Installation Instructions

Ecosine evo IP21 cover kits

Ecosine evo

FN 3440 / FN 3441 (50 Hz) for 380–415 V AC
FN 3450 / FN 3451 (50 Hz) for 440–500 V AC
FN 3452 / FN 3453 (60 Hz) for 440–480 V AC

Schaffner Group | Nordstrasse 11 | 4542 Luterbach | Switzerland
T +41 32 681 66 26 | F+41 32 681 66 30 | www.schaffner.com
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The most current edition of these instructions (PDF format) can be obtained from www.schaffner.com or from your local Schaffner sales representative.

Other technical documentation of our products is also available in the download area of www.schaffner.com

Document name:

Installation Instructions Ecosine evo IP21 cover kits Rev01.pdf

Version history

Revision	Date	Description
01	July 2017	Initial version

i. Important user notice

Schaffner ecosine evo harmonic filters are designed for the operation on the input (grid) side of power electronic equipment with six-pulse rectifier front-ends in balanced three-phase power systems, like typically used in AC or DC motor drives and high power DC supplies. Filter suitability for a given application must be determined by the user on a case by case basis. Schaffner will not assume liability for any consequential downtimes or damages resulting from use or application of ecosine filters outside of their specifications. Ecosine filters are not designed for single-phase or split-phase applications.

ii. General Safety Notes and Installation Guidelines (Cautions and Warnings)

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Schaffner International Ltd ǀ Nordstrasse 11
4542 Luterbach ǀ Switzerland
P +41 32 681 66 26 ǀ F +41 32 681 66 30

Power Quality Filters

General Safety Notes and Installation Guidelines (Cautions and Warnings)

1. Important Information

These general safety notes refer to the group of power quality filters including active and passive harmonic filter (AHF, PHF), AC line chokes and output filters. Do not attempt to install, operate, maintain or inspect power quality filters until you have read through the safety notes and installation guidelines as well as installation manual and product specification. Do not use any Schaffner product until you have a full knowledge of the equipment, safety notes and installation guidelines. The same applies to all warnings placed on the the filters. Please ensure that those are not removed and their legibility is not influenced by external factors.
The following symbols, terms and designations are used in these general safety notes and installation guidelines:

Label	Description
⚠ CAUTION	Follow these instructions to avoid hazardous conditions which could cause minor or moderate injury or may cause damages to the unit.
⚠ WARNING	Follow these instructions to avoid hazardous conditions which could result in death or serious injury.
NOTICE	Indicates content to be noted by the reader.

2. General Installation Notes

- Please read and follow the safety and application notes below.
- Carefully inspect the shipping container and the product prior to the installation. In case of visual damage, don't install the filter and file a claim with the freight carrier involved.
- Filters may be heavy. Follow the instructions for lifting heavy equipment defined by your company.
- Use an appropriately sized threaded bolt for every mounting hole/slot provided by the filter flange. The strength class of the bolt must be determined by the installer, depending upon filter weight and the material of the mounting surface.
- Connect the filter to the protective earth (PE) terminal(s).
- Remove all line side power, then connect the phase terminal(s) and neutral terminal (if any) of the filter. The filter label may also indicate LINE (grid side terminals) and LOAD (power electronics terminals).
- For the electrical connection of the filter terminals, apply the torques recommended on the filter label and/or in the published filter datasheets.
- Cable or busbar cross sections have to be chosen in accordance with national and international electric codes and applicable product standards governing the equipment that will incorporate the power quality filters and the equipment in use.
- Some filters provide additional terminals, e.g. for over-temperature monitoring. These features have to be properly used before energizing the filter. If uncertain, please consult your local Schaffner representative.
- Active Harmonic Filters (AHF) are working with current transformers (CTs) which are a 3rd party product and which are typically installed in electrical equipment with lethal high voltage levels. Before attempting to install CTs read the CT installation safety page provided by the CT manufacturer. Always consider transformer as a part of the circuit to which it is connected, and do not touch the leads and terminals or other parts of the transformer unless they are known to be grounded.
- In order to get the maximum benefit out of your power quality filter, please also consult aditional user manuals, installation manuals, whitepaper and other material, published in the download section of www.schaffner.com. These additional guidelines provide helpful hints for equipment related topics as well as technical knowledge.

