduit pull-out strength
 Very good chemical properties
 Free from halogens and cadmium
 Fits conduit profile coarse (G)
 Lock nut delivered with the fitting

PMA FIXPlus fittings with NPT threads

Type UNV-N-UL & UAV-N-UL

Type UNV-N-UL - Connector straight, NPT thread


	Order no. black	Order no. grey	Thread size NPT	Fits to conduit size		Thread length (mm)	Outside Ø (mm)	Overall length (mm)
				NW	Inch			
	BUNV-N027-UL	SUNV-N027-UL	½"	17	1/2	13.0	29.5	49.5
	BUNV-N043-UL	SUNV-N043-UL	¾"	23	3/4	14.0	37.0	54.0
	BUNV-N069-UL	SUNV-N069-UL	1"	29	1	15.0	44.0	56.0
	BUNV-N076-UL	SUNV-N076-UL	1¼"	36	1-1/4	18.0	55.0	71.0
	BUNV-N088-UL	SUNV-N088-UL	1½"	48	1-1/2	18.0	69.0	71.5
	BUNV-N098-UL	SUNV-N098-UL	2"	48	1-1/2	18.0	69.0	71.5

Approvals



Extremely high impact resistance
 Vibration-resistant connection to PMA FLEXPlus conduits
 Easy installation
 High conduit pull-out strength
 Very good chemical properties
 Free from halogens and cadmium
 Fits conduit profile coarse (G)
 Lock nuts available on request

Type UAV-N-UL - Connector 45° elbow, NPT thread

	Order no. black	Order no. grey	Thread size NPT	Fits to conduit size		Thread length (mm)	Outside Ø (mm)	Overall length (mm)	Overall height (mm)
				NW	Inch				
	BUAV-N027-UL	SUAV-N027-UL	½"	17	1/2	13.0	29.5	57.5	51.5
	BUAV-N043-UL	SUAV-N043-UL	¾"	23	3/4	14.0	37.0	67.0	60.0
	BUAV-N069-UL	SUAV-N069-UL	1"	29	1	15.0	44.0	73.5	67.0
	BUAV-N076-UL	SUAV-N076-UL	1¼"	36	1-1/4	18.0	53.5	91.5	85.5
	BUAV-N088-UL	SUAV-N088-UL	1½"	36	1-1/4	18.0	66.0	99.0	96.0
	BUAV-N098-UL	SUAV-N097-UL	2"	48	1-1/2	18.0	66.0	99.0	101.0

Approvals




Extremely high impact resistance
 Vibration-resistant connection to PMA FLEXPlus conduits
 Easy installation
 High conduit pull-out strength
 Very good chemical properties
 Free from halogens and cadmium
 Fits conduit profile coarse (G)
 Lock nuts available on request

PMA FIXPLus fittings with NPT threads

Type UWV-M-UL

Type UWV-M-UL - Connector 90° elbow, NPT thread

	Order no. black	Order no. grey	Thread size NPT	Fits to conduit size		Thread length (mm)	Outside Ø (mm)	Overall length (mm)	Overall height (mm)
				NW	Inch				
	BUWV-N027-UL	SUWV-N027-UL	½"	17	1/2	13.0	29.5	58.5	45.5
	BUWV-N043-UL	SUWV-N043-UL	¾"	23	3/4	14.0	37.0	66.5	56.0
	BUWV-N069-UL	SUWV-N069-UL	1"	29	1	15.0	44.0	73.5	64.5
	BUWV-N076-UL	SUWV-N076-UL	1¼"	36	1-1/4	18.0	53.5	96.0	77.0
	BUWV-N088-UL	SUWV-N088-UL	1½"	48	1-1/2	18.0	66.0	106.0	90.5
	BUWV-N098-UL	SUWV-N098-UL	2"	48	1-1/2	18.0	66.0	111.0	90.5

Approvals



Extremely high impact resistance
 Vibration-resistant connection to PMA FLEXPLus conduits
 Easy installation
 High conduit pull-out strength
 Very good chemical properties
 Free from halogens and cadmium
 Fits conduit profile coarse (G)
 Lock nuts available on request



Special connectors

Introduction

Meet the demands of our customers. We are always looking for ways to offer our best services.

In addition to the broad ranges of connectors offered within the PMAFIX Pro, PMAFIX and Smartline product lines, PMA offers further application specific connector solutions such as the MPNK-M series for high temperatures applications, JENQ-M series for Food and Beverage applications and the MONK-M to terminate an overbraided conduit.






Metal connectors, metric


Type MPNK & MONK

Type MPNK - Metal connector for PMA conduits, metric thread

	Order no. metal	Thread metric	Fits to conduit size NW	Fits to conduit size profile	Inside Ø min. (mm)	Thread length (mm)
	MPNK-M160	M16 x 1.5	10	T	12.0	12.0
	MPNK-M162	M16 x 1.5	12	T	12.0	12.0
	MPNK-M207	M20 x 1.5	17	T	15.8	14.0
	MPNK-M253	M25 x 1.5	23	G	19.0	15.0
	MPNK-M329	M32 x 1.5	29	G	26.5	18.0

For high temperature applications
 Suitable for high mechanical loads
 Nickel-plated brass
 Seals made from silicon
 Easy introduction of wires and cables
 Vibration-proof connection to PMAFLEX conduits
 Very good chemical properties
 IP68

Type MONK - Metal connector for overbraided conduits, metric thread


	Order no. metal	Thread metric	Fits to conduit size NW	Fits to conduit profile	Inside Ø min. (mm)	Thread length (mm)
	MONK-M162	M16 x 1.5	12	T	12.0	12.0
	MONK-M207	M20 x 1.5	17	T	16.0	14.0
	MONK-M253	M25 x 1.5	23	G	19.0	15.0
	MONK-M329	M32 x 1.5	29	G	26.5	18.0
	MONK-M406	M40 x 1.5	36	G	35.0	15.0
	MONK-M508	M50 x 1.5	48	G	45.0	16.0

For termination of overbraided conduits
 For high temperature applications and applications in areas with hot metal shavings and flying sparks
 Nickel-plated brass
 Seals made from silicon

Stainless steel liquid tight fitting

Type JENQ

Type JENQ - for overextruded conduit, IP69

	Order no.	Thread size metric	Fits to conduit size NW	Thread length (mm)	Inside Ø min. (mm)	Ø D (mm)	Wrench size (mm)	sw
	JENQ-M162-10	M16 x 1.5	12	10.0	9.2	31.9	35.9	30.0
	JENQ-M207-10	M20 x 1.5	17	10.0	13.0	35.0	36.9	32.0
	JENQ-M253-11	M25 x 1.5	23	11.0	18.3	44.5	41.6	40.0
	JENQ-M329-13	M32 x 1.5	29	13.0	24.0	55.5	48.7	50.0
	JENQ-M406-13	M40 x 1.5	36	13.0	32.4	61.5	51.2	57.0
	JENQ-M506-14	M50 x 1.5	48	14.0	42.3	78.0	57.4	74.0

Approvals



IP 69 rating
 For termination of overextruded conduits
 For high hygienic requirements
 Suitable for food & beverage industry
 Unique single piece design Stainless Steel 316L material
 Seals made from FDA compliant material
 Easy cleaning
 High thread and system connection strengths
 High resistance to chemicals and cleaning agents
 Easy assembly

Accessories

Introduction

For flexible and application friendly solutions. PMA offers a vast array of practical accessories in order to complete the PMA cable protection system.

We offer lock nuts produced from polyamide or metal, thread reducers and enlargers, conduit adapters, swivel adapters as well as different mounting clips for conduits. All this practical products will help to create the PMA line for our customers even more flexible and application friendly.

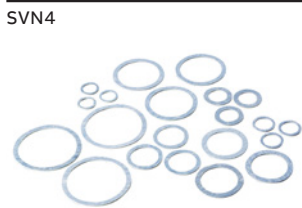




Flat gaskets, metric, PG, NPT, GAS

Type SVN4

Type SVN4 - Flat thread gasket, metric/NPT/PG/GAS



Order no.	Fits to thread metric	Inside Ø (mm)	Outside Ø (mm)	Thickness (mm)
SVN4-M12	M12 x 1.5	12.0	20.0	1.5
SVN4-M12/02	M12 x 1.5	12.0	23.0	1.5
SVN4-M16	M16 x 1.5	16.0	22.0	1.5
SVN4-M16/02	M16 x 1.5	16.0	25.0	1.5
SVN4-M20	M20 x 1.5	20.0	27.0	1.5
SVN4-M20/02	M20 x 1.5	20.0	33.0	1.5
SVN4-M25	M25 x 1.5	25.0	35.0	1.5
SVN4-M25/01	M25 x 1.5	25.0	31.0	1.5
SVN4-M25/02	M25 x 1.5	25.0	39.0	1.5
SVN4-M32	M32 x 1.5	32.0	43.0	1.5
SVN4-M32/02	M32 x 1.5	32.0	49.0	1.5
SVN4-M40	M40 x 1.5	40.0	55.0	1.5
SVN4-M40/01	M40 x 1.5	40.0	51.0	1.5
SVN4-M40/02	M40 x 1.5	40.0	64.0	1.5
SVN4-M50	M50 x 1.5	50.0	69.0	1.5
SVN4-M50/01	M50 x 1.5	50.0	59.0	1.5
SVN4-M50/02	M50 x 1.5	50.0	74.0	1.5
SVN4-M63	M63 x 1.5	63.0	75.0	1.5

Order no.	Fits to thread PG	Inside Ø (mm)	Outside Ø (mm)	Thickness (mm)
SVN4-07	07	12.5	16.5	1.5
SVN4-09	07	15.2	20.0	1.5
SVN4-11	11	18.6	24.0	1.5
SVN4-13	13.5	20.4	31.0	1.5
SVN4-16	16	22.5	31.0	1.5
SVN4-21	21	28.3	37.0	1.5
SVN4-29	29	37.0	48.0	1.5
SVN4-36	36	47.0	57.0	1.5
SVN4-42	42	54.0	60.0	1.5
SVN4-48	48	59.3	69.0	1.5

Order no.	Fits to thread PG	Inside Ø (mm)	Outside Ø (mm)	Thickness (mm)
SVN4-N02/01	½"	28.0	21.6	1.5
SVN4-N04/01	¾"	36.0	27.0	1.5
SVN4-N06/01	1"	46.0	33.7	1.5
SVN4-N07/01	1¼"	55.0	42.5	1.5
SVN4-N08/01	1½"	70.0	48.6	1.5
SVN4-N09/01	2"	70.0	60.7	1.5

Order no.	Fits to thread GAS	Inside Ø (mm)	Outside Ø (mm)	Thickness (mm)
SVN4-G00	¼"	13.2	20.0	1.5
SVN4-G01	⅜"	16.7	22.0	1.5
SVN4-G02	½"	21.0	28.0	1.5
SVN4-G04	¾"	26.5	34.0	1.5
SVN4-G06	1"	33.3	42.0	1.5
SVN4-G07	1¼"	41.9	53.0	1.5
SVN4-G08	1½"	47.8	62.0	1.5
SVN4-G09	2"	59.6	69.0	1.5

For sealing of polyamide or metal threads of PMA fittings. For ingress protection at the thread up to IP68

For solid sealing of uneven rough contact areas around the thread hole or when no constructive measures for O-Rings are provided


NBR reinforced with aramide fibres (asbestos-free). Temperature range: -50°C to +200°C, short-term to +350°C

Note: Depending on flange sizes flat thread gaskets can have different widths. Please indicate fitting for which gasket is needed for replacement orders

Locking clips, water impact protection


Type AFN2, OVN2 & WPS

Type AFN2 - Universal safety clip

	Order no. dark grey	Fits to conduit size			Width (mm)	Length (mm)	Thickness (mm)
		NW	Inch	Profile			
	AFN2-07GT.LOSE	07	1/4	G + T	14.0	14.0	7.0
	AFN2-10GT.LOSE	10	5/16	G + T	17.5	17.0	8.0
	AFN2-12GT.LOSE	12	3/8	G + T	20.5	20.0	7.3
	AFN2-17GT.LOSE	17	1/2	G + T	26.5	22.0	8.0
	AFN2-23GT.LOSE	23	3/4	G + T	34.0	27.5	11.8
	AFN2-29GT.LOSE	29	1	G + T	40.5	32.0	11.8
	AFN2-36GT.LOSE	36	1-1/4	G + T	50.0	39.0	9.5
	AFN2-48GT.LOSE	48	1-1/2	G + T	62.0	47.0	9.5


Pre-installed in PMA connectors IP66 and IP68GT
Allows simple push-in assembly of PMA conduits

Type OVN2 - Oval clip

	Order no. dark grey	Fits to conduit size			Width (mm)	Length (mm)	Thickness (mm)
		NW	Inch	Profile			
	OVN2-07.100	07	1/4	G + T	14.0	14.0	6.0
	OVN2-10.50	10	5/16	G + T	17.5	17.0	7.0
	OVN2-12.50	12	3/8	G + T	21.0	19.0	6.0
	OVN2-17.50	17	1/2	G + T	26.5	22.5	7.0
	OVN2-23.30	23	3/4	G + T	34.0	27.5	10.5
	OVN2-29.20	29	1	G + T	40.5	32.0	10.5
	OVN2-36.40	36	1-1/4	G + T	49.5	39.0	8.5
	OVN2-48.20	48	1-1/2	G + T	62.0	47.0	8.5

Provides reliable fixation of PMA conduits within PMA IP68 fittings

Type WPS - Water impact protection


	Order no. black	Fits to conduit size		Outside Ø (mm)	Thickness (mm)
		NW	Profile		
	WPS-NW10	10	G + T	22.0	8.0
	WPS-NW12	12	G + T	26.0	8.0
	WPS-NW17	17	G + T	33.0	8.0
	WPS-NW23	23	G + T	40.0	9.0
	WPS-NW29	29	G + T	47.0	9.5
	WPS-NW36	36	G + T	59.0	10.0
	WPS-NW48	48	G + T	71.0	10.0

Increased protection of PMAFIX fittings against water jet impact – increased protection up to IP69
For increased ingress protection requirements regarding high pressure/steam jet cleaning
Based on PMAFIX IP68 system
Two-piece water impact protection with click cap
Retrofit installation possible

Sealing caps

Type NVN3, NFN3 & NR

Type NVN3 - Sealing cap, reinforced

	Order no.	NW	Fits to conduit size		Length (mm)
			Metric	Inch	
	NVN3-07.100	07	10	1/4	9.0
	NVN3-09.50	10	12	5/16	9.0
	NVN3-11.50	12	16	3/8	12.0
	NVN3-16.50	17	23	1/2	16.5
	NVN3-21.30	23	25	3/4	13.0
	NVN3-29.20	29	32	1	14.0
	NVN3-36.20	36	40	1-1/4	17.5
	NVN3-48.10	48	50	1-1/2	17.5

In connection with PMAFIX connectors („V“ series) and PMA corrugated conduits

For ingress protection IP68 static/IP67 dynamic


Specially modified polyesterelastomer

Free from halogens and cadmium

Fits both conduit profiles: fine (T) and coarse (G)

Temperature range: -40°C to +105°C

Type NFN3 - Sealing cap

	Order no.	NW	Fits to conduit size		Length (mm)
			Inch	Profile	
	NFN3-07	07	1/4	10	9.0
	NFN3-09	10	5/16	12	9.0
	NFN3-11	12	3/8	16	9.0
	NFN3-16	17	1/2	23	9.0
	NFN3-21	23	3/4	25	9.0
	NFN3-29	29	1	32	9.0
	NFN3-36	36	1-1/4	40	11.0
	NFN3-48	48	1-1/2	50	11.0

In connection with PMAFIX connectors („F“ series) and PMA corrugated conduits

For ingress protection IP67 static/IP65 dynamic


Specially modified polyesterelastomer

Free from halogens and cadmium

Fits conduit profiles: fine (T) and coarse (G)

Temperature range: -40°C to +105°C

Type KNH2 - PMAFIX Pro sealing and locking element

	Order no.	NW	Fits to conduit size		Outside Ø (mm)	Overall length (mm)
			Metric	Inch		
	KNH2-NW10	10	12	5/16	22.0	28.0
	KNH2-NW12	12	16	3/8	25.5	33.5
	KNH2-NW17	17	20	1/2	31.5	38.5
	KNH2-NW23	23	25	3/4	38.5	41.0
	KNH2-NW29	29	32	1	46.5	46.5
	KNH2-NW36	36	40	1-1/4	55.5	50.5
	KNH2-NW48	48	50	1-1/2	68.0	56.5

For use in connection with PMAFIX PRO connectors PMA corrugated conduits for ingress protection IP68 and IP69 static and dynamic

Specially modified PA6/Polyester-elastomer

Free from halogens and cadmium

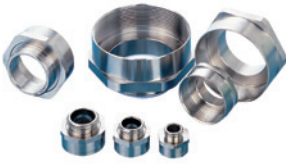
Fits conduit profiles: fine (T) and coarse (G)

Temperature range: -40°C to +105°C

Enlargers, reducers, metric and PG


Type ME, MR & NR

Type ME - Enlarger, brass, metric thread

	Order no.	Thread outside		Thread inside		Wrench size (mm)	Inside Ø (mm)	Overall length (mm)
		Metric	Length (mm)	Metric	Length (mm)			
	M12M16M	M12 x 1.5	5.0	M16 x 1.5	7.0	18	8.0	16.0
	M16M20M	M16 x 1.5	5.0	M20 x 1.5	7.5	22	12.0	16.5
	M20M25M	M20 x 1.5	6.0	M25 x 1.5	8.0	27	15.0	18.5
	M25M32M	M25 x 1.5	7.0	M32 x 1.5	9.0	34	21.0	20.5
	M32M40M	M32 x 1.5	8.0	M40 x 1.5	10	42	26.0	23.5
	M40M50M	M40 x 1.5	8.0	M50 x 1.5	13	52	34.0	30.0
	M50M63M	M50 x 1.5	9.0	M63 x 1.5	16	65	44.0	32.5


For enlargement of an existing thread
 Nickel-plated brass
 Hexagonal form
 Temperature range: -60°C to +200°C

Type MR - Reducer, brass, metric thread

	Order no. standard	Order no. hexagonal	Thread outside metric	Thread inside metric
	M16M12M	M16M12M/6	M16 x 1.5	M12 x 1.5
	M20M12M	M20M12M/6	M20 x 1.5	M12 x 1.5
	M20M16M	M20M16M/6	M20 x 1.5	M16 x 1.5
	M25M16M	M25M16M/6	M25 x 1.5	M16 x 1.5
	M25M20M	M25M20M/6	M25 x 1.5	M20 x 1.5
	M32M20M	M32M20M/6	M32 x 1.5	M20 x 1.5
	M32M25M	M32M25M/6	M32 x 1.5	M25 x 1.5
	M40M25M	M40M25M/6	M40 x 1.5	M25 x 1.5
	M40M32M	M40M32M/6	M40 x 1.5	M32 x 1.5
	M50M32M	M50M32M/6	M50 x 1.5	M32 x 1.5
	M50M40M	M50M40M/6	M50 x 1.5	M40 x 1.5
	M63M40M	M63M40M/6	M63 x 1.5	M40 x 1.5
	M63M50M	M63M50M/6	M63 x 1.5	M50 x 1.5

Reduction of threaded or clearance holes to smaller thread sizes
 Nickel-plated brass
 Temperature range: -60°C to +200°C
 Round form without O-ring, XXXX/6 hexagonal form with O-ring

Type NR - Reducer, PG

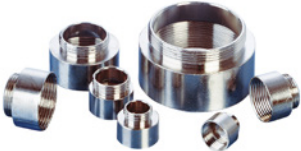
	Order no.	Thread outside PG	Thread inside PG	Length (mm)	Inside Ø (mm)	Outside Ø (mm)
	1109N	11	09	22.5	10.5	24.5
	1309N	13.5	09	15.0	10.0	26.0
	1311N	13.5	11	24.0	11.5	26.0
	1609N	16	09	16.0	10.0	29.0
	1611N	16	11	16.0	11.5	29.0
	1613N	16	13.5	27.0	13.5	29.0
	2113N	21	13.5	16.0	13.5	35.5
	2116N	21	16	16.0	15.5	35.5
	2921N	29	21	17.0	22.0	43.0
	3629N	36	29	24.0	30.5	54.0

Reduction of threaded or clearance holes to smaller PG thread sizes
 High-grade, glass fibre reinforced Polyamid 6
 Temperature range: -30°C to +100°C

Enlargers, reducers, PG


Type ME & MR

Type ME - Enlarger, brass, PG thread

	Order no. metal, standard	Thread outside		Thread inside		Outside Ø (mm)	Overall length (mm)
		PG	Length (mm)	PG	Length (mm)		
	0709M	07	5.0	09	07	17.0	15.0
	0911M	09	6.0	11	07	20.0	16.5
	0913M	09	6.0	13	7.5	22.0	17.5
	1113M	11	6.0	13	08	22.0	17.5
	1116M	11	6.5	16	8.5	24.0	19.0
	1121M	11	6.5	21	10	30.0	21.0
	1316M	13.5	6.5	16	7.5	24.0	19.0
	1321M	13.5	6.5	21	8.5	30.0	21.0
	1621M	16	6.5	21	8.5	30.0	21.0
	1629M	16	6.5	29	11	39.0	22.5
	2129M	21	7.0	29	11.5	39.0	23.0
	2936M	29	8.0	36	12	50.0	27.5
	4248M	42	10.0	48	17	64.0	33.0

For enlargement of an existing thread
Nickel-plated brass
Temperature range: -60°C to +200°C

Type MR - Reducer, brass, PG thread


	Order no. metal, standard	Thread outside		Thread inside PG	Outside Ø (mm)	Overall length (mm)
		PG	Length (mm)			
	0907M	09	6.0	07	17.0	8.5
	1107M	11	6.0	07	20.0	8.5
	1109M	11	6.0	09	20.0	8.5
	1307M	13.5	6.5	07	22.0	9.0
	1309M	13.5	6.5	09	22.0	9.0
	1311M	13.5	6.5	11	22.0	9.0
	1607M	16	6.5	07	24.0	9.5
	1609M	16	6.5	09	24.0	9.5
	1611M	16	6.5	11	24.0	9.5
	1613M	16	6.5	13.5	24.0	9.5
	2111M	21	7.0	11	30.0	10.0
	2113M	21	7.0	13.5	30.0	10.0
	2116M	21	7.0	16	30.0	10.0
	2916M	29	8.0	16	39.0	11.5
	2921M	29	8.0	21	39.0	11.5
	3621M	36	9.0	21	50.0	12.5
	3629M	36	9.0	29	50.0	12.5
	4229M	42	10	29	57.0	14.0
	4236M	42	10	36	57.0	14.0
	4836M	48	10	36	64.0	14.0
4842M	48	10	42	64.0	14.0	

Reduction of threaded or clearance holes to smaller thread sizes
Nickel-plated brass
Temperature range: -60°C to +200°C

Plug screws, metric, PG

Type 514

Type 514 - Plug screw, metric/PG thread

	Order no. grey	Fits to thread metric	Outside Ø (mm)	Height (mm)	Thread length (mm)
	514-M12	M12 x 1.5	15.0	10.0	6.0
	514-M16	M16 x 1.5	20.0	10.5	6.0
	514-M20	M20 x 1.5	24.0	10.5	6.0
	514-M25	M25 x 1.5	30.0	13.0	8.0
	514-M32	M32 x 1.5	37.0	13.5	8.0
	514-M40	M40 x 1.5	46.0	14.0	8.0
	514-M50	M50 x 1.5	56.0	16.5	10.0
	514-M63	M63 x 1.5	70.0	17.0	12.0
	Order no. grey	Fits to thread PG	Outside Ø (mm)	Height (mm)	Thread length (mm)
	514-07	07	15.0	10.0	6.0
	514-09	09	19.0	10.0	6.0
	514-11	11	22.0	10.0	6.0
	514-13	13.5	25.0	10.0	6.0
	514-16	16	27.0	10.0	6.0
	514-21	21	33.0	12.5	8.0
	514-29	29	44.5	13.0	8.0
	514-36	36	55.5	15.0	10.0
	514-48	48	69.5	17.0	12.0

For closing off unused threaded holes

Polyamide 6 glass fibre reinforced

Free from halogens and cadmium


IP54

Temperature range: -30°C to +100°C

Lock nuts, metric, PG

Type MN

Type MN - Hexagonal lock nut, polyamide, metric/PG thread

	Order no. black	Order no. grey	Fits to thread metric	Wrench size (mm)	Height (mm)
MN 	BMN-M12	GMN-M12	M12 x 1.5	17	5.0
	BMN-M16	GMN-M16	M16 x 1.5	22	5.0
	BMN-M20	GMN-M20	M20 x 1.5	26	5.6
	BMN-M25	GMN-M25	M25 x 1.5	32	6.0
	BMN-M32	GMN-M32	M32 x 1.5	41	7.0
	BMN-M40	GMN-M40	M40 x 1.5	50	7.0
	BMN-M50	GMN-M50	M50 x 1.5	60	8.0
	BMN-M63	GMN-M63	M63 x 1.5	75	8.0
	Order no. black	Order no. grey	Fits to thread PG	Wrench size (mm)	Height (mm)
	BMN-07	GMN-07	07	19	5.0
	BMN-09	GMN-09	09	22	5.0
	BMN-11	GMN-11	11	24	5.0
	BMN-13	GMN-13	13.5	27	6.0
	BMN-16	GMN-16	16	30	6.0
	BMN-21	GMN-21	21	36	7.0
	BMN-29	GMN-29	29	46	7.0
	BMN-36	GMN-36	36	60	8.0
	BMN-48	GMN-48	48	70	8.0

Glass fibre reinforced Polyamid 6
High tightening torques

Lock nuts, metric, PG

Type MM

Type MM - Hexagonal lock nut, brass, metric/PG thread

MM



Order no.	Fits to thread metric	Wrench size (mm)	Height (mm)
GMM-M12	M12 x 1.5	15	2.8
GMM-M16	M16 x 1.5	19	2.8
GMM-M20	M20 x 1.5	24	3.0
GMM-M25	M25 x 1.5	30	3.5
GMM-M32	M32 x 1.5	36	4.0
GMM-M40	M40 x 1.5	46	4.5
GMM-M50	M50 x 1.5	60	5.0
GMM-M63	M63 x 1.5	70	5.5


Order no.	Fits to thread PG	Wrench size (mm)	Height (mm)
GMM-07	07	15	2.8
GMM-09	09	18	2.8
GMM-11	11	21	3.0
GMM-13	13.5	23	3.0
GMM-16	16	26	3.0
GMM-21	21	32	3.5
GMM-29	29	41	4.0
GMM-36	36	51	5.0
GMM-42	42	60	5.0
GMM-48	48	64	5.5

Nickel-plated brass
Maximum possible torque
Safe system connection

System supports, half-shells


Type VH & GN

Type VH - System support

	Order no. support ①	Order no. clip ①	Order no. complete ①	Fits to conduit size		Width x Height x Depth (mm)	Fixing screws
				NW	Metric		
	BVH-17-010	BVH-17-020	BVH-17-000	17	20	35 x 36 x 36	6 x M5
	BVH-23-010	BVH-23-020	BVH-23-000	23	25	35 x 44 x 36	6 x M5
	BVH-29-010	BVH-29-020	BVH-29-000	29	32	46 x 52 x 40	6 x M5
	BVH-36-010	BVH-36-020	BVH-36-000	36	40	53 x 58 x 60	6 x M5
	BVH-48-010	BVH-48-020	BVH-48-000	48	50	66 x 72 x 60	6 x M5

For applications in machine building and installation
 Optimal axial strain relief due to integrated rib
 Variable fixation possible due to six holes, safe against turning
 With safety lid suitable for overhead installation
 High retention forces
 PA 6

Type GN - Half shell

	Order no. fine profile, black	Order no. coarse profile, black	Fits to conduit size		Outside Ø (mm)	Width (mm)
			NW	Metric		
	BGN-S12T	–	12	16	26.5	34.0
	BGN-S17T	BGN-S17G	17	20	32.0	34.0
	BGN-S23T	BGN-S23G	23	25	39.5	34.0
	BGN-S29T	BGN-S29G	29	32	47.0	34.0
	BGN-S36T	–	36	40	55.0	36.5
	–	BGN-S36G	36	40	55.0	34.0
	BGN-S48T	–	48	50	66.5	36.5
	–	BGN-S48G	48	50	66.5	34.0
	–	BGN-S70G	70	80	93.5	38.0


For conduit fixation in conjunction with beam systems, particularly in traction and machine applications
 Fixes conduit against axial movements
 Allows radial turning of conduit
 Especially suitable for dynamic applications due to rounded edges
 PA 6

① Please replace "B" for black with "S" for grey in front of the order no.

