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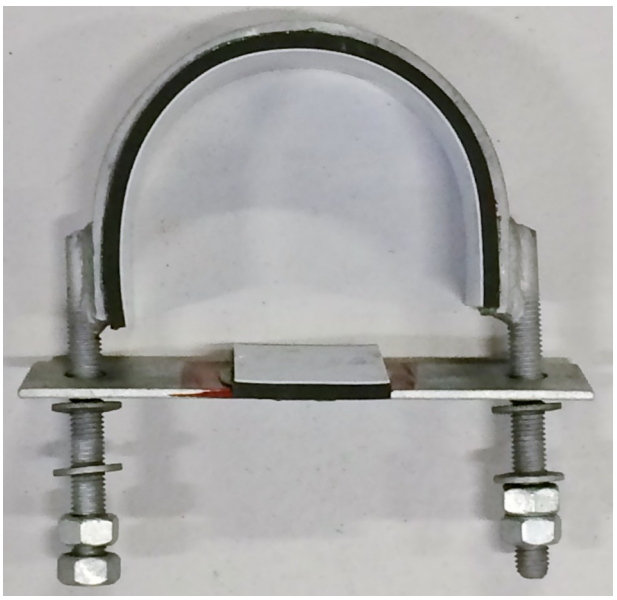
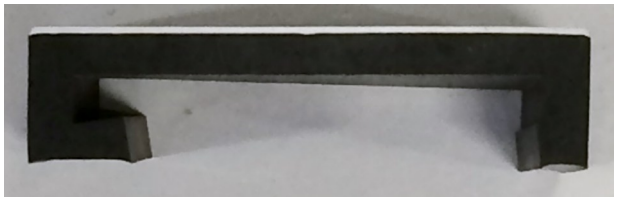
EME ESLIN

SPECIAL FLEXIBLE PIPE SUPPORT EQUIPMENT





Cobalch ApS ● Hejreskovvej 24 ● DK-3490 Kvistgård ● Denmark ● Tel.: +45 4582 0533
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Introduction

Resiliency and absorption of angular rotation .. with PTFE low friction options

Esmat Engineering's Eslin special flexible pipe support equipment is based upon a specially developed compound on the basic of polyurethane, known as Eslin 60A (60° shore A hardness). Eslin is non-hygroscopic, making it suitable for low temperature applications, is immune to the ingress of flammable liquids and is electrically safe. Eslin products are also flame retardant, self extinguishing and have a low toxic fume release when burning.

Eslin products are especially used in combined conditions like:

- high flexibility/resiliency
- absorbtion of angular rotation
- maximum compressive stress of 7 MPa for reinforced Eslin with PTFE
- under water apllication

Eslin can be used as noise and vibration insulation, but Eslin vulkanized to PTFE provides a wide range of low friction options.

Line of product: Slide bearings, linings, penetrations, pipe blocks and clamps.

Bearings with resiliency and high stresses requirements

For heavy duty bearings Esmat delivers the EME-HD line of products. Basic material is Eslin 60A, but designed for very high stresses and under water application. Greatest benefit is having a flexible pad (backing) even whenm high compression stress and shearing stress do occour.

Fields of application are:

- shock absorption of high loads
- noise and vibration reduction
- seperating pad between steel-to-steel or steel-to-concrete surface

Maximum compressive stress depends on among others the configuration of the bearing, desired compression and accidental shearing load. But stresses up to 60 MPa are possible.

Line of product: High duty bearings and generator shock absorbers.

Client specification - unique solution for a unique problem

Developing and producing of special products on client specification is one of our key competitive instruments.

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Dynamical properties of Eslin flexible pipe supporting depend on among others:

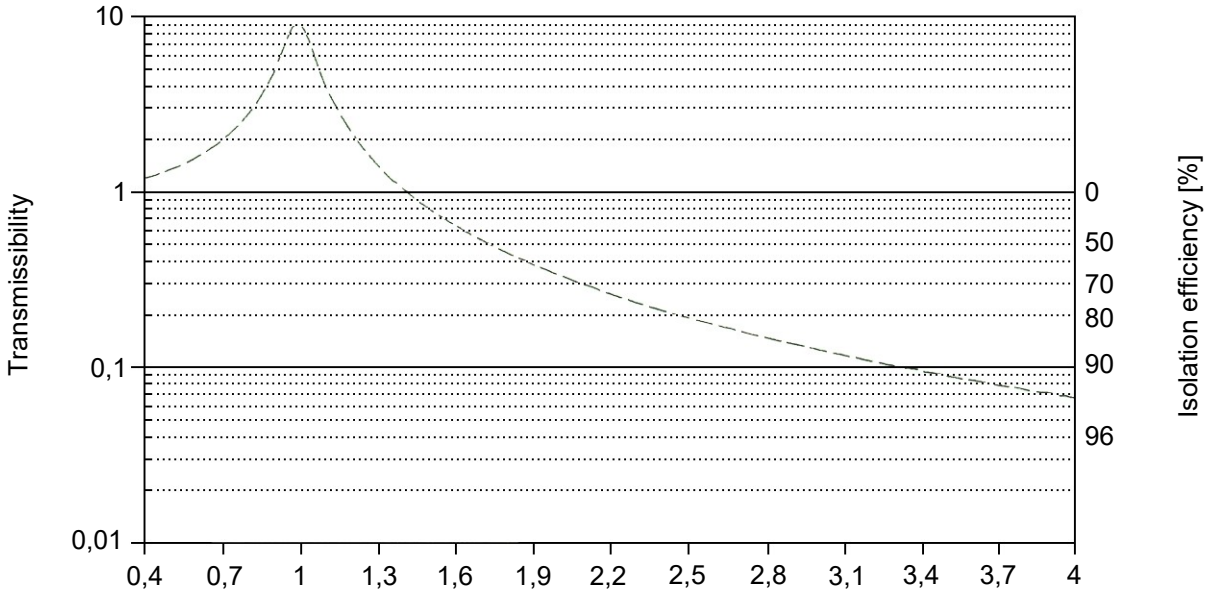
- compressive stress
- geometry of Eslin
- disturbing frequency
- temperature
- flexibility

Althrough dynamic analysis is a very complex one, some guidelines are applicable based upon a theoretical approach to single-degree-of-freedom vibration and noise problems.

Best guidance is given by the transmissibility graph, regarding:

transmissinility = transmissibility factor of the disturbing frequency
fd = disturbing frequency [Hz]
fn = natural frequency of Eslin [Hz]
average damping ratio of 5,5%, which gives a material loss factor of 0,11.

TRANSMISSIBILITY
Reduction in structural noise transmission



- Where the frequency ratio exceeds 2,5, the isolation efficiency will be 80% or over.

- Low disturbing frequency → ratio ≥ 2,5 → low natural frequency → thick Eslin layer is required.
  Products: (Slide) Bearings in weld, bolt and clip system. Please ask for advise.

- High disturbing frequency → ratio ≥ 2,5 → higher natural frequency is alowed → thinner Elsin layer gives a good result.
  Products: Slide bearing, clamp lining and isolation pads. Please ask for advice.

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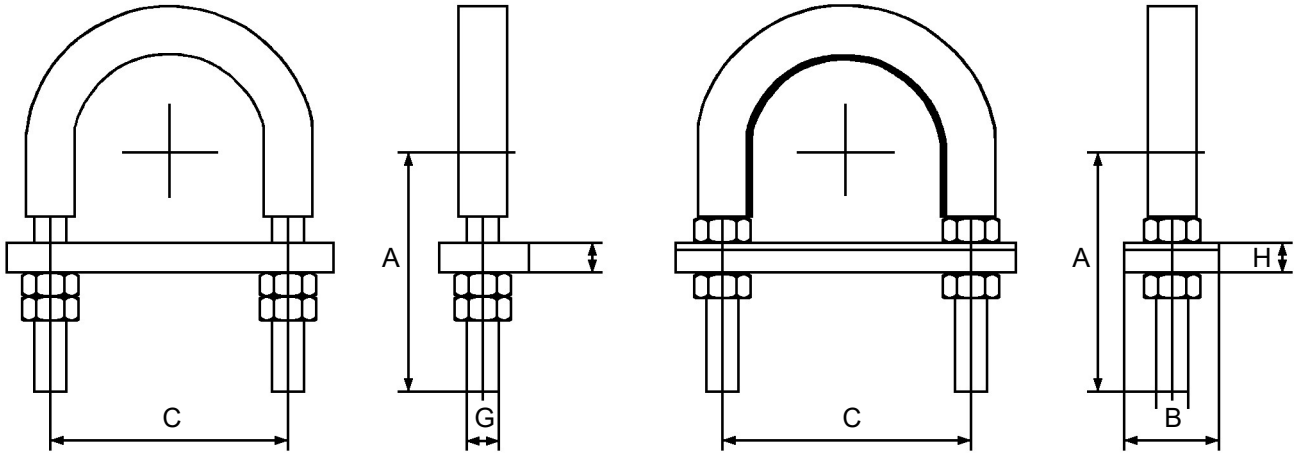
Lined u-bolt
Type EME-30 and EME-31



