



Installation Operation Maintenance

**Rooftop Energy Recovery Module
for
TKD / TKH / WKD / WKH
YKD / YKH / DKD / DKH
125-155-175-200-250-265-290-340
275-300-350-400-500-600**



General information

Foreword

These instructions are given as a guide to good practice in the installation, start-up, operation, and maintenance by the user, of Trane Energy Recovery Module. They do not contain full service procedures necessary for the continued successful operation of this equipment. The services of a qualified technician should be employed through the medium of a maintenance contract with a reputable service company. Read this manual thoroughly before unit start-up.

Warnings and cautions

Warnings and Cautions appear at appropriate sections throughout this manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The constructor assumes no liability for installations or servicing performed by unqualified personnel.

WARNING! Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION! Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or for equipment or property-damage-only accidents.

Important recommendations

To avoid death, injury, equipment or property damage, the following recommendations should be observed during equipment operation:

1. The units are suitable for ambient air temperature between -20°C and $+70^{\circ}\text{C}$ and for air flow temperature between -20°C and $+40^{\circ}\text{C}$. Different conditions need written confirmation from the manufacturer.
2. The usual measure against frost in coils and protection against temperatures have to be secured by the user.
3. Components - Some OEM products have specific manufacturer's service instruction documents. These are delivered inside the unit. In this case, only the indications in the OEM manual are valid and the service handbook in hand has only general character for the relating components.
4. As fire prevention, fire dampers are to be provided where ducts cross firebreaks. Local fire prevention code is to be observed carefully.

To avoid death, injury, equipment or property damage, the following recommendations should be observed during maintenance and service visits:

1. Disconnect the main power supply before any servicing on the unit.
2. For inspection on the Air Handling Units and to avoid risks, the units surroundings are to be sufficiently lighted.

Reception

On arrival, inspect the unit before signing the delivery note. In case of visible damage: The consignee (or the site representative) must specify any damage on the delivery note, legibly sign and date the delivery note, and the truck driver must countersign it. The consignee (or the site representative) must notify your local Trane sales office and send a copy of the delivery note. The customer (or the site representative) should send a registered letter to the last carrier within 3 days of delivery.

Reception in France only:

Concealed damage must be looked for at delivery and immediately treated as visible damage.

Reception in all countries except France:

In case of concealed damage: The consignee (or the site representative) must send a registered letter to the last carrier within 7 days of delivery, claiming for the described damage. A copy of this letter must be sent to your local Trane sales office.

Warranty

Warranty is based on the general terms and conditions of the manufacturer. The warranty is void if the equipment is repaired or modified without the written approval of the manufacturer, if the operating limits are exceeded or if the control system or the electrical wiring is modified. Damage due to misuse, lack of maintenance or failure to comply with the manufacturer's instructions or recommendations is not covered by the warranty obligation. If the user does not conform to the rules of this manual, it may entail cancellation of warranty and liabilities by the manufacturer.

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Installation

Energy Recovery Module (ERM) preparation

Use the provided gasket inside the rooftop unit and fix it to the ERM internal edge as described in Figure 1.

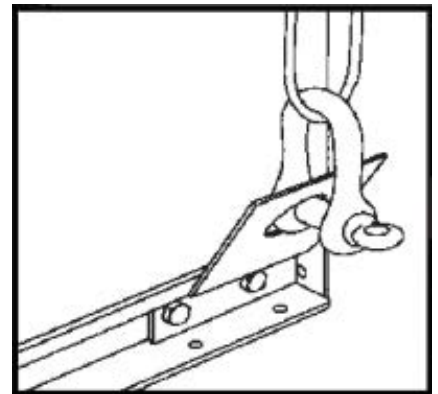
Figure 1 -



Cut the cable tie and prepare the cables at the border of the ERM to ease the cable installation into the rooftop front side.

Mount and use the delivered lifting device for ERM handling as shown in Figure 2.

Figure 2 -

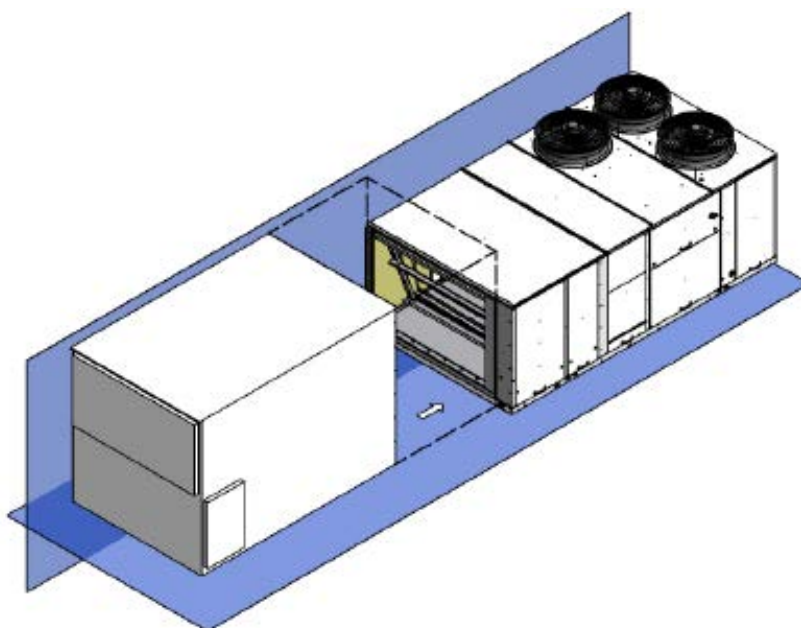


Installation

The ERM needs to be supported on the perimeter panels.

The frame surface should be flat and perfectly aligned with the rooftop bottom plan. Position the ERM so that it is aligned with the down left corner of the rooftop. See Figure 3.

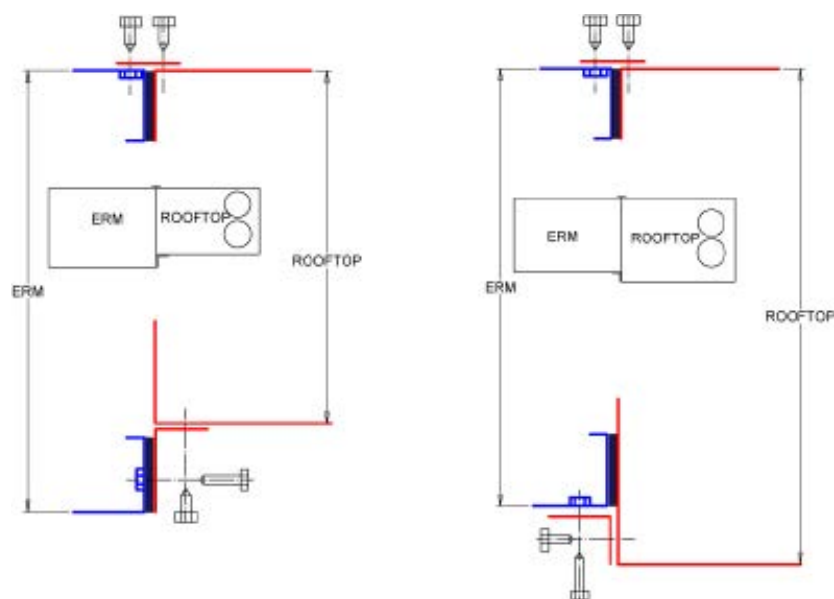
Figure 3 -



Fasten the ERM with the flat / back side flange (1) to ensure the ERM is perfectly aligned with the rooftop. See Figure 4

Fasten the front side vertical angle flange (2). Verify that the gasket is not damaged during this operation.

Figure 4 -



Installation

Fasten the roof end to the ERM with self-drilling screws as shown in Figure 5.

Figure 5a -

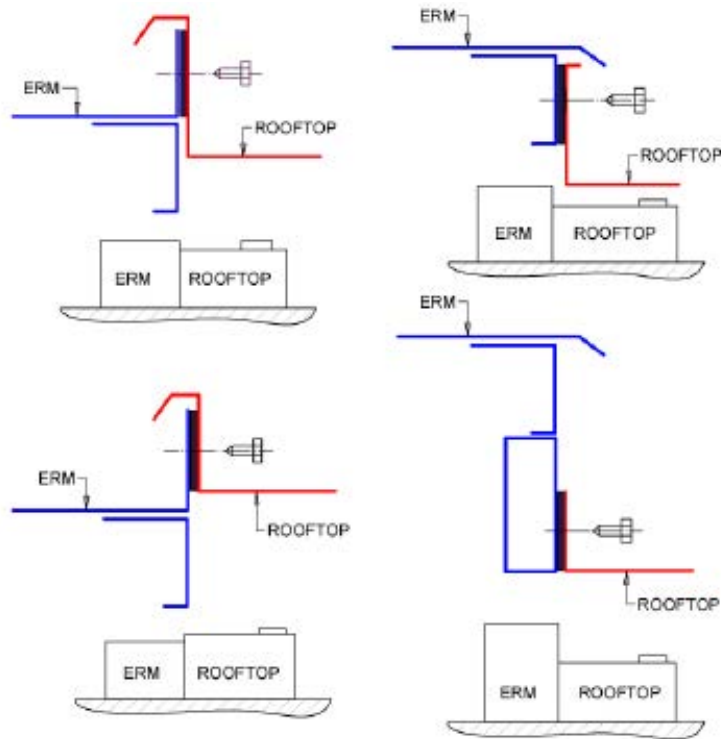
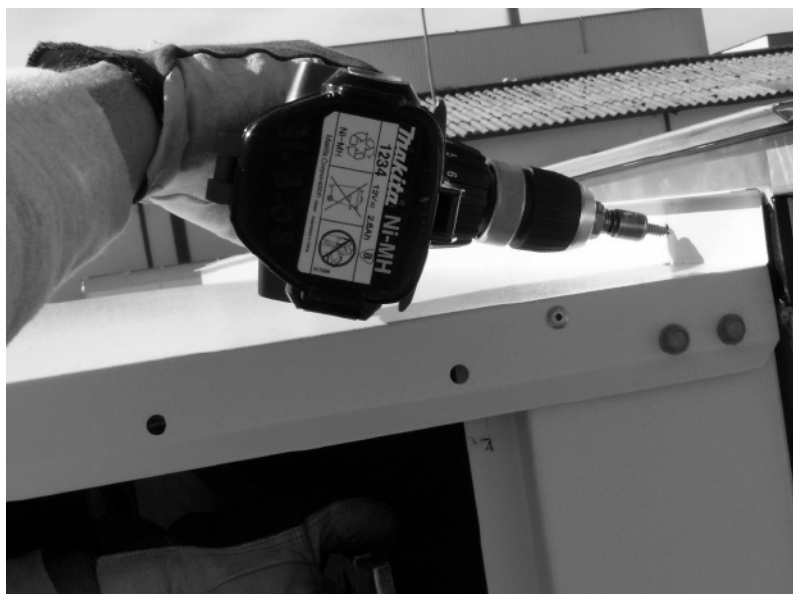


Figure 5b -



Run all the ERM cable (power and actuator) and transparent hose (if installed) into the rooftop fresh air / filter section.

