

Closing Instructions
UN Packaging
Southern Container, LLC
2026



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Plastic Pails



CLOSING INSTRUCTIONS FOR U.N. 1H2 ROUND OPENHEAD DRUMS

Customer Document No. ETS-CD-1010

STATEMENT OF NOTIFICATION REQUIREMENTS

These instructions are provided to the filler of Mauser Packaging Solutions (MPS) UN certified packaging in accordance with §178.2(c) of the U.S. Department of Transportation's (DOT) hazardous materials regulations, Title 49 of the Code of Federal Regulations (CFR). The instructions apply exclusively to 1H2 single unit packaging of the type and style as described herein and bearing a UN certification marking. At the time of transfer, any package or packaging component supplied by MPS does not meet the UN standard because it is disassembled. Only when assembled in the manner, and using the components described herein, is this packaging certified by MPS to meet the UN standard.

It is the regulatory obligation of the packaging filler to properly assemble and close UN certified packaging. If the packaging is not assembled and closed per these instructions, or if any of the components are omitted or replaced with substitute components, this packaging is not certified by MPS as meeting the UN performance standard. It is the regulatory obligation of the shipper to determine that the filled package is authorized for transportation. When transporting by air, the general requirements for transportation by aircraft in §173.27 of Title 49 CFR must also be met.

SCOPE OF CLOSING INSTRUCTIONS – PACKAGINGS INCLUDED

The instructions contained herein apply only to ROUND Plastic Openhead Pails and Covers manufactured and sold by Mauser Packaging Solutions under the MPS, NAMPAC, ROPAK, PLASTICAN, and ICL brand names. These packages may be rated for either UN-LIQUIDS, UN-SOLIDS, or both. UN MARKINGS appear on both the pail (body) and the cover. The package, when properly closed per these instructions, shall be rated to the marking or markings which appear on both the pail AND the cover.

SCOPE OF CLOSING INSTRUCTIONS – PACKAGINGS EXCLUDED

The instructions contained herein apply only to ROUND Plastic Openhead Pails and Press-On Covers marketed under the BWAY, NAMPAC, ROPAK, and ICL brand names. Separate closing instructions are available for UN-Solids rated square and rectangular openhead packages, as well as UN-Solids rated screw top containers.

APPLICABLE MPS UN 1H2 COMPONENTS

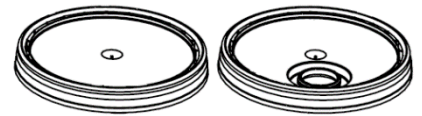
1H2 CONTAINER:

- UN-Rated Round Open Head Pails (sizes range from 2G to 20-Liter)



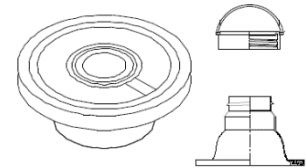
COVERS:

- UN-LIQUIDS Rated Covers (UN 0234 Series or U5 Series) with Tubular Rubber Gasket (Approved for Liquids & Solids)
- Removable (Tear) Skirt Covers with Tubular Rubber Gasket (Approved for Solids Only). Covers may be 4-tab or 8-tab style (design dependent)



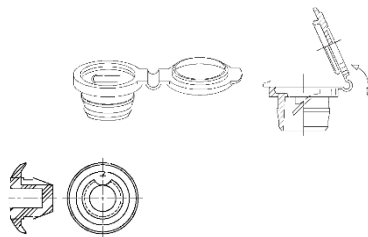
CLOSURES: (See MPS's Variation 5 Certifications for approved closure listing)

- 70mm Screw Caps with Gasket
- Crimp-on Pour Spouts (vented and unvented)



VENTS: (See MPS's Variation 5 Certifications for approved closure listing)

- Pierce Membrane Vent (Liquids)
- Umbrella-Style Buna Vent (Solids)



MAUSER PACKAGING SOLUTIONS UN OPEN-HEAD WITH SNAP-ON COVER APPLICATION REQUIREMENTS

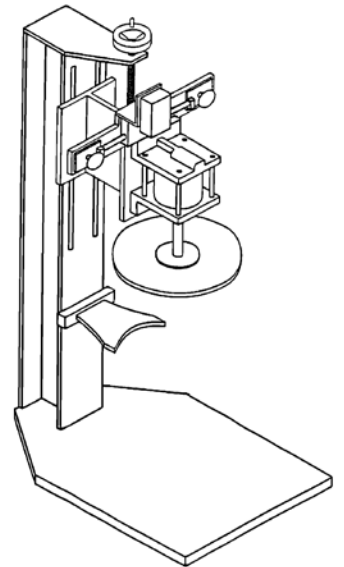
Mauser Packaging Systems openhead pails and covers are designed to be assembled by pressing the cover downward onto the top of the pail with a sufficient amount of force that the internal lip of the cover stretches over the outer lip of the pail and snaps back into place beneath it. There are many types of closing machines and tools available for accomplish this task. Most of these devices do an excellent job of closing a commercial-duty MPS container. However, due to the rigorous test requirements established by the United Nations and adopted by the DOT, UN packaging must be closed properly in order to meet performance requirements, which are absolutely essential to the safe containment and transport of materials. Therefore, MPS only endorses the following cover installation methods, listed here in order of preference.

VERTICAL CYLINDER PRESS

For optimum UN package performance, MPS strongly endorses the use of a vertical cylinder press. This style of capping press uses a vertically-mounted cylinder, generally pneumatic, to apply a uniform pressure across the cover-pail interface and ensures consistent cover installation without deforming the cover or the sealing gasket beyond design limitations.

The amount of force necessary to properly apply a MPS UN cover is considerably more than required to apply a typical commercial-grade cover. Minimally, a 5" diameter pneumatic cylinder using 115 to 130 psi air pressure is required to properly apply a MPS UN cover. If a larger cylinder is used, the air pressure can be lowered accordingly. MPS recommends a vertical cylinder press having a piston diameter of 6" and 80 to 90 psi air pressure. When capping, the application pressure must be maintained for a minimum of 1 - 2 seconds and the cylinder must be allowed to stroke a minimum of 1/4" below the top of covers to ensure proper installation.

The cover press closing plate (platen) must be parallel to the base within 0.05" and must have sufficient strength to minimize deflection during application of the cover. The use of a Burp Plug (a plug protruding from the center of the capper platen designed to bow the cover slightly during capping to allow excess air to escape) is not recommended when applying MPS's UN cover.

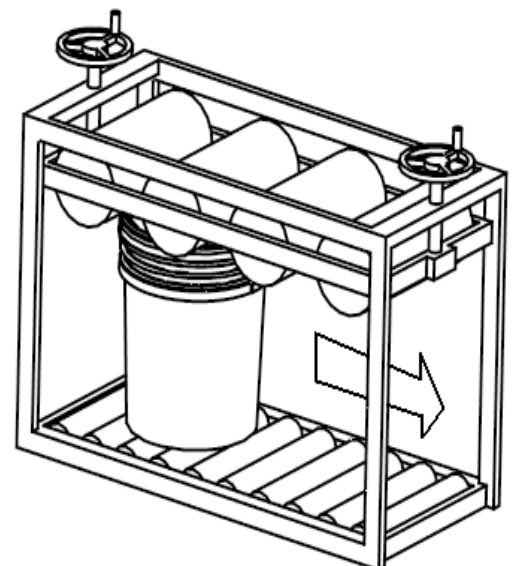


ROLL-ON PRESS

The roll-on cover press, also known as a roller capper or roller closer, is a high-speed closing unit typically used in high volume filling operations. It is generally used in conjunction with a thru-feed conveyor which passes the pail and cover under the capping rollers. These rollers exert a down force onto the cover as it passes, forcing the internal lip of the cover to stretch over the outer lip of the pail and snap back into place beneath it.

It is critical to keep the roll-on cover press adjusted to the open-head container height variances to ensure that the package is not stressed during cover application. MPS suggests that, as a starting point for capping UN rated openhead packages, the exit end of a roll-on cover press be set to the pail height (without cover) plus 0.200". Minor adjustments from this initial height setting may be necessary to ensure complete cover installation. Always verify that the capper is installing the cover properly and completely before going into production.

Design and operating rates for this type of press vary greatly. For this reason, Mauser Packaging Systems cannot unilaterally endorse this style of capping press for use with 1H2 UN openhead packaging. The package filler must evaluate their



individual roll-on press to verify that the press is capable of consistently seating the cover completely onto the openhead pail.

MALLET /HAMMER

This is the least expensive and generally very effective method for the installation of a typical commercial-grade pail cover. However, using a mallet to generate the force that must be applied to various parts of the MPS UN cover in order to fully seat it onto the pail can damage the cover and/or the gasket during installation. Only rubber-faced mallets may be used to close MPS's UN-rated openhead package.



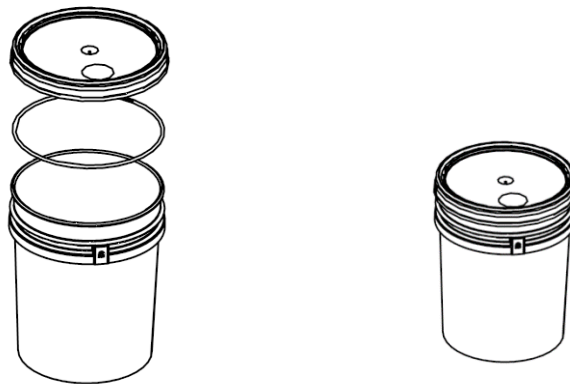
Due to the hazardous nature of the products packaged in UN containers, mallet capping MPS's UN certified containers is not the preferred capping method. Packagers are encouraged to use equipment that applies a uniform and consistent capping pressure.

