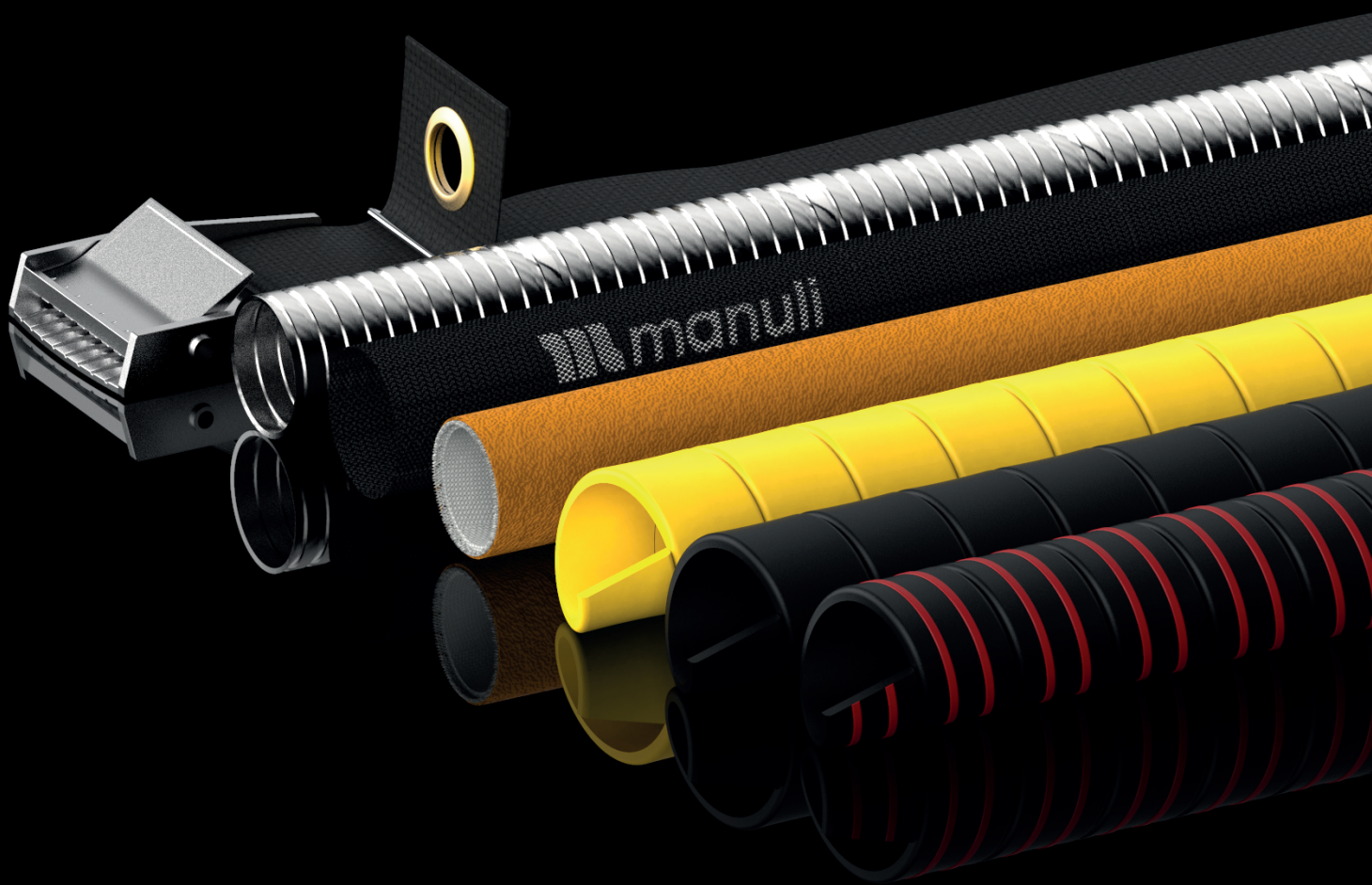
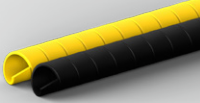
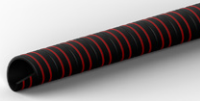
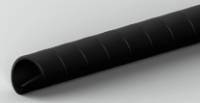
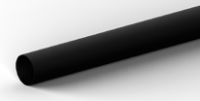
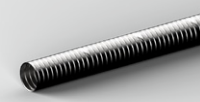
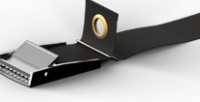