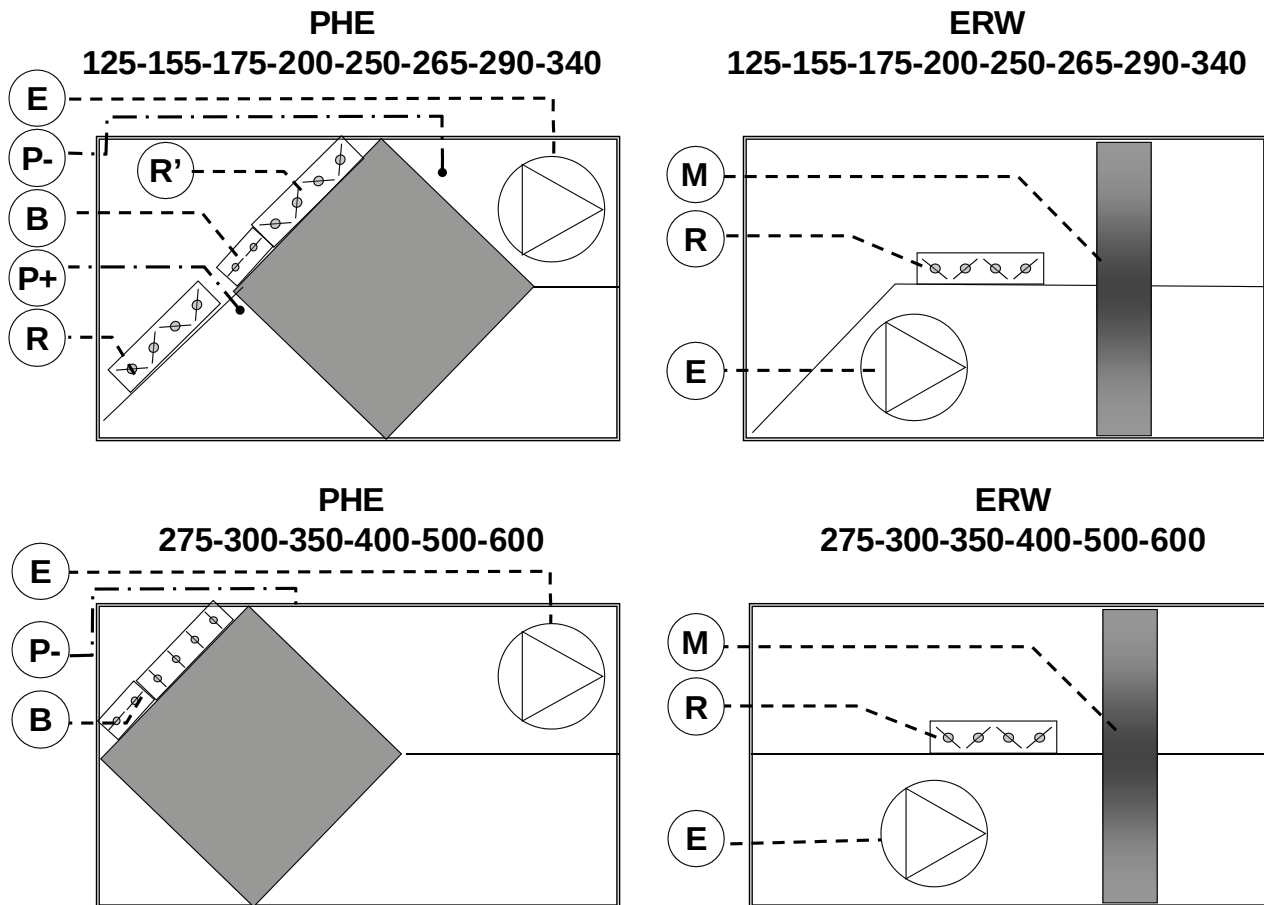
Place the fresh air filter into the filter rack located behind the fresh air inlet louver of the ERM.

Installation

Cable preparation

Depending on the ERM type and rooftop size, different connections need to be made. Refer to Figure 6 to perform the necessary connections.

Figure 6 - Connections



- (P-)** Plastic hose - Defrost pressure switch negative pressure port
- (P+)** Plastic hose - Defrost pressure switch positive pressure port
- (M)** Power cable – Heat recovery Wheel motor (400V/3/50)
- (E)** Power cable – Exhaust / Return fan motor (400V/3/50)
- (R)** Control cable – Return air mixing damper actuator modulating
- (R')** Control cable – Fresh air damper actuator (modulating)
- (B)** Control cable – By-pass free cooling damper actuator (ON-OFF)

Installation

Exhaust / Return fan cable connection

Run the power exhaust fan motor power cables to the speed inverter.

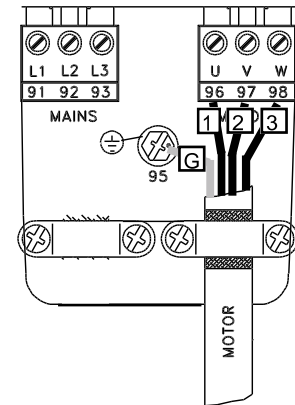
Connect the three phases and ground cable(s) to the MOTOR terminal of the speed inverter.

Respect the cable numbers as shown in Figure 7.

If two exhaust fan motors are installed, repeat the operation two times.

The cable shield must be connected to the chassis by means of the cable clamp.

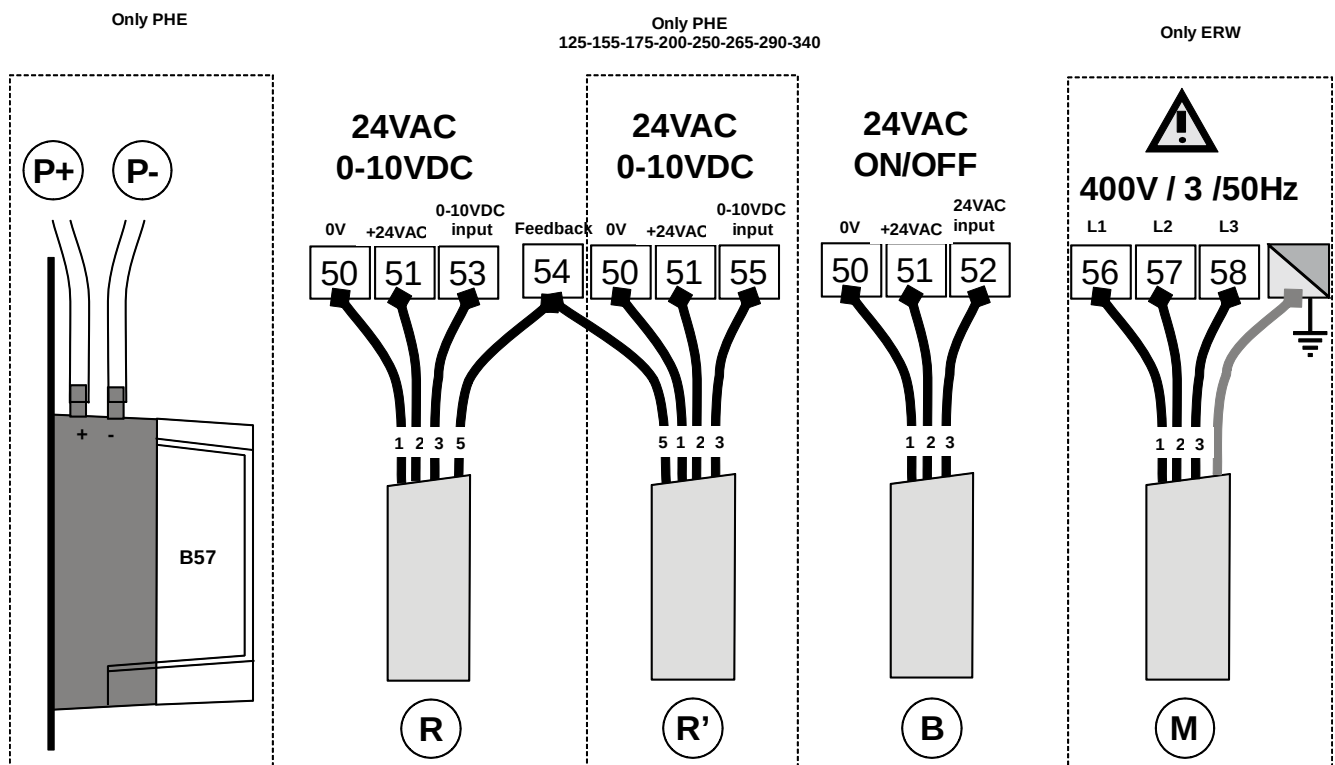
Figure 7 -



Connect to the spring terminal blocks X50-X51-X52-X53-X56-X57-X58. Connect cables according to the following wiring diagrams.

For Plate Heat exchanger versions, connect the plastic hose to the differential defrost pressure switch port.