System supports, rails for system supports


Type FH-0 & FHS

Type FH-0 - System support, one-piece

	Order no. black	Order no. grey	Fits to conduit size			Width x Height x Depth (mm)	Fixing screws
			NW	Metric	Inch		
	BFH-07-0	SFH-07-0	07	10	1/4	17.0 x 21.5 x 20.0	1 x M4
	BFH-10-0	SFH-10-0	10	12	5/16	20.5 x 24.5 x 20.0	1 x M5
	BFH-12-0	SFH-12-0	12	16	3/8	24.0 x 27.0 x 20.0	1 x M5
	BFH-17-0	SFH-17-0	17	20	1/2	30.0 x 34.0 x 20.0	1 x M6
	BFH-23-0	SFH-23-0	23	25	3/4	38.5 x 42.0 x 20.0	1 x M6
	BFH-29-0	SFH-29-0	29	32	1	45.5 x 48.0 x 20.0	1 x M6
	BFH-36-0	SFH-36-0	36	40	1-1/4	55.5 x 56.0 x 20.0	1 x M6
	BFH-48-0	SFH-48-0	48	50	1-1/2	67.5 x 68.0 x 20.0	1 x M6

For applications in machine building and installation
 Optimal axial strain relief due to integrated rib
 Suitable for overhead installations due to safety lid
 High retention forces
 Quick mounting due to single hole fixing
 Fits to rail for system support FHS
 PA 6

Type FHS - Rail for system support


	Order no. black	Order no. grey	Fits to system supports	Length x Height x Depth (mm)
FHS	BFHS-00	SFHS-00	FH-NW-0	275.0 x 15.5 x 25.0
	Additional position supports or distance spacers			
	BFHS-PH	SFHS-PH	Position support with screws	
	BFHS-PH1	SFHS-PH1	Distance spacers	

For flexible assembly of one-piece system supports and/or fixation of various conduit sizes
 Glass fibre reinforced polyamide 6
 Extremely robust construction
 High stiffness
 Positioning and distance spacers available
 Glass fibre reinforced PA6

Tube clamps


Type GL & GH

Type GL - Tube clamp, one-piece

	Order no. black	Order no. grey	Fits to conduit size			Width (mm)	Fixing screws
			NW	Metric	Inch		
	BGL-07	SGL-07	07	10	1/4	25.0	1 x M4
	BGL-10	SGL-10	10	12	5/16	27.0	1 x M4
	BGL-12	SGL-12	12	16	3/8	31.0	1 x M4
	BGL-17	SGL-17	17	20	1/2	39.5	1 x M5
	BGL-23	SGL-23	23	25	3/4	49.0	1 x M5
	BGL-29	SGL-29	29	32	1	57.0	1 x M6

Used in general machine and installation applications
 Integrated rib provides axial strain relief
 Allows turning of the conduit, thus avoiding torsion stresses
 Pre-fixation on the conduit possible
 PA 6

Type GH - Tube clamp, one-piece


	Order no. black	Order no. grey	Thread outside			Width (mm)	Fixing screws
			NW	Metric	Inch		
	BGH-23	SGH-23	23	25	3/4	16.0	2 x M5
	BGH-29	SGH-29	29	32	1	19.0	2 x M6
	BGH-36	SGH-36	36	40	1-1/4	24.0	2 x M6
	BGH-48	SGH-48	48	50	1-1/2	24.0	2 x M6
	BGH-56	SGH-56	56	68	2	26.0	2 x M8
	BGH-70	SGH-70	70	80	2-1/2	30.0	2 x M8
	BGH-95	SGH-95	95	106	4	30.0	2 x M8

Used in general machine and installation applications
 Integrated rib provides axial strain relief
 Allows turning of the conduit, thus avoiding torsion stresses
 Pre-fixation on the conduit possible
 Allows solid fixation with 2 screws
 PA 6

Tube clamps


Type SGB & SGS

Type SGB - Tube clamp

	Order no. black	Fits to conduit size			Width (mm)	Fixing screws
		NW	Metric	Inch		
	SGB-07	07	10	1/4	13.0	1 x M4
	SGB-09	10	12	5/16	13.0	1 x M4
	SGB-11	12	16	3/8	13.0	1 x M4
	SGB-16	17	20	1/2	16.0	1 x M5
	SGB-21	23	25	3/4	16.0	1 x M5
	SGB-29	29	32	1	19.0	1 x M6
	SGB-36	36	40	1-1/4	19.0	1 x M6
	SGB-48	48	50	1-1/2	19.0	1 x M6

For fixation of static conduits
Galvanized steel
Elastomer profile (EPDM) free from halogens
Smooth connection to PMA conduits
Good resistance to ozone and ageing
Temperature range: -40°C to +120°C

Type SGS - Tube clamp


	Order no. black	Fits to conduit size			Width x Height x Depth (mm)	Fixing screws
		NW	Metric	Inch		
	SGS-36	36	40	1-1/4	80.0 x 48.0 x 19.0	2 x M6
	SGS-48	48	50	1-1/2	94.0 x 58.0 x 19.0	2 x M6
	SGS-56	56	68	2	118.0 x 72.0 x 24.0	2 x M8
	SGS-70	70	80	2-1/2	130.0 x 85.0 x 24.0	2 x M8
	SGS-95	95	106	4	156.0 x 110.0 x 24.0	2 x M8
	SGS-125	125	146	5	200.0 x 152.0 x 24.0	2 x M8

For fixation of static conduits
Galvanized steel
Elastomer profile (EPDM) free from halogens
Smooth connection to PMA conduits
Good resistance to ozone and ageing
Temperature range: -40°C to +120°C
Galvanized steel/EPDM

System supports

Type GPS, GP & BGP-3x48

Type GPS - System support, one-piece, stackable

	Order no.	Fits to conduit size				Width (mm)	Height (mm)	Depth (mm)
		NW	Metric	Inch	DIN-NW			
	BGPS-12/01*	12	16	3/8	2	70.0	51.0	30.0
	BGPS-17	17	20	1/2	2	70.0	51.0	30.0
	BGPS-23	23	25	3/4	2	70.0	51.0	30.0
	BGPS-29	29	32	1	3	85.0	65.0	30.0
	BGPS-36	36	40	1-1/4	3	85.0	65.0	30.0
	BGPS-48	48	50	1-1/2	4	115.0	92.5	30.0
	BGPS-56	56	68	2	4	115.0	92.5	30.0

*This size will be delivered with a half-shell insert

In railway vehicle construction, heavy machine building industry and other applications with increased mechanical requirements

Heavy design, high retention forces. Applicable with standard metal C rails

Clasp for easy pre-mounting and final assembly. Especially suitable for dyn. applic. due to rounded edges


The following nominal widths can be combined for stacking: NW 12 with NW 17 + 23, NW 17 with NW 23,

NW 29 with NW 36, NW 48 with NW 56

Content of delivery: System support and 2 screws for securing of the lid (optional); without mounting accessories

PA 6

Type GP - System support, stackable

	Order no. ①	Thread outside			Width (mm)	Height (mm)	Depth (mm)
		NW	Metric	Inch			
	BGP-12/01*	12	16	3/8	48.0	66.0	36.0
	BGP-17	17	20	1/2	48.0	66.0	36.0
	BGP-23	23	25	3/4	48.0	66.0	36.0
	BGP-29	29	32	1	62.0	66.0	36.0
	BGP-36	36	40	1-1/4	62.0	66.0	36.0
	BGP-48	48	50	1-1/2	76.0	66.0	36.0
	BGP-56G	56	68	2	87.0	78.0	36.0

*This size will be delivered with a half-shell insert

In railway vehicle construction, heavy machine building industry and other applications with increased mechanical requirements

Variable stacking possibilities, due to the "Block"-system a high rigidity is guaranteed


Fixes conduit against axial movements. Allows radial turning of conduit

Especially suitable for dyn. applic. due to rounded edges. Variety of support possibilities

Content of delivery: System support with assembling screws; without mounting accessories

PA 6

Type BGP-3 x48- Multiple system support

	Order no.	Thread outside				Width (mm)	Height (mm)	Length (mm)
		NW	Metric	Inch	Profile			
	BGP-3 x 48	48	50	1-1/2	G and T	30.0	84.0	214.0

In railway vehicle construction, heavy machine building industry and other applications with increased mechanical requirements

Multiple system support for 3 x NW48 max. conduits

Axial fixation of conduit. Conduit rotation possible (avoids torsion)

Especially suitable for dynamic applications due to rounded edges


PA 6

① Please replace "B" for black with "S" for grey in front of the order no.

Conduit terminations


Type RKS & CT

Type RKS - Conduit terminal sleeve

	Order no. black	Fits to conduit size			Inside Ø (mm)	Outside Ø (mm)	Length (mm)
		NW	Metric	Inch			
	RKS-07	07	10	1/4	4.5	12.5	16.0
	RKS-10	10	12	5/16	8.0	15.5	16.0
	RKS-12	12	16	3/8	10.0	19.0	20.0
	RKS-17	17	20	1/2	13.0	24.0	21.0
	RKS-23	23	25	3/4	20.0	32.0	22.0
	RKS-29	29	32	1	25.0	38.0	22.0
	RKS-36	36	40	1-1/4	33.0	46.0	25.0
	RKS-48	48	50	1-1/2	45.0	58.0	25.0
	RKS-56	56	68	2	54.0	71.0	28.0

For clean conduit end termination where no fitting is required
PA 6

Type CT - Conduit termination


	Order no. black	Fits to conduit size			Clamping range (mm)	Length (mm)	Height (mm)
		NW	Metric	Inch			
	BCT-10	10	12	5/16	4-8	28.0	13.0
	BCT-12	12	16	3/8	5-9	35.0	16.0
	BCT-17	17	20	1/2	7-14	42.0	21.0
	BCT-23	23	25	3/4	14-22	51.0	28.0
	BCT-29	29	32	1	16-22	53.0	34.0
	BCT-36	36	40	1-1/4	16-29	55.0	42.0

For sealing of cables and wires at the exit from PMA corrugated conduits
Avoids ingress of dirt and liquids
Can be fixed additionally with cable ties
Neoprene rubber
Temperature range: -30°C to +120°C

Abrasion protection sleeves, tools

Type SS/SV & EWZ

Type SS/SV - Abrasion protection sleeve

	Order no.	Fits to conduit size			Outside Ø (mm)	Length (mm)
		NW	Metric	Inch		
	BSS-17	17	20	1/2	42.0	22.0
	BSS-23	23	25	3/4	49.0	26.0
	BSS-29	29	32	1	55.0	26.0
	BSS-36	36	40	1-1/4	63.0	30.0
	BSS-48	48	50	1-1/2	75.0	30.0
	BSS-56G	56	68	2	90.0	33.0
	BSV-70G	70	80	2-1/2	108.0	60.0

Abrasion protection for corrugated conduits in positions exposed to chafing
Increases the life time of moving conduits
PA 6

Type EWZ - Draw-in tool

	Order no. black with hole	Order no. black with handle	Fits to conduit size		Width x Length x Depth (mm)
			NW	Inch	
EWZ	EWZ-02	EWZ-03	7.5-34	-	117.7 x 45.2 x 71.9



Suitable for drawing in cables or wires into PMA Divisible System conduits or other slit conduits
Designed in a handy shape and equipped with a practical hand grip for wedging or with hole for direct holding of the wires
Polyamide 6.6
Colour: black

Tools

Type PMACUT

Type PMACUT - Cutting tool for conduits, NW 07-48

	Order no. Cutting tool	Order no. Spare blade	Cutting range	For conduit size	
				NW	Inch
PMACUT	PMACUT-38	FP-38	0-38	07-29	1/4-1
	PMACUT-52	FP-52	0-52	23-48	3/4-1-1/2



Can be used to cut all PMA conduits
 Enables a precise and straight cut around the corrugation
 Metal
 Colour: Red

Type PMACUT - Cutting tool for conduits, NW 56-125

	Order no. black	Fits to conduit size			Length x Width x Depth (mm)
		NW	Metric	Inch	
PMACUT	PMACUT-NW56	56	68	2	337 x 101 x 15
	PMACUT-NW70	70	80	2-1/2	350 x 110 x 15
	PMACUT-NW95	95	106	4	400 x 142 x 20
	PMACUT-NW125	125	146	5	443 x 182 x 20

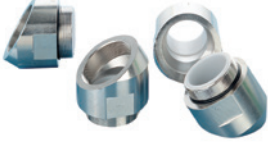


Can be used to cut all PMA conduits with large nominal widths
 Enables a precise and straight cut at the top of the corrugation
 High level of safety through retractable blade
 Aluminium

Elbow adapters, metric

Type MAVI & MAVIK

Type MAVI - Special 45° elbow adapter, metric thread

	Order no.	Thread metric		Thread length outside (mm)	Outside Ø (mm)	Overall length (mm)
		Inside	Outside			
	MAVI-M20/01	M20 x 1.5	M20 x 1.5	10.0	35.0	45.0
	MAVI-M25/01	M25 x 1.5	M25 x 1.5	11.0	39.0	51.0
	MAVI-M32/01	M32 x 1.5	M32 x 1.5	13.0	46.0	54.0
	MAVI-M40/01	M40 x 1.5	M40 x 1.5	13.0	55.0	62.0
	MAVI-M50/01	M50 x 1.5	M50 x 1.5	14.0	65.0	75.0
	MAVI-M63/01	M63 x 1.5	M63 x 1.5	14.0	80.0	84.0

Where a certain cable outlet angle is required

In connection with PMA connectors, especially connectors with strain relief VNZ

Enables different mounting positions: With a lock nut behind a clearance hole / In threaded holes (lock nut on MAVI side for positioning) / With SCA spin-coupler


Nickel-plated aluminium (other materials e.g. stainless steel or nickel-plated brass available on request)

High thread and system connection strength

IP68 static/IP67 dynamic

Temperature range: -60°C to +105°C

Type MAVIK - Positioning 45° elbow adapter, metric thread

	Order no.	Thread metric		Thread length outside (mm)	Outside Ø (mm)	Overall length (mm)
		Inside	Outside			
	MAVIK-M20/01	M20 x 1.5	M20 x 1.5	10.0	35.0	52.0
	MAVIK-M25/01	M25 x 1.5	M25 x 1.5	11.0	39.0	58.0
	MAVIK-M32/01	M32 x 1.5	M32 x 1.5	13.0	46.0	61.0
	MAVIK-M40/01	M40 x 1.5	M40 x 1.5	13.0	55.0	69.5
	MAVIK-M50/01	M50 x 1.5	M50 x 1.5	14.0	65.0	83.0
	MAVIK-M63/01	M63 x 1.5	M63 x 1.5	14.0	80.0	92.0

Where a certain cable outlet angle is required

In connection with PMA connectors, especially connectors with strain relief VNZ

The counter nut allows accurate positioning of the outlet direction in threaded holes

Adapter made from nickel-plated aluminium (other materials e.g. stainless steel or nickel-plated brass available on request), counter nut made from nickel-plated brass

High thread and system connection strength


IP68 static/IP67 dynamic

Temperature range: -60°C to +105°C

Swivel and positioning adapters, metric, PG

Type SWA & SCA

Type SWA - Swivel adapter with special sealing, metric/PG metal thread

	Order no.	Thread metric	Thread length (mm)	Outside Ø (mm)	Overall length (mm)
	SWA-M16-10	M16 x 1.5	10.0	23.0	37.5
	SWA-M20-10	M20 x 1.5	10.0	27.0	38.5
	SWA-M25-11	M25 x 1.5	11.0	32.0	41.0
	SWA-M32-13	M32 x 1.5	13.0	45.0	46.5
	SWA-M40-13	M40 x 1.5	13.0	55.0	47.5
	SWA-M50-14	M50 x 1.5	14.0	59.0	49.5
	SWA-M63-14	M63 x 1.5	14.0	75.0	52.0

	Order no.	Thread PG	Thread length (mm)	Outside Ø (mm)	Overall length (mm)
	SWA-P09	09	15.0	23.0	44.5
	SWA-P11	11	15.0	27.0	45.5
	SWA-P16	16	15.0	32.0	48.0
	SWA-P21	21	15.0	40.0	51.0
	SWA-P29	29	15.0	50.0	52.0
	SWA-P36	36	15.0	59.0	55.0
	SWA-P48	48	15.0	70.0	55.0

Allow PMA connectors to swivel freely in applications where such movement is occasionally necessary


In connection with PMA connectors with metal thread

Nickel-plated brass with thread edge protection

IP68 and IP69

Temperature range: -40°C to +105°C

Type SCA - Positioning adapter, metric/PG metal thread

	Order no.	Thread metric	Thread length (mm)	Outside Ø (mm)	Overall length (mm)
	SCA-M16-10	M16 x 1.5	10.0	22.0	32.0
	SCA-M20-10	M20 x 1.5	10.0	26.0	33.0
	SCA-M25-11	M25 x 1.5	11.0	32.0	35.0
	SCA-M32-13	M32 x 1.5	13.0	39.0	39.5
	SCA-M40-13	M40 x 1.5	13.0	50.0	41.0
	SCA-M50-14	M50 x 1.5	14.0	59.0	43.5
	SCA-M63-14	M63 x 1.5	14.0	75.0	45.5

	Order no.	Thread PG	Thread length (mm)	Outside Ø (mm)	Overall length (mm)
	SCA-P09	09	12.0	22.0	35.0
	SCA-P11	11	12.0	26.0	36.0
	SCA-P16	16	13.0	29.0	38.0
	SCA-P21	21	14.0	39.0	41.0
	SCA-P29	29	14.0	44.0	42.5
	SCA-P36	36	17.0	59.0	49.0
	SCA-P48	48	17.0	69.0	50.5

Allows easy positioning of elbow connectors with metal thread

In connection with PMA connectors with metal thread (Metric: Metal long thread)

Nickel-plated brass

High fastening torque with thread edge protection

P68 and IP69

Temperature range: -40°C to +105°C

PMA JUMBO sizes

General technical details

Larger sizes for big solutions. When you need conduits with larger sizes for your cable protection, we provide you with a comprehensive selection of large size conduits including connectors and flanges.

—
* All conduits are REACH and RoHS compliant

The PMA JUMBO product line includes a range of large size cable protection products. Seven different conduit types using a variety of raw materials to provide optimal performance in various applications and compatible fittings.

- PMA JUMBO conduits polyamide and polyurethane conduits in the large nominal width sizes NW56, 70, 95, 125 (PA6 conduits – PCL, CYL, VCS, VOH) (PA12 conduits – PIS, PCS) (PU conduits – PUE)
- PMAGRIP flange and threaded fittings plus accessories BGG (straight), BGO (90°) flange fittings achieve a sealing rating of IP50 and IP65 with a conduit sealing ring BGGV (straight), BGOV (90°) flange fittings achieve a sealing rating of IP68

Material

- Conduits made from specially formulated PA6, PA12 and PU
- Fittings made from specially formulated polyamide 6
- Self-extinguishing
- Free from halogens, REACH + RoHS compliant*
- Very good chemical properties
- Temperature range:
PA6 –40°C to +105°C, short-term to +160°C
PA12 –40°C to +95°C, short-term to +150°C
PU –60°C to +50°C

Characteristics

- Excellent conduit pull-out strength
- High impact resistance
- All PMA Jumbo conduits have a coarse (G) profile
- The conduit types PIS and VCS are UL recognized in jumbo sizes for use with the flange type fittings.





Conduits, large sizes

Type PMAFLEX JUMBO conduits

Type PMAFLEX JUMBO conduits



Order no. black	Order no. grey	Conduit size			Inside Ø		Outside Ø (mm)	Stat./Dyn. radius (mm)	PU meter
		NW	Metric	Inch	(mm)	(inch)			
CYLG-56B.30*	CYLG-56S.30*	56	68	2	56.7	2.232	67.4	120/-	30
CYLG-70B.10*	CYLG-70S.10*	70	80	2-1/2	67.5	2.657	79.7	140/-	10
CYLG-95B.10*	CYLG-95S.10*	95	106	4	91.6	3.606	106.2	190/-	10
PCLG-56B.30	PCLG-56S.30	56	68	2	56.3	2.217	67.2	130/-	30
PCLG-70B.10	PCLG-70S.10	70	80	2-1/2	67.5	2.657	80.0	160/-	10
PCLG-95B.10	PCLG-95S.10	95	106	4	91.5	3.602	106.0	210/-	10
PCLG-125B.6	PCLG-125S.6	125	146	5	126.5	4.980	146.5	450/-	6
PIHG-56B.30	PIHG-56S.30	56	68	2	56.3	2.217	67.2	110/270	30
PIHG-70B.30	PIHG-70S.30	70	80	2-1/2	67.2	2.646	79.6	150/350	30
PIHG-95B.30	PIHG-95S.30	95	106	4	91.3	3.594	106.0	170/450	30
PIHG-125B.20	PIHG-125S.20	125	146	5	126.5	4.980	146.5	350/480	20
VCSG-56B.30	VCSG-56S.30	56	68	2	56.1	2.209	67.2	150/-	30
VCSG-70B.10	VCSG-70S.10	70	80	2-1/2	66.5	2.618	80.0	200/-	10
VCSG-95B.10	VCSG-95S.10	95	106	4	91.0	3.583	106.0	300/-	10
LLPAG-56A.30	LLPAG-56S.30	56	68	2	56.3	2.217	67.2	120/-	30
LLPAG-70A.10	LLPAG-70S.10	70	80	2-1/2	68.0	2.677	80.0	160/-	10
LLPAG-95A.10	LLPAG-95S.10	95	106	4	91.9	3.618	106.0	210/-	10
LLPAG-125A.6	LLPAG-125S.6	125	146	5	126.5	4.980	146.5	450/-	6
VOHG-56B.10	VOHG-56S.10	56	68	2	55.5	2.185	67.2	135/-	10
VOHG-70B.10	VOHG-70S.10	70	80	2-1/2	67.0	2.638	80.0	200/-	10
VOHG-95B.10	VOHG-95S.10	95	106	4	90.5	3.563	106.0	300/-	10
VOHG-125B.6	VOHG-125S.6	125	146	5	126.0	4.961	146.5	480/-	6
XPCSG-56BG.30	-	56	68	2	56.7	2.232	67.5	110/270	30
XPCSG-70BG.10	-	70	80	2-1/2	67.5	2.657	79.0	130/320	10
XPCSG-95BG.10	-	95	106	4	91.6	3.606	106.0	170/430	10
PCSG-56B.30	PCSG-56S.30	56	68	2	56.1	2.209	67.2	130/280	30
PCSG-70B.10	PCSG-70S.10	70	80	2-1/2	66.5	2.618	80.0	170/360	10
PCSG-95B.10	PCSG-95S.10	95	106	4	91.0	3.583	106	250/470	10
PUEG-56B.30	-	56	68	2	56.3	2.217	67.2	90/170	30
PUEG-70B.30	-	70	80	2-1/2	68.2	2.685	80.5	100/220	30

* Not approved to UL 1696 / CSA C22.2 No. 227.3-05 (UL file E 80294)

For further conduits and other sizes see conduit guide


Approvals



PMAGRIP flange connectors

Type GG & GO

Type GG - Flange straight


	Order no. black	Order no. grey	Fits to conduit size			Width (mm)	Height (mm)	Depth (mm)
			NW	Metric	Inch			
GG 	BGG-56	SGG-56	56	68	2	82.0	97.0	42.0
	BGG-70	SGG-70	70	80	2-1/2	97.0	114.0	48.0
	BGG-95	SGG-95	95	106	4	126.0	146.0	53.0
	BGG-125	SGG-125	125	146	5	-	194.0	79.0

Approvals



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)
 Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications
 Flange seal FGO4/01 made from NBR, optional for indoor applications with special chemical requirements
 Temperature range with FGO4: -40°C to +105°C
 Temperature range with FGO4/01: -25°C to +70°C
 Content of delivery: Flange part, fixation clamps (incl. 2 screws), flange seal (FGO4 or FGO4/01), conduit seal ring (optional for IP65)

Type GO - Flange 90° elbow

	Order no. black	Order no. grey	Fits to conduit size			Width (mm)	Height (mm)	Depth (mm)
			NW	Metric	Inch			
GO 	BGO-56	SGO-56	56	68	2	82.0	97.0	101.0
	BGO-70	SGO-70	70	80	2-1/2	97.0	114.0	115.0
	BGO-95	SGO-95	95	106	4	126.0	146.0	149.0

Approvals



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)
 Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications
 Flange seal FGO4/01 made from NBR, optional for indoor applications with special chemical requirements
 Temperature range with FGO4: -40°C to +105°C
 Temperature range with FGO4/01: -25°C to +70°C
 Content of delivery: Flange part, fixation clamps (incl. 2 screws), flange seal (FGO4 or FGO4/01), conduit seal ring (optional for IP65)

PMAGRIP flange connectors

Type GGV & GOV

Type GGV - Flange straight

	Order no. black, IP68	Fits to conduit size			Width (mm)	Height (mm)	Depth (mm)
		NW	Metric	Inch			
GGV	BGGV-56	56	68	2	82.0	97.0	42.0
	BGGV-70	70	80	2-1/2	97.0	114.0	48.0
	BGGV-95	95	106	4	126.0	146.0	53.0



Approvals



In railway vehicle construction as well as in a wide range of industrial applications with high sealing and safety requirements
Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications

Flange seal FGO4/01 made from NBR on request, optional for indoor applications with special chemical requirements

Ingress protection: IP68, IP69 with conduit sealing NVN3

Temperature range with FGO4: -40°C to +105°C

Temperature range with FGO4/01: -25°C to +70°C

If the application temperature is above 70°C we recommend to use an additional internal conduit support sleeve (BES)

Content of delivery: Flange part, fixation clamps (incl. 2 screws), conduit seal (NVN3), flange seal (FGO4 or FGO4/01)

Type GOV - Flange 90° elbow

	Order no. black, IP68	Fits to conduit size			Width (mm)	Height (mm)	Depth (mm)
		NW	Metric	Inch			
GOV	BGOV-56	56	68	2	82.0	97.0	101.0
	BGOV-70	70	80	2-1/2	97.0	114.0	115.0
	BGOV-95	95	106	4	126.0	146.0	149.0



Approvals



In railway vehicle construction as well as in a wide range of industrial applications with high sealing and safety requirements
Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications

Flange seal FGO4/01 made from NBR on request, optional for indoor applications with special chemical requirements

Ingress protection: IP68, IP69 with conduit sealing NVN3

Temperature range with FGO4: -40°C to +105°C

Temperature range with FGO4/01: -25°C to +70°C

If the application temperature is above 70°C we rec. to use an additional internal conduit support sleeve (BES)

Content of delivery: Flange part, fixation clamps (incl. 2 screws), conduit seal (NVN3), flange seal (FGO4 or FGO4/01)

PMAGRIP threaded connectors

Type GG & GI

Type GG - Connector straight with locking clamps, metric/PG thread

	Order no. black	Order no. grey	Thread	Fits to conduit size			Thread length (mm)	Outside Ø (mm)	Overall length (mm)
				NW	Metric	Inch			
GG	BGG-M6356	SGG-M6356	M63 x 1.5	56	68	2	18.0	98.0	57.5
	BGG-P3656	SGG-P3656	PG 36	56	68	2	18.0	98.0	57.3



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)
 Content of delivery: Threaded part, fixation clamps (incl. 2 screws), conduit seal ring (optional for IP65)

Type GI - Connector straight with locking clamps, metric female thread

	Order no. black	Order no. grey	Thread	Fits to conduit size			Thread length (mm)	Outside Ø (mm)	Overall length (mm)
				NW	Metric	Inch			
GI	BGI-M7556	SGI-M7556	M75 x 1.5	56	68	2	15.0	98.0	53.3



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)
 Content of delivery: Threaded part, fixation clamps (incl. 2 screws), conduit seal ring (optional for IP65)

Tube clamps, conduit seal rings, large size accessories

Type GH & SGS

Type GH - Tube clamp, one-piece



	Order no. black	Order no. grey	Fits to conduit size			Width (mm)	Fixing screw
			NW	Metric	Inch		
GH	BGH-56	SGH-56	56	68	2	26.0	2 x M8
	BGH-70	SGH-70	70	80	2-1/2	30.0	2 x M8
	BGH-95	SGH-95	95	106	4	30.0	2 x M8

For general machine and installation applications
 Integrated rib provides axial strain relief
 Allows turning of the conduit thus avoiding torsion stresses
 Pre-fixation on the conduit possible
 Allows solid fixation with 2 screws
 For other sizes of BGH tube clamps please see page 112
 PA 6

Type SGS - Tube clamp




	Order no.	Fits to conduit size			Width x Height x Depth (mm)	Fixing screw
		NW	Metric	Inch		
SGS	SGS-36	36	40	1-1/4	80.0 x 48.0 x 19.0	2 x M6
	SGS-48	48	50	1-1/2	94.0 x 58.0 x 19.0	2 x M6
	SGS-56	56	68	2	118.0 x 72.0 x 24.0	2 x M8
	SGS-70	70	80	2-1/2	130.0 x 85.0 x 24.0	2 x M8
	SGS-95	95	106	4	156.0 x 110.0 x 24.0	2 x M8
	SGS-125	125	146	5	200.0 x 152.0 x 24.0	2 x M8

For fixation of static conduits
 Galvanized steel
 Elastomer profile (EPDM) free from halogens
 Smooth connection to PMA conduits
 Good resistance to ozone and ageing
 Temperature range: -40°C to +120°C

Tube clamps, conduit seal rings, large size accessories

Type SGO3

Type SGO3 - Conduit seal ring

	Order no.	Fits to conduit size			Inside Ø (mm)	Outside Ø (mm)	Thickness (mm)
		NW	Metric	Inch			
	SGO3-56	56	68	2	49.5	61.0	1.5
	SGO3-70	70	80	2-1/2	61.5	74.0	1.5
	SGO3-95	95	106	4	86.0	102.0	1.5
	SGO3-125	125	146	5	122.0	142.0	2.0

Used at the conduit end for sealing between the PMAGRIP flanges GG/GO/GI and PMA JUMBO conduits

Nitrile rubber NBR

Temperature range: -40°C to +105°C

PMA Divisible System

General technical details

One-piece Divisible System. The ideal solution for repairs, retrofit and pre-loomed applications. Equally all PMA conduits are compatible.