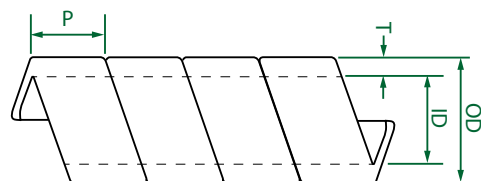


HOSE PROTECTIONS

HOSE PROTECTIONS INDEX

The Manuli Hydraulics range of hose protections is the culmination of decades of experience in the hydraulic connectors industry. Our hose protections are designed to meet the most stringent of international safety standards, whilst also actively preventing hose damage and potential injury.

PROTECTION TYPE	KEY FEATURES						
	Material	Size (mm)	Colour	Temperature Range	Specifications	Key Properties	Page No.
PROTECTION SPRING PS 	POLYETHYLENE	9 - 84	BLACK OR YELLOW	-40°C TO +90°C	MANULI® DESIGN	HIGH FLEXIBILITY; HIGH ABRASION RESISTANCE	608
MINING PROTECTION SPRING MPS 	POLYETHYLENE (ANTISTATIC)	12 - 84	BLACK WITH TWO RED LINES	-40°C TO +90°C	MANULI® DESIGN; FRAS; MSHA; ISO 6805	HIGH ABRASION RESISTANCE; FLAME RETARDANT & ANTISTATIC PROPERTIES	609
HT PROTECTION SPRING HTPS 	POLYAMMIDE	10 - 60	BLACK	-40°C TO +120°C	MANULI® DESIGN; MSHA	HIGH TEMPERATURE AND ABRASION RESISTANCE; FLAME RETARDANT; VERY HIGH FLEXIBILITY	610
TEXTILE SLEEVE TSL 	POLYESTER FIBRES	18 - 110	BLACK	-50°C TO +100°C (PEAKS +140°C)	MANULI® DESIGN; FRAS; MSHA; MDG41	FLUID ENERGY DIFFUSION; ANTI-ABRASIVE; FLAME RETARDANT & ANTISTATIC PROPERTIES	611
FIRE SLEEVE FSL 	SILICONE SLEEVE WITH GLASS FIBRE BRAID	13 - 76	ORANGE	-60°C TO +260°C (PEAKS +1500°C)	MANULI® DESIGN; NFF16-101 & P92-507 (CLASS FO & M2)	EXTREME HEAT RESISTANCE; EXTREME FLEXIBILITY AT LOW TEMPERATURES	612
HEAT SHRINKABLE SLEEVE HSSL 	POLYOLEFIN	31 - 51	BLACK	-55°C TO +125°C	UL224 VW-1	SELF EXTINGUISHING FLAME RESISTANCE; LOW VOLTAGE ELECTRICAL INSULATION	613
STAINLESS STEEL ARMOUR GUARD SSAG 	STAINLESS STEEL	10 - 51	SILVER	-	API 16D FIRE TEST	HIGH ABRASION RESISTANCE; EXTREME HEAT RESISTANCE	614
TEXTILE CLINCH STRAP TCS 	POLYESTER FIBRES	400 - 1500	BLACK	-50°C TO +100°C	MANULI® DESIGN; FRAS; MSHA	FLAME RETARDANT & ANTISTATIC PROPERTIES	615