GENERAL COVER INSTALLATION INSTRUCTIONS

1. Before seating a UN rated cover onto a UN rated openhead pail, visually inspect the mating surfaces of each component. For pails, verify that the pail lip is free of defects and debris. For gasketed covers, ensure that the tubular gasket is fully seated inside the cover, is not twisted or deformed, and that there are no plastic hairs or debris on its visible surfaces. For Tri-Seal gasketless covers, ensure that the visible sealing areas inside the cover are clean and defect free.
2. After filling the pail to the appropriate volume, loosely place the inspected cover on top of it and verify that the cover is aligned with the pail and resting reasonably flat.
3. Apply the cover using the appropriate capping apparatus.
 - a. For vertical cylinder presses, engage the pressure cylinder and apply a downward capping force for 1-2 sec's or until all audible capping sounds have ceased, then release.
 - b. For roll-on presses, feed the pail with cover through the press until it exits the discharge end.
4. Inspect the closed package to verify that the cover is fully seated onto the pail. Localized bulging of the cover sidewall is an indication that the cover has not fully latched. Adjust the down force of the capper as needed and re-cap the package until the cover is fully seated.



The application force required to install the UN cover fully onto the UN pail will vary according to ambient temperature and the closing speed of the cover press. Adjustments of speed and pressure may be necessary to optimize cover installation. Always verify capper settings before proceeding with production.



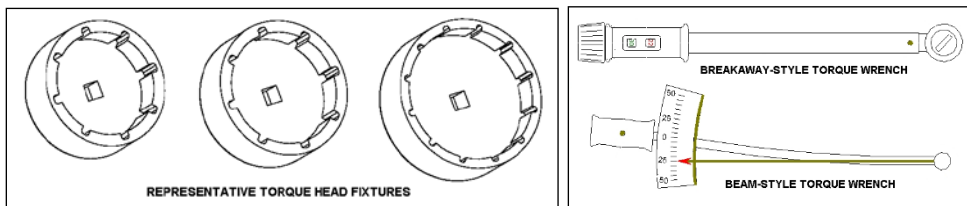
CLOSURE AND FITMENT INSTRUCTIONS

In addition to plain panel covers, which have no additional fitments or closures, MPS's UN covers are also available in liquid-rated versions with threaded and crimp-on neck finishes as well vented versions for both liquids and solids. MPS may pre-install fittings into or onto these openings for the convenience of the package filler or supply them separately. In either case, it is the package filler's responsibility to ensure that the fitment or closure is completely installed and/or properly torqued, crimped, or pressed into position before the filled package is shipped.

THREADED FITMENTS (Screw cap Installation)

APPARATUS:

- 70mm Torque Head Fixture
- Torque Wrench (break-away or digital read-out style preferred)



PROCEDURE:

1. Inspect the top surface of the neck to ensure an acceptable sealing surface, clean and free of any debris.
2. Inspect the cap to ensure the gasket is properly assembled and is clean.
3. Start the cap on the neck by hand, rotating the cap in a clock-wise direction. Take care not to cross thread the cap; this will result in damage to the cap or to the neck finish.
4. Using the 70mm torque head fixture mounted onto a torque wrench, tighten the cap per the table below.

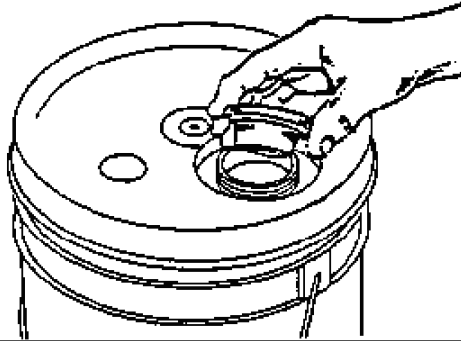
CAP SIZE (DIA)	Thread Pitch	INSTALLATION TORQUE
70mm	8TPI (3mm)	120 IN-LBS (10 FT-LBS)
70mm	6TPI (4mm)	120 IN-LBS (10 FT-LBS)

63mm CRIMP-ON FITMENTS (Pour Spout Installation)

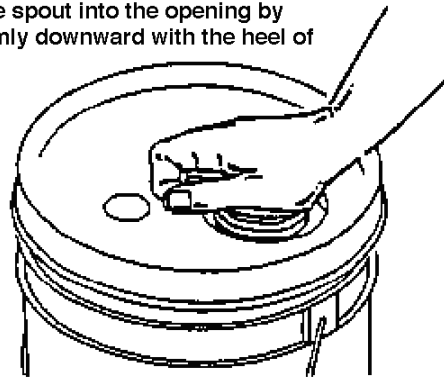
MPS generally provides crimp-on fitments pre-installed onto openhead pail covers. In such cases, the package filler need only visually verify that the crimp-on fitting has been installed and fully crimped. If the package filler is to install the crimp-on fitment, then the following procedure must be used. The proper seating (assembly) of the crimp-on fitting to the MPS container is absolutely essential to the safe containment and transport of hazardous materials.

Note: Always inspect the sealing surfaces of both mating components to ensure that they are clean and free of debris prior to assembly.

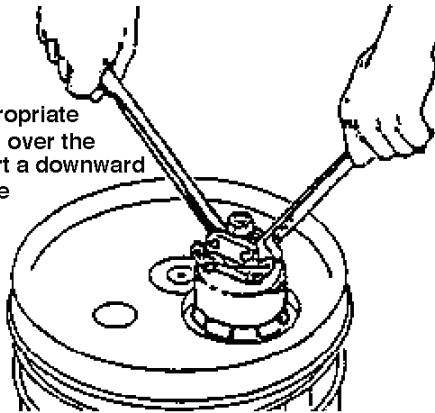
- 1** Simply place the crimp-on into the opening.



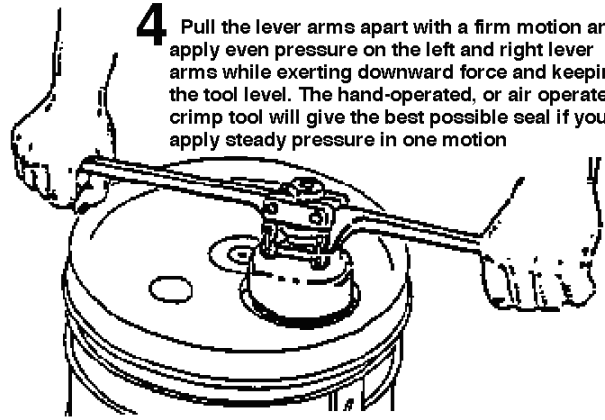
- 2** Force the spout into the opening by pushing firmly downward with the heel of the hand.



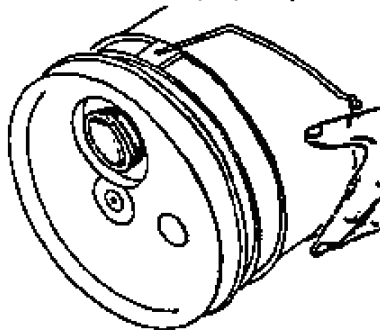
- 3** Place the appropriate manual crimp tool over the crimp-on and exert a downward force, making sure the tool is level.



- 4** Pull the lever arms apart with a firm motion and apply even pressure on the left and right lever arms while exerting downward force and keeping the tool level. The hand-operated, or air operated crimp tool will give the best possible seal if you apply steady pressure in one motion



- 5** Crimp tools must be periodically checked against the manufacturer's specification to ensure proper operation.



- 6** Use fitting manufacturer's crimp gauge to verify that fitting is properly crimped onto container.

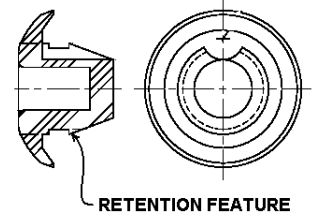


VENT OPTIONS AND INSTALLATION

MPS's UN covers are available in two vented versions, an umbrella-style Buna vent for solids applications which permits vapors from the contents to vent to atmosphere and a pierce-membrane vent with hinged overcap for liquid applications which prevents gugging during pour-out. Vents are typically pre-installed by MPS, but it is ultimately the package filler's responsibility to ensure that the vents are present and installed properly before the filled package is shipped.

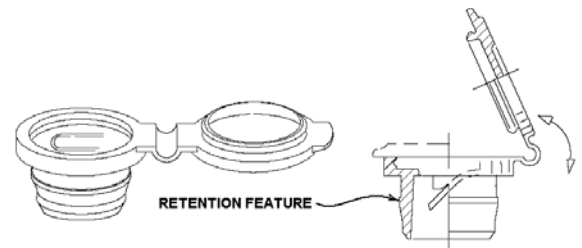
Umbrella-Style Buna Vent

1. View the vent insert from both the inside and outside of the cover and verify that the insert is fully seated against the outer cover face and the retention features of the insert have snapped through and protrude from the inner cover face.
2. If the retention features cannot be seen protruding from the inside face of the cover, apply pressure to the top surface of the insert until it snaps into position.



Pierce-Membrane Vent

1. View the vent insert from both the inside and outside of the cover and verify that the insert is fully seated against the outer cover face and the retention features of the insert have snapped through and protrude from the inner cover face.
2. If the retention features cannot be seen protruding from the inside face of the cover, apply pressure to the top surface of the insert until it snaps into position.
3. Open the hinged over cap and visually verify that the membrane is intact and unbroken. This insert is only certified for shipment with the membrane intact. Once the membrane is broken, the cover can only be used for local storage.



