

ChemLine

FoodLine

**ShieldLine**

FrictionLine

# Singlegates Root Flashings made of ShieldLine Materials



# Singlegates

## Singlegates

Trelleborg Singlegates are grommets with various design based of IP classification or application. These grommets are for leading through both low and medium power current cables as well various types of tubings. There are available Singlegates for openings based of traditional dimensions of PG-dimensions as well as new mm-dimensions.

Trelleborg Singlegates are made of various types of polymers. For electrical applications, all these polymers are RoHS compliant and have excellent weather, UV- and ozone resistance. Also EMC-compatible and oil resistant models are available. For other applications other high quality polymers are available based of application and requirements.

Trelleborg Singlegates are supplied in various types of plastic bags and boxes based of request of customer. Standard packing sizes are available at our homepages, address [www.trelleborg.com/mar-con](http://www.trelleborg.com/mar-con)



### IP67-series

There are available two different design alternatives for PG-openings. Both of these designs gives absolute protection against dust and strong jets of water and also against effects of immersion between 15 cm and 1 m. Model VET is traditional double seal design and T-VET is new design which one is possible to use as a sealing plug also. Also there are available two different design alternatives for mm-openings.

Both of these designs gives absolute protection against dust and strong jets of water and also against effects of immersion between 15 cm and 1 m. Model GET is traditional double seal design and T-GET is new design which one is possible to use as a plug also. With design of GET and T-GET its possible to use cable ties for special strain relief requirements.

### IP54-series

There are available two different design alternatives for PG-openings and also for mm-openings. These designs gives protection for limited ingress of dust and against water splashed from all directions. Models with customized preholes for cables and tubes are available.



Item	Packing size	Item	Packing size
Singlegate GET 3-5	50	Singlegate VET 3-5	50
Singlegate GET 5-7	50	Singlegate VET 5-7	50
Singlegate GET 7-10	50	Singlegate VET 8-14	50
Singlegate GET 10-14	50	Singlegate VET 7-10	50
Singlegate GET 14-20	25	Singlegate VET 10-14	50
Singlegate GET 20-26	25	Singlegate VET 14-20	25
Singlegate GET 26-35	10	Singlegate VET 20-26	25
Singlegate GET 30-45	5	Singlegate VET 26-35	10
Singlegate GET 40-60	5		

# T-VET



**Trelleborg Singlegate T-VET -grommets are for leading through both low and medium power current cables as well various types of tubing.**

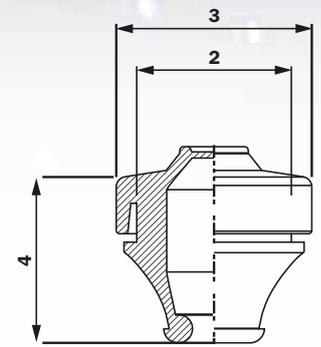
The grommets are suitable for indoor and outdoor applications. The grommet fits to openings made with dimensions of PG. Model T-VET has new double seal design where top side of the grommet is closed and is therefore possible to use as plug also.

Trelleborg Singlegate T-VET -grommets have alternative models for cables between diameters of 3 mm up to 35 mm. Wall thickness can be between 1 to 4 mm. The design gives IP67

protection against dust and strong jets of water and also against effects of immersion between 15 cm and 1 m.

Trelleborg Singlegate T-VET -grommets are available as standard of TPE-materials on table below. As request also other colours and materials like conductive EMC-material are available. More information of materials on page 17.

Trelleborg Singlegate T-VET-grommets are inspected and certified by SGS Fimko, the Finnish authority in charge of electrical equipment safety standards.



Code	Packing size	Material	Colour	Ral code	Classifications	Electrical number	Cable diameter	2	3	4	Plate thickness
100744	50	TPE EPDM	Grey	7042		1733328	3-5	13	20	17	1-4
100746	50	TPE EPDM	Grey	7035	UL 94;V-0	1733329	3-5	13	20	17	1-4
100747	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733330	3-5	13	20	17	1-4
100186	50	TPE EPDM	Grey	7042		1733331	5-7	16	20	19	1-4
100749	50	TPE EPDM	Grey	7035	UL 94;V-0	1733332	5-7	16	20	19	1-4
100187	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733333	5-7	16	20	19	1-4
100465	50	TPE EPDM	Grey	7042		1733334	7-10	19	24	21	1-4
100751	50	TPE EPDM	Grey	7035	UL 94;V-0	1733335	7-10	19	24	21	1-4
100188	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733336	7-10	19	24	21	1-4
100189	50	TPE EPDM	Grey	7042		1733337	10-14	23	29	23	1-4
100190	50	TPE EPDM	Grey	7035	UL 94;V-0	1733338	10-14	23	29	23	1-4
100191	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733339	10-14	23	29	23	1-4
100753	25	TPE EPDM	Grey	7042		1733340	14-20	29	34	26	1-4
100192	25	TPE EPDM	Grey	7035	UL 94;V-0	1733341	14-20	29	34	26	1-4
100193	25	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733342	14-20	29	34	26	1-4
100194	25	TPE EPDM	Grey	7042		1733343	20-26	38	46	30	1-4
100755	25	TPE EPDM	Grey	7035	UL 94;V-0	1733344	20-26	38	46	30	1-4
100195	25	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733345	20-26	38	46	30	1-4
100196	10	TPE EPDM	Grey	7042		1733346	26-35	48	57,5	33	1-4
100197	10	TPE EPDM	Grey	7035	UL 94;V-0	1733347	26-35	48	57,5	33	1-4
100198	10	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733348	26-35	48	57,5	33	1-4