Figure 8 - Connections



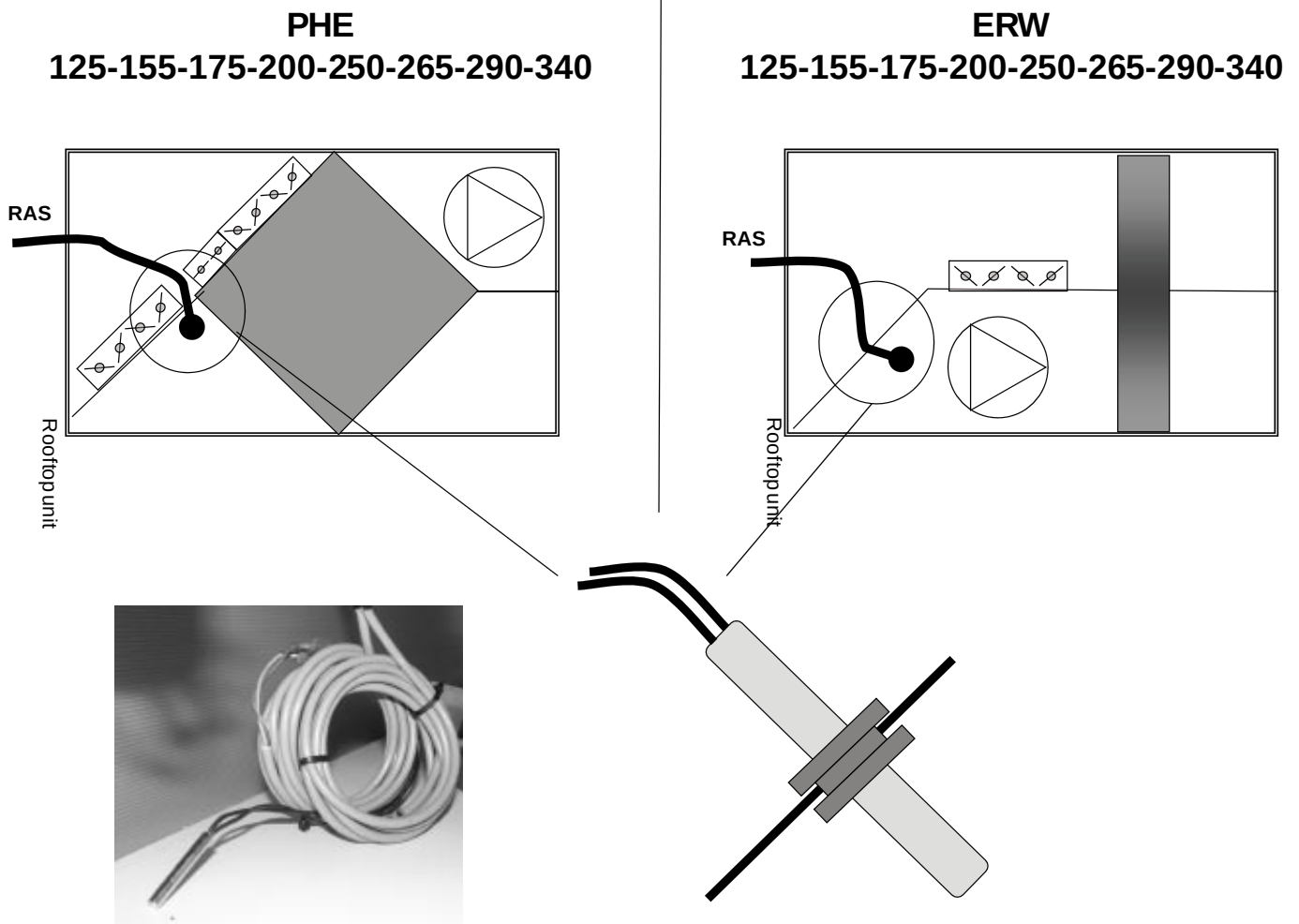
WARNING!: insulate the cables to ensure there has not been any cable damage during shipping and installation.

Installation

On unit sizes 125-155-175-200-250-265-290-340, the return air sensor of the economizer needs to be placed into to return air section of the ERM.

Place return air temperature sensors in the air return section of the ERM as indicated in Figure 9.

Figure 9 -



Operation

Service Test Guide for Component Operation

Test and setup of the ERM is performed during the first two steps of the rooftop test sequence.

Step 1 of the test simulates normal ventilation mode of the unit.

Step 2 of the test simulates free cooling mode.

During step 1, adjust the return air damper position by turning the minimum position potentiometer on the Economizer module (ECA).

In case of plate heat exchanger version (PHE) adjust the exhaust fan speed minimum reference by changing the corresponding parameters. See Exhaust Fan Setup section in this manual.

Heat Recovery Wheel (ERW)

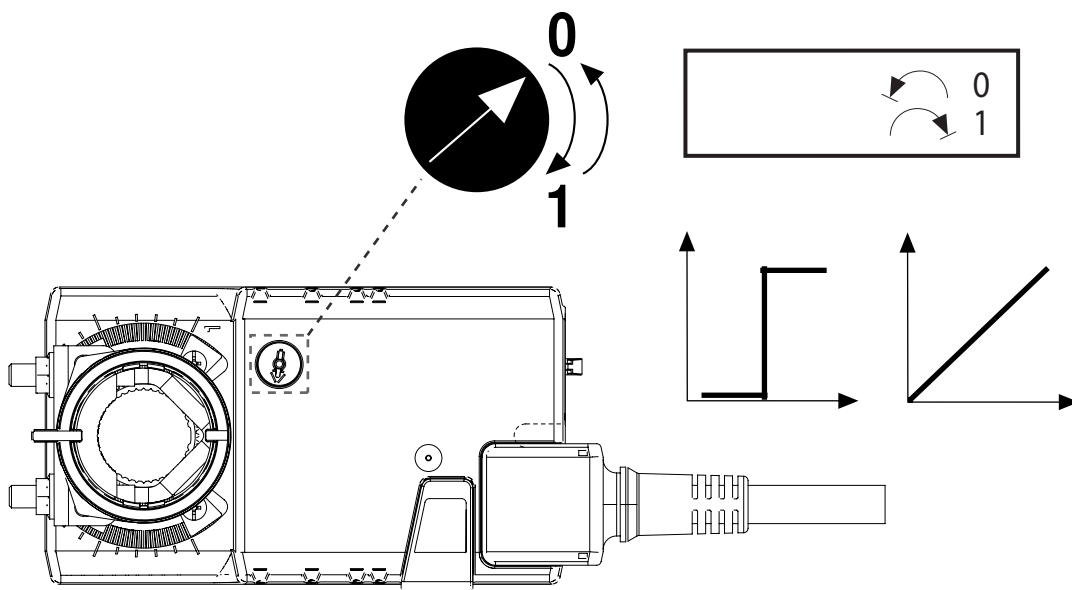
Step	Mode	Indoor Fan	Economizer module	Exhaust fan speed	ERW motor	Return air mixing damper
1	Fan On	ON	Minimum	Nominal	ON	Minimum
2	Econ. Free cooling	ON	100% Open	Nominal	Off	Closed

Plate Heat Exchanger (PHE)

Step	Mode	Indoor Fan	Economizer module	Exhaust fan speed	Plate heat exchanger by-pass damper	Return air mixing damper
1	Fan On	ON	Minimum	Minimum	OFF	Minimum
2	Econ. Free cooling	ON	100% Open	Maximum	By-pass	Closed

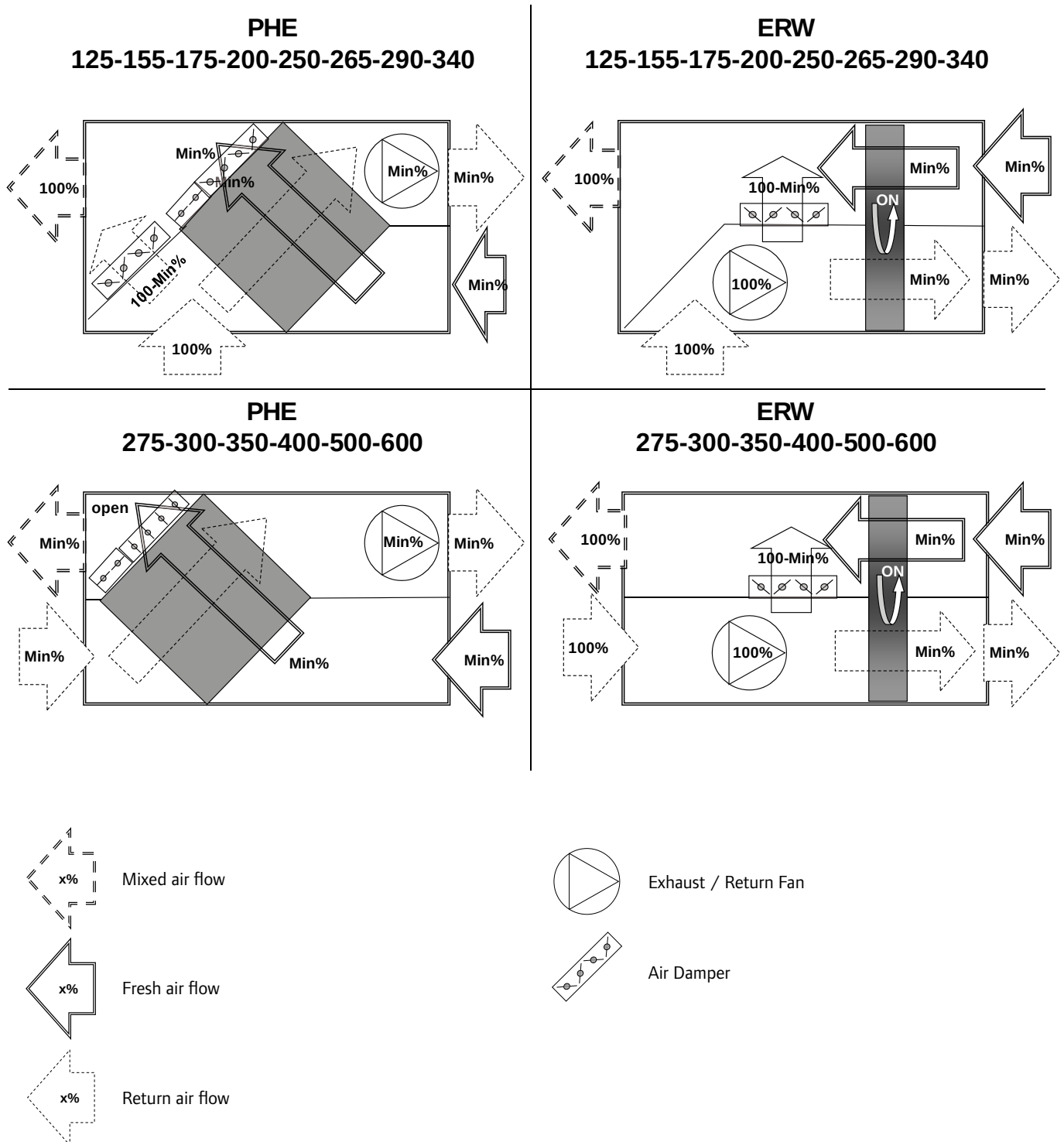
If the damper actuator is operating in the opposite way as it should be, reverse the direction of the rotation selector switch as shown in figure below.

Figure 10a - Damper actuator direction



Operation

Figure 10b - Air circulation in normal operation



Operation

Exhaust fan setup

In case of dual exhaust fan, set up both exhaust fan inverters at the same reference.

Adjust the minimum speed (x% fresh airflow) via frequency drive parameter 204. (See Fan performances tables in Appendix)

Adjust the maximum speed (100% airflow exhausted) via frequency drive parameter 205. (See Fan performances tables in Appendix).

Fresh air percentage can be controlled measuring return air, outdoor air and mix air temperature with the following formula:

$$Min\% = \frac{T^{\circ}return - T^{\circ}mix}{T^{\circ}return - T^{\circ}outdoor}$$

Stating:

Min % = % fresh air

T° return = Return air temperature

T° Outdoor = Outdoor air temperature

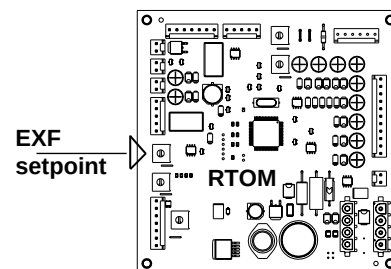
Free cooling operation

Free cooling is controlled by Reliatel ECA board. When free cooling is enabled, mix return air damper will close and energy recovery heat exchanger will be deactivated.