3. Safety Notes and Regulations

1. Label on equipment 2. Safety note category	Safety note regulations
⚠ WARNING	Equipment installation, start-up, operation and maintenance (if any) have to be carried out by a trained and certified electrician or technician, who is familiar with safety procedures in electrical systems. Non-qualified persons are not allowed to use, install, operate or maintain PQ filters!
⚠ WARNING	High voltage potentials are involved in the operation of power quality equipment. Always remove power before handling energized parts of the filter, and let ample time elapse for the capacitors to discharge to safe levels (<42V). Residual voltages are to be measured both line to line and line to earth.
⚠ CAUTION	Correct protective earthing of the equipment must be established and the user must be protected against supply voltage in accordance with applicable national and local regulations. Always practice the safety procedures defined by your company and by applicable national electric codes when handling, installing, operating or maintaining electrical equipment.
⚠ CAUTION	Some product may include EMC filters which may cause leakage currents to ground. Always connect the filter to protective earth (PE) first, then continue with the wiring of phase/neutral terminals. When decommissioning the filter, remove the PE connection at the end.
⚠ WARNING	Using the direct OFF setting in AHF does not disconnect the equipment from mains and is thus not to be used as a safety switch.
⚠ CAUTION	Follow the general installation and environmental condition notes closely. Ensure that cooling slots (if any) are free from obstructions that could inhibit efficient air circulation. Operate the filter within its electrical, mechanical, thermal and ambient specifications at all times.
⚠ CAUTION	Power quality filters are lossy electrical components. Parts/surfaces of the equipment may get hot under load operating conditions.
NOTICE	At altitudes above 2000m, please contact Schaffner prior to installation.
NOTICE	Filter suitability for a given application must ultimately be determined by the user (the party that is putting the filter into operation) on a case by case basis. Schaffner will not assume liability for any consequential downtimes or damages resulting from use of filters outside their specifications.
⚠ CAUTION	In case of uncertainty and questions please contact your local Schaffner partner for assistance (details per region available at www.schaffner.com).

1. Ecosine evo passive harmonic filter designation

1.1 Distinguishing between FN 3440 / FN 3441, FN 3450 / FN 3451 and FN 3452 / FN 3453

Before going into the details of the designation, it is important to be aware of the difference between FN 3440 and FN 3441, FN 3450 and FN 3451, FN 3452 and FN 3453. FN 3440 FN 3450 and FN 3452 are used for motor drives without dc-link choke. They are similar to FN 3441, FN 3451 and FN 3453 except there is one choke less in FN 3441, FN 3451 and FN 3453 series as they are meant to be used for motor drives with dc-link choke (8%) included. In other words, there are three chokes (line choke, trap choke and load choke) included in filter series FN 3440, FN 3450 and FN 3452, whereas there are only two chokes (line choke, trap choke) included in filter series FN 3441, FN 3451 and FN 3453 series.

By distinguishing between FN 3440, (FN 3450, FN 3452) as well as FN 3441 (FN 3451, FN 3453) Schaffner is able to provide optimized solutions for different drive types:

- If there is no DC-link choke present in the motor drive, FN 3440, FN 3450, FN 3453 filter series help to reduce THID to 5% @ rated power.
- If there is a minimum 8% DC-link choke present in the motor drive, FN 3441, FN 3451, FN 3453 filter series reduce THID to 5% @ rated power

In case you have difficulties to decide for the right filter, please contact your local Schaffner representative for support.

1.2 Explanation of ecosine evo designation

Ecosine evo is the new generation of Schaffner passive harmonic filter. They are introduced with a new designation system, which contains of 4 sections connected with '-' as shown in Figure 1.

