

Air Conditioning System Inspection Report

Equipment Owner's Organisation	Bills Bakery		
Responsible Site Contact	Bill Bloggs		
Equipment Owner's Address	99 Cake Walk, Watford, WD99 9XX		
UPRN	012345678900	RRN	

Date of inspection	16/11/2009	Date of lodgement	16/11/2009
Assessor name and assessor ID	Russ McAnulla	Address of Assessor's employer	Sheldon Reed Ltd
Name and ID number of Scheme	BREC BREC100010		
Related Party Disclosure			
Assessment Software Used	2		

Executive Summary

Well maintained system. Few obvious problems. Consider changing set point to 27 degrees

System components inspected

The following components of the system were inspected:

System Documentation
Refrigeration Plant
Heat Rejection Equipment
System Controls

Key Recommendations

System efficiency, capacity and cooling loads

No guidance given.

Air Conditioning System Inspection Report

Improvement options

No guidance given.

Alternative solutions

No guidance given.

Other recommendations

No guidance given.

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Packaged Cooling Systems Inspection Checklist

Pre Site visit work items:

Equipment Owner			
Organisation Name	Bills Bakery		
Equipment Owner/Manager Name	Bill Bloggs	Telephone	01234567890
Street Address	99 Cake Walk		
City	Watford	Postcode	WD99 9XX

Equipment Operator (if different from owner)			
Organisation Name	Fred's Fridge Ltd		
Responsible Site Contact	Fred Froid	Telephone	09876543210
Street Address	11 Coldharbour Lane		
City	Glasgow	Postcode	G11 9KK

Accredited inspector details			
Inspector Name	Russ McAnulla		
Inspector Number		Accreditation Scheme	BREC
Business Trading Name	Sheldon Reed Ltd		
Business Trading Address	4 Tudor Avenue Watford WD24 7NX		

Insurance Details					
Insurance Company		Policy Number			
Start Date	02/10/2009	Expiry Date	02/10/2009	PI Limit (£)	0

Inspection Details			
UPRN	012345678900	RRN	
Date of inspection	16/11/2009	Date of lodgement	
Effective rated output of the all air-conditioning in the building?	12		

Packaged Cooling Systems Inspection Checklist

Note: Request following information from client and complete the following checklist. The inspector should examine the relevant documentation and systems as far as possible to check that the installed equipment is as described. If the documentation is not available, then an additional part of this procedure is to locate the equipment and assemble a minimum portfolio of relevant documentation.

Record Checklist Pre Inspection Information			
Level	Information Required	Reviewed	Not Available
Essential	Itemised list of installed packaged cooling systems including product makes, models and identification numbers together with cooling capacities and locations of the equipment.	X	
	Description of method of control of temperature.	X	
	Description of method of control of periods of operation.	X	
Desirable	Reports from earlier inspections of air conditioning systems, and for the generation of an energy performance certificate		
	Records of maintenance operations carried out including filter changing, cleaning indoor and outdoor heat exchangers, refrigerant leakage tests, repairs to refrigeration components or replenishing with refrigerant.	X	
	Records of calibration and maintenance operations carried out on control systems and sensors		
	Records of sub-metered air conditioning plant use or energy consumption.		
Optional	An estimate of the design cooling load for each system (if available). Otherwise, a brief description of the occupation of the cooled spaces, and of power consuming equipment normally used in those spaces.		
	Records of any issues or complaints that have been raised concerning the indoor comfort conditions achieved in the treated spaces.	X	

Packaged Cooling Systems Inspection Checklist

Site visit work items:

Number of Units	2
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Equipment inspected Note: Verify information provided by client is correct by way of inspection and insert actual verified information in fields below.

Unit Identifier	Outside Unit
Manufacturer	Dakin
Description	Outside unit of multi-split system
Model / Reference	Unknown
Serial Number	N/A
Year plant installed	2006
Rated Cooling Capacity (kW)	13
Refrigerant Type	R-22
Location	Roof
Areas / Systems Served	Whole area

Note below any discrepancy between information provided by client and on site information collected:

Packaged Cooling Units checklist for visual inspection

Item / Guidance Notes	Inspection Notes	Guidance Recommendations
Is area around equipment clear of obstructions and debris, both to operators and to airflow?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If No provide information and description of obstructions:	No guidance given.
Is general condition of the indoor and/or outdoor units in good order?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no provide description of dilapidations:	No guidance given.
Assess temperature difference / and observe refrigerant via sight	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	No guidance given.

