

1. HERMETIC SEAL — "Hermetic" means air tight. A "hermetically sealed container" is one that is suitably designed to maintain the commercial sterility of its contents after processing, i.e., preclude the entrance of bacteria and also maintain the desired vacuum or pressure in the can. Food and beverage cans (tin and steel) normally have three hermetic seals—one along the side seam and one each at the top and bottom ends of the can.

2. SWELLS — Both ends of the can are bulged. Neither end will remain flat without pressure. Soft swells yield to manual pressure, but no impression can be made manually on hard swells. Swells result from positive pressure in the can usually because of spoilage of the contents. Some swells, especially in acid products, may result from chemical reaction between the contents and the container.

3. FLIPPERS — Only one end is slack or slightly bulged. That end will remain flat if pressed in. Cans which bulge when sharply and squarely struck end-down on a flat surface are flippers, provided that the bulged end remains flat when pressed. Flippers result from a lack of vacuum.

4. SPRINGERS — One end of a can bulges. Manual pressure on the bulged end forces the opposite end out or the same end will spring out with release of pressure. If both ends bulge but only one will remain flat when pressed, the can is a springer. Springers result from moderate positive pressure in the can.

5. HYDROGEN SWELL — A bulged, closed metal can caused by hydrogen produced therein by reaction of the metal with the content of the can.

6. FALSE SEAM — A significant defect in the double seam in which the cover and body hooks are not overlapped or engaged. (Photo 9). Defect is not always detectable by simple external examination, i.e., a complete can tear down inspection may be necessary to reveal the false seam.

7. RUST — Iron oxide produced by moisture in contact with unprotected base plate metal. (Photos 11 and 17).

8. PITTING — Depressions in a metal surface caused by corrosion. (Photo 11).

9. CORROSION — Any deterioration of the surface of the container due to a chemical reaction.

10. PIN HOLES — Minute opening in the base plate metal due to corrosion.

11. SHARP SEAM — A sharp edge at the top inside portion of the seam. Condition can be first indication of a further complication known as a "cut-over." (This defect can usually be felt more easily than it can be seen).

12. CUT-OVER — A sharp break or bend in the can end metal at the seaming panel radius. (Photo 14).

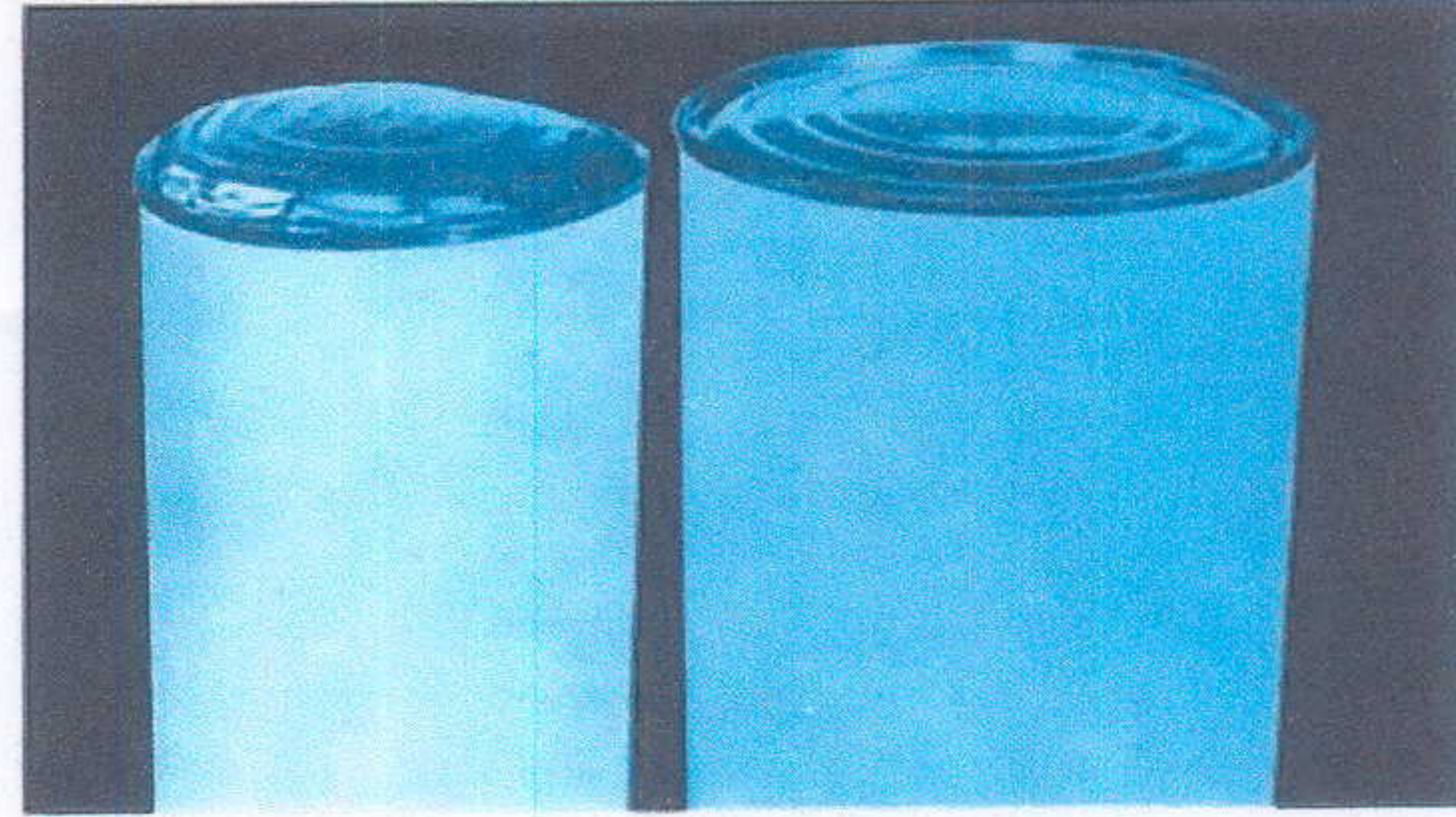
13. VEE OR SPUR — Small metal irregularities in the double seam in one or more "V" shapes. (Photo 15).

14. PANELING — Flat sides on can body and/or permanent distortion (collapsing) of the can body caused by internal vacuum and excessive external pressure developed during processing or cooling. (Photo 18).

15. BUCKLE AND/OR BUCKLING — Permanent distortion of the can end caused by excessive internal pressure. (Photo 21).

Can Defects

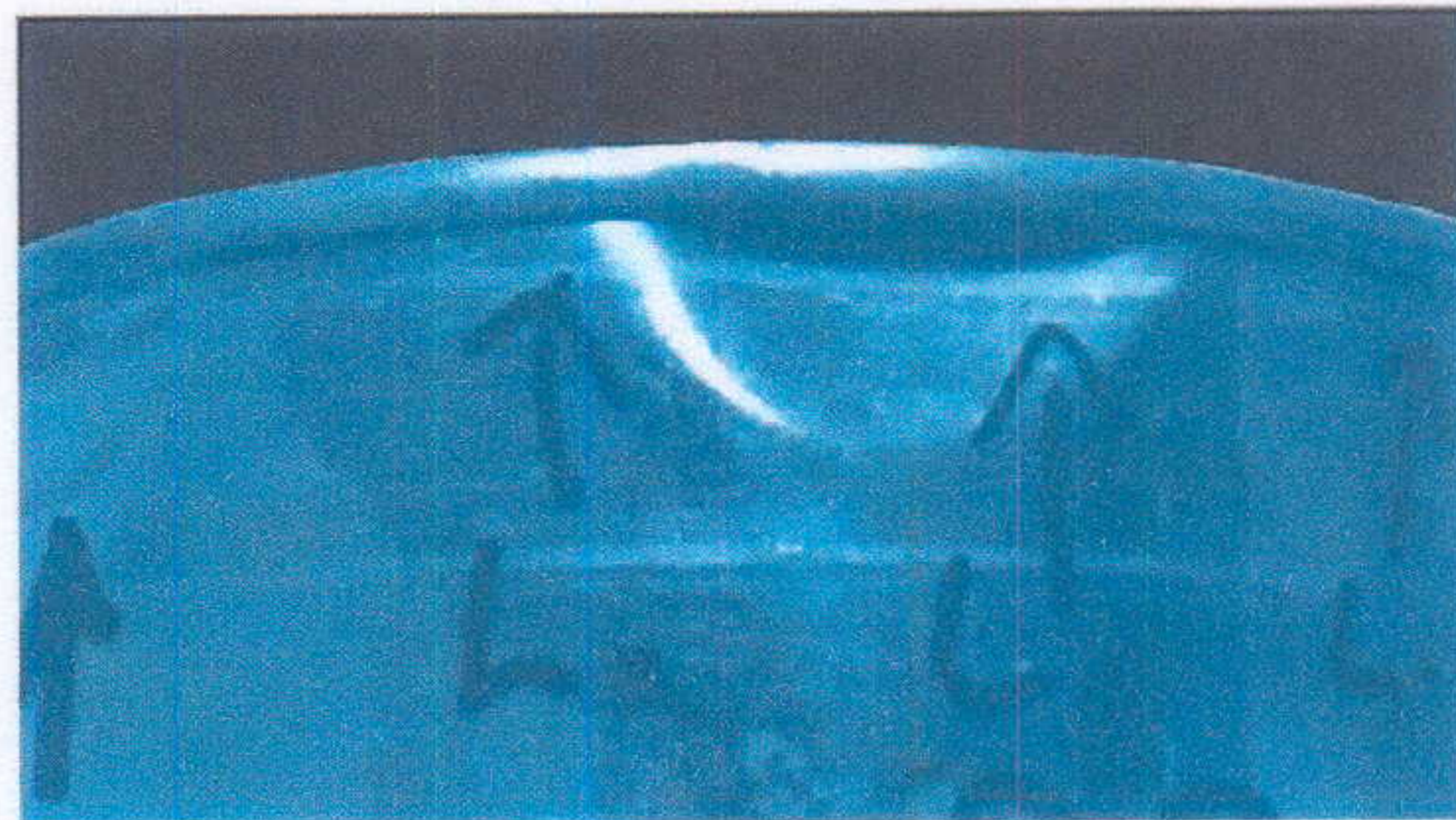
Examples of damage to metal cans and when damage requires return of merchandise.