CLOSURES WITH PTFE MEMBRANE VENTS

MPS has certified several vented closures for use with UN rated openhead pails and covers. These closures typically utilize an expanded PTFE (breathable) membrane that permits gases to escape while retaining the liquid contents of the container, preventing dangerous container pressurization. This vent membrane will only function properly if it is in good condition and is openly exposed to the vacant headspace inside the container.

1. Visually inspect the membrane on the underside of the closure before installation to ensure that it is securely attached to the closure and free of defects or foreign materials.
2. Secure the closure to the container as directed elsewhere in this document.
3. Never overfill the container to the point where fluid contacts the closure membrane. The membrane must be exposed to the open headspace so that the container can 'breathe' properly.

CLOSING, CRIMPING AND CAPPING TOOL & EQUIPMENT SUPPLIERS

The following is a list of suppliers and manufacturers of various pail capping tools and equipment. This list is by no means complete and MPS does not specifically endorse any of the companies listed. The list is offered purely as a courtesy to our valued customers.

Lid Closers (vertical cylinder press and/or roll-on closers)

Heisler Manufacturing
Atlanta Grotnes Machine Co.
Crandall International, Inc.
Pailmate

Crimpers for 63mm Fittings

Rieke Corporation
Tri-Sure Worldwide
APC Products Limited

Screw cap Wrench Heads (for Screw cap Torquing)

The Cary Company
Rieke Corporation

Distributors of Fittings and Tooling

The Cary Company

CLOSURE TOOL REFERENCE TABLE

Closure Mfg'r	Closure Types	Closure Size (mm)	Closure Tool Model	Closure Tool Description
American Flange	Tri-Sure Tab Seal		UG	Manual Crimping Tool
	Tri-Sure Uni-Grip		UAG	Pneumatic Crimping Tool
Norpak / Norton	Norcap	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your Norpak/Norton representative for equivalent adapter
	Norcap Vented			
Republic	Comack	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your Republic representative for equivalent adapter
	Comack TEXT			
	SC63R			
	Vented			
Rieke	FS-60	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394
	FS-70			
	FS-70 Vented			
	FS-80			
	FS-80 Vented			
	FS-80-T			
Rieke	FS-10-6-300		FS-600	Manual Flexspout Crimping Tool
	FS-10-6-624		IA-FS-600	Airmatic Flexspout Crimping Tool
	FS-10-8V-300		HFS-600	Airdraulic Flexspout Crimping Head and Hose
	FS-II			

Revision History:

Version	Description	By	Date
5.5	Updated to Mauser Packaging Solutions format.	F. Burney	14-Aug-2018
5.6	Corrected application torque for 70mmx6tpi screwcap.	F. Burney	01-July-2019



CLOSING INSTRUCTIONS FOR UN TIGHTHEAD DRUMS (1H1) AND JERRICANS (3H1)

Customer Document No. ETS-CD-1012

STATEMENT OF NOTIFICATION REQUIREMENTS

These instructions are provided by Mauser Packaging Solutions (MPS) to the filler of UN certified plastic packaging marketed under the BWAY, NAMPAC, or K LW brand names in accordance with §178.2(c) of the U.S. Department of Transportation's (DOT) hazardous materials regulations, Title 49 of the Code of Federal Regulations (CFR). The instructions apply exclusively to 1H1 and 3H1 single unit packaging of the type and style as described herein and bearing a UN certification marking. At the time of transfer, any package or packaging component supplied by MPS does not meet the UN standard because it is disassembled. Only when assembled in the manner, and using the components described herein, is this packaging certified by MPS to meet the UN standard.

It is the regulatory obligation of the packaging filler to properly assemble and close UN certified packaging. If the packaging is not assembled and closed per these instructions, or if any of the components are omitted or replaced with substitute components, this packaging is not certified by MPS as meeting the UN performance standard. It is the regulatory obligation of the shipper to determine that the filled package is authorized for transportation. When transporting by air, the general requirements for transportation by aircraft in §173.27 of Title 49 CFR must also be met.

SCOPE OF CLOSING INSTRUCTIONS – PACKAGINGS INCLUDED

The instructions contained herein apply to self-stacking round tighthead drums and square/rectangular tighthead jerricans in sizes of 15-gallon and under manufactured and sold by Mauser Packaging Solutions under the BWAY, NAMPAC, and K LW brand names. These packages are hazmat rated for UN-LIQUIDS. UN MARKINGS may appear on the top or sidewall of the container. The package, when properly closed per these instructions, shall be rated to the UN marking embossed into the container.

SCOPE OF CLOSING INSTRUCTIONS – PACKAGINGS EXCLUDED

- PEPSI Small Form EZ Pour tightheads (2-gallon and under) are not covered under these instructions (See ETS-CD-1031).
- AutoChlor 10-Liter jerricans with RDI dip tubes are not covered under these instructions (See ETS-CD-1032).
- These instructions DO NOT apply to MPS tighthead drums and jerricans when used as an inner packaging of a 4G package.

APPLICABLE MPS UN 1H1 and 3H1 COMPONENTS

The instructions found in this closure document are applicable to the following molded plastic containers as manufactured and sold by Mauser Packaging Solutions and their associated closures.

1H1 ROUND TIGHTHEAD DRUM:

- UN Rated Round tighthead Drums (15 Gallon & Below)
- UN Rated Large Drums (30 Gallon – 60 Gallon)

3H1 SQUARE, RECTANGLE and DELEX JERRICANS:

- UN Rated (STH-Series) Square tighthead (4 Gallon thru 7 Gallon)
- UN Rated (RTH-Series) Rectangle tighthead/swing handle (4 Gallon thru 6 Gallon))
- UN Rated (RST-Series) Rectangle tighthead/integrated handle (4 Gallon thru 7 Gallon)
- UN Rated (DLX-Series) Delex tighthead (20 Liter/5 Gallon)
- UN Rated SQRD Jerrican tighthead (3 Gallon – 6 Gallon)
- UN Rated SI-Series Rectangular tighthead/integrated handle (13 Liter thru 27 Liter)
- UN Rated EG-Series Rectangular tighthead/integrated handle
- UN Rated 10-liter jerricans, multiple styles

CLOSURES:

- 45mm DIN Screw Cap (4mm pitch, approx. 6tpi)
 - 50/51mm DIN Screw Cap (6mm pitch, approx. 4tpi)
 - 60/61mm DIN Screw Cap (6mm pitch, approx. 4tpi)
 - 63mm Screw Cap (8tpi)
 - 70mm Screw Cap (6tpi & 8tpi)
 - 70 mm Screw Cap with pTfe Membrane Vent (6tpi & 8tpi)
 - Crimp-On Pour Spouts
 - American Flange Tab Seal Pour Spout (Crimp-On)
 - 2 inch & 56mm Internal Buttress Bung Plugs
 - 2 Inch Internal Buttress Bung Plug with microporous vent
 - American Flange / Tri-Sure Plastiplug
- (Note: All closures listed above include plain and tamper-evident versions where applicable)**

VENTS:

- ¾" bung plug
- ¾" plug vents with membrane
- ¾" Acorn vents
- 18mm vent
- 22mm vent
- 24mm vent
- 28mm vent
- 22/24mm captive vent

45, 50/51, 60/61, 63 and 70mm Screw Cap Closure Instructions

PURPOSE:

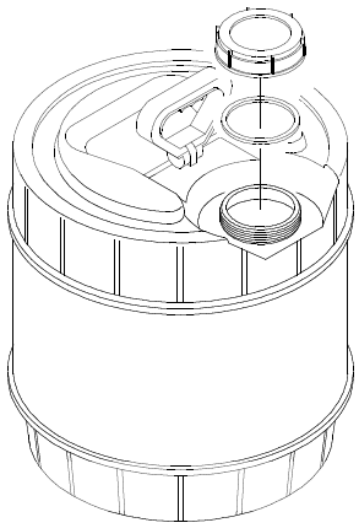
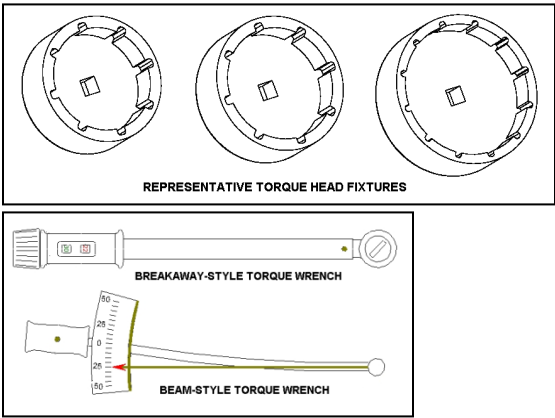
To ensure that the threaded screw cap is properly sealed when assembled onto MPS’s jerricans and tighthead drums. The DOT/UN Performance Certification only applies to a Tight Head Container that is closed per this procedure.

SIGNIFICANCE:

The sealing performance of the Cap is compromised if the top surface of the neck is rough, has a burr, or is not clean; in addition, if the gasket in the cap is not properly seated in the O-Ring groove, twisted, or is not clean. The Caps are only to be assembled on the jerrican after all sealing surfaces pass inspection.

APPARATUS:

- 50/51, 60/61, 63 or 70mm Torque Head Fixture
- Torque Wrench (Adjustable from 10 - 15 ft-lbs or 120 - 180 in-lbs)
- The use of a calibrated automatic torque application machine is permissible if it does not damage the threads or seating surface of the container.



permissible if it

PROCEDURE:

1. Inspect the top surface of the neck to ensure an acceptable sealing surface, clean and free of any debris.
2. Inspect the cap to ensure the gasket is properly assembled and is clean.
3. Start the cap on the neck by hand, rotating the cap in a clock-wise direction. Take care not to cross thread the cap; this will result in damage to the cap or to the neck finish.
4. Using the 50/51, 60/61, or 70mm torque head fixture mounted onto a torque wrench, tighten the cap per the table below.