(1.) Material meets the requirements of UL 94, moderate oil resistance

# VET



**Trelleborg Singlegate VET -grommets are for leading through both low and medium power current cables as well various types of tubing.**

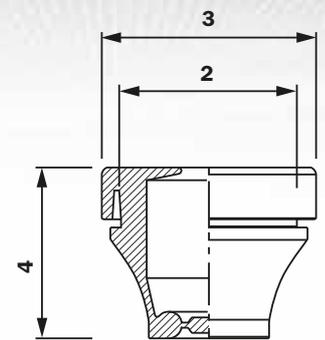
The grommets are suitable for indoor and outdoor applications. The grommets fits to openings made with dimensions of PG. Model VET has traditional double seal design where back side of the grommet is closed.

Trelleborg Singlegate VET -grommets have alternative models for cables between diameters of 3 mm up to 35 mm. Wall thickness can be between 1 to 4 mm. The design gives IP67 protection against dust and strong jets of water

and also against effects of immersion between 15 cm and 1 m.

Trelleborg Singlegate VET -grommets are available as standard of materials on table below. As request also other colours and materials like silicones and EMC-models are available. More information of materials on page 17.

Trelleborg Singlegate VET-grommets are inspected and certified by SGS Fimko, the Finnish authority in charge of electrical equipment safety standards.



Code	Packing sizes	Material	Colour	Ral code	Electrical number	Cable diameter	2	3	4	Plate thickness
100715	50	EPDM	Black		1733324	3-5	13.2	20	12,8	1-4
100716	50	EPDM	Grey	7042	1733325	3-5	13.2	20	12,8	1-4
104010	50	EPDM	Grey	7035	1733326	3-5	13,2	20	12,8	1-4
104011	50	CR Oil Resistant	Black		1733327	3-5	13,2	20	12,8	1-4
100306	50	EPDM	Black		1733320	5-7	16	20	20	1-4
100307	50	EPDM	Grey	7042	1733321	5-7	16	20	20	1-4
100308	50	EPDM	Grey	7035	1733322	5-7	16	20	20	1-4
100712	50	CR Oil Resistant	Black		1733323	5-7	16	20	20	1-4
100291	50	EPDM	Black		1733300	8-14	23	28	23,5	1-4
100292	50	EPDM	Grey	7042	1733301	8-14	23	28	23,5	1-4
100702	50	EPDM	Grey	7035	1733302	8-14	23	28	23,5	1-4
100293	50	CR Oil Resistant	Black		1733303	8-14	23	28	23,5	1-4
100295	50	EPDM	Black		1733304	7-10	19	24	21	1-4
100296	50	EPDM	Grey	7042	1733305	7-10	19	24	21	1-4
100703	50	EPDM	Grey	7035	1733306	7-10	19	24	21	1-4
100704	50	CR Oil Resistant	Black		1733307	7-10	19	24	21	1-4
100297	25	EPDM	Black		1733308	14-20	29	34	26	1-4
100298	25	EPDM	Grey	7042	1733309	14-20	29	34	26	1-4
100707	25	EPDM	Grey	7035	1733310	14-20	29	34	26	1-4
100299	25	CR Oil Resistant	Black		1733311	14-20	29	34	26	1-4
100300	25	EPDM	Black		1733312	20-26	38	46	30	1-4
100301	25	EPDM	Grey	7042	1733313	20-26	38	46	30	1-4
100709	25	EPDM	Grey	7035	1733314	20-26	38	46	30	1-4
100302	25	CR Oil Resistant	Black		1733315	20-26	38	46	30	1-4
100304	10	EPDM	Black		1733316	26-35	48	57,5	30	1-4
100305	10	EPDM	Grey	7042	1733317	26-35	48	57,5	30	1-4
100710	10	EPDM	Grey	7035	1733318	26-35	48	57,5	30	1-4
100711	10	CR Oil Resistant	Black		1733319	26-35	48	57,5	30	1-4

# T-GET



**Trelleborg Singlegate T-GET -grommets are for leading through both low and medium power current cables as well various types of tubing.**

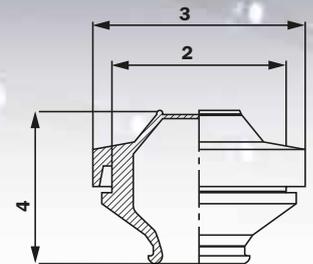
The grommets are suitable for indoor and outdoor applications. The grommets fits to openings made with dimensions of mm. Model T-GET has new double seal design where top side of the grommet is closed and is therefore possible to use as plug also.