PROTECTION SPRING

PS

PART. REF	DESCRIPTION	DIMENSIONS													
		INTERNAL DIAMETER (ID)		OUTSIDE DIAMETER (OD)		WALL THICKNESS (T)		PITCH (P)		WRAPPING RANGE		WEIGHT		STANDARD PACK LENGTH	
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	G/M	LB/FT	M	FT
JP11B01009E099	BLACK PROTECTION SPRING DN 9	9.0	0.35	13.0	0.51	2.00	0.079	11.0	0.43	9-13	0.35-0.51	50	0.03	20	66
JP11B01012E099	BLACK PROTECTION SPRING DN 12	12.0	0.47	16.5	0.65	2.25	0.089	13.0	0.51	12-17	0.47-0.66	60	0.04	20	66
JP11B01015E099	BLACK PROTECTION SPRING DN 15	15.0	0.59	20.0	0.79	2.50	0.098	15.5	0.61	15-22	0.59-0.86	90	0.06	20	66
JP11B01019E099	BLACK PROTECTION SPRING DN 19	19.0	0.75	24.5	0.96	2.75	0.108	19.0	0.75	19-28	0.74-1.1	150	0.10	20	66
JP11B01023E099	BLACK PROTECTION SPRING DN 23	23.0	0.91	30.0	1.18	3.50	0.138	23.0	0.91	23-33	0.9-1.29	225	0.15	20	66
JP11B01031E099	BLACK PROTECTION SPRING DN 31	30.5	1.20	39.0	1.54	4.25	0.167	29.0	1.14	30-44	1.18-1.73	350	0.24	20	66
JP11B01038E099	BLACK PROTECTION SPRING DN 38	38.0	1.50	46.5	1.83	4.25	0.167	36.0	1.42	38-65	1.49-2.55	400	0.27	20	66
JP11B01047E099	BLACK PROTECTION SPRING DN 47	47.0	1.85	58.0	2.28	5.50	0.217	39.5	1.56	47-70	1.85-2.75	600	0.40	20	66
JP11B01061E099	BLACK PROTECTION SPRING DN 61	61.0	2.40	73.0	2.87	6.00	0.236	44.0	1.73	61-90	2.4-3.54	950	0.64	20	66
JP11B01071E099	BLACK PROTECTION SPRING DN 71	70.5	2.78	84.5	3.33	7.00	0.276	51.0	2.01	70-150	2.75-5.9	1150	0.77	20	66
JP11B01084E099	BLACK PROTECTION SPRING DN 84	84.0	3.31	99.0	3.90	7.50	0.295	56.0	2.20	84-200	3.3-7.87	1500	1.01	10	33
JP11Y01009E099	YELLOW PROTECTION SPRING DN 9	9.0	0.35	13.0	0.51	2.00	0.079	11.0	0.43	9-13	0.35-0.51	50	0.03	20	66
JP11Y01012E099	YELLOW PROTECTION SPRING DN 12	12.0	0.47	16.5	0.65	2.25	0.089	13.0	0.51	12-17	0.47-0.66	60	0.04	20	66
JP11Y01015E099	YELLOW PROTECTION SPRING DN 15	15.0	0.59	20.0	0.79	2.50	0.098	15.5	0.61	15-22	0.59-0.86	90	0.06	20	66
JP11Y01019E099	YELLOW PROTECTION SPRING DN 19	19.0	0.75	24.5	0.96	2.75	0.108	19.0	0.75	19-28	0.74-1.1	150	0.10	20	66
JP11Y01023E099	YELLOW PROTECTION SPRING DN 23	23.0	0.91	30.0	1.18	3.50	0.138	23.0	0.91	23-33	0.9-1.29	225	0.15	20	66
JP11Y01031E099	YELLOW PROTECTION SPRING DN 31	30.5	1.20	39.0	1.54	4.25	0.167	29.0	1.14	30-44	1.18-1.73	350	0.24	20	66
JP11Y01038E099	YELLOW PROTECTION SPRING DN 38	38.0	1.50	46.5	1.83	4.25	0.167	36.0	1.42	38-65	1.49-2.55	400	0.27	20	66
JP11Y01047E099	YELLOW PROTECTION SPRING DN 47	47.0	1.85	58.0	2.28	5.50	0.217	39.5	1.56	47-70	1.85-2.75	600	0.40	20	66
JP11Y01061E099	YELLOW PROTECTION SPRING DN 61	61.0	2.40	73.0	2.87	6.00	0.236	44.0	1.73	61-90	2.4-3.54	950	0.64	20	66
JP11Y01071E099	YELLOW PROTECTION SPRING DN 71	70.5	2.78	84.5	3.33	7.00	0.276	51.0	2.01	70-150	2.75-5.9	1150	0.77	20	66
JP11Y01084E099	YELLOW PROTECTION SPRING DN 84	84.0	3.31	99.0	3.90	7.50	0.295	56.0	2.20	84-200	3.3-7.87	1500	1.01	10	33