CAP SIZE (DIA)	Thread Pitch	INSTALLATION TORQUE
45mm	4mm (6tpi)	144 IN-LBS (12 FT-LBS)
50/51mm	6mm (4TPI)	180 IN-LBS (15 FT-LBS)
60/61mm	6mm (4TPI)	180 IN-LBS (15 FT-LBS)
63mm	8TPI (3mm)	120 IN-LBS (10 FT-LBS)
70mm	8TPI (3mm)	120 IN-LBS (10 FT-LBS)
70mm	6TPI (4mm)	120 to 150 IN-LBS (10 to 12.5 FT-LBS)
NOTE Application torques show above apply to both plain and tamper evident closures		

2" Buttress or 2" NPT Bung Plug Closure Instructions

PURPOSE:

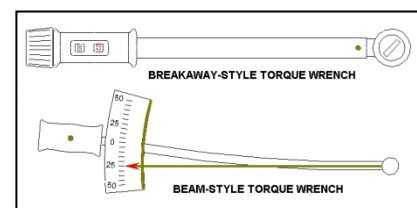
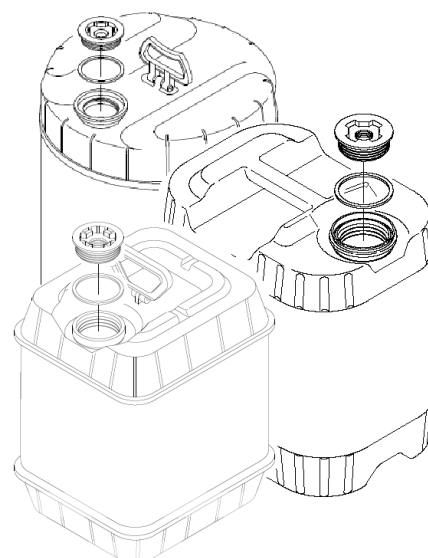
These instructions are designed to ensure the proper installation of any one of several 2" buttress threaded bung plugs into jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the Bung Plug can be compromised if the top gasket sealing surface of the neck is rough, has a burr, or is not clean; in addition, if the gasket on the Bung Plug is not properly seated in the O-Ring groove, is twisted, or is not clean. The Bung Plugs are only to be assembled on the jerrican after all sealing surfaces have passed visual inspection.

APPARATUS:

- Torque wrench of suitable measuring capacity (25 ft-lbs minimum), digital breakaway style preferred
- Torque Wrench Fitting specific to the bung plug being installed. Fitting should be shape matched to and fit securely inside the center impression in the bung plug and mount directly to the torque wrench shaft. Contact the specific bung plug manufacturer for additional Torque Wrench Fitting information.
- The use of a calibrated automatic torque application machine is permissible if it does not damage the threads or seating surface of the container.



ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container neck is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed onto the closure and fully seated against the closure flange. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Start the bung plug into the container neck by hand, turning clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Wrench Fitting as described above to finish seating the closure to the recommended torque (see **Closure Application** table).

2" Bung Plug Closure Style	Gasket Material	Application Torque for 100 kPa rating	Application Torque for 150 kPa rating
Wolverine 2" Buttress Plug, Plain	EPDM	20 ft-lbs (240 in-lbs)	20 ft-lbs (240 in-lbs)
Wolverine 2" Buttress Plug, Vented	EPDM	20 ft-lbs (240 in-lbs)	N/A
Wolverine 2" Buttress Plug	B4	N/A	25 ft-lbs (300 in-lbs)
Rieke PP57-B-5 2" Buttress Plug	EPDM	20 ft-lbs (240 in-lbs)	20 ft-lbs (240 in-lbs)
Rieke PP57-B-5 2" Buttress Plug, Vented	EPDM	25 ft-lbs (300 in-lbs)	N/A
Brandt/Mauser 2" Buttress Plug	EPDM	N/A	25 ft-lbs (300 in-lbs)
Tri-Sure (American Flange) 2" PlastiPlug	EPDM	20 ft-lbs (240 in-lbs)	25 ft-lbs (300 in-lbs)

63mm Crimp-On Fitting Closure Instructions

PURPOSE:

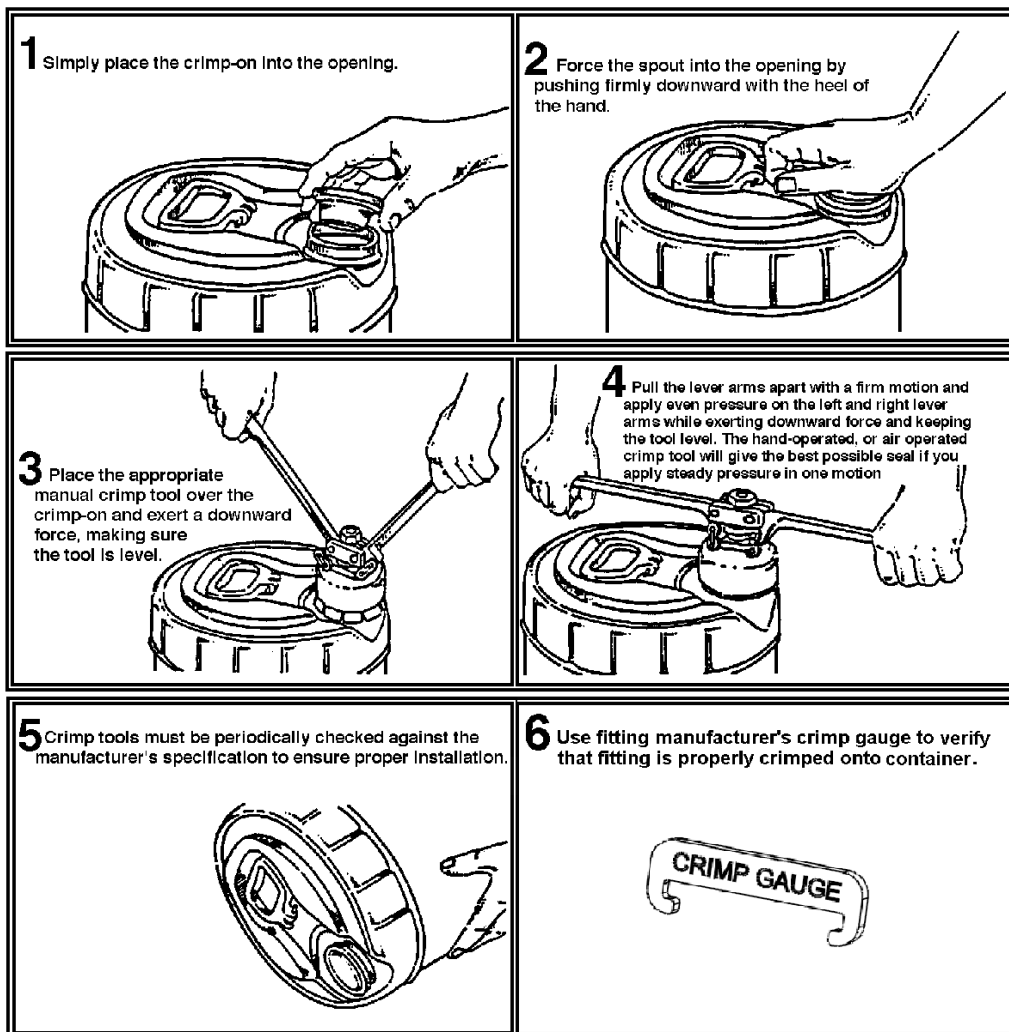
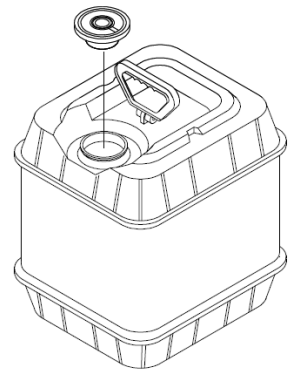
These instructions are designed to ensure the proper installation of any one of several 63mm crimp-on fittings onto jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling. Ensure that the crimp bead around the top of the container neck is clean and free of burrs, ragged edges, or other defects and verify that the inner surface of the fitting is clean and defect free before assembling the components.

APPARATUS:

- Manual or automatic multi-jaw crimp head (manual model shown in instruction diagrams)



3/4" NPS Bung Plug Closure Instructions

PURPOSE:

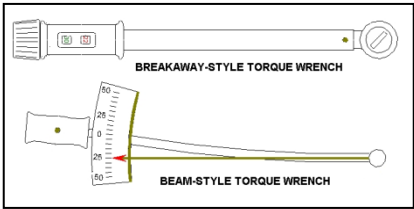
These instructions are designed to ensure the proper installation of any one of several vented and non-vented 3/4" NPS threaded bung plugs into the vent orifice on jerricans and tighthead drums produced by Mauser Packaging Solutions.

SIGNIFICANCE:

The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed properly, as per this procedure. Failure to follow this procedure may render the UN certification null. The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling and all components should be inspected prior to cover application.

APPARATUS:

- Torque wrench of suitable measuring capacity (25 ft-lbs minimum), breakaway style preferred
- Torque Wrench Fitting specific to the bung plug being installed. shape matched to and fit securely inside the center impression in and mount directly to the torque wrench shaft. Contact the specific manufacturer for additional Torque Wrench Fitting information.
- The use of a calibrated automatic torque application machine is permissible if it does not damage the threads or seating surface of the container.



