

CUSTOMS DUTY – cooling component for personal computers – component consisting of two parts, a heat sink and a fan – the fan incorporating a printed circuit board to control its function – whether classified as a fan (heading 84.14) or a computer part (84.73) – application of Rule 3(b) of the General Interpretation Rules – whether nature of components as "active" or "passive" relevant to the determination

LONDON TRIBUNAL CENTRE

DYNATRON UK LTD Appellant

- and -

THE COMMISSIONERS OF CUSTOMS AND EXCISE Respondents

Tribunal: MALCOLM GAMMIE QC (Chairman)

ALEX MCLOUGHLIN

Sitting in public in London on 25th April 2002

Mr F Fallah for the Appellant

Philippa Whipple of Counsel for the Respondents

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DECISION

The Appeal

1. Dynatron UK Ltd ("the Appellant") appeals against the Respondents' decision contained in a letter dated 7th November 2000 that a Crystal Cooler incorporating a heat sink and a fan ("the cooling component") for installation in a personal computer and imported by the Appellant was correctly classified under commodity code 84.14, being an axial fan (included within the heading which covers, "Air or vacuum pumps, air and other gas compressors and fans; ventilating or recycling hoods incorporating a fan, whether fitted with filters").
2. The issue for determination in the appeal is whether the cooling component should be classified under commodity code 84.14 as the Respondents contended or, as the Appellant contends, under 84.73 as being, "Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with the machines of headings Nos 84.69 to 84.72". The duty under heading 84.14 is 2.3 per cent whilst

there is no duty on items under heading 84.73. There is no dispute as to the amount of duty (£1,742.85) in issue in the appeal. It is simply a matter of the correct classification of the product concerned.

3. We were shown a sample of the cooling component. A personal computer (with its outer casing removed) was also used to demonstrate the location, function and operation of a cooling component similar to the one in question. The computer was turned on for the purposes of the demonstration and we were shown the effect on the computer's operation when the fan was turned off. We heard expert evidence from Mr Bevan Clues, a consultant electrical engineer. We should also note that Mr Fallah, who represented the Appellant, was able to assist us in relation to this matter as someone who works in the computer industry supplying these cooling components.

The cooling component

4. The product under review is a "Crystal Cooler" used to cool the processor of a personal computer. Visually it comprises two distinct components, a heat sink and a cooling fan, which are attached to form the whole. In the case of the particular cooling component with which we are concerned, the fan clips onto the heat sink. The heat sink comprises an extruded aluminium block, the base being approximately 61 mm by 47 mm in size out of which fourteen fins are raised at approximately 5 mm intervals. The base and the fins comprise one piece of metal. The fins function to increase the surface area of the heat sink and therefore improve its cooling characteristics. The underside of the heat sink is entirely smooth (to facilitate contact with the motherboard of the computer) but the surface of each fin is corrugated (further increasing its surface area) rather than flat. Each fin is divided into eleven 'teeth', the two outer teeth being approximately 8 mm in diameter and the inner nine being 2 mm in diameter. As a result there are gaps both side-ways-on between the fins and lengthways between the 'teeth', so facilitating the passage of air to conduct the heat away. The fins are of varying heights ranging from 13 mm to 21 mm. Two of the taller fins are shaped at the top to provide a lip onto which the fan is clipped.
5. The fan attaches and detaches with relative ease. Apart from the central core of the fan, the fan is made of transparent plastic. It has a square frame below which protrude ten prongs and above which there is an octagonal housing for the fan blades. The four prongs at each corner are the retaining clips that attach over the lips of the two taller fins on the heat sink. When attached to the heat sink, four smaller prongs run down each side of the heat sink's fins, so ensuring that the fan cannot slip out of position on top of the heat sink. The other two plastic prongs are larger and protrude over each end of the heat sink. Inserted in these prongs is a metal strip. The metal strip does not touch the heat sink. There is a square hole at the end of each strip and the strip protrudes below the base of the heat sink. The underside of the heat sink is attached to the motherboard of the computer by means of a thermal conductive paste. The metal strips are designed to attach to lugs or something similar within the computer housing and thereby ensure both that the fan unit cannot become detached from the heat sink and that the heat sink remains in contact with the motherboard. We understand that a variety of methods are used to hold the heat sink and fan elements together and for attaching the cooling component to the motherboard of the computer.
6. The fan itself comprises seven blades and is housed in a raised octagonal plastic unit, being some 12 mm in height with the square plastic frame on which it sits. The frame and octagonal fan housing are all one piece of