Trelleborg Singlegate T-GET -grommets have alternative models for cables between diameters of 3 mm up to 60 mm. Wall thickness can be between 1,2 to 5,2 mm (bigger ones 1,2 to 5,2 mm). The design gives IP67 protection

against dust and strong jets of water and also against effects of immersion between 15 cm and 1 m.

Trelleborg Singlegate T-GET -grommets are available as standard of TPE-materials on table below. As request also other colours and materials like conductive EMC-material are available. More information of materials on page 17.

Trelleborg Singlegate T-GET-grommets are inspected and certified by SGS Fimko, the Finnish authority in charge of electrical equipment safety standards.



Code	Packing size	Material	Colour	Ral code	Classifications	Electrical number	Cable diameter	2	3	4	Plate thickness
100722	50	TPE EPDM	Grey	7042		1733385	3-5	12	19	20,9	1-5
100723	50	TPE EPDM	Grey	7035	UL 94;V-0	1733386	3-5	12	19	20,9	1-5
100724	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733387	3-5	12	19	20,9	1-5
100725	50	TPE EPDM	Grey	7042		1733388	5-7	16	23	21,6	1-5
100726	50	TPE EPDM	Grey	7035	UL 94;V-0	1733389	5-7	16	23	21,6	1-5
100727	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733390	5-7	16	23	21,6	1-5
100728	50	TPE EPDM	Grey	7042		1733391	7-10	20	27	24,3	1-5
100729	50	TPE EPDM	Grey	7035	UL 94;V-0	1733392	7-10	20	27	24,3	1-5
100730	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733393	7-10	20	27	24,3	1-5
100731	50	TPE EPDM	Grey	7042		1733394	10-14	25	32	24,8	1-5
100732	50	TPE EPDM	Grey	7035	UL 94;V-0	1733395	10-14	25	32	24,8	1-5
100733	50	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733396	10-14	25	32	24,8	1-5
100734	25	TPE EPDM	Grey	7042		1733397	14-20	32	39	28,1	1-5
100735	25	TPE EPDM	Grey	7035	UL 94;V-0	1733398	14-20	32	39	28,1	1-5
100736	25	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733399	14-20	32	39	28,1	1-5
100737	25	TPE EPDM	Grey	7042		1733400	20-26	40	46	31,8	1-5
100183	25	TPE EPDM	Grey	7035	UL 94;V-0	1733401	20-26	40	46	31,8	1-5
100184	25	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733402	20-26	40	46	31,8	1-5
100738	10	TPE EPDM	Grey	7042		1733403	26-35	50	57	39,7	1-5
100739	10	TPE EPDM	Grey	7035	UL 94;V-0	1733404	26-35	50	57	39,7	1-5
100740	10	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733405	26-35	50	57	39,7	1-5
103924	5	TPE EPDM	Grey	7042		1733406	30-45	60	69	59,6	1-5
100741	5	TPE EPDM	Grey,	7035	UL 94;V-0	1733407	30-45	60	69	59,6	1-5
100185	5	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733408	30-45	60	69	59,6	1-5
103925	5	TPE EPDM	Grey,	7042		1733409	40-60	80	89	78,2	1,2-5,2
100742	5	TPE EPDM	Grey,	7035	UL 94;V-0	1733410	40-60	80	89	78,2	1,2-5,2
100743	5	TPE EPDM	Black		UL 94; V-0, Oil resistant (1.)	1733411	40-60	80	89	78,2	1,2-5,2

(1.) Material meets the requirements of UL 94, moderate oil resistance

# GET



**Trelleborg Singlegate GET -grommets are for leading through both low and medium power current cables as well various types of tubing.**

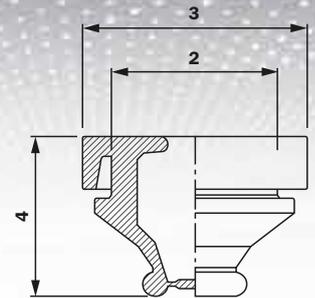
The grommets are suitable for indoor and outdoor applications. The grommets fits to openings made with dimensions of mm. Model GET has traditional double seal design where back side of the grommet is closed.

Trelleborg Singlegate GET -grommets have alternative models for cables between diameters of 3 mm up to 60 mm. Wall thickness can be between 1,3 to 5 mm. The design gives IP67

protection against dust and strong jets of water and also against effects of immersion between 15 cm and 1 m.

Trelleborg Singlegate GET -grommets are available as standard of materials on table below. As request also other colours and materials like EMC-models are available. More information of materials on page 17.