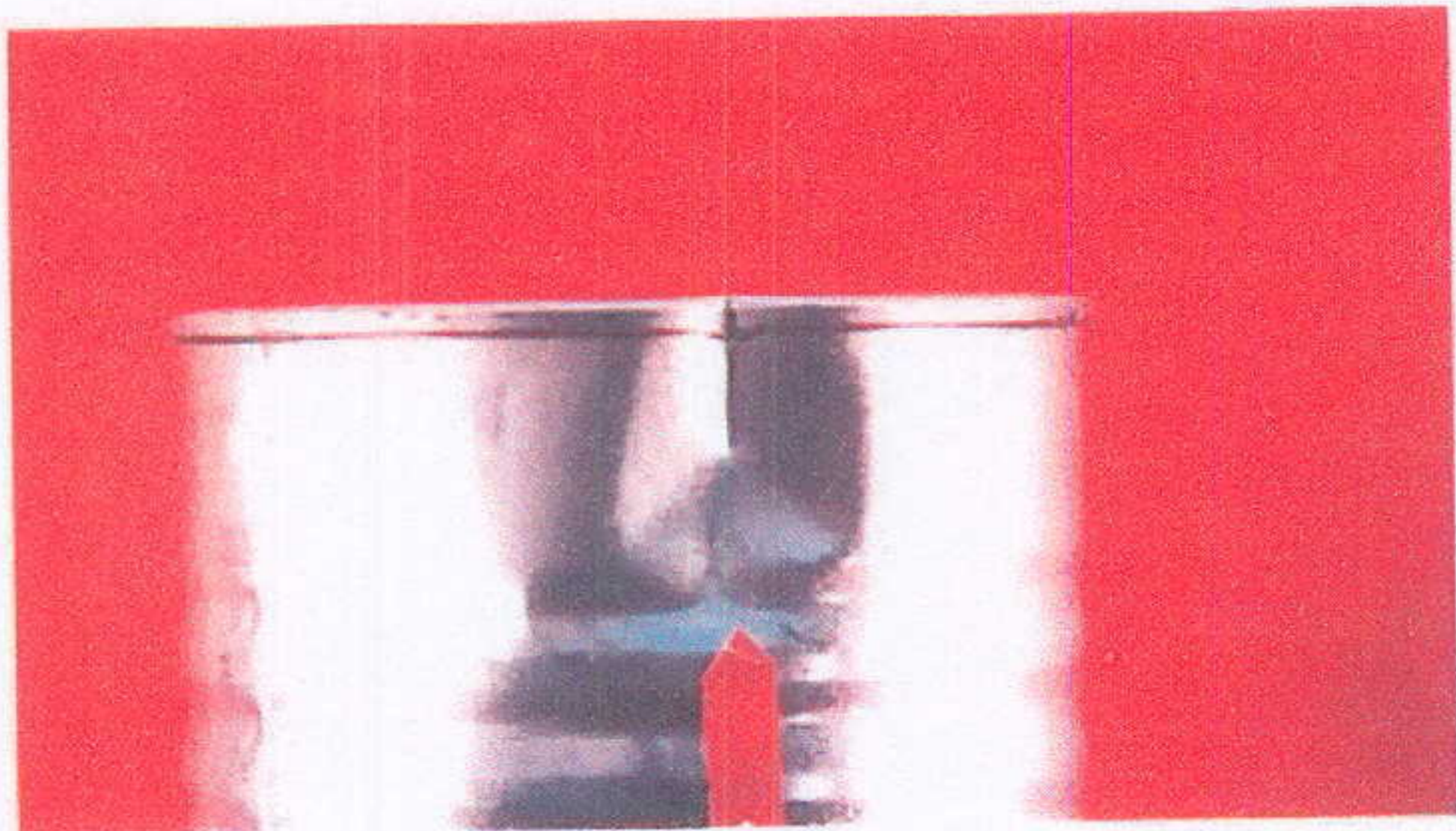
1. Bulged and/or swollen ends from gas formation in can which causes one or both ends to swell producing a flipper, soft swell, hard swell, or blown can.



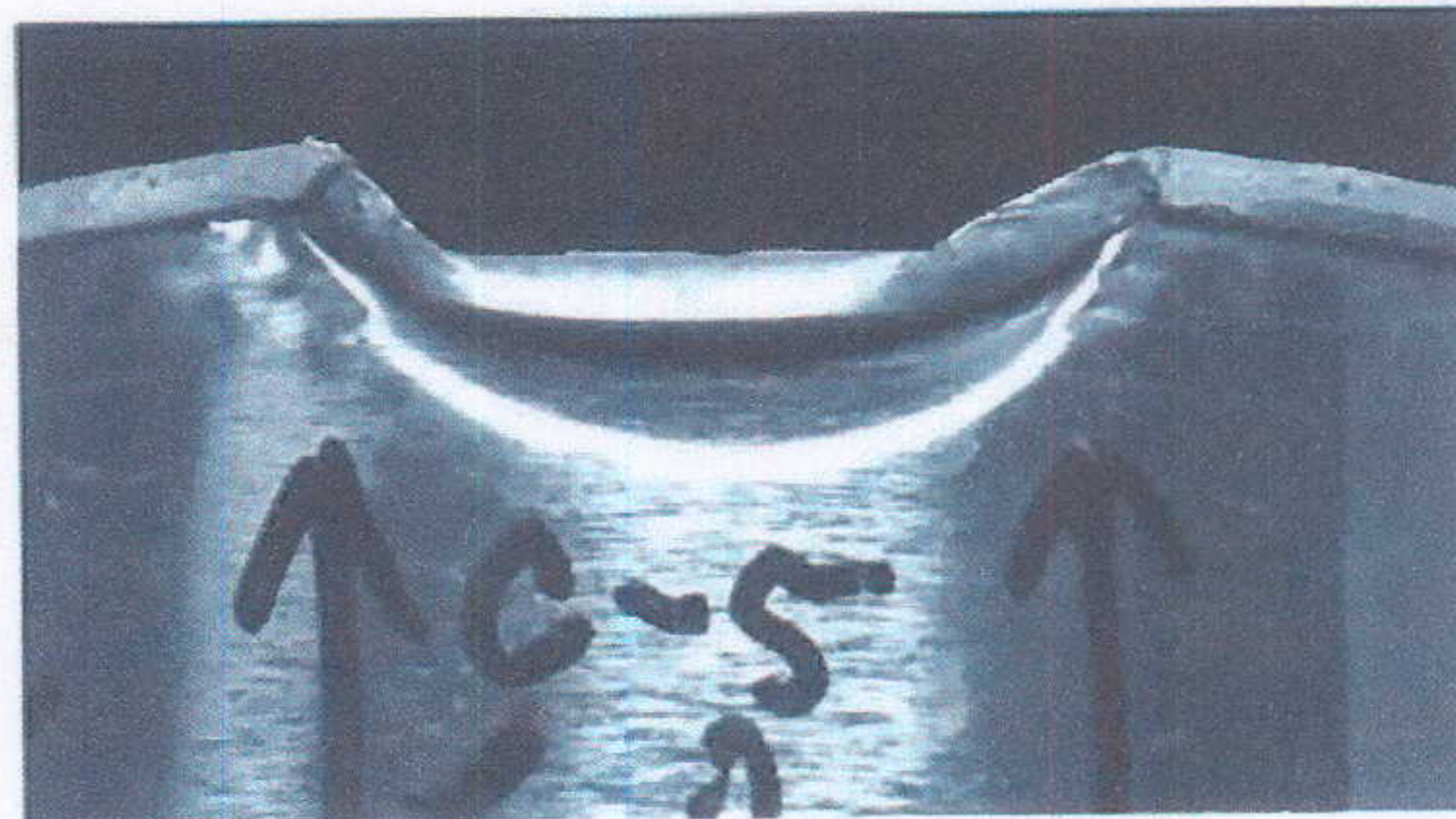
2. Can with likely loss of hermetic seal and normally a leaker due to the mislocked side seam.