The ERM will operate as a 100% fresh air / 100% exhaust air unit.

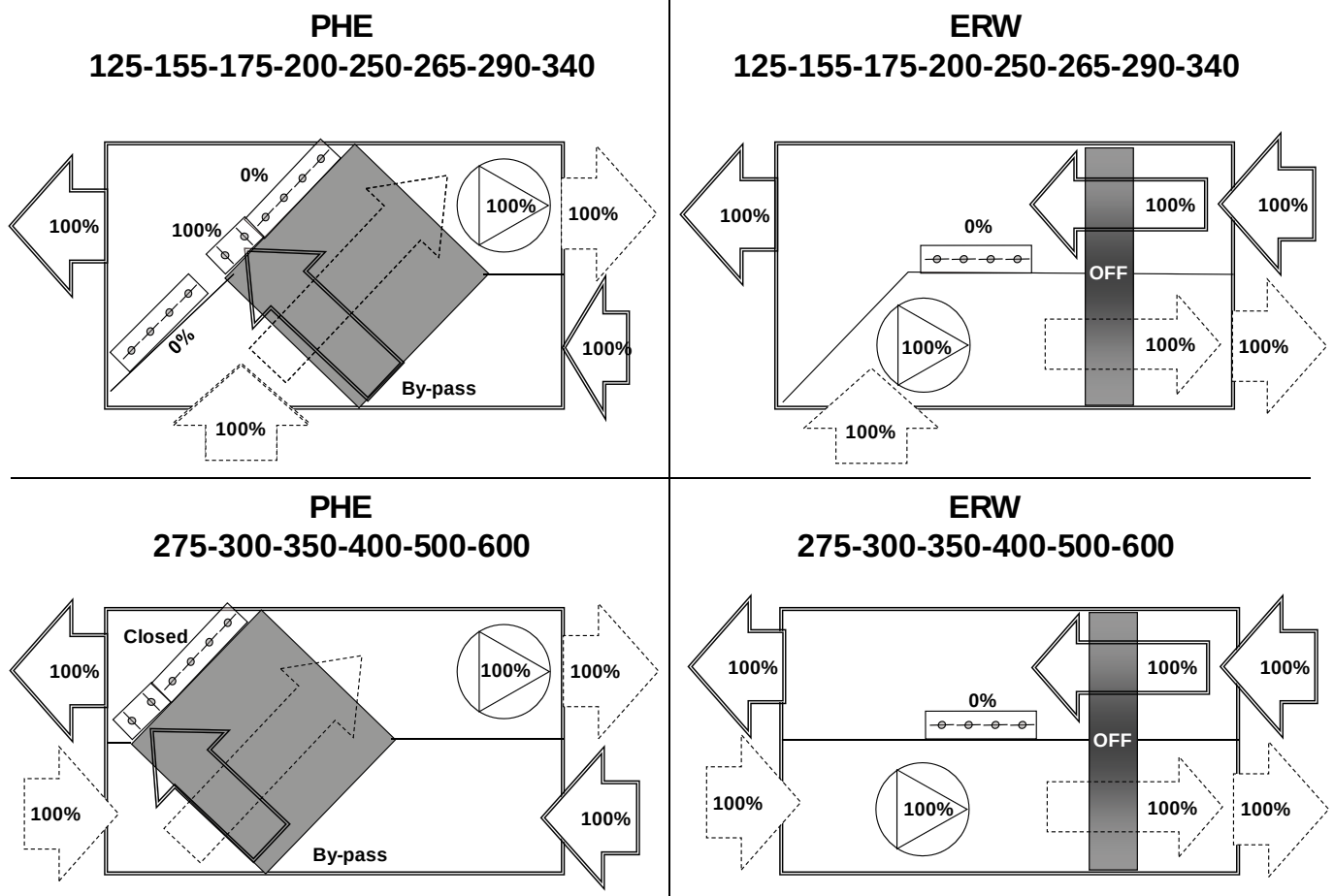
Set the EXF set point at 50% on the RTOM – R40 inside the control panel of the unit.

Figure 11 -



Operation

Figure 12 - Air circulation in free cooling operation



Free cooling operation

Operation

Defrost pressure switch (PHE version)

In winter mode, frost occurs in the return air side of the exchanger increasing pressure drop. The defrost pressure switch setting should be setup so that it does not switch in free cooling mode (100% exhaust air flow).

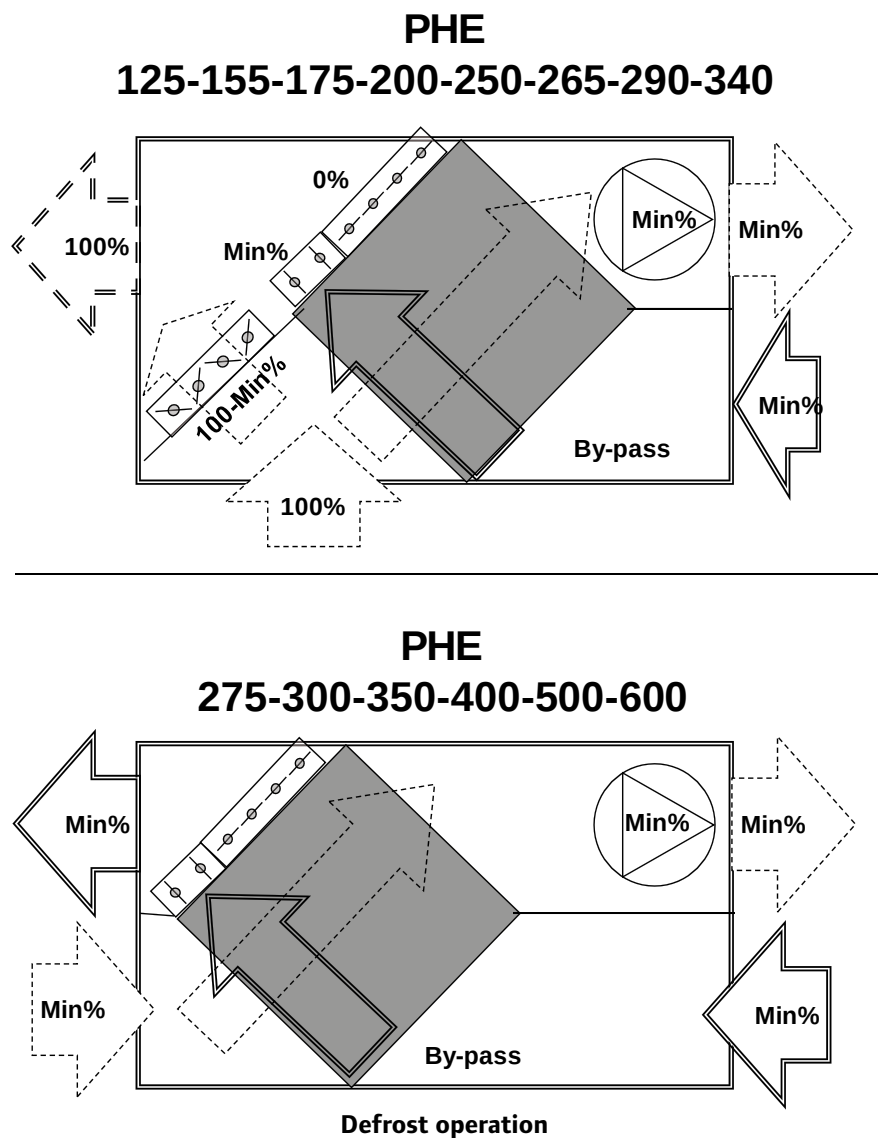
During the free cooling test mode, adjust the pressure switch setting to reach the threshold point. This value of pressure drop is the maximum non frosted pressure drop. Increase this setting by +50% to set up the frosted pressure drop.

ERM defrost mode is active when the timer relay light is activated.

The defrost pressure switch activates a timer relay that opens the bypass damper for a duration of 5 minutes (default setting).

During defrost operation, the mixing damper stays in the minimum position.