Trelleborg Singlegate GET-grommets are inspected and certified by SGS Fimko, the Finnish authority in charge of electrical equipment safety standards.



Code	Packing size	Material	Colour	Ral code	Electrical number	Cable diameter	2	3	4	Plate thickness
100589	50	EPDM	Black		1733381	3-5	12,2	19	18,5	1,3-5
100590	50	EPDM	Grey	7042	1733382	3-5	12,2	19	18,5	1,3-5
104018	50	SILICONE Q	Red		1733384	3-5	12,2	19	18,5	1,3-5
100587	50	EPDM	Black		1733377	5-7	16,2	23	18,5	1,3-5
100231	50	EPDM	Grey	7042	1733378	5-7	16,2	23	18,5	1,3-5
104016	50	SILICONE Q	Red		1733380	5-7	16,2	23	18,5	1,3-5
100578	50	EPDM	Black		1733361	7-10	20,2	27	19,5	1,3-5
100226	50	EPDM	Grey	7042	1733362	7-10	20,2	27	19,5	1,3-5
100581	50	SILICONE Q	Red		1733364	7-10	20,2	27	19,5	1,3-5
100574	50	EPDM	Black		1733361	10-14	25,2	32	19,5	1,3-5
100167	50	EPDM	Grey	7042	1733362	10-14	25,2	32	19,5	1,3-5
100576	50	SILICONE Q	Red		1733364	10-14	25,2	32	19,5	1,3-5
100227	25	EPDM	Black		1733365	14-20	32,2	39	21,5	1,3-5
100228	25	EPDM	Grey	7042	1733366	14-20	32,2	39	21,5	1,3-5
102263	25	SILICONE Q	Red		1733368	14-20	32,2	39	21,5	1,3-5
100583	25	EPDM	Black		1733369	20-26	40,2	47	24	1,3-5
100584	25	EPDM	Grey	7042	1733370	20-26	40,2	47	24	1,3-5
100585	25	SILICONE Q	Red		1733372	20-26	40,2	47	24	1,3-5
100229	10	EPDM	Black		1733373	26-35	50,2	58	30	1,3-5
100230	10	EPDM	Grey	7042	1733374	26-35	50,2	58	30	1,3-5
104014	10	SILICONE Q	Red		1733376	26-35	50,2	58	30	1,3-5
100223	5	EPDM	Black		1733349	30-45	60,2	69	45	1,3-5
100224	5	EPDM	Grey	7042	1733350	30-45	60,2	69	45	1,3-5
102258	5	SILICONE Q	Red		1733352	30-45	60,2	69	45	1,3-5
100573	5	EPDM	Black		1733353	40-60	80,2	90	60	1,3-5
100225	5	EPDM	Grey	7042	1733354	40-60	80,2	90	60	1,3-5
104013	5	SILICONE Q	Red		1733356	40-60	80,2	90	60	1,3-5

# T-GD

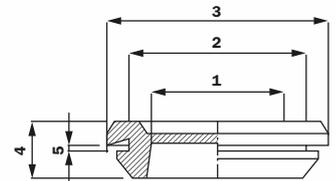


**Trelleborg Singlegate T-GD-grommets are for leading through both low and medium power current cables as well various types of tubing.**

The grommets are suitable for indoor and outdoor applications. The grommets fits to openings made with dimensions of PG.

Trelleborg Singlegate T-GD-grommets have alternative models for cables between diameters of 9 mm up to 69 mm. Wall thickness can be between 1 to 2 mm and bigger ones 1,5 to 3

mm. The design gives protection for limited ingress of dust and against water splashed from all directions. Models with customized preholes for cables and tubes are available.



Code	Material	Colour	Ral code	Flame resistance	Electrical number	Cable diameter	1	2	3	4	5
100174	TPE EPDM	Black		UL 94; V-0	1733412	9	9	15,5	20	7	1-2
100175	TPE EPDM	Black		UL 94; V-0	1733413	11	11	18,5	23	7	1-2
100176	TPE EPDM	Black		UL 94; V-0	1733414	13,5	13,5	20,5	25	7	1-2
100177	TPE EPDM	Black		UL 94; V-0	1733415	16	16	22,5	28	7	1-2
100178	TPE EPDM	Black		UL 94; V-0	1733416	21	21	28	35	9	1-2
100179	TPE EPDM	Black		UL 94; V-0	1733417	29	29	37	44	10	1-2
100180	TPE EPDM	Black		UL 94; V-0	1733418	36	36	47	54	12	1,5-3
100181	TPE EPDM	Black		UL 94; V-0	1733419	48	48	60	68	12	1,5-3
100182	TPE EPDM	Black		UL 94; V-0	1733420	53	53	64	75	12	1,5-3
100721	TPE EPDM	Black		UL 94; V-0	1733421	69	69	79	90	12	1,5-3

# T-GDM



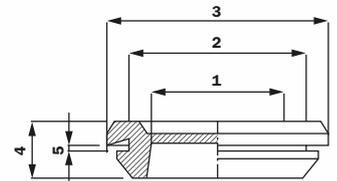
**Trelleborg Singlegate T-GDM-grommets are for leading through both low and medium power current cables as well various types of tubing.**

The grommets are suitable for indoor and outdoor applications. The grommets fits to openings made with dimensions of mm.

