

FOSS THER FOSS

— Coster BOV



OVERVIEW

For numerous products packed under pressure, the content and the propellant must be kept separate. To meet this requirement, dual compartment packaging was developed. Coster's BOV system consists of an aluminum or tinplate can closed by a valve on which a flexible multilayer film bag, containing the product to be dispensed, is affixed or welded. The propellant, liquid gas or compressed gas (nitrogen, air), is contained inside the can outside the bag and squeezes the bag to release the product through the valve.



This solution makes it possible to dispense the product in whatever position the can is held. BOVs are suitable for cosmetic, pharmaceutical, household and technical products. The multi-layer laminated bag ensures high impermeability. The inner layer of polyethylene or polypropylene is compatible with all the usual aerosol products. All Coster BOVs guarantee a high drop resistance even with repeated drops. Valves are available in many different versions offering varying flow rates suitable for a broad range of applications. A variety of actuators and caps are available for sprays, gels and other products. The system can be used with standard cans, so the same machines with minor adjustments can be used to fill cans equipped with either standard or BOV valves. All materials, including bag and seal, comply with FDA regulations regarding food contact. Coster maintains a DMF for its BOVs for pharmaceutical applications. Coster has established new facilities dedicated to the production of BOV valves. The factories are built to the highest production standards with optimal quality systems.

BOV BENEFITS

- OPTIMISED FOR OXYGEN-SENSITIVE PRODUCTS (AIRLESS)
- TOTAL SEPARATION BARRIER BETWEEN PRODUCT AND PROPELLANT, HERMETIC SEAL WITHIN THE BAG: NO CONTAMINATION, TOTAL PRODUCT INTEGRITY PROTECTION
- LAMINATED POUCH OFFERS SUPERIOR BARRIER & IMPERMEABILITY
- USE OF AIR AS ENVIRONMENTALLY FRIENDLY PROPELLANT
- PRODUCT EMPTYING UP TO 98%
- HYGIENIC AND STERILIZABLE
- CAN BE USED IN ANY POSITION: 360° ACTUATION
- CAN BE USED WITH STANDARD ACTUATORS
- CAN BE USED WITH STANDARD AEROSOL CANS
- CAN BE USED WITH LIQUID AND VISCOUS PRODUCTS

BAG FIXED WITH A PLUG

Coster systems are available in several different versions. In the NKLCU, KTCS, KTCSU, 20BOV (press-down) and NRTLC, NRTLCU (tilt action) versions the bag is fixed with a plug to the valve body. The exclusive, patented valve-bag coupling and the valve body in acetalic resin give these versions the highest impermeability, allowing the use of liquefied propellant. Compared to compressed gas, liquefied propellant has a significant advantage: the delivery rate is constant, regardless of how much product has already been dispensed.

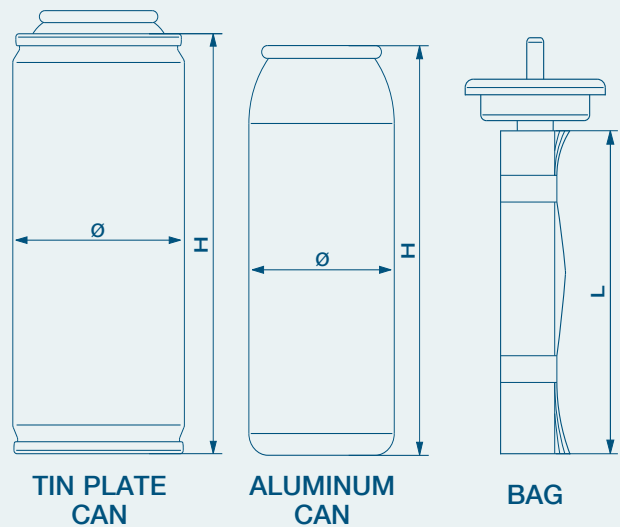
These versions can also be pressurized with compressed gas. Liquefied propellants are filled through the valve. Compressed gasses are filled under-cup. The product is filled into the bag through the valve's stem. High impermeability makes the system fully suitable for pharmaceutical and cosmetic applications.

These versions can be used with aluminum and tin plate cans with max Ø 53 mm and max filling volume 300 ml.