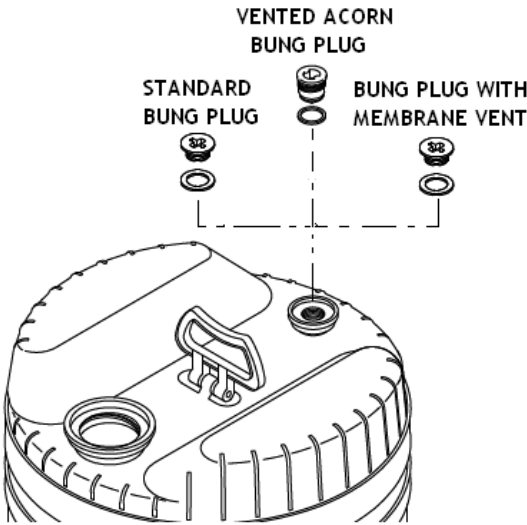
digital
Fitting should be
the bung plug
bung plug

ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container vent is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed onto the closure and fully seated against the closure flange. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Start the vent plug into the container neck by hand, turning clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Fitting as described above to finish seating the closure to the recommended torque (see **Plug Installation Torque** table

Wrench
below).

Vent Plug Type	Installation Torque
3/4" Standard Bung Plug	85 in-lbs (7 ft-lbs)
3/4" Bung Plug with Membrane	85 in-lbs (7 ft-lbs)
3/4" Vented ACORN Bung Plug	85 in-lbs (7 ft-lbs)



18, 22, 24 and 28mm Screw Cap Vent Closure Instructions

PURPOSE:

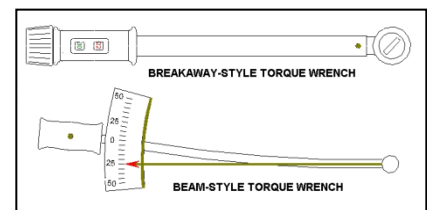
These instructions are designed to ensure the proper installation of 18, 22, 24, and 28mm screw caps onto their respective threaded vent openings on jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling and all components should be inspected prior to cover application.

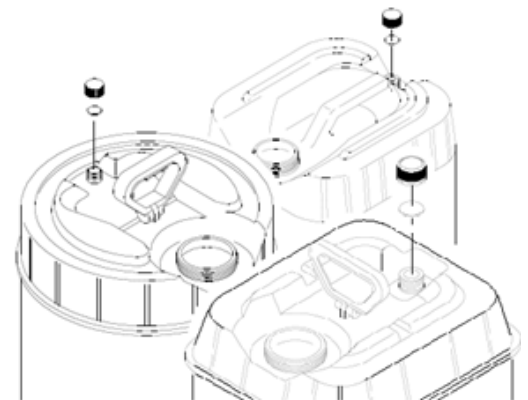
APPARATUS:

- Torque wrench of suitable measuring capacity (25 ft-lbs minimum), digital breakaway style or T-Handle preferred.
- Torque Wrench Head Fixture specific to the screw cap being installed. Wrench Head should be shape matched and fitted securely to the outer diameter of the screw cap and mount directly to the torque wrench shaft. Contact the specific screw cap manufacturer for additional Wrench Head Fixture information.



ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container vent is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed inside the closure and fully seated against the closure's top inner surface. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Start the screw cap onto the container neck by hand, turning clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Wrench Fitting as described above to finish seating the closure to the recommended torque (see **Closure Application Torque** table below).



Screw Cap Size	Application Torque
18mm SP400	15 in-lbs (1.3 ft-lbs)
22mm SP400	20 in-lbs (1.6 ft-lbs)
24mm SP400	23 in-lbs (1.9 ft-lbs)
28mm SP400	25 in-lbs (2.0 ft-lbs)

21/24mm Captive Screw Cap Vent Closure Instructions

PURPOSE:

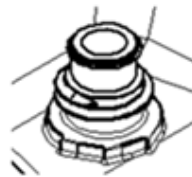
These instructions are designed to ensure the proper installation of 21/24mm captive screw caps onto the mating threaded vent nipple on jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies only to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling and all components should be inspected prior to cover application.



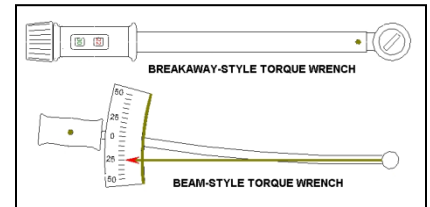
21/24mm Captive Closure



21/24mm Vent Nipple

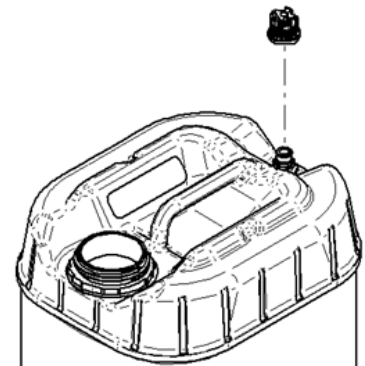
APPARATUS:

- Torque wrench of suitable measuring capacity (20 in-lbs minimum), digital breakaway style or T-Handle preferred.
- Torque Wrench Head Fixture specific to the screw cap being installed. Wrench Head should be shape matched and fitted securely to the outer diameter of the screw cap and mount directly to the torque wrench shaft. Contact the specific screw cap manufacturer for additional Wrench Head Fixture information.



ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container vent is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed inside the closure and fully seated against the closure's top inner surface. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Press the closure downward to snap it onto the vent nipple, then turn the closure clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Wrench Head Fixture as described above to finish seating the closure to the recommended torque.
5. Application torque for this closure is **20 in-lbs (1.6 ft-lbs)**.



CLOSURE TOOL REFERENCE TABLE

Closure Mfg'r	Closure Types	Closure Size (mm)	Closure Tool Model	Closure Tool Description
Various	Vent Caps	18,22,28		T-Handle Torque wrench
American Flange	Tri-Sure Tab Seal		UG	Manual Crimping Tool
	Tri-Sure Uni-Grip		UAG	Pneumatic Crimping Tool
Norpak / Norton	Norcap	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your Norpak/Norton representative for equivalent adapter
	Norcap Vented			
Republic	Comack	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your Republic representative for equivalent adapter
	Comack TEXT			
	SC63R Vented			
Brandt (MAUSER)	Brandt 70mm Brandt 70 Vented Brandt 70mm TE	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Brandt (MAUSER)	Brandt 61mm Brandt 61 Vented Brandt 61mm TE	61		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
BeriCap	60/61mm DIN	60/61		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Westphal Lange	Westphal Lange 61mm TE	61		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Brandt (MAUSER)	Brandt 51mm Vented	51		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Rieke	FS-60	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394
	FS-70 FS-70 TE FS-70 Vented			
	SC-76 SC-76 TE			
	FS-80 FS-80 TE FS-80 Vented			
	SC-86 SC-86 TE			
Rieke/Bomag/Technocraft Pour Spouts	FS-10-6-300 FS-10-6-624 FS-10-8V-300 FS-300 FS-II		FS-600 IA-FS-600 HFS-600	Manual Flexspout Crimping Tool Airmatic Flexspout Crimping Tool Airdraulic Flexspout Crimping Head and Hose
	Bomag Crimp-on		FS-600 IA-FS-600 HFS-600	Manual Flexspout Crimping Tool Airmatic Flexspout Crimping Tool Airdraulic Flexspout Crimping Head and Hose
	Technocraft Crimp-on		FS-600 IA-FS-600 HFS-600	Manual Flexspout Crimping Tool Airmatic Flexspout Crimping Tool Airdraulic Flexspout Crimping Head and Hose

MAUSER PACKAGING SOLUTIONS – PLASTIC MANUFACTURING LOCATIONS – SMALL CONTAINERS

Bryan, Texas, 1591 N. Harvey Mitchell Parkway, Bryan, Texas 77803

Cedar City, Utah, 1033 N. Production Road, Cedar City, Utah 84721

Cidra, Puerto Rico, Road 172 KM 13.4, Cidra, Puerto Rico 00739

Dayton, New Jersey, 7 Wheeling Road, Dayton, New Jersey 08810

Elk Grove Village, Illinois, 1350 Arthur Avenue, Elk Grove Village, Illinois 60007

Elk Grove Village, Illinois, 2350 Lively Boulevard, Elk Grove Village, Illinois 60007

Indianapolis, Indiana, 6061 Guion Road, Indianapolis, Indiana 46254

LaGrange, Georgia, 1603 Orchard Hill Road, LaGrange, Georgia 30240

Langley, British Columbia, Canada, 5850-272nd Street, Langley, British Columbia, Canada V4W 3Z1

Leominster, Massachusetts, 196 Industrial Road, Leominster, Massachusetts 01453

Mansfield, Texas, 1501 East Dallas Street, Mansfield Texas 76063

Monroe, Ohio, 980 Deneen Avenue, Monroe, OH 45050

Newnan, Georgia, 98 Amlajack Boulevard, Newnan, Georgia 30265

Oakville, Ontario, Canada, 2240 Wyecroft Road, Oakville, Ontario, Canada L6L 6M1

Springhill, Nova Scotia, Canada, 29 Memorial Crescent, Springhill, Nova Scotia, Canada B0M 1X0

Valparaiso, Indiana, 4002 Montdale Drive, Valparaiso, Indiana 46383

For more information on Mauser Packaging Solutions, visit our website at: <https://www.mauserpackaging.com>

Revision History:

Version	Description	By	Date
4.5	Updated to Mauser Packaging Solutions format.	F. Burney	15-Aug-2018

Closing Instructions

Corporate Office
500 Industrial Park Dr.
Portland IN 47371
Tel 260.726.7000 Fax 260.726.8111

Date Created:
Revised: November 10, 2021

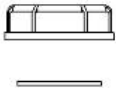
Closing Instructions for 5 Gallon Swing Handle – 70MM 8TPI, 22MM

Caps that this closing instruction includes are:

Priority Plastics 70mm caps manufactured by Miami Valley Plastics are: 8229-202-060 (70mm Cap W/EPDM Gasket

Cap: Amcor Rigid Plastics USA, Inc: Priority item number 6043-000-060 with F-217 Liner.22mm

Cap: Berry Plastics: Priority item number 6043-000-060 with Foam Liner.