Trelleborg Singlegate T-GDM-grommets have alternative models for cables between diameters of 9 mm up to 69 mms. Wall thickness can be between 1 to 2 mms and bigger ones 1,5 to 3

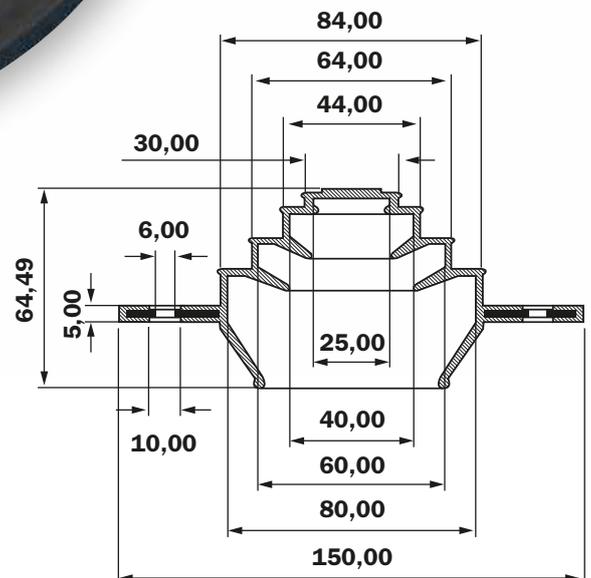
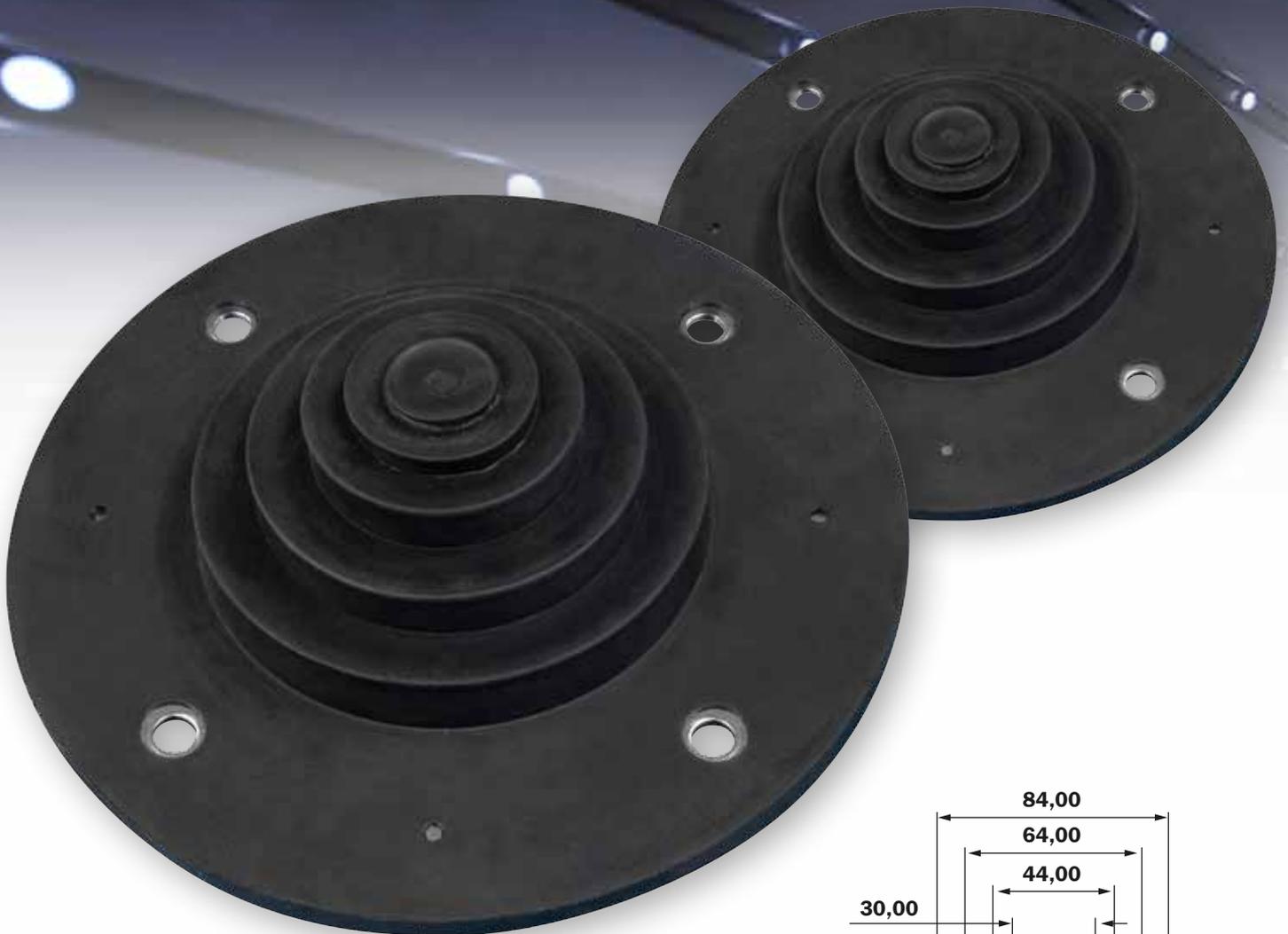
mms. The design gives protection for limited ingress of dust and against water splashed from all directions. Models with customized preholes for cables and tubes are available.

