



IBW



WATER HEATERS FOR AIR DUCTS, TYPE IBW

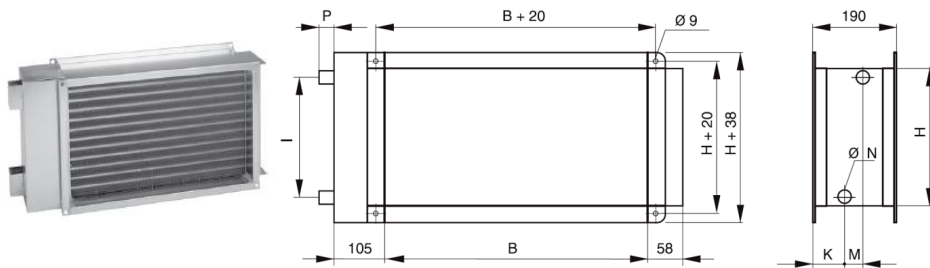
DESCRIPTION

Water heaters are air conditioning equipment used for air heating in air ducts with rectangular duct. Case and cabinet of the heaters are made from galvanized steel sheet. The heating element is formed of a copper tube provided with aluminium fins. The ducts from the manufacturer are provided with plastic caps on both ends, which are used to prevent the heater from contamination during transportation and handling. Connection of the heater is made by collet transition with thread, which is not supplied, or by soldering. The passing air must not contain solid, fibrous, sticky, aggressive ingredients. They must also be free of chemicals that cause corrosion of the used materials, i.e. disrupt aluminium, copper and zinc.

TECHNICAL SPECIFICATION, DIMENSIONS

TYPE	B (mm)	H (mm)	I (mm)	K (mm)	M (mm)	øN (mm)	P (mm)	Output 1 (kW)	Output 2 (kW)	Airflow (m ³ /h)	dT1 (K)	dT2 (K)	Pressure drops 1 (kPa)	Water flow 1 (l/h)	Weight (kg)
IBW-200-2	400	200	150	84	43	22	28	10,7	6,5	1 152	28	16	2	470	8,0
IBW-200-4	400	200	150	84	43	22	28	17,3	10,8	1 152	44	27	3	760	9,6
IBW-225-2	500	250	200	62	65	22	28	17,1	10,8	1 800	28	17	6	750	8,8
IBW-225-4	500	250	200	62	65	22	28	29,7	19,9	1 800	48	33	8	1300	10,9
IBW-250-2	500	300	250	84	43	22	28	21,6	13,7	2 160	29	18	4	950	12,2
IBW-250-4	500	300	250	84	43	22	28	35,9	24,2	2 160	48	33	10	1 580	11,8
IBW-285-2	600	300	250	62	65	28	35	25,7	16,2	2 592	28	18	4	1 130	13,1
IBW-285-4	600	300	250	62	65	28	35	43,4	29,4	2 592	47	31	10	1 910	14,7
IBW-315-2	600	350	300	84	43	22	28	28,5	18,1	3 024	26	18	6	1 250	14,1
IBW-315-4	600	350	300	84	43	22	28	48,2	32,5	3 024	46	31	13	2 120	14,6
IBW-355-2	700	400	350	66	58	28	35	40,7	26,0	4 032	30	18	5	1 790	14,6
IBW-355-3	700	400	350	66	58	28	35	55,0	36,0	4 032	40	26	6	2 410	16,5
IBW-400-2	800	500	450	82	47	28	35	59,1	38,1	5 760	31	18	7	2 600	18,2
IBW-400-4	800	500	450	82	47	28	35	96,3	65,1	5 760	42	27	10	4 230	24,8
IBW-450-2	1000	500	450	66	58	28	35	75,1	49,0	7 200	30	20	7	3 300	20,3
IBW-450-4	1000	500	450	66	58	28	35	122,0	82,6	7 200	42	28	14	5 370	28,2

Note: Output values apply to the air supply 0 °C, output 1 for a temperature gradient of 80/60 °C, output 2 for a temperature gradient of 60/40 °C.