GRIP **GUIDE**

NPS inch	DN	EME part number	Dimensions in mm					EME part number
			U-bolt			Pad		
			A	C	G	B	L	
1/2	15	EME-30-21	60	35	M6	30	65	EME-31-21
3/4	20	EME-30-27	65	40	M6	30	70	EME-31-27
1	25	EME-30-34	65	47	M6	30	77	EME-31-34
1 1/4	32	EME-30-43	70	60	M10	30	100	EME-31-43
1 1/2	40	EME-30-49	75	66	M10	30	106	EME-31-49
2	50	EME-30-61	80	78	M10	30	118	EME-31-61
2 1/2	*	EME-30-73	87	94	M12	30	134	EME-31-73
2 1/2	*	EME-30-76	87	102	M12	30	134	EME-31-76
3	80	EME-30-89	100	108	M12	30	148	EME-31-89
4	100	EME-30-115	115	134	M12	30	174	EME-31-115
5	125	EME-30-141	145	164	M16	40	214	EME-31-141
6	150	EME-30-168	155	192	M16	40	242	EME-31-168
8	200	EME-30-219	180	243	M16	40	293	EME-31-219
10	250	EME-30-273	212	303	M20	50	353	EME-31-273
12	300	EME-30-324	260	356	M20	50	406	EME-31-324
16	400	EME-30-406	305	456	M20	50	506	EME-31-406

Application : Noise & vibration reduction for pipelines
Pipe types : For stainless steel & galvanised pipes
EME-30 : Grip type
EME-31 : Non-grip (guide) type with inner PTFE lining
Steel type : Rst 37.2 (S235JRG2)
Steel coating : Hot dip galvanised
Linning materials : Eslin for -30° up to +100°C
Essil200 for -30° up to +200°C
Essil300 for -30° up to +300°C

Linning materiale vulcanised to u-bolt and optional PTFE.
Good oil resistance, weather resistance and ageing resistance.
Watertight vulcanised covering.

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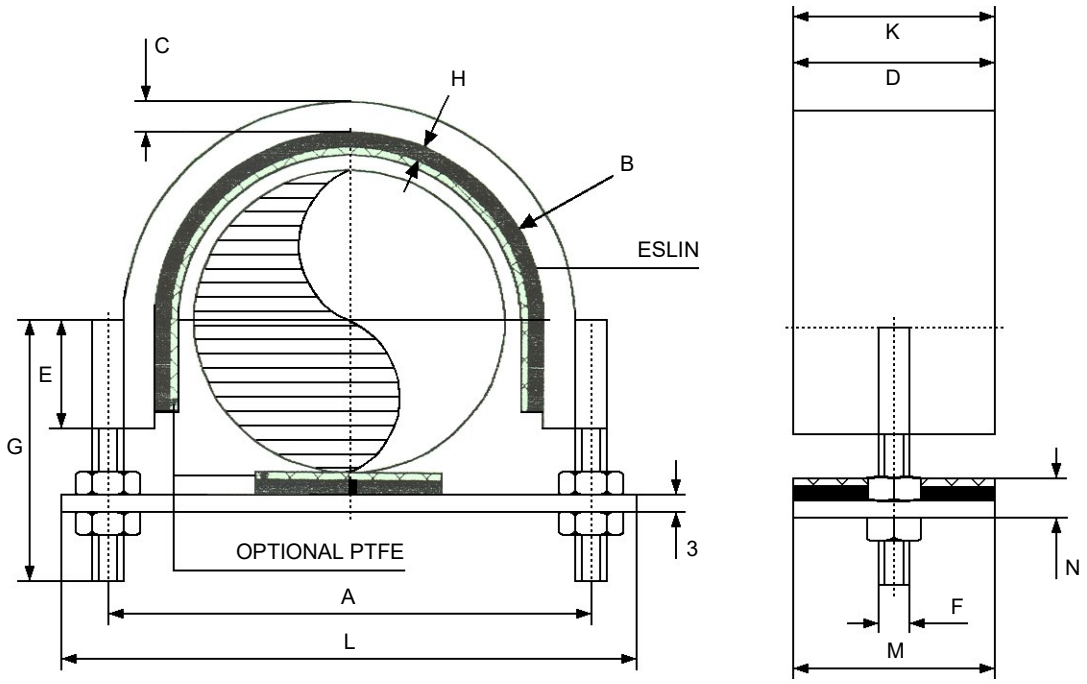
U strap vulcanized
Type EME-A and EME-A/PT