Figure 13 - Air circulation in defrost operation



Appendix

Table 1 - Exhaust fan performances

Downflow Plate Heat Exchanger (PHE - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
125-155-175	590	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	1167	20 Hz
	1340	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	1044	18 Hz	0.3 kW	1241	21 Hz
	2090	n/a	n/a	n/a	0.2 kW	930	16 Hz	0.2 kW	1169	20 Hz	0.3 kW	1335	23 Hz
	2840	0.2 kW	889	15 Hz	0.2 kW	1119	19 Hz	0.3 kW	1305	22 Hz	0.4 kW	1447	25 Hz
	3590	0.2 kW	1136	20 Hz	0.3 kW	1303	22 Hz	0.4 kW	1449	25 Hz	0.6 kW	1575	27 Hz
	4340	0.3 kW	1366	23 Hz	0.5 kW	1486	26 Hz	0.6 kW	1605	28 Hz	0.7 kW	1721	30 Hz
	5090	0.5 kW	1581	27 Hz	0.7 kW	1670	29 Hz	0.8 kW	1771	30 Hz	1.0 kW	1884	32 Hz
	5840	0.7 kW	1788	31 Hz	0.9 kW	1860	32 Hz	1.1 kW	1952	33 Hz	1.3 kW	2064	35 Hz
	6590	1.0 kW	1993	34 Hz	1.3 kW	2058	35 Hz	1.4 kW	2146	37 Hz	1.6 kW	2259	39 Hz
	7340	1.4 kW	2204	38 Hz	1.6 kW	2267	39 Hz	1.8 kW	2353	40 Hz	2.0 kW	2463	42 Hz
	8090	1.8 kW	2426	42 Hz	2.1 kW	2488	43 Hz	2.3 kW	2568	44 Hz	2.5 kW	2665	46 Hz
	8840	2.3 kW	2662	46 Hz	2.6 kW	2718	47 Hz	2.8 kW	2781	48 Hz	3.1 kW	2851	49 Hz
	9590	2.9 kW	2907	50 Hz	3.2 kW	2945	51 Hz	3.5 kW	2974	51 Hz	3.8 kW	2995	51 Hz
	10340	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	11090	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	11820	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Downflow Plate Heat Exchanger (PHE - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
200-250-265	850	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	756	26 Hz	0.4 kW	910	31 Hz
	1920	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	821	28 Hz	0.4 kW	958	33 Hz
	2990	n/a	n/a	n/a	0.3 kW	716	24 Hz	0.3 kW	900	31 Hz	0.5 kW	1021	35 Hz
	4060	0.3 kW	642	22 Hz	0.3 kW	839	29 Hz	0.4 kW	990	34 Hz	0.6 kW	1095	37 Hz
	5130	0.3 kW	811	28 Hz	0.4 kW	963	33 Hz	0.6 kW	1087	37 Hz	0.8 kW	1182	40 Hz
	6200	0.4 kW	974	33 Hz	0.6 kW	1090	37 Hz	0.8 kW	1193	41 Hz	1.1 kW	1280	44 Hz
	7270	0.6 kW	1129	38 Hz	0.9 kW	1219	42 Hz	1.1 kW	1307	45 Hz	1.4 kW	1391	47 Hz
	8340	0.9 kW	1281	44 Hz	1.2 kW	1352	46 Hz	1.5 kW	1430	49 Hz	1.7 kW	1514	52 Hz
	9410	1.3 kW	1431	49 Hz	1.6 kW	1490	51 Hz	1.9 kW	1562	53 Hz	2.2 kW	1647	56 Hz
	10480	1.7 kW	1582	54 Hz	2.1 kW	1634	56 Hz	2.4 kW	1703	58 Hz	2.7 kW	1788	61 Hz
	11550	2.3 kW	1736	59 Hz	2.6 kW	1784	61 Hz	3.0 kW	1849	63 Hz	3.3 kW	1933	66 Hz
	12620	2.9 kW	1896	65 Hz	3.3 kW	1939	66 Hz	3.7 kW	1998	68 Hz	4.0 kW	2075	71 Hz
	13690	3.6 kW	2059	70 Hz	4.0 kW	2093	71 Hz	4.4 kW	2141	73 Hz	n/a	n/a	n/a
	14760	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	15830	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	16920	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Downflow Plate Heat Exchanger (PHE - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
290-340	1080	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	692	24 Hz	0.5 kW	833	28 Hz
	2450	n/a	n/a	n/a	0.3 kW	559	19 Hz	0.3 kW	748	26 Hz	0.5 kW	876	30 Hz
	3820	n/a	n/a	n/a	0.3 kW	659	22 Hz	0.4 kW	818	28 Hz	0.6 kW	932	32 Hz
	5190	0.4 kW	604	21 Hz	0.4 kW	768	26 Hz	0.5 kW	900	31 Hz	0.8 kW	1001	34 Hz
	6560	0.4 kW	752	26 Hz	0.6 kW	881	30 Hz	0.8 kW	990	34 Hz	1.0 kW	1081	37 Hz
	7930	0.6 kW	899	31 Hz	0.8 kW	999	34 Hz	1.1 kW	1090	37 Hz	1.4 kW	1172	40 Hz
	9300	0.9 kW	1043	36 Hz	1.2 kW	1121	38 Hz	1.5 kW	1197	41 Hz	1.8 kW	1274	43 Hz
	10670	1.2 kW	1187	41 Hz	1.6 kW	1247	43 Hz	1.9 kW	1314	45 Hz	2.3 kW	1387	47 Hz
	12040	1.7 kW	1331	45 Hz	2.1 kW	1378	47 Hz	2.5 kW	1437	49 Hz	2.8 kW	1509	52 Hz
	13410	2.3 kW	1476	50 Hz	2.7 kW	1514	52 Hz	3.2 kW	1568	54 Hz	3.5 kW	1639	56 Hz
	14780	3.0 kW	1623	55 Hz	3.5 kW	1655	56 Hz	3.9 kW	1704	58 Hz	4.3 kW	1772	60 Hz
	16150	3.8 kW	1774	61 Hz	4.3 kW	1799	61 Hz	4.8 kW	1843	63 Hz	5.3 kW	1906	65 Hz
	17520	4.7 kW	1926	66 Hz	5.3 kW	1944	66 Hz	5.9 kW	1979	68 Hz	6.4 kW	2032	69 Hz
	18890	5.8 kW	2078	71 Hz	6.5 kW	2085	71 Hz	n/a	n/a	n/a	n/a	n/a	n/a
	20260	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	21600	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Downflow Plate Heat Exchanger (PHE - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
275-300-350	1020	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	687	23 Hz	0.5 kW	818	28 Hz
	2310	n/a	n/a	n/a	0.3 kW	557	19 Hz	0.3 kW	741	25 Hz	0.6 kW	860	29 Hz
	3600	n/a	n/a	n/a	0.3 kW	651	22 Hz	0.4 kW	808	28 Hz	0.6 kW	915	31 Hz
	4890	0.3 kW	583	20 Hz	0.4 kW	752	26 Hz	0.5 kW	885	30 Hz	0.8 kW	981	33 Hz
	6180	0.4 kW	722	25 Hz	0.5 kW	858	29 Hz	0.7 kW	970	33 Hz	1.0 kW	1057	36 Hz
	7470	0.5 kW	860	29 Hz	0.7 kW	969	33 Hz	1.0 kW	1063	36 Hz	1.3 kW	1144	39 Hz
	8760	0.8 kW	996	34 Hz	1.0 kW	1082	37 Hz	1.3 kW	1163	40 Hz	1.6 kW	1240	42 Hz
	10050	1.1 kW	1131	39 Hz	1.4 kW	1200	41 Hz	1.7 kW	1271	43 Hz	2.1 kW	1346	46 Hz
	11340	1.5 kW	1265	43 Hz	1.9 kW	1321	45 Hz	2.2 kW	1386	47 Hz	2.6 kW	1460	50 Hz
	12630	2.0 kW	1399	48 Hz	2.4 kW	1447	49 Hz	2.8 kW	1508	51 Hz	3.2 kW	1583	54 Hz
	13920	2.6 kW	1536	52 Hz	3.1 kW	1577	54 Hz	3.5 kW	1636	56 Hz	3.9 kW	1710	58 Hz
	15210	3.4 kW	1674	57 Hz	3.9 kW	1712	58 Hz	4.3 kW	1767	60 Hz	4.7 kW	1841	63 Hz
	16500	4.2 kW	1815	62 Hz	4.8 kW	1847	63 Hz	5.2 kW	1898	65 Hz	5.7 kW	1967	67 Hz
	17790	5.2 kW	1955	67 Hz	5.8 kW	1981	68 Hz	6.3 kW	2023	69 Hz	6.8 kW	2083	71 Hz
	19080	6.3 kW	2091	71 Hz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	20400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Downflow Plate Heat Exchanger (PHE - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
400-500-600	1620	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	3680	n/a	n/a	n/a	n/a	n/a	n/a	0.5 kW	581	20 Hz	1.0 kW	677	23 Hz
	5740	n/a	n/a	n/a	0.5 kW	513	17 Hz	0.6 kW	639	22 Hz	1.1 kW	725	25 Hz
	7800	0.6 kW	462	16 Hz	0.6 kW	598	20 Hz	0.8 kW	704	24 Hz	1.3 kW	780	26 Hz
	9860	0.6 kW	575	19 Hz	0.8 kW	685	23 Hz	1.1 kW	774	26 Hz	1.6 kW	843	29 Hz
	11920	0.9 kW	686	23 Hz	1.1 kW	774	26 Hz	1.5 kW	850	29 Hz	2.0 kW	912	31 Hz
	13980	1.2 kW	795	27 Hz	1.6 kW	865	29 Hz	2.1 kW	930	32 Hz	2.6 kW	989	34 Hz
	16040	1.7 kW	901	31 Hz	2.2 kW	958	32 Hz	2.8 kW	1015	34 Hz	3.3 kW	1074	36 Hz
	18100	2.4 kW	1006	34 Hz	3.0 kW	1053	36 Hz	3.6 kW	1106	37 Hz	4.1 kW	1165	39 Hz
	20160	3.3 kW	1110	38 Hz	3.9 kW	1151	39 Hz	4.5 kW	1203	41 Hz	5.0 kW	1264	43 Hz
	22220	4.3 kW	1215	41 Hz	5.0 kW	1253	42 Hz	5.6 kW	1304	44 Hz	6.1 kW	1368	46 Hz
	24280	5.5 kW	1323	45 Hz	6.2 kW	1360	46 Hz	6.9 kW	1411	48 Hz	7.4 kW	1477	50 Hz
	26340	6.9 kW	1433	49 Hz	7.7 kW	1469	50 Hz	8.3 kW	1520	52 Hz	8.9 kW	1587	54 Hz
	28400	8.5 kW	1546	52 Hz	9.3 kW	1580	54 Hz	10.0 kW	1630	55 Hz	10.6 kW	1694	57 Hz
	30460	10.3 kW	1658	56 Hz	11.2 kW	1688	57 Hz	12.0 kW	1733	59 Hz	12.6 kW	1791	61 Hz
	32450	12.3 kW	1763	60 Hz	13.3 kW	1787	61 Hz	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Table 2 - Exhaust fan performances