plastic, open at the top and bottom. The hub of the fan, from which the blades protrude, is circular and approximately 24 mm in diameter. The hub comprises a sealed unit containing the 12-volt DC motor powering the fan. Three cables emerge from this hub one of which carries the power needed to operate the fan. Once Mr Fallah had detached the fan unit from the heat sink, we could see that the hub contained a printed computer circuit board. The other cables are, in effect, the bi-directional link between this circuit board and the computer's central processor. Essentially, the printed circuit board functions to monitor temperature and measure the speed of the fan. It transmits this information to the central processor, which then instructs the hub circuit board to adjust the speed of rotation of the fan so regulating the computer's temperature.

7. We take the following description of the purpose and functioning of the cooling component from Mr Clues' proof of evidence:

"Computers are complex machines and are designed and manufactured in various forms. A type of computer, called a Personal Computer (PC), has within in a Mother Board containing the main circuitry. Onto this Mother Board is mounted the processor chip. This is a micro-computer fabricated in a single component. As personal computers have become faster and more complex so the heat generated by the processor chip has increased. This heat has to be removed to avoid the chip overheating. Early PCs used what is called a 'heat sink' for this purpose. This is a piece of metal in physical contact with the processor chip. Heat generated by the chip will flow into the heat sink. The heat sink usually has fins on it to increase the surface area. The heat flowing into the heat sink is then dissipated into the surrounding air. Thus such a 'heat sink' is air cooled by natural convection.

As personal computers became more complex, so the quantity of heat generated by the processor chip increased to a point where natural convection was no longer sufficient in order to maintain equilibrium at a safe temperature. The solution was to install a more complex heat sink incorporating a fan. In this arrangement the fan is powered all the time that the PC is powered i.e. 'on'. Air is forced over the metal heat sink in greater volume that would occur with natural convection and so the cooling effect is increased. Thus the temperature can be maintained at a safe level."

The Community Customs Code classification

8. Duty is payable on the Appellant's imports in accordance with the provisions of Council Regulation (EEC) No. 2913/92 of 12th October 1992 establishing the Community Customs Code (OJL 302, 19.10.92, "the Code"). The tariff classification of goods is governed by Article 20(6) of the Code and depends upon determining the correct sub-heading of the Combined Nomenclature as established by Council Regulation (EEC) No 2658/87 of 23rd July 1987. This provides a systematic classification for all goods in international trade and is designed to ensure, with the aid of the General Rules of Interpretation (GIR) that any product falls into a single classification.
9. The Appellant entered the cooling components under heading 84.73, "Parts and accessories (other than covers, carrying cases and the like) suitable for the use solely or principally with machines of headings Nos. 84.69 to 84.72". More specifically, the Appellant contended that the correct classification was 8473 30 90, namely, "Parts and accessories of machines of heading No 8471, Other".

10. Heading 84.14 covers "Air or vacuum pumps, air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan, whether or not fitted with filters". Sub-heading 8414 59 "Other" includes at 8414 59 30 "axial fans". This is the coding contended for by the Respondents on the basis that the cooling component was most accurately described as an axial fan, that is one where the air is propelled in a stream parallel to the axis of the fan.

11. Note 2 to Section XVI of the Combined Nomenclature (which has the force of law), states (so far as relevant to this case) that—

"¼ parts of machines ¼ are to be classified according to the following rules:

(a) Parts which are goods included in any of the headings of Chapters 84 or 85 (other than headings Nos ¼ 8473 ¼) are in all cases to be classified in their respective headings."