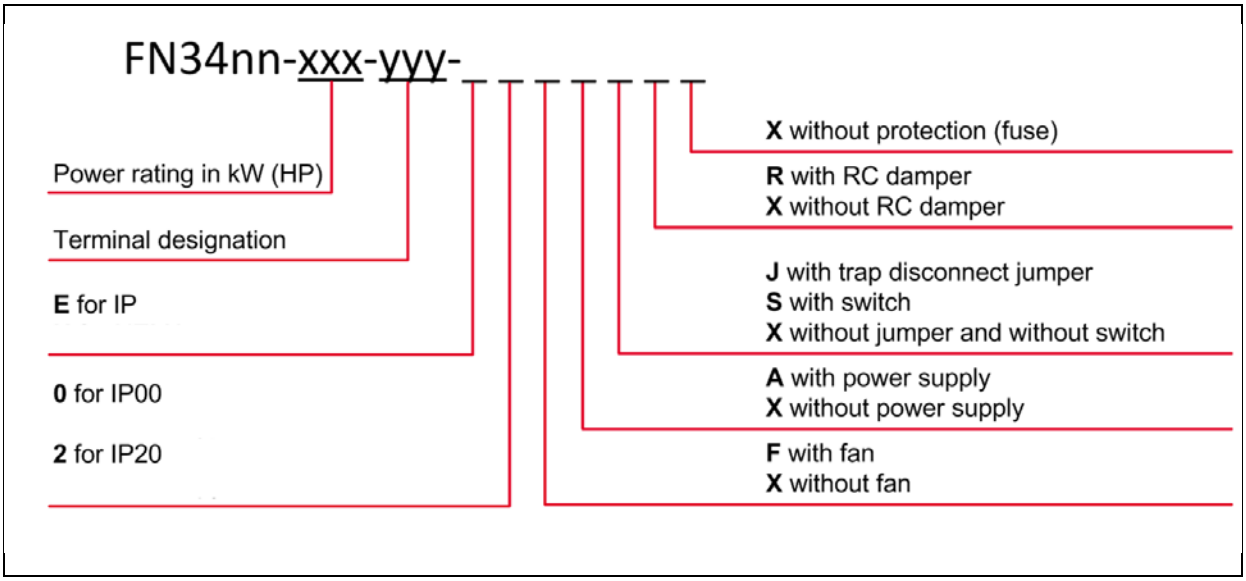


Figure 1 Ecosine evo designation

- The first part of the designation **'FN 34nn**-xxx-yyy-_ _ _ _ _ _ _**'** distinguishes between the six ecosine evo filter series.

	FN 3440	FN 3441	FN 3450	FN 3451	FN 3452	FN 3453
For 6-pulse diode rectifier without DC-link choke	✓		✓		✓	
For 6-pulse diode rectifier with 8% DC-link choke		✓		✓		✓
For SCR rectifier	✓		✓		✓	
Operating frequency	50 Hz		50 Hz		60 Hz	
Nominal operating voltage	3x 380 to 415 V AC		3x 440 to 500 V AC		3x 440 to 480 V AC	

- The second part of the designation 'FN 34nn-**xxx**-yyy-_ _ _ _ _ _ _**'** indicates the **motor drive power rating**, in kW for 50 Hz filters and in HP for 60 Hz filters. Please note that ecosine evo filters are not using current rating in the designation anymore.
- The third part of the designation 'FN 34nn-xxx-**yyy**-_ _ _ _ _ _ _' indicates the power terminal type. For more information please see Table 1.
- The fourth part of the designation 'FN 34nn-xxx-yyy- _ _ _ _ _ _ _' contains seven slots, the first two slots reveal the protection category of the filter, e.g. E0 and E2 represent IP 00 and IP 20 enclosure, respectively. The following five slots represent the presence (F,A,R,J) or absence (X) of optional modules in the filter, as shown in Figure 1. Please find more information in section 2.4, 2.5 and 2.6 of the user and installation manual (available via myecosine.com or with filter in printed version)

Schaffner offers an online **Product Configurator** (myecosine.com) and the Schaffner Power Quality Simulator **SchaffnerPQS3** (pqs.schaffner.com) to select and verify the most suitable ecosine evo filter for your application.

2. Ecosine evo IP21 cover kits

Ecosine evo IP21 cover kits are enclosure upgrade kits adding additional top covers for ecosine evo passive harmonic filter. Ecosine evo IP21 cover kits fulfill the basic requirements needed for upgrading the enclosure of ecosine evo passive harmonic filter class from IP20 to IP21 (EN60529). Basically this means of protecting the filter also from vertically dripping water.

Table 1 Ecosine evo IP21 cover kits

SAP No.	Description	Suitable for
817233	ECOSINE EVO IP21 COVER KIT A	**All IP20 frame size A versions of:** FN 3440/41, FN 3450/51, FN 3452/53
817249	ECOSINE EVO IP21 COVER KIT B	**All IP20 frame size B versions of:** FN 3440/41, FN3450/51, FN3452/53
817250	ECOSINE EVO IP21 COVER KIT C	**All IP20 frame size C versions of:** FN 3440/41, FN 3450/51, FN 3452/53
817251	ECOSINE EVO IP21 COVER KIT D	**All IP20 frame size D versions of:** FN 3440/41, FN 3450/51, FN 3452/53
817252	ECOSINE EVO IP21 COVER KIT E	**All IP20 frame size E versions of:** FN 3440/41, FN 3450/51, FN 3452/53
817253	ECOSINE EVO IP21 COVER KIT F	**All IP20 frame size F versions of:** FN 3450/51, FN 3452/53
817254	ECOSINE EVO IP21 COVER KIT G	**All IP20 frame size G versions of:** FN 3440/41, FN 3450/51, FN 3452/53
817255	ECOSINE EVO IP21 COVER KIT H	**All IP20 frame size H versions of:** FN 3440/41, FN 3450/51, FN 3452/53