EME part no.	Nom. pipe size inch	Pipe o/d	Clamp details							ESLIN linning		Isolation strip		
			A	B	C	D	E	F	G	H	K	L	M	N
EME-A-1	1	33,4	62	22	6	50	7	6	70	3	50	95	50	6,5
EME-A-1 1/2	1 1/2	48,3	80	29	6	50	10	10	75	3	50	120	50	6,5
EME-A-2	2	60,3	92	35	6	50	15	10	80	3	50	130	50	6,5
EME-A-2 1/2	2 1/2	73,0	107	41	6	50	18	12	100	3	50	150	50	6,5
EME-A-3	3	88,9	124	50	6	50	20	12	100	3	50	165	50	6,5
EME-A-4	4	114,3	148	62	6	50	30	12	120	3	50	190	50	6,5
EME-A-5	5	141,3	175	76	6	50	40	12	130	3	50	225	50	6,5
EME-A-6	6	168,3	206	89	6	50	55	16	155	3	50	260	50	6,5
EME-A-8	8	219,1	258	115	6	50	80	16	180	3	50	310	50	6,5
EME-A-10	10	273,0	322	141	10	75	100	20	210	3	65	380	65	6,5
EME-A-12	12	323,9	374	167	10	75	130	20	245	3	65	430	65	6,5
EME-A-14	14	355,6	406	183	10	75	150	20	260	3	65	460	65	6,5
EME-A-16	16	406,4	460	208	12	75	170	20	285	3	75	515	75	6,5
EME-A-18	18	457,0	516	234	12	75	180	24	320	3	75	575	75	6,5
EME-A-20	20	508,0	566	259	12	75	200	24	345	3	75	625	75	6,5
EME-A-24	24	610,0	668	310	12	75	250	24	400	3	75	730	75	6,5

NOTES:
- Deliverable with four nuts and washers (galvanised)
- All threads to be metric cource R.H. (galvanised)
- Flat part of clamp hot-dip-galvanised
- Clearance between o/d pipe and ESLIN/PTFE 2 mm
- Material: Carbon steel
- ESLIN 60° A/VD to be vulcanised to steel strap

Part number EME-A:
ESLIN lining without PTFE surface
Part number EME-A/PT:
ESLIN lining with PTFE surface.

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Clip slide bearings for profile beams HEA, HEB, IPE, UNP and ANGLES

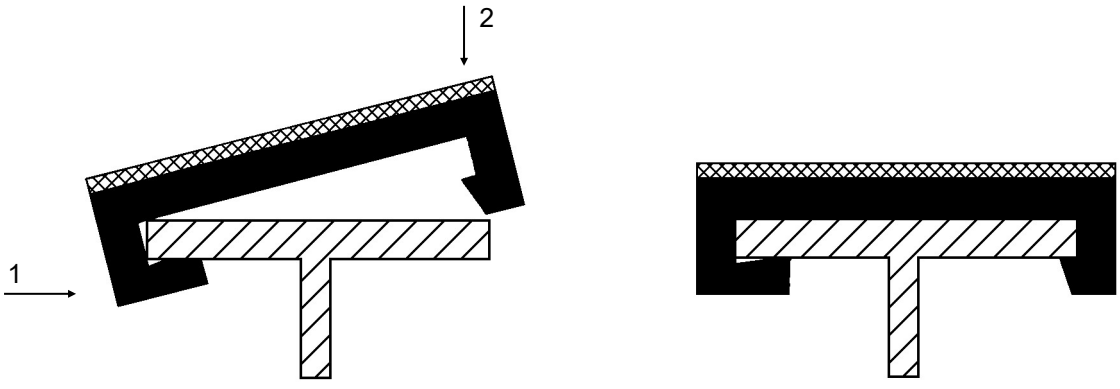
Advantages of clip slide bearings:

- short mounting time (approx. 20 seconds)
- mounting without any tools or glue
- applicable to each surface coating
- short dismounting time

Characteristics:

- surface	- PTFE low friction
- standard length	- 50 - 60 - 75 - 100 - 120 - 150 - 200 - 300 mm
- standard thickness	- 10 mm
- standard width	- conform width of flange
- nominal vertical working load	- 2 N/mm²
- coefficient of friction	- max. 10%
- temperature range	- -30 up to +80° C

Mounting instruction:



Note: ONLY TO MOUNT BY HAND
DO NOT USE TOOLS!

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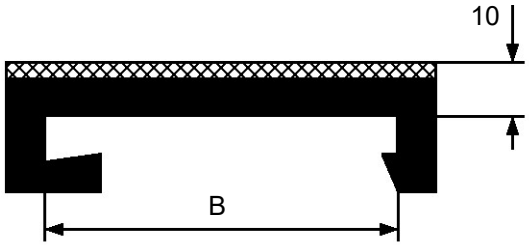
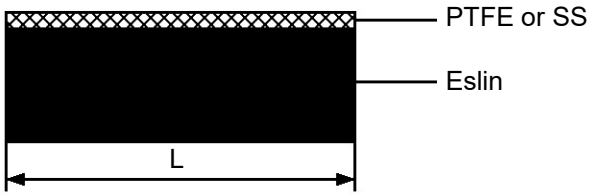
Clip slide bearing
Dimension