Step 1. Ensure the gasket is in the 70mm closure.



Step 2. Turn the 70mm cap to get started over the threads of the 70mm neck.



Step 3. Place an overcap fixture over the 70mm cap.



Step 4. Torque the cap to 175-185 in-lbs.



Step 5. Ensure the gasket is in the 22 mm closure.



Step 6. Place an overcap fixture over the 22 mm cap.



Step 7. Torque the cap to 25-30 in-lbs.

NOTE: Priority Plastics, Inc. certifies that these containers have been manufactured and certified in accordance with Performance Requirements of Part 178 Subpart M of title 49CFR. The chemical filler and the shipper may rely upon the marking as certification that the package meets the applicable UN performance standards. The shipper is responsible for ensuring the product is authorized in the package and must consult and General Shipper Requirements, including modal requirements. To meet UN standards, the package must be properly closed for shipment. Failure to follow the closure instructions or substitution of packaging components other than those identified in the closure instructions will render the UN Certification invalid.

UN Closed Head Packaging

The following information is being provided to customers and distributors of the Priority Plastics, Inc. to fulfill the notification requirements of 178.2© of the 49 CFR. These closing instructions are based upon the procedures used during assembly for testing and certifying this package to a UN standard. These instructions apply to all Priority's 20 Liter and 5 Gallon rectangular tightheads with an integrated handle and an SC76RTE Ratchet 6TPI neck and 22mm vent. Alternative methods used for final assembly and closure may not effectively provide a certified UN standard packaging.

UN Rating: 3H1/Y1.8/150

Resin for Container: LP5100, CP50100, NOVAPOL HB-W952-A

PROPER SCREW CAP INSTALTLATION

Caps that this closing instruction includes are:

Brandt Cap: 6 TPI, 70MM Tamper Evident with 3/4" NPT, Natural (Brandt # CAP7034NAT6TPIEPDMTE, Priority # 8224-200-060)
Rieke Caps: 70MM, SC76RTE with 3/4"NPT & EPDM Gasket (Rieke # 03920001, Priority # 8234-200-060),
22mm Cap: Amcor Rigid Plastics USA, Inc: Priority item # 6043-000-060 with F-217 Liner. 22mm Cap: Amcor Rigid Plastics USA,

1. Place the correct 70mm cap as listed above on the container ensuring the gasket is in the cap (Fig.1)
2. Manually screw the cap on the container (Fig. 2)
3. Place an overcap fixture over the 70mm cap (Fig 3)
4. Use a Snap on Tool Hand Torque-O-Meter Torque Wrench 0- 300 in-lb and torque the 70mm cap to 175-185 in-lbs. (Fig 4).
5. Ensure the F-217 liner is in the 22mm cap (Fig. 5)
6. Manually screw the 22mm cap on the 22mm vent opening (Fig 6)
7. Place an overcap fixture over the 22mm cap (Fig. 7)
8. Use a Snap on Tool Hand Torque-O-Meter torque Wrench. 0 -125 in-lb or 0-300 in-lb and torque the 22mm cap to 25-30 in-lbs.

NOTE: Priority Plastics, Inc. certifies that these containers have been manufactured and certified in accordance with Performance Requirements of Part 178 Subpart M of title 49CFR. The chemical filler and the shipper may rely upon the marking as certification that the package meets the applicable UN performance standards. The shipper is responsible for ensuring the product is authorized in the package and must consult and General Shipper Requirements, including modal requirements. To meet UN standards, the package must be properly closed for shipment. Failure to follow the closure instructions, or substitution of packaging components other than those identified in the closure instructions will render the UN certification invalid.



Figure 1



Figure 2



Figure 3



Figure 4

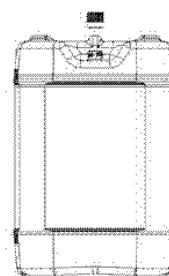


Figure 5



Figure 6



Figure 7



Figure 8

UN Closed Head Packaging

The following information is being provided to customers and distributors of the Priority Plastics, Inc. to fulfill the notification requirements of 178.2© of the 49 CFR. These closing instructions are based upon the procedures used during assembly for testing and certifying this package to a UN standard. These instructions apply to all Priority's 20 Liter and 5 Gallon rectangular tightheads with an integrated handle and an SC76RTE Ratchet 6TPI neck and 22mm vent. Alternative methods used for final assembly and closure may not effectively provide a certified UN standard packaging.

UN Rating: 3H1/Y1.8/150

Resin for Container: CP50100 or LP5100

PROPER SCREW CAP INSTATLATION

Caps that this closing instruction includes are:

Rieke Caps: 70MM, SC76RTE with 3/4"NPT & EPDM Gasket

(Rieke # 03920001, Priority # 8234-200-060),

Brandt Cap: 6 TPI, 70MM Tamper Evident with 3/4" NPT, Natural

(Brandt # CAP7034NAT6TPIEPDMTE, Priority # 8224-200-060)

Brandt Cap: 6TPI, 70MM Tamper Evident with 3/4"NPT & Welded in Vent Material(Priority # 8224-201-060).

22mm Cap: Amcor Rigid Plastics USA, Inc: Priority item #

6043-000-060 with F-217 Liner.22mm Cap: Amcor Rigid Plastics USA,

1. Place the correct 70mm cap as listed above on the container ensuring the gasket is in the cap (Fig.1)
2. Manually screw the cap on the container (Fig. 2)
3. Place an overcap fixture over the 70mm cap (Fig 3)
4. Use a Snap on Tool Hand Torque-O-Meter Torque Wrench 0- 300 in-lb and torque the 70mm cap to 175-185 in-lb. (Fig 4).
5. Ensure the F-217 liner is in the 22mm cap (Fig. 5)
6. Manually screw the 22mm cap on the 22mm vent opening (Fig 6)
7. Place an overcap fixture over the 22mm cap (Fig. 7)
8. Use a Snap on Tool Hand Torque-O-Meter torque Wrench. 0 -125 in-lb or 0-300 in-lb and torque the 22mm cap to 25-30 in-lb.

NOTE: Priority Plastics, Inc. certifies that these containers have been manufactured and certified in accordance with Performance Requirements of Part 178 Subpart M of title 49CFR. The chemical filler and the shipper may rely upon the marking as certification that the package meets the applicable UN performance standards. The shipper is responsible for ensuring the product is authorized in the package and must consult and General Shipper Requirements, including modal requirements. To meet UN standards, the package must be properly closed for shipment. Failure to follow the closure instructions, or substitution of packaging components other than those identified in the closure instructions will render the UN certification invalid.

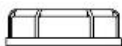


Figure 1



Figure 2



Figure 3



Figure 4

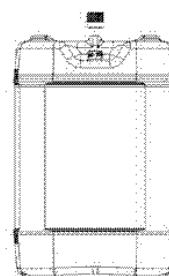


Figure 5



Figure 6



Figure 7



Figure 8

UN Closed Head Packaging

The following information is being provided to customers and distributors of the Priority Plastics, Inc. to fulfill the notification requirements of 178.2© of the 49 CFR. These closing instructions are based upon the procedures used during assembly for testing and certifying this package to a UN standard. These instructions apply to all Priority's 20 Liter and 5 Gallon rectangular tightheads with with an integrated handle and a standard 8 TPI neck and 22mm vent. Alternative methods used for final assembly and closure may not effectively provide a certified UN standard packaging.

UN Rating: 3H1/Y1.8/150

Resin for Container: LP5100 or CP50100, Novapol HB-W952-A

PROPER SCREW CAP INSTALTLATION

Caps that this closing instruction includes are:

Priority Plastics 70mm caps manufactured by Miami Valley Plastics are: 8229-202-060(70mm Cap W/EPDM Gasket), 8229-236-060 (70mm Cap W ¾" NPT knocked out and a yellow polytec vent plug installed W/EPDM Gasket on both the cap and plug). Rieke Caps: FS70 with ¾"NPT & EPDM Gasket (Rieke # 03500003, Priority # 8232-300-060), FS70 with EPDM Gasket & ¾" NPT with Welded in Zitex Vent Material (Rieke # 03500049, Priority # 8232-301-060), FS80 with EPDM Gasket (Rieke # 0350002, Priority # 8240-000-060)
22mm Cap: Amcor Rigid Plastics USA, Inc: Priority item # 6043-000-060 with F-217 Liner. Amcor Rigid Plastics USA, Inc. Priority item # 8231-000-070 with Safe-Gard™ 75M Induction Seal.