2.1 Mechanical frame sizes

Ecosine evo passive harmonic filters are implemented on a base plate or base frame featuring 8 different frame sizes, Frame A to Frame H, from the lowest to the highest rating. Details are provided in filter selection tables, Table 2 to Table 7. The overview of all frame sizes in IP 20 are shown in Figure 3.

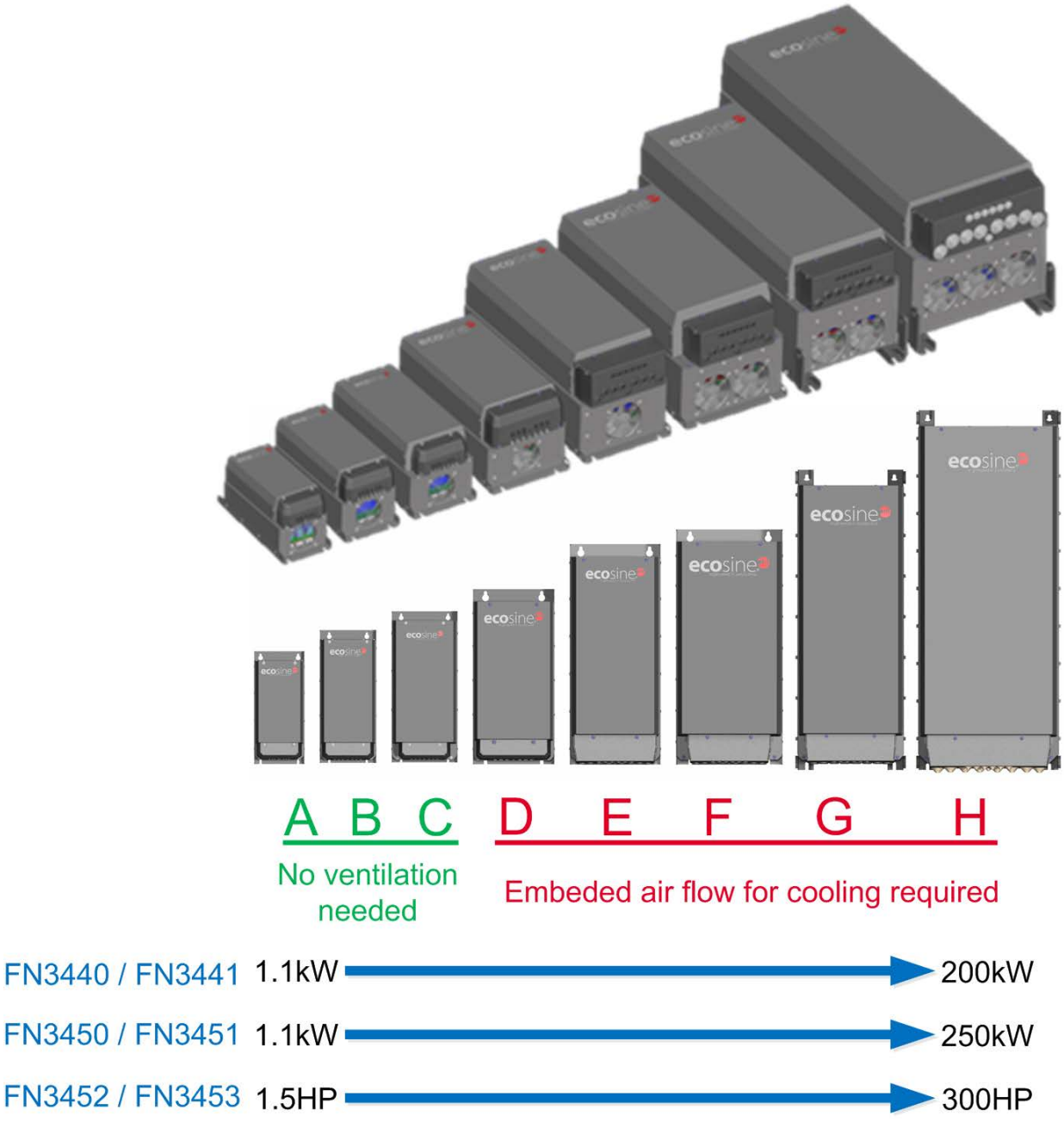


Figure 2 Overview of all IP20 frame size versions

2.2 Filter selection table FN 3440 / FN 3441 (50 Hz, 3×380 … 415 V AC)

Table 2 FN 3440 filter selection table

Filter	Rated load power @ 400 V/50 Hz [kW]	Motor drive input current [Arms]***	Rated filter input current [Arms]	Weight [kg]	Terminal	Frame size
FN3440-1-110-E2_____*	1.1	3	1.63	8	110	A
FN3440-2-110-E2_____*	2.2	5.5	3.26	11	110	A
FN3440-4-112-E2_____*	4	10	5.93	15	112	B
FN3440-6-112-E2_____*	5.5	13	8.17	19	112	C
FN3440-8-112-E2_____*	7.5	16	11.1	23	112	C
FN3440-11-113-E2_____	11	24	16.3	32	113	D
FN3440-15-113-E2_____	15	32	22.2	36	113	D
FN3440-19-113-E2_____	19	38	28.2	37	113	D
FN3440-22-115-E2_____	22	45	32.5	53	115	E
FN3440-30-115-E2_____	30	60	44.4	55	115	E
FN3440-37-115-E2_____	37	75	54.8	66	115	E
FN3440-45-115-E2_____	45	90	66.7	73	115	E
FN3440-55-115-E2_____	55	110	81.6	75	115	E
FN3440-75-116-E2_____	75	150	111	126	116	G
FN3440-90-116-E2_____	90	180	134	147	116	G
FN3440-110-118-E2_____	110	210	164	175	118	H
FN3440-132-118-E2_____**	132	260	197	194	118	H
FN3440-160-118-E2_____**	160	320	240	219	118	H