Packaged Cooling Systems Inspection Checklist

glass or pressure gauge. Is this satisfactory?	If no provide explanation:	
Is the heat exchanger partially blocked or undersized?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide explanation:	No guidance given.
Is there evidence of icing or excessive condensation?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide detail:	No guidance given.
Does area around plant show signs of oily stains indicative of a refrigerant leak?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide description and check any notes within the maintenance records :	No guidance given.
Are there any obstructions to airflow through the outdoor and indoor unit heat exchangers?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide description	No guidance given.
Is there any potential for recirculation of warm air?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide explanation:	No guidance given.
Check condition of indoor grilles, filters and terminal units.		

Appropriately Sized Cooling Plant

Guidance Notes	Inspection Notes	Guidance Recommendations										
Compare system sizes with likely loads. Section 4 TM44 contains simple procedures for assessing whether refrigeration systems and air supply systems are likely to be oversized.	<p>Following Information Required:</p> <table border="1"> <tr> <td>Total Occupants</td> <td>0</td> </tr> <tr> <td>Total Floor Area</td> <td>250</td> </tr> <tr> <td>Occupant density /m² derive</td> <td>5</td> </tr> <tr> <td>Lower level heat gain</td> <td>10 /W m²</td> </tr> <tr> <td>Upper level heat gain</td> <td>14 /W m²</td> </tr> </table>	Total Occupants	0	Total Floor Area	250	Occupant density /m ² derive	5	Lower level heat gain	10 /W m ²	Upper level heat gain	14 /W m ²	No guidance given.
Total Occupants	0											
Total Floor Area	250											
Occupant density /m ² derive	5											
Lower level heat gain	10 /W m ²											
Upper level heat gain	14 /W m ²											

Packaged Cooling Systems Inspection Checklist

	Installed Cooling Capacity	13	kW	
The installed size is deemed:				
More than Expected		<input type="checkbox"/>		
Less than Expected		<input type="checkbox"/>		
As Expected		<input checked="" type="checkbox"/>		

Refrigeration Charge

Guidance Notes	Inspection Notes	Guidance Recommendations
In operation observe the temperature difference across the refrigeration compressor. Compared with the ambient temperature in the plant room / outside air.	Refrigeration Temperature: Pre compressor <input style="width: 50px;" type="text" value="0"/> Post Compressor <input style="width: 50px;" type="text" value="0"/> Ambient <input style="width: 50px;" type="text" value="0"/> The Temperature is Deemed: More than Expected <input type="checkbox"/> Less than Expected <input type="checkbox"/> As Expected <input checked="" type="checkbox"/>	No guidance given.

Metering

Item / Guidance Notes	Inspection Notes	Guidance Recommendations
Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, record meter reading <input style="width: 100px;" type="text"/>	No guidance given.
Is a BEMs installed in the building which can warn about out of range alarms?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If No then provide details No BEM system in place	No guidance given.

Equipment inspected Note: Verify information provided by client is correct by way of inspection and insert

Packaged Cooling Systems Inspection Checklist

actual verified information in fields below.	
Unit Identifier	Inside Unit
Manufacturer	Dakin
Description	One of 3 cassettes
Model / Reference	Cassette
Serial Number	N/A
Year plant installed	2006
Rated Cooling Capacity (kW)	4
Refrigerant Type	R-22
Location	Main office
Areas / Systems Served	Whole area

Note below any discrepancy between information provided by client and on site information collected:

Packaged Cooling Units checklist for visual inspection

Item / Guidance Notes	Inspection Notes	Guidance Recommendations
Is area around equipment clear of obstructions and debris, both to operators and to airflow?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If No provide information and description of obstructions:	No guidance given.
Is general condition of the indoor and/or outdoor units in good order?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If no provide description of dilapidations:	No guidance given.
Assess temperature difference / and observe refrigerant via sight glass or pressure gauge. Is this satisfactory?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no provide explanation:	No guidance given.
Is the heat exchanger partially blocked or undersized?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide explanation:	No guidance given.