(b) Other parts, if suitable for use solely or principally with a particular kind of machine ¼ are to be classified with the machines of that kind or in heading No ¼ 8473 ¼ as appropriate ¼

(c) All other parts are to be classified in heading No ¼ 8473 ¼ as appropriate ¼

12. Accordingly, if the cooling component is a fan within heading 84.14 it falls to be classified under that heading even though a correct description would also be as a computer part within heading 84.73. In determining whether or not the cooling component is correctly described as a fan the third of the general rules for the interpretation of the Combined Nomenclature provide the following principles:

"When by the application of rule 2(b) or for any other reason, goods are prima facie classifiable under two or more headings, classification shall be effected as follows:

(a) the heading which provides the most specific description shall be preferred to headings providing a more general description. However, when two or more headings each refer to part only of the materials or substances contained in mixed or composite goods or to part only of the items in a set put up for retail sale, those headings are to be regarded as equally specific in relation to those goods, even if one of them gives a more complete or precise description of the goods;

(b) mixtures, composite goods consisting of different materials or made up of different components, and goods put up in sets for retail sale, which cannot be classified by reference to 3(a), shall be classified as if they consisted of the material or component which gives them their essential character in so far as this criterion is applicable;

(c) when goods cannot be classified by reference to 3(a) or (b), they shall be classified under the heading which occurs last in numerical order among those which equally merit consideration."

13. These rules operate in the order in which they are set out. The Respondents accepted that rule 3(a) does not apply in this case but relied

on rule 3(b). Paragraph (VII) of the Explanatory Notes to rule 3(b) states that,

"goods are to be classified as if they consisted of the material or component **which gives them their essential character**, in so far as this criterion is applicable."

Paragraph (VIII) states that,

"The factor which determines essential character will vary as between different kinds of goods. It may, for example, be determined by the nature of the material or component, its bulk, quantity, weight or value, or by the role of the constituent material in relation to the use of the goods."

Finally, we refer to paragraph (IX):

"For the purposes of this Rule, composite goods made up of different components shall be taken to mean not only those in which the components are attached to each other to form a practically inseparable whole but also those with separable components, **provided** these components are adapted one to the other and are mutually complementary and that together they form a whole which would not normally be offered for sale in separate parts."

14. As regards the status of the Explanatory Notes to the Harmonised System, we note the views of the European Court of Justice, in *Develop Dr Eisbein GmbH & Co v Hauptzollamt Stuttgart-West* [1993] ECR I-2655, that:

"21 ... the Explanatory Notes to the nomenclature of the Customs Cooperation Council constitute an important means of ensuring the uniform application of the Common Customs Tariff by the customs authorities of the Member States and as such may be considered a valid aid to the interpretation of the tariff. However, those notes do not have legally binding force so that, where appropriate, it is necessary to consider whether their content is in accordance with the actual provisions of the Common Customs Tariff and whether they alter the meaning of such provisions."

The Appellant's submissions

15. The Respondents did not dispute that the cooling component fell within heading 84.73 as "parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with the machines of headings Nos. 84.69 to 84.72". Mr Fallah submitted for the Appellant that this was the only heading into which it fell; the cooling component was not within heading 84.14 at all. He said that the description at 84.14 referred only to "fans" and that it was necessary to look at the subheadings to 84.14 to see what type of fan was contemplated. Sub-heading 8414 51 referred to "Table, floor, wall, window, ceiling or roof fans, with a self-contained electric motor of an output not exceeding 125W". This indicated the type of product that heading 84.14 was intended to cover and the cooling component was clearly not a fan of the intended type. It could not therefore fall into the residual sub-heading 8414 59 30 under the description of "other axial fans".
16. Mr Fallah referred to GIR Rule 3(a). He noted by reference to this rule that if the cooling component were prima facie classifiable under two or more

headings, "the heading which provides the most specific description shall be preferred to the headings providing a more general description". In his submission, the more precise – and correct – description of the cooling component was as a part of a computer.