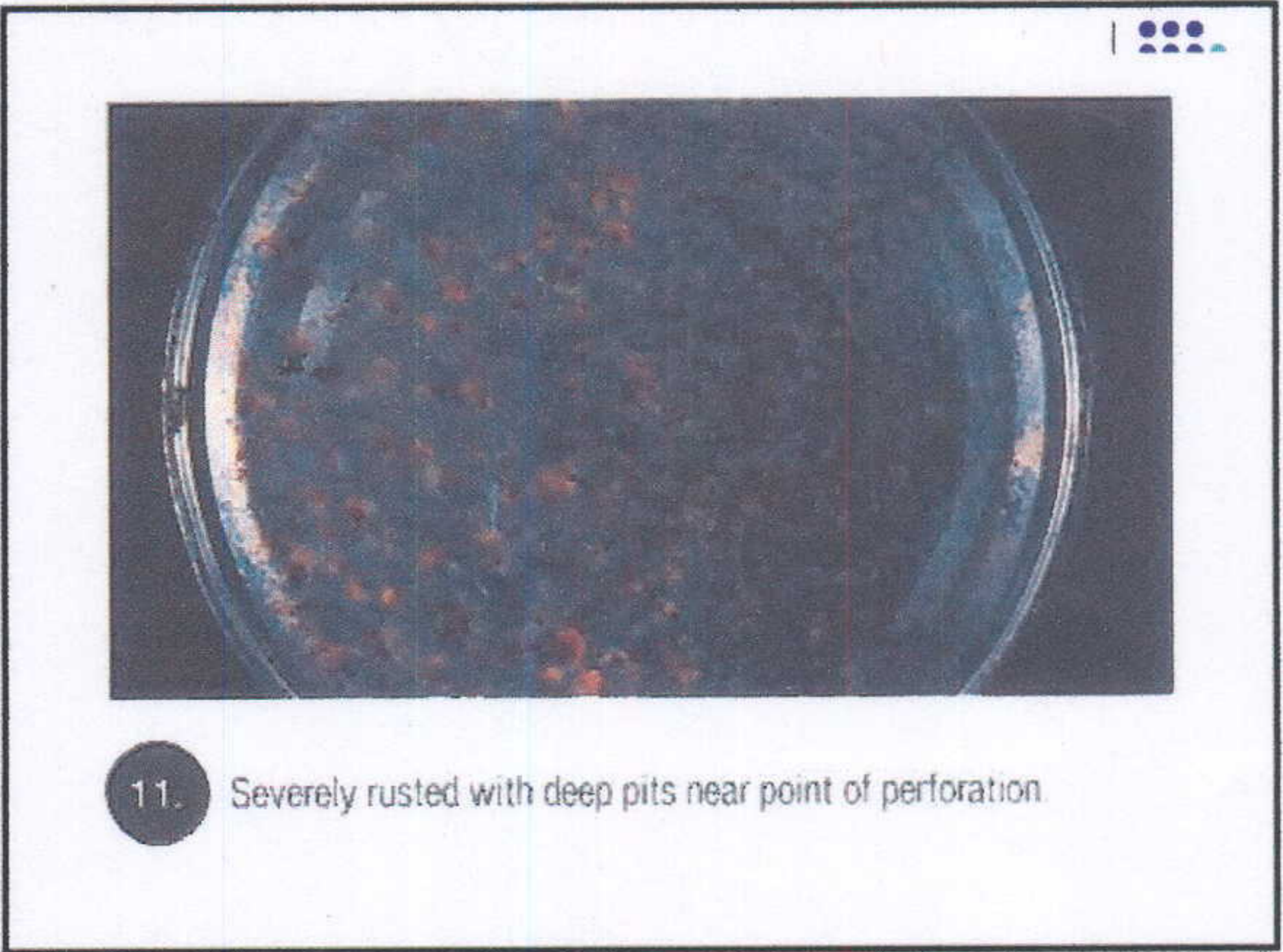
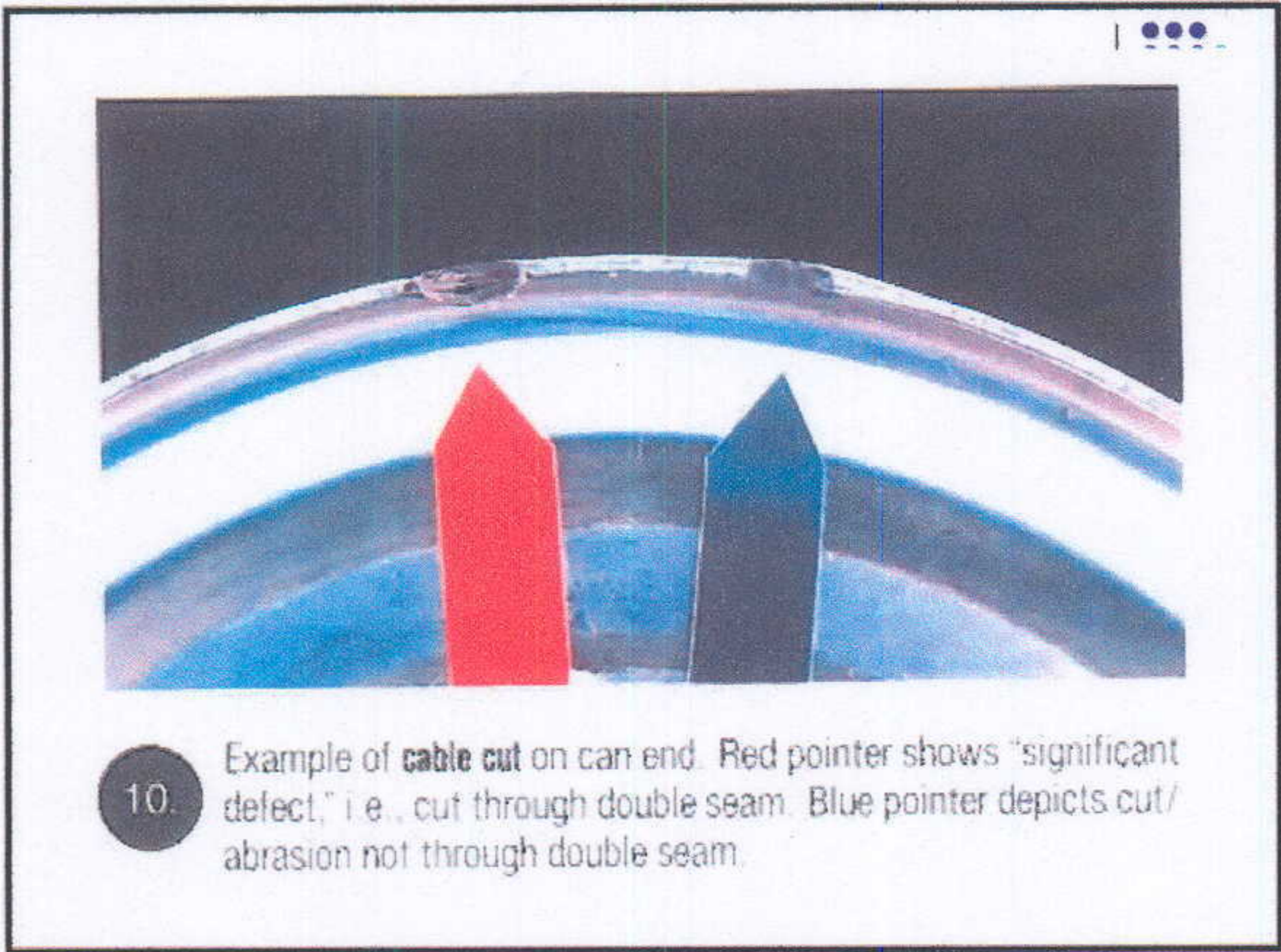
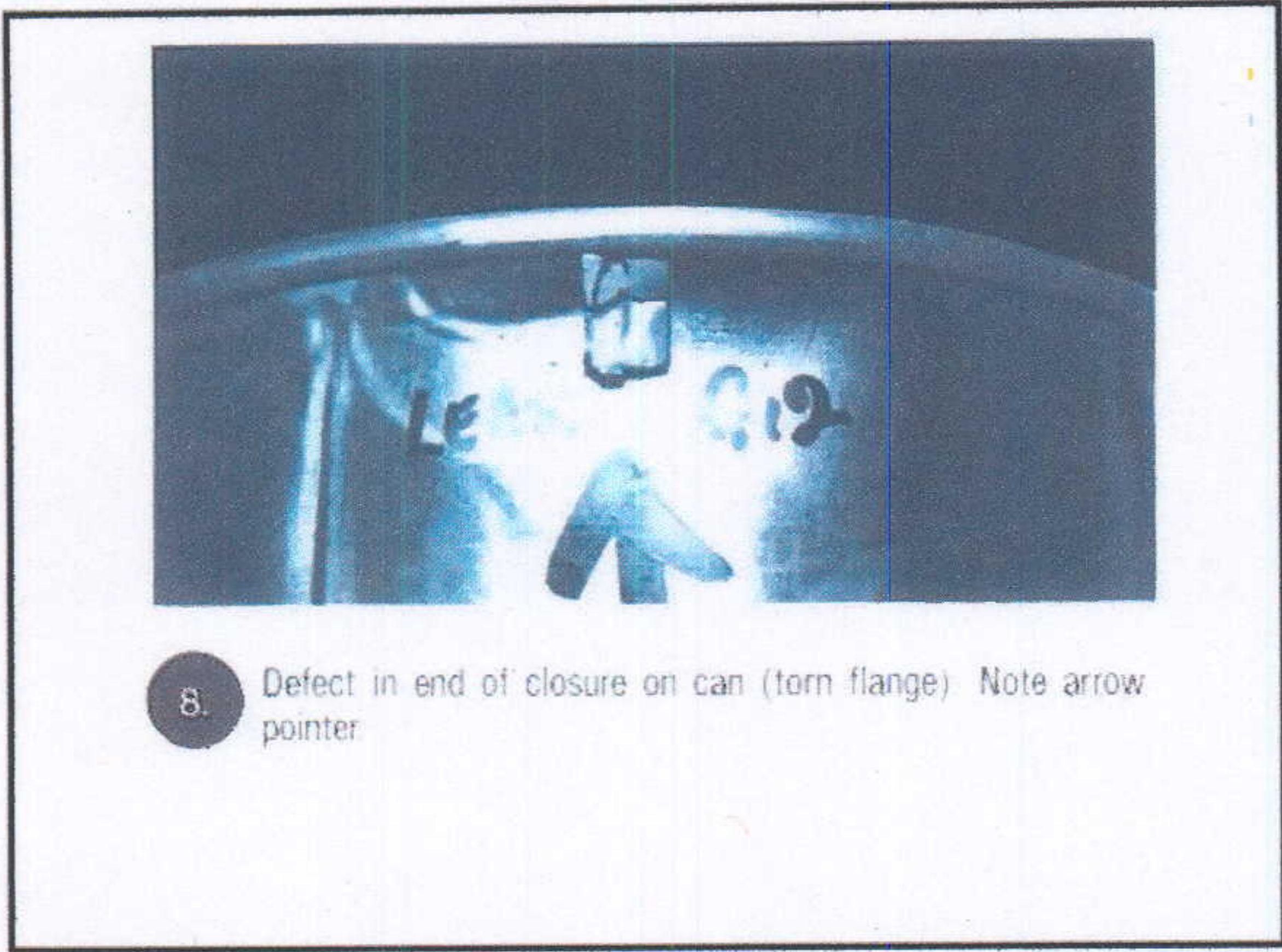
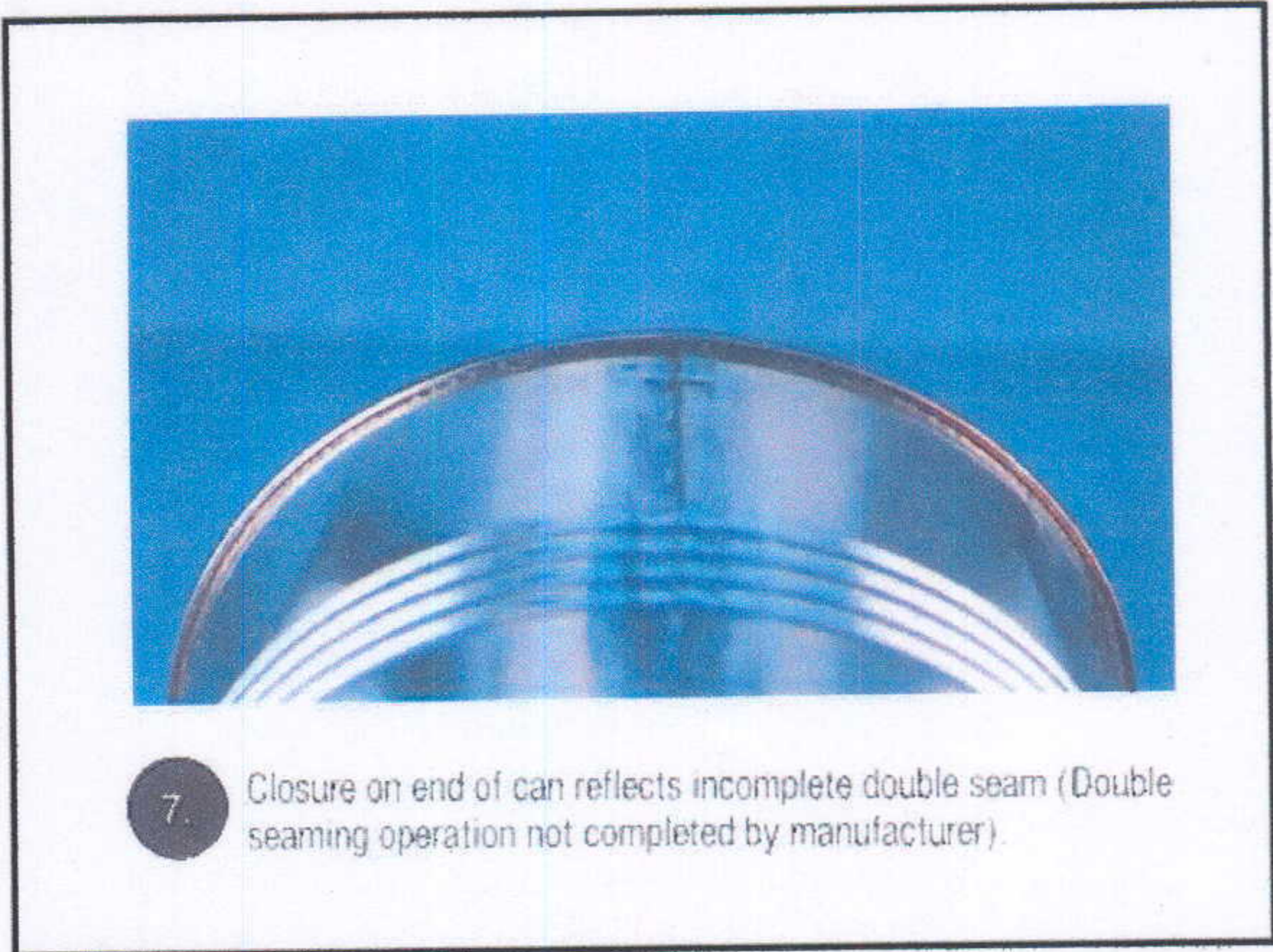
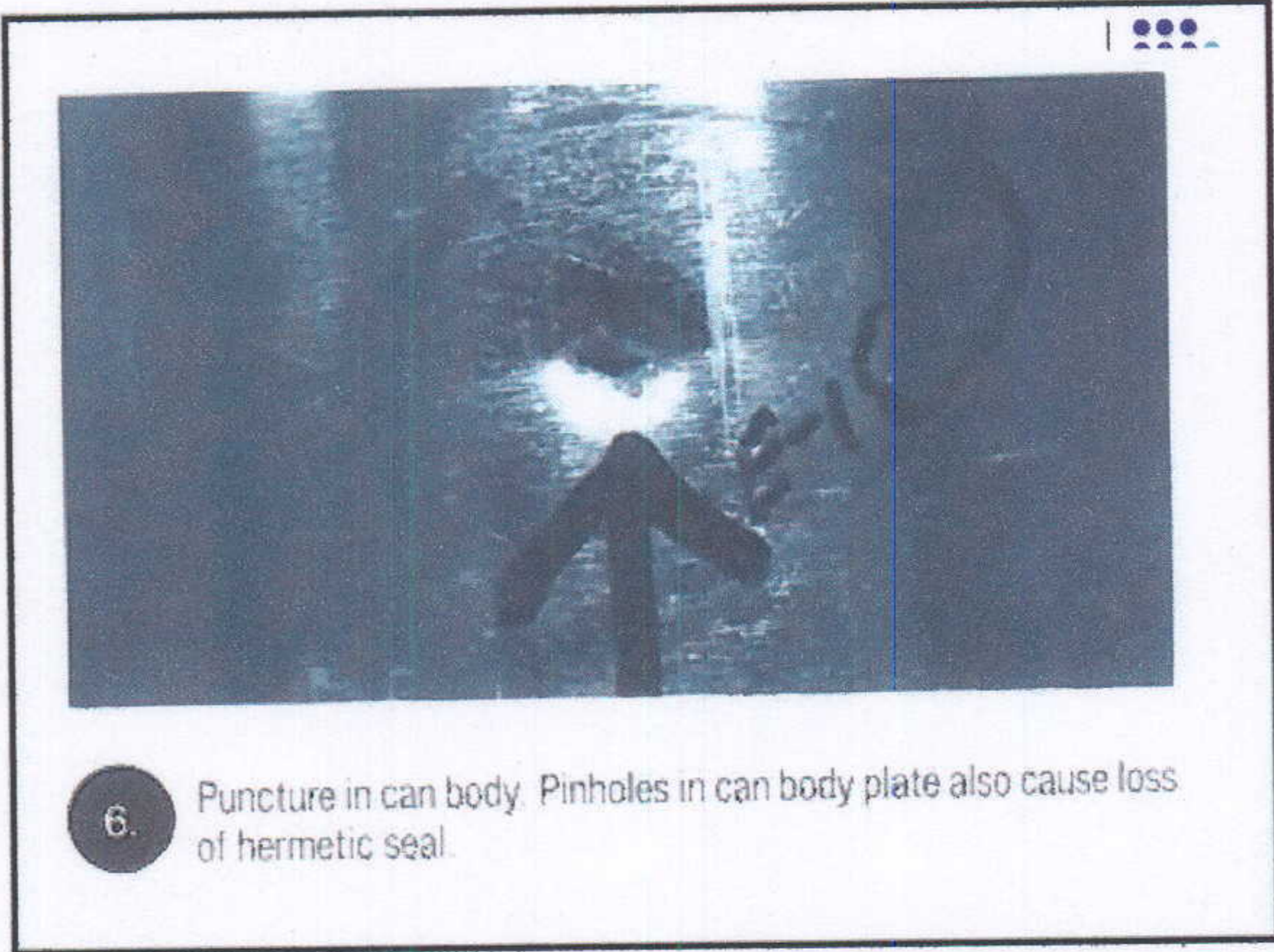
3. An opening below the double seam or plate fracture.