Packaged Cooling Systems Inspection Checklist

Is there evidence of icing or excessive condensation?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide detail:	No guidance given.
Does area around plant show signs of oily stains indicative of a refrigerant leak?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide description and check any notes within the maintenance records :	No guidance given.
Are there any obstructions to airflow through the outdoor and indoor unit heat exchangers?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide description	No guidance given.
Is there any potential for recirculation of warm air?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes provide explanation:	No guidance given.
Check condition of indoor grilles, filters and terminal units.	All filters and grills clean	

Appropriately Sized Cooling Plant

Guidance Notes	Inspection Notes	Guidance Recommendations												
Compare system sizes with likely loads. Section 4 TM44 contains simple procedures for assessing whether refrigeration systems and air supply systems are likely to be oversized.	<p>Following Information Required:</p> <table border="1"> <tr> <td>Total Occupants</td> <td>0</td> </tr> <tr> <td>Total Floor Area</td> <td>50</td> </tr> <tr> <td>Occupant density /m² derive</td> <td>5</td> </tr> <tr> <td>Lower level heat gain</td> <td>3 /W m²</td> </tr> <tr> <td>Upper level heat gain</td> <td>5 /W m²</td> </tr> <tr> <td>Installed Cooling Capacity</td> <td>4 kW</td> </tr> </table> <p>The installed size is deemed:</p> <p>More than Expected <input type="checkbox"/></p> <p>Less than Expected <input type="checkbox"/></p> <p>As Expected <input checked="" type="checkbox"/></p>	Total Occupants	0	Total Floor Area	50	Occupant density /m ² derive	5	Lower level heat gain	3 /W m ²	Upper level heat gain	5 /W m ²	Installed Cooling Capacity	4 kW	No guidance given.
Total Occupants	0													
Total Floor Area	50													
Occupant density /m ² derive	5													
Lower level heat gain	3 /W m ²													
Upper level heat gain	5 /W m ²													
Installed Cooling Capacity	4 kW													

Packaged Cooling Systems Inspection Checklist

Refrigeration Charge		
Guidance Notes	Inspection Notes	Guidance Recommendations
In operation observe the temperature difference across the refrigeration compressor. Compared with the ambient temperature in the plant room / outside air.	<p>Refrigeration Temperature:</p> <p>Pre compressor <input type="text" value="0"/></p> <p>Post Compressor <input type="text" value="0"/></p> <p>Ambient <input type="text" value="0"/></p> <p>The Temperature is Deemed:</p> <p>More than Expected <input type="checkbox"/></p> <p>Less than Expected <input type="checkbox"/></p> <p>As Expected <input checked="" type="checkbox"/></p>	No guidance given.

Metering		
Item / Guidance Notes	Inspection Notes	Guidance Recommendations
Is metering installed to enable monitoring of energy consumption of refrigeration plant?	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, record meter reading <input type="text"/></p>	No guidance given.
Is a BEMs installed in the building which can warn about out of range alarms?	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If No then provide details</p> <p>None necessary with such a small installation</p>	No guidance given.

Packaged Cooling Systems Inspection Checklist

System Controls		
Item / Guidance Notes	Inspection Notes	Guidance Recommendations
Assess zoning in relation to factors such as local levels of internal gain, orientation and exposure to solar radiation. Is zoning appropriate?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no explain problem:	No guidance given.
Note the current indicated weekday and time of day on controllers against the actual time.	Correct	No guidance given.
Note the set on and off periods (for weekday and weekend if this facility is available with the timer).	Setting appropriate to staff working hours	No guidance given.
Is there a shortfall in timer capabilities?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes explain problem:	No guidance given.
Identify and assess zone heating and cooling temperature control sensors. Are the sensor types and locations appropriate in relation to heating and cooling emitters, heat flows or likely temperature distributions in the zone or space?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no explain problem:	No guidance given.
Note the set temperature in each zone for heating and cooling in relation to the activities and occupancy of zones and spaces in relation to the manager's intent.	set to 22 degrees	Consider resetting to 27 degrees

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Are guidance notices visible or controls available to inhibit use of cooling equipment whilst windows are open or cooling/heating is on?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes explain problem:	No guidance given.
Note type, age and method of capacity of control equipment.	Weekend settings available	No guidance given.
Compare with current good practice	OK	No guidance given.

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