Horizontal flow Plate Heat Exchanger (PHE - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
125-155-175	590	n/a	n/a	n/a	0.1 kW	729	12 Hz	0.1 kW	985	17 Hz	0.3 kW	1165	20 Hz
	1340	n/a	n/a	n/a	0.1 kW	841	14 Hz	0.1 kW	1068	18 Hz	0.3 kW	1236	21 Hz
	2090	0.1 kW	735	13 Hz	0.1 kW	977	17 Hz	0.2 kW	1175	20 Hz	0.3 kW	1328	23 Hz
	2840	0.2 kW	931	16 Hz	0.2 kW	1131	19 Hz	0.3 kW	1300	22 Hz	0.4 kW	1440	25 Hz
	3590	0.2 kW	1135	19 Hz	0.3 kW	1297	22 Hz	0.4 kW	1441	25 Hz	0.6 kW	1568	27 Hz
	4340	0.3 kW	1347	23 Hz	0.5 kW	1476	25 Hz	0.6 kW	1597	27 Hz	0.8 kW	1713	29 Hz
	5090	0.5 kW	1565	27 Hz	0.7 kW	1664	28 Hz	0.8 kW	1766	30 Hz	1.0 kW	1872	32 Hz
	5840	0.7 kW	1786	30 Hz	0.9 kW	1860	32 Hz	1.1 kW	1947	33 Hz	1.3 kW	2045	35 Hz
	6590	1.0 kW	2011	34 Hz	1.2 kW	2065	35 Hz	1.4 kW	2138	36 Hz	1.6 kW	2231	38 Hz
	7340	1.3 kW	2239	38 Hz	1.6 kW	2276	39 Hz	1.8 kW	2339	40 Hz	2.0 kW	2426	41 Hz
	8090	1.7 kW	2470	42 Hz	2.0 kW	2493	43 Hz	2.3 kW	2546	43 Hz	2.5 kW	2629	45 Hz
	8840	2.2 kW	2702	46 Hz	2.6 kW	2713	46 Hz	2.9 kW	2757	47 Hz	3.1 kW	2834	48 Hz
	9590	2.8 kW	2934	50 Hz	3.2 kW	2933	50 Hz	3.5 kW	2967	51 Hz	3.8 kW	3036	52 Hz
	10340	3.5 kW	3163	54 Hz	3.9 kW	3149	54 Hz	4.2 kW	3171	54 Hz	4.5 kW	3229	55 Hz
	11090	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	11820	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Horizontal flow Plate Heat Exchanger (PHE - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
200-250-265	850	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	767	26 Hz	0.4 kW	914	31 Hz
	1920	n/a	n/a	n/a	0.2 kW	619	21 Hz	0.2 kW	826	28 Hz	0.4 kW	960	33 Hz
	2990	n/a	n/a	n/a	0.2 kW	725	25 Hz	0.3 kW	901	31 Hz	0.5 kW	1021	35 Hz
	4060	0.3 kW	653	22 Hz	0.3 kW	840	29 Hz	0.4 kW	987	34 Hz	0.6 kW	1095	37 Hz
	5130	0.3 kW	812	28 Hz	0.4 kW	960	33 Hz	0.6 kW	1083	37 Hz	0.8 kW	1180	40 Hz
	6200	0.4 kW	969	33 Hz	0.6 kW	1086	37 Hz	0.8 kW	1189	41 Hz	1.1 kW	1278	44 Hz
	7270	0.6 kW	1124	38 Hz	0.9 kW	1215	41 Hz	1.1 kW	1303	44 Hz	1.4 kW	1387	47 Hz
	8340	0.9 kW	1277	44 Hz	1.2 kW	1349	46 Hz	1.5 kW	1426	49 Hz	1.7 kW	1507	51 Hz
	9410	1.3 kW	1431	49 Hz	1.6 kW	1488	51 Hz	1.9 kW	1557	53 Hz	2.2 kW	1638	56 Hz
	10480	1.7 kW	1585	54 Hz	2.0 kW	1633	56 Hz	2.4 kW	1696	58 Hz	2.7 kW	1776	60 Hz
	11550	2.2 kW	1743	59 Hz	2.6 kW	1783	61 Hz	3.0 kW	1841	63 Hz	3.3 kW	1917	65 Hz
	12620	2.8 kW	1903	65 Hz	3.2 kW	1936	66 Hz	3.6 kW	1988	68 Hz	4.0 kW	2058	70 Hz
	13690	3.5 kW	2066	70 Hz	4.0 kW	2090	71 Hz	4.4 kW	2131	73 Hz	4.8 kW	2190	75 Hz
	14760	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	15830	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	16920	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Horizontal flow Plate Heat Exchanger (PHE - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
290-340	1080	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	688	23 Hz	0.5 kW	832	28 Hz
	2450	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	746	25 Hz	0.5 kW	875	30 Hz
	3820	n/a	n/a	n/a	0.3 kW	654	22 Hz	0.4 kW	817	28 Hz	0.6 kW	931	32 Hz
	5190	0.4 kW	596	20 Hz	0.4 kW	765	26 Hz	0.5 kW	900	31 Hz	0.8 kW	1000	34 Hz
	6560	0.4 kW	748	26 Hz	0.6 kW	879	30 Hz	0.8 kW	990	34 Hz	1.0 kW	1080	37 Hz
	7930	0.6 kW	897	31 Hz	0.8 kW	998	34 Hz	1.1 kW	1089	37 Hz	1.4 kW	1171	40 Hz
	9300	0.8 kW	1042	36 Hz	1.1 kW	1119	38 Hz	1.4 kW	1196	41 Hz	1.8 kW	1273	43 Hz
	10670	1.2 kW	1185	40 Hz	1.6 kW	1244	42 Hz	1.9 kW	1311	45 Hz	2.2 kW	1384	47 Hz
	12040	1.7 kW	1328	45 Hz	2.1 kW	1374	47 Hz	2.5 kW	1434	49 Hz	2.8 kW	1506	51 Hz
	13410	2.2 kW	1472	50 Hz	2.7 kW	1510	52 Hz	3.1 kW	1564	53 Hz	3.5 kW	1635	56 Hz
	14780	2.9 kW	1618	55 Hz	3.4 kW	1650	56 Hz	3.9 kW	1700	58 Hz	4.3 kW	1769	60 Hz
	16150	3.7 kW	1768	60 Hz	4.3 kW	1794	61 Hz	4.8 kW	1839	63 Hz	5.2 kW	1902	65 Hz
	17520	4.7 kW	1921	66 Hz	5.3 kW	1940	66 Hz	5.8 kW	1975	67 Hz	6.3 kW	2026	69 Hz
	18890	5.7 kW	2074	71 Hz	6.4 kW	2081	71 Hz	n/a	n/a	n/a	n/a	n/a	n/a
	20260	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	21600	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Horizontal flow Plate Heat Exchanger (PHE - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
275-300-350	1020	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	691	24 Hz	0.5 kW	819	28 Hz
	2310	n/a	n/a	n/a	0.3 kW	563	19 Hz	0.3 kW	742	25 Hz	0.6 kW	861	29 Hz
	3600	n/a	n/a	n/a	0.3 kW	653	22 Hz	0.4 kW	808	28 Hz	0.6 kW	915	31 Hz
	4890	0.3 kW	586	20 Hz	0.4 kW	752	26 Hz	0.5 kW	884	30 Hz	0.8 kW	981	33 Hz
	6180	0.4 kW	721	25 Hz	0.5 kW	856	29 Hz	0.7 kW	968	33 Hz	1.0 kW	1056	36 Hz
	7470	0.5 kW	857	29 Hz	0.7 kW	966	33 Hz	1.0 kW	1061	36 Hz	1.3 kW	1142	39 Hz
	8760	0.8 kW	992	34 Hz	1.0 kW	1079	37 Hz	1.3 kW	1161	40 Hz	1.6 kW	1237	42 Hz
	10050	1.1 kW	1127	38 Hz	1.4 kW	1196	41 Hz	1.7 kW	1268	43 Hz	2.1 kW	1341	46 Hz
	11340	1.5 kW	1262	43 Hz	1.9 kW	1318	45 Hz	2.2 kW	1382	47 Hz	2.6 kW	1454	50 Hz
	12630	2.0 kW	1398	48 Hz	2.4 kW	1445	49 Hz	2.8 kW	1503	51 Hz	3.2 kW	1575	54 Hz
	13920	2.6 kW	1536	52 Hz	3.1 kW	1575	54 Hz	3.5 kW	1630	56 Hz	3.9 kW	1701	58 Hz
	15210	3.3 kW	1675	57 Hz	3.8 kW	1708	58 Hz	4.3 kW	1760	60 Hz	4.7 kW	1829	62 Hz
	16500	4.1 kW	1816	62 Hz	4.7 kW	1843	63 Hz	5.2 kW	1890	64 Hz	5.6 kW	1954	67 Hz
	17790	5.1 kW	1957	67 Hz	5.7 kW	1977	67 Hz	6.3 kW	2015	69 Hz	6.8 kW	2072	71 Hz
	19080	6.2 kW	2094	71 Hz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	20400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Horizontal flow Plate Heat Exchanger (PHE - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
400-500-600	1620	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.9 kW	640	22 Hz
	3680	n/a	n/a	n/a	0.4 kW	442	15 Hz	0.5 kW	584	20 Hz	0.9 kW	678	23 Hz
	5740	n/a	n/a	n/a	0.5 kW	517	18 Hz	0.6 kW	640	22 Hz	1.0 kW	725	25 Hz
	7800	0.5 kW	467	16 Hz	0.6 kW	599	20 Hz	0.8 kW	703	24 Hz	1.3 kW	780	26 Hz
	9860	0.6 kW	575	19 Hz	0.8 kW	683	23 Hz	1.1 kW	772	26 Hz	1.6 kW	841	29 Hz
	11920	0.9 kW	684	23 Hz	1.1 kW	771	26 Hz	1.5 kW	847	29 Hz	2.0 kW	911	31 Hz
	13980	1.2 kW	791	27 Hz	1.6 kW	861	29 Hz	2.1 kW	927	31 Hz	2.6 kW	987	33 Hz
	16040	1.7 kW	897	30 Hz	2.2 kW	954	32 Hz	2.7 kW	1012	34 Hz	3.3 kW	1070	36 Hz
	18100	2.4 kW	1003	34 Hz	3.0 kW	1050	36 Hz	3.5 kW	1102	37 Hz	4.1 kW	1160	39 Hz
	20160	3.2 kW	1109	38 Hz	3.9 kW	1149	39 Hz	4.5 kW	1198	41 Hz	5.0 kW	1256	43 Hz
	22220	4.2 kW	1216	41 Hz	4.9 kW	1251	42 Hz	5.6 kW	1298	44 Hz	6.1 kW	1358	46 Hz
	24280	5.4 kW	1324	45 Hz	6.2 kW	1356	46 Hz	6.8 kW	1403	48 Hz	7.4 kW	1463	50 Hz
	26340	6.7 kW	1435	49 Hz	7.6 kW	1464	50 Hz	8.3 kW	1509	51 Hz	8.9 kW	1570	53 Hz
	28400	8.3 kW	1546	52 Hz	9.2 kW	1573	53 Hz	10.0 kW	1616	55 Hz	10.6 kW	1675	57 Hz
	30460	10.1 kW	1657	56 Hz	11.1 kW	1681	57 Hz	11.9 kW	1719	58 Hz	12.6 kW	1773	60 Hz
	32450	12.1 kW	1762	60 Hz	13.1 kW	1779	60 Hz	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Table 3 - Exhaust fan performances