KEY FEATURES

- High abrasion resistance
- High flexibility
- Resistant to water, oils, fuels and hydraulic fluids
- Easy to install, no clamps needed
- High ozone and external agents resistance

CONTINUOUS SERVICE TEMPERATURE RANGE

-40 °C, -40 °F

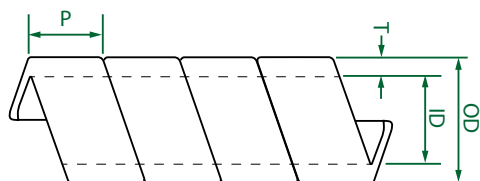
90 °C, 194 °F

MATERIAL

Polyethylene

APPLICABLE SPECS

Manuli® Design



MINING PROTECTION SPRING

MPS

PART. REF		DESCRIPTION		DIMENSIONS											
		INTERNAL DIAMETER (ID)		OUTSIDE DIAMETER (OD)		WALL THICKNESS (T)		PITCH (P)		WRAPPING RANGE		WEIGHT		STANDARD PACK LENGTH	
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	G/M	LB/FT	M	FT
JP11B02012E099	MINING PROTECTION SPRING DN 12	12.0	0.47	16.5	0.65	2.25	0.089	13.00	0.51	12-17	0.47-0.66	60	0.04	20	66
JP11B02015E099	MINING PROTECTION SPRING DN 15	15.0	0.59	20.0	0.79	2.50	0.098	15.50	0.61	15-22	0.59-0.86	90	0.06	20	66
JP11B02019E099	MINING PROTECTION SPRING DN 19	19.0	0.75	24.5	0.96	2.75	0.108	19.00	0.75	19-28	0.74-1.10	150	0.10	20	66
JP11B02023E099	MINING PROTECTION SPRING DN 23	23.0	0.91	30.0	1.18	3.50	0.138	23.00	0.91	23-33	0.91-1.29	225	0.15	20	66
JP11B02031E099	MINING PROTECTION SPRING DN 31	30.5	1.20	39.0	1.54	4.25	0.167	29.00	1.14	30-44	1.18-1.73	350	0.24	20	66
JP11B02038E099	MINING PROTECTION SPRING DN 38	38.0	1.50	46.5	1.83	4.25	0.167	36.00	1.42	38-65	1.49-2.55	400	0.27	20	66
JP11B02047E099	MINING PROTECTION SPRING DN 47	47.0	1.85	58.0	2.28	5.50	0.217	39.50	1.56	47-70	1.85-2.75	600	0.40	20	66
JP11B02061E099	MINING PROTECTION SPRING DN 61	61.0	2.40	73.0	2.87	6.00	0.236	44.00	1.73	61-90	2.40-3.54	950	0.64	20	66
JP11B02071E099	MINING PROTECTION SPRING DN 71	70.5	2.78	84.5	3.33	7.00	0.276	51.00	2.01	70-150	2.75-5.9	1150	0.77	20	66
JP11B02084E099	MINING PROTECTION SPRING DN 84	84.0	3.31	99.0	3.90	7.50	0.295	56.00	2.20	84-200	3.31-7.87	1500	1.01	10	33

KEY FEATURES

- High abrasion resistance
- High flexibility
- Flame retardant and antistatic properties
- Resistant to water, oils, fuels and hydraulic fluids
- Easy to install, no clamps needed
- High visibility in field due to red central lines