FN3440-200-118-E2_____**	200	400	300	267	118	H

* Filter rating which does not require forced cooling or fan module
** Filter rating which does not require RC damping module for rectifiers with EMI filter
*** Motor drive input current without harmonic filter

Table 3 FN 3441 filter selection table

Filter	Rated load power @ 400 V/50 Hz [kW]	Motor drive input current [Arms]***	Rated filter input current [Arms]	Weight [kg]	Terminal	Frame size
FN3441-1-110-E2_____*	1.1	1.7	1.62	7	110	A
FN3441-2-110-E2_____*	2.2	3.4	3.23	9	110	A
FN3441-4-112-E2_____*	4	6.2	5.9	13	112	B
FN3441-6-112-E2_____*	5.5	8.5	8.1	16	112	C
FN3441-8-112-E2_____*	7.5	12	11	18	112	C
FN3441-11-113-E2_____	11	17	16	27	113	D
FN3441-15-113-E2_____	15	23	22	30	113	D
FN3441-19-113-E2_____	19	29.3	28	34	113	D
FN3441-22-115-E2_____	22	34	32	44	115	E
FN3441-30-115-E2_____	30	46	44	48	115	E
FN3441-37-115-E2_____	37	57	54	54	115	E
FN3441-45-115-E2_____	45	70	66	59	115	E
FN3441-55-115-E2_____	55	85	81	68	115	E
FN3441-75-116-E2_____	75	116	110	107	116	G
FN3441-90-116-E2_____	90	140	133	115	116	G
FN3441-110-118-E2_____	110	171	162	144	118	H
FN3441-132-118-E2_____**	132	205	195	166	118	H
FN3441-160-118-E2_____**	160	249	238	185	118	H
FN3441-200-118-E2_____**	200	312	297	226	118	H

* Filter rating which does not require forced cooling or fan module
** Filter rating which does not require RC damping module for rectifiers with EMI filter
*** Motor drive input current without harmonic filter