BAG WELDED

In the KWBU (male) and KWBFU (female) versions the film is welded on the polyethylene or polypropylene valve body. These versions can be used only with compressed gasses, with aluminum and tin plate cans with max Ø 66 mm and max filling volume 500 ml. Also available are special versions suitable for an irradiation treatment for sterilization.

BAG DIMENSION



The bag length L varies from 55 mm to 230 mm, and it is calculated according to the can utilized.

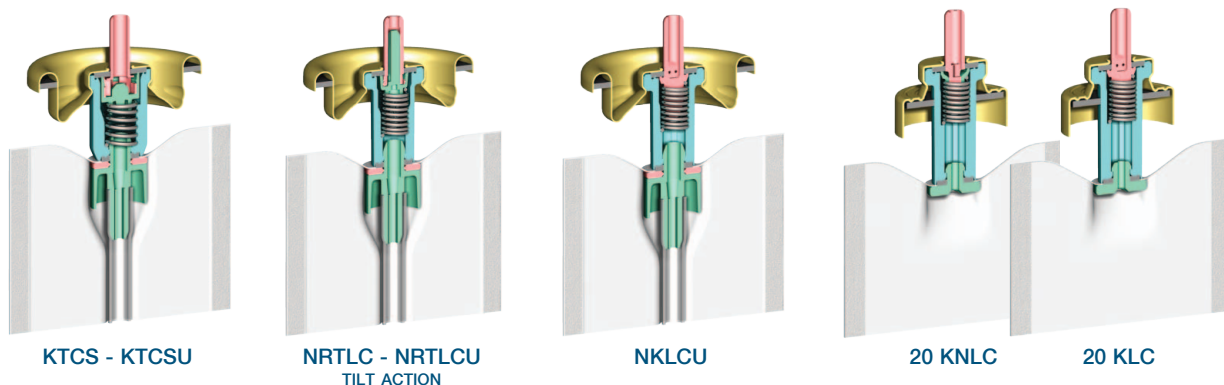
For standard cans, the approximate bag dimensions are: tin plate: $L = H \text{ can} - 10 \text{ mm}$; aluminum: $L = H \text{ can} - 15 \text{ mm}$

The bag width varies according to the diameter of the can utilized: depending on the can size range, the bag width will be 79, 100 or 120 mm.

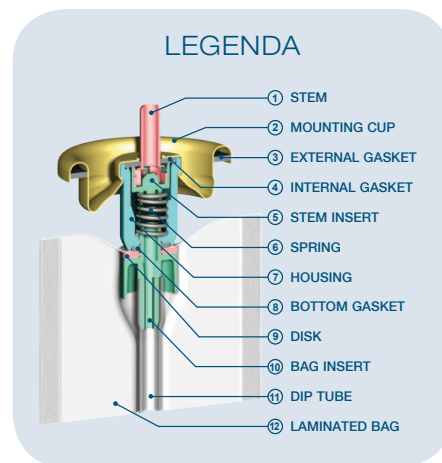
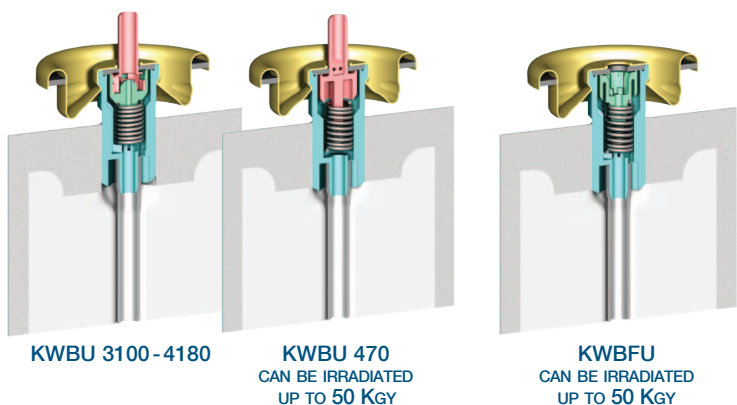
No dip tube is needed for bag lengths less than 110 mm.