1. Place the correct 70mm cap as listed above on the container (Fig.1)
2. Manually screw the cap on the container (Fig. 2)
3. Place an overcap fixture over the 70mm cap (Fig 3)
4. Use a Snap on Tool Hand Torque-O-Meter Torque Wrench 0- 300 in-lb and torque the 70mm cap to 175-185 in-lbs (Fig 4).
5. Make sure the Yellow Vent Plug is torqued to 50 in-lbs if using the 8229-236-060 Cap. Place a plug fixture in the plug.
6. Use a Snap on Tool Hand Torque O-Meter torque Wrench 0-300 in-lb. or 0-125 in-lb and torque the plug to 50 in-lb
7. Manually screw the 22mm cap on the 22mm vent opening (Fig 6)
8. If using the 8231-000-070 cap with the Induction Seal ensure the Safe-Gard 75M is sealed on the 22mm vent/
9. Place an overcap fixture over the 22mm cap (Fig. 7)
10. Use a Snap on Tool Hand Torque-O-Meter torque Wrench 0 -125 in-lb or 0-300 in-lb and torque the 22mm cap to 25-30 in-lb

NOTE: Priority Plastics, Inc. certifies that these containers have been manufactured and certified in accordance with Performance Requirements of Part 178 Subpart M of title 49CFR. The chemical filler and the shipper may rely upon the marking as certification that the package meets the applicable UN performance standards. The shipper is responsible for ensuring the product is authorized in the package and must consult and General Shipper Requirements, including modal requirements. To meet UN standards, the package must be properly closed for shipment. Failure to follow the closure instructions, or substitution of packaging components other than those identified in the closure instructions will render the UN certification invalid.



Figure 1



Figure 2

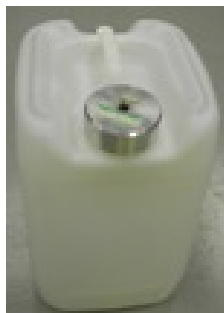


Figure 3



Figure 4

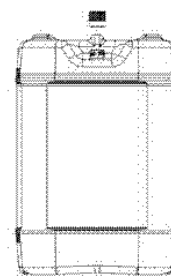


Figure 5



Figure 6



Figure 7



Figure 8

Closing Instructions

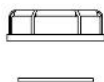
Corporate Office
500 Industrial Park Dr.
Portland IN 47371
Tel 260.726.7000 Fax 260.726.8111

Date Created:
Updated to New Format: 08.07.2019

Closing Instructions for 20 Liter, 8TPI, No Vent Containers

Caps that this closing instruction includes are:

Priority Plastics 70mm caps manufactured by Miami Valley Plastics are: 8229-202-060 (70mm Cap W/EPDM Gasket)



Step 1. Ensure the gasket is in the 70mm closure.



Step 2. Turn the 70mm cap to get started over the threads of the 70mm neck.



Step 3. Place an overcap fixture over the 70mm cap.



Step 4. Torque the cap to 175 – 185 in-lbs.

NOTE: Priority Plastics, Inc. certifies that these containers have been manufactured and certified in accordance with Performance Requirements of Part 178 Subpart M of title 49CFR. The chemical filler and the shipper may rely upon the marking as certification that the package meets the applicable UN performance standards. The shipper is responsible for ensuring the product is authorized in the package and must consult and General Shipper Requirements, including modal requirements. To meet UN standards, the package must be properly closed for shipment. Failure to follow the closure instructions or substitution of packaging components other than those identified in the closure instructions will render the UN Certification invalid.

ENCORE INDUSTRIES UN OPEN-HEAD SNAP-ON LID APPLICATION REQUIREMENTS

ENCORE INDUSTRIES' open-head pails and lids are designed to be assembled by pressing the lid downward onto the top of the pail with a sufficient amount of force that the internal lip of the lid stretches over the outer lip of the pail and snaps back into place beneath it. There are many types of closing machines and tools available for accomplish this task. Most of these devices do an excellent job of closing a commercial-duty ENCORE INDUSTRIES container. However, due to the rigorous test requirements established by the United Nations and adopted by the DOT, UN packaging must be closed properly in order to meet performance requirements, which are absolutely essential to the safe containment and transport of materials. Therefore, ENCORE INDUSTRIES only endorses the following cover installation methods, listed here in order of preference.

VERTICAL CYLINDER PRESS (PREFERRED)

For optimum UN package performance, ENCORE INDUSTRIES strongly endorses the use of a vertical cylinder press. This style of capping press uses a vertically-mounted cylinder, generally pneumatic, to apply a uniform pressure across the lid-pail interface and ensures consistent cover installation without deforming the lid or the sealing gasket beyond design limitations.

The amount of force necessary to properly apply an ENCORE INDUSTRIES UN lid is considerably more than required to apply a typical commercial-grade lid. Minimally, a 5" diameter pneumatic cylinder using 115 to 130 psi air pressure is required to properly apply an ENCORE INDUSTRIES UN lid. If a larger cylinder is used, the air pressure can be lowered accordingly. ENCORE INDUSTRIES recommends a vertical cylinder press having a piston diameter of 6" and 80 to 90 psi air pressure. When capping, the application pressure must be maintained for a minimum of 1 - 2 seconds and the cylinder must be allowed to stroke a minimum of 1/4" below the top of lids to ensure proper installation.

The lid press closing plate (platen) must be parallel to the base within 0.05" and must have sufficient strength to minimize deflection during application of the lid. The use of a Burp Plug (a plug protruding from the center of the capper platen designed to bow the lid slightly during capping to allow excess air to escape) is recommended when applying ENCORE INDUSTRIES' UN lid. ENCORE INDUSTRIES recommends a 3/4" thick burp plug.



REVISED 06/30/2016

1H2 UN PAIL CLOSING INSTRUCTIONS

LIQUID UN 1H2/Y1.5/30/**/USA/+AA7110

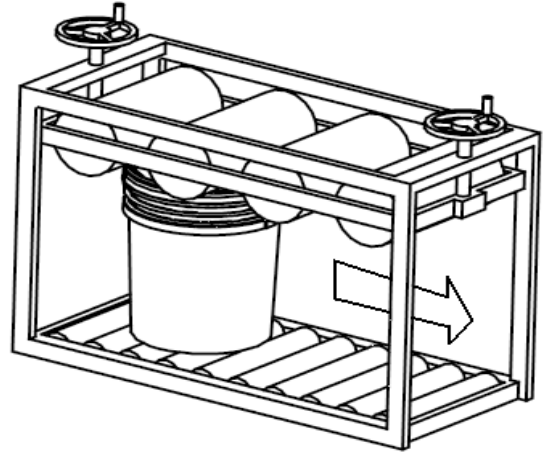
SOLID UN 1H2/Y30/S/**/USA/+AA7072

SOLID UN 1H2/Y43/S/**/USA/+AA7515

ROLL – ON PRESS

The roll-on cover press, also known as a roller capper or roller closer, is a high-speed closing unit typically used in high volume filling operations. It is generally used in conjunction with a thru-feed conveyor which passes the pail and cover under the capping rollers. These rollers exert a down force onto the cover as it passes, forcing the internal lip of the cover to stretch over the outer lip of the pail and snap back into place beneath it.

It is critical to keep the roll-on cover press adjusted to the open-head container height variances to ensure that the package is not stressed during cover application. ENCORE INDUSTRIES suggests that, as a starting point for capping UN rated open-head packages, the exit end of a roll-on cover press be set to the pail height (without cover) plus 0.200". Minor adjustments from this initial height setting may be necessary to ensure complete cover installation. Always verify that the capper is installing the cover properly and completely before going into production.



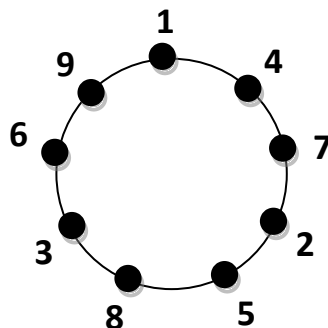
Design and operating rates for this type of press vary greatly. For this reason, ENCORE INDUSTRIES cannot unilaterally endorse this style of capping press for use with 1H2 UN open-head packaging. The package filler must evaluate their individual roll-on press to verify that the press is capable of consistently seating the cover completely onto the open-head pail.

MALLET /HAMMER

This is the least expensive and generally very effective method for the installation of a typical commercial-grade pail cover. However, using a mallet to generate the force that must be applied to various parts of the ENCORE INDUSTRIES UN cover to fully seat it onto the pail can damage the cover, the pail, and/or the gasket during installation. **Due to the hazardous nature of the products packaged in a UN certified container, mallet capping ENCORE INDUSTRIES's UN certified containers is not recommended.**

However, ENCORE INDUSTRIES DOES recommend that any and all capped pails and lids be visually inspected for seal and lock as well as double checking the fit with a rubber mallet in the striking configuration shown below.

Mallet Strike Pattern:



REVISED 06/30/2016

1H2 UN PAIL CLOSING INSTRUCTIONS

LIQUID UN 1H2/Y1.5/30/**/USA/+AA7110

SOLID UN 1H2/Y30/S/**/USA/+AA7072

SOLID UN 1H2/Y43/S/**/USA/+AA7515

GENERAL COVER INSTALLATION INSTRUCTIONS

1. Before seating a UN rated cover onto a UN rated open-head pail, visually inspect the mating surfaces of each component. For pails, verify that the pail lip is free of defects and debris. For gasketed covers, ensure that the tubular gasket is fully seated inside the cover, is not twisted or deformed, and that there are no plastic hairs or debris on its visible surfaces.
2. After filling the pail to the appropriate volume, loosely place the inspected cover on top of it and verify that the cover is aligned with the pail and resting reasonably flat.
3. Apply the cover using the appropriate capping apparatus.
 - a. For vertical cylinder presses, engage the pressure cylinder and apply a downward capping force for 1-2 seconds or until all audible capping sounds have ceased, then release.
 - b. For roll-on presses, feed the pail with cover through the press until it exits the discharge end.
4. Inspect the closed package to verify that the cover is fully seated onto the pail. Localized bulging of the cover sidewall is an indication that the cover has not fully latched. Adjust the down force of the capper as needed and re-cap the package until the cover is fully seated.