17. Mr Fallah did not dispute the description that Mr Clues had given of the purpose and function of the cooling component (see paragraph 7 above). He drew our attention, however, to the fact that Mr Clues had accepted that the computer could not safely function without the cooling component. Based on this, he took issue with the conclusions that Mr Clues had drawn. Mr Clues had expressed his view of the dominant feature of the product in the following terms:

"Usually components can be either considered to be active or passive. For example, a light bulb is a passive device. When power is applied then the filament heats up to a level where light is emitted. Similarly a simple brush for cleaning is a passive device used for cleaning. A vacuum cleaner, by comparison, is an active and more complex device incorporating one or more motors to provide power for generating a vacuum and for rotating the brushes.

The first type of heat sink which I discussed is a passive heat sink and relies (sic) on natural convection. By comparison the type of heat sink under review comprises essentially a metal component and a fan together with fixings. Thus together the item is an active heat sink which could not function without the fan operating. If the fan was not there or if the fan fails in use then the likely result is the overheating of the processor chip and its subsequent failure."

18. In response to this, Mr Fallah demonstrated how the heat sink and fan functioned. As part of his demonstration, Mr Fallah disconnected the fan so that the computer had to rely solely on the heat sink to regulate the temperature. There was almost immediately some increase in the surrounding temperature within the computer but the computer did not fail or cease to function in any way. In response to Mr Fallah's questions, Mr Clues expressed the view that while the computer did not immediately cease to function when the fan was turned off, over a prolonged period the temperature would build to a point at which the computer would be likely to fail. We did not understand Mr Fallah to dispute this as the possible (or perhaps even the likely) eventual outcome or that the heat sink by itself would be insufficient to maintain the computer over time at a safe operating temperature. What Mr Fallah demonstrated, however, was that the heat sink continues to function without the fan.
19. We are uncertain how realistic it is to postulate a case in which the heat sink ceases to function while the fan remains operational. If the heat sink were incorrectly attached with a paste that was not thermal conductive paste, it might well never function. Otherwise, the cooling component would presumably have to become detached from the motherboard while the fan continued to operate. This seems inherently less likely than the possibility of the fan breaking down. Asked whether the cooling mechanism could work without the heat sink, however, Mr Clues accepted that it would not and that the fan without the heat sink would be ineffectual as it would be insufficient by itself to remove the heat generated by the central processor.
20. Mr Fallah noted that the Respondents, in their review letter of 7th November 2000, had expressed their conclusion in the following terms:

"The assembly consists of two components which prima facie fall to be classified under different headings. The fan would fall to be classified under Heading 84.14 and the heat sink under Heading 84.73. This means that classification must be determined using GIR 3 and I consider that Rule 3(b) applies in this case. In my opinion it is the fan which provides the essential character. The heat sink absorbs heat efficiently, but the primary cooling function is achieved by the action of the fan. Therefore, I consider that the assembly is correctly classified under heading 84.14, using GIR 1 and GIR 3(b). As the fan is of the axial type, the full commodity code is 841459 30 00."

Mr Fallah said that it was clear from his demonstration and from Mr Clues' evidence that the heat sink was the primary cooling mechanism and that the fan's role was solely to improve the functioning of the heat sink by enhancing the air flow over the heat sink.

21. Mr Fallah also drew attention to Note 5 to Chapter 84. This provides that:

(B) Automatic data processing machines may be in the form of systems consisting of a variable number of separate units. Subject to paragraph (E) below, a unit is to be regarded as being a part of a complete system if it meets all the following conditions:

(a) it is of a kind solely or principally used in an automatic data processing system;

(b) it is connectable to the central processing unit either directly or through one or more other units; and

(c) it is able to accept or deliver data in a form (codes or signals) which can be used by the system."