2.3 Filter selection table FN 3450 / FN 3451 (50 Hz, 3×440 … 500 V AC)

Table 4 FN 3450 filter selection table

Filter	Rated load power @ 480 VAC/50 Hz [kW]	Motor drive input current [Arms]***	Rated filter input current [Arms]	Weight [kg]	Terminal	Frame size
FN3450-1-110-E2_____*	1.1	1.5	1.35	7	110	A
FN3450-2-110-E2_____*	2.2	3	2.75	9	110	A
FN3450-4-112-E2_____*	4	5.5	4.99	13	112	B
FN3450-6-112-E2_____*	5.5	10	6.77	15	112	B
FN3450-8-112-E2_____*	7.5	13	9.24	19	112	C
FN3450-11-112-E2_____*	11	16	13.6	23	112	C
FN3450-15-113-E2_____	15	24	18.5	32	113	D
FN3450-19-113-E2_____	19	32	23.3	36	113	D
FN3450-22-113-E2_____	22	38	27.0	40	113	D
FN3450-30-115-E2_____	30	45	36.9	53	115	E
FN3450-37-115-E2_____	37	60	45.4	60	115	E
FN3450-45-115-E2_____	45	75	55.2	69	115	E
FN3450-55-115-E2_____	55	90	67.5	74	115	F
FN3450-75-115-E2_____	75	110	92.5	95	115	F
FN3450-90-116-E2_____	90	150	111	129	116	G
FN3450-110-116-E2_____	110	180	135	149	116	G
FN3450-132-118-E2_____	132	210	163	178	118	H
FN3450-160-118-E2_____**	160	260	198	198	118	H
FN3450-200-118-E2_____**	200	320	248	234	118	H
FN3450-250-118-E2_____**	250	400	310	274	118	H

* Filter rating which does not require forced cooling or fan module
** Filter rating which does not require RC damping module for rectifiers with EMI filter
*** Motor drive input current without harmonic filter

Table 5 FN 3451 filter selection table

Filter	Rated load power @ 480 VAC/50 Hz [kW]	Motor drive input current [Arms]***	Rated filter input current [Arms]	Weight [kg]	Terminal	Frame size
FN3451-1-110-E2_____*	1.1	1.4	1.3	6	110	A
FN3451-2-110-E2_____*	2.2	2.8	2.7	8	110	A
FN3451-4-112-E2_____*	4	5.1	4.9	11	112	B
FN3451-6-112-E2_____*	5.5	7.1	6.7	13	112	B
FN3451-8-112-E2_____*	7.5	9.6	9.2	16	112	C
FN3451-11-112-E2_____*	11	14.1	13.4	19	112	C
FN3451-15-113-E2_____	15	19.3	18.3	28	113	D
FN3451-19-113-E2_____	19	24.4	23	30	113	D
FN3451-22-113-E2_____	22	28	27	34	113	D
FN3451-30-115-E2_____	30	38.5	36.6	44	115	E
FN3451-37-115-E2_____	37	47.5	45	49	115	E
FN3451-45-115-E2_____	45	58	55	55	115	E
FN3451-55-115-E2_____	55	71	67	62	115	F
FN3451-75-115-E2_____	75	97	92	77	115	F
FN3451-90-116-E2_____	90	116	110	109	116	G
FN3451-110-116-E2_____	110	142	135	117	116	G
FN3451-132-118-E2_____	132	170	162	147	118	H
FN3451-160-118-E2_____**	160	207	197	166	118	H
FN3451-200-118-E2_____**	200	259	246	200	118	H
FN3451-250-118-E2_____**	250	324	308	238	118	H

* Filter rating which does not require forced cooling or fan module
** Filter rating which does not require RC damping module for rectifiers with EMI filter
*** Motor drive input current without harmonic filter

2.4 Filter selection table FN 3452 / FN 3453 (60 Hz, 3×440 … 480 V AC)

Table 6 FN 3452 filter selection table

Filter	Rated load power @ 480 V/60 Hz		Motor drive input current	Rated filter input current	Weight		Terminal	Frame size
	[kW]	[HP]	[Arms]***	[Arms]	[kg]	[lbs]		
FN3452-1-110-E2_____*	1.1	1.5	2	1.37	7	15.4	110	A
FN3452-3-110-E2_____*	2.2	3	4	2.76	9	19.8	110	A
FN3452-5-112-E2_____*	3.7	5	7	4.57	11	24.3	112	B
FN3452-8-112-E2_____*	5.6	7.5	11	6.91	14	31	112	B
FN3452-10-112-E2_____*	7.5	10	14	9.29	17.4	38	112	C
FN3452-15-112-E2_____*	11	15	21	13.8	20	44	112	C
FN3452-20-113-E2_____	15	20	27	18.5	31	68	113	D
FN3452-25-113-E2_____	19	25	34	23.1	35	77	113	D
FN3452-30-113-E2_____	22	30	44	27.8	40	88	113	D
FN3452-40-115-E2_____	30	40	52	37.2	52	115	115	E
FN3452-50-115-E2_____	37	50	66	46.2	57	126	115	E
FN3452-60-115-E2_____	45	60	83	55.6	65	143	115	E
FN3452-75-115-E2_____	56	75	103	69.3	67	147	115	F
FN3452-100-115-E2_____	75	100	128	92.5	90	198	115	F
FN3452-125-116-E2_____	93	125	165	115	125	276	116	G
FN3452-150-116-E2_____	112	150	208	139	146	322	116	G
FN3452-200-118-E2_____	149	200	240	184	187	412	118	H
FN3452-250-118-E2_____**	186	250	320	231	204	450	118	H
FN3452-300-118-E2_____**	224	300	403	279	269	593	118	H