Trelleborg Singlegate T-GDM -grommets are available as standard of materials on table below. As request also other colours and materials like silicones and EMC-models are available. More information of materials on page 17.



Code	Material	Colour	Ral code	Flame resistance	Electrical number	Cable diameter	1	2	3	4	5
103665	TPE EPDM	Black		UL 94; V-0	1733422	9	9	12,2	17	7	1-2
103933	TPE EPDM	Black		UL 94; V-0	1733423	11	11	16,2	21	7	1-2
100199	TPE EPDM	Black		UL 94; V-0	1733424	13,5	13,5	20,2	25	7	1-2
100200	TPE EPDM	Black		UL 94; V-0	1733425	16	16	25,2	31	7	1-2
102342	TPE EPDM	Black		UL 94; V-0	1733426	21	21	32,2	40	9	1-2
103523	TPE EPDM	Black		UL 94; V-0	1733427	29	29	40,2	48	10	1-2
104019	TPE EPDM	Black		UL 94; V-0	1733428	36	36	50,2	58	12	1,5-3
104021	TPE EPDM	Black		UL 94; V-0	1733429	48	48	60,2	68	12	1,5-3
104022	TPE EPDM	Black		UL 94; V-0	1733430	53	53	70,2	81	12	1,5-3
104023	TPE EPDM	Black		UL 94; V-0	1733431	69	69	80,2	91	12	1,5-3

# M 20-80



Code	Material	Colour	Classifications	Electrical number
104048	TPE EPDM	RAL 7042		1733483
104049	TPE EPDM	Grey RAL 7035	UL 94; V-0	1733484
101035	TPE EPDM	Black	UL 94; V-0; Oil resistant (1.)	1733485

(1.) Material meets the requirements of UL 94, moderate oil resistance

# Roof flashings



**Trelleborg sheet-metal roof flashings can effectively seal electrical wires, antennas, air ventilation- and air conditioning pipes, chimneys and similar round inlets coming through sheet-metal roofs.**

Around the flashing goes an easily bendable aluminum flange which can be fitted to various shapes of sheet-metal roof surfaces.

These Trelleborg roof flashings can be

used on a flat or on profiled surface.

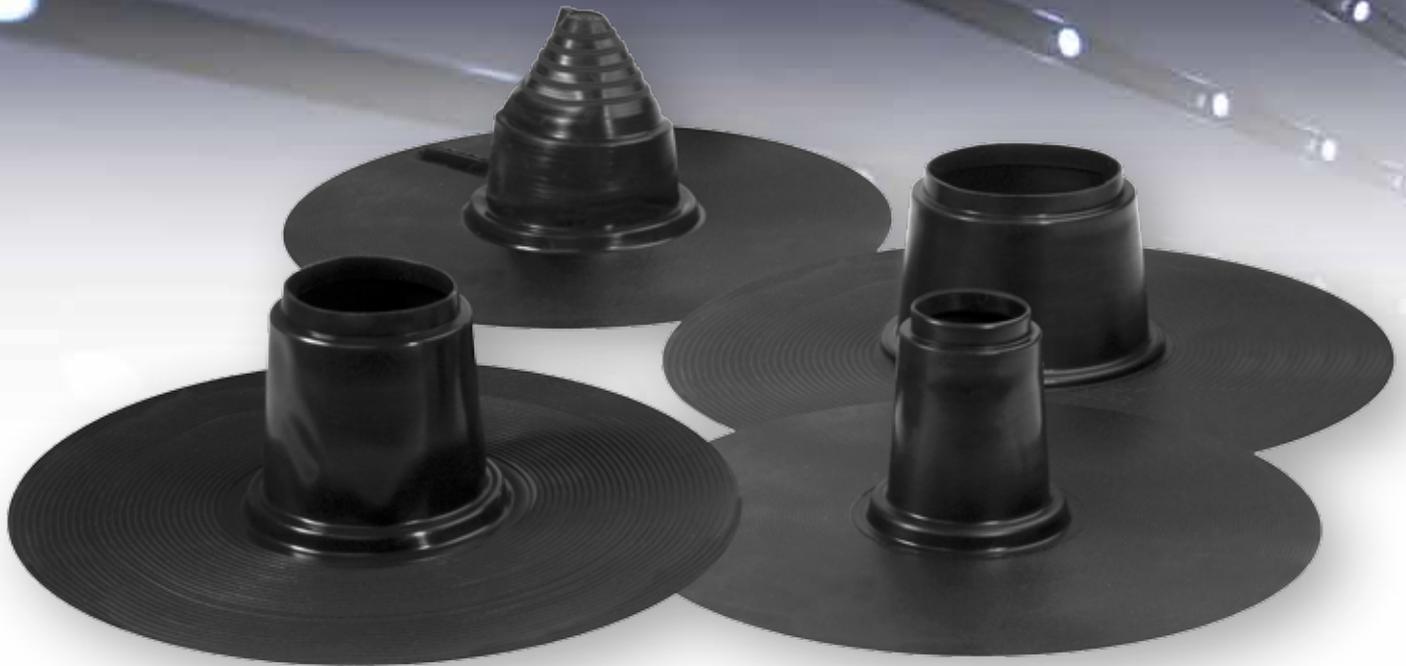
#### Installation instructions:

1. Choose appropriate size flashing and cut flashing to right pipe diameter with sharp knife, if needed
2. Cut flashing approximately 20% smaller than exact pipe diameter
3. Slide flashing on pipe or antenna. If needed, shape aluminum flange to fit roof surface profile

4. Apply silicon sealant or equivalent between roof and aluminum flange
5. Use fasteners to fasten aluminium flange to sheet-metal roof to complete installation
6. Mount a stainless clamping collar on top of the flashing to secure weatherproof at the top

	Code	Material	Colour	Electrical number	Base material	Base size	For pipe diameter
no 1	101061	EPDM	Black	1733472	Aluminium	125 x 125	5-60
no 2	101059	EPDM	Black	1733473	Aluminium	165 x 165	40-100
no 3	100138	EPDM	Black	1733474	Aluminium	205 x 205	60-125
no 4	100137	EPDM	Black	1733475	Aluminium	245 x 245	80-160
no 5	101058	EPDM	Black	1733476	Aluminium	285 x 285	100-185
no 6	101060	EPDM	Black	1733477	Aluminium	325 x 325	130-230
no 7-8	100139	EPDM	Black	1733478	Aluminium	Ø 560	220-450

# Roof Flashings



**TRELLEBORG felt roof flashings can effectively seal electrical wires, antennas, air ventilation- and air conditioning pipes, chimneys and similar inlets coming through felt roofs.**

Flange of the flashing is sealed with bitumen between two layers of felt roof. Top of the flashing is sealed by using a stainless clamping collar.

Installation requires good expertise of installation process and knowledge of the field. Therefore, in order to secure full weatherproof, we recommend to use experts in the installation process.

	Code	Material	Colour	Electrical number	Base size	For pipe diameter
no 50 / 75 / 90	103325	EPDM	Black	1733479	Ø 444	50 / 75 / 90
no 110	101055	EPDM	Black	1733480	Ø 484	110
no 150 / 160	103324	EPDM	Black	1733481	Ø 530	150 / 160
no 200 / 250 / 300 / 350	104026	EPDM	Black	1733482	Ø 710	200 / 250 / 300 / 350

# Comparison of Materials

## TPE (Thermoplastic Elastomer)

- excellent resistance to weathering, ozone and UV exposure
- provides good chemical resistance, and excellent electrical properties limited resistance for oils (resists oils as splash)
- flame retardant grades UL 94 V-0 (test thickness < 1,0 mm), halogen free
- standard hardnesses 25 ShA – 70 ShA
- recyclable
- wide range of colours, easy to customize
- service temperature range -40 - + 100°C
- FDA approved grades available

## TPU (Thermoplastic Urethane)

- good resistance to weathering, ozone and UV exposure
- good abrasive properties
- limited resistance for oils (resists oils as splash)
- standard hardnesses 50 ShA – 70 ShA
- recyclable
- wide range of colours, easy to customize
- service temperature range -40 - + 100°C
- FDA approved grades available

## TPV (Thermoplastic Vulcanizate)

- show excellent resistance to UV Light; very little change in Delta E
- improved oil and chemical resistance; Exhibit superior chemical resistance over a wide range of temperature (Oils / Petroleum and Sebum, Automotive fluids, aqueous solutions, acids and bases, organic solvents)
- flame retardant grades 50 ShA to 50 ShD , UL 94 V-0 ; 1.5mm
- hardness range 15 ShA to 50 ShD Temperature range continues use up to 125°C and short-term exposure up to 150°C. Brittle point lower than

-60°C for most grades. Provides good low-temperature flexibility and impact toughness

- it looks and feels like thermoset rubber
- improved compression set at elevated temperatures (over 70°C)
- medical/food contact grades from 45 ShA to 50 ShD