EME part number	Beam Width "B"
EME-BS-HEA 100/...	100
EME-BS-HEA 120/...	120
EME-BS-HEA 140/...	140
EME-BS-HEA 160/...	160
EME-BS-HEA 180/...	180
EME-BS-HEA 200/...	200
EME-BS-HEA 220/...	220
EME-BS-HEA 240/...	240
EME-BS-HEA 260/...	260
EME-BS-HEA 280/...	280
EME-BS-HEA 300/...	300
EME-BS-HEA 320/...	300
EME-BS-HEA 340/...	300
EME-BS-HEA 360/...	300
EME-BS-HEA 400/...	300
EME-BS-HEA 450/...	300
EME-BS-HEA 500/...	300
EME-BS-HEA 550/...	300
EME-BS-HEA 600/...	300

EME-BS-HEB 100/...	100
EME-BS-HEB 120/...	120
EME-BS-HEB 140/...	140
EME-BS-HEB 160/...	160
EME-BS-HEB 180/...	180
EME-BS-HEB 200/...	200
EME-BS-HEB 220/...	220
EME-BS-HEB 240/...	240
EME-BS-HEB 260/...	260
EME-BS-HEB 280/...	280
EME-BS-HEB 300/...	300
EME-BS-HEB 320/...	300
EME-BS-HEB 340/...	300
EME-BS-HEB 360/...	300
EME-BS-HEB 400/...	300

Special flange sizes on request

EME part number	Beam Width "B"
EME-BS-IPE 100/...	55
EME-BS-IPE 120/...	64
EME-BS-IPE 140/...	73
EME-BS-IPE 160/...	82
EME-BS-IPE 180/...	91
EME-BS-IPE 200/...	100
EME-BS-IPE 220/...	110
EME-BS-IPE 240/...	120
EME-BS-IPE 270/...	135
EME-BS-IPE 300/...	150
EME-BS-IPE 330/...	160
EME-BS-IPE 400/...	180

EME-BS-UNP 100/...	50
EME-BS-UNP 120/...	55
EME-BS-UNP 140/...	60
EME-BS-UNP 160/...	65
EME-BS-UNP 180/...	70
EME-BS-UNP 200/...	75

EME-BS-ANGLE 50/...	50
EME-BS-ANGLE 55/...	55
EME-BS-ANGLE 60/...	60
EME-BS-ANGLE 65/...	65
EME-BS-ANGLE 70/...	70
EME-BS-ANGLE 75/...	75
EME-BS-ANGLE 80/...	80
EME-BS-ANGLE 100/...	100
EME-BS-ANGLE 120/...	120
EME-BS-ANGLE 140/...	140
EME-BS-ANGLE 150/...	150
EME-BS-ANGLE 160/...	160
EME-BS-ANGLE 200/...	200

Available in standard length "L":
50 - 60 - 75 - 70 - 120 - 150 - 200 - 300 mm

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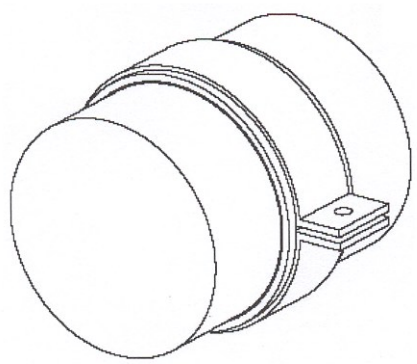
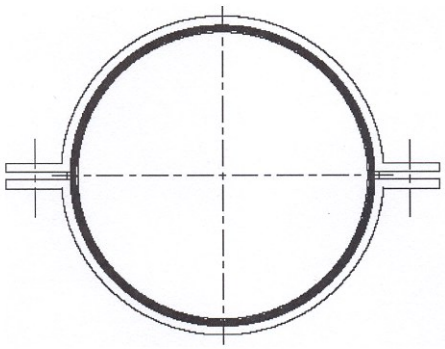
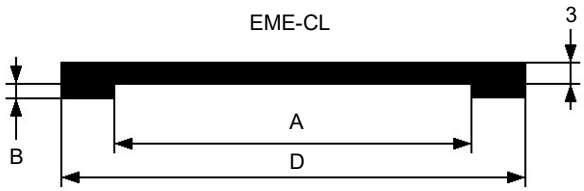
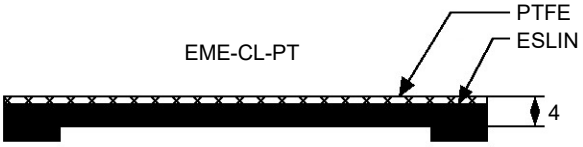
Elsin Clamp Lining +100°C
EME-CL and EME-CL-PT









Prevents corrosion problems. Clamp Lining eliminates corrosion problems due to electrolytic action between dissimilar metals of pipe and pipe clamp. Also noise and vibrationreduction, especially when supplied in thicker base thickness.