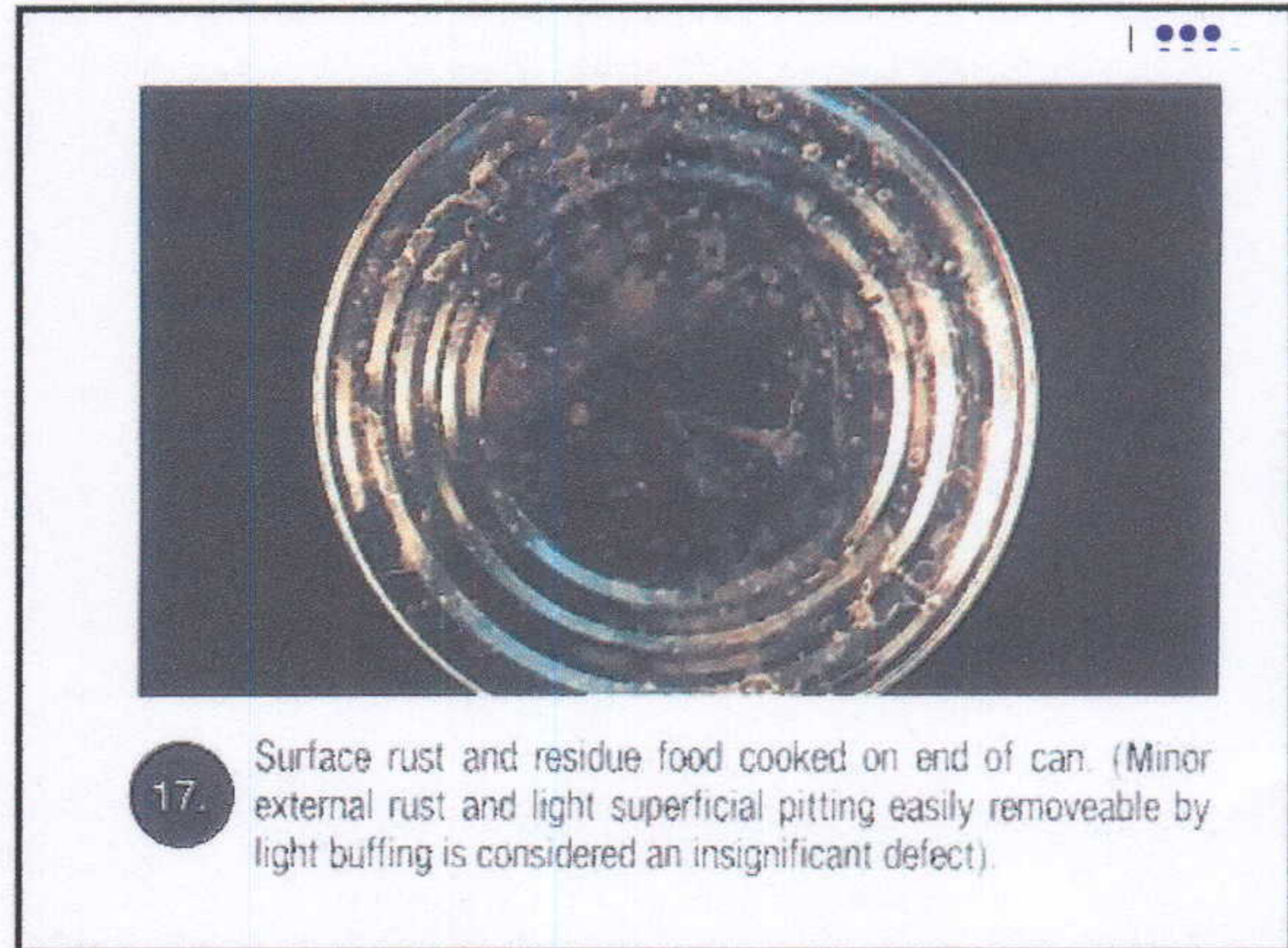
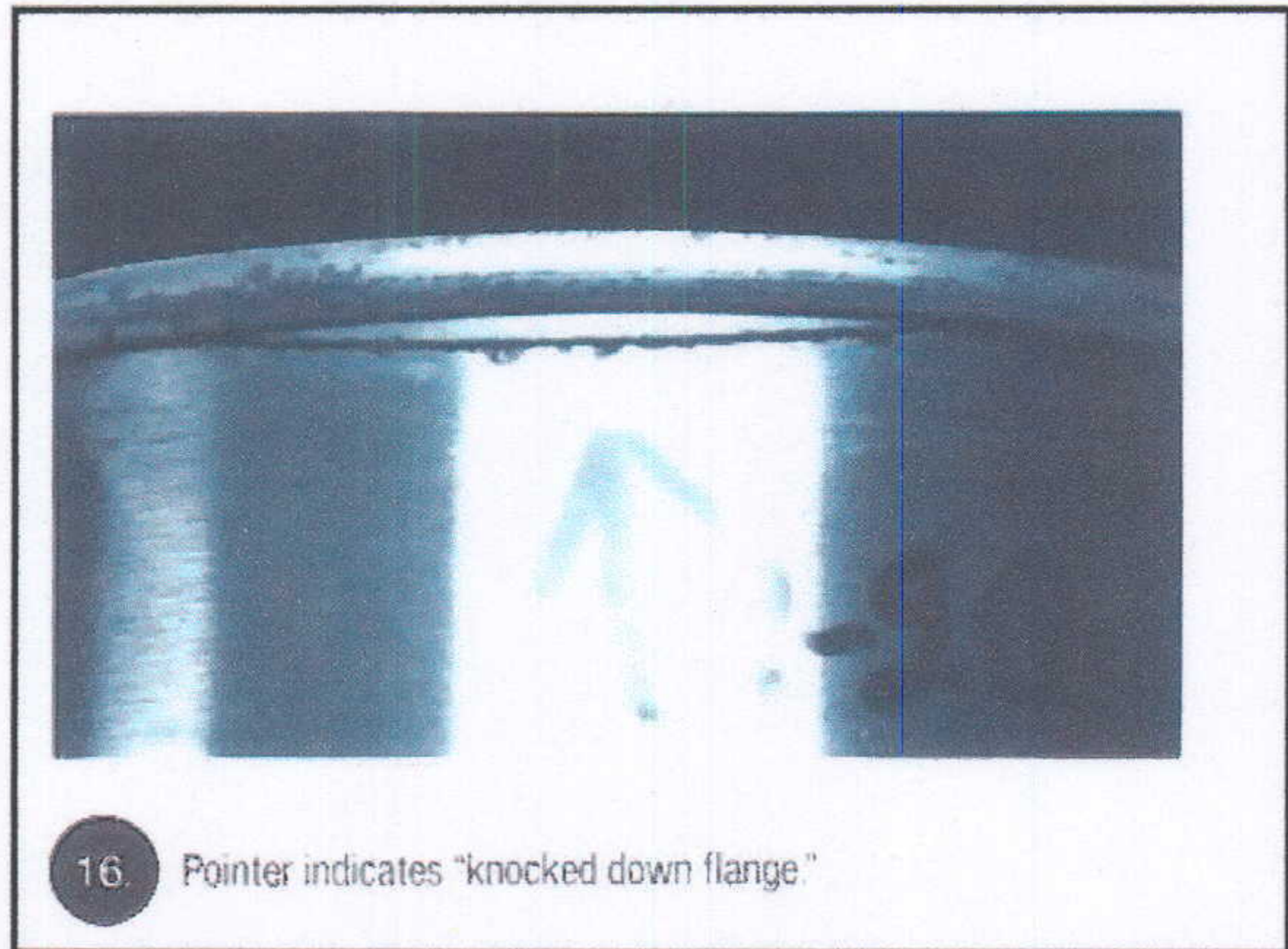
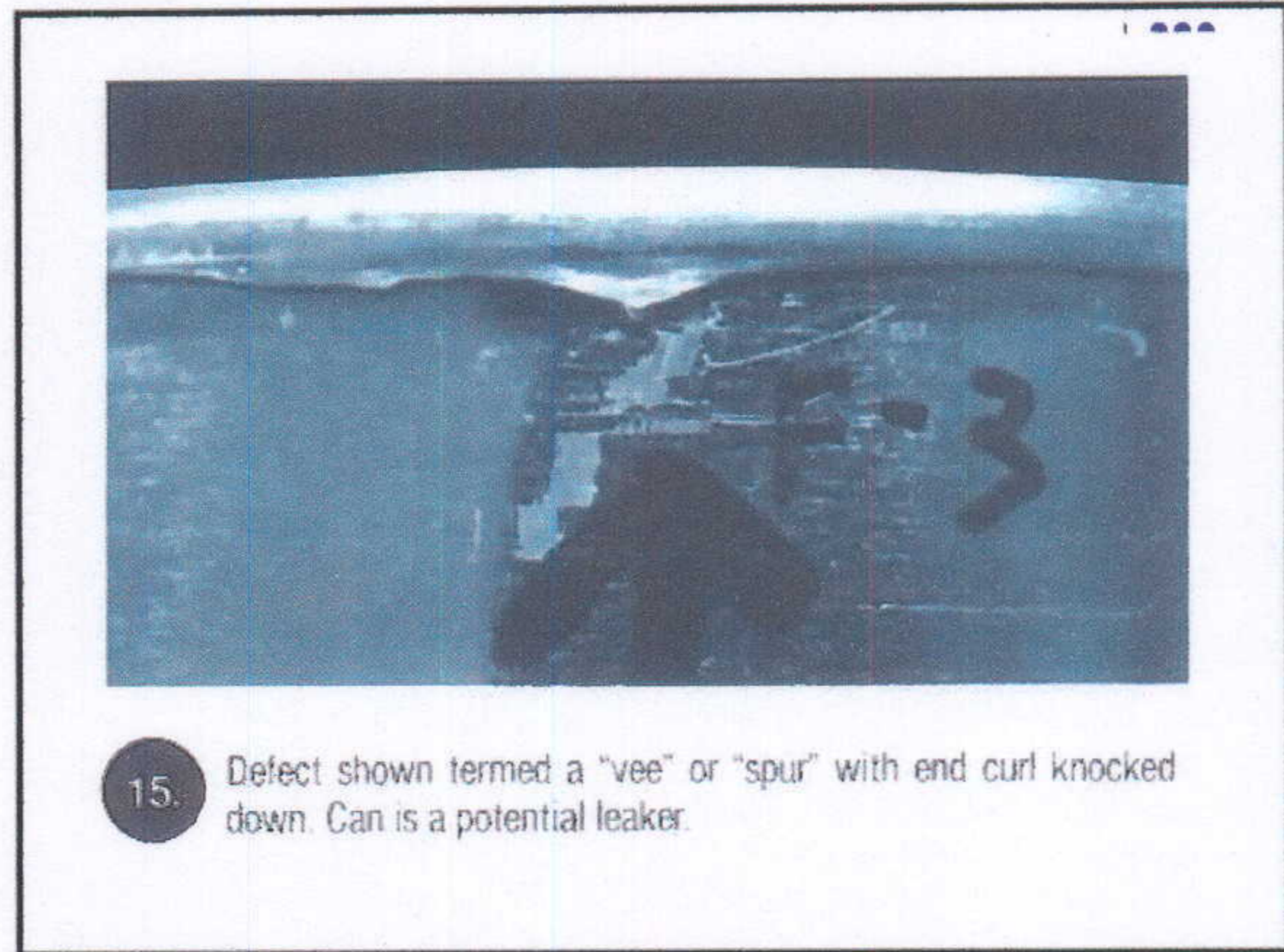