Downflow Energy Recovery Wheel (ERW - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
125-155-175	590	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	1177	20 Hz
	1340	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	1085	19 Hz	0.3 kW	1257	22 Hz
	2090	n/a	n/a	n/a	0.2 kW	988	17 Hz	0.2 kW	1208	21 Hz	0.3 kW	1353	23 Hz
	2840	0.2 kW	940	16 Hz	0.2 kW	1166	20 Hz	0.3 kW	1341	23 Hz	0.5 kW	1466	25 Hz
	3590	0.3 kW	1168	20 Hz	0.3 kW	1340	23 Hz	0.5 kW	1481	25 Hz	0.6 kW	1592	27 Hz
	4340	0.4 kW	1388	24 Hz	0.5 kW	1516	26 Hz	0.6 kW	1633	28 Hz	0.8 kW	1736	30 Hz
	5090	0.5 kW	1599	27 Hz	0.7 kW	1697	29 Hz	0.9 kW	1796	31 Hz	1.0 kW	1896	33 Hz
	5840	0.8 kW	1807	31 Hz	1.0 kW	1882	32 Hz	1.2 kW	1970	34 Hz	1.3 kW	2070	36 Hz
	6590	1.1 kW	2016	35 Hz	1.3 kW	2076	36 Hz	1.5 kW	2157	37 Hz	1.7 kW	2257	39 Hz
	7340	1.4 kW	2229	38 Hz	1.7 kW	2280	39 Hz	1.9 kW	2354	40 Hz	2.1 kW	2452	42 Hz
	8090	1.8 kW	2450	42 Hz	2.1 kW	2493	43 Hz	2.3 kW	2560	44 Hz	2.5 kW	2651	46 Hz
	8840	2.3 kW	2679	46 Hz	2.6 kW	2713	47 Hz	2.8 kW	2769	48 Hz	3.1 kW	2846	49 Hz
	9590	2.8 kW	2917	50 Hz	3.1 kW	2938	50 Hz	3.4 kW	2974	51 Hz	n/a	n/a	n/a
	10340	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	11090	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	11820	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Downflow Energy Recovery Wheel (ERW - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
200-250-265	850	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	785	27 Hz	0.4 kW	927	32 Hz
	1920	n/a	n/a	n/a	0.2 kW	662	23 Hz	0.3 kW	851	29 Hz	0.5 kW	979	33 Hz
	2990	0.3 kW	555	19 Hz	0.3 kW	766	26 Hz	0.3 kW	929	32 Hz	0.5 kW	1043	36 Hz
	4060	0.3 kW	702	24 Hz	0.3 kW	877	30 Hz	0.5 kW	1016	35 Hz	0.7 kW	1119	38 Hz
	5130	0.4 kW	848	29 Hz	0.5 kW	992	34 Hz	0.7 kW	1111	38 Hz	0.9 kW	1205	41 Hz
	6200	0.5 kW	996	34 Hz	0.7 kW	1113	38 Hz	0.9 kW	1216	41 Hz	1.1 kW	1303	44 Hz
	7270	0.7 kW	1144	39 Hz	0.9 kW	1240	42 Hz	1.2 kW	1328	45 Hz	1.4 kW	1411	48 Hz
	8340	1.0 kW	1294	44 Hz	1.3 kW	1371	47 Hz	1.5 kW	1448	49 Hz	1.8 kW	1527	52 Hz
	9410	1.3 kW	1445	49 Hz	1.7 kW	1507	51 Hz	2.0 kW	1575	54 Hz	2.3 kW	1651	56 Hz
	10480	1.7 kW	1599	54 Hz	2.1 kW	1648	56 Hz	2.4 kW	1708	58 Hz	2.8 kW	1781	61 Hz
	11550	2.2 kW	1756	60 Hz	2.6 kW	1794	61 Hz	3.0 kW	1846	63 Hz	3.3 kW	1915	65 Hz
	12620	2.8 kW	1916	65 Hz	3.2 kW	1943	66 Hz	3.7 kW	1988	68 Hz	4.0 kW	2051	70 Hz
	13690	3.4 kW	2078	71 Hz	3.9 kW	2093	71 Hz	4.4 kW	2128	73 Hz	4.8 kW	2183	74 Hz
	14760	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	15830	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	16920	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Downflow Energy Recovery Wheel (ERW - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
290-340	1080	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	700	24 Hz	0.5 kW	837	29 Hz
	2450	n/a	n/a	n/a	0.3 kW	583	20 Hz	0.3 kW	768	26 Hz	0.5 kW	887	30 Hz
	3820	n/a	n/a	n/a	0.3 kW	691	24 Hz	0.4 kW	844	29 Hz	0.7 kW	947	32 Hz
	5190	0.4 kW	639	22 Hz	0.4 kW	802	27 Hz	0.6 kW	928	32 Hz	0.9 kW	1018	35 Hz
	6560	0.5 kW	784	27 Hz	0.6 kW	912	31 Hz	0.8 kW	1017	35 Hz	1.1 kW	1099	37 Hz
	7930	0.6 kW	925	32 Hz	0.9 kW	1026	35 Hz	1.1 kW	1114	38 Hz	1.5 kW	1191	41 Hz
	9300	0.9 kW	1064	36 Hz	1.2 kW	1142	39 Hz	1.5 kW	1219	42 Hz	1.9 kW	1292	44 Hz
	10670	1.3 kW	1200	41 Hz	1.7 kW	1263	43 Hz	2.0 kW	1330	45 Hz	2.3 kW	1403	48 Hz
	12040	1.8 kW	1338	46 Hz	2.2 kW	1388	47 Hz	2.6 kW	1450	49 Hz	2.9 kW	1522	52 Hz
	13410	2.3 kW	1478	50 Hz	2.8 kW	1519	52 Hz	3.2 kW	1575	54 Hz	3.6 kW	1647	56 Hz
	14780	3.0 kW	1621	55 Hz	3.5 kW	1655	56 Hz	4.0 kW	1707	58 Hz	4.4 kW	1775	61 Hz
	16150	3.8 kW	1769	60 Hz	4.3 kW	1796	61 Hz	4.8 kW	1840	63 Hz	5.3 kW	1903	65 Hz
	17520	4.6 kW	1920	66 Hz	5.3 kW	1938	66 Hz	5.8 kW	1973	67 Hz	6.3 kW	2024	69 Hz
	18890	5.6 kW	2073	71 Hz	6.3 kW	2078	71 Hz	7.0 kW	2098	72 Hz	n/a	n/a	n/a
	20260	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	21600	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Downflow Energy Recovery Wheel (ERW - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
275-300-350	1020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.6 kW	820	28 Hz
	2310	n/a	n/a	n/a	n/a	n/a	n/a	0.4 kW	748	26 Hz	0.6 kW	871	30 Hz
	3600	n/a	n/a	n/a	0.4 kW	654	22 Hz	0.4 kW	829	28 Hz	0.7 kW	931	32 Hz
	4890	n/a	n/a	n/a	0.4 kW	775	26 Hz	0.6 kW	914	31 Hz	0.9 kW	999	34 Hz
	6180	0.5 kW	741	25 Hz	0.6 kW	889	30 Hz	0.8 kW	1000	34 Hz	1.1 kW	1074	37 Hz
	7470	0.6 kW	888	30 Hz	0.8 kW	1000	34 Hz	1.0 kW	1091	37 Hz	1.4 kW	1160	40 Hz
	8760	0.8 kW	1023	35 Hz	1.1 kW	1110	38 Hz	1.4 kW	1187	41 Hz	1.7 kW	1256	43 Hz
	10050	1.1 kW	1151	39 Hz	1.5 kW	1220	42 Hz	1.8 kW	1290	44 Hz	2.2 kW	1361	46 Hz
	11340	1.6 kW	1275	44 Hz	2.0 kW	1334	46 Hz	2.3 kW	1401	48 Hz	2.6 kW	1476	50 Hz
	12630	2.1 kW	1400	48 Hz	2.5 kW	1453	50 Hz	2.9 kW	1518	52 Hz	3.2 kW	1597	54 Hz
	13920	2.7 kW	1528	52 Hz	3.1 kW	1577	54 Hz	3.5 kW	1642	56 Hz	3.9 kW	1722	59 Hz
	15210	3.4 kW	1660	57 Hz	3.9 kW	1708	58 Hz	4.3 kW	1770	60 Hz	4.7 kW	1847	63 Hz
	16500	4.2 kW	1798	61 Hz	4.7 kW	1841	63 Hz	5.2 kW	1896	65 Hz	5.6 kW	1964	67 Hz
	17790	5.1 kW	1939	66 Hz	5.6 kW	1974	67 Hz	6.2 kW	2015	69 Hz	6.7 kW	2064	70 Hz
	19080	6.1 kW	2082	71 Hz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	20400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Downflow Energy Recovery Wheel (ERW - D)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
400-500-600	1620	n/a	n/a	n/a	n/a	n/a	n/a	0.5 kW	710	24 Hz	0.9 kW	842	29 Hz
	3680	n/a	n/a	n/a	0.5 kW	588	20 Hz	0.6 kW	754	26 Hz	1.0 kW	876	30 Hz
	5740	0.6 kW	472	16 Hz	0.5 kW	657	22 Hz	0.8 kW	806	28 Hz	1.2 kW	918	31 Hz
	7800	0.6 kW	571	20 Hz	0.7 kW	733	25 Hz	1.0 kW	865	30 Hz	1.5 kW	968	33 Hz
	9860	0.7 kW	669	23 Hz	0.9 kW	811	28 Hz	1.3 kW	929	32 Hz	1.8 kW	1023	35 Hz
	11920	0.9 kW	771	26 Hz	1.2 kW	894	31 Hz	1.7 kW	999	34 Hz	2.2 kW	1087	37 Hz
	13980	1.2 kW	874	30 Hz	1.6 kW	980	34 Hz	2.1 kW	1074	37 Hz	2.7 kW	1156	40 Hz
	16040	1.6 kW	977	33 Hz	2.1 kW	1069	37 Hz	2.7 kW	1154	39 Hz	3.3 kW	1231	42 Hz
	18100	2.1 kW	1082	37 Hz	2.7 kW	1161	40 Hz	3.3 kW	1238	42 Hz	4.0 kW	1312	45 Hz
	20160	2.7 kW	1187	41 Hz	3.4 kW	1256	43 Hz	4.1 kW	1327	45 Hz	4.8 kW	1398	48 Hz
	22220	3.4 kW	1294	44 Hz	4.2 kW	1355	46 Hz	4.9 kW	1419	49 Hz	5.7 kW	1488	51 Hz
	24280	4.3 kW	1403	48 Hz	5.1 kW	1455	50 Hz	5.9 kW	1515	52 Hz	6.7 kW	1582	54 Hz
	26340	5.2 kW	1513	52 Hz	6.2 kW	1558	53 Hz	7.0 kW	1613	55 Hz	7.8 kW	1678	57 Hz
	28400	6.3 kW	1624	56 Hz	7.3 kW	1662	57 Hz	8.2 kW	1712	59 Hz	9.1 kW	1774	61 Hz
	30460	7.6 kW	1735	59 Hz	8.6 kW	1766	60 Hz	9.6 kW	1812	62 Hz	10.5 kW	1871	64 Hz
	32450	8.9 kW	1842	63 Hz	10.0 kW	1867	64 Hz	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Table 4 - Exhaust fan performances

Horizontal flow Energy Recovery Wheel (ERW - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
125-155-175	590	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	975	17 Hz	0.3 kW	1158	20 Hz
	1340	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	1086	19 Hz	0.3 kW	1245	21 Hz
	2090	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	1209	21 Hz	0.4 kW	1346	23 Hz
	2840	0.2 kW	931	16 Hz	0.2 kW	1164	20 Hz	0.3 kW	1342	23 Hz	0.5 kW	1462	25 Hz
	3590	0.3 kW	1151	20 Hz	0.3 kW	1336	23 Hz	0.4 kW	1482	25 Hz	0.6 kW	1591	27 Hz
	4340	0.4 kW	1369	23 Hz	0.5 kW	1512	26 Hz	0.6 kW	1634	28 Hz	0.8 kW	1735	30 Hz
	5090	0.5 kW	1582	27 Hz	0.7 kW	1693	29 Hz	0.8 kW	1796	31 Hz	1.0 kW	1892	32 Hz
	5840	0.8 kW	1794	31 Hz	0.9 kW	1878	32 Hz	1.1 kW	1967	34 Hz	1.3 kW	2061	35 Hz
	6590	1.0 kW	2007	34 Hz	1.3 kW	2070	35 Hz	1.5 kW	2148	37 Hz	1.6 kW	2242	38 Hz
	7340	1.4 kW	2221	38 Hz	1.6 kW	2269	39 Hz	1.8 kW	2339	40 Hz	2.0 kW	2432	41 Hz
	8090	1.8 kW	2440	42 Hz	2.0 kW	2474	42 Hz	2.3 kW	2537	43 Hz	2.5 kW	2628	45 Hz
	8840	2.2 kW	2664	45 Hz	2.5 kW	2687	46 Hz	2.8 kW	2741	47 Hz	3.0 kW	2828	48 Hz
	9590	2.7 kW	2892	49 Hz	3.1 kW	2903	50 Hz	3.4 kW	2947	50 Hz	3.6 kW	3024	52 Hz
	10340	3.3 kW	3125	53 Hz	3.7 kW	3121	53 Hz	4.1 kW	3150	54 Hz	4.4 kW	3211	55 Hz
	11090	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	11820	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Horizontal flow Energy Recovery Wheel (ERW - H)