Quality Solutions for Pharmaceutical, Cosmetic & Technical Applications

BOV FAMILY SERIES : BAG FIXED WITH PLUG



BOV FAMILY SERIES : BAG WELDED



MAIN CHARACTERISTICS AND EXAMPLES OF APPLICATIONS

APPLICATION	PROPELLANT	VALVE-BAG COUPLING	BOV SERIES	CAN DIAMETER mm	BAG VOLUME ml	DELIVERY RATE
Food Gels Creams	Compressed	Welded	KWBU 4180, KWBFU	35 ÷ 66	30 ÷ 500	medium - high
		Fixed with plug	KTCSU 4180	35 ÷ 53	15 ÷ 250	medium - high
	Liquefied	Fixed with plug	KTCS 4180	35 ÷ 53	15 ÷ 250	medium - high
Post foaming shaving/shower	Compressed	Welded	KWBU 3100, KWBU 4180, KWBFU	35 ÷ 66	30 ÷ 500	medium - high
		Fixed with plug	KTCSU 3100, KTCSU 4180	35 ÷ 53	15 ÷ 250	medium - high
	Liquefied	Fixed with plug	KTCS 3100, KTCS 4180	35 ÷ 53	15 ÷ 250	medium - high
Cosmetics Technicals Insecticide	Compressed	Welded	KWBU 3100, KWBFU	35 ÷ 66	30 ÷ 500	medium - high
		Fixed with plug	KTCSU 3100, NRTLCLU 1190	35 ÷ 53	15 ÷ 250	medium - high
	Liquefied	Fixed with plug	KTCS 3100, NRTLCL 1190	35 ÷ 53	15 ÷ 250	medium - high
Pharmaceuticals Nasal Spray	Compressed	Welded	KWBU 470, KWBFU	35 ÷ 66	30 ÷ 500	low
		Fixed with plug	NKLCU 450, NRTLCLU 1190	35 ÷ 53	15 ÷ 250	low - medium
	Liquefied	Fixed with plug	20KNLCL / 20KLC NRTLCL 1190	25 ÷ 40 35 ÷ 53	10 ÷ 75 15 ÷ 250	low - medium medium - high
Mist water	Compressed	Welded	KWBU 470	35 ÷ 66	30 ÷ 500	low
		Fixed with plug	NKLCU 450, NRTLCLU 1190	35 ÷ 53	15 ÷ 250	low - medium
	Liquefied	Fixed with plug	KTCS 3100, NRTLCL 1190	35 ÷ 53	15 ÷ 250	medium - high

Coster laboratories are at customers' disposal to define technical details.

Low, Medium or High Dispensing Rates

ACTUATORS FOR MALE VALVES

FOR GELS



V05.452



V05.981 ^(*)



V05.982



V05.983



V05.987



ORBIT V21.97 ^(*)



ORBIT V21.98 ^(**)



SFERA V31.28 ^(**)

FOR FOAMS, CREAMS & LOTIONS



V05.453



V05.496



V05.963



V05.967



V05.992



SFERA V31.29 ^(**)

FOR SPRAY PRODUCTS



V05.701



V05.2101



SALUS V21.105



TWIST V21.94



CRYSTAL V21.112



V05.2701 ^(*)

ACTUATORS FOR FEMALE VALVES



SALUS V21.115



SFERA V31.36 ^(**)