CONTINUOUS SERVICE TEMPERATURE RANGE

-40 °C, -40 °F

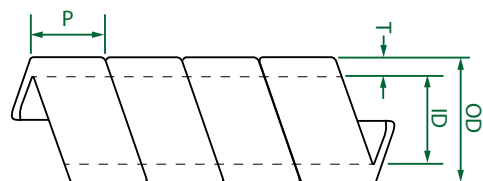
90 °C, 194 °F

MATERIAL

Polyethylene (antistatic)

APPLICABLE SPECS

Manuli® Design, MSHA, FRAS, ISO 6805



HIGH TEMPERATURE PROTECTION SPRING

HTPS

PART. REF		DESCRIPTION				DIMENSIONS											
		INTERNAL DIAMETER (ID)		OUTSIDE DIAMETER (OD)		WALL THICKNESS (T)		PITCH (P)		WRAPPING RANGE		WEIGHT		STANDARD PACK LENGTH			
		MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	G/M	LB/FT	M	FT		
JP12B03010I099	HT PROTECTION SPRING DN 10	9.5	0.37	11.5	0.45	1.00	0.039	6.9	0.27	9-13	0.35-0.51	27	0.02	24	79.2		
JP12B03011I099	HT PROTECTION SPRING DN 11	11.0	0.43	13.0	0.51	1.00	0.039	6.9	0.27	11-13	0.43-0.52	35	0.025	24	78.7		
JP12B03013I099	HT PROTECTION SPRING DN 13	12.7	0.50	16.3	0.64	1.80	0.071	13.0	0.51	13-17	0.51-0.67	45	0.03	24	79.2		
JP12B03014I099	HT PROTECTION SPRING DN 14	14.0	0.55	17.6	0.69	1.80	0.071	13.0	0.51	14-17	0.55-0.67	50	0.035	24	78.7		
JP12B03016I099	HT PROTECTION SPRING DN 16	16.0	0.63	19.6	0.77	1.80	0.071	13.0	0.51	16-22	0.63-0.87	55	0.04	24	79.2		
JP12B03019I099	HT PROTECTION SPRING DN 19	19.0	0.75	23.6	0.93	2.30	0.091	16.0	0.63	19-28	0.75-1.10	100	0.07	24	79.2		
JP12B03025I099	HT PROTECTION SPRING DN 25	25.4	1.00	30.0	1.18	2.30	0.091	16.0	0.63	25-40	0.98-1.57	110	0.07	24	79.2		
JP12B03028I099	HT PROTECTION SPRING DN 28	28.0	1.10	35.2	1.39	3.60	0.142	25.0	0.98	28-48	1.10-1.89	225	0.15	24	79.2		
JP12B03035I099	HT PROTECTION SPRING DN 35	35.0	1.38	42.2	1.66	3.60	0.142	25.0	0.98	35-50	1.38-1.97	270	0.18	24	79.2		
JP12B03050I099	HT PROTECTION SPRING DN 50	50.0	1.97	60.0	2.36	5.00	0.197	35.0	1.38	50-70	1.97-2.76	540	0.36	12	39.6		
JP12B03060I099	HT PROTECTION SPRING DN 60	60.0	2.36	70.0	2.76	5.00	0.197	35.0	1.38	60-80	2.36-3.15	640	0.43	12	39.6		

KEY FEATURES

- High temperature resistance
- High abrasion resistance
- Very high flexibility
- Very low bend radius
- Flame retardant, MSHA approved
- Resistant to water, oils, fuels and hydraulic fluids
- Easy to install, no clamps needed