* Filter rating which does not require forced cooling or fan module
** Filter rating which does not require RC damping module for rectifiers with EMI filter
*** Motor drive input current without harmonic filter

Table 7 FN 3453 filter selection table

Filter	Rated load power @ 480 V/60 Hz		Motor drive input current	Rated filter input current	Weight		Terminal	Frame size
	[kW]	[HP]	[Arms]***	[Arms]	[kg]	[lbs]		
FN3453-1-110-E2_____*	1.1	1.5	1.44	1.37	6	13.2	110	A
FN3453-3-110-E2_____*	2.2	3	2.87	2.74	8	17.6	110	A
FN3453-5-112-E2_____*	3.7	5	4.75	4.52	10	22	112	B
FN3453-8-112-E2_____*	5.6	7.5	7.18	6.85	13	28.7	112	B
FN3453-10-112-E2_____*	7.5	10	9.6	9.2	15.7	34.6	112	C
FN3453-15-112-E2_____*	11	15	14.4	13.7	17	37.5	112	C
FN3453-20-113-E2_____	15	20	19.3	18.3	27	59.5	113	D
FN3453-25-113-E2_____	19	25	24	23	29	63.9	113	D
FN3453-30-113-E2_____	22	30	29	27.5	34	75	113	D
FN3453-40-115-E2_____	30	40	38.5	36.8	43	94.8	115	E
FN3453-50-115-E2_____	37	50	48	45.8	48	105.8	115	E
FN3453-60-115-E2_____	45	60	58	55	54	119	115	E
FN3453-75-115-E2_____	56	75	72	69	57	125.7	115	F
FN3453-100-115-E2_____	75	100	97	92	75	165.3	115	F
FN3453-125-116-E2_____	93	125	120	114	106	233.7	116	G
FN3453-150-116-E2_____	112	150	144	138	122	269	116	G
FN3453-200-118-E2_____	149	200	192	183	156	343.9	118	H
FN3453-250-118-E2_____**	186	250	241	229	170	374.8	118	H
FN3453-300-118-E2_____**	224	300	290	277	222	489.4	118	H

* Filter rating which does not require forced cooling or fan module
** Filter rating which does not require RC damping module for rectifiers with EMI filter
*** Motor drive input current without harmonic filter

3. IP21 cover installation

Please follow the simple steps below to ensure a safe and reliable cover function for many years. Please do also always follow the general safety and installation guidelines provided within this document as well as relevant local, national or international standards that are applicable.

Step 1: Visual inspection

All Schaffner ecosine evo IP21 cover kits are packaged with great care for international shipment.

However, carefully inspect the packaging for damage that may have occurred in transit. Then unpack the kits and carefully inspect for any signs of damage. You might keep the packaging for future transportation of the kits.

In the case of damage, please file a claim with the freight forwarder involved immediately and contact your local Schaffner partner for support.

If the kits are not going to be put in service upon receipt, we emphasize to store within the original packaging in a clean, dry location.

Step 2: Mounting

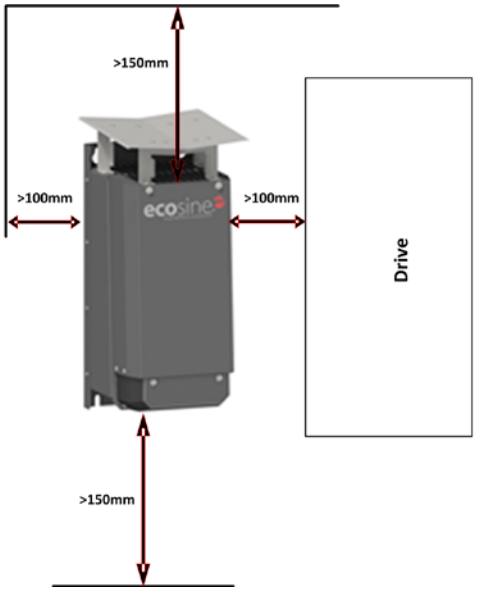
Ecosine evo IP21 cover kits are easy to install. All ecosine evo passive harmonic filters FN 3440 / FN 3441, FN 3450 / FN 3451, FN 3452 / FN 3453 are pre-configured with 4 mounting holes needed for adapting the covers.