NOTE

^(*) suitable for Ø49 tin plate and Ø50 Cebal Transfer Alu cans

^(**) suitable for Ø52 tin plate and Ø53 Cebal Transfer Alu cans

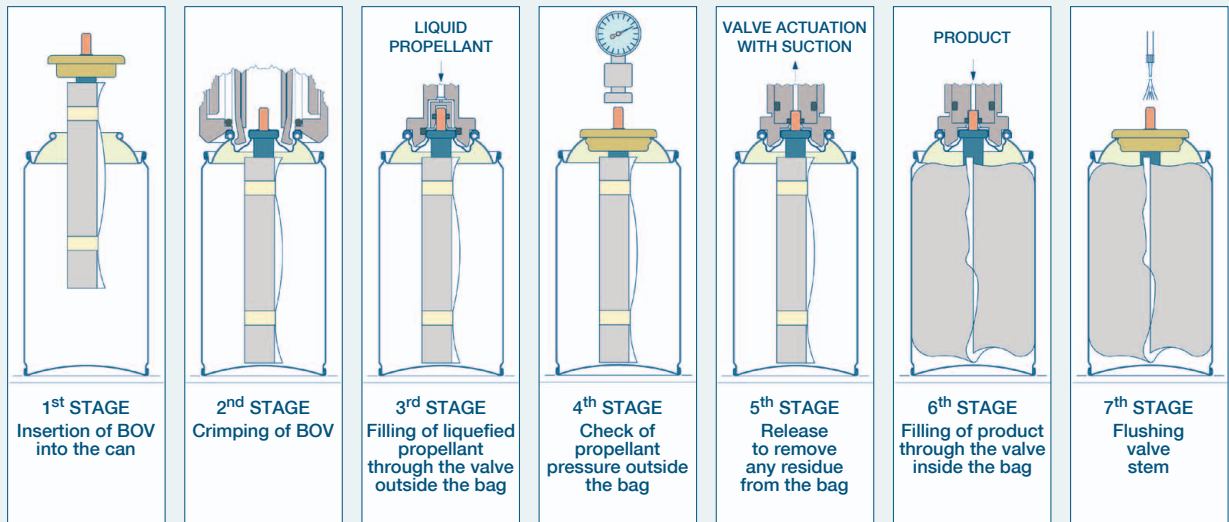
^(*) suitable for low flow rates

For Sprays, Foams, Gels & Lotions
For Male & Female Valves

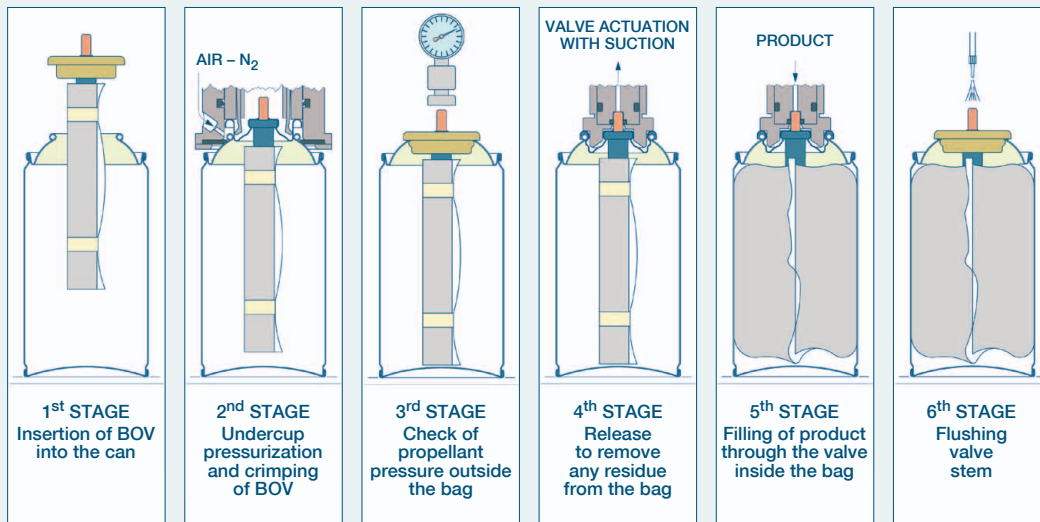
Bag On Valve Actuators

Filling Stages & Filling Methods

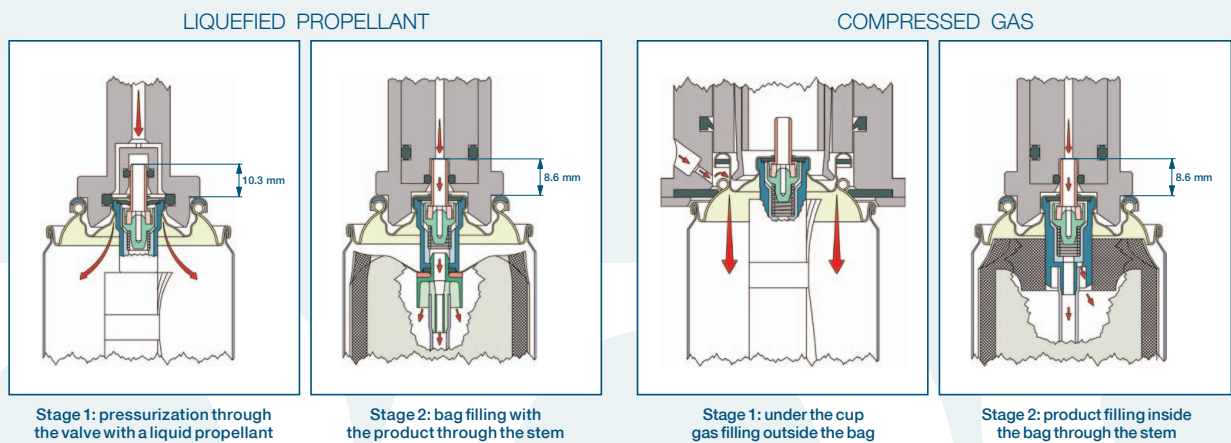
FILLING STAGES : THROUGH THE VALVE PRESSURIZATION AND PRODUCT FILLING



FILLING STAGES : UNDERCUP PRESSURIZATION, THROUGH THE VALVE PRODUCT FILLING



PRODUCT FILLING METHODS



Comprehensive BOV
Gassing Solutions

FILLING MACHINES FOR BAG-ON-VALVES

Coster Tecnologie Speciali, founded in the early 60's, serves as a global partner in the aerosol sector, offering aerosol components and machines for filling aerosol, spray and dispensing products. Leveraging over 45 years experience and know-how of both its valve and machinery divisions, Coster is a world leader in the provision of innovative services and high quality products designed to meet customers' needs. To satisfy the increasing demand for BOV filling, Coster has developed a series of machines to allow for the secure processing of dual compartment systems, ranging from semi-automatic (for laboratory and small-scale production) to fully automatic machines, suitable for both liquid and compressed gas (Nitrogen, Air).