CONTINUOUS SERVICE TEMPERATURE RANGE

-40 °C, -40 °F

120 °C, 248 °F

MATERIAL

Polyamide

APPLICABLE SPECS

Manuli® Design, MSHA

TEXTILE SLEEVE

TSL



PART. REF	DESCRIPTION	DIMENSIONS							
		INTERNAL DIAMETER (ID)		EXTERNAL FLATTENED WIDTH		WEIGHT		STANDARD PACK LENGTH	
		MM	IN	MM	IN	G/M	LB/FT	M	FT
JP23B06018I099	TEXTILE SLEEVE DN 18	18.0	0.71	32.0	1.26	2.0	4.4	50	165
JP23B06023I099	TEXTILE SLEEVE DN 23	23.0	0.91	40.0	1.57	2.2	4.8	50	165
JP23B06029I099	TEXTILE SLEEVE DN 29	29.0	1.14	49.0	1.93	2.5	5.5	50	165
JP23B06036I099	TEXTILE SLEEVE DN 36	36.0	1.42	56.0	2.20	3.0	6.6	50	165
JP23B06040I099	TEXTILE SLEEVE DN 40	40.0	1.57	63.0	2.48	3.2	7.0	50	165
JP23B06056I099	TEXTILE SLEEVE DN 56	56.0	2.20	88.0	3.46	4.0	8.8	50	165
JP23B06063I099	TEXTILE SLEEVE DN 63	63.0	2.48	105.0	4.13	5.0	11.0	50	165
JP23B06071I099	TEXTILE SLEEVE DN 71	70.0	2.80	115.0	4.53	5.5	12.1	50	165
JP23B06093I099	TEXTILE SLEEVE DN 93	93.0	3.66	146.0	5.75	7.2	15.8	50	165
JP23B06110I099	TEXTILE SLEEVE DN 110	110.0	4.33	176.0	6.93	8.5	18.7	50	165

KEY FEATURES

- High abrasion resistance
- Resistant to water, oils, fuels and hydraulic fluids
- Fluid energy diffusion in case of hose failure to prevent direct jetting
- Easy to install with simple clamps to extremities
- Flame retardant and antistatic properties

CONTINUOUS SERVICE TEMPERATURE RANGE

-50 °C, -58 °F

100 °C, 212 °F

MAX. OPERATING TEMPERATURE

140 °C, 284 °F

MATERIAL

Polyester fibres

APPLICABLE SPECS

Manuli® Design, MSHA, FRAS, MDG41



FIRE SLEEVE

FSL

PART. REF	DESCRIPTION	DIMENSIONS							
		INTERNAL DIAMETER (ID)		APPROX. WALL THICKNESS (T)		WEIGHT		STANDARD PACK LENGTH	
		MM	IN	MM	IN	G/M	LB/FT	M	FT
JP24A05013I099	FIRE SLEEVE DN 13	13.0	0.51	4.0	0.16	200.0	0.13	50	165.0
JP24A05016I099	FIRE SLEEVE DN 16	16.0	0.63	4.0	0.16	220.0	0.15	50	165.0
JP24A05019I099	FIRE SLEEVE DN 19	19.0	0.75	4.0	0.16	240.0	0.16	50	165.0
JP24A05022I099	FIRE SLEEVE DN 22	22.0	0.87	4.0	0.16	260.0	0.17	50	165.0
JP24A05025I099	FIRE SLEEVE DN 25	25.0	0.98	4.0	0.16	290.0	0.19	50	165.0
JP24A05032I099	FIRE SLEEVE DN 32	32.0	1.26	4.0	0.16	380.0	0.26	50	165.0
JP24A05038I099	FIRE SLEEVE DN 38	38.0	1.50	4.0	0.16	440.0	0.30	50	165.0
JP24A05045I099	FIRE SLEEVE DN 45	45.0	1.77	4.0	0.16	490.0	0.33	25	82.5
JP24A05051I099	FIRE SLEEVE DN 51	51.0	2.01	4.0	0.16	540.0	0.36	25	82.5
JP24A05064I099	FIRE SLEEVE DN 64	64.0	2.52	4.0	0.16	680.0	0.46	20	66.0
JP24A05076I099	FIRE SLEEVE DN 76	76.0	2.99	4.0	0.16	880.0	0.59	20	66.0

KEY FEATURES

- Extreme heat resistance
- Extreme flexibility at low temperatures
- Designed to protect and insulate hydraulic hoses and bundles of hoses against flames, metal projections, melting glass etc.
- Easy to install, no clamps needed