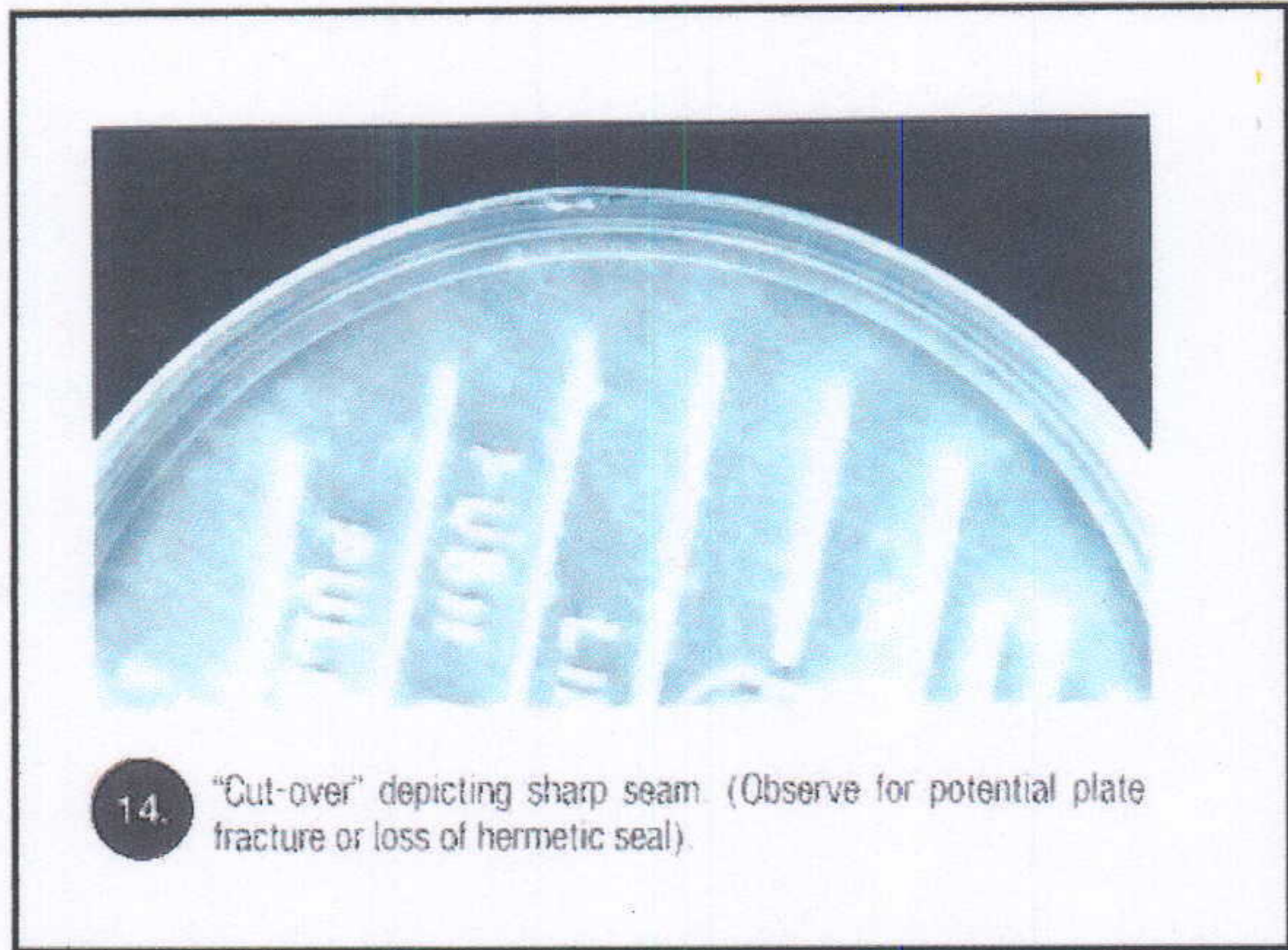
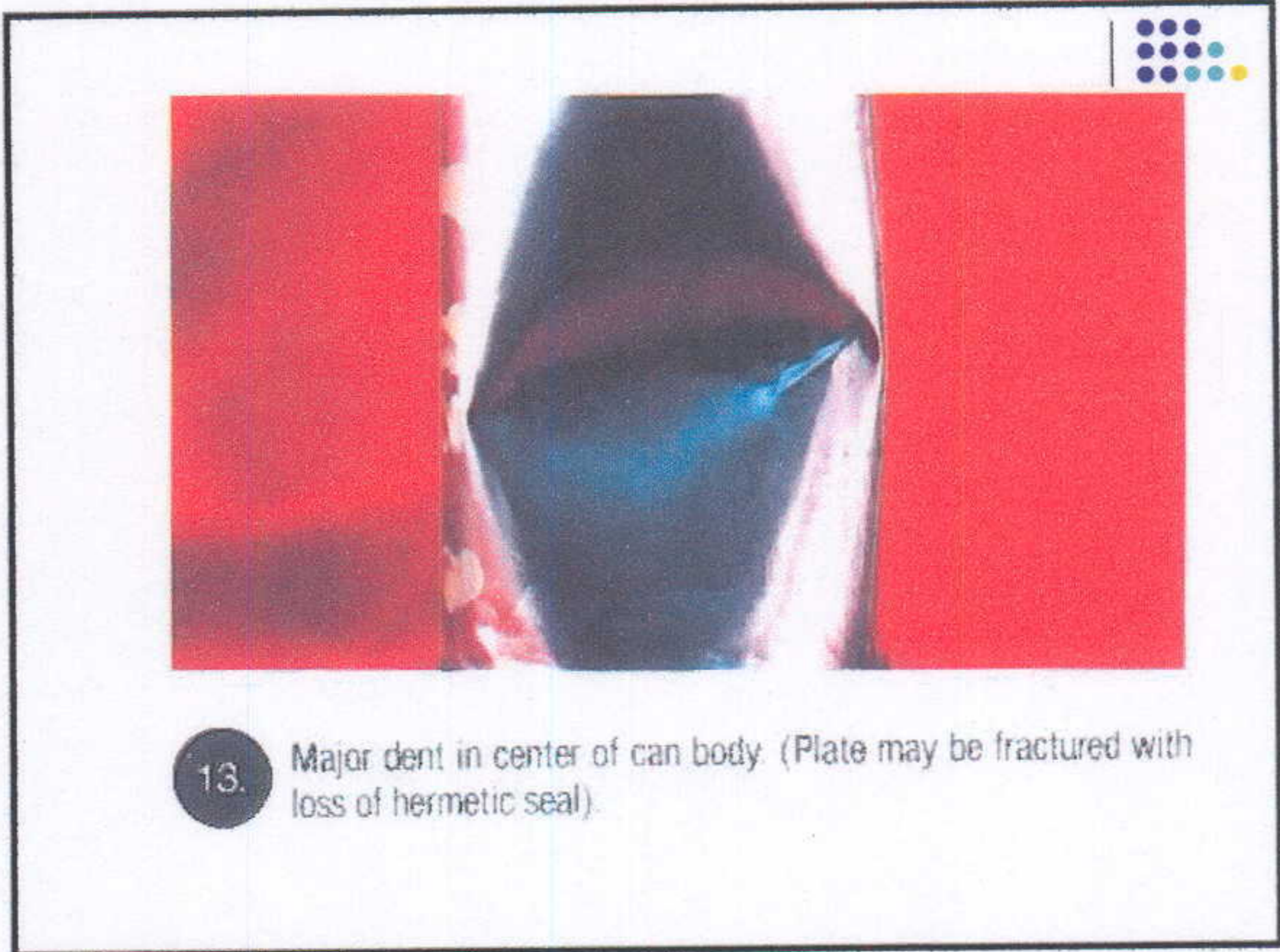
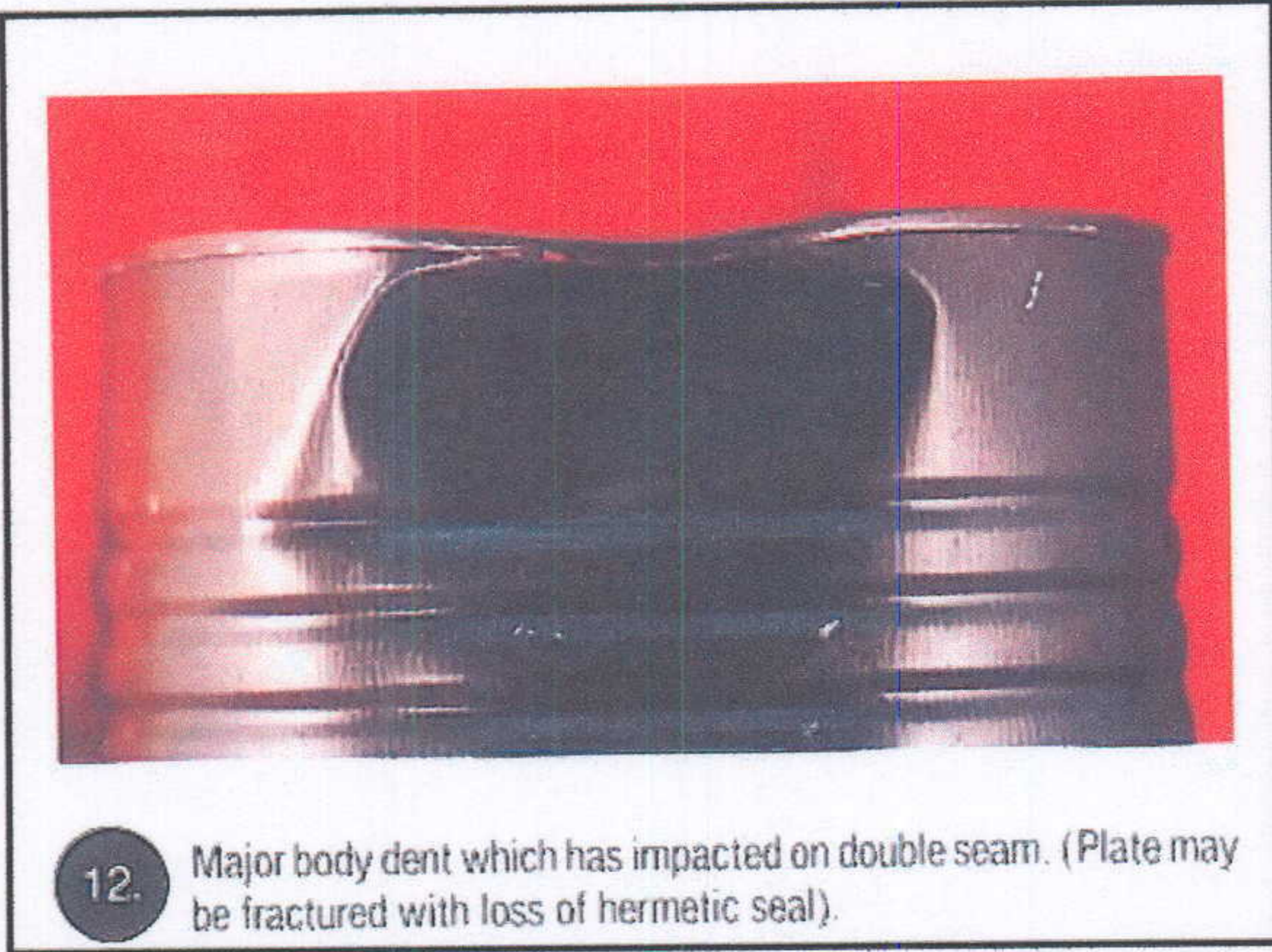


