

MAUSER USA, LLC CLOSING INSTRUCTIONS – INTERMEDIATE BULK CONTAINERS

Preset torque wrenches or adjustable torque wrenches are suitable for this procedure. Please calibrate wrenches at least annually. Variable range adjustable machinist torque wrenches are available and most auto parts stores, catalog stores like Grainger and Mc Master Carr, Sears, Home Depot, Lowes, on-line drum parts suppliers, and many others. IBC Cap and valve adapters are available through MAUSER or many catalog houses that specialize in drum and IBC parts and components.

VALVES

The valves supplied with MAUSER IBCs are factory installed and are not meant to be installed by the filler. A qualified IBC reconditioner like National Container Group is equipped and staffed with trained technicians for all valve replacements. If an IBC valve must be replaced the following procedures must be followed. Only valves as specified in the original design qualification are suitable.

IBC valve replacement must adhere to the requirements of 49 CFR Part 180 Subpart D §§ 180.350 -180.352 **Qualification and Maintenance of IBCs**. MAUSER assumes no responsibility for the performance of any packaging modified from the original design by any person or company. This information is provided as an accommodation and MAUSER assumes no warranty or guarantee of any kind and the recipient's use or non-use of this information is at the sole discretion and responsibility of the recipient.

1. Inspect new unused replacement valve for presence of defect free, clean gaskets.
2. Hand thread the valve until the threads begin to grip.
3. MAUSER Butterfly and Cylinder and Integrated Collar Valves: Using a torque wrench with a valve adapter as above tighten the valve to a minimum of 70 ft-lbs, finishing the procedure with the valve in the proper vertical orientation. If the valve reaches 70 ft-lbs and will not orient properly, or if it can not reach 70 ft-lbs, it may be cross threaded or a bad thread. Discard and repeat with a new valve. The polyolefin gasket on the valve collar is not designed for multiple installations.
4. Metal collar valves: Holding the valve in the proper vertical orientation spin the metal collar until hand tight. Using a calibrated torque wrench with valve adapter tighten the collar to ≥ 55 ft-lbs.
5. Leak proof test the empty IBC with ≥ 20 kPa air pressure per 49 CFR 178.813.

CAP SEALS

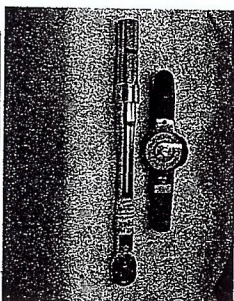
It is the responsibility of the filler to verify the torque on all closures that have been "factory torqued" and/or closures that have been supplied with a cap seal, dust cover or tamper evidence. This includes any bulges in an IBC lid/cap. For this reason we suggest all cap seals and the like be installed after filling and all closures have been properly closed. Please be aware that cap seals and tamper evidence devices may interfere with the proper function of vents or other pressure and vacuum relief devices.

DIP TUBES AND EXTRACTION VALVES:

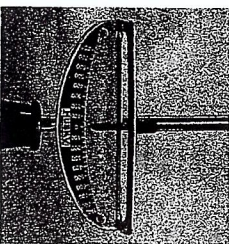
Please consult the manufacturer for proper closing torques on the style being used.

TORQUE WRENCHES

The following are photographs of various torque wrenches MAUSER has found suitable to apply the required closing torque. These are typical units and other brands of adjustable wrenches are acceptable. These should be regularly calibrated.



Dial Indicating and Adjustable Torque Wrench



Husky Brand Indicating Wrench

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United States Department of Transportation regulations state that packaging manufacturers are required to notify each person to whom the packaging is transferred of all requirements not met at the time of transfer. This requirement is given in Title 49, Code of Federal Regulations (49 CFR), Part 178 Specifications for Packagings, § 178.2 (c). In addition this Paragraph requires the closing information to be provided to any person to whom this package is transferred who may need to close the packaging prior to re-shipment. Furthermore, it is the shipper's responsibility as set forth in § 173.22(a)(4) to ensure that these closing instructions are carried out as described. In order to ensure the instructions are followed in a manner to result in safe transport of hazardous materials the shipper is obligated, as set forth in § 172.204(a)(4), namely - function specific training - to train his/her employees in the correct way to close the packaging for shipment. In order to fulfill this obligation the shipper often turns to the packaging manufacturer for this training since the manufacturer has designed, produced and tested the packaging to meet UN performance standards. MAUSER is prepared to provide this training in addition to supplying closing instructions. It has been the practice of MAUSER to send closing instructions attached to the shipping documents with each shipment of drums. This document provides specific information on closing MAUSER packagings.

These closing instructions must be given to the individuals responsible for closing the packagings prior to shipment. A hard copy (printed) must be maintained by the filler or operator for shipment. Copies should be immediately available at the fill lines.

The following tables and text give examples of the parts and closing torque required to prepare IBC for shipment so that it is capable of meeting the performance standards indicated by the UN marking on the side or top of the packaging. MAUSER recommends that only parts that have been tested and certified by MAUSER be used to close the packagings for shipment. Any UN marking is voided if parts other than those used in the original design qualifications are used. Each closure is supplied with the proper gasket in accordance with the UN design type tests for the packaging supplied. In the case of Intermediate Bulk Containers, IBCs, the lid, gaskets, plugs, cages, pallets, valves and service equipment are supplied as tested.

PRIOR TO CLOSING:

Inspect each closure to ensure that the closure has the proper gasket and that both closure and gasket are in good condition. Inspect the sealing surface for damage and make sure the threads and sealing surfaces are dry. Replace any defective gaskets, plugs or lids with new, defect free parts identical to the original packaging design.

CLOSING PROCEDURES FOR PLUGS AND CAPS:

1. The plug or cap is inserted into the appropriate opening and screwed down, "hand tight" until the gasket is in contact with the sealing surface.
2. A torque wrench capable of applying the proper torque to the fitting as specified by the closing instructions following is then used to tighten the plug or cap until it reaches the pre-set torque as indicated by a release or click. These wrenches should be calibrated at least annually.

INTERMEDIATE BULK CONTAINERS

IBC Type	Gasket Type	Torque
A Bulkdrum @ 11	EPDM/FKM	70 ft.-lbs.
B MAUSER @ SM series 275/330 gallon	EPDM	70 ft.-lbs.
C MAUSER @ SM series 275/330 gallon	FKM/PM	70 ft.-lbs.
D 12" plug in 150 mm lid vented and solid	EPDM/FKM	20-25 ft.-lbs.
E 56 mm plug in 150 mm lid vented and solid	EPDM/FKM	20-25 ft.-lbs.
F 12" Buttress plug in top of IBC	EPDM/FKM	20 ft-lbs

All UN 31HA1 and 31 HG1 Composite IBCs 49CFR § 178.707 (a) (5) that are supplied with lids, cages, pallets and service equipment must be closed for shipment using only the components supplied and specified in the design qualification tests for that IBC.

- Place the lid with gasket in place on the top opening of the IBC.
- Screw the lid by hand until the gasket is in contact with the sealing surface.
- Using the lid adaptor and torque wrench tighten the lid to the recommended torque. Recommended torque is reached when the wrench releases or clicks.