Storage, installation, operation and maintenance instructions

1. General

- 1.1. All products are manufactured in conformance with EU statutory and regulatory requirements and are individually pressure and leak tested. It is our customer's responsibility to assure the conformity of the products with local requirements in the country of the installation.
- 1.2. Selection, installation, operation and maintenance of the product shall be carried out by qualified and authorized personnel, in accordance with statutory and regulatory requirements and best engineering practice. In particular, the personnel shall be aware of potential risks related to the product safety and environment.
- 1.3. The customer shall have knowledge and understanding of the General Business Conditions of Lloyd Coils Europe s.r.o. (on order confirmations and invoices).
- 1.4. Operator of a system incorporating the product shall be respecting all relevant statutory and regulatory requirements, in particular as far as concern the work safety, leak detection and refrigerant handling.

2. Storage

- 2.1. The products are delivered in a packaging on a palette. Any damages of the packaging or any other visible traces of an incident shall be detected at the reception of products and recorded in the forwarder's transportation documentation.
- 2.2. The products tubes circuits are filled by dry air and the products shall be stored in a dry place, at the exemption of chemicals, oils, lubricants, dust and mud native from building activities, of direct sunlight, in order to prevent corrosion of tubes, casing and damage of the paint.

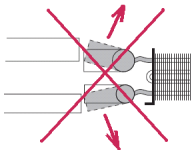
3. Installation

- 3.1. Before installation, the installer shall verify that all characteristics of the product and of the unit or system where the product is being incorporated are compatible.

- 3.2. The product incorporation in a system shall be compatible with the product design pressures and temperatures. Standard design pressures and temperatures are shown in DOC-008; for a specific product, allowed group of refrigerants and maximum allowable pressure PS are displayed on the product drawing that is validated by the customer.
- 3.3. The chemical composition of the air passing the coil shall be compatible with fin and tube material. Special materials as tinned copper, polymeric pre-coated fins, other suitable anticorrosive coatings etc. might be used for certain corrosive environments.
- 3.4. Foreign particles in the air will decrease the coil efficiency and may cause damage of the coil; put a sufficient protection grid and air filter when appropriate.
- 3.5. The refrigerant used shall be compatible with the tube material (copper). In particular, the refrigerant must not contain components initiating intensive corrosion or stress corrosion cracking (SCC) of copper and its alloys (e.g. NH_4^+ , Cl^- , formic acid etc). The impact of refrigerant's chemical composition on tube corrosion shall be consulted with a corrosion expert in advance.
- 3.6. The presence of foreign particles in the refrigerant may cause irreparable damage of the coil. Therefore an efficient and well-adapted filter shall be incorporated.
- 3.7. Coil shall be protected against any risk of damage due to excessive vibrations, even temporary, which could occur during unit operation or operation of other equipment close by (transmitted by floor, frame, pipes, valves etc.).
- 3.8. The coil is not structural element. The coil shall be fixed by its casing to a solid frame or platform. If the height of a vertical coil exceeds 1.5 m, back supports shall be used. For horizontal coils, coil deflection shall be eliminated. In no case return bends or header tubes shall be used to fix the coil.
- 3.9. The coil is designed for either vertical or horizontal use, depending on the coil

circuiting and position of connections. Our sales engineer may specially validate use of the coil in a different position than that originally defined.

- 3.10. For horizontal fluid coils (water, brine or a different liquid heaters or coolers) with connections on the same side, inclination of 5 mm per every meter of the coil length (in the direction down to the header) is recommended in order to allow a safe discharge.
- 3.11. For coils with a fan plate, the weight of the fan mounted shall correspond to the solidity of the fixation (inserts, sheet-metal-screw etc.) and to the thickness of the metal. Fan supports shall be used where appropriate. For threaded inserts, the correct way of assembly (with spacers) shall be used.
- 3.12. The piping shall be designed in conformance with industry standards. Use correct pipe diameter, thickness and layout. Coils shall be protected against excessive vibrations from the piping; use flexible connections where appropriate. Coils may be connected in parallel only under very special circumstances.
- 3.13. When connecting the coil to the circuit, it is forbidden to adapt the position or orientation of the connections of the coil by a mechanical force. Carefully manipulate with capillaries position - may break in brazing areas ! If the coil is being connected by brazing, the coil header tubes and brazed joints should be protected properly against flame and heat.



- 3.14. Fluid coils are normally designed to be connected to a closed loop circuit, eliminating oxidation. All air trapped in the circuit shall be vented. For higher temperatures, oxygen shall be removed by a well-adapted separator. Refrigerant flow rate shall not exceed maximum admissible value (2,1 m/s for water). When the supply pipes remade of non-ferrous metal, take also all precautions necessary to avoid corrosion.