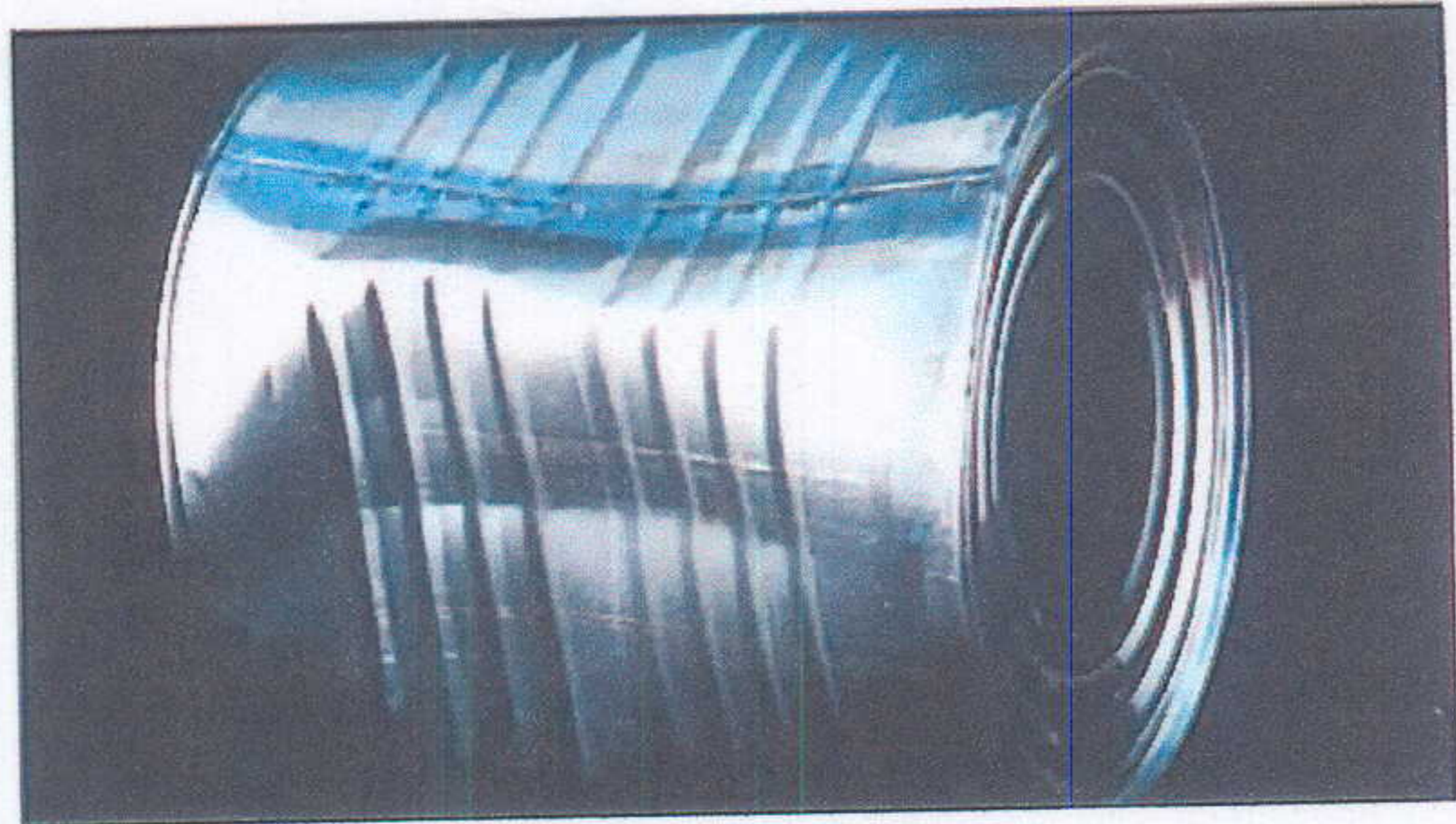
4. Plate fracture in double seam or can body (Note position of red pointer).