CONTINUOUS SERVICE TEMPERATURE RANGE

-60 °C, -76 °F

260 °C, 500 °F

MAX. OPERATING TEMPERATURE

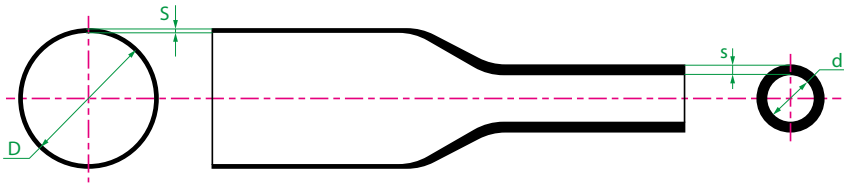
1100 °C, 2012 °F for 15 minutes; 1500 °C, 2732 °F for 1 minute;

MATERIAL

Silicone sleeve with glass-fibre braid

APPLICABLE SPECS

Manuli® Design, NFF16-101 and P92-507 (class FO and M2)



HEAT SHRINKABLE SLEEVE

HSSL

PART. REF		DESCRIPTION		DIMENSIONS									
		INTERNAL DIAMETER (D) - EXPANDED TUBE		INTERNAL DIAMETER (d) - RECOVERED TUBE		WALL THICKNESS (S) - EXPANDED TUBE		WALL THICKNESS (s) - RECOVERED TUBE		WEIGHT		STANDARD PACK LENGTH	
		MM	IN	MM	IN	MM	IN	MM	IN	G/M	LB/FT	M	FT
JP21B11076I099	HEAT SHRINKABLE SLEEVE DN 31 / DN 38	76.2	3.00	38.1	1.50	0.6	0.024	2.0	0.079	310	0.21	15	49.2
JP21B11102I099	HEAT SHRINKABLE SLEEVE DN 51	101.6	4.00	50.8	2.00	1.0	0.039	2.5	0.098	520	0.35	15	49.2

KEY FEATURES

- Self extinguishing
- Low voltage electrical insulation
- Easy to install with simple hot air jetting
- Protects ferrule from dirt and moisture ingress