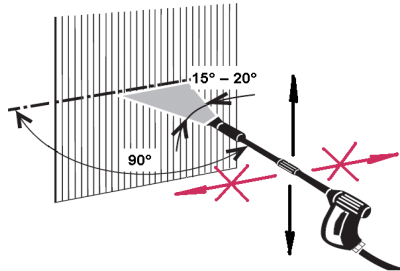
- 3.15. For fluid coils, freezing of the refrigerant typically causes irreparable damage of the coil. An effective protection device shall be installed. Precaution shall be taken during the installation and start-up.
- 3.16. For cooling coils, water condensate or ice can be formed on the fins. Droplets may follow the air stream. Design your system properly, use hydrophilic fin material, droplets eliminators and drying panes when appropriate. Ice formed and accumulated in the fin block may cause irreparable damage of the coil. Ice accumulation shall be eliminated by an effective and well-controlled defrosting device (or applying positive refrigerant temperatures if possible).
- 3.17. For volatile refrigerant coils (evaporator coils, condenser coils etc.) the installer shall ensure that all system parts are compatible with the refrigerant used and in accordance with all applicable statutory and regulatory requirements. One or several devices shall be installed to protect against any direct or indirect risks to persons or equipment in the case of the system design or installation fault. Right installation and filling tools and equipment shall be used during the installation and start up of the system.
- 3.18. Systems shall be sealed correctly and checked for leaks around all system elements and joints. Leak detection system shall be used wherever appropriate, in accordance with the applicable statutory and regulatory requirements.
- 3.19. Evaporator coils are designed to work properly between 50% and 100% of the design capacity. Multi-circuits shall be used whenever operation under 50% of the design capacity is needed. Refrigerant distributor of Venturi type shall be always in vertical position in order to assure equivalent refrigerant distribution and maximum capacity. The expansion valve should be mounted directly on the refrigerant distributor. If this is not possible, straight tube shall be used, as shortest as possible; any curved tube will worsen the refrigerant distribution which may decrease the coil capacity to an important extent.
- 3.20. Do not use evaporator coil as a condenser (reversible) without prior consultation with your sales engineer.

4. Operation

- 4.1. The system incorporating our product shall be operated strictly in the conditions defined by the system design and documentation including this instruction, by qualified and authorized personnel, in accordance with all statutory and regulatory requirements, including the applicable regulations on refrigerants.
- 4.2. The system and the coil shall be periodically inspected and maintained in accordance with the maintenance instructions of the manufacturer(s) and best practices.
- 4.3. For fluid coils, the quality of the fluid shall be periodically checked in order to prevent corrosion.

5. Maintenance (recommended yearly period)

- 5.1. The system and the coil shall be periodically inspected and maintained in accordance with the maintenance instructions of the manufacturer(s) and best practices.
- 5.2. Before beginning any work on the system the personnel shall assure that all security precautions have been taken.
- 5.3. Check defrosting equipment (Including frost resistance of the medium). For fluid coils, protect the coils against freezing of the refrigerant. During a longer stoppage period, the temperature of the environment shall always be above the freezing point of the refrigerant.
- 5.4. Periodical cleaning of the coil shall be carried out, using pH neutral cleaning agents that do not attack the coil materials (biodegradable detergents). Dirty coil decreases the capacity of the system, its energy efficiency and may potentially cause system failures. Use flat shape of the water spray and keep the direction of the spray perpendicular to the fin edge. The cleaning period shall be adapted to the level of the pollution of the environment and shall in no case exceed 12 months.



eliminated, corrosion protection shall be applied (e.g. LCE Coating) or the coils shall be replaced. Nota: Tubes damage caused by reasons 2.2 3.3, 3.5, 3.6, 3.14 are rarely visible.

- 5.6. Pressure test including venting inspection (to avoid leak of the refrigerant)
- 5.7. For fluid coils, the quality of the fluid shall be periodically checked in order to prevent corrosion.

6. Problem solving

- 6.1. In case of any dysfunction, instructions relative to the system where the coil is incorporated shall be respected.
- 6.2. Guarantee conditions are specified in the General Business Conditions of Lloyd Coils Europe s.r.o. (on order confirmations and invoices).
- 6.3. No intervention on the coil may be carried out before receiving a written confirmation of our representative.
- 6.4. Before contacting our responsible, please note the product traceability information – product part number, production lot, identification labels – together with the characteristics relative to the system and environment (operating temperatures, pressures, refrigerants, air flow rates, air temperatures etc.) and with a photograph of the defect if possible.



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