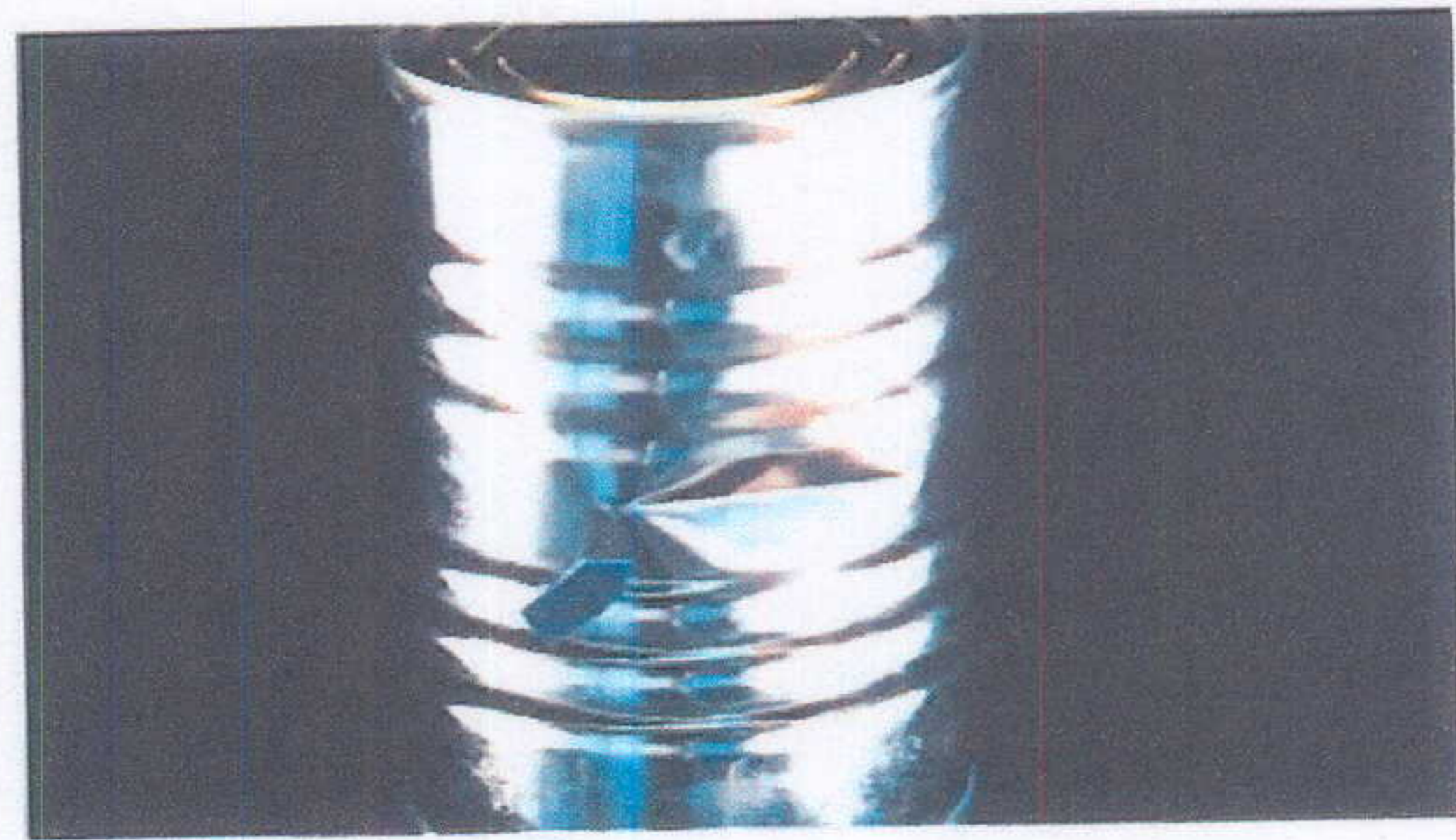
5. Severe double seam dent plate fracture.