Mr Fallah noted that by an additional note it was provided that subheading 8471 70 51 also applies to, "CD-ROM drives, being storage units for automatic data processing machines, which consist of drive units designed for retrieving the signals from CD-ROMs, audio CDs and photo CDs and equipped with a jack for earphones, a volume control button or a start/stop button". He said that this note had been added to Chapter 84 because CD-ROM drives had not existed in 1987 when the original Community Nomenclature had been drawn up. He submitted that we should interpret the headings in the light of product development. In this case the printed circuit board, which was an integral part of the cooling component, meant that a more precise classification would be as an automatic data processing machine within heading 84.71.

The Respondents' submissions

22. In response to Mr Fallah's submissions on heading 84.71, Ms Whipple noted that Note 5(B) referred to a "unit" but the cooling component could only properly be described as a "part". She referred to Note 5(E), which states that, "Machines performing a specific function other than data processing and incorporating or working in conjunction with an automatic data processing machine are to be classified in the headings appropriate to their respective functions or, failing that, in residual headings." She said that the addition of a printed circuit board did not change the character of the component. She adopted Mr Clues' view that the addition of the

printed circuit board merely meant that the fan had become a more sophisticated fan.

23. She noted that the Explanatory Notes to heading 84.14 stated that the heading excluded fans fitted with elements additional to their motors or housing where such elements gave them the characteristics of more complex machines of other headings, such as air heaters, air conditioning machines, dust extractors or air coolers for the industrial treatment of materials. Thus, if the Appellant imported a central processor unit, it could not be classified as a fan just because it incorporated a cooling component. In this case, however, the essential characteristic of the product was the fan and it did not cease to be a fan because the fan incorporated a printed circuit board to control its operation.
24. Developing this submission, she noted that it was not a rule of interpretation in the first place as to whether the cooling component was a fan or not. The component comprised two parts: a heat sink and a fan, which was the more sophisticated for the incorporation of a printed circuit board. There was no heading for a heat sink and there was therefore no other heading apart from 84.14: the correct heading was either heading 84.14 or 84.73. This led to GIR Rule 3(b) and Note 2(a). If under Rule 3(b) the essential characteristic of the component was as a fan, Note 2(a) secured that the only heading into which it could be brought was heading 84.14. The Explanatory Note to Note 2 made it clear that in general parts that are suitable for use solely or principally with particular machines are classified in the same heading as those machines but that separate headings were provided for office machines including heading 84.71. The Explanatory Notes also made clear, however, that parts which in themselves constitute an article covered by a heading in the section are in all cases classified in their appropriate heading even if specifically designed to work as part of a specific machine. This made it clear that if the cooling component was a fan it must be classified as a fan even if it works in a computer and only works in a computer.
25. In her submission, therefore, because the cooling component prima facie fell within both headings 84.14 and 84.73, Rule 3(a) did not apply. That made it necessary to refer to Rule 3(b). While the cooling component comprised both the heat sink and the fan, she submitted that the essential character of the component was a fan. She accepted that if the Respondents were incorrect on this, heading 84.73 would be the correct categorisation. She drew our attention, however, to Mr Clues' conclusion, namely—

"I accept that the "Crystal Cooler" is a part of a computer (84.73). It is not an accessory because the PC cannot safely operate without it. It is also an active component because it is air cooled by the inclusion of an electric fan. ¼ The component cools the processor. Therefore it is my conclusion that the primary feature of this component is the fact that air is moved to effect cooling, by its design. This being the case then 84.14 is a more accurate description of the component than 84.73 (compare with the question: is a light bulb best described as a component for generating light or is it part of a house)."

26. Ms Whipple said that it was plain from the demonstration that the fan acted to control the temperature within the computer. When the fan stopped the temperature rose and to reduce the temperature the computer would increase the rotation of the fan. This was why the computer had to communicate with the fan and why the fan housing incorporated a printed circuit board. This made the fan a more sophisticated fan but did not alter its essential character as a fan.