Ease of installation. Easy to install due to u-profile and flexible material.

Fields of application. Offshore and onshore piping, shipbuilding, chemical and petrochemical industries, gas distribution systems, LPG and LNG plants.

Material. Eslin 60 A/VD flame retardative sutitable from -80 up to +100° C.

Grip and guide. EME-CL is like a grip version, while EME-CL-PT has a low friction top layer of PTFE.

Part number	A	B	D	Part number
EME-CL-025	25	2	35	EME-CL-PT-025
EME-CL-030	30	2	40	EME-CL-PT-030
EME-CL-035	35	2	45	EME-CL-PT-035
EME-CL-040	40	2	50	EME-CL-PT-040
EME-CL-050	50	2	65	EME-CL-PT-050
EME-CL-060	60	2	75	EME-CL-PT-060
EME-CL-065	65	2	80	EME-CL-PT-065
EME-CL-070	70	2	85	EME-CL-PT-070
EME-CL-080	80	3	100	EME-CL-PT-080
EME-CL-090	90	3	110	EME-CL-PT-090
EME-CL-100	100	3	120	EME-CL-PT-100
EME-CL-110	110	3	130	EME-CL-PT-110
EME-CL-120	120	3	140	EME-CL-PT-120
EME-CL-125	125	3	145	EME-CL-PT-125
EME-CL-130	130	3	150	EME-CL-PT-130
EME-CL-140	140	3	160	EME-CL-PT-140
EME-CL-150	150	3	170	EME-CL-PT-150
EME-CL-200	200	3	220	EME-CL-PT-200
EME-CL-250	250	3	270	EME-CL-PT-250
EME-CL-300	300	3	320	EME-CL-PT-300
EME-CL-350	350	3	370	EME-CL-PT-350

Base thickness is 3 mm.
Other sizes or thickness upon request.

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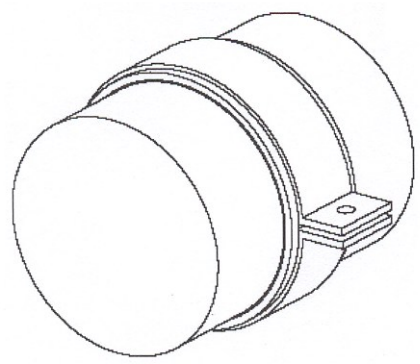
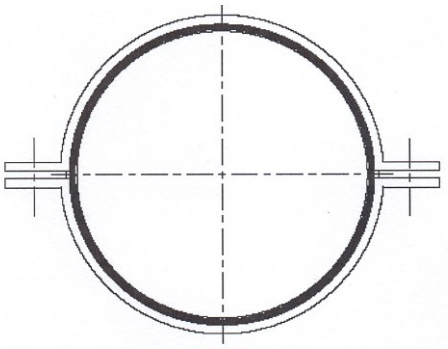
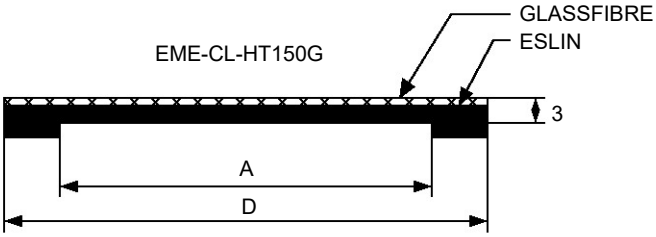
Silicone Clamp Lining +150°C
EME-CL-HT-150G







Prevents corrosion problems. Clamp Lining eliminates corrosion problems due to electrolytic action between dissimilar metals of pipe and pipe clamp. Also noise and vibrationreduction, especially when supplied in thicker base thickness.

Ease of installation. Easy to install due to u-profile and flexible material.

Fields of application. Offshore and onshore piping, shipbuilding, chemical and petrochemical industries, gas distribution systems, LPG and LNG plants.

Material. Silicone rubber with glassfibre backing up to +150° C.

Glassfibre backing. The glassfibre backing provides extra strength.

Part number	A	D
EME-CL-HT150G-025	25	35
EME-CL-HT150G-030	30	40
EME-CL-HT150G-035	35	45
EME-CL-HT150G-040	40	50
EME-CL-HT150G-050	50	65
EME-CL-HT150G-060	60	75
EME-CL-HT150G-065	65	80
EME-CL-HT150G-070	70	85
EME-CL-HT150G-080	80	100
EME-CL-HT150G-090	90	110
EME-CL-HT150G-100	100	120
EME-CL-HT150G-110	110	130
EME-CL-HT150G-120	120	140
EME-CL-HT150G-125	125	145
EME-CL-HT150G-130	130	150
EME-CL-HT150G-140	140	160
EME-CL-HT150G-150	150	170
EME-CL-HT150G-200	200	220
EME-CL-HT150G-250	250	270
EME-CL-HT150G-300	300	320
EME-CL-HT150G-350	350	370

Base thickness i 3 mm.
Other sizes or thickness upon request.