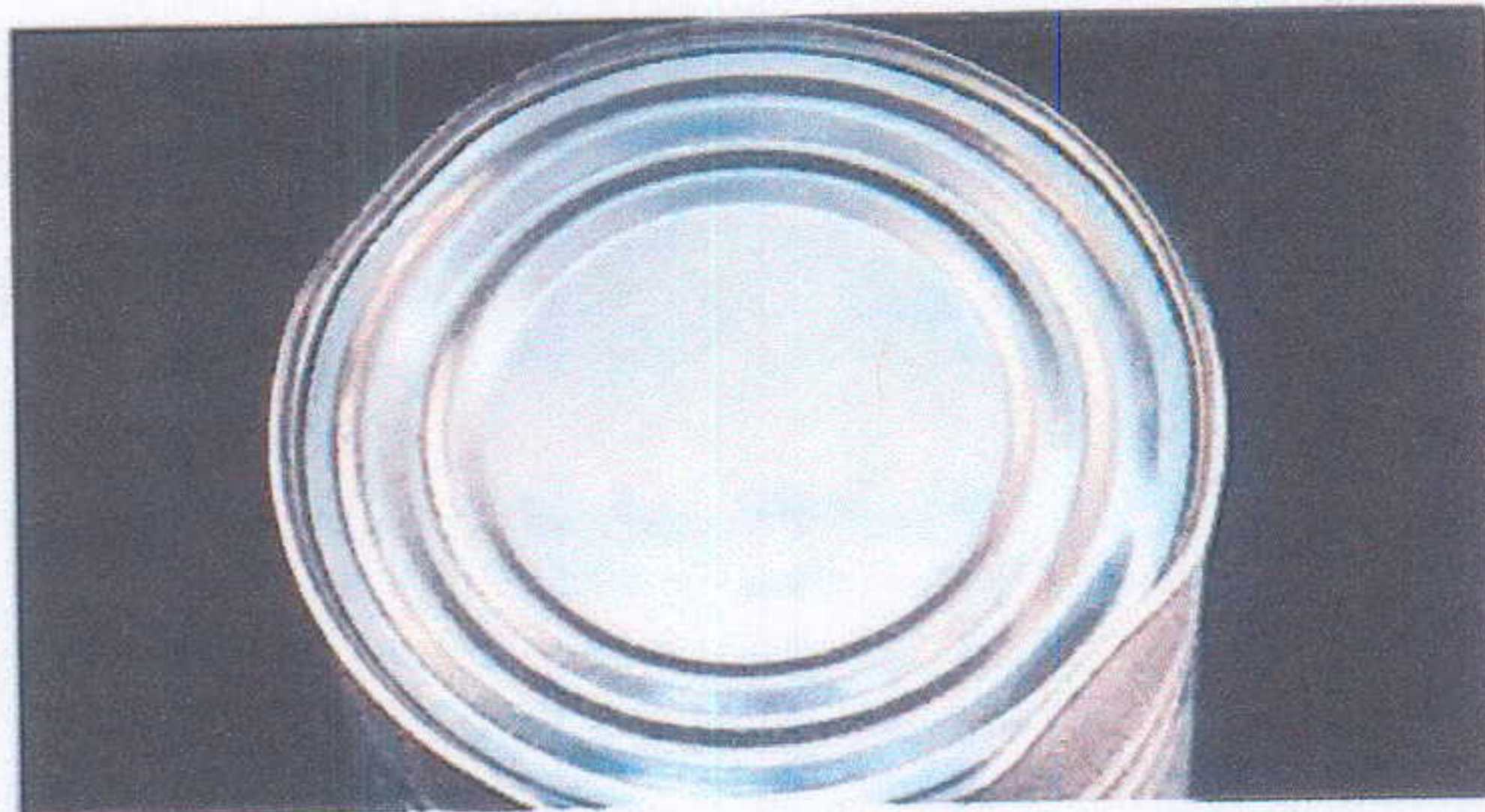




18. Paneled container without visible signs of loss of integrity, i.e., no plate fractures.



19. Obvious body dent on side of container body. Side seam and/or double seams appear not significantly affected.

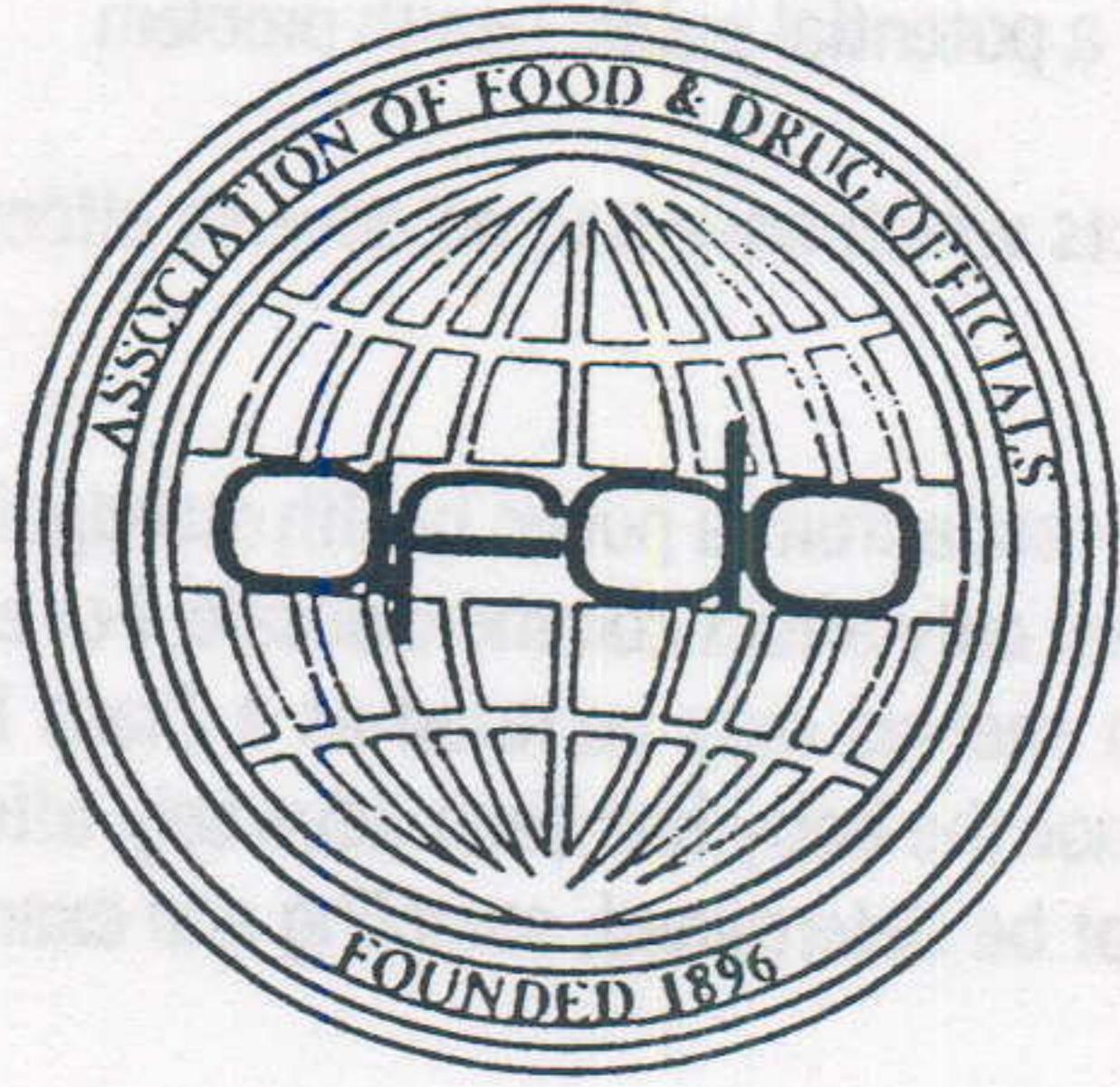


20. Minor dent to double seam on end of can body, i.e., it does not appear creased or sharp.



21. Minor "buckle" just extending into double seam on end of can body (Double seam does not appear significantly affected.)

A POCKET GUIDE TO CAN DEFECTS



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Canned foods are the safest food processed today. Approximately 60% of food consumed in the United States is thermally processed and packaged in hermetically sealed containers. However, regardless of the safety assured in canned foods, any damaged or defective canned products are a potential public health problem. Defective cans may leak and allow microorganisms to enter that may cause food poisoning or other significant health problems. The deadly food poisoning, botulism, is always a significant threat and a potential public health problem to consider when dealing with serious defective/damaged canned food containers requiring inspection, evaluation and sampling. It is imperative that canned food products with visual and/or external defects be recognized. Those containers with "significant defects" should not be sold, distributed or consumed. However, canned foods with "insignificant defects" (Aesthetic Defects) normally represent no public health hazard, i.e., if the hermetic seal on the can has not been jeopardized, these products are generally considered safe and when properly labeled, such products are acceptable for distribution and sale.

This Pocket Guide is intended in part to help resolve the question which frequently arises concerning the evaluation and safety of canned food products, i.e., when does the can defect or damage become severe enough to represent a public health concern or hazard.

This simplified guide shows in color some of the major types of can defects which may be commonly found by visual observation. It categorizes the defects/damages according to their degree of potential hazard, and shows what to look for in the routine visual inspection of the finished product. These classifications may change after laboratory examination. It is essential that prior to sale, samples of each defect suspected of causing loss of hermetic seal be collected for laboratory examination e.g., measurement and integrity of can seams, microbiological analysis of contents, etc. Note that a "hermetically sealed" container for canned foods and/or beverages is considered as one that is appropriately constructed/ designed and intended to assure no entry of bacterial microorganism and thus maintain the commercial sterility of its contents after thermal processing. Other definitions commonly and frequently used in the visual evaluation of can defects are included as part of this pocket guide for a quick and simple reference and for easy use in the field.

DEFINITION OF DEFECTS (Updated November 1987)

Number and color ratings are used throughout this guide for simplification. From visual examination, if presence of microbial growth or evidence of loss of hermetic seal is in question (Class I or II): the container must be examined in the laboratory.

Class I—Critical Defects: Defects which provide evidence that the container has lost its hermetic seal (e.g., holes, fracture, punctures, product leakage, etc.) or evidence that there is, has been, microbial growth in the can contents.

This is a critical defect rating which would be considered a potential public health problem. Any lot which is found to have a defect must be set aside and thoroughly inspected and sorted to ensure that no containers that have lost their hermetic seal are distributed.

Class II—Major Defects: Defects that result in cans which do not show visible signs of having lost their hermetic seal, but are of such magnitude that they may have lost their hermetic seal.

This is a major defect rating which may result in the loss of the hermetic seal and become a public health problem. Even though a Class II defect may not be health threatening by itself, a large number of cans with Class II defects necessitates more extensive sampling of such lots before sale. Evidence of a significant number of Class II defects may be considered a potential public health problem.

Class III—Minor Defects: Defects which have had no adverse effect on the hermetic seal.

This is a defect rating of minor significance from a public health standpoint. This guide is not concerned with defects that only affect commercial sale. For example, dented cans which will not stack on shelves may be rated as a Class III when neither the double seam, side seam nor the body has been adversely affected. If the effect on the hermetic seal cannot be determined, sampling and examination would be appropriate.