## EPDM (Ethylene Propylene Diene Monomer)

- superior resistance to weathering, ozone and UV exposure
- provides excellent chemical resistance, and good electrical properties
- resists animal and vegetable oils, steam, water and oxygenated solvents
- flame retardant grades UL 94 V-2 (test thickness < 3,0 mm)
- standard hardnesses 40 ShA – 70 ShA
- limited range of colours
- working temperature range -40 - + 120°C
- EMC grades with attenuation of 40 dB – 60 dB

## NBR (Nitrile Butadiene Rubber)

- limited weathering resistance
- it is generally resistant to fuel and other chemicals. Also resistant to aliphatic hydrocarbons but less resistant aromatic hydrocarbons, ketones, esters, aldehydes and to ozone
- flame resistance is poor
- hardness range 20 - 95 ShA
- working temperature range of - 40 to + 125°C
- environmental performances: colorability, gas permeability and water resistance are excellent
- other physical & mechanical properties: adhesion to metal and rigid materials are excellent, abrasion resistance, compression set and tear resistance are good to excellent

## CR (Chloroprene Rubber)

- good weathering resistance, flame retarding. Moderate resistance to petroleum-based fluids
- service temperature -45....+120°C
- adhesion to many substrates
- good resistance toward chemicals and ageing
- CR in general has good chemical stability and maintains flexibility over a wide temperature range
- hardness range 40 – 95 ShA

## Q (Silicone)

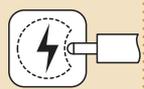
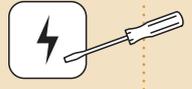
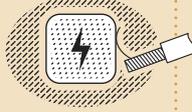
- excellent resistance to weathering, ozone and UV exposure
- also provides excellent chemical resistance and good electrical properties
- resists oils as splash
- flame retardant grades UL 94 V-0 (test thickness < 0,8 mm), halogen free
- standard hardnesses 25 ShA – 90 ShA
- wide range of colours, easy to customize
- service temperature range -50 - + 200°C

# IP-codes

## First numeral

Protection against ingress of solid foreign objects

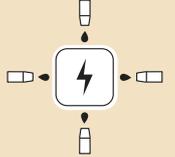
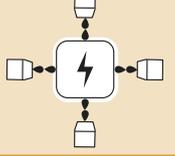
Meaning protection of persons against access to hazardous parts with:

IP	Requirements	Example	
0	No protection		No protection provided
1	Full penetration of 50.0 mm diameter sphere not allowed and shall have adequate clearance from hazardous parts. Contact with hazardous parts not permitted		Back of hand
2	Full penetration of 12.5 mm diameter sphere not allowed. The jointed test finger shall have adequate clearance from hazardous parts		Finger
3	The access probe of 2.5 mm diameter shall not penetrate		Tool
4	The access probe of 1.0 mm diameter shall not penetrate		Wire
5	Limited ingress of dust permitted (no harmful deposit, refer to standard)		Wire
6	Totally protected against ingress of dust		Wire

## Second numeral

Protection against harmful ingress of water

Meaning for protection from ingress of water:

IP	Requirements	Example	
0	No protection		No protection provided
1	Protected against vertically falling drops of water		Vertically dripping
2	Protected against vertically falling drops of water with enclosure tilted 15° from the vertical.		Enclosure tilted 15° from the vertical
3	Protected against sprays to 60° from the vertical		Limited spraying
4	Protected against water splashed from all directions		Splashing from all directions
5	Protected against lowpressure jets of water from all directions		Hosing jets from all directions
6	Protected against strong jets of water		Strong hosing jets from all directions
7	Protected against the effects of immersion between 15.0 cm and 1.0 m		Temporary immersion
8	Protected against longer periods of immersion under pressure		Immersion

# Assembly

## Step 1



Make appropriate size hole to blind plate or knock-out plate. Avoid rough and sharp edges.

## Step 2



Place the grommet on the hole and pull it firmly to its place.

## Step 3



Make a small hole into the membrane using a screwdriver or cut the top of the cone using side cutters.

## Step 4



Push the cable or tube through the guide hole.

## Step 5, backside



Pull the cable or tube back some 20 mm to lock it.

## Step 5, frontside



Pull the cable or tube back some 20 mm to lock it.



# TRELLEBORG

## ENGINEERED SYSTEMS

We seal, damp and protect in demanding industrial environments throughout the world.

Trelleborg is a global industrial group whose leading positions are based on advanced polymer technology and in-depth applications know-how.

Trelleborg Industrial Products Finland Oy is a part of Product Area Trelleborg Electrical Protection. We are the leading, flexible developer and manufacturer of elastomer-based innovative custom designed solutions that address the demanding pass-thru and sealing needs of the global telecom, electronics, power and HVAC industries. We serve the customers with fast, high quality product development and rapid prototyping. Our global presence supports multinational co-operation with flexible manufacturing capabilities.

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