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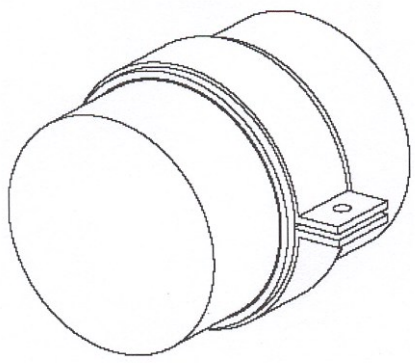
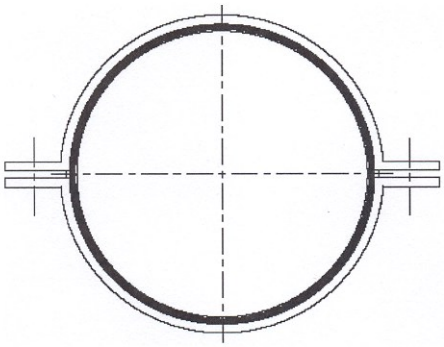
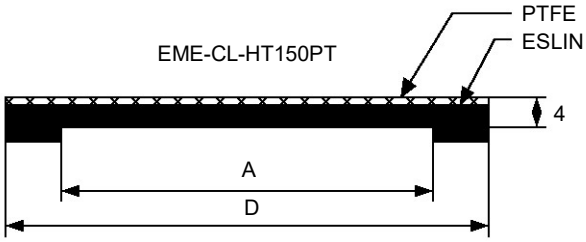
PTFE/Silicon Clamp Lining +150°C
EME-CL-HT150PT







Prevents corrosion problems. Clamp Lining eliminates corrosion problems due to electrolytic action between dissimilar metals of pipe and pipe clamp. Also noise and vibrationreduction, especially when supplied in thicker base thickness.

Ease of installation. Easy to install due to u-profile and flexible material.

Fields of application. Offshore and onshore piping, shipbuilding, chemical and petrochemical industries, gas distribution systems, LPG and LNG plants.

Material. Silicone rubber with PTFE top surface up to +150° C.

PTFE backing. The PTFE backing provides low friction slide surface.

Part number	A	D
EME-CL-HT150PT-025	25	35
EME-CL-HT150PT-030	30	40
EME-CL-HT150PT-035	35	45
EME-CL-HT150PT-040	40	50
EME-CL-HT150PT-050	50	65
EME-CL-HT150PT-060	60	75
EME-CL-HT150PT-065	65	80
EME-CL-HT150PT-070	70	85
EME-CL-HT150PT-080	80	100
EME-CL-HT150PT-090	90	110
EME-CL-HT150PT-100	100	120
EME-CL-HT150PT-110	110	130
EME-CL-HT150PT-120	120	140
EME-CL-HT150PT-125	125	145
EME-CL-HT150PT-130	130	150
EME-CL-HT150PT-140	140	160
EME-CL-HT150PT-150	150	170
EME-CL-HT150PT-200	200	220
EME-CL-HT150PT-250	250	270
EME-CL-HT150PT-300	300	320
EME-CL-HT150PT-350	350	370

Base thickness is 4 mm.
Other sizes or thickness upon request.

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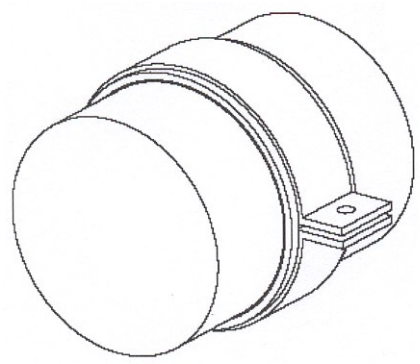
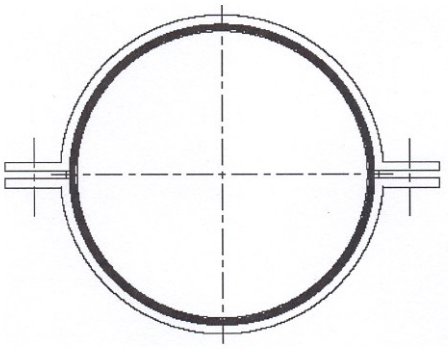
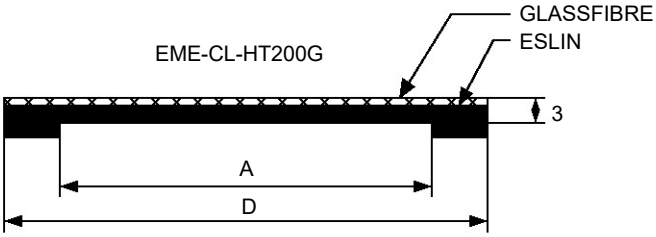
Silicone Clamp Lining +200°C
EME-CL-HT-200G