PMA offers a divisible system based upon PMA standard nominal widths.

This allows free combination of the PACOF and PPCOF divisible conduits with PMAFIX Pro, PMAFIX and PMA Smart Line fittings. Using the PMA Divisible System Fittings repairs can be easily made to existing installations without disconnecting cables. Equally all PMA conduits – also slit – are compatible with the fittings of the divisible system.

Material

- Conduits made from spec. formulated PA 6 and Polypropylene
- Fittings made from specially formulated polyamide 6
- Colour: Black
- Free from halogens, REACH + RoHS compliant
- Temperature range:
Conduits: -40°C to +160°C
Connectors: -40°C to min. +105°C

Characteristics

- Fast installation
- Conduit can be installed in fitting prior to closing the fitting
- High impact resistance
- High conduit pull-out strength
- Fits conduit profiles – fine (T) and coarse (G)






Conduits

Type PACOF & PPCOF


Type PACOF - Flexible, divisible

	Order no. black	Fits to conduit size			Inside Ø (mm)	Outside Ø (mm)	Stat. radius (mm)	PU meter
		NW	Metric	Inch				
	PACOF-07B.50	07	10	1/4	5.6	10.0	30	50
	PACOF-10B.50	10	12	5/16	8.5	12.8	33	50
	PACOF-12B.50	12	16	3/8	11.0	15.6	35	50
	PACOF-17B.50	17	20	1/2	15.5	21.1	45	50
	PACOF-23B.50	23	25	3/4	22.1	28.4	70	50
	PACOF-29B.50	29	32	1	27.2	34.5	120	50
	PACOF-36B.30	36	40	1-1/4	32.0	42.4	145	30
	PACOF-48B.30	48	50	1-1/2	43.9	54.1	150	30
	PACOF-70B.10	70	80	2-1/2	62.0	79.0	190	10

PACOF Index

min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For machine building and plant construction
 For trouble-free retrofitting and applicable for repairs
 Specially modified polyamide 6
 Can be opened and closed again in longitudinal direction any time
 Good ductility
 Good compression resistance
 Free from halogens, REACH + RoHS compliant
 Temperature range: -40°C to +105°C, short-term to +160°C
 IP50

	Order no. black	Fits to conduit size			Inside Ø (mm)	Outside Ø (mm)	Stat. radius (mm)	PU meter
		NW	Metric	Inch				
	PPCOF-07B.50	07	10	1/4	5.6	10.0	25	50
	PPCOF-10B.50	10	12	5/16	8.5	12.8	28	50
	PPCOF-12B.50	12	16	3/8	11.0	15.6	35	50
	PPCOF-17B.50	17	20	1/2	15.1	21.1	45	50
	PPCOF-23B.50	23	25	3/4	22.1	28.4	60	50
	PPCOF-29B.50	29	32	1	26.6	34.5	100	50
	PPCOF-36B.30	36	40	1-1/4	31.8	42.4	120	30
	PPCOF-48B.30	48	50	1-1/2	43.9	54.1	140	30
	PPCOF-70B.10	70	80	2-1/2	60.5	78.0	200	10

PPCOF Index


min.	max.
Ductility	
Fatigue reversed bending	
Compression resistance	
Low temperature performance	
Weathering resistance	

For machine building and plant construction
 For trouble-free retrofitting and applicable for repairs
 Specially modified polypropylene PP
 Can be opened and closed again in longitudinal direction any time
 Good reversed bending resistance
 Temperature range: -20°C to +105°C, short-term to +150°C
 IP50

Connectors, lock nuts

Type LNO & LN

Type LNO - Divisible connector straight, one-piece, metric thread

	Order no. black	Thread metric	Fits to conduit size			Thread length (mm)	Overall length (mm)
			NW	Metric	Inch		
	BLNO-M160	M16 x 1.5	10	12	5/16	13.0	37.5
	BLNO-M162	M16 x 1.5	12	16	3/8	13.0	39.5
	BLNO-M202	M20 x 1.5	12	16	3/8	13.0	39.5
	BLNO-M207	M20 x 1.5	17	20	1/2	13.0	43.5
	BLNO-M257	M25 x 1.5	17	20	1/2	14.0	44.5
	BLNO-M253	M25 x 1.5	23	25	3/4	14.0	52.5
	BLNO-M323	M32 x 1.5	23	25	3/4	17.0	56.0
	BLNO-M329	M32 x 1.5	29	32	1	17.0	61.0
	BLNO-M409	M40 x 1.5	29	32	1	21.0	65.0
	BLNO-M406	M40 x 1.5	36	40	1-1/4	22.0	74.5
	BLNO-M508	M50 x 1.5	48	50	1-1/2	22.0	80.5

Divisible connector straight, one-piece, metric thread

Compatible with PMA standard, slit and divisible conduits with standard nominal widths


In industries, plant construction, machine building as well as in house and electrical installations

For retrofit installation or repair

IP54

Special: Push-in installation of conduit into pre-installed fitting also possible

Type LN - Divisible lock nut, metric thread

	Order no. black	Thread metric	Fits with divisible connector		Wrench size (mm)	Width (mm)
			BLNO-M160	BLNO-M162		
	BLN-M16	M16 x 1.5	BLNO-M160	BLNO-M162	22.0	8.0
	BLN-M20	M20 x 1.5	BLNO-M202	BLNO-M207	26.0	8.0
	BLN-M25	M25 x 1.5	BLNO-M257	BLNO-M253	32.0	9.0
	BLN-M32	M32 x 1.5	BLNO-M323	BLNO-M329	41.0	12.0
	BLN-M40	M40 x 1.5	BLNO-M409	BLNO-M406	50.0	15.0
	BLN-M50	M50 x 1.5	BLNO-M508		60.0	15.0

Compatible with divisible PMA connectors, type BLNO


For retrofit installation or repair

Temperature range: -40°C to +100°C, short-term: +130°C

T, Y pieces, connection splice


Type LTO & LYO

Type LTO - Divisible T piece, one-piece

	Order no. black, IP40	3x conduit sizes		
		NW	Metric	Inch
	BLTO-070707	07	10	1/4
	BLTO-101010	10	12	5/16
	BLTO-121212	12	16	3/8
	BLTO-171717	17	20	1/2
	BLTO-232323	23	25	3/4
	BLTO-292929	29	32	1

Compatible with PMA standard, slit and divisible conduits with standard nominal widths
 In industries, plant construction, machine building as well as in house and electrical installations
 For retrofit installation or repair
 IP40
 Conduit can be installed in fitting prior to closing the fitting

Type LYO - Divisible Y piece, one-piece

	Order no. black, IP40	1x conduit size			2x conduit sizes		
		NW	Metric	Inch	NW	Metric	Inch
	BLYO-100707	10	12	5/16	07	10	1/4
	BLYO-121010	12	16	3/8	10	12	5/16
	BLYO-171212	17	20	1/2	12	16	3/8
	BLYO-231717	23	25	3/4	17	20	1/2
	BLYO-292917	17	20	1/2	29	32	1

Compatible with PMA standard, slit and divisible conduits with standard nominal widths
 In industries, plant construction, machine building as well as in house and electrical installations
 For retrofit installation or repair
 IP40
 Conduit can be installed in fitting prior to closing the fitting

T, Y pieces, connection splice

Type LSGO

Type LSGO - One-piece, divisible

	Order no. black, IP40	Fits to conduit size		Overall length (mm)	Outer Ø (mm)
		NW	Inch		
LSGO	BLSGO-101010	10	5/16	36	16
	BLSGO-121212	12	3/8	36	21
	BLSGO-171717	17	1/2	38	26
	BLSGO-232323	23	3/4	39	33



Compatible with PMA standard, slit and divisible conduits with standard nominal widths
 In industries, plant construction, machine building as well as in house and electrical installations
 For retrofit installation or repair
 Polyamide (Nylon) 66
 IP40 rated

PMAJACK Plastic and metal braids

General technical details

Bundling and abrasion protection. Polyamide, polyester and steel braids – an alternative way to bundle and protect electrical cables.

Plastic braids manufactured from polyester and polyamide filaments – the other alternative solution for protecting and bundling cables.

This PMA cable protection system provides simple bundling and abrasion protection for cables and wires.

Various braid types to fulfill different requirements complimented by a range of braid terminations for simple and clean assembly.

Material

- Braids made from polyamide 6.6 or polyester
- Terminations made from PA 6, aluminium or brass
- Free from halogens, REACH + RoHS compliant

Characteristics

- Flammability of braids:
polyamide 6.6 UL 94 V2,
polyester UL 94 V0
- Braid design: Following DIN 65 164 part 1+2
- EN 45545-2 HL3






Plastic braided hoses

Type F.66 & C.66

Type F.66 - Braided hose


	Order no. black	Order no. grey	NW	Fits to termination	Weight nom. per 100 m (kg)	Operative range min. Ø (mm)	Operative range max. Ø (mm)
F.66 	F.66.04SW	F.66.04GR	4	–	0.4	3.0	7.0
	F.66.06SW	F.66.06GR	6	SRER-06	0.6	5.0	8.0
	F.66.08SW	F.66.08GR	8	SRER-06	0.8	7.0	10.0
	F.66.10SW	F.66.10GR	10	SRER-06	1.0	9.0	13.0
	F.66.12SW	F.66.12GR	12	SRER-06	1.4	11.0	16.0
	F.66.16SW	F.66.16GR	16	SRER-16	1.7	15.0	21.0
	F.66.20SW	F.66.20GR	20	SRER-16	2.0	20.0	26.0
	F.66.25SW	F.66.25GR	25	SRER-21/SRER-29	2.4	24.0	31.0
	F.66.30SW	F.66.30GR	30	SRER-21/SRER-29	3.5	28.0	38.0
	F.66.40SW	F.66.40GR	40	SRER-29	4.2	38.0	49.0
	F.66.50SW	F.66.50GR	50	SREV-40/SRER-50	5.1	48.0	65.0
	F.66.70SW	F.66.70GR	70	SREV-40/SRER-50	4.9	48.0	85.0

Approvals



Monofile Ø: 0.28mm for increased abrasion properties
 Coverage: > 90%
 Polyamide 6.6
 Specifications: DIN 5510 (S4/SR2/ST2), UL-File E 125 619, EN45545-2 HL3
 Temperature range: –55°C to +135°C, short-term to +160°C

Type C.66 - Braided hose


	Order no. black	Order no. grey	NW	Fits to termination	Weight nom. per 100 m (kg)	Operative range min. Ø (mm)	Operative range max. Ø (mm)
C.66 	C.66.10SW	C.66.10GR	10	SRER-06	0.7	8.0	14.0
	C.66.12SW	C.66.12GR	12	SRER-06/SRER-16	0.9	9.0	18.0
	C.66.16SW	C.66.16GR	16	SRER-06/SRER-16	1.2	11.0	22.0
	C.66.20SW	C.66.20GR	20	SRER-16/SRER-21	1.4	14.0	26.0
	C.66.25SW	C.66.25GR	25	SRER-16/SRER-21	1.4	18.0	28.0
	C.66.30SW	C.66.30GR	30	SRER-21/SRER-29	2.5	25.0	43.0
	C.66.40SW	C.66.40GR	40	SRER-29	2.5	30.0	52.0
	C.66.45SW	–	45	SREV-40/SRER-50	4.0	40.0	73.0

Monofile Ø: 0.28mm for increased abrasion properties
 Coverage: > 75%
 Polyamide 6.6
 Specifications: DIN 5510 (S4/SR2/ST2), EN45545-2 HL3
 Temperature range: –55°C to +135°C, short-term to +160°C

Plastic braided hoses

Type L.66 & F.PX

Type L.66 - Braided hose

	Order no. black	Order no. grey	NW	Fits to termination	Weight nom. per 100 m (kg)	Operative range min. Ø (mm)	Operative range max. Ø (mm)
L.66	L.66.04SW	L.66.04GR	04	–	0.4	4.0	5.0
	L.66.08SW	L.66.08GR	08	SRER-06	0.5	5.0	10.0
	L.66.10SW	L.66.10GR	10	SRER-06	0.8	7.0	13.0
	L.66.16SW	L.66.16GR	16	SRER-16	0.9	11.0	20.0
	L.66.20SW	L.66.20GR	20	SRER-16	1.4	17.0	33.0
	L.66.25SW	L.66.25GR	25	SRER-21/SRER-29	1.5	21.0	34.0
	L.66.30SW	L.66.30GR	30	SRER-21/SRER-29	1.8	25.0	45.0
	L.66.40SW	L.66.40GR	40	SRER-29	1.9	31.0	55.0
	L.66.50SW	L.66.50GR	50	SREV-40/SRER-50	3.2	58.0	70.0

Monofile Ø: 0.25mm


Coverage: > 65%

Polyamide 6.6

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I3/F2), EN45545-2 HL3

Temperature range: –55°C to +135°C, short-term to +160°C

Type F.PX - Braided hose

	Order no. grey	NW	Fits to termination	Weight nom. per 100 m (kg)	Operative range min. Ø (mm)	Operative range max. Ø (mm)
F.PX	F.PX.04GR	04	–	0.3	3.0	7.0
	F.PX.06GR	06	SRER-06	0.5	5.0	8.0
	F.PX.08GR	08	SRER-06	0.7	7.0	10.0
	F.PX.10GR	10	SRER-06	0.8	9.0	13.0
	F.PX.12GR	12	SRER-06	1.1	11.0	16.0
	F.PX.16GR	16	SRER-16	1.3	15.0	21.0
	F.PX.20GR	20	SRER-16/SRER-21	1.5	20.0	26.0
	F.PX.25GR	25	SRER-16/SRER-21	2.0	24.0	31.0
	F.PX.30GR	30	SRER-21/SRER-29	2.9	28.0	38.0
	F.PX.40GR	40	SREV-40	3.1	38.0	49.0

Monofile Ø: 0.28mm for increased abrasion properties

Coverage: > 90%

Polyester


Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I3/F2), EN45545-2 HL3

Temperature range: –50°C to +120°C, short-term to +150°C

Plastic braided hoses

Type L.PX & G.PX


Type L.PX - Braided hose

	Order no. black	Order no. grey	NW	Fits to termination	Weight nom. per 100m (kg)	Operative range min. Ø (mm)	Operative range max. Ø (mm)
L.PX	L.PX.04SW	L.PX.04GR	04	–	0.4	3.0	8.0
	L.PX.08SW	L.PX.08GR	08	SRER-06	0.5	5.0	10.0
	L.PX.10SW	L.PX.10GR	10	SRER-06	0.7	7.0	14.0
	L.PX.16SW	L.PX.16GR	16	SRER-16	0.8	11.0	20.0
	L.PX.20SW	L.PX.20GR	20	SRER-16	1.2	19.0	28.0
	L.PX.25SW	L.PX.25GR	25	SRER-21/SRER-29	1.4	21.0	34.0
	L.PX.30SW	L.PX.30GR	30	SRER-21/SRER-29	1.7	25.0	40.0
	L.PX.40SW	L.PX.40GR	40	SRER-29	1.7	31.0	55.0
	L.PX.50SW	L.PX.50GR	50	SREV-40/SRER-50	2.7	40.0	68.0

Monofile Ø: 0.22mm. Coverage: > 65%. Polyester

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I1/F2), EN45545-2 HL3. Temperature range: -50°C to +120°C, short-term to +150°C


Type G.PX - Braided hose

	Order no. black	NW	Packing unit PU/m	Weight nom. per 100m (kg)	Recommended range	
					min. Ø (mm)	max. Ø (mm)
G.PX	G.PX.05SW	05	25	1.6	4.5	5.5
	G.PX.08SW	08	25	2.0	7.0	9.0
	G.PX.10SW	10	25	2.3	9.0	11.0
	G.PX.13SW	13	25	2.5	11.5	13.0
	G.PX.16SW	16	25	3.4	14.5	17.5
	G.PX.19SW	19	25	3.8	17.0	21.0
	G.PX.25SW	25	25	4.8	22.5	27.5
	G.PX.29SW	29	25	5.3	26.0	32.0
	G.PX.32SW	32	25	6.1	29.0	35.0
	G.PX.38SW	38	25	8.3	34.0	42.0
	G.PX.50SW	50	25	8.7	45.0	55.0

Open, self winding construction. For retrofit installation. Overlapping: 90° (+40°/-25°). Polyester

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I3/F2), EN45545-2 HL3. Temperature range: -55°C to +150°C

Type B.PX - Braided hose

	Order no. black	NW	Construction numb. x Ø mm	Packing unit PU/m	Weight nom. per 100m (kg)	Recommended range	
						min. Ø (mm)	max. Ø (mm)
B.PX	B.PX.12SW	12	96 x 0.20	100	0.5	6.0	18.0
	B.PX.15SW	15	144 x 0.20	100	0.7	10.0	28.0
	B.PX.30SW	30	192 x 0.20	100	0.9	20.0	42.0


Coverage: > 50%. Excellent abrasion properties. Lightweight structure. High flexibility. Excellent flame-retardant properties. Polyester

Specifications: EN 45545-2 HL3 (R22 & R23). UL94 V0. Temperature range: -50°C to +120°C continuous, +150°C short-term

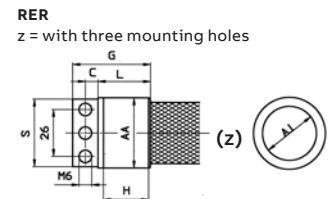
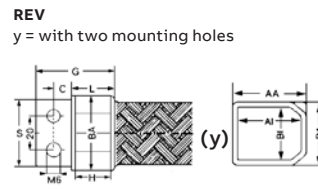
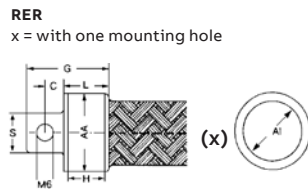
Braid terminations, connectors

Type RER/REV

Type RER/REV - Braid termination

RER/REV	Order no.	NW	AI (mm)	AA (mm)	BI (mm)	BA (mm)	H (mm)	L (mm)	G (mm)	S (mm)	C (mm)
	grey										
	SRER-06 (x)	06	6.5	13	-	-	13	21	33	13	6
	SRER-16 (x)	16	16	24	-	-	15	25	39	15	7
	SRER-21 (x)	21	22	32	-	-	20	29	43	15	7
	SRER-29 (z)	29	30	40	-	-	18	29	43	39	7
	SRER-50 (z)	50	50	61	-	-	18	29	43	50	7
	SREV-40 (y)	40	47	58	34	44	20	24	44	38	10

For termination and fixation of plastic braided hoses
 Suitable for: F.66, C.66, L.66, F.PX, L.PX braids
 Polyamide 6
 For exact braid and termination fitting configuration please refer to PMAJACK data sheets



Braid terminations, connectors

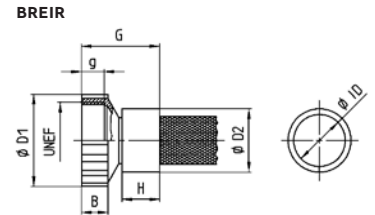
Type BREIR & MREIR

Type BREIR - Connector for plastic braids, female thread

	Order no. black	NW	Thread size UNEF	Fits to PMAJACK			Ø ID (mm)	Ø D1 (mm)	B (mm)	G (mm)	g (mm)	H (mm)	Ø D2 (mm)
				F.66	C.66	L.66							
				F.PX	F.PX	L.PX							
BREIR	BREIR-U2916	16	1 ³ / ₁₆ -18	12-20	12-25	16-25	36.2	20.5	10.5	36.5	9	15	25
	BREIR-U3516	16	1 ⁷ / ₁₆ -18	12-20	12-25	16-25	42.5	20.5	11.5	37.5	9	15	25



For round connectors
Suitable for: F.66, C.66, L.66, F.PX, L.PX braids
Polyamide 6

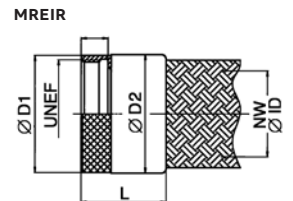


Type MREIR - Connector for plastic braids, female thread

	Order no. grey	NW	Thread size UNEF	Fits to PMAJACK			g (mm)	Ø D1 (mm)	Ø D2 (mm)	L (mm)	Ø ID (mm)
				F.66	C.66	F.PX					
				F.66	C.66	F.PX					
MREIR	MREIR-U3529	29	1 ⁷ / ₁₆ -18	25-40	30+40	25-40	29	40.0	40.5	37.5	30.0




For round connectors
Suitable for: F.66, C.66, L.66, F.PX, L.PX braids
Black anodized aluminium



Stainless steel braids, tools

Type F.304, PMA-Tie-tool & HSG

Type F.304 - Stainless steel braided hose

	Order no.	Braid specification	Fits to conduit size NW	Operative range min. Ø (mm)	Operative range max. Ø (mm)
	F.304.10	24 x 7 x 0.3	10	10.0	18.0
	F.304.12	24 x 8 x 0.3	12	10.0	24.0
	F.304.17	24 x 12 x 0.3	17	15.0	28.0
	F.304.23	36 x 9 x 0.3	23	21.0	34.0
	F.304.29	36 x 11 x 0.3	29	25.0	40.0
	F.304.36	36 x 9 x 0.4	36	32.0	47.0
	F.304.48	48 x 10 x 0.4	48	55.0	80.0

Surface coverage: >90%
Temperature range: -70°C to +1000°C

Type PMA-Tie-tool - Clamping tool for metal cable ties

	Order no.	For PMA-Tie-tool width (mm)
PMA-Tie-tool	PMA-Tie-tool	6.35



Handtool, self locking for speedy application
Allows easy strapping of metal cable ties "Band-It"
For long lasting fixation without deformation
Stainless steel
Colour: Black

Type HSG - Hot cutting tool

	Order no.	Order no. Spare cutting tape
HSG	HSG-00	HSG-00-SB




For quick and easy cutting of plastic braidings
Smallest hot cutting tool for permanent use
With fixed edge (working area 30mm)
Voltage: 230 V - 50 Hz (115 V - 60 Hz)
Performance: 40W
Length of the connecting lead: 2m

Connectors, adapters

Type VEMD

Type VEMD - Connector for overbraided conduits, metric/PG metal thread

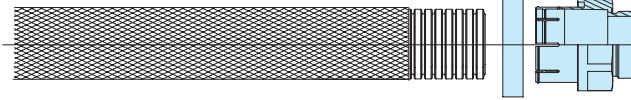
	Order no. with jubilee clip	Thread metric	Fits to conduit size		Outside Ø x Length (mm)
			NW	Metric	
	MVEMD-M406/01	40 x 1.5	36	40	55.0 x 59.0
	MVEMD-M508/01	40 x 1.5	48	50	65.0 x 62.0
	MVEMD-M6356/01	63 x 1.5	56	68	80.0 x 72.0
	Order no. with jubilee clip	Thread PG	Fits to conduit size		Outside Ø x Length (mm)
	MVEMD-P4856/01	48	NW	Metric	
			56	68	80.0 x 72.0

Nickel-plated aluminium
IP66 up to IP68 on request

VEMD with metal cable tie "Band-It"



VEMD with jubilee clip



Content of delivery includes blue marked products.

Connectors, adapters

Type VEMD-RER

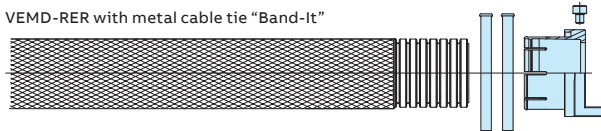
Type VEMD-RER - Adapter for overbraided conduits

	Order no. with Band-It*	Order no. with jubilee clip	Fits to conduit size		Width x Height x Length (mm)
			NW	Metric	
VEMD-RER	MVEMD-RER6	MVEMD-RER6/01	36	40	54.0 x 54.0 x 53.0
	MVEMD-RER8	–	48	50	66.0 x 66.0 x 53.0

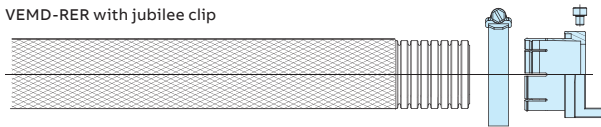


*Metal cable tie
Nickel-plated aluminium
IP66 on conduit side

VEMD-RER with metal cable tie "Band-It"



VEMD-RER with jubilee clip



Content of delivery includes
blue marked products.

Technical annex

Introduction

Conforms with standards. Intensive research and testing is the reason PMA continues to set new standards and trends in cable protection.

PMA products conform to worldwide standards and regulations.

As a pioneer in the field of cable protection, we have always given high priority to our own testing facilities, and we have consciously introduced stringent in-house standards. This approach has enabled PMA to exercise a significant influence on the development of international standards. Standards committees with responsibility for cable systems regularly ask our company to provide advice or participate as an active member.

High quality product from A–Z

From basic items to high-tech products, all of our products meet the most stringent quality requirements.

Some of the outstanding are:

- Resistance to temperature, weathering, UV radiation and chemical agents
- High system pull-out resistance
- Excellent fire protection characteristics (flammability, smoke density and toxicity)
- Excellent system ingress protection up to IP68 and IP69
- Extremely long service life
- Conformance to all major international product standards

Technical annex

Testing methods according to IEC EN01386 and PMA internal procedures

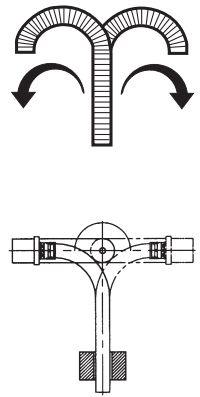
PMA DO is a PMA in-house test

IEC EN 61386

PMA DO 9.21-4425

Resistance to fatigue when exposed to continuous bending

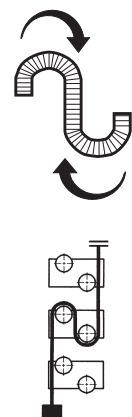
Both standards describe tests designed to evaluate conduit resistance to fatigue when exposed to continuous cycles of repetitive bending. The test procedure involves bending back and forth around a central pivotal point. Although the test procedure is the same for both standards there are differences in the test parameters and the classification of results. For a “pliable” classification according to IEC EN 61386-22 a conduit must withstand 3 cycles at the minimum declared operating temperature. For a “flexible” classification according to IEC EN 61386-23 a conduit must withstand 5000 cycles at the minimum declared operating temperature. PMA DO 9.21-4425 tests the conduit at 23°C and 50% r.h. but the test is not limited to a fixed number of cycles. It continues until the first signs of damage occur in order to find the actual performance limit.



PMA DO 9.21-4420

Resistance to fatigue when exposed to continuous bending

This PMA internal standard describes a demanding test for conduit fatigue when exposed to continuous repetitive bending. The conduit is fixed at the top of the apparatus, it passes over and under two pulley wheels. A weight is suspended at the bottom end simulating the weight of cables within the conduit. The pulley wheels move up and down continuously bending the conduit twice through 180° over its entire length. The test is performed at 23°C and 50% r.h. and continues until the first signs of damage occur.



Technical annex

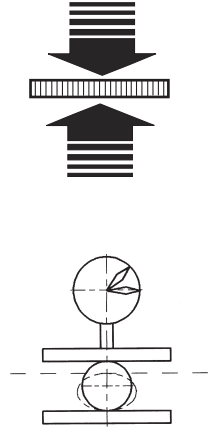
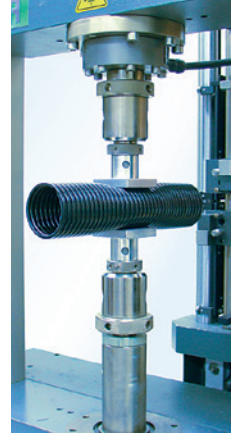
Testing methods according to IEC EN01386 and PMA internal procedures

PMA DO is a PMA in-house test.

IEC EN 61386
PMA DO 9.21-4320

Compression strength

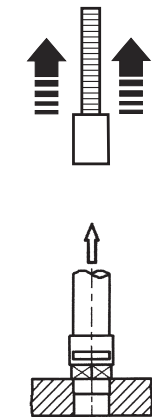
Both standards describe a test designed to evaluate conduit resistance to compression forces. Excessive deformation of a conduit under compression could potentially cause damage to cables being protected within it. The force required to compress the conduit between two square plates to a specific % of its original diameter is measured. Relaxation over time and recovery after removal of the force are evaluated. The tests are performed at 23°C and 50% r.h. IEC EN 61386 uses two 50mm x 50mm plates and allows 25% deformation. PMA DO 9.21-4320 records results with 50mm x 50mm and 100mm x 100mm test plates and allows 20% deformation.



IEC EN 61386
PMA DO 9.21-4610

System security – pull-out strength

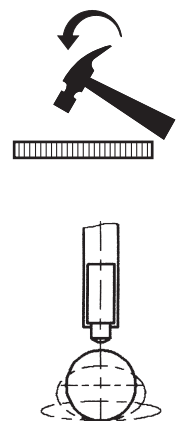
Both standards are designed to test the security of the connection between conduit and fitting. Two fittings with a piece of conduit between them are pulled apart with steadily increasing force. Extension of the conduit is recorded graphically against the force applied. The force required to pull the conduit out of the fitting is determined. The tests are performed at 23°C and 50% r.h.



IEC EN 61386
PMA DO 9.21-4330

Resistance to impact

These standards describe tests to evaluate the resistance of conduits to high energy impacts. They can be performed on conduits at various temperatures. Weights of different mass are dropped from an adjustable height directly onto a conduit sample which has been conditioned at the specified temperature. The energy of impact can be calculated as mass x gravity x height. The geometry of the object falling onto the conduit is regulated. No breaks, cracks or excessive permanent deformation should be visible after the test.