27. Ms Whipple said that the Community Customs Code provided a mechanical means of taxation that worked in a structured way. There was obviously some room for interpretation but the aim of the code was to produce a uniform application across the Community. The fact that the cooling component might better be described as a computer part was unimportant if the essential character of the component was as a fan. She said that the Respondents' uniform practice had been to classify these products under heading 84.14 and she drew our attention to several Binding Tariff Information ("BTI") rulings given in the Netherlands and Germany classifying similar cooling components under heading 84.14. She noted, however, an Italian BTI that had classified a similar component under heading 84.73. Nevertheless, in her submission the correct heading was 84.14.

Conclusion

28. We are particularly grateful to Ms Whipple for her concise statement of the issues that arise for our decision and to Mr Fallah for enlivening the proceedings with his demonstration of the functioning of this particular computer component. In relation to the respective submissions, we are not inclined to accept Mr Fallah's submissions with regard to heading 84.71 and Note 5 to Chapter 84. We tend to agree with Ms Whipple that the printed circuit board that is incorporated within the fan's hub merely makes the fan a more sophisticated fan. Nevertheless, we think that Mr Fallah's submissions are correct in so far as his main point is that the essential character of this product is that of a computer component (that is, a more efficiently functioning heat sink) rather than a fan.
29. We think that an accurate description of this product would be as "a cooling component", designed to function as an integrated unit for maintaining a personal computer at a safe temperature for continuous operation. To fulfil that function the component incorporates a heat sink, a fan and a printed circuit board. If Rule 3(b) requires us to have regard to the product's dominant or essential characteristic, we have little doubt that it is the heat sink. This is the conclusion that we draw from Mr Fallah's demonstration. If we were to ask someone knowledgeable in the construction and operation of computers what this component is, we think that they would say it was a heat sink. Mr Clues himself did not describe the cooling component as a fan. He said that the solution to the problem of more powerful personal computers generating more heat was, "to install a more complex heat sink incorporating a fan". Someone less knowledgeable might look at the product and note that it incorporates a fan but the fact that to the casual observer the fan is the only immediately identifiable element of the product, does not in our view mean that the product should be classified as a fan. It is clear that the fan has been added solely to improve the functionality of the heat sink and not to function as the primary cooling mechanism. If we have regard to Paragraph (VIII) of the Explanatory Notes the role of the fan is subservient to the primary role of the heat sink.
30. In arriving at our conclusion we would reject Mr Clues' characterisation of items as "active" and "passive" as a relevant criterion in this context. A fan is obviously active in the sense that it has easily observable moving parts. That does not mean, however, that a static metal heat sink is "passive". As our description indicates, it is not just a slab of metal but is of a sophisticated design and made to improve its cooling function. As such it constantly functions to conduct heat away from the central processor. This may not be visible to the naked eye and can only be observed by measuring the temperature but it is in our view an active

function and represents the essential function of the cooling component. The heat sink continues to function without the fan and the fan is designed to serve the heat sink so that it functions more efficiently in conducting heat away from the central processor.

31. We would add, however, that our conclusion would not be different even if we did accept Mr Clues' suggestion that the heat sink is a "passive" component. Mr Clues takes a light bulb as his example of a passive device. We do not think, however, that a product unit that combined the light bulb with a fan and printed circuit board designed to cool the light bulb when lit would be correctly be classified as a fan rather than a light bulb and yet the bulb is no more an "active" part of such a unit than it was when it was just a light bulb. A light bulb generates heat because an electric current is passed through its filament. The heat sink generates heat because it is placed in contact with the motherboard. The analogy may not be precise but we think it suffices to illustrate that there is nothing in the context of the Crystal Cooler to Mr Clues' suggestion that the "active" nature of the fan as compared to the "passive" nature of the heat sink means that the fan is the essential characteristic of the Crystal Cooler.
32. The appeal is, therefore, allowed. Mr Fallah indicated that the Appellant was not concerned to claim its costs. We therefore make no order but the Appellant is at liberty to apply within 28 days of the release date of this decision.

MALCOLM GAMMIE QC

CHAIRMAN

RELEASED:

LON/00/7092-DYN.GAM