Prevents corrosion problems. Clamp Lining eliminates corrosion problems due to electrolytic action between dissimilar metals of pipe and pipe clamp. Also noise and vibrationreduction, especially when supplied in thicker base thickness.

Ease of installation. Easy to install due to u-profile and flexible material.

Fields of application. Offshore and onshore piping, shipbuilding, chemical and petrochemical industries, gas distribution systems, LPG and LNG plants.

Material. Silicone rubber with glassfibre backing up to +200° C.

Glassfibre backing. The glassfibre backing provides extra strength.

Part number	A	D
EME-CL-HT200G-025	25	35
EME-CL-HT200G-030	30	40
EME-CL-HT200G-035	35	45
EME-CL-HT200G-040	40	50
EME-CL-HT200G-050	50	65
EME-CL-HT200G-060	60	75
EME-CL-HT200G-065	65	80
EME-CL-HT200G-070	70	85
EME-CL-HT200G-080	80	100
EME-CL-HT200G-090	90	110
EME-CL-HT200G-100	100	120
EME-CL-HT200G-110	110	130
EME-CL-HT200G-120	120	140
EME-CL-HT200G-125	125	145
EME-CL-HT200G-130	130	150
EME-CL-HT200G-140	140	160
EME-CL-HT200G-150	150	170
EME-CL-HT200G-200	200	220
EME-CL-HT200G-250	250	270
EME-CL-HT200G-300	300	320
EME-CL-HT200G-350	350	370

Base thickness i 3 mm.
Other sizes or thickness upon request.

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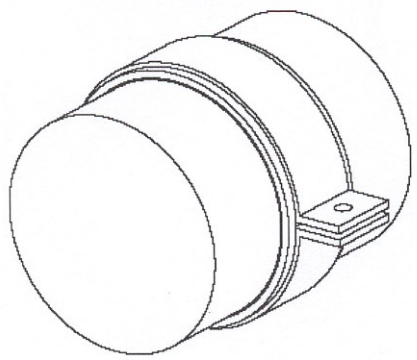
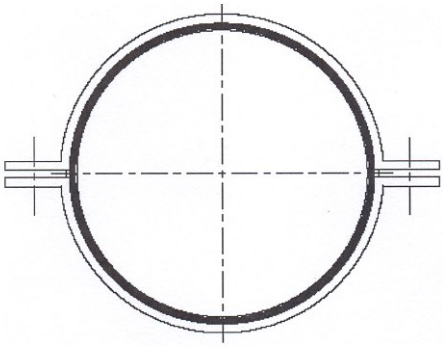
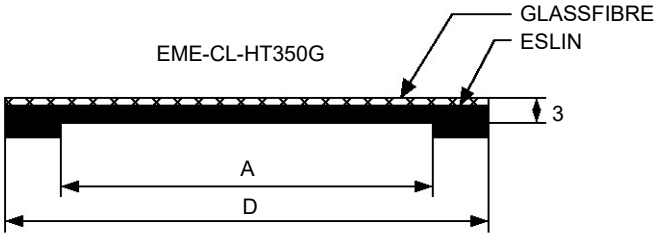
pipeline accessories

Silicone Clamp Lining +350°C
EME-CL-HT-350G







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Part number	A	D
EME-CL-HT350PT-025	25	35
EME-CL-HT350PT-030	30	40
EME-CL-HT350PT-035	35	45
EME-CL-HT350PT-040	40	50
EME-CL-HT350PT-050	50	65
EME-CL-HT350PT-060	60	75
EME-CL-HT350PT-065	65	80
EME-CL-HT350PT-070	70	85
EME-CL-HT350PT-080	80	100
EME-CL-HT350PT-090	90	110
EME-CL-HT350PT-100	100	120
EME-CL-HT350PT-110	110	130
EME-CL-HT350PT-120	120	140
EME-CL-HT350PT-125	125	145
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EME-CL-HT350PT-140	140	160
EME-CL-HT350PT-150	150	170
EME-CL-HT350PT-200	200	220
EME-CL-HT350PT-250	250	270
EME-CL-HT350PT-300	300	320
EME-CL-HT350PT-350	350	370

Base thickness is 3 mm.
Other sizes or thickness upon request.

11-20-242

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