Technical annex

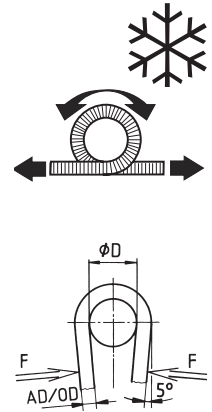
Testing methods according to IEC EN01386 and PMA internal procedures

PMA DO is a PMA in-house test.

PMA DO 9.21-4380

Flexibility at low temperature

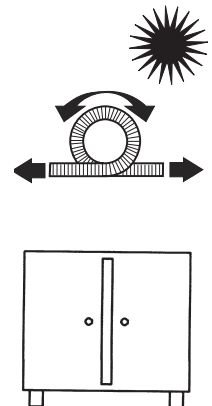
This standard describes a test procedure to evaluate the flexibility of conduits at low temperatures. The conduit under test is placed in a climatic chamber at the lowest specified operating temperature for four hours. It is then removed and immediately bent around a mandrel of diameter related to the outside diameter (OD) of the conduit. Four classifications are achievable based upon the smallest achievable bending radius without damage.



PMA DO 9.21-4360

Resistance to thermal ageing

This standard describes a procedure designed to evaluate the thermal stability of a conduit and its resistance to thermal ageing. The conduit is exposed to a temperature significantly above the maximum recommended continuous operating temperature for 168 hours, 160°C (PA6) or 150°C (PA12). The Flexibility at Low Temperature procedure DO 9.21-4380 is performed both before and after the thermal ageing procedure. The results are compared to detect any change in material characteristics.

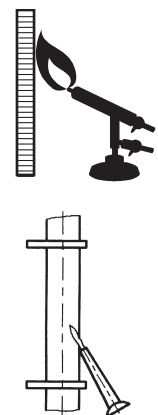
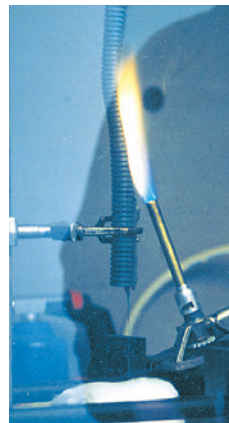


PMA DO 9.21-4430

IEC EN 61386

Flammability tests

PMA DO 9.21-4430 evaluates flammability characteristics using a defined flame from a standard burner. The time before ignition, fire propagation behaviour and extinguishing time after removal of the heat source are all factors in evaluating the flammability of conduits for a Self-Extinguishing Classification IEC 61386 uses the EN 60695-2-10 Glow wire test procedure to evaluate the flame Propagation behavior of conduits allocating the classifications. Non-flame propagating or flame propagating.



Technical annex

Ingress protections according to IEC 60529

Ingress protection (IP) according to IEC 60529

Ingress protection (IP)







A standard to classify product performance regarding ingress protection.

Different number – different protection!

For example, products classified as IPx8 are not automatically protected against jet water! Immersion tests for classifications IPx7 and IPx8 differ from the tests for protection against jet water for IPx6, IPx5, or IPx4.

Therefore PMA cable protection systems are tested regarding different sealing requirements.

PMA Products

			PMAFIX Pro	PMAFIX IP68+ WPS	PMAFIX IP68/ IP68GT	PMAFIX IP66	PMA Smart Line
	IPx4	Splash water from all directions	●	●	●	●	●
	IPx5	Jet water at any angle	●	●	●	●	●
	IPx6	Powerful jet water from any angle	●	●	●	●	●
	IPx7	Submersion (1m, 30 min.)	●	●	●	-	-
	IPx8	Submersion at time and pressure >IPx7	●	●	●	-	-
	IPx9	High pressure (up to 100 bar, 80°C) water from any angle	●	●*	●*	●*	●*

*IEC 60529 can be fulfilled without WPS (Water impact protection ring). PMA recommends the use of the WPS ring for trouble free practical applications



PMA products offer complete protection!



Tested to 100 bar

Technical annex

Ingress protections according to IEC 60529

Dust

Protection against contact and penetration of foreign objects
Degree of protection (contact/foreign bodies)

	0	No protection
	1	Objects greater than 50mm Ø, accidental touch by hands
	2	Objects greater than 12.5mm Ø, accidental touch by fingers
	3	Objects greater than 2.5mm Ø, e.g. tools/wires
	4	Objects greater than 1mm Ø, e.g. tools/wires
	5	Protected against dust - limited ingress (no harmful deposits)
	6	Totally protected against dust (dust-tight)



Water

Protection against fluids
Degree of protection (water)

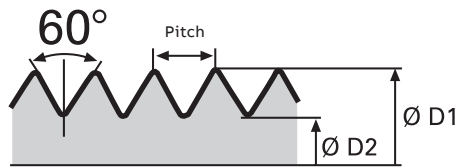
	0	No protection
	1	Protected against vertically falling drops of water
	2	Protected against direct sprays of water 15° from vertical
	3	Protected against sprays of water to 60° from vertical
	4	Protected against water sprayed from all directions - limited ingress permitted
	5	Protected against low pressure jets of water from all directions - limited ingress permitted
	6	Protected against strong pressure jets of water, heavy seas - limited ingress permitted
	7	Protection against the effects of immersion between 15cm - 1m
	8	Protection against long periods of immersion under a quoted pressure, e.g. 2 bar at 24 hours
	9	IP69 Automotive standard DIN40050 and signifies resistance to high pressure jets of water (up to 80 bar) from any angle

Technical annex

Table of thread dimensions

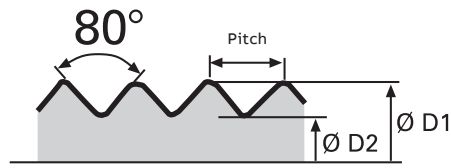
Metric fine thread - EN 60423

Metric	Pitch (mm)	Ø D1 (mm)	Ø D2 (mm)	Hole -0/+0.3 (mm)
12	1.5	12	10.16	12.0
16	1.5	16	14.16	16.0
20	1.5	20	18.16	20.0
25	1.5	25	23.16	25.0
32	1.5	32	30.16	32.0
40	1.5	40	38.16	40.0
50	1.5	50	48.16	50.0
63	1.5	63	61.16	63.0



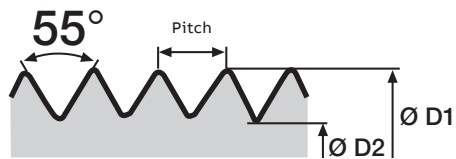
PG thread - DIN 40430

PG	Pitch (mm)	Ø D1 (mm)	Ø D2 (mm)	Hole (mm)
07	1.270	12.5	11.28	12.7
09	1.411	15.2	13.86	15.4
11	1.411	18.6	17.26	18.8
13	1.411	20.4	19.06	20.7
16	1.411	22.5	21.16	22.8
21	1.588	28.3	26.78	28.6
29	1.588	37.0	35.48	37.4
36	1.588	47.0	45.48	47.5
48	1.588	59.3	57.78	59.8



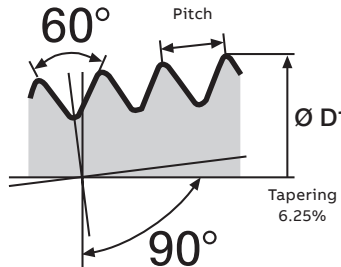
GAS pipe thread - DIN 259 Bl. 3, ISO 228/1

GAS	Pitch (mm)	Ø D1 (mm)	Ø D2 (mm)	Hole (mm)
¼"	1.337	13.157	11.445	13.4
⅜"	1.337	16.662	14.950	17.0
½"	1.814	20.955	18.631	21.3
¾"	1.814	26.441	24.117	26.8
1"	2.309	33.249	30.291	33.7
1¼"	2.309	41.910	38.952	42.4
1½"	2.309	47.803	44.845	48.3
2"	2.309	59.614	56.656	60.2



American standard taper pipe thread - ANSI/ASME B 1.20

NPT	Pitch (mm)	Ø D1 (mm)	Hole D2 (mm)
¼"	1.411	13.716	13.9
⅜"	1.411	17.145	17.4
½"	1.814	21.336	21.6
¾"	1.814	26.670	26.9
1"	2.209	33.401	33.7
1¼"	2.209	42.164	42.4
1½"	2.209	48.260	48.5
2"	2.209	60.325	60.6



Technical annex

Comparison table

Conduit

Nominal width NW		
Standard	Metric	Inside Ø nom. (mm)
07	10	6.2
10	12	9.6
10	12	9.6
12	16	12.0
12	16	12.0
17	20	16.2
17	20	16.2
23	25	22.6
23	25	22.6
29	32	29.0
29	32	29.0
36	40	36.5
36	40	36.5
48	50	47.5
48	50	47.5

Conduit

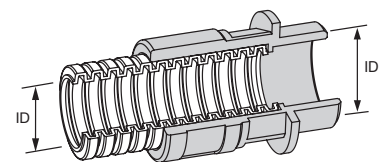
Nominal width NW		
Standard	Metric	Inside Ø nom. (mm)
07	10	6.2
10	12	9.6
12	16	12.0
-	-	-
17	20	16.2
23	25	22.6
29	32	29.0
36	40	36.5
-	-	-
48	50	47.5

Connector metric

Inside diameter mm (nom.) ID		
Thread size	Metal thread	Polyamide thread
M12	-	8.0
M12	5.7	8.0
M16	9.6	11.0
M16	9.7	11.0
M20	13.5	13.0
M20	13.5	14.6
M25	18.3	19.0
M25	18.4	19.0
M32	24.2	24.0
M32	25.4	26.0
M40	31.4	32.0
M40	32.6	32.0
M50	39.5	39.0
M50	41.5	42.0
M63	51.4	53.0

Connector PG

Inside diameter mm (nom.) ID		
Thread size	Metal thread	Polyamide thread
PG07	-	8.0
PG09	9.5	10.0
PG11	12.5	13.0
PG13.5	14.5	14.5
PG16	16.5	17.5
PG21	22.0	22.5
PG29	30.0	30.5
PG36	40.0	37.5
PG42	-	46.0
PG48	49.5	50.0



Inside diameter threads to inside diameter conduits.

Technical annex

Tightening torques

Recommended tightening torques for PMA fittings - For threaded bore holes and with lock nuts

Thread	Metal* [Nm]	Polyamide** [Nm]
M12	4.0	1.5
M16	4.0	3.0
M20	6.0	4.0
M25	8.0	6.0
M32	10.0	8.0
M40	15.0	9.0
M50	15.0	10.0
M63	15.0	10.0

* Thread combination: Metal + metal

** Thread combination: Metal + polyamide or polyamide + polyamide

Thread	Metal* [Nm]	Polyamide [Nm]
PG07	3.5	1.5
PG09	4.0	1.5
PG11	6.0	2.0
PG13.5	6.0	2.5
PG16	7.0	4.0
PG21	8.0	5.0
PG29	10.0	9.0
PG36	15.0	15.0
PG48	15.0	15.0

Strain relief fittings - According to EN 50262

Thread	Metal NVNZ-Mxxxx NKNZ-Mxxxx	Metal NVNZ-Mxxxx/P NKNZ-Mxxxx/P	Polyamide S/BVNZ-Mxxxx [Nm] EN
	[Nm] EN	[Nm]	
M12	5.0	6.0	0.9
M16	5.0	8.0	3.0
M20	7.5	10.0	4.0
M25	10.0	10.0	7.5
M32	15.0	15.0	10.0
M40	20.0	20.0	10.0
M50	20.0	20.0	10.0
M63	20.0	20.0	10.0

Note: These values were gauged at standard climate (23°C/50% relative humidity)

According to DIN VDE 0619

Thread	Metal NVNZ-Pxxxx	Metal NVNZ-Pxxxx/P	Polyamide S/BVNZ-Pxxxx [Nm]
	[Nm]	[Nm]	
PG07	6.25	6.0	2.5
PG09	6.25	8.0	3.75
PG11	6.25	10.0	3.75
PG13.5	6.25	10.0	3.75
PG16	7.5	10.0	5.0
PG21	10.0	15.0	7.5
PG29	10.0	20.0	7.5
PG36	10.0	30.0	7.5
PG48	10.0	40.0	7.5

Technical annex

Applications engineering information

Fill factor, relevant guidelines

The question of conduit capacity or fill factor arises in the use of cable protection systems. This describes the extent to which a conduit can or should be filled with cables and/or conductors based on the available cross-sectional area.

In all cases, PMA recommends that a conduit **capacity of 70%** not be exceeded. (Application-specific procedures and standards must also be considered.)

This ensures that operation is not unnecessarily impaired by increased friction between the individual conductors in dynamically moving systems. In addition, subsequent installation of additional conductors and/or cables is also possible if necessary.

Wiring installation: fixation

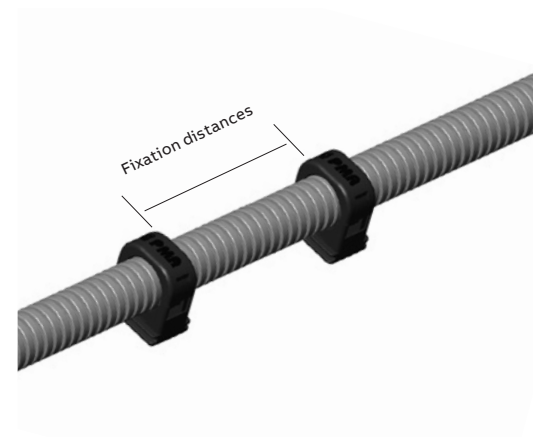
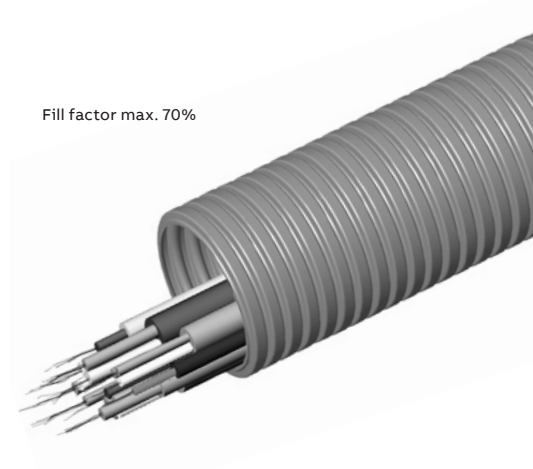
PMA AG recommends that cable protection systems be fastened with a spacing of **300mm to 500mm** between supports. This spacing can be varied depending on the application and location. This recommendation applies for all available dimensions. For larger diameters, the increased load due to the cables and conductors in the conduit is accounted for by adherence to the support spacing. PMA supplies suitable system supports for various strength requirements and applications.

European standard **EN 50343:2003-5.15** "Railway applications – Rolling stock – Rules for installation of cabling" specifies the following spacing between supports for fastening conductors:

Horizontal wiring: 300mm

Vertical wiring: 500mm

(Application specific guidelines and standards should also be considered.)



Technical annex

Chemical resistance

Chemical resistance comparison table

Resistance against	Chemical formula	PA6, Polyamide 6 PA6.6, Polyamide 6.6	PA12, Polyamide 12 PA11, Polyamide 11	PP, Polypropylene PE, Polyethylene	TPU	PFA PVDF
Acetic acid (10%)	C2H4O2	1	2	3	0	3
Acetone	C3H6O	3	3	3	0	3
Ammonia (30%)	NH3	3	3	3	0	3
Benzene	–	3	3	2	1	3
Brake fluid	–	3	3	3	0	3
Caustic soda	NaOH	3	3	3	1	3
Ethyl alcohol (40%)	C2H6O	3	3	3	1	3
Glycol	C2H6O2	3	3	3	0	3
Hydrochloric acid (10%)	HCL	0	1	3	0	3
Methanol	CH4O	2	3	3	1	3
Methyl ethyl ketone	C4H8O	3	3	3	0	3
Nitric acid (10%)	HNO3	0	0	2	0	3
Ozone	O3	2	2	2	1	3
Paint thinner	–	3	3	1	0	3
Perchloroethylene	C2Cl4	2	2	2	0	3
Paraffin	–	3	3	1	0	3
Phosphoric acid (10%)	H3O4P	1	2	3	0	3
Sea water	–	3	3	3	2	3
Soap solution	–	3	3	3	2	3
Sodium chloride	NaCl	3	3	3	3	3
Sulphuric acid (10%)	H2SO4	1	2	3	0	3
Toluene	C7H8	3	3	1	0	3
Trichloroethylene	C2HCl3	1	2	0	0	3
Turpentine	–	3	3	0	0	3
Urine	–	3	3	3	3	3

Resistance against oils and greases	Chemical formula	PA6, Polyamide 6 PA6.6, Polyamide 6.6	PA12, Polyamide 12 PA11, Polyamide 11	PP, Polypropylene PE, Polyethylene	TPU	PFA PVDF
Cutting oils*	–	3	3	2	1	3
Diesel oil	–	3	3	2	2	3
ASTM Oil Nr. 3	–	3	3	2	1	3
Fuel oil	–	3	3	2	1	3
Hydraulic oils*	–	3	3	2	1	3
Mineral oils	–	3	3	2	3	3
Spark-erosion liquids	–	3	3	2	1	3
Skydrol	–	1	2	2	0	3
Transformer oils*	–	3	3	2	1	3

*Synthetic additives can affect the oil resistance of plastics. Please contact PMA for further information

Key:

- 3 = Excellent resistance/suitable for permanent contact
- 2 = Resistant/suitable for occasional contact
- 1 = Relatively resistant/suitable for short-term contact
- 0 = Not recommended

Important

The chemical resistance of plastic products is also dependant on factors such as temperature, amount of time exposed to chemicals (e.g. occasional contact or immersed) as well as the concentration of the specific chemicals. The stated chemical resistances are valid for a temperature of 20°C. The chemical resistance table above serves only as a guide for the use of polyamide products in conjunction with the listed chemicals. Each specific application should be controlled for suitability by the end-user.

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
0709M	7TAA292550R0000	106	514-36	7TAA292690R0007	107	BCT-36	7TAA292860R0050	115
0907M	7TAA292550R0001	106	514-48	7TAA292690R0008	107	BFH-07-0	7TAA292700R0009	111
0911M	7TAA292550R0002	106	514-M12	7TAA292690R0009	107	BFH-10-0	7TAA292700R0011	111
0913M	7TAA292550R0003	106	514-M16	7TAA292690R0010	107	BFH-12-0	7TAA292700R0012	111
1107M	7TAA292550R0004	106	514-M20	7TAA292690R0011	107	BFH-17-0	7TAA292700R0013	111
1109M	7TAA292550R0005	106	514-M25	7TAA292690R0012	107	BFH-23-0	7TAA292700R0015	111
1109N	7TAA292550R0006	105	514-M32	7TAA292690R0013	107	BFH-29-0	7TAA292700R0017	111
1113M	7TAA292550R0007	106	514-M40	7TAA292690R0014	107	BFH-36-0	7TAA292700R0018	111
1116M	7TAA292550R0008	106	514-M50	7TAA292690R0015	107	BFH-48-0	7TAA292700R0020	111
1121M	7TAA292550R0009	106	514-M63	7TAA292690R0016	107	BFHS-00	7TAA292700R0022	111
1307M	7TAA292550R0010	106	AFN2-07GT.LOSE	7TAA292700R0000	103	BFHS-PH	7TAA292700R0024	111
1309M	7TAA292550R0011	106	AFN2-10GT.LOSE	7TAA292700R0001	103	BFHS-PH1	7TAA292700R0025	111
1309N	7TAA292550R0012	105	AFN2-12GT.LOSE	7TAA292700R0002	103	BFIL-P070	7TAA292610R0003	85
1311M	7TAA292550R0013	106	AFN2-17GT.LOSE	7TAA292700R0003	103	BFIL-P07M	7TAA292610R0004	85
1311N	7TAA292550R0014	105	AFN2-23GT.LOSE	7TAA292700R0004	103	BFIL-P090	7TAA292610R0005	85
1316M	7TAA292550R0015	106	AFN2-29GT.LOSE	7TAA292700R0005	103	BFIL-P112	7TAA292610R0006	85
1321M	7TAA292550R0016	106	AFN2-36GT.LOSE	7TAA292700R0006	103	BFIL-P117	7TAA292610R0007	85
1607M	7TAA292550R0017	106	AFN2-48GT.LOSE	7TAA292700R0007	103	BFIL-P132	7TAA292610R0008	85
1609M	7TAA292550R0018	106	B.PX.12SW		138	BFIL-P137	7TAA292610R0009	85
1609N	7TAA292550R0019	105	B.PX.15SW		138	BFIL-P160	7TCA292000R0600	85
1611M	7TAA292550R0020	106	B.PX.30SW		138	BFIL-P167	7TAA292610R0010	85
1611N	7TAA292550R0021	105	BAVD-12/10GT	7TAA292580R0000	89	BFIL-P213	7TAA292610R0011	85
1613M	7TAA292550R0022	106	BAVD-17/10GT	7TAA292580R0001	89	BFIL-P217	7TAA292610R0012	85
1613N	7TAA292550R0023	105	BAVD-17/12GT	7TAA292580R0002	89	BFIL-P293	7TCA292000R0601	85
1621M	7TAA292550R0024	106	BAVD-23/10GT	7TAA292580R0003	89	BFIL-P299	7TAA292610R0013	85
1629M	7TAA292550R0025	106	BAVD-23/12GT	7TAA292580R0004	89	BFIL-P366	7TAA292610R0014	85
2111M	7TAA292550R0026	106	BAVD-23/17GT	7TAA292580R0005	89	BFIL-P369	7TCA292000R0602	85
2113M	7TAA292550R0027	106	BAVD-29/10GT	7TAA292580R0006	89	BFIL-P488	7TAA292610R0015	85
2113N	7TAA292550R0028	105	BAVD-29/12GT	7TAA292580R0007	89	BGG-125	7TAA292860R0000	123
2116M	7TAA292550R0029	106	BAVD-29/17GT	7TAA292580R0008	89	BGG-56	7TAA292860R0001	123
2116N	7TAA292550R0030	105	BAVD-29/23GT	7TAA292580R0009	89	BGG-70	7TAA292860R0002	123
2129M	7TAA292550R0031	106	BAVD-36/29GT	7TAA292580R0010	89	BGG-95	7TAA292860R0003	123
2916M	7TAA292550R0032	106	BAVD-48/36GT	7TAA292580R0011	89	BGG-M6356	7TAA292860R0004	125
2921M	7TAA292550R0033	106	BAVR-10/07	7TAA292580R0013	89	BGG-P3656	7TAA292860R0005	125
2921N	7TAA292550R0034	105	BAVR-12/10	7TAA292580R0014	89	BGGV-56	7TAA292860R0006	124
2936M	7TAA292550R0035	106	BAVR-17/10	7TAA292580R0015	89	BGGV-70	7TAA292860R0007	124
3621M	7TAA292550R0036	106	BAVR-17/12	7TAA292580R0016	89	BGGV-95	7TAA292860R0008	124
3629M	7TAA292550R0037	106	BAVR-23/10	7TAA292580R0017	89	BGH-23	7TAA292720R0014	112
3629N	7TAA292550R0038	105	BAVR-23/12	7TAA292580R0018	89	BGH-29	7TAA292720R0015	112
4229M	7TAA292550R0039	106	BAVR-23/17	7TAA292580R0019	89	BGH-36	7TAA292720R0016	112
4236M	7TAA292550R0040	106	BAVR-29/10	7TAA292580R0020	89	BGH-48	7TAA292720R0017	112
4248M	7TAA292550R0041	106	BAVR-29/12	7TAA292580R0021	89	BGH-56	7TAA292720R0018	112,126
4836M	7TAA292550R0042	106	BAVR-29/17	7TAA292580R0022	89	BGH-70	7TAA292720R0019	112,126
4842M	7TAA292550R0043	106	BAVR-29/23	7TAA292580R0023	89	BGH-95	7TAA292720R0020	112,126
514-07	7TAA292690R0000	107	BAVR-36/29	7TAA292580R0024	89	BGI-M7556	7TAA292860R0009	125
514-09	7TAA292690R0001	107	BAVR-48/36	7TAA292580R0025	89	BGL-07	7TAA292720R0021	112
514-11	7TAA292690R0002	107	BCT-10	7TAA292860R0045	115	BGL-10	7TAA292720R0022	112
514-13	7TAA292690R0003	107	BCT-12	7TAA292860R0046	115	BGL-12	7TAA292720R0023	112
514-16	7TAA292690R0004	107	BCT-17	7TAA292860R0047	115	BGL-17	7TAA292720R0024	112
514-21	7TAA292690R0005	107	BCT-23	7TAA292860R0048	115	BGL-23	7TAA292720R0025	112
514-29	7TAA292690R0006	107	BCT-29	7TAA292860R0049	115	BGL-29	7TAA292720R0026	112

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
BGN-S12T	7TAA292680R0000	110	BKIHG-U566	7TAA292400R0046	47	BREIR-U2916	7TAA292920R0007	140
BGN-S17G	7TAA292680R0001	110	BKIHG-U568	7TAA292400R0047	47	BREIR-U3516	7TCA292000R0853	140
BGN-S17T	7TAA292680R0002	110	BLN-M16	7TAA292740R0000	131	BSS-17	7TAA292850R0013	116
BGN-S23G	7TAA292680R0003	110	BLN-M20	7TAA292740R0001	131	BSS-23	7TAA292850R0014	116
BGN-S23T	7TAA292680R0004	110	BLN-M25	7TAA292740R0002	131	BSS-29	7TAA292850R0015	116
BGN-S29G	7TAA292680R0005	110	BLN-M32	7TAA292740R0003	131	BSS-36	7TAA292850R0016	116
BGN-S29T	7TAA292680R0006	110	BLN-M40	7TAA292740R0004	131	BSS-48	7TAA292850R0017	116
BGN-S36G	7TAA292680R0007	110	BLN-M50	7TAA292740R0005	131	BSS-56G	7TAA292850R0018	116
BGN-S36T	7TAA292680R0008	110	BLNO-M160	7TAA292740R0006	131	BSV-70G	7TAA292850R0019	116
BGN-S48G	7TAA292680R0009	110	BLNO-M162	7TAA292740R0007	131	BVAD-M120GT	7TAA292150R0032	58
BGN-S48T	7TAA292680R0010	110	BLNO-M202	7TAA292740R0008	131	BVAD-M160GT	7TAA292150R0033	58
BGN-S70G	7TAA292680R0011	110	BLNO-M207	7TAA292740R0009	131	BVAD-M162GT	7TAA292150R0034	58
BGO-56	7TAA292860R0010	123	BLNO-M253	7TAA292740R0010	131	BVAD-M202GT	7TAA292150R0035	58
BGO-70	7TAA292860R0011	123	BLNO-M257	7TAA292740R0011	131	BVAD-M207GT	7TAA292150R0036	58
BGO-95	7TAA292860R0012	123	BLNO-M323	7TAA292740R0012	131	BVAD-M253GT	7TAA292150R0037	58
BGOV-56	7TAA292860R0013	124	BLNO-M329	7TAA292740R0013	131	BVAD-M329GT	7TAA292150R0038	58
BGOV-70	7TAA292860R0014	124	BLNO-M406	7TAA292740R0014	131	BVAD-M406GT	7TAA292150R0039	58
BGOV-95	7TAA292860R0015	124	BLNO-M409	7TAA292740R0015	131	BVAD-M506GT	7TAA292150R0040	58
BGP-12/01	7TCA292000R6631	114	BLNO-M508	7TAA292740R0016	131	BVAD-M508GT	7TAA292150R0041	58
BGP-17	7TCA292000R6632	114	BLSGO-101010	7TCA292000R9460	133	BVAD-M638GT	7TAA292150R0042	58
BGP-23	7TCA292000R6633	114	BLSGO-121212	7TCA292000R9461	133	BVAD-N022GT	7TAA292150R0043	78
BGP-29	7TCA292000R6634	114	BLSGO-171717	7TCA292000R9462	133	BVAD-N027GT	7TAA292150R0044	78
BGP-3x48	7TCA292000R8706	114	BLSGO-232323	7TCA292000R9463	133	BVAD-N043GT	7TAA292150R0045	78
BGP-36	7TCA292000R6635	114	BLTO-070707	7TCA292000R4700	132	BVAD-N069GT	7TAA292150R0046	78
BGP-48	7TCA292000R6636	114	BLTO-101010	7TCA292000R4701	132	BVAD-N076GT	7TAA292150R0047	78
BGP-56G	7TAA292860R0026	114	BLTO-121212	7TCA292000R4702	132	BVAD-N088GT	7TAA292150R0048	78
BGPS-12/01	7TCA292000R5539	114	BLTO-171717	7TCA292000R4703	132	BVAD-P090GT	7TAA292150R0049	70
BGPS-17	7TAA292860R0027	114	BLTO-232323	7TCA292000R4704	132	BVAD-P112GT	7TAA292150R0050	70
BGPS-23	7TAA292860R0028	114	BLTO-292929	7TCA292000R4705	132	BVAD-P132GT	7TAA292150R0051	70
BGPS-29	7TAA292860R0029	114	BLYO-100707	7TCA292000R4706	132	BVAD-P137GT	7TAA292150R0052	70
BGPS-36	7TAA292860R0030	114	BLYO-121010	7TCA292000R4707	132	BVAD-P167GT	7TAA292150R0053	70
BGPS-48	7TAA292860R0031	114	BLYO-171212	7TCA292000R4708	132	BVAD-P213GT	7TAA292150R0054	70
BGPS-56	7TAA292860R0032	114	BLYO-231717	7TCA292000R4709	132	BVAD-P299GT	7TAA292150R0055	70
BKIHG-U212	7TAA292400R0028	47	BLYO-292917	7TCA292000R4710	132	BVAD-P366GT	7TAA292150R0056	70
BKIHG-U217	7TAA292400R0029	47	BMN-07	7TAA292670R0008	108	BVAD-P488GT	7TAA292150R0057	70
BKIHG-U242	7TAA292400R0030	47	BMN-09	7TAA292670R0009	108	BVAV-M160	7TAA292150R0065	58
BKIHG-U243	7TAA292400R0031	47	BMN-11	7TAA292670R0010	108	BVAV-M162	7TAA292150R0066	58
BKIHG-U247	7TAA292400R0032	47	BMN-13	7TAA292670R0011	108	BVAV-M202	7TAA292150R0067	58
BKIHG-U292	7TAA292400R0033	47	BMN-16	7TAA292670R0012	108	BVAV-M207	7TAA292150R0068	58
BKIHG-U293	7TAA292400R0034	47	BMN-21	7TAA292670R0013	108	BVAV-M253	7TAA292150R0069	58
BKIHG-U297	7TAA292400R0035	47	BMN-29	7TAA292670R0014	108	BVAV-M329	7TAA292150R0070	58
BKIHG-U299	7TAA292400R0036	47	BMN-36	7TAA292670R0015	108	BVAV-M406	7TAA292150R0071	58
BKIHG-U353	7TAA292400R0037	47	BMN-48	7TAA292670R0016	108	BVAV-M506	7TAA292150R0072	58
BKIHG-U357	7TAA292400R0038	47	BMN-M12	7TAA292670R0020	108	BVAV-M508	7TAA292150R0073	58
BKIHG-U359	7TAA292400R0039	47	BMN-M16	7TAA292670R0021	108	BVAV-M638	7TAA292150R0074	58
BKIHG-U433	7TAA292400R0040	47	BMN-M20	7TAA292670R0022	108	BVAV-N022	7TAA292150R0075	78
BKIHG-U439	7TAA292400R0041	47	BMN-M25	7TAA292670R0023	108	BVAV-N027	7TAA292150R0076	78
BKIHG-U503	7TAA292400R0042	47	BMN-M32	7TAA292670R0024	108	BVAV-N043	7TAA292150R0077	78
BKIHG-U506	7TAA292400R0043	47	BMN-M40	7TAA292670R0025	108	BVAV-N069	7TAA292150R0078	78
BKIHG-U508	7TAA292400R0044	47	BMN-M50	7TAA292670R0026	108	BVAV-N076	7TAA292150R0079	78
BKIHG-U509	7TAA292400R0045	47	BMN-M63	7TAA292670R0027	108	BVAV-N088	7TAA292150R0080	78