Unit size	Airflow m ³ /h	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
200-250-265	850	n/a	n/a	n/a	n/a	n/a	n/a	0.2 kW	782	27 Hz	0.4 kW	926	32 Hz
	1920	n/a	n/a	n/a	0.2 kW	657	22 Hz	0.3 kW	849	29 Hz	0.5 kW	978	33 Hz
	2990	0.3 kW	547	19 Hz	0.3 kW	762	26 Hz	0.3 kW	927	32 Hz	0.5 kW	1041	35 Hz
	4060	0.3 kW	695	24 Hz	0.3 kW	873	30 Hz	0.5 kW	1013	35 Hz	0.7 kW	1117	38 Hz
	5130	0.4 kW	841	29 Hz	0.5 kW	987	34 Hz	0.6 kW	1107	38 Hz	0.9 kW	1202	41 Hz
	6200	0.5 kW	988	34 Hz	0.7 kW	1107	38 Hz	0.9 kW	1210	41 Hz	1.1 kW	1298	44 Hz
	7270	0.7 kW	1136	39 Hz	0.9 kW	1232	42 Hz	1.2 kW	1321	45 Hz	1.4 kW	1404	48 Hz
	8340	1.0 kW	1285	44 Hz	1.2 kW	1362	46 Hz	1.5 kW	1440	49 Hz	1.8 kW	1518	52 Hz
	9410	1.3 kW	1436	49 Hz	1.6 kW	1497	51 Hz	1.9 kW	1565	53 Hz	2.2 kW	1640	56 Hz
	10480	1.7 kW	1590	54 Hz	2.0 kW	1637	56 Hz	2.4 kW	1697	58 Hz	2.7 kW	1768	60 Hz
	11550	2.1 kW	1748	60 Hz	2.6 kW	1783	61 Hz	2.9 kW	1834	62 Hz	3.3 kW	1900	65 Hz
	12620	2.7 kW	1909	65 Hz	3.1 kW	1932	66 Hz	3.6 kW	1974	67 Hz	3.9 kW	2034	69 Hz
	13690	3.3 kW	2073	71 Hz	3.8 kW	2085	71 Hz	4.3 kW	2116	72 Hz	4.7 kW	2166	74 Hz
	14760	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	15830	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	16920	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Appendix

Horizontal flow Energy Recovery Wheel (ERW - H)

Unit size	«Airflow m ³ /h»	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
290-340	1080	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	692	24 Hz	0.5 kW	835	28 Hz
	2450	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	764	26 Hz	0.5 kW	886	30 Hz
	3820	n/a	n/a	n/a	0.4 kW	682	23 Hz	0.4 kW	842	29 Hz	0.7 kW	946	32 Hz
	5190	0.4 kW	628	21 Hz	0.4 kW	797	27 Hz	0.6 kW	926	32 Hz	0.9 kW	1017	35 Hz
	6560	0.5 kW	778	27 Hz	0.6 kW	909	31 Hz	0.8 kW	1015	35 Hz	1.1 kW	1096	37 Hz
	7930	0.6 kW	921	31 Hz	0.8 kW	1022	35 Hz	1.1 kW	1111	38 Hz	1.4 kW	1187	40 Hz
	9300	0.9 kW	1059	36 Hz	1.2 kW	1137	39 Hz	1.5 kW	1213	41 Hz	1.8 kW	1287	44 Hz
	10670	1.3 kW	1194	41 Hz	1.6 kW	1256	43 Hz	2.0 kW	1323	45 Hz	2.3 kW	1396	48 Hz
	12040	1.7 kW	1329	45 Hz	2.1 kW	1379	47 Hz	2.5 kW	1441	49 Hz	2.9 kW	1514	52 Hz
	13410	2.3 kW	1466	50 Hz	2.7 kW	1508	51 Hz	3.1 kW	1565	53 Hz	3.5 kW	1637	56 Hz
	14780	2.9 kW	1607	55 Hz	3.4 kW	1643	56 Hz	3.9 kW	1695	58 Hz	4.3 kW	1764	60 Hz
	16150	3.7 kW	1753	60 Hz	4.2 kW	1783	61 Hz	4.7 kW	1829	62 Hz	5.1 kW	1891	65 Hz
	17520	4.5 kW	1905	65 Hz	5.1 kW	1927	66 Hz	5.7 kW	1963	67 Hz	6.2 kW	2012	69 Hz
	18890	5.4 kW	2061	70 Hz	6.1 kW	2072	71 Hz	6.7 kW	2092	71 Hz	n/a	n/a	n/a
	20260	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	21600	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Horizontal flow Energy Recovery Wheel (ERW - H)

Unit size	«Airflow m ³ /h»	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
275-300-350	1020	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	687	23 Hz	0.6 kW	823	28 Hz
	2310	n/a	n/a	n/a	n/a	n/a	n/a	0.3 kW	757	26 Hz	0.6 kW	872	30 Hz
	3600	n/a	n/a	n/a	0.4 kW	668	23 Hz	0.4 kW	831	28 Hz	0.7 kW	931	32 Hz
	4890	0.4 kW	595	20 Hz	0.4 kW	777	27 Hz	0.5 kW	911	31 Hz	0.8 kW	998	34 Hz
	6180	0.5 kW	738	25 Hz	0.5 kW	883	30 Hz	0.7 kW	995	34 Hz	1.1 kW	1072	37 Hz
	7470	0.6 kW	877	30 Hz	0.8 kW	991	34 Hz	1.0 kW	1085	37 Hz	1.4 kW	1157	39 Hz
	8760	0.8 kW	1009	34 Hz	1.1 kW	1100	38 Hz	1.4 kW	1180	40 Hz	1.7 kW	1250	43 Hz
	10050	1.1 kW	1138	39 Hz	1.4 kW	1211	41 Hz	1.8 kW	1282	44 Hz	2.1 kW	1351	46 Hz
	11340	1.5 kW	1266	43 Hz	1.9 kW	1325	45 Hz	2.3 kW	1390	47 Hz	2.6 kW	1461	50 Hz
	12630	2.0 kW	1394	48 Hz	2.4 kW	1444	49 Hz	2.8 kW	1505	51 Hz	3.2 kW	1576	54 Hz
	13920	2.6 kW	1525	52 Hz	3.0 kW	1568	53 Hz	3.5 kW	1625	55 Hz	3.8 kW	1696	58 Hz
	15210	3.2 kW	1659	57 Hz	3.7 kW	1696	58 Hz	4.2 kW	1749	60 Hz	4.6 kW	1818	62 Hz
	16500	4.0 kW	1796	61 Hz	4.5 kW	1827	62 Hz	5.0 kW	1874	64 Hz	5.5 kW	1937	66 Hz
	17790	4.8 kW	1937	66 Hz	5.4 kW	1960	67 Hz	6.0 kW	1997	68 Hz	6.5 kW	2048	70 Hz
	19080	5.8 kW	2080	71 Hz	6.4 kW	2092	71 Hz	n/a	n/a	n/a	n/a	n/a	n/a
	20400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Horizontal flow Energy Recovery Wheel (ERW - H)

Unit size	«Airflow m ³ /h»	50 Pa			150 Pa			250 Pa			350 Pa		
		absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting	absorbed kW	Fan speed	Inverter setting
400-500-600	1620	n/a	n/a	n/a	0.3 kW	423	14 Hz	0.4 kW	562	19 Hz	0.8 kW	656	22 Hz
	3680	n/a	n/a	n/a	0.3 kW	482	16 Hz	0.5 kW	607	21 Hz	0.9 kW	694	24 Hz
	5740	0.5 kW	407	14 Hz	0.4 kW	549	19 Hz	0.6 kW	660	22 Hz	1.1 kW	740	25 Hz
	7800	0.5 kW	500	17 Hz	0.6 kW	622	21 Hz	0.9 kW	720	24 Hz	1.3 kW	794	27 Hz
	9860	0.7 kW	595	20 Hz	0.9 kW	700	24 Hz	1.2 kW	786	27 Hz	1.7 kW	854	29 Hz
	11920	1.0 kW	694	24 Hz	1.3 kW	783	27 Hz	1.7 kW	859	29 Hz	2.2 kW	922	31 Hz
	13980	1.4 kW	796	27 Hz	1.7 kW	870	29 Hz	2.2 kW	937	32 Hz	2.7 kW	996	34 Hz
	16040	1.8 kW	900	31 Hz	2.3 kW	961	33 Hz	2.8 kW	1019	35 Hz	3.4 kW	1075	36 Hz
	18100	2.5 kW	1007	34 Hz	3.0 kW	1056	36 Hz	3.6 kW	1107	38 Hz	4.2 kW	1159	39 Hz
	20160	3.2 kW	1115	38 Hz	3.9 kW	1154	39 Hz	4.5 kW	1198	41 Hz	5.1 kW	1247	42 Hz
	22220	4.1 kW	1226	42 Hz	4.8 kW	1255	43 Hz	5.6 kW	1293	44 Hz	6.2 kW	1339	45 Hz
	24280	5.1 kW	1339	45 Hz	6.0 kW	1359	46 Hz	6.7 kW	1390	47 Hz	7.5 kW	1434	49 Hz
	26340	6.2 kW	1452	49 Hz	7.2 kW	1464	50 Hz	8.1 kW	1489	50 Hz	8.9 kW	1529	52 Hz
	28400	7.6 kW	1567	53 Hz	8.7 kW	1570	53 Hz	9.6 kW	1589	54 Hz	10.5 kW	1625	55 Hz
	30460	9.1 kW	1681	57 Hz	10.3 kW	1675	57 Hz	11.4 kW	1688	57 Hz	12.3 kW	1718	58 Hz
	32450	10.7 kW	1791	61 Hz	12.1 kW	1776	60 Hz	13.3 kW	1781	60 Hz	n/a	n/a	n/a

Notes



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