Important:

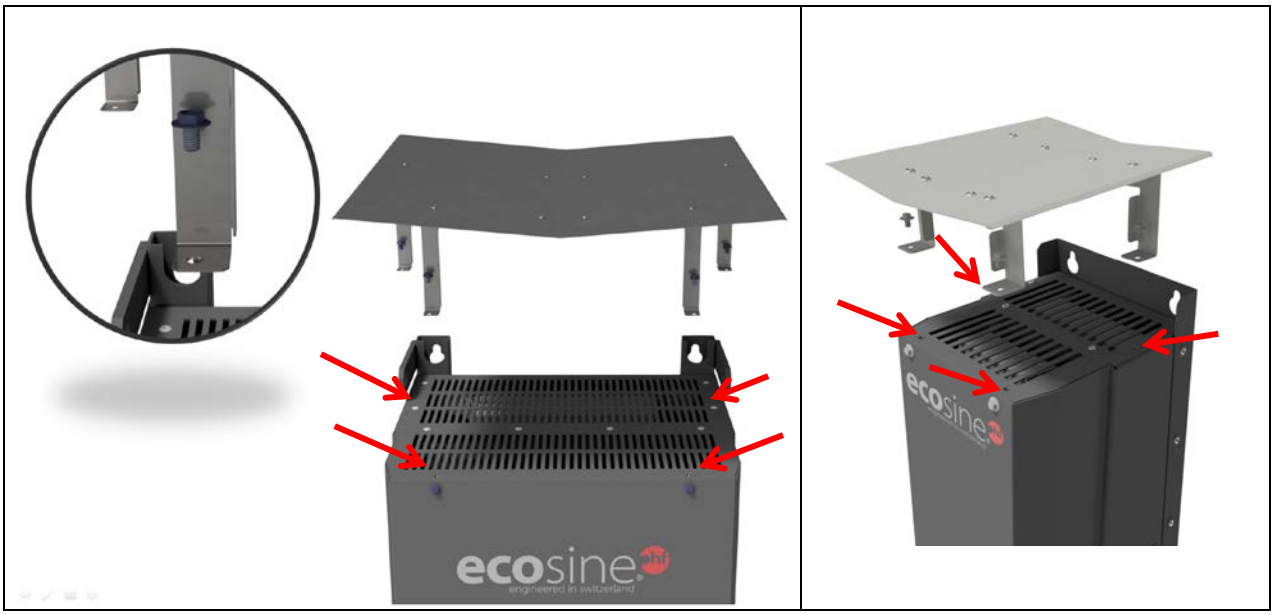
In order to ensure sufficient air flow, keep a clearance of min.150mm above and below the filter to walls or other components. If IP21 cover kits are used the above clearance is still defined from the filter top outlet.

Additional work to access the device, caused by not respected clearance distances, will be accounted separately.

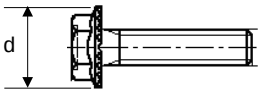
It must be ensured that the environmental temperature is kept below 45°C with appropriate thermal management (e.g. cabinet cooling). Filter operation in environments with higher temperatures require a temperature derating.



II.1 Screw hole positions for adapting the covers to the filters:



II.2 Screw selection: Schaffner recommends zinc coated hex ribbed flange steel bolts. Together with the IP21 cover kits appropriate screws will be delivered. The use of washers is not recommended.



II.3 Cover placement:

1. Set cover loose on the filter. Due to its geometrics covers will only fit in one direction.
2. Position screws.
3. Fix screws with appropriate torque.

II.4 Final check:

1. Prior to the use of the IP21 filters please double check all cover screws for appropriate installation and the cover for correct position.
2. Make sure that no material has fallen into the filter. Any material falling into the filter is a potential source of damage and electrical hazard. This is particularly true for conductive material but not limited to it only.
3. Any material inside the filter leading to a defect or malfunction will void warranty.

4. Disclaimer

This document has been carefully checked. However, Schaffner does not assume any liability for errors or inaccuracies. Published specifications are subject to change without notice. Product suitability for an area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Schaffner does not guarantee the availability of all published products. Latest publications and a complete disclaimer can be downloaded from the Schaffner website. All trademarks recognized.