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
BVAV-N098	7TAA292150R0081	78	BVH-36-020	7TAA292700R0038	110	BVID-M406GT	7TAA292610R0022	83
BVAV-P090	7TAA292150R0082	70	BVH-48-000	7TAA292700R0039	110	BVID-M508GT	7TAA292610R0023	83
BVAV-P112	7TAA292150R0083	70	BVH-48-010	7TAA292700R0040	110	BVID-M638GT	7TAA292610R0024	83
BVAV-P132	7TAA292150R0084	70	BVH-48-020	7TAA292700R0041	110	BVIRA-U150	7TAA292610R0080	86
BVAV-P137	7TAA292150R0085	70	BVIDA-U150GT	7TAA292610R0025	86	BVIRA-U152	7TAA292610R0081	86
BVAV-P167	7TAA292150R0086	70	BVIDA-U152GT	7TAA292610R0026	86	BVIRA-U15M	7TAA292610R0082	86
BVAV-P213	7TAA292150R0087	70	BVIDA-U15MGT	7TAA292610R0027	86	BVIRA-U180	7TAA292610R0083	86
BVAV-P299	7TAA292150R0088	70	BVIDA-U180GT	7TAA292610R0028	86	BVIRA-U182	7TAA292610R0084	86
BVAV-P366	7TAA292150R0089	70	BVIDA-U182GT	7TAA292610R0029	86	BVIRA-U187	7TAA292610R0085	86
BVAV-P488	7TAA292150R0090	70	BVIDA-U187GT	7TAA292610R0030	86	BVIRA-U232	7TAA292610R0086	86
BVBD-M207GT	7TAA292150R0091	59	BVIDA-U232GT	7TAA292610R0031	86	BVIRA-U233	7TAA292610R0087	86
BVBD-M253GT	7TAA292150R0092	59	BVIDA-U233GT	7TAA292610R0032	86	BVIRA-U237	7TAA292610R0088	86
BVBD-M257GT	7TAA292150R0093	59	BVIDA-U237GT	7TAA292610R0033	86	BVIRA-U343	7TAA292610R0089	86
BVBD-M323GT	7TAA292150R0094	59	BVIDA-U343GT	7TAA292610R0034	86	BVIRA-U347	7TAA292610R0090	86
BVBD-M329GT	7TAA292150R0095	59	BVIDA-U347GT	7TAA292610R0035	86	BVIRA-U402	7TAA292610R0091	86
BVBD-M406GT	7TAA292150R0096	59	BVIDA-U402GT	7TAA292610R0036	86	BVIRA-U403	7TAA292610R0092	86
BVBD-M409GT	7TAA292150R0097	59	BVIDA-U403GT	7TAA292610R0037	86	BVIRA-U407	7TAA292610R0093	86
BVBD-M506GT	7TAA292150R0098	59	BVIDA-U407GT	7TAA292610R0038	86	BVIRB-U162	7TAA292610R0094	86
BVBD-M508GT	7TAA292150R0099	59	BVIDB-U162GT	7TAA292610R0039	86	BVIRB-U202	7TAA292610R0095	86
BVBD-M638GT	7TAA292150R0100	59	BVIDB-U202GT	7TAA292610R0040	86	BVIRB-U232	7TAA292610R0096	86
BVBD-P167GT	7TAA292150R0101	71	BVIDB-U232GT	7TAA292610R0041	86	BVIRB-U237	7TAA292610R0097	86
BVBD-P213GT	7TAA292150R0102	71	BVIDB-U237GT	7TAA292610R0042	86	BVIRB-U267	7TAA292610R0098	86
BVBD-P299GT	7TAA292150R0103	71	BVIDB-U267GT	7TAA292610R0043	86	BVIRB-U293	7TAA292610R0099	86
BVBD-P366GT	7TAA292150R0104	71	BVIDB-U293GT	7TAA292610R0044	86	BVIRB-U297	7TAA292610R0100	86
BVBD-P488GT	7TAA292150R0105	71	BVIDB-U297GT	7TAA292610R0045	86	BVIRB-U323	7TAA292610R0101	86
BVBV-M207	7TAA292150R0106	59	BVIDB-U323GT	7TAA292610R0046	86	BVIRB-U353	7TAA292610R0102	86
BVBV-M253	7TAA292150R0107	59	BVIDB-U353GT	7TAA292610R0047	86	BVIRB-U357	7TAA292610R0103	86
BVBV-M257	7TAA292150R0108	59	BVIDB-U357GT	7TAA292610R0048	86	BVIRB-U359	7TAA292610R0104	86
BVBV-M323	7TAA292150R0109	59	BVIDB-U359GT	7TAA292610R0049	86	BVIR-M160	7TAA292610R0066	83
BVBV-M329	7TAA292150R0110	59	BVIDG-U212GT	7TAA292610R0050	87	BVIR-M162	7TAA292610R0067	83
BVBV-M406	7TAA292150R0111	59	BVIDG-U217GT	7TAA292610R0051	87	BVIR-M202	7TAA292610R0068	83
BVBV-M409	7TAA292150R0112	59	BVIDG-U242GT	7TAA292610R0052	87	BVIR-M207	7TAA292610R0069	83
BVBV-M506	7TAA292150R0113	59	BVIDG-U247GT	7TAA292610R0053	87	BVIR-M253	7TAA292610R0070	83
BVBV-M508	7TAA292150R0114	59	BVIDG-U293GT	7TAA292610R0054	87	BVIR-M257	7TAA292610R0071	83
BVBV-M638	7TAA292150R0115	59	BVIDG-U297GT	7TAA292610R0055	87	BVIR-M329	7TAA292610R0072	83
BVBV-P167	7TAA292150R0116	71	BVIDG-U353GT	7TAA292610R0056	87	BVIR-M406	7TAA292610R0073	83
BVBV-P213	7TAA292150R0117	71	BVIDG-U357GT	7TAA292610R0057	87	BVIR-M508	7TAA292610R0074	83
BVBV-P299	7TAA292150R0118	71	BVIDG-U359GT	7TAA292610R0058	87	BVIR-M638	7TAA292610R0075	83
BVBV-P366	7TAA292150R0119	71	BVIDG-U433GT	7TAA292610R0059	87	BVIR-P070	7TAA292610R0076	83
BVBV-P488	7TAA292150R0120	71	BVIDG-U436GT	7TAA292610R0060	87	BVIR-P090	7TAA292610R0077	83
BVH-17-000	7TAA292700R0027	110	BVIDG-U439GT	7TAA292610R0061	87	BVIR-P112	7TAA292610R0078	83
BVH-17-010	7TAA292700R0028	110	BVIDG-U506GT	7TAA292610R0062	87	BVIR-P167	7TAA292610R0079	83
BVH-17-020	7TAA292700R0029	110	BVIDG-U509GT	7TAA292610R0063	87	BVIRS-U162	7TCA292000R0041	86
BVH-23-000	7TAA292700R0030	110	BVIDG-U566GT	7TAA292610R0064	87	BVIRS-U202	7TCA292000R0042	86
BVH-23-010	7TAA292700R0031	110	BVIDG-U569GT	7TAA292610R0065	87	BVIRS-U237	7TCA292000R0043	86
BVH-23-020	7TAA292700R0032	110	BVID-M12MGT	7TAA292610R0016	83	BVIRS-U267	7TCA292000R0044	86
BVH-29-000	7TAA292700R0033	110	BVID-M160GT	7TAA292610R0017	83	BVIRS-U293	7TCA292000R0045	86
BVH-29-010	7TAA292700R0034	110	BVID-M162GT	7TAA292610R0018	83	BVIRS-U323	7TCA292000R0046	86
BVH-29-020	7TAA292700R0035	110	BVID-M207GT	7TAA292610R0019	83	BVIRS-U359	7TCA292000R0047	86
BVH-36-000	7TAA292700R0036	110	BVID-M253GT	7TAA292610R0020	83	BVIVG-U152	7TAA292610R0105	87
BVH-36-010	7TAA292700R0037	110	BVID-M329GT	7TAA292610R0021	83	BVIVG-U187	7TAA292610R0106	87

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
BVIVG-U210	7TAA292610R0107	87	BVND-M329GT	7TAA292150R0154	57	BVND-P296GT	7TAA292150R0197	69
BVIVG-U212	7TAA292610R0108	87	BVND-M406GT	7TAA292150R0156	57	BVND-P299GT	7TAA292150R0198	69
BVIVG-U217	7TAA292610R0109	87	BVND-M409GT	7TAA292150R0157	57	BVND-P366GT	7TAA292150R0199	69
BVIVG-U242	7TAA292610R0110	87	BVND-M506GT	7TAA292150R0159	57	BVND-P368GT	7TAA292150R0200	69
BVIVG-U243	7TAA292610R0111	87	BVND-M508GT	7TAA292150R0160	57	BVND-P428GT	7TAA292150R0201	69
BVIVG-U247	7TAA292610R0112	87	BVND-M638GT	7TAA292150R0161	57	BVND-P488GT	7TAA292150R0202	69
BVIVG-U292	7TAA292610R0113	87	BVND-N022GT	7TAA292150R0162	78	BVNDZ-M160GT	7TAA292150R0204	58
BVIVG-U293	7TAA292610R0114	87	BVND-N027GT	7TAA292150R0163	78	BVNDZ-M162GT	7TAA292150R0205	58
BVIVG-U297	7TAA292610R0115	87	BVND-N043GT	7TAA292150R0164	78	BVNDZ-M207GT	7TAA292150R0206	58
BVIVG-U299	7TAA292610R0116	87	BVND-N069GT	7TAA292150R0165	78	BVNDZ-M253GT	7TAA292150R0207	58
BVIVG-U349	7TCA292000R1035	87	BVND-N076GT	7TAA292150R0166	78	BVNDZ-M329GT	7TAA292150R0208	58
BVIVG-U352	7TAA292610R0169	87	BVND-N088GT	7TAA292150R0167	78	BVNDZ-M406GT	7TAA292150R0209	58
BVIVG-U353	7TAA292610R0117	87	BVND-N098GT	7TAA292150R0168	78	BVNDZ-M508GT	7TAA292150R0210	58
BVIVG-U356	7TAA292610R0118	87	BVND-P070GT-11	7TAA292150R0169	69	BVNDZ-M638GT	7TAA292150R0211	58
BVIVG-U357	7TAA292610R0119	87	BVND-P070GT-8	7TAA292150R0170	69	BVNDZ-P090GT	7TAA292150R0212	70
BVIVG-U359	7TAA292610R0120	87	BVND-P072GT-11	7TAA292150R0171	69	BVNDZ-P112GT	7TAA292150R0213	70
BVIVG-U433	7TAA292610R0121	87	BVND-P072GT-8	7TAA292150R0172	69	BVNDZ-P132GT	7TAA292150R0214	70
BVIVG-U436	7TAA292610R0122	87	BVND-P07MGT-11	7TAA292150R0173	69	BVNDZ-P137GT	7TAA292150R0215	70
BVIVG-U437	7TAA292610R0123	87	BVND-P07MGT-8	7TAA292150R0174	69	BVNDZ-P163GT	7TAA292150R0216	70
BVIVG-U439	7TAA292610R0124	87	BVND-P090GT-11	7TAA292150R0176	69	BVNDZ-P167GT	7TAA292150R0217	70
BVIVG-U503	7TAA292610R0125	87	BVND-P090GT-8	7TAA292150R0177	69	BVNDZ-P213GT	7TAA292150R0218	70
BVIVG-U506	7TAA292610R0126	87	BVND-P092GT-11	7TAA292150R0178	69	BVNDZ-P299GT	7TAA292150R0219	70
BVIVG-U508	7TAA292610R0127	87	BVND-P092GT-8	7TCA292000R1057	69	BVNDZ-P366GT	7TAA292150R0220	70
BVIVG-U509	7TAA292610R0128	87	BVND-P097GT-11	7TAA292150R0179	69	BVNDZ-P488GT	7TAA292150R0221	70
BVIVG-U563	7TAA292610R0129	87	BVND-P097GT-8	7TCA292000R5693	69	BVNR-RE12	7TAA292150R0222	90
BVIVG-U566	7TAA292610R0130	87	BVND-P09MGT-11	7TAA292150R0180	69	BVNR-RE12-24	7TAA292150R0223	90
BVIVG-U568	7TAA292610R0131	87	BVND-P09MGT-8	7TCA292000R1058	69	BVNR-RE1317	7TAA292150R0224	90
BVIVG-U569	7TAA292610R0132	87	BVND-P110GT-11	7TAA292150R0181	69	BVNR-RE1317-28	7TAA292150R0225	90
BVIVG-U628	7TCA292000R1039	87	BVND-P110GT-8	7TAA292150R0182	69	BVNR-RE17	7TAA292150R0226	90
BVND-G000GT	7TAA292150R0127	77	BVND-P112GT-11	7TAA292150R0183	69	BVNR-RE17-28	7TAA292150R0227	90
BVND-G00MGT	7TAA292150R0128	77	BVND-P112GT-8	7TAA292150R0184	69	BVNR-RE23	7TAA292150R0229	90
BVND-G010GT	7TAA292150R0129	77	BVND-P117GT-11	7TAA292150R0185	69	BVNR-RE23-32	7TAA292150R0230	90
BVND-G012GT	7TAA292150R0130	77	BVND-P117GT-8	7TCA292000R1060	69	BVNR-RE29	7TAA292150R0232	90
BVND-G022GT	7TAA292150R0131	77	BVND-P11MGT-11	7TAA292150R0186	69	BVNR-RE29-44	7TAA292150R0233	90
BVND-G027GT	7TAA292150R0132	77	BVND-P11MGT-8	7TCA292000R5694	69	BVNR-RE36	7TAA292150R0235	90
BVND-G043GT	7TAA292150R0133	77	BVND-P130GT-11	7TAA292150R0187	69	BVNR-RE36-50	7TAA292150R0236	90
BVND-G069GT	7TAA292150R0134	77	BVND-P130GT-8	7TCA292000R1061	69	BVNR-RE48	7TAA292150R0238	90
BVND-G076GT	7TAA292150R0135	77	BVND-P132GT-11	7TAA292150R0188	69	BVNR-RE48-65	7TAA292150R0239	90
BVND-G088GT	7TAA292150R0136	77	BVND-P132GT-8	7TCA292000R1062	69	BVNR-REM162	7TAA292150R0240	90
BVND-G098GT	7TAA292150R0137	77	BVND-P137GT-11	7TAA292150R0189	69	BVNR-REM162-24	7TAA292150R0241	90
BVND-M120GT	7TAA292150R0138	57	BVND-P137GT-8	7TCA292000R1064	69	BVNR-REM187	7TAA292150R0242	90
BVND-M12MGT	7TAA292150R0139	57	BVND-P13MGT-11	7TAA292150R0190	69	BVNR-REM187-28	7TAA292150R0243	90
BVND-M160GT	7TAA292150R0140	57	BVND-P13MGT-8	7TCA292000R1065	69	BVNR-REM207	7TAA292150R0244	90
BVND-M162GT	7TAA292150R0141	57	BVND-P160GT-11	7TAA292150R0191	69	BVNR-REM207-28	7TAA292150R0245	90
BVND-M200GT	7TAA292150R0142	57	BVND-P160GT-8	7TCA292000R5695	69	BVNR-REM253	7TAA292150R0246	90
BVND-M202GT	7TAA292150R0144	57	BVND-P162GT-11	7TAA292150R0192	69	BVNR-REM253-32	7TAA292150R0247	90
BVND-M203GT	7TAA292150R0146	57	BVND-P163GT-11	7TAA292150R0193	69	BVNR-REM329	7TAA292150R0248	90
BVND-M207GT	7TAA292150R0147	57	BVND-P163GT-8	7TCA292000R1066	69	BVNR-REM329-44	7TAA292150R0249	90
BVND-M253GT	7TAA292150R0149	57	BVND-P167GT-11	7TAA292150R0194	69	BVNR-REM406	7TAA292150R0250	90
BVND-M257GT	7TAA292150R0150	57	BVND-P167GT-8	7TAA292150R0195	69	BVNR-REM406-50	7TAA292150R0251	90
BVND-M323GT	7TAA292150R0152	57	BVND-P213GT	7TAA292150R0196	69	BVNR-REM508	7TAA292150R0252	90

Index

Products in alphabetical order

Part. no.	GID no.	Page
BVNR-REM508-65	7TAA292150R0253	90
BVNV-G000	7TAA292150R0256	77
BVNV-G00M	7TAA292150R0257	77
BVNV-G010	7TAA292150R0258	77
BVNV-G012	7TAA292150R0259	77
BVNV-G022	7TAA292150R0260	77
BVNV-G027	7TAA292150R0261	77
BVNV-G043	7TAA292150R0262	77
BVNV-G069	7TAA292150R0263	77
BVNV-G076	7TAA292150R0264	77
BVNV-G088	7TAA292150R0265	77
BVNV-G098	7TAA292150R0266	77
BVNV-M120	7TAA292150R0267	57
BVNV-M12M	7TAA292150R0268	57
BVNV-M160	7TAA292150R0269	57
BVNV-M162	7TAA292150R0270	57
BVNV-M200	7TAA292150R0272	57
BVNV-M202	7TAA292150R0273	57
BVNV-M203	7TAA292150R0274	57
BVNV-M207	7TAA292150R0275	57
BVNV-M253	7TAA292150R0277	57
BVNV-M257	7TAA292150R0279	57
BVNV-M323	7TAA292150R0281	57
BVNV-M329	7TAA292150R0282	57
BVNV-M406	7TAA292150R0283	57
BVNV-M409	7TAA292150R0284	57
BVNV-M506	7TAA292150R0285	57
BVNV-M508	7TAA292150R0286	57
BVNV-M638	7TAA292150R0287	57
BVNV-N022	7TAA292150R0289	78
BVNV-N027	7TAA292150R0290	78
BVNV-N043	7TAA292150R0291	78
BVNV-N069	7TAA292150R0292	78
BVNV-N076	7TAA292150R0293	78
BVNV-N088	7TAA292150R0294	78
BVNV-N098	7TAA292150R0295	78
BVNV-P070	7TAA292150R0296	69
BVNV-P072	7TCA292000R1118	69
BVNV-P07M	7TAA292150R0297	69
BVNV-P090	7TAA292150R0298	69
BVNV-P092	7TAA292150R0299	69
BVNV-P097	7TAA292150R1288	69
BVNV-P09M	7TAA292150R0300	69
BVNV-P110	7TAA292150R0301	69
BVNV-P112	7TAA292150R0302	69
BVNV-P117	7TAA292150R0303	69
BVNV-P11M	7TAA292150R0304	69
BVNV-P130	7TAA292150R0305	69
BVNV-P132	7TAA292150R0306	69
BVNV-P137	7TAA292150R0307	69
BVNV-P13M	7TAA292150R0308	69

Part. no.	GID no.	Page
BVNV-P162	7TAA292150R0309	69
BVNV-P163	7TCA292000R1137	69
BVNV-P167	7TAA292150R0310	69
BVNV-P213	7TAA292150R0311	69
BVNV-P296	7TAA292150R0312	69
BVNV-P299	7TAA292150R0313	69
BVNV-P366	7TAA292150R0314	69
BVNV-P368	7TCA292000R1147	69
BVNV-P428	7TAA292150R0315	69
BVNV-P488	7TAA292150R0316	69
BVNZ-M162S	7TAA292150R0317	58
BVNZ-M207S	7TAA292150R0318	58
BVNZ-M253S	7TAA292150R0319	58
BVNZ-M329S	7TAA292150R0320	58
BVNZ-M406S	7TAA292150R0321	58
BVNZ-M508S	7TAA292150R0322	58
BVNZ-M638S	7TAA292150R0323	58
BVNZ-P090S	7TAA292150R0327	70
BVNZ-P112S	7TAA292150R0328	70
BVNZ-P132S	7TAA292150R0329	70
BVNZ-P137S	7TAA292150R0330	70
BVNZ-P163S	7TAA292150R0331	70
BVNZ-P167S	7TAA292150R0332	70
BVNZ-P213S	7TAA292150R0333	70
BVNZ-P299S	7TAA292150R0334	70
BVNZ-P366S	7TAA292150R0335	70
BVNZ-P488S	7TAA292150R0336	70
BVOD-P167GT	7TAA292150R0337	83
BVOD-P213GT	7TAA292150R0338	83
BVOD-P299GT	7TAA292150R0339	83
BVOD-P366GT	7TAA292150R0340	83
BVOD-P488GT	7TAA292150R0341	83
BVOV-P167	7TAA292150R0342	83
BVOV-P213	7TAA292150R0343	83
BVOV-P299	7TAA292150R0344	83
BVOV-P366	7TAA292150R0345	83
BVOV-P488	7TAA292150R0346	83
BVSGD-1212GT	7TAA292300R0000	90
BVSGD-1717GT	7TAA292300R0001	90
BVSGD-2323GT	7TAA292300R0002	90
BVSGD-2929GT	7TAA292300R0003	90
BVSGD-3636GT	7TAA292300R0004	90
BVSGD-4848GT	7TAA292300R0005	90
BVSGR-1212	7TAA292300R0006	90
BVSGR-1717	7TAA292300R0007	90
BVSGR-2323	7TAA292300R0008	90
BVSGR-2929	7TAA292300R0009	90
BVSGR-3636	7TAA292300R0010	90
BVSGR-4848	7TAA292300R0011	90
BVTD-101010GT	7TAA292150R1292	88
BVTD-121212GT	7TAA292150R1293	88

Part. no.	GID no.	Page
BVTD-171717GT	7TAA292150R1294	88
BVTD-232323GT	7TAA292150R0347	88
BVTD-292929GT	7TAA292150R0348	88
BVTD-363636GT	7TAA292150R0349	88
BVTD-484848GT	7TAA292150R0350	88
BVTR-101010	7TAA292150R0351	88
BVTR-121212	7TAA292150R0353	88
BVTR-171717	7TAA292150R0355	88
BVTR-232323	7TAA292150R0358	88
BVTR-292929	7TAA292150R0359	88
BVTR-363636	7TAA292150R0361	88
BVTR-484848	7TAA292150R0363	88
BVWD-G000GT	7TAA292150R0364	77
BVWD-G00MGT	7TAA292150R0365	77
BVWD-G010GT	7TAA292150R0366	77
BVWD-G012GT	7TAA292150R0367	77
BVWD-G022GT	7TAA292150R0368	77
BVWD-G027GT	7TAA292150R0369	77
BVWD-G043GT	7TAA292150R0370	77
BVWD-G069GT	7TAA292150R0371	77
BVWD-G076GT	7TAA292150R0372	77
BVWD-G088GT	7TAA292150R0373	77
BVWD-G098GT	7TAA292150R0374	77
BVWD-M120GT	7TAA292150R0375	59
BVWD-M12MGT	7TAA292150R0376	59
BVWD-M160GT	7TAA292150R0377	59
BVWD-M162GT	7TAA292150R0378	59
BVWD-M200GT	7TAA292150R0379	59
BVWD-M202GT	7TAA292150R0380	59
BVWD-M207GT	7TAA292150R0381	59
BVWD-M253GT	7TAA292150R0382	59
BVWD-M329GT	7TAA292150R0383	59
BVWD-M406GT	7TAA292150R0384	59
BVWD-M508GT	7TAA292150R0385	59
BVWD-N022GT	7TAA292150R0386	79
BVWD-N027GT	7TAA292150R0387	79
BVWD-N043GT	7TAA292150R0388	79
BVWD-N069GT	7TAA292150R0389	79
BVWD-N076GT	7TAA292150R0390	79
BVWD-N088GT	7TAA292150R0391	79
BVWD-N098GT	7TAA292150R0392	79
BVWD-P070GT-11	7TAA292150R0393	72
BVWD-P070GT-8	7TCA292000R1233	72
BVWD-P072GT-11	7TAA292150R0394	72
BVWD-P072GT-8	7TCA292000R5702	72
BVWD-P07MGT-11	7TAA292150R0395	72
BVWD-P07MGT-8	7TCA292000R5703	72
BVWD-P090GT-11	7TAA292150R0396	72
BVWD-P090GT-8	7TCA292000R1236	72
BVWD-P092GT-11	7TAA292150R0397	72
BVWD-P092GT-8	7TCA292000R5704	72