CONTINUOUS SERVICE TEMPERATURE RANGE

-55 °C, -67 °F

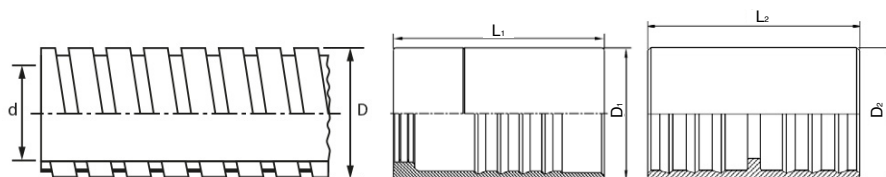
125 °C, 257 °F

MATERIAL

X-linked polyolefin heat shrinkable thin wall

APPLICABLE SPECS

UL 224 VW-1 for flame resistance



STAINLESS STEEL ARMOUR GUARD

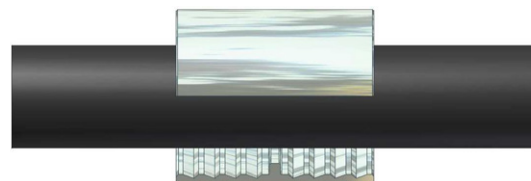
SSAG

PART. REF		DESCRIPTION		DIMENSIONS						METAL SLEEVE			ARMOUR JOINT		
		INTERNAL DIAMETER (d)		OUTSIDE DIAMETER (D)		MIN. BEND RADIUS		WEIGHT		PART. REF	D1	L1	PART. REF	D2	L2
		MM	IN	MM	IN	MM	IN	G/M	LB/FT						
JP45G090280099	STAINLESS STEEL ARMOUR GUARD DN10	25	1"	32.0	1.26	127	5.00	565	0.38	IO2110-06GA	40.5	60	IO84210-06	40.5	65
JP45G090320099	STAINLESS STEEL ARMOUR GUARD DN 12	31	1.1/4"	36.5	1.44	150	5.91	703	0.47	IO2110-08GA	46.8	75	IO84210-08	46.8	65
JP45G090400099	STAINLESS STEEL ARMOUR GUARD DN 16	38	1.1/2"	44.5	1.75	180	7.09	939	0.63	IO2110-10GA	53.2	90	IO84210-10	53.2	65
JP45G090450099	STAINLESS STEEL ARMOUR GUARD DN 19	46	1.3/4"	51.0	2.01	240	9.45	1,118	0.75	IO2110-12GA	59.5	105	IO84210-12	59.5	70
JP45G090500099	STAINLESS STEEL ARMOUR GUARD DN 25	51	2"	57.5	2.26	300	11.81	1,301	0.87	IO2110-16GA	66.0	120	IO84210-16	66.0	75
JP45G090650099	STAINLESS STEEL ARMOUR GUARD DN 31	63	2.1/2"	70.0	2.76	420	16.54	1,636	1.10	IO2110-20GA	78.6	135	IO84210-20	78.6	95
JP45G090750099	STAINLESS STEEL ARMOUR GUARD DN 38	76	3"	82.5	3.27	500	19.69	1,920	1.29	IO2110-24GA	91.5	150	IO84210-24	91.5	105
JP45G090900099	STAINLESS STEEL ARMOUR GUARD DN 51	89	3.1/2"	96.0	3.78	630	24.80	2,386	1.60	IO2110-32GA	106.5	165	IO84210-32	106.5	115

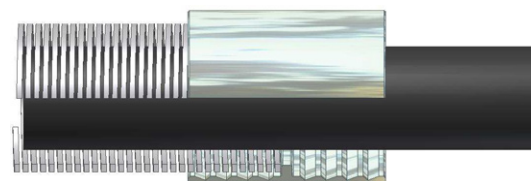
ARMOUR JOINING PROCEDURE

Individual pieces of the metal sleeve can be joined using a dedicated Armour Joint. The procedure for joining the pieces of flexible armour is as follows:

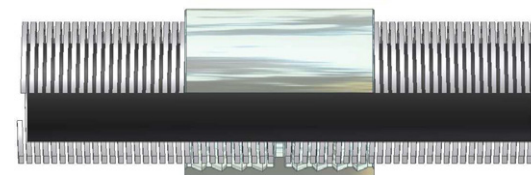
1. Slide the Armour Joint onto the hose.

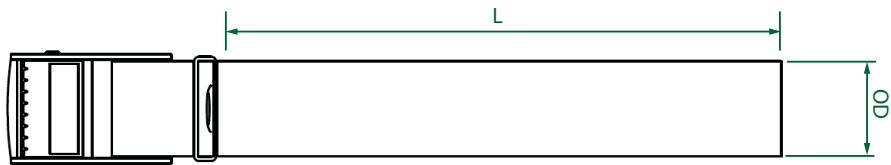


2. Insert the first piece of flexible armour into the Armour Joint until it reaches the internal stop.



3. Insert the second piece of flexible armour into the other side of the Armour Joint until it also reaches the internal stop.





TEXTILE CLINCH STRAP

TCS

PART. REF	LENGTH (Circumference of hose bundles)	STRAP WIDTH	STD. PACK
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	MM	IN	MM	IN	QTY.	KG	LB
JP33B10040T099	400	15.7	25	0.98	100	5.0	11.0
JP33B10080T099	800	31.5	25	0.98	100	6.0	13.2
JP33B10150T099	1500	59.1	25	0.98	100	7.5	16.5

KEY FEATURES

- High abrasion resistance
- Flame retardant, MSHA approved
- Resistant to water, oils, fuels and hydraulic fluids
- Easy to install, eyelets for hose bundle hanging purposes
- Metal buckle for robust fastening in any environment

CONTINUOUS SERVICE TEMPERATURE RANGE

-50 °C, -58 °F

100 °C, 212 °F

MATERIAL

Polyester fibres

APPLICABLE SPECS

Manuli® Design, MSHA, FRAS

