

New refillable spray system

by Dr. Peter Schiwiek



For certain applications, especially in the workshop area, a new refillable spray can generation has been put on the market in addition to the traditional aerosol can.

These new very resistant refillable aluminium cans with screwing devices for valves are either pressure-filled in the neck area below the valve or filled through an auto-valve at the bottom of the can. This spraying device - for as such it must be described - is refilled through a can and once the valve is screwed it is filled via an ordinary compressed air line either in the neck or in the bottom area. There are already a great number of such systems on the market. Logically, experience will lead to diversifications of these systems.

The idea for setting-up the system described hereafter was already developed in 1989 by the development department of the Ing.-Büro Dr. Peter Schiwiek. When setting-up this system Dr. Schiwiek, an energy expert and lecturer, was especially interested in ensuring efficiency and flexibility. To this end he developed a refillable can system which is sold on the market with a separate handling device. A special feature of the system is its design as an almost two piece aluminium can the dome cap of which is separated from the can body. Once the cap is unlocked, the filled can closed with a snap cap is placed in a handling device. The dome cap fitted with a valve is fastened and closed with a mounting ring. The check valve in the bottom area can be operated via a flexible, disc-shaped adapter

by means of any common compressed air pistol.

Then, the operating pressure of the can corresponds to the relevant operating pressure of the compressed air installation of the workshop, the limit being fixed at 6 - 8 bar. The system is mainly intended for the industrial and workshop field. On the basis of the experience in this sector, its application in the household or leisure sector would be possible.

The advantage of this system is the use of a very stable, armoured tube that will also meet stringent requirements. In this way both the pressure-guiding internal parts and the applicator are protected. The alternative operating of the spray system with diptube or internal piston within the deepdrawn aluminium can depends on the product to be filled.

The operating with a hollow piston - for the use without diptube is mainly intended for the use in the automotive field for reparation work. The innovation of a re-usable spray can in a safety container offers the possibility to use, if necessary, the internal can as always refillable portion unit closed with a plastic clips cap over a longer period of time. This means that after use, the portion unit can be made pressure-free, taken off the device, closed with the clip cap and stored. This is a considerable advantage compared with other known systems.

Thus, the system is mainly composed of an armoured tube with threaded tension ring and the pressurized container with a check valve at the bottom intended for filling and release of air. The internal can is to be intro-

duced as two piece, separate unit.

The 300 ml volume of the container must be filled according to the standard series 2 (60% volume). The remaining volume is intended as head-space for the compressed air to be filled. Once the can is properly screwed, it is turned by 180. Then, an ordinary compressed air pistol is powerfully pushed against the thermoplast adapter in order to open the check valve below. The recommended operating pressure should be 6 to 8 bar.

Tests carried out by the Technical Monitoring Association (TÜV) have shown that first deformations occur above 18 bar. The reusable spraying device has the advantage that internal container (and the external as well) has not be thrown away after use but can be refilled and can be put again into the rigid external container. The system is a real spraying device which does not involve any problems due to residues of critical products.

Moreover, filled internal containers can be stored and if necessary be exchanged with the last used internal container. Empty containers can be cleaned according to TÜV requirements and can be stored again after refilling.

The well-known problem of explosive gaseous mixtures, especially in the case of petrol/mineral oil fractions, was solved by guiding static charges directly from the can to the operating device.

As the gasket used are mostly of materials such as acrylnitril and NBR they present a good resistance against hydrocarbons, petrol, propane, butane, propylene, mineral and hydraulics oils. If requested,

EPDM (ethylene, propylene, dien-rubber) may be used.

The dome cap gasket is not a flat gasket but an O-ring-type gasket. This has the advantage that the screw cap requires few efforts (to close - to open) compared with a flat gasket.

As the system is not only offered as aerosol system with diptube but also as piston can, it enables the spraying or application of different kinds of product groups, for example grease.

In the case of products with stronger pigment loss, the system is supplied with a stirring ball.

The complete spray system includes a range of nozzles as those used for ordinary aerosol push-buttons.

The new refillable spray system mainly intended for the technical sector, especially workshops, was officially approved. Thanks to the use of cans, dome caps and valve components it is also applicable in the aerosol sector.

The number of the registration card is the following:

70/940/11.000 328/94

This spray can has been sold on the market since July 1994 and its manufacturer is looking for competent distribution partners in Germany and abroad.

Name of manufacturer:
Ingenieur-Büro Dr. Schiwiek
Lindenring 40
D-79189 Bad Krozingen
Tel. (0 76 33) 1 40 16
Fax (0 76 33) 1 40 15