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
BVWD-P09MGT-11	7TAA292150R0398	72	BVWV-P072	7TCA292000R5709	72	CUSG-29S.31		31
BVWD-P09MGT-8	7TCA292000R5705	72	BVWV-P07M	7TAA292150R0443	72	CUSG-36B.31	7TAA292490R0004	31
BVWD-P110GT-11	7TAA292150R0399	72	BVWV-P090	7TAA292150R0444	72	CUSG-36S.31		31
BVWD-P110GT-8	7TCA292000R1238	72	BVWV-P092	7TAA292150R0445	72	CUSG-48B.31	7TAA292490R0005	31
BVWD-P112GT-11	7TAA292150R0400	72	BVWV-P09M	7TAA292150R0446	72	CUSG-48S.31		31
BVWD-P112GT-8	7TAA292150R0401	72	BVWV-P110	7TAA292150R0447	72	CYLG-125B.06	7TAA292360R0000	17
BVWD-P11MGT-11	7TAA292150R0402	72	BVWV-P112	7TAA292150R0448	72	CYLG-125S.06	7TAA292360R0001	17
BVWD-P11MGT-8	7TCA292000R5706	72	BVWV-P11M	7TCA292000R1259	72	CYLG-23B.50	7TAA292240R0008	17
BVWD-P130GT-11	7TAA292150R0403	72	BVWV-P130	7TAA292150R0449	72	CYLG-23S.50	7TAA292240R0009	17
BVWD-P130GT-8	7TCA292000R1239	72	BVWV-P132	7TAA292150R0450	72	CYLG-29B.50	7TAA292240R0010	17
BVWD-P132GT-11	7TAA292150R0404	72	BVWV-P137	7TAA292150R0451	72	CYLG-29S.50	7TAA292240R0011	17
BVWD-P132GT-8	7TCA292000R1240	72	BVWV-P13M	7TCA292000R1265	72	CYLG-36B.30	7TAA292240R0012	17
BVWD-P137GT-11	7TAA292150R0405	72	BVWV-P167	7TAA292150R0452	72	CYLG-36S.30	7TAA292240R0013	17
BVWD-P137GT-8	7TAA292150R0406	72	BVWV-P213	7TAA292150R0453	72	CYLG-48B.30	7TAA292240R0014	17
BVWD-P13MGT-11	7TAA292150R0407	72	BVWV-P299	7TAA292150R0454	72	CYLG-48S.30	7TAA292240R0015	17
BVWD-P13MGT-8	7TCA292000R5707	72	BVWV-P366	7TAA292150R0455	72	CYLG-56B.30	7TAA292360R0002	17,122
BVWD-P167GT-11	7TAA292150R0408	72	BVWV-P488	7TAA292150R0456	72	CYLG-56S.30	7TAA292360R0003	17,122
BVWD-P167GT-8	7TAA292150R0409	72	BVYD-100707GT	7TAA292150R0457	88	CYLG-70B.10	7TAA292360R0004	17,122
BVWD-P213GT	7TAA292150R0410	72	BVYD-121010GT	7TAA292150R0458	88	CYLG-70S.10	7TAA292360R0006	17,122
BVWD-P299GT	7TAA292150R0411	72	BVYD-171212GT	7TAA292150R0459	88	CYLG-95B.10	7TAA292360R0008	17,122
BVWD-P366GT	7TAA292150R0412	72	BVYD-231717GT	7TAA292150R0460	88	CYLG-95S.10	7TAA292360R0010	17,122
BVWD-P488GT	7TAA292150R0413	72	BVYD-292323GT	7TAA292150R0461	88	CYLT-07B.50	7TAA292240R0018	17
BVWV-G000	7TAA292150R0414	77	BVYD-362929GT	7TAA292150R0462	88	CYLT-07S.50	7TAA292240R0019	17
BVWV-G00M	7TAA292150R0415	77	BVYD-483636GT	7TAA292150R0463	88	CYLT-10B.50	7TAA292240R0020	17
BVWV-G010	7TAA292150R0416	77	BVYR-100707	7TAA292150R0464	88	CYLT-10S.50	7TAA292240R0021	17
BVWV-G012	7TAA292150R0417	77	BVYR-121010	7TAA292150R0465	88	CYLT-12B.50	7TAA292240R0022	17
BVWV-G022	7TAA292150R0418	77	BVYR-171212	7TAA292150R0466	88	CYLT-12S.50	7TAA292240R0023	17
BVWV-G027	7TAA292150R0419	77	BVYR-231717	7TAA292150R0467	88	CYLT-17B.50	7TAA292240R0024	17
BVWV-G043	7TAA292150R0420	77	BVYR-292323	7TAA292150R0468	88	CYLT-17S.50	7TAA292240R0025	17
BVWV-G069	7TAA292150R0421	77	BVYR-362929	7TAA292150R0469	88	CYLT-23B.50	7TAA292240R0026	17
BVWV-G076	7TAA292150R0422	77	BVYR-483636	7TAA292150R0470	88	CYLT-23S.50	7TAA292240R0027	17
BVWV-G088	7TAA292150R0423	77	C.66.10GR	7TAA292910R0000	136	CYLT-29B.50	7TAA292240R0028	17
BVWV-G098	7TAA292150R0424	77	C.66.10SW	7TAA292910R0001	136	CYLT-29S.50	7TAA292240R0029	17
BVWV-M120	7TAA292150R0425	59	C.66.12GR	7TAA292910R0002	136	CYLT-36B.50	7TAA292240R0030	17
BVWV-M12M	7TAA292150R0426	59	C.66.12SW	7TAA292910R0003	136	CYLT-36S.50	7TAA292240R0031	17
BVWV-M160	7TAA292150R0427	59	C.66.16GR	7TAA292910R0004	136	CYLT-48B.50	7TAA292240R0032	17
BVWV-M162	7TAA292150R0428	59	C.66.16SW	7TAA292910R0005	136	CYLT-48S.50	7TAA292240R0033	17
BVWV-M202	7TAA292150R0429	59	C.66.20GR	7TAA292910R0006	136	E 150p7	7TCA292000R9071	44,45, 62,64, 68,74
BVWV-M207	7TAA292150R0430	59	C.66.20SW	7TAA292910R0007	136	E 150p8	7TCA292000R9074	44,45, 62,64, 68
BVWV-M253	7TAA292150R0431	59	C.66.25GR	7TAA292910R0008	136	E 150p9	7TCA292000R9075	44,45, 62,64, 68,74
BVWV-M329	7TAA292150R0432	59	C.66.25SW	7TAA292910R0009	136	E 152p11	7TCA292000R9081	44,45, 62,64, 68,74
BVWV-M406	7TAA292150R0433	59	C.66.30GR	7TAA292910R0010	136	E 152p13	7TCA292000R9083	44,45, 62,64, 68
BVWV-M508	7TAA292150R0434	59	C.66.30SW	7TAA292910R0011	136	E 152p7	7TCA292000R9076	44,45, 62,64, 68
BVWV-N022	7TAA292150R0435	79	C.66.40GR	7TAA292910R0012	136			
BVWV-N027	7TAA292150R0436	79	C.66.40SW	7TAA292910R0013	136			
BVWV-N043	7TAA292150R0437	79	C.66.45SW	7TAA292910R0014	136			
BVWV-N069	7TAA292150R0438	79	CUSG-17B.31	7TAA292490R0000	31			
BVWV-N076	7TAA292150R0439	79	CUSG-17S.31	7TCA292000R1523	31			
BVWV-N088	7TAA292150R0440	79	CUSG-23B.31	7TAA292490R0001	31			
BVWV-N098	7TAA292150R0441	79	CUSG-23S.31	7TAA292490R0002	31			
BVWV-P070	7TAA292150R0442	72	CUSG-29B.31	7TAA292490R0003	31			

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
E 152p9	7TCA292000R9077	44,45, 62,64, 68	ESDT-10B.50	7TAA292240R0050	17	FP-52	7TAA292880R0003	117
E 153p11	7TCA292000R9090	44,62,74	ESDT-12B.50	7TAA292240R0051	17	G.PX.05SW	7TAA292910R0075	138
E 153p13	7TCA292000R9091	44,45, 62,64, 68,74	ESDT-17B.50	7TAA292240R0052	17	G.PX.08SW	7TAA292910R0076	138
E 153p16	7TCA292000R9092	44,45, 62,64, 68,74	ESDT-23B.50	7TAA292240R0053	17	G.PX.10SW	7TAA292910R0077	138
E 154p11	7TCA292000R9094	74	ESDT-29B.50	7TAA292240R0054	17	G.PX.13SW	7TAA292910R0078	138
E 154p13	7TCA292000R9095	44,45	ESDT-36B.30	7TAA292240R0055	17	G.PX.16SW	7TAA292910R0079	138
E 154p18	7TCA292000R9097	44,45, 62,64, 68,74	ESDT-48B.30	7TAA292240R0056	17	G.PX.19SW	7TAA292910R0080	138
E 154p20	7TCA292000R9098	44,45, 62,64, 68,74	EWZ-02	7TAA292880R0000	116	G.PX.25SW	7TAA292910R0081	138
E 155p16	7TCA292000R9107	44,62	EWZ-03	7TAA292880R0001	116	G.PX.29SW	7TAA292910R0082	138
E 155p18	7TCA292000R9101	44,62,64	F.304.10	7TAA292910R0015	141	G.PX.32SW	7TAA292910R0083	138
E 155p20	7TCA292000R9138	44,62,64	F.304.12	7TAA292910R0016	141	G.PX.38SW	7TAA292910R0084	138
E 155p25	7TCA292000R9108	44,45, 62,64, 74	F.304.17	7TAA292910R0017	141	G.PX.50SW	7TAA292910R0085	138
E 155p28	7TCA292000R9109	44,45, 62,64, 74	F.304.23	7TAA292910R0018	141	GMM-07	7TAA292670R0028	109
E 156p25HF	7TCA292000R9104	44,62	F.304.29	7TAA292910R0019	141	GMM-09	7TAA292670R0029	109
E 156p32	7TCA292000R9110	44,45, 62,64, 74	F.304.36	7TAA292910R0020	141	GMM-11	7TAA292670R0030	109
E 156p34	7TCA292000R9121	74	F.304.48	7TAA292910R0021	141	GMM-13	7TAA292670R0032	109
E 156p36	7TCA292000R9111	44,45, 62,64, 74	F.66.04GR	7TAA292910R0024	136	GMM-16	7TAA292670R0034	109
E 157p36HF	7TCA292000R9112	44,45, 62,64	F.66.04SW	7TAA292910R0025	136	GMM-21	7TAA292670R0035	109
E 157p40HF	7TCA292000R9113	44,45, 62,64	F.66.06GR	7TAA292910R0026	136	GMM-29	7TAA292670R0037	109
E 158p44	7TCA292000R9114	44,45, 62,64, 74	F.66.06SW	7TAA292910R0027	136	GMM-36	7TAA292670R0038	109
E 158pm1X35	7TCA292000R9127	44,45, 62,64	F.66.08GR	7TAA292910R0028	136	GMM-42	7TAA292670R0039	109
E151P11	7TCA292000R9117	74	F.66.08SW	7TAA292910R0029	136	GMM-48	7TAA292670R0040	109
E151P7	7TCA292000R9115	74	F.66.10GR	7TAA292910R0030	136	GMM-M12	7TAA292670R0041	109
E151P9	7TCA292000R9116	74	F.66.10SW	7TAA292910R0031	136	GMM-M16	7TAA292670R0043	109
EK 150p7	7TCA292000R9053	44,62,64	F.66.12GR	7TAA292910R0032	136	GMM-M20	7TAA292670R0045	109
EK 150p8	7TCA292000R9068	44,62	F.66.12SW	7TAA292910R0033	136	GMM-M25	7TAA292670R0047	109
EK 150p9	7TCA292000R9069	44,62	F.66.16GR	7TAA292910R0034	136	GMM-M32	7TAA292670R0049	109
EK 154p13	7TCA292000R9088	44,62	F.66.16SW	7TAA292910R0035	136	GMM-M40	7TAA292670R0051	109
EK 154p16	7TCA292000R9123	44,62	F.66.20GR	7TAA292910R0036	136	GMM-M50	7TAA292670R0052	109
EK 155p18	7TCA292000R9100	44,45,62	F.66.20SW	7TAA292910R0037	136	GMM-M63	7TAA292670R0053	109
EK 155p20	7TCA292000R9102	44,45,62	F.66.25GR	7TAA292910R0038	136	GMN-07	7TAA292670R0054	108
EK 155p25	7TCA292000R9103	44,62	F.66.25SW	7TAA292910R0039	136	GMN-09	7TAA292670R0055	108
EK 156p28	7TCA292000R9105	44,62	F.66.30GR	7TAA292910R0040	136	GMN-11	7TAA292670R0056	108
ESDG-56B.10	7TCA292000R7720	17	F.66.30SW	7TAA292910R0041	136	GMN-13	7TAA292670R0057	108
ESDG-70B.10	7TCA292000R7722	17	F.66.40GR	7TAA292910R0042	136	GMN-16	7TAA292670R0058	108
ESDG-95B.10	7TCA292000R1850	17	F.66.40SW	7TAA292910R0043	136	GMN-21	7TAA292670R0059	108
ESDT-07B.50	7TAA292240R0049	17	F.66.50GR	7TAA292910R0044	136	GMN-29	7TAA292670R0060	108
			F.66.50SW	7TAA292910R0045	136	GMN-36	7TAA292670R0061	108
			F.66.70GR	7TAA292910R0046	136	GMN-48	7TAA292670R0062	108
			F.66.70SW	7TAA292910R0047	136	GMN-M12	7TAA292670R0063	108
			F.PX.04GR	7TAA292910R0065	137	GMN-M16	7TAA292670R0064	108
			F.PX.06GR	7TAA292910R0066	137	GMN-M20	7TAA292670R0065	108
			F.PX.08GR	7TAA292910R0067	137	GMN-M25	7TAA292670R0066	108
			F.PX.10GR	7TAA292910R0068	137	GMN-M32	7TAA292670R0067	108
			F.PX.12GR	7TAA292910R0069	137	GMN-M40	7TAA292670R0068	108
			F.PX.16GR	7TAA292910R0070	137	GMN-M50	7TAA292670R0069	108
			F.PX.20GR	7TAA292910R0071	137	GMN-M63	7TAA292670R0070	108
			F.PX.25GR	7TAA292910R0072	137	HSG-00	7TAA292880R0004	141
			F.PX.30GR	7TAA292910R0073	137	HSG-00-SB	7TAA292880R0005	141
			F.PX.40GR	7TAA292910R0074	137	JENQ-M162-10	7TCA292000R0463	99
			FP-38	7TAA292880R0002	117	JENQ-M207-10	7TCA292000R0464	99

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
JENQ-M253-11	7TCA292000R0465	99	L.66.25GR	7TAA292910R0185	137	LLPAG-36S.30	7TAA292030R0026	34
JENQ-M329-13	7TCA292000R0466	99	L.66.25SW	7TAA292910R0186	137	LLPAG-48A.30	7TAA292030R0027	34
JENQ-M406-13	7TCA292000R0467	99	L.66.30GR	7TAA292910R0187	137	LLPAG-48S.30	7TAA292030R0028	34
JENQ-M506-14	7TCA292000R0468	99	L.66.30SW	7TAA292910R0188	137	LLPAG-56A.30	7TAA292030R0029	34,122
JFBDG-17C01.50	7TCA292000R7548	29	L.66.40GR	7TAA292910R0189	137	LLPAG-56S.30	7TAA292030R0030	34,122
JFBDG-23C01.50	7TCA292000R7549	29	L.66.40SW	7TAA292910R0190	137	LLPAG-70A.10	7TAA292030R0031	34,122
JFBDG-29C01.50	7TCA292000R7933	29	L.66.50GR	7TAA292910R0191	137	LLPAG-70S.10	7TAA292030R0032	34,122
JFBDG-36C01.30	7TCA292000R7932	29	L.66.50SW	7TAA292910R0192	137	LLPAG-95A.10	7TAA292030R0033	34,122
JFBDG-48C01.30	7TCA292000R7934	29	L.PX.04GR	7TAA292910R0193	138	LLPAG-95S.10	7TAA292030R0034	34,122
JFBDT-12C01.50	7TCA292000R7547	29	L.PX.04SW	7TAA292910R0194	138	LLPF-07A.50	7TAA292030R0035	35
JKNH-M162	7TCA292000R9305	49	L.PX.08GR	7TAA292910R0195	138	LLPF-07S.50	7TAA292030R0036	35
JKNH-M202	7TCA292000R9352	49	L.PX.08SW	7TAA292910R0196	138	LLPF-10A.50	7TAA292030R0037	35
JKNH-M207	7TCA292000R9306	49	L.PX.10GR	7TAA292910R0197	138	LLPF-10S.50	7TAA292030R0038	35
JKNH-M253	7TCA292000R9307	49	L.PX.10SW	7TAA292910R0198	138	LLPF-12A.50	7TAA292030R0039	35
JKNH-M257	7TCA292000R9357	49	L.PX.16GR	7TAA292910R0199	138	LLPF-12S.50	7TAA292030R0040	35
JKNH-M323	7TCA292000R9358	49	L.PX.16SW	7TAA292910R0200	138	LLPF-17A.50	7TAA292030R0041	35
JKNH-M329	7TCA292000R9308	49	L.PX.20GR	7TAA292910R0201	138	LLPF-17S.50	7TAA292030R0042	35
JKNH-M406	7TCA292000R9309	49	L.PX.20SW	7TAA292910R0202	138	LLPF-23A.50	7TAA292030R0043	35
JKNH-M409	7TCA292000R9359	49	L.PX.25GR	7TAA292910R0203	138	LLPF-23S.50	7TAA292030R0044	35
JKNH-M506	7TCA292000R9360	49	L.PX.25SW	7TAA292910R0204	138	LLPF-29A.50	7TAA292030R0045	35
JKNH-M508	7TCA292000R9310	49	L.PX.30GR	7TAA292910R0205	138	LLPF-29S.50	7TAA292030R0046	35
JKNH-M638	7TCA292000R9361	49	L.PX.30SW	7TAA292910R0206	138	LLPFG-17A.50	7TAA292030R0048	35
JLLPA-12A.50	7TCA292000R9663	30	L.PX.40GR	7TAA292910R0207	138	LLPFG-17S.50	7TAA292030R0049	35
JLLPAG-17A.50	7TCA292000R9664	30	L.PX.40SW	7TAA292910R0208	138	LLPFG-23A.50	7TAA292030R0050	35
JLLPAG-23A.50	7TCA292000R9665	30	L.PX.50GR	7TAA292910R0209	138	LLPFG-23S.50	7TAA292030R0051	35
JLLPAG-29A.50	7TCA292000R9666	30	L.PX.50SW	7TAA292910R0210	138	LLPFG-29A.50	7TAA292030R0052	35
JLLPAG-36A.30	7TCA292000R9667	30	LLPA-07A.50	7TAA292030R0000	34	LLPFG-29S.50	7TAA292030R0053	35
JLLPAG-48A.30	7TCA292000R9668	30	LLPA-07S.50	7TAA292030R0001	34	LLPFG-36A.30	7TAA292030R0054	35
JXPCSF-17BO.50	7TCA292000R9616	29	LLPA-10A.50	7TAA292030R0002	34	LLPFG-36S.30	7TAA292030R0055	35
JXPCSF-23BO.50	7TCA292000R9610	29	LLPA-10S.50	7TAA292030R0003	34	LLPFG-48A.30	7TAA292030R0056	35
JXPCSF-29BO.50	7TCA292000R9617	29	LLPA-12A.50	7TAA292030R0005	34	LLPFG-48S.30	7TAA292030R0057	35
JXPCSF-36BO.30	7TCA292000R9618	29	LLPA-12S.50	7TAA292030R0006	34	LLPO-07A.50	7TAA292030R0075	34
JXPCSF-48BO.30	7TCA292000R9619	29	LLPA-17A.50	7TAA292030R0007	34	LLPO-07S.50	7TAA292030R0076	34
JXPCSF-12BO.50	7TCA292000R9615	29	LLPA-17S.50	7TAA292030R0008	34	LLPO-10A.50	7TAA292030R0077	34
KNH2-NW10	7TAA292560R0000	104	LLPA-23A.50	7TAA292030R0009	34	LLPO-10S.50	7TAA292030R0078	34
KNH2-NW12	7TAA292560R0001	104	LLPA-23S.50	7TAA292030R0010	34	LLPO-12A.50	7TAA292030R0079	34
KNH2-NW17	7TAA292560R0002	104	LLPA-29A.50	7TAA292030R0011	34	LLPO-12S.50	7TAA292030R0080	34
KNH2-NW23	7TAA292560R0003	104	LLPA-29S.50	7TAA292030R0012	34	LLPO-17A.50	7TAA292030R0081	34
KNH2-NW29	7TAA292560R0004	104	LLPA-36A.30	7TAA292030R0013	34	LLPO-17S.50	7TAA292030R0082	34
KNH2-NW36	7TAA292560R0005	104	LLPA-36S.30	7TAA292030R0014	34	LLPO-23A.50	7TAA292030R0083	34
KNH2-NW48	7TAA292560R0006	104	LLPA-48A.30	7TAA292030R0015	34	LLPO-23S.50	7TAA292030R0084	34
L.66.04GR	7TAA292910R0175	137	LLPA-48S.30	7TAA292030R0016	34	LLPO-29A.50	7TAA292030R0085	34
L.66.04SW	7TAA292910R0176	137	LLPAG-125A.06	7TAA292030R0017	34,122	LLPO-29S.50	7TAA292030R0086	34
L.66.08GR	7TAA292910R0177	137	LLPAG-125S.06	7TAA292030R0018	34,122	LLPO-36A.30	7TAA292030R0087	34
L.66.08SW	7TAA292910R0178	137	LLPAG-17A.50	7TAA292030R0019	34	LLPO-36S.30	7TAA292030R0088	34
L.66.10GR	7TAA292910R0179	137	LLPAG-17S.50	7TAA292030R0020	34	LLPO-48A.30	7TAA292030R0089	34
L.66.10SW	7TAA292910R0180	137	LLPAG-23A.50	7TAA292030R0021	34	LLPO-48S.30	7TAA292030R0090	34
L.66.16GR	7TAA292910R0181	137	LLPAG-23S.50	7TAA292030R0022	34	M12M16M	7TAA292550R0044	105
L.66.16SW	7TAA292910R0182	137	LLPAG-29A.50	7TAA292030R0023	34	M16M12M	7TAA292550R0045	105
L.66.20GR	7TAA292910R0183	137	LLPAG-29S.50	7TAA292030R0024	34	M16M12M/6	7TAA292550R0046	105
L.66.20SW	7TAA292910R0184	137	LLPAG-36A.30	7TAA292030R0025	34	M16M20M	7TAA292550R0047	105

Index

Products in alphabetical order

Part. no.	GID no.	Page
M20M12M	7TAA292550R0048	105
M20M12M/6	7TAA292550R0049	105
M20M16M	7TAA292550R0050	105
M20M16M/6	7TAA292550R0051	105
M20M25M	7TAA292550R0052	105
M25M16M	7TAA292550R0053	105
M25M16M/6	7TAA292550R0054	105
M25M20M	7TAA292550R0055	105
M25M20M/6	7TAA292550R0056	105
M25M32M	7TAA292550R0057	105
M32M20M	7TAA292550R0058	105
M32M20M/6	7TAA292550R0059	105
M32M25M	7TAA292550R0060	105
M32M25M/6	7TAA292550R0061	105
M32M40M	7TAA292550R0062	105
M40M25M	7TAA292550R0063	105
M40M25M/6	7TAA292550R0064	105
M40M32M	7TAA292550R0065	105
M40M32M/6	7TAA292550R0066	105
M40M50M	7TAA292550R0067	105
M50M32M	7TAA292550R0069	105
M50M32M/6	7TAA292550R0070	105
M50M40M	7TAA292550R0071	105
M50M40M/6	7TAA292550R0072	105
M50M63M	7TAA292550R0073	105
M63M40M	7TCA292000R2520	105
M63M40M/6	7TCA292000R0162	105
M63M50M	7TAA292550R0074	105
M63M50M/6	7TAA292550R0075	105
MAVIK-M20/01	7TAA292660R0006	118
MAVIK-M25/01	7TAA292660R0007	118
MAVIK-M32/01	7TAA292660R0008	118
MAVIK-M40/01	7TAA292660R0009	118
MAVIK-M50/01	7TAA292660R0010	118
MAVIK-M63/01	7TAA292660R0011	118
MAVI-M20/01	7TAA292660R0000	118
MAVI-M25/01	7TAA292660R0001	118
MAVI-M32/01	7TAA292660R0002	118
MAVI-M40/01	7TAA292660R0003	118
MAVI-M50/01	7TAA292660R0004	118
MAVI-M63/01	7TAA292660R0005	118
MKAH-M120-10	7TAA292400R0062	46
MKAH-M160-10	7TAA292400R0063	46
MKAH-M162-10	7TAA292400R0064	46
MKAH-M202-10	7TAA292400R0065	46
MKAH-M207-10	7TAA292400R0066	46
MKAH-M253-11	7TAA292400R0067	46
MKAH-M257-11	7TAA292400R0068	46
MKAH-M323-13	7TAA292400R0069	46
MKAH-M329-13	7TAA292400R0070	46
MKAH-M406-13	7TAA292400R0071	46

Part. no.	GID no.	Page
MKAH-M409-13	7TAA292400R0072	46
MKAH-M506-14	7TAA292400R0073	46
MKAH-M508-14	7TAA292400R0074	46
MKAH-M638-14	7TAA292400R0075	46
MKBBH-M120-10	7TAA292400R0076	46
MKBBH-M160-10	7TAA292400R0077	46
MKBBH-M162-10	7TAA292400R0078	46
MKBBH-M202-10	7TAA292400R0079	46
MKBBH-M207-10	7TAA292400R0080	46
MKBBH-M253-11	7TAA292400R0081	46
MKBBH-M257-11	7TAA292400R0082	46
MKBBH-M323-13	7TAA292400R0083	46
MKBBH-M329-13	7TAA292400R0084	46
MKBBH-M406-13	7TAA292400R0085	46
MKBBH-M409-13	7TAA292400R0086	46
MKBBH-M506-14	7TAA292400R0087	46
MKBBH-M508-14	7TAA292400R0088	46
MKBBH-M638-14	7TAA292400R0089	46
MKNH-M120-10	7TAA292400R0090	43
MKNH-M160-10	7TAA292400R0091	43
MKNH-M162-10	7TAA292400R0092	43
MKNH-M202-10	7TAA292400R0093	43
MKNH-M207-10	7TAA292400R0094	43
MKNH-M253-11	7TAA292400R0095	43
MKNH-M257-11	7TAA292400R0096	43
MKNH-M323-13	7TAA292400R0097	43
MKNH-M329-13	7TAA292400R0098	43
MKNH-M406-13	7TAA292400R0099	43
MKNH-M409-13	7TAA292400R0100	43
MKNH-M506-14	7TAA292400R0101	43
MKNH-M508-14	7TAA292400R0102	43
MKNH-M638-14	7TAA292400R0103	43
MONK-M162	7TCA292000R4711	98
MONK-M207	7TCA292000R4712	98
MONK-M253	7TCA292000R4713	98
MONK-M329	7TCA292000R4714	98
MONK-M406	7TCA292000R4715	98
MONK-M508	7TCA292000R4716	98
MPNK-M160	7TCA292000R4717	98
MPNK-M162	7TCA292000R4718	98
MPNK-M207	7TCA292000R4719	98
MPNK-M253	7TCA292000R4720	98
MPNK-M329	7TCA292000R4721	98
MREIR-U3529	7TCA292000R2699	140
MVAV-M120-10	7TAA292150R0471	65
MVAV-M120-5	7TAA292150R0472	65
MVAV-M162-10	7TAA292150R0473	65
MVAV-M162-5	7TAA292150R0474	65
MVAV-M207-10	7TAA292150R0475	65
MVAV-M207-6	7TAA292150R0476	65
MVAV-M253-11	7TAA292150R0477	65

Part. no.	GID no.	Page
MVAV-M253-7	7TAA292150R0478	65
MVAV-M329-13	7TAA292150R0479	65
MVAV-M329-8	7TAA292150R0480	65
MVAV-M406-13	7TAA292150R0481	65
MVAV-M406-8	7TAA292150R0482	65
MVAV-M508-14	7TAA292150R0483	65
MVAV-M508-9	7TAA292150R0484	65
MVAV-M638-10	7TAA292150R0485	65
MVAV-M638-14	7TAA292150R0486	65
MVAV-P090	7TAA292150R0487	75
MVAV-P112	7TAA292150R0488	75
MVAV-P137	7TAA292150R0489	75
MVAV-P167	7TAA292150R0490	75
MVAV-P213	7TAA292150R0491	75
MVAV-P299	7TAA292150R0492	75
MVAV-P366	7TAA292150R0493	75
MVAV-P488	7TAA292150R0494	75
MVBV-M207-10	7TAA292150R0495	66
MVBV-M207-6	7TAA292150R0496	66
MVBV-M253-11	7TAA292150R0497	66
MVBV-M253-7	7TAA292150R0498	66
MVBV-M257-11	7TAA292150R0499	66
MVBV-M257-7	7TAA292150R0500	66
MVBV-M323-13	7TAA292150R0501	66
MVBV-M323-8	7TAA292150R0502	66
MVBV-M329-13	7TAA292150R0503	66
MVBV-M329-8	7TAA292150R0504	66
MVBV-M406-13	7TAA292150R0505	66
MVBV-M406-8	7TAA292150R0506	66
MVBV-M409-13	7TAA292150R0507	66
MVBV-M409-8	7TAA292150R0508	66
MVBV-M506-14	7TAA292150R0509	66
MVBV-M506-9	7TAA292150R0510	66
MVBV-M508-14	7TAA292150R0511	66
MVBV-M508-9	7TAA292150R0512	66
MVBV-M638-10	7TAA292150R0513	66
MVBV-M638-14	7TAA292150R0514	66
MVBV-P167	7TAA292150R0515	75
MVBV-P213	7TAA292150R0516	75
MVBV-P299	7TAA292150R0517	75
MVBV-P366	7TAA292150R0518	75
MVBV-P488	7TAA292150R0519	75
MVEMD-M406/01	7TCA292000R2747	142
MVEMD-M508/01	7TCA292000R2748	142
MVEMD-M6356/01	7TCA292000R2749	142
MVEMD-P4856/01	7TCA292000R2750	142
MVEMD-RER6	7TCA292000R2751	143
MVEMD-RER6/01	7TCA292000R2752	143
MVEMD-RER8	7TCA292000R2753	143
MVNV-M120-10	7TAA292150R0520	60
MVNV-M120-5	7TAA292150R0521	60