Automatic filling lines for BOVs include:

- Empty cans feeding table
- Automatic BOV valve inserter
- Automatic rotary filling machine
- Automatic system for feeding liquid product or gel
- Waterbath
- Automatic checkweigher
- Automatic actuator placer
- Automatic cap placer
- Can accumulating table.

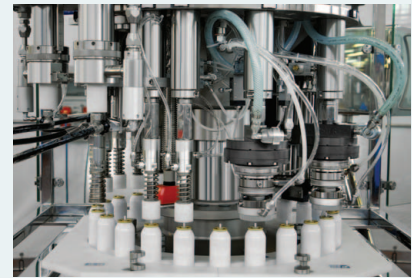
Below, automatic filling machine for BOV (up to 60 pcs/min). It performs BOV insertion onto the cans, BOV insertion checking, under the cup pressurisation and BOV crimping, outside the bag propellant pressure checking, filling of product into the bag, BOV stem flushing. Right, close-ups of various machine stations.

The range of Coster BOV filling machines is complemented by a series of ancillary machines such as mixing units for the preparation of post-foaming gel, which allow Coster to offer complete support to customers for all BOV filling requirements.

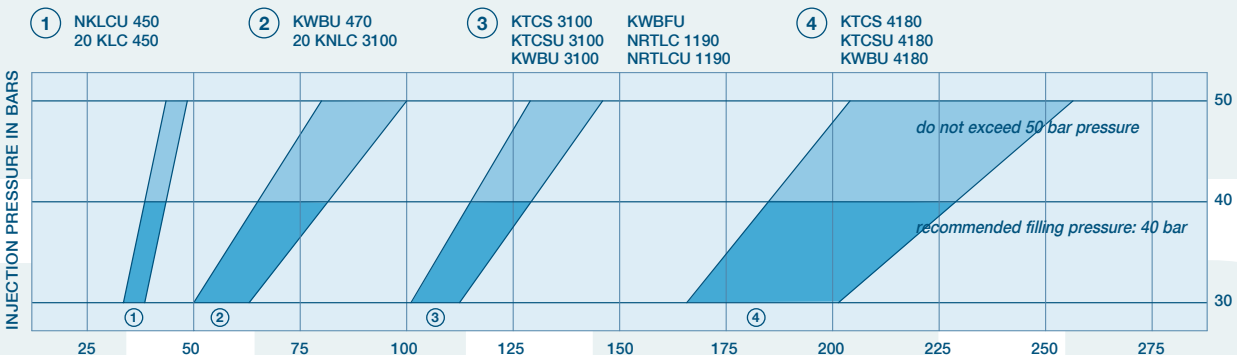
Coster BOV filling machines are currently used to fill shaving gels, pharmaceutical products, cosmetics and food.