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
MVNV-M160-10	7TAA292150R0522	60	MVWV-M508-14	7TAA292150R0573	67	NKIS-M329	7TAA292400R0135	48
MVNV-M160-5	7TAA292150R0523	60	MVWV-M508-9	7TAA292150R0574	67	NKIS-M406	7TAA292400R0136	48
MVNV-M162-10	7TAA292150R0524	60	MVWV-M638-10	7TAA292150R0575	67	NKIS-M508	7TAA292400R0137	48
MVNV-M162-5	7TAA292150R0525	60	MVWV-M638-14	7TAA292150R0576	67	NKIS-M638	7TAA292400R0138	48
MVNV-M202-10	7TAA292150R0526	60	MVWV-P090	7TAA292150R0577	76	NKNH-M120-10	7TAA292400R0139	43
MVNV-M202-6	7TAA292150R0527	60	MVWV-P112	7TAA292150R0578	76	NKNH-M160-10	7TAA292400R0140	43
MVNV-M207-10	7TAA292150R0528	60	MVWV-P137	7TAA292150R0579	76	NKNH-M162-10	7TAA292400R0141	43
MVNV-M207-6	7TAA292150R0529	60	MVWV-P167	7TAA292150R0580	76	NKNH-M202-10	7TAA292400R0142	43
MVNV-M253-11	7TAA292150R0530	60	MVWV-P213	7TAA292150R0581	76	NKNH-M207-10	7TAA292400R0143	43
MVNV-M253-7	7TAA292150R0531	60	MVWV-P299	7TAA292150R0582	76	NKNH-M253-11	7TAA292400R0144	43
MVNV-M257-11	7TAA292150R0532	60	MVWV-P366	7TAA292150R0583	76	NKNH-M257-11	7TAA292400R0145	43
MVNV-M257-7	7TAA292150R0533	60	MVWV-P488	7TAA292150R0584	76	NKNH-M323-13	7TAA292400R0146	43
MVNV-M323-13	7TAA292150R0534	60	NFN3-07	7TAA292800R0000	104	NKNH-M329-13	7TAA292400R0147	43
MVNV-M323-8	7TAA292150R0535	60	NFN3-09	7TAA292800R0001	104	NKNH-M406-13	7TAA292400R0148	43
MVNV-M329-13	7TAA292150R0536	60	NFN3-11	7TAA292800R0002	104	NKNH-M409-13	7TAA292400R0149	43
MVNV-M329-8	7TAA292150R0537	60	NFN3-16	7TAA292800R0003	104	NKNH-M506-14	7TAA292400R0150	43
MVNV-M406-13	7TAA292150R0538	60	NFN3-21	7TAA292800R0004	104	NKNH-M508-14	7TAA292400R0151	43
MVNV-M406-8	7TAA292150R0539	60	NFN3-29	7TAA292800R0005	104	NKNH-M638-14	7TAA292400R0152	43
MVNV-M409-13	7TAA292150R0540	60	NFN3-36	7TAA292800R0006	104	NKNZ-M120/P1	7TAA292400R0153	44
MVNV-M409-8	7TAA292150R0541	60	NFN3-48	7TAA292800R0007	104	NKNZ-M120/P2	7TAA292400R0154	44
MVNV-M506-14	7TAA292150R0542	60	NKAH-M120-10	7TAA292400R0104	46	NKNZ-M120/P3	7TAA292400R0155	44
MVNV-M506-9	7TAA292150R0543	60	NKAH-M160-10	7TAA292400R0105	46	NKNZ-M120R/P		44
MVNV-M508-14	7TAA292150R0544	60	NKAH-M162-10	7TAA292400R0106	46	NKNZ-M160/P1	7TAA292400R0156	44
MVNV-M508-9	7TAA292150R0545	60	NKAH-M202-10	7TAA292400R0107	46	NKNZ-M160/P1-L	7TCA292000R7735	45
MVNV-M638-10	7TAA292150R0546	60	NKAH-M207-10	7TAA292400R0108	46	NKNZ-M160/P2	7TAA292400R0157	44
MVNV-M638-14	7TAA292150R0547	60	NKAH-M253-11	7TAA292400R0109	46	NKNZ-M160/P2-L		45
MVNV-P090	7TAA292150R0548	73	NKAH-M257-11	7TAA292400R0110	46	NKNZ-M160/P3	7TAA292400R0158	44
MVNV-P112	7TAA292150R0549	73	NKAH-M323-13	7TAA292400R0111	46	NKNZ-M160/P3-L	7TCA292000R5581	45
MVNV-P137	7TAA292150R0550	73	NKAH-M329-13	7TAA292400R0112	46	NKNZ-M160R/P	7TCA292000R0183	44
MVNV-P167	7TAA292150R0551	73	NKAH-M406-13	7TAA292400R0113	46	NKNZ-M160R/P-L		45
MVNV-P213	7TAA292150R0552	73	NKAH-M409-13	7TAA292400R0114	46	NKNZ-M202/P1	7TAA292400R0161	44
MVNV-P293	7TAA292150R0553	73	NKAH-M506-14	7TAA292400R0115	46	NKNZ-M202/P1-L	7TCA292000R0184	45
MVNV-P299	7TAA292150R0554	73	NKAH-M508-14	7TAA292400R0116	46	NKNZ-M202/P3	7TAA292400R0162	44
MVNV-P366	7TAA292150R0555	73	NKAH-M638-14	7TAA292400R0117	46	NKNZ-M202/P3-L	7TCA292000R7948	45
MVNV-P488	7TAA292150R0556	73	NKBH-M120-10	7TAA292400R0118	46	NKNZ-M202/P4	7TAA292400R0163	44
MVWV-M120-10	7TAA292150R0557	67	NKBH-M160-10	7TAA292400R0119	46	NKNZ-M202/P4-L	7TCA292000R8006	45
MVWV-M120-5	7TAA292150R0558	67	NKBH-M162-10	7TAA292400R0120	46	NKNZ-M202R/P	7TCA292000R0185	44
MVWV-M160-10	7TAA292150R0559	67	NKBH-M202-10	7TAA292400R0121	46	NKNZ-M202R/P-L	7TCA292000R7752	45
MVWV-M160-5	7TAA292150R0560	67	NKBH-M207-10	7TAA292400R0122	46	NKNZ-M207/P3	7TAA292400R0165	44
MVWV-M162-10	7TAA292150R0561	67	NKBH-M253-11	7TAA292400R0123	46	NKNZ-M207/P3-L	7TCA292000R0186	45
MVWV-M162-5	7TAA292150R0562	67	NKBH-M257-11	7TAA292400R0124	46	NKNZ-M207/P4	7TAA292400R0166	44
MVWV-M202-10	7TAA292150R0563	67	NKBH-M323-13	7TAA292400R0125	46	NKNZ-M207/P4-L		45
MVWV-M202-6	7TAA292150R0564	67	NKBH-M329-13	7TAA292400R0126	46	NKNZ-M207/P5	7TAA292400R0167	44
MVWV-M207-10	7TAA292150R0565	67	NKBH-M406-13	7TAA292400R0127	46	NKNZ-M207/P5-L	7TCA292000R8008	45
MVWV-M207-6	7TAA292150R0566	67	NKBH-M409-13	7TAA292400R0128	46	NKNZ-M207R/P	7TCA292000R6163	44
MVWV-M253-11	7TAA292150R0567	67	NKBH-M506-14	7TAA292400R0129	46	NKNZ-M207R/P-L	7TCA292000R0187	45
MVWV-M253-7	7TAA292150R0568	67	NKBH-M508-14	7TAA292400R0130	46	NKNZ-M253/P5	7TCA292000R0188	44
MVWV-M329-13	7TAA292150R0569	67	NKBH-M638-14	7TAA292400R0131	46	NKNZ-M253/P6	7TCA292000R0189	44
MVWV-M329-8	7TAA292150R0570	67	NKIS-M162	7TAA292400R0132	48	NKNZ-M253R/P	7TCA292000R6152	44
MVWV-M406-13	7TAA292150R0571	67	NKIS-M207	7TAA292400R0133	48	NKNZ-M253R1/P	7TCA292000R6288	44
MVWV-M406-8	7TAA292150R0572	67	NKIS-M253	7TAA292400R0134	48	NKNZ-M257/P4	7TCA292000R8813	44

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
NKNZ-M257/P5	7TAA292400R0172	44	NKNZ-M638/P2-L	7TCA292000R8547	45	NSNV-N098/01	7TCA292000R8910	81
NKNZ-M257/P5-L	7TAA292400R0173	45	NKNZ-M638R/P	7TCA292000R9837	44	NSWIV-N022/01	7TCA292000R0470	82
NKNZ-M257/P6	7TAA292400R0174	44	NKNZ-M638R/P-L	7TCA292000R9838	45	NSWV-N022/01	7TCA292000R8939	80
NKNZ-M257/P6-L	7TCA292000R0190	45	NSBIV-N027/01	7TCA292000R8950	82	NVAV-M120-10	7TAA292150R0596	65
NKNZ-M257R/P	7TCA292000R0191	44	NSBIV-N043/01	7TCA292000R0471	82	NVAV-M120-5	7TAA292150R0597	65
NKNZ-M257R/P-L	7TCA292000R6630	45	NSBIV-N069/01	7TCA292000R8951	82	NVAV-M162-10	7TAA292150R0598	65
NKNZ-M323/P2	7TCA292000R0192	44	NSBIV-N076/01	7TCA292000R0472	82	NVAV-M162-5	7TAA292150R0599	65
NKNZ-M323/P2-L	7TCA292000R0193	45	NSBIV-N088/01	7TCA292000R0474	82	NVAV-M207-10	7TAA292150R0600	65
NKNZ-M323/P4	7TAA292400R0177	44	NSBIV-N098/01	7TCA292000R0475	82	NVAV-M207-6	7TAA292150R0601	65
NKNZ-M323/P4-L	7TCA292000R0194	45	NSBV-M207-10	7TAA292150R0585	80	NVAV-M253-11	7TAA292150R0602	65
NKNZ-M323/P5	7TAA292400R0178	44	NSBV-M253-11	7TAA292150R0586	80	NVAV-M253-7	7TAA292150R0603	65
NKNZ-M323/P5-L	7TCA292000R9595	45	NSBV-M329-13	7TAA292150R0587	80	NVAV-M329-13	7TAA292150R0606	65
NKNZ-M323R/P	7TAA292400R0179	44	NSBV-M406-13	7TAA292150R0588	80	NVAV-M329-8	7TAA292150R0607	65
NKNZ-M323R/P-L	7TCA292000R8774	45	NSBV-M409-13	7TCA292000R2945	80	NVAV-M406-13	7TAA292150R0608	65
NKNZ-M323R1/P	7TAA292400R0180	44	NSBV-M508-14	7TAA292150R0589	80	NVAV-M406-8	7TAA292150R0609	65
NKNZ-M323R1/P-L	7TCA292000R6197	45	NSBV-M638-14	7TAA292150R0590	80	NVAV-M508-14	7TAA292150R0612	65
NKNZ-M329/P2	7TCA292000R0195	44	NSBV-N027/01	7TCA292000R8940	80	NVAV-M508-9	7TAA292150R0613	65
NKNZ-M329/P2-L	7TCA292000R9446	45	NSBV-N043/01	7TCA292000R8941	80	NVAV-M638-10	7TAA292150R0614	65
NKNZ-M329/P3	7TCA292000R6029	44	NSBV-N069/01	7TCA292000R8942	80	NVAV-M638-14	7TAA292150R0615	65
NKNZ-M329/P3-L	7TCA292000R9017	45	NSBV-N076/01	7TCA292000R8943	80	NVAV-P090	7TAA292150R0616	75
NKNZ-M329/P4	7TCA292000R0196	44	NSBV-N088/01	7TCA292000R8944	80	NVAV-P112	7TAA292150R0617	75
NKNZ-M329R/P	7TCA292000R6284	44	NSBV-N098/01	7TCA292000R8945	80	NVAV-P137	7TAA292150R0618	75
NKNZ-M329R/P-L		45	NSBV-P167-6.5	7TAA292150R0591	80	NVAV-P167	7TAA292150R0619	75
NKNZ-M406/P1	7TCA292000R5867	44	NSBV-P213-7	7TAA292150R0592	80	NVAV-P213	7TAA292150R0620	75
NKNZ-M406/P2	7TCA292000R0197	44	NSBV-P299-8	7TAA292150R0593	80	NVAV-P299	7TAA292150R0621	75
NKNZ-M406R/P	7TCA292000R6071	44	NSBV-P366-9	7TAA292150R0594	80	NVAV-P366	7TAA292150R0622	75
NKNZ-M409/P1	7TCA292000R9509	44	NSBV-P488-10	7TAA292150R0595	80	NVAV-P488	7TAA292150R0623	75
NKNZ-M409/P2	7TCA292000R9235	44	NSNIV-N022/01	7TCA292000R9059	82	NVBV-M207-10	7TAA292150R0624	66
NKNZ-M409/P3	7TCA292000R6028	44	NSNIV-N027/01	7TCA292000R8946	82	NVBV-M207-6	7TAA292150R0625	66
NKNZ-M409/P3-L		45	NSNIV-N043/01	7TCA292000R9060	82	NVBV-M253-11	7TAA292150R0626	66
NKNZ-M409/P4	7TAA292400R0187	44	NSNIV-N069/01	7TCA292000R8936	82	NVBV-M253-7	7TAA292150R0627	66
NKNZ-M409/P4-L	7TCA292000R0198	45	NSNIV-N076/01	7TCA292000R9061	82	NVBV-M257-11	7TAA292150R0628	66
NKNZ-M409/P5	7TAA292400R0188	44	NSNIV-N088/01	7TCA292000R9062	82	NVBV-M257-7	7TAA292150R0629	66
NKNZ-M409/P5-L	7TCA292000R8009	45	NSNIV-N098/01	7TCA292000R9063	82	NVBV-M323-13	7TAA292150R0630	66
NKNZ-M409R/P	7TAA292400R0189	44	NSNV-M120-10	7TCA292000R5954	81	NVBV-M323-8	7TAA292150R0631	66
NKNZ-M409R/P-L	7TCA292000R0199	45	NSNV-M162-10	7TCA292000R5955	81	NVBV-M329-13	7TAA292150R0632	66
NKNZ-M506/P1	7TAA292400R0192	44	NSNV-M207-10	7TCA292000R5956	81	NVBV-M329-8	7TAA292150R0633	66
NKNZ-M506/P1-L		45	NSNV-M253-11	7TCA292000R5957	81	NVBV-M406-13	7TAA292150R0634	66
NKNZ-M506/P3	7TAA292400R0193	44	NSNV-M329-13	7TCA292000R5958	81	NVBV-M406-8	7TAA292150R0635	66
NKNZ-M506/P3-L	7TCA292000R8548	45	NSNV-M329-7	7TCA292000R5959	81	NVBV-M409-13	7TAA292150R0636	66
NKNZ-M506R/P	7TCA292000R0200	44	NSNV-M406-13	7TCA292000R5960	81	NVBV-M409-8	7TAA292150R0637	66
NKNZ-M506R/P-L	7TCA292000R0201	45	NSNV-M406-7	7TCA292000R5961	81	NVBV-M506-14	7TAA292150R0638	66
NKNZ-M508/P2	7TAA292400R0196	44	NSNV-M409-13	7TCA292000R5962	81	NVBV-M506-9	7TAA292150R0639	66
NKNZ-M508/P2-L	7TCA292000R8788	45	NSNV-M508-14	7TCA292000R5963	81	NVBV-M508-14	7TAA292150R0640	66
NKNZ-M508/P3	7TAA292400R0197	44	NSNV-M638-14	7TCA292000R5964	81	NVBV-M508-9	7TAA292150R0641	66
NKNZ-M508/P3-L	7TCA292000R9600	45	NSNV-N022/01	7TCA292000R8904	81	NVBV-M638-10	7TAA292150R0642	66
NKNZ-M508R/P	7TCA292000R0202	44	NSNV-N027/01	7TCA292000R8905	81	NVBV-M638-14	7TAA292150R0643	66
NKNZ-M508R/P-L		45	NSNV-N043/01	7TCA292000R8906	81	NVBV-P167	7TAA292150R0644	75
NKNZ-M638/P1	7TAA292400R0200	44	NSNV-N069/01	7TCA292000R8907	81	NVBV-P213	7TAA292150R0645	75
NKNZ-M638/P1-L		45	NSNV-N076/01	7TCA292000R8908	81	NVBV-P299	7TAA292150R0646	75
NKNZ-M638/P2	7TAA292400R0201	44	NSNV-N088/01	7TCA292000R8909	81	NVBV-P366	7TAA292150R0647	75

Index

Products in alphabetical order

Part. no.	GID no.	Page
NVBV-P488	7TAA292150R0648	75
NVIR-M120	7TAA292610R0133	84
NVIR-M160	7TCA292000R0215	84
NVIR-M162	7TAA292610R0134	84
NVIR-M207	7TAA292610R0135	84
NVIR-M253	7TAA292610R0136	84
NVIR-M329	7TAA292610R0137	84
NVIR-M406	7TAA292610R0138	84
NVIR-M508	7TAA292610R0139	84
NVIR-M638	7TAA292610R0140	84
NVIZR-P07M	7TAA292610R0141	85
NVIZR-P090	7TAA292610R0142	85
NVIZR-P110	7TAA292610R0143	85
NVIZR-P112	7TAA292610R0144	85
NVIZR-P137	7TCA292000R0216	85
NVIZR-P167	7TAA292610R0145	85
NVIZR-P213	7TAA292610R0146	85
NVIZR-P299	7TAA292610R0147	85
NVIZR-P366	7TAA292610R0148	85
NVIZR-P488	7TAA292610R0149	85
NVN3-07.100	7TAA292800R0008	104
NVN3-09.50	7TAA292800R0009	104
NVN3-11.50	7TAA292800R0010	104
NVN3-16.50	7TAA292800R0011	104
NVN3-21.30	7TAA292800R0012	104
NVN3-29.20	7TAA292800R0013	104
NVN3-36.20	7TAA292800R0014	104
NVN3-48.10	7TAA292800R0015	104
NVNV-M120-10	7TAA292150R0649	60
NVNV-M120-5	7TAA292150R0650	60
NVNV-M160-10	7TAA292150R0651	60
NVNV-M160-5	7TAA292150R0652	60
NVNV-M162-10	7TAA292150R0653	60
NVNV-M162-5	7TAA292150R0654	60
NVNV-M202-10	7TAA292150R0655	60
NVNV-M202-6	7TAA292150R0656	60
NVNV-M207-10	7TAA292150R0657	60
NVNV-M207-6	7TAA292150R0658	60
NVNV-M253-11	7TAA292150R0659	60
NVNV-M253-7	7TAA292150R0660	60
NVNV-M257-11	7TAA292150R0661	60
NVNV-M257-7	7TAA292150R0662	60
NVNV-M323-13	7TAA292150R0663	60
NVNV-M323-8	7TAA292150R0664	60
NVNV-M329-13	7TAA292150R0665	60
NVNV-M329-8	7TAA292150R0666	60
NVNV-M406-13	7TAA292150R0667	60
NVNV-M406-8	7TAA292150R0668	60
NVNV-M409-13	7TAA292150R0669	60
NVNV-M409-8	7TAA292150R0670	60
NVNV-M506-14	7TAA292150R0671	60

Part. no.	GID no.	Page
NVNV-M506-9	7TAA292150R0672	60
NVNV-M508-14	7TAA292150R0673	60
NVNV-M508-9	7TAA292150R0674	60
NVNV-M638-10	7TAA292150R0675	60
NVNV-M638-14	7TAA292150R0676	60
NVNV-N022	7TCA292000R8980	61
NVNV-N027	7TCA292000R8981	61
NVNV-N043	7TCA292000R8985	61
NVNV-N069	7TCA292000R8986	61
NVNV-N076	7TCA292000R8982	61
NVNV-N088	7TCA292000R8983	61
NVNV-N098	7TCA292000R8984	61
NVNV-P090	7TAA292150R0677	73
NVNV-P112	7TAA292150R0678	73
NVNV-P137	7TAA292150R0679	73
NVNV-P167	7TAA292150R0680	73
NVNV-P213	7TAA292150R0681	73
NVNV-P293	7TAA292150R0682	73
NVNV-P299	7TAA292150R0683	73
NVNV-P366	7TAA292150R0684	73
NVNV-P488	7TAA292150R0685	73
NVNZ-M120R/P	7TAA292150R0686	62
NVNZ-M120R/P-L		64
NVNZ-M120S/B1		63
NVNZ-M120S/B2		63
NVNZ-M120S/B3		63
NVNZ-M120S/P1	7TAA292150R0689	62
NVNZ-M120S/P1-L	7TCA292000R0254	64
NVNZ-M120S/P2	7TAA292150R0690	62
NVNZ-M120S/P3	7TAA292150R0691	62
NVNZ-M120S/P3-L	7TCA292000R0255	64
NVNZ-M160R/P	7TAA292150R0692	62
NVNZ-M160R/P-L	7TAA292150R0693	64
NVNZ-M160S/B1		63
NVNZ-M160S/B2		63
NVNZ-M160S/B3		63
NVNZ-M160S/P1	7TAA292150R0696	62
NVNZ-M160S/P1-L	7TAA292150R0697	64
NVNZ-M160S/P2	7TAA292150R0698	62
NVNZ-M160S/P2-L	7TAA292150R0699	64
NVNZ-M160S/P3	7TAA292150R0700	62
NVNZ-M160S/P3-L	7TAA292150R0701	64
NVNZ-M202R/P	7TAA292150R0704	62
NVNZ-M202R/P-L	7TAA292150R0705	64
NVNZ-M202S/B1	7TCA292000R9839	63
NVNZ-M202S/B3	7TCA292000R9503	63
NVNZ-M202S/B4		63
NVNZ-M202S/P1	7TAA292150R0708	62
NVNZ-M202S/P1-L	7TAA292150R0709	64
NVNZ-M202S/P3	7TAA292150R0710	62
NVNZ-M202S/P3-L	7TAA292150R0711	64

Part. no.	GID no.	Page
NVNZ-M202S/P4	7TAA292150R0712	62
NVNZ-M202S/P4-L	7TAA292150R0713	64
NVNZ-M207R/P	7TAA292150R0714	62
NVNZ-M207R/P-L	7TAA292150R0715	64
NVNZ-M207S/B1	7TCA292000R9315	63
NVNZ-M207S/B2	7TCA292000R9316	63
NVNZ-M207S/B3	7TCA292000R9317	63
NVNZ-M207S/B4	7TCA292000R9318	63
NVNZ-M207S/B5	7TCA292000R9319	63
NVNZ-M207S/P3	7TAA292150R0718	62
NVNZ-M207S/P3-L	7TAA292150R0719	64
NVNZ-M207S/P4	7TAA292150R0720	62
NVNZ-M207S/P4-L	7TAA292150R0721	64
NVNZ-M207S/P5	7TAA292150R0722	62
NVNZ-M207S/P5-L	7TAA292150R0723	64
NVNZ-M253R/P	7TAA292150R0724	62
NVNZ-M253S/B5		63
NVNZ-M253S/B6		63
NVNZ-M253S/P5	7TAA292150R0728	62
NVNZ-M253S/P6	7TAA292150R0729	62
NVNZ-M257R/P	7TAA292150R0730	62
NVNZ-M257R/P-L	7TAA292150R0731	64
NVNZ-M257S/B4		63
NVNZ-M257S/B5	7TCA292000R9794	63
NVNZ-M257S/B6		63
NVNZ-M257S/P4	7TAA292150R0734	62
NVNZ-M257S/P5	7TAA292150R0735	62
NVNZ-M257S/P5-L	7TAA292150R0736	64
NVNZ-M257S/P6	7TAA292150R0737	62
NVNZ-M257S/P6-L	7TAA292150R0738	64
NVNZ-M323R/P	7TAA292150R0739	62
NVNZ-M323R/P-L	7TAA292150R0740	64
NVNZ-M323R1/P	7TAA292150R0741	62
NVNZ-M323R1/P-L	7TAA292150R0742	64
NVNZ-M323S/B4	7TCA292000R9137	63
NVNZ-M323S/B5	7TCA292000R9795	63
NVNZ-M323S/P4	7TAA292150R0745	62
NVNZ-M323S/P4-L	7TAA292150R0746	64
NVNZ-M323S/P5	7TAA292150R0747	62
NVNZ-M323S/P5-L	7TAA292150R0748	64
NVNZ-M329R/P	7TCA292000R0278	62
NVNZ-M329R/P-L	7TAA292150R0749	64
NVNZ-M329S/B2		63
NVNZ-M329S/B3		63
NVNZ-M329S/B4	7TCA292000R9796	63
NVNZ-M329S/P2	7TAA292150R0752	62
NVNZ-M329S/P2-L	7TAA292150R0753	64
NVNZ-M329S/P3	7TAA292150R0754	62
NVNZ-M329S/P3-L	7TAA292150R0755	64
NVNZ-M329S/P4	7TAA292150R0756	62
NVNZ-M406R/P	7TAA292150R0757	62

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
NVNZ-M406S/B1		63	NVNZ-P112S/P3	7TAA292150R0820	74	NVWV-P366	7TAA292150R0890	76
NVNZ-M406S/B2		63	NVNZ-P112S/P4	7TAA292150R0821	74	NVWV-P488	7TAA292150R0891	76
NVNZ-M406S/P1	7TAA292150R0760	62	NVNZ-P160R/P		74	NVWZ-M160R/P	7TAA292150R0892	68
NVNZ-M406S/P2	7TAA292150R0761	62	NVNZ-P160S/P1	7TAA292150R0822	74	NVWZ-M160S/P1	7TAA292150R0893	68
NVNZ-M409R/P	7TAA292150R0762	62	NVNZ-P167R/P	7TAA292150R0825	74	NVWZ-M160S/P2	7TAA292150R0894	68
NVNZ-M409R/P-L	7TAA292150R0763	64	NVNZ-P167S/P3	7TAA292150R0828	74	NVWZ-M160S/P3	7TAA292150R0895	68
NVNZ-M409S/B1		63	NVNZ-P167S/P4	7TAA292150R0829	74	NVWZ-M202R/P	7TAA292150R0896	68
NVNZ-M409S/B2		63	NVNZ-P167S/P5	7TAA292150R0830	74	NVWZ-M202S/P1	7TAA292150R0897	68
NVNZ-M409S/B3		63	NVNZ-P167S/P6	7TAA292150R0831	74	NVWZ-M202S/P3	7TAA292150R0898	68
NVNZ-M409S/B4		63	NVNZ-P213R/P	7TAA292150R0834	74	NVWZ-M202S/P4	7TAA292150R0899	68
NVNZ-M409S/B5		63	NVNZ-P213R1/P	7TAA292150R0836	74	NVWZ-M207R/P	7TAA292150R0900	68
NVNZ-M409S/P1	7TAA292150R0766	62	NVNZ-P213S/P1	7TCA292000R0301	74	NVWZ-M207S/P1	7TCA292000R3285	68
NVNZ-M409S/P2	7TAA292150R0767	62	NVNZ-P213S/P4	7TAA292150R0839	74	NVWZ-M207S/P3	7TAA292150R0901	68
NVNZ-M409S/P3	7TCA292000R0288	62	NVNZ-P213S/P5	7TAA292150R0840	74	NVWZ-M207S/P4	7TAA292150R0902	68
NVNZ-M409S/P3-L	7TAA292150R0768	64	NVNZ-P299R/P	7TAA292150R0843	74	NVWZ-M207S/P5	7TAA292150R0903	68
NVNZ-M409S/P4	7TAA292150R0769	62	NVNZ-P299S/P3	7TAA292150R0846	74	NVWZ-M257R/P	7TAA292150R0904	68
NVNZ-M409S/P4-L	7TAA292150R0770	64	NVNZ-P299S/P4	7TAA292150R0847	74	NVWZ-M257S/P5	7TAA292150R0905	68
NVNZ-M409S/P5	7TAA292150R0771	62	NVNZ-P299S/P5	7TAA292150R0848	74	NVWZ-M257S/P6	7TAA292150R0906	68
NVNZ-M409S/P5-L	7TAA292150R0772	64	NVNZ-P366R/P	7TAA292150R0851	74	NVWZ-M323S/P4	7TCA292000R3286	68
NVNZ-M506R/P	7TAA292150R0773	62	NVNZ-P366S/P1	7TAA292150R0854	74	OVN2-07.100	7TAA292700R0042	103
NVNZ-M506R/P-L	7TAA292150R0774	64	NVNZ-P366S/P2	7TAA292150R0855	74	OVN2-10.50	7TAA292700R0043	103
NVNZ-M506S/B1		63	NVNZ-P366S/P3	7TAA292150R0856	74	OVN2-12.50	7TAA292700R0044	103
NVNZ-M506S/B3		63	NVNZ-P488R/P	7TAA292150R0859	74	OVN2-17.50	7TAA292700R0045	103
NVNZ-M506S/P1	7TAA292150R0777	62	NVNZ-P488S/P1	7TAA292150R0862	74	OVN2-23.30	7TAA292700R0046	103
NVNZ-M506S/P1-L	7TAA292150R0778	64	NVNZ-P488S/P2	7TAA292150R0863	74	OVN2-29.20	7TAA292700R0047	103
NVNZ-M506S/P3	7TAA292150R0779	62	NVWV-M120-10	7TAA292150R0864	67	OVN2-36.40	7TAA292700R0048	103
NVNZ-M506S/P3-L	7TAA292150R0780	64	NVWV-M120-5	7TAA292150R0865	67	OVN2-48.20	7TAA292700R0049	103
NVNZ-M508R/P	7TAA292150R0781	62	NVWV-M160-10	7TAA292150R0866	67	PACOF-07B.50	7TAA292730R0000	33,130
NVNZ-M508R/P-L	7TAA292150R0782	64	NVWV-M160-5	7TAA292150R0867	67	PACOF-10B.50	7TAA292730R0001	33,130
NVNZ-M508S/B2		63	NVWV-M162-10	7TAA292150R0868	67	PACOF-12B.50	7TAA292730R0002	33,130
NVNZ-M508S/B3	7TCA292000R9591	63	NVWV-M162-5	7TAA292150R0869	67	PACOF-17B.50	7TAA292730R0004	33,130
NVNZ-M508S/P2	7TAA292150R0785	62	NVWV-M202-10	7TAA292150R0870	67	PACOF-23B.50	7TAA292730R0006	33,130
NVNZ-M508S/P2-L	7TAA292150R0786	64	NVWV-M202-6	7TAA292150R0871	67	PACOF-29B.50	7TAA292730R0008	33,130
NVNZ-M508S/P3	7TAA292150R0787	62	NVWV-M207-10	7TAA292150R0872	67	PACOF-36B.30	7TAA292730R0009	33,130
NVNZ-M508S/P3-L	7TAA292150R0788	64	NVWV-M207-6	7TAA292150R0873	67	PACOF-48B.30	7TAA292730R0010	33,130
NVNZ-M638R/P	7TAA292150R0789	62	NVWV-M253-11	7TAA292150R0874	67	PACOF-70B.10	7TAA292730R0011	33,130
NVNZ-M638R/P-L	7TAA292150R0790	64	NVWV-M253-7	7TAA292150R0875	67	PCLG-125B.6	7TAA292360R0011	18,122
NVNZ-M638S/B1		63	NVWV-M329-13	7TAA292150R0876	67	PCLG-125S.6	7TAA292360R0012	18,122
NVNZ-M638S/B2		63	NVWV-M329-8	7TAA292150R0877	67	PCLG-17B.50	7TAA292240R0059	18
NVNZ-M638S/P1	7TAA292150R0793	62	NVWV-M406-13	7TAA292150R0878	67	PCLG-17S.50	7TAA292240R0060	18
NVNZ-M638S/P1-L	7TAA292150R0794	64	NVWV-M406-8	7TAA292150R0879	67	PCLG-23B.50	7TAA292240R0062	18
NVNZ-M638S/P2	7TAA292150R0795	62	NVWV-M508-14	7TAA292150R0880	67	PCLG-23S.50	7TAA292240R0063	18
NVNZ-M638S/P2-L	7TAA292150R0796	64	NVWV-M508-9	7TAA292150R0881	67	PCLG-29B.50	7TAA292240R0065	18
NVNZ-P090R/P	7TAA292150R0803	74	NVWV-M638-10	7TAA292150R0882	67	PCLG-29S.50	7TAA292240R0066	18
NVNZ-P090S/P1	7TCA292000R0296	74	NVWV-M638-14	7TAA292150R0883	67	PCLG-36B.30	7TAA292240R0069	18
NVNZ-P090S/P3	7TAA292150R0806	74	NVWV-P090	7TAA292150R0884	76	PCLG-36S.30	7TAA292240R0071	18
NVNZ-P110R/P	7TAA292150R0809	74	NVWV-P112	7TAA292150R0885	76	PCLG-48B.30	7TAA292240R0073	18
NVNZ-P110S/P1	7TAA292150R0812	74	NVWV-P137	7TAA292150R0886	76	PCLG-48S.30	7TAA292240R0075	18
NVNZ-P110S/P3	7TAA292150R0813	74	NVWV-P167	7TAA292150R0887	76	PCLG-56B.30	7TAA292360R0013	18,122
NVNZ-P112R/P	7TAA292150R0816	74	NVWV-P213	7TAA292150R0888	76	PCLG-56S.30	7TAA292360R0015	18,122
NVNZ-P112S/P1	7TAA292150R0819	74	NVWV-P299	7TAA292150R0889	76	PCLG-70B.10	7TAA292360R0017	18,122

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
PCLG-70S.10	7TAA292360R0019	18,122	PCSLT-17B.50	7TAA292240R0113	19	PISG-48S.30	7TAA292240R0152	20
PCLG-95B.10	7TAA292360R0021	18,122	PCSLT-17S.50	7TCA292000R5800	19	PIST-07B.50	7TAA292240R0153	20
PCLG-95S.10	7TAA292360R0023	18,122	PCST-07B.100	7TAA292240R0115	19	PIST-07S.50	7TAA292240R0154	20
PCLT-07B.50	7TAA292240R0076	18	PCST-07S.50	7TAA292240R0116	19	PIST-10B.50	7TAA292240R0155	20
PCLT-07S.50	7TAA292240R0077	18	PCST-10B.50	7TAA292240R0117	19	PIST-10S.50	7TAA292240R0156	20
PCLT-10B.50	7TAA292240R0078	18	PCST-10S.50	7TAA292240R0118	19	PIST-12B.50	7TAA292240R0157	20
PCLT-10S.50	7TAA292240R0079	18	PCST-12B.50	7TAA292240R0119	19	PIST-12S.50	7TAA292240R0158	20
PCLT-12B.50	7TAA292240R0080	18	PCST-12S.50	7TAA292240R0120	19	PIST-17B.50	7TAA292240R0160	20
PCLT-12S.50	7TAA292240R0081	18	PCST-17B.50	7TAA292240R0121	19	PIST-17S.50	7TAA292240R0161	20
PCLT-17B.50	7TAA292240R0083	18	PCST-17S.50	7TAA292240R0122	19	PIST-23B.50	7TAA292240R0163	20
PCLT-17S.50	7TAA292240R0085	18	PELT-10S.50	7TAA292240R0123	20	PIST-23S.50	7TAA292240R0164	20
PCLT-23B.50	7TAA292240R0086	18	PELT-10SL.50	7TAA292240R0124	20	PIST-29B.50	7TAA292240R0165	20
PCLT-23S.50	7TAA292240R0088	18	PELT-12S.50	7TAA292240R0125	20	PIST-29S.50	7TAA292240R0166	20
PCLT-29B.50	7TAA292240R0089	18	PELT-12SL.50	7TAA292240R0126	20	PIST-36B.30	7TAA292240R0167	20
PCLT-29S.50	7TAA292240R0091	18	PELT-17S.50	7TAA292240R0127	20	PIST-36S.30	7TAA292240R0168	20
PCLT-36B.30	7TAA292240R0092	18	PELT-17SL.50	7TAA292240R0128	20	PIST-48B.30	7TAA292240R0169	20
PCLT-36S.50	7TCA292000R3533	18	PELT-23S.50	7TAA292240R0131	20	PIST-48S.30	7TAA292240R0170	20
PCLT-48B.30	7TCA292000R3535	18	PELT-23SL.50	7TAA292240R0132	20	PLRG-17B.50	7TCA292000R6231	24
PCLT-48S.50	7TCA292000R3536	18	PELT-29S.30	7TAA292240R0133	20	PLRG-17S.50	7TCA292000R6259	24
PCSG-17B.50	7TAA292240R0093	19	PELT-29SL.30	7TAA292240R0134	20	PLRG-23B.50	7TCA292000R6232	24
PCSG-17S.50	7TAA292240R0094	19	PELT-36S.30	7TAA292240R0135	20	PLRG-23S.50	7TCA292000R6260	24
PCSG-23B.50	7TAA292240R0096	19	PELT-36SL.30	7TAA292240R0136	20	PLRG-29B.50	7TCA292000R6233	24
PCSG-23S.50	7TAA292240R0098	19	PELT-48S.30	7TAA292240R0137	20	PLRG-29S.50	7TCA292000R6261	24
PCSG-29B.50	7TAA292240R0099	19	PELT-48SL.30	7TAA292240R0138	20	PLRG-36B.30	7TCA292000R6234	24
PCSG-29S.50	7TAA292240R0100	19	PHTG-17B.50	7TAA292430R0000	15	PLRG-36S.30	7TCA292000R6262	24
PCSG-36B.30	7TAA292240R0101	19	PHTG-23B.50	7TAA292430R0001	15	PLRG-48B.30	7TCA292000R6235	24
PCSG-36S.30	7TAA292240R0102	19	PHTG-29B.50	7TAA292430R0002	15	PLRG-48S.30	7TCA292000R6263	24
PCSG-48B.30	7TAA292240R0103	19	PHTG-36B.30	7TAA292430R0003	15	PLRT-07B.50	7TCA292000R6236	24
PCSG-48S.30	7TAA292240R0104	19	PHTG-48B.30	7TAA292430R0004	15	PLRT-07S.50	7TCA292000R6264	24
PCSG-56B.30	7TAA292360R0025	19,122	PHTT-07B.50	7TAA292430R0005	15	PLRT-10B.50	7TCA292000R6237	24
PCSG-56S.30	7TAA292360R0026	19,122	PHTT-10B.50	7TAA292430R0006	15	PLRT-10S.50	7TCA292000R6265	24
PCSG-70B.10	7TAA292360R0027	19,122	PHTT-12B.50	7TAA292430R0007	15	PLRT-12B.50	7TCA292000R6238	24
PCSG-70S.10	7TCA292000R0303	19,122	PHTT-17B.50	7TAA292430R0008	15	PLRT-12S.50	7TCA292000R6266	24
PCSG-95B.10	7TAA292360R0029	19,122	PHTT-23B.50	7TAA292430R0009	15	PMACUT-38	7TAA292880R0006	117
PCSG-95S.10	7TAA292360R0030	19,122	PIHG-125B.20	7TAA292360R0031	20,122	PMACUT-52	7TAA292880R0007	117
PCSLG-17B.50	7TAA292240R0105	19	PIHG-125S.20	7TAA292360R0032	20,122	PMACUT-NW125	7TAA292880R0011	117
PCSLG-17S.50	7TCA292000R5792	19	PIHG-56B.30	7TAA292360R0033	20,122	PMACUT-NW56	7TAA292880R0008	117
PCSLG-23B.50	7TAA292240R0106	19	PIHG-56S.30	7TAA292360R0034	20,122	PMACUT-NW70	7TAA292880R0009	117
PCSLG-23S.50	7TCA292000R5793	19	PIHG-70B.30	7TAA292360R0036	20,122	PMACUT-NW95	7TAA292880R0010	117
PCSLG-29B.50	7TAA292240R0107	19	PIHG-70S.30	7TAA292360R0038	20,122	PMA-Tie-tool	7TCA292000R3742	141
PCSLG-29S.50	7TCA292000R5794	19	PIHG-95B.30	7TAA292360R0040	20,122	POHG-17B.50	7TAA292430R0017	15
PCSLG-36B.30	7TAA292240R0108	19	PIHG-95S.30	7TAA292360R0042	20,122	POHG-17S.50	7TAA292430R0018	15
PCSLG-36S.30	7TCA292000R5795	19	PISG-17B.50	7TAA292240R0139	20	POHG-23B.50	7TAA292430R0019	15
PCSLG-48B.30	7TAA292240R0109	19	PISG-17S.50	7TAA292240R0140	20	POHG-23S.50	7TAA292430R0020	15
PCSLG-48S.30	7TCA292000R5796	19	PISG-23B.50	7TAA292240R0142	20	POHG-29B.50	7TAA292430R0021	15
PCSLT-07B.50	7TAA292240R0110	19	PISG-23S.50	7TAA292240R0143	20	POHG-29S.50	7TAA292430R0022	15
PCSLT-07S.50	7TCA292000R5797	19	PISG-29B.50	7TAA292240R0144	20	POHG-36B.30	7TAA292430R0023	15
PCSLT-10B.50	7TAA292240R0111	19	PISG-29S.50	7TAA292240R0145	20	POHG-36S.30	7TAA292430R0024	15
PCSLT-10S.50	7TCA292000R5798	19	PISG-36B.30	7TAA292240R0147	20	POHG-48B.30	7TAA292430R0025	15
PCSLT-12B.50	7TAA292240R0112	19	PISG-36S.30	7TAA292240R0149	20	POHG-48S.30	7TAA292430R0026	15
PCSLT-12S.50	7TCA292000R5799	19	PISG-48B.30	7TAA292240R0151	20	POHT-10B.50	7TAA292430R0027	15

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
POHT-10S.50	7TAA292430R0028	15	PVDT-29P.50	7TCA292000R3817	22	SGH-36	7TAA292720R0049	112
POHT-12B.50	7TAA292430R0029	15	RKS-07	7TAA292150R0907	115	SGH-48	7TAA292720R0050	112
POHT-12S.50	7TAA292430R0030	15	RKS-10	7TAA292150R0908	115	SGH-56	7TAA292720R0051	112,126
POSG-29B.50	7TCA292000R5823	21	RKS-12	7TAA292150R0909	115	SGH-70	7TAA292720R0052	112,126
POSG-36B.30	7TCA292000R3749	21	RKS-17	7TAA292150R0910	115	SGH-95	7TAA292720R0053	112,126
POSG-48B.30	7TCA292000R3750	21	RKS-23	7TAA292150R0911	115	SGI-M7556	7TCA292000R4118	112
POSG-70B.30	7TAA292900R0008	21	RKS-29	7TAA292150R0912	115	SGL-07	7TAA292720R0054	112
POSG-95B.30	7TCA292000R0304	21	RKS-36	7TAA292150R0913	115	SGL-10	7TAA292720R0055	112
POST-10B.50	7TAA292240R0171	21	RKS-48	7TAA292150R0914	115	SGL-12	7TAA292720R0056	112
POST-12B.50	7TAA292240R0172	21	RKS-56	7TAA292150R0915	115	SGL-17	7TAA292720R0057	112
POST-17B.50	7TAA292240R0173	21	SCA-M16-10	7TAA292630R0000	119	SGL-23	7TAA292720R0058	112
POST-23B.50	7TAA292240R0174	21	SCA-M20-10	7TAA292630R0001	119	SGL-29	7TAA292720R0059	112
POST-29B.50	7TAA292240R0175	21	SCA-M25-11	7TAA292630R0002	119	SGO3-125	7TAA292980R0000	127
POST-36B.30	7TAA292240R0176	21	SCA-M32-13	7TAA292630R0003	119	SGO3-56	7TAA292980R0001	127
POST-48B.30	7TAA292240R0177	21	SCA-M40-13	7TAA292630R0004	119	SGO3-70	7TAA292980R0002	127
PPCOF-07B.50	7TAA292730R0012	33,130	SCA-M50-14	7TAA292630R0005	119	SGO3-95	7TAA292980R0003	127
PPCOF-10B.50	7TAA292730R0013	33,130	SCA-M63-14	7TAA292630R0006	119	SGO-56	7TAA292860R0037	123
PPCOF-12B.50	7TAA292730R0014	33,130	SCA-P09	7TAA292630R0007	119	SGO-70	7TAA292860R0038	123
PPCOF-17B.50	7TAA292730R0016	33,130	SCA-P11	7TAA292630R0008	119	SGO-95	7TAA292860R0039	123
PPCOF-23B.50	7TAA292730R0018	33,130	SCA-P16	7TAA292630R0009	119	SGS-125	7TAA292720R0060	113,126
PPCOF-29B.50	7TAA292730R0020	33,130	SCA-P21	7TAA292630R0010	119	SGS-36	7TAA292720R0061	113,126
PPCOF-36B.30	7TAA292730R0021	33,130	SCA-P29	7TAA292630R0011	119	SGS-48	7TAA292720R0062	113,126
PPCOF-48B.30	7TAA292730R0022	33,130	SCA-P36	7TAA292630R0012	119	SGS-56	7TAA292720R0063	113,126
PPCOF-70B.10	7TAA292730R0023	33,130	SCA-P48	7TAA292630R0013	119	SGS-70	7TAA292720R0064	113,126
PSXG-23B.50	7TAA292430R0032	16	SFH-07-0	7TAA292700R0050	111	SGS-95	7TAA292720R0065	113,126
PSXG-29B.50	7TAA292430R0033	16	SFH-10-0	7TAA292700R0051	111	SRER-06	7TAA292920R0008	136
PSXG-36B.30	7TAA292430R0034	16	SFH-12-0	7TAA292700R0052	111	SRER-16	7TAA292920R0009	136
PSXG-48B.30	7TAA292430R0035	16	SFH-17-0	7TAA292700R0053	111	SRER-21	7TAA292920R0010	136
PSXT-10B.50	7TAA292430R0036	16	SFH-23-0	7TAA292700R0054	111	SRER-29	7TAA292920R0011	136
PSXT-12B.50	7TAA292430R0037	16	SFH-29-0	7TAA292700R0055	111	SRER-50	7TAA292920R0012	136
PSXT-17B.50	7TCA292000R0305	16	SFH-36-0	7TAA292700R0056	111	SREV-40	7TAA292920R0013	136
PUEG-56B.30	7TAA292360R0043	21,122	SFH-48-0	7TAA292700R0057	111	SVN4-07	7TAA292640R0000	102
PUEG-70B.30	7TAA292360R0044	21,122	SFHS-00	7TAA292700R0058	111	SVN4-09	7TAA292640R0001	102
PUET-23B.50	7TAA292900R0004	21	SFHS-PH	7TAA292700R0060	111	SVN4-11	7TAA292640R0002	102
PUET-29B.30	7TAA292900R0005	21	SFHS-PH1	7TAA292700R0061	111	SVN4-13	7TAA292640R0003	102
PUET-36B.30	7TAA292900R0006	21	SGB-07	7TAA292720R0027	113	SVN4-16	7TAA292640R0004	102
PUET-48B.21	7TAA292900R0007	21	SGB-09	7TAA292720R0029	113	SVN4-21	7TAA292640R0005	102
PUSG-17B.31	7TAA292490R0006	31	SGB-11	7TAA292720R0031	113	SVN4-29	7TAA292640R0006	102
PUSG-17S.31		31	SGB-16	7TAA292720R0036	113	SVN4-36	7TAA292640R0007	102
PUSG-23B.31	7TAA292490R0007	31	SGB-21	7TAA292720R0039	113	SVN4-42	7TAA292640R0008	102
PUSG-23S.31		31	SGB-29	7TAA292720R0043	113	SVN4-48	7TAA292640R0009	102
PUSG-29B.31	7TAA292490R0008	31	SGB-36	7TAA292720R0044	113	SVN4-G00	7TAA292640R0010	102
PUSG-29S.31		31	SGB-48	7TAA292720R0046	113	SVN4-G01	7TAA292640R0011	102
PUSG-36B.31	7TAA292490R0009	31	SGG-125	7TAA292860R0033	123	SVN4-G02	7TAA292640R0012	102
PUSG-36S.31		31	SGG-56	7TAA292860R0034	123	SVN4-G04	7TAA292640R0013	102
PUSG-48B.31	7TAA292490R0010	31	SGG-70	7TAA292860R0035	123	SVN4-G06	7TAA292640R0014	102
PUSG-48S.31		31	SGG-95	7TAA292860R0036	123	SVN4-G07	7TAA292640R0015	102
PVDT-10P.50	7TAA292240R0178	22	SGG-M6356	7TCA292000R4106	125	SVN4-G08	7TAA292640R0016	102
PVDT-12P.50	7TAA292240R0179	22	SGG-P3656	7TCA292000R4107	125	SVN4-G09	7TAA292640R0017	102
PVDT-17P.50	7TAA292240R0180	22	SGH-23	7TAA292720R0047	112	SVN4-M12	7TAA292640R0018	102
PVDT-23P.50	7TAA292240R0181	22	SGH-29	7TAA292720R0048	112	SVN4-M12/02	7TAA292640R0019	102

Index

Products in alphabetical order

Part. no.	GID no.	Page	Part. no.	GID no.	Page	Part. no.	GID no.	Page
SVN4-M16	7TAA292640R0020	102	VAMLG-48S.30	7TAA292240R0214	23	VOHG-29B.50	7TAA292240R0263	24
SVN4-M16/02	7TAA292640R0021	102	VAMLG-56B.30	7TAA292360R0048	23	VOHG-29S.50	7TAA292240R0265	24
SVN4-M20	7TAA292640R0022	102	VAMLG-56S.30	7TAA292360R0049	23	VOHG-36B.30	7TAA292240R0266	24
SVN4-M20/02	7TAA292640R0023	102	VAMLG-70B.70	7TAA292360R0050	23	VOHG-36S.30	7TAA292240R0267	24
SVN4-M25	7TAA292640R0024	102	VAMLG-70S.70	7TAA292360R0051	23	VOHG-48B.30	7TAA292240R0269	24
SVN4-M25/01	7TCA292000R4288	102	VAMLG-95B.70	7TAA292360R0052	23	VOHG-48S.30	7TAA292240R0271	24
SVN4-M25/02	7TAA292640R0025	102	VAMLG-95S.70	7TAA292360R0053	23	VOHG-56B.10	7TAA292360R0062	24,122
SVN4-M32	7TAA292640R0026	102	VAMLT-10B.50	7TAA292240R0217	23	VOHG-56S.10	7TAA292360R0063	24,122
SVN4-M32/02	7TAA292640R0027	102	VAMLT-10S.50	7TAA292240R0218	23	VOHG-70B.10	7TAA292360R0064	24,122
SVN4-M40	7TAA292640R0028	102	VAMLT-12B.50	7TAA292240R0219	23	VOHG-70S.10	7TAA292360R0065	24,122
SVN4-M40/01	7TCA292000R4289	102	VAMLT-12S.50	7TAA292240R0220	23	VOHG-95B.10	7TAA292360R0066	24,122
SVN4-M40/02	7TAA292640R0029	102	VAMT-10B.50	7TAA292240R0223	22	VOHG-95S.10	7TAA292360R0067	24,122
SVN4-M50	7TAA292640R0030	102	VAMT-10S.50	7TAA292240R0224	22	VUSG-17B.31	7TAA292490R0011	32
SVN4-M50/01	7TCA292000R4290	102	VAMT-12B.50	7TAA292240R0225	22	VUSG-17S.31		32
SVN4-M50/02	7TAA292640R0031	102	VAMT-12S.50	7TAA292240R0226	22	VUSG-23B.31	7TAA292490R0012	32
SVN4-M63	7TAA292640R0032	102	VCSG-17B.50	7TAA292240R0230	23	VUSG-23S.31		32
SWA-M16-10	7TAA292590R0000	119	VCSG-17S.50	7TAA292240R0231	23	VUSG-29B.31	7TAA292490R0013	32
SWA-M20-10	7TAA292590R0001	119	VCSG-23B.50	7TAA292240R0232	23	VUSG-29S.31		32
SWA-M25-11	7TAA292590R0002	119	VCSG-23S.50	7TAA292240R0233	23	VUSG-36B.31	7TAA292490R0014	32
SWA-M32-13	7TAA292590R0003	119	VCSG-29B.50	7TAA292240R0234	23	VUSG-36S.31		32
SWA-M40-13	7TAA292590R0004	119	VCSG-29S.50	7TAA292240R0235	23	VUSG-48B.31	7TAA292490R0015	32
SWA-M50-14	7TAA292590R0005	119	VCSG-36B.30	7TAA292240R0236	23	VUSG-48S.31		32
SWA-M63-14	7TAA292590R0006	119	VCSG-36S.30	7TAA292240R0237	23	WPS-NW10	7TAA292650R0000	103
SWA-P09	7TAA292590R0007	119	VCSG-48B.30	7TAA292240R0238	23	WPS-NW12	7TAA292650R0001	103
SWA-P11	7TAA292590R0008	119	VCSG-48S.30	7TAA292240R0239	23	WPS-NW17	7TAA292650R0002	103
SWA-P16	7TAA292590R0009	119	VCSG-56B.30	7TAA292360R0054	23,122	WPS-NW23	7TAA292650R0003	103
SWA-P21	7TAA292590R0010	119	VCSG-56S.30	7TAA292360R0055	23,122	WPS-NW29	7TAA292650R0004	103
SWA-P29	7TAA292590R0011	119	VCSG-70B.10	7TAA292360R0056	23,122	WPS-NW36	7TAA292650R0005	103
SWA-P36	7TAA292590R0012	119	VCSG-70S.10	7TAA292360R0057	23,122	WPS-NW48	7TAA292650R0006	103
SWA-P48	7TAA292590R0013	119	VCSG-95B.10	7TAA292360R0058	23,122	XPCLG-17BB.50	7TAA292240R0290	25
VAMG-17B.50	7TAA292240R0195	22	VCSG-95S.10	7TAA292360R0059	23,122	XPCLG-17SB.50	7TAA292240R0291	25
VAMG-17S.50	7TAA292240R0196	22	VCST-07B.100	7TAA292240R0240	23	XPCLG-23BB.50	7TAA292240R0292	25
VAMG-23B.50	7TAA292240R0197	22	VCST-07S.100	7TAA292240R0241	23	XPCLG-23SB.50	7TAA292240R0293	25
VAMG-23S.50	7TAA292240R0198	22	VCST-10B.50	7TAA292240R0242	23	XPCLG-29BB.50	7TAA292240R0294	25
VAMG-29B.50	7TAA292240R0199	22	VCST-10S.50	7TAA292240R0243	23	XPCLG-29SB.50	7TAA292240R0295	25
VAMG-29S.50	7TAA292240R0200	22	VCST-12B.50	7TAA292240R0244	23	XPCLG-36BB.30	7TAA292240R0296	25
VAMG-36B.30	7TAA292240R0201	22	VCST-12S.50	7TAA292240R0245	23	XPCLG-36SB.30	7TAA292240R0297	25
VAMG-36S.30	7TAA292240R0202	22	VCST-17B.50	7TAA292240R0246	23	XPCLG-48BB.30	7TAA292240R0298	25
VAMG-48B.30	7TAA292240R0203	22	VCST-17S.50	7TAA292240R0247	23	XPCLG-48SB.30	7TAA292240R0299	25
VAMG-48S.30	7TAA292240R0204	22	VOHD-07B.50	7TAA292240R0248	24	XPCLT-10BB.50	7TCA292000R0334	25
VAMLG-125B.6	7TAA292360R0046	23	VOHD-07S.50	7TAA292240R0249	24	XPCLT-10SB.50	7TAA292240R0300	25
VAMLG-125S.6	7TAA292360R0047	23	VOHD-10B.50	7TAA292240R0250	24	XPCLT-12BB.50	7TAA292240R0301	25
VAMLG-17B.50	7TAA292240R0205	23	VOHD-10S.50	7TAA292240R0251	24	XPCLT-12SB.50	7TAA292240R0301	25
VAMLG-17S.50	7TAA292240R0206	23	VOHD-12B.50	7TAA292240R0252	24	XPCLT-17BB.50	7TAA292240R0302	25
VAMLG-23B.50	7TAA292240R0207	23	VOHD-12S.50	7TAA292240R0253	24	XPCLT-17SB.50		25
VAMLG-23S.50	7TAA292240R0208	23	VOHG-125B.6	7TAA292360R0060	24,122	XPCSFG-17BO.50	7TCA292000R8726	28
VAMLG-29B.50	7TAA292240R0209	23	VOHG-125S.6	7TAA292360R0061	24,122	XPCSFG-23BO.50	7TCA292000R8802	28
VAMLG-29S.50	7TAA292240R0210	23	VOHG-17B.50	7TAA292240R0255	24	XPCSFG-29BO.50	7TCA292000R8803	28
VAMLG-36B.30	7TAA292240R0211	23	VOHG-17S.50	7TAA292240R0257	24	XPCSFG-36BO.30	7TCA292000R8804	28
VAMLG-36S.30	7TAA292240R0212	23	VOHG-23B.50	7TAA292240R0259	24	XPCSFG-48BO.30	7TCA292000R8805	28
VAMLG-48B.30	7TAA292240R0213	23	VOHG-23S.50	7TAA292240R0261	24	XPCSFT-07BO.100	7TCA292000R9467	28

Index

Products in alphabetical order

Part. no.	GID no.	Page
XPCSFT-10BO.50	7TCA292000R8799	28
XPCSFT-12BO.50	7TCA292000R8801	28
XPCSG-17BG.50	7TCA292000R8829	27
XPCSG-23BG.50	7TCA292000R8831	27
XPCSG-29BG.50	7TCA292000R8832	27
XPCSG-36BG.30	7TCA292000R8834	27
XPCSG-48BG.30	7TCA292000R8835	27
XPCSG-56BG.30		27,122
XPCSG-70BG.10		122
XPCSG-70BG.30		27
XPCSG-95BG.10		122
XPCST-10BG.50	7TCA292000R8827	27
XPCST-12BG.50	7TCA292000R8828	27
XSOLG-17BG.50	7TAA292240R0303	25
XSOLG-23BG.50	7TAA292240R0304	25
XSOLG-29BG.50	7TAA292240R0305	25
XSOLG-36BG.30	7TAA292240R0306	25
XSOLG-48BG.30	7TAA292240R0307	25
XSOLT-10BG.50	7TCA292000R0335	25
XSOLT-12BG.50	7TAA292240R0314	25
XVCS1H-10BG.50	7TCA292000R5547	26
XVCS1H-12BG.50	7TAA292240R0315	26
XVCS1H-17BG.50	7TAA292240R0316	26
XVCS1H-23BG.50	7TAA292240R0317	26
XVCS1H-29BG.50	7TAA292240R0318	26
XVCS1H-36BG.30	7TAA292240R0319	26
XVCS1H-48BG.30	7TAA292240R0320	26
XVCS2H-10BG.50		26
XVCS2H-12BG.50	7TCA292000R4679	26
XVCS2H-17BG.50	7TCA292000R4681	26
XVCS2H-23BG.50	7TCA292000R4682	26
XVCS2H-29BG.50	7TCA292000R4683	26
XVCS2H-36BG.30	7TCA292000R4684	26
XVCS2H-48BG.30	7TCA292000R4685	26
XVCSFG-17BB.50	7TCA292000R9748	27
XVCSFG-23BB.50	7TCA292000R9750	27
XVCSFG-29BB.50	7TCA292000R9751	27
XVCSFG-36BB.30	7TCA292000R9752	27
XVCSFG-48BB.30	7TCA292000R9753	27
XVCSFT-10BB.50	7TCA292000R9746	27
XVCSFT-12BB.50	7TCA292000R9747	27
xxxG-17x/S.50		36
xxxG-23x/S.50		36
xxxG-29x/S.50		36
xxxG-36x/S.30		36
xxxG-48x/S.30		36
xxxT-12x/S.50		36
xxxT-17x/S.50		36

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