Clockwise from left: BOV insertion and insertion checking; under the cup pressurisation and BOV crimping, propellant pressure checking, release; product filling into the bag; filling head.



PRODUCT FILLING SPEED



Laboratory & Production Filling Lines Available In a Wide Range of Speeds

Filling Speed & Pressure

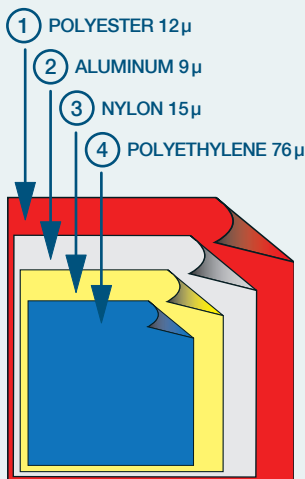
Advanced Bag on Valve Systems

BAG LAMINATE MATERIALS AND COMPLIANCE:

Laminates and valve materials comply with FDA food regulations.

BOV can be gamma-irradiated to max 50 KGy in case of KWBU 470 series.

- Standard laminate: LLDPE/Nylon/Aluminum/Polyester
- Laminated material for H₂O₂-based products: LLDPE/Polyester
- Laminated material for sunscreens: PP/Nylon/Aluminum/Polyester
- Laminated material for post-foaming gels: LL-MD-LLPE/Aluminum/Nylon



Left, Coster Bag-On-Valves and Series 1800 actuators have been selected by Novartis for their popular Lamisil antifungal solution.



A selection of products using Coster BOVs: left, pharmaceuticals; above, sunscreens; right, deodorants and depilatory creams.



Products using Coster BOVs: left, food dispensers; right, shower and shaving gels and foams.



Products using Coster BOVs: from left, room fresheners, fire extinguishers, insect repellents and personal defense spray.

High Drop Resistance
Highly Impermeable System

Coster Bag On Valve Facilities

DEDICATED COSTER BOV MANUFACTURING FACILITIES

Coster Group's manufacturing facilities are distributed across a global network. Six plants, including a facility dedicated to the production of Bag-On-Valves, are located in Northern Italy, as are the Coster Machinery Division and an assembly machine plant, ACR. Additional European plants are located in Holland, Spain and the UK. Other factories are located in Argentina, India, Malaysia and the USA. Licensee manufacturers complete the Group's production network; Coster also operates major distribution centres in France and Germany.

Coster Group considers the production of Bag-On-Valves to be a strategic priority. Demand for BOV solutions is increasing as new applications for the technology are discovered and implemented. Coster's vertical production strategy has led to the construction of a brand new facility in Caldonazzo, Italy, located next to Coster 3, one of the largest aerosol valve factories in the world. Coster 4 is dedicated exclusively to the production of Bag-On-Valves. The Coster plant near Chicago is dedicated primarily to the production of Bag-On-Valves for the North American markets. The main features of the new BOV plants are an advanced quality system, the capacity to ensure full traceability and a clean production environment.



Below, high-throughput bag placement machine for BOVs at Coster 4 facility in Caldonazzo, Italy.



Below, a view of the Coster 3 and Coster 4 plants located in Caldonazzo, Italy. Coster 3, to the right in the photograph, is one of the most advanced and highly automated plants in the aerosol valve sector. Automation is governed by an integrated, computerized system that continuously monitors the entire production flow, from the dosage of the raw materials in the silos to the moulding, collection of moulded components by laser-guided robots, sorting and finally packaging and preparation for shipping. Also manufactured in Coster 3 are the valves used in the Coster 4 facility, dedicated exclusively to the production of Bag-On-Valves. Left, Coster USA, Inc., South Elgin, Illinois: the factory is located near Chicago's O'Hare Airport. Assembly of 1" valves and bag placement are performed at this facility.



Highest level of Automation,
Productivity & Quality