Caution: The application force required to install the UN cover fully onto the UN pail will vary according to ambient temperature and the closing speed of the cover press. Adjustments of speed and pressure may be necessary to optimize cover installation. Always verify capper settings before proceeding with production.

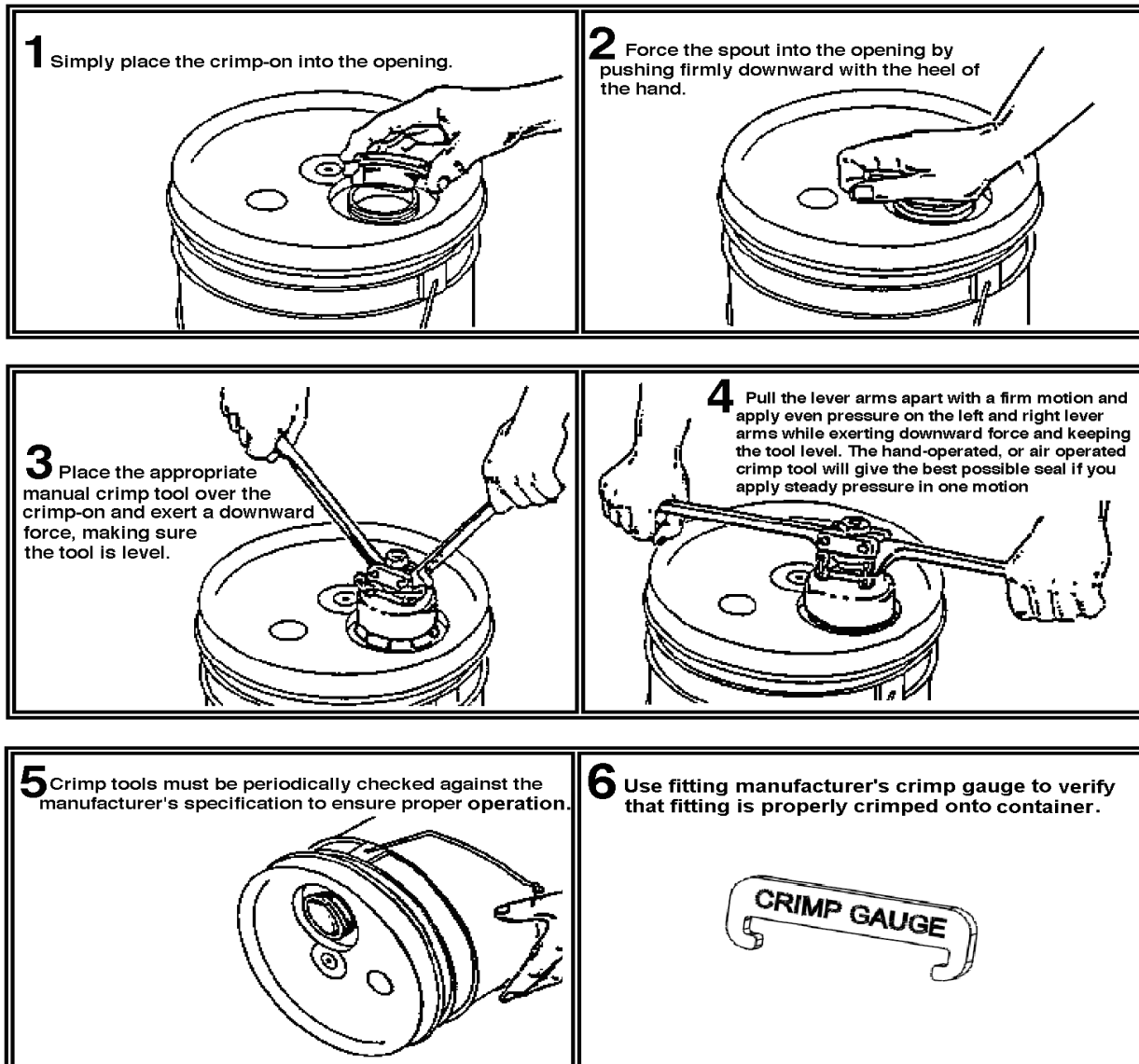
CLOSURE AND FITMENT INSTRUCTIONS

In addition to plain panel lids which have no additional fitments or closures, ENCORE INDUSTRIES's UN lids are also available in liquid-rated versions with crimp-on neck finishes. ENCORE INDUSTRIES may pre-install fittings into or onto these openings for the convenience of the package filler or supply them separately. In either case, it is the package filler's responsibility to ensure that the fitment or closure is completely installed and/or properly torqued, crimped, or pressed into position before the filled package is shipped.

63mm CRIMP-ON FITMENTS (Pour Spout Installation)

ENCORE INDUSTRIES generally provides crimp-on fitments pre-installed onto open-head pail lids. In such cases, the package filler need only visually verify that the crimp-on fitting has been installed and fully crimped. If the package filler is to install the crimp-on fitment, then the following procedure must be used. The proper seating (assembly) of the crimp-on fitting to the ENCORE INDUSTRIES container is absolutely essential to the safe containment and transport of hazardous materials.

Note: Always inspect the sealing surfaces of both mating components to ensure that they are clean and free of debris prior to assembly.



REVISED 06/30/2016

1H2 UN PAIL CLOSING INSTRUCTIONS

LIQUID UN 1H2/Y1.5/30/**/USA/+AA7110

SOLID UN 1H2/Y30/S/**/USA/+AA7072

SOLID UN 1H2/Y43/S/**/USA/+AA7515

CLOSING, CRIMPING AND CAPPING TOOL & EQUIPMENT SUPPLIERS

The following is a list of suppliers and manufacturers of various pail capping tools and equipment. This list is by no means complete and ENCORE INDUSTRIES does not specifically endorse any of the companies listed. The list is offered purely as a courtesy to our valued customers.

Lid Closers (vertical cylinder press and/or roll-on closers)

Heisler Manufacturing

Crandall International, Inc.

Pailmate

Atlanta Grotnes Machine Co

Crimpers for 63mm Fittings

Rieke Corporation

REVISED 06/30/2016

1H2 UN PAIL CLOSING INSTRUCTIONS

LIQUID UN 1H2/Y1.5/30/**/USA/+AA7110

SOLID UN 1H2/Y30/S/**/USA/+AA7072

SOLID UN 1H2/Y43/S/**/USA/+AA7515

M&M INDUSTRIES, INC.

MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC. UN/DOT PACKAGING FOR HAZARDOUS SOLIDS/LIQUIDS

At M&M Industries, we understand your goal to safely transport your valuable products along roads and highways. You want to provide your customers with value while keeping their trust. While we are legally bound to provide you with the following information, M&M Industries also wants you to know we value your endeavor and want to help you reach your goal, every day.

Under the **U.S. Department of Transportation's Title 49CFR** it is the **Shipper's Responsibility** to determine that the packaging or container is an authorized packaging, including all part 173 requirements. The selected packaging must be properly assembled for transportation in accordance with the manufacturer's notification. **Please do all testing and research necessary to ensure that you have selected the proper M M Industries container for use with your product.**

To meet UN/DOT Standards, this package must be properly closed for shipment. At the time of transfer, the packaging does not meet the UN standard because it is disassembled. Only when assembled as specified in the closure instructions below, and using the components described herein, is this packaging certified to meet the UN standard. Failure to follow the closure instructions or substituting package components with components other than those identified in the following paragraph will render the UN/DOT Certification invalid.

A copy of the manufacturer's notification, including closure instructions, must be made available for inspection by a representative of the Department of Transportation upon request for at least 90 days once the package is offered to the initial carrier for transportation in commerce. However, M&M Industries recommends that you retain these documents for a minimum of 365 days after the package is offered for shipment. The current record retention requirements are subject to change and are found in 49CFR 173.22(a)(4), <http://www.ecfr.gov>

M&M Industries takes superb pride in our Quality Assurance program and systems. However, even with our very best efforts, fittings on covers / pails can become damaged or shift during transportation or storage after leaving our facility. M&M Industries recommends that fillers/offers take all steps deemed necessary to check the fittings on each pail / cover, to meet your quality standards. An example of this is a screw cap on a

cover that may vibrate or back off during transportation. The offeror of a hazardous material may be open to liability if they do not take the necessary precautions. Should you have any questions, please contact customer service at **(800) 331-5305**.

THESE CLOSING INSTRUCTIONS REMAIN IN EFFECT UNTIL FURTHER NOTICE.

CLOSING INSTRUCTIONS FOR: M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) Containers

Identification of Packaging:

This packaging type is identified by:

Pail Size (gallons)	Mold Number	M2 Lids (B engraved on lid, tear tab)	M2 Lid diameter (ref only, measured at bottom of lid)	M4 Lids (A engraved on lid)	M4 Lid diameter (ref only, measured at bottom of lid)
6.5	11716	10905, 10953, 11183, 11184, 11827, 12680	12.47"	N/A	N/A
5.5	11851, 10910	10905, 10953, 11183, 11184, 11827, 12680	12.47"	N/A	N/A
5.3	12341, 44M2PA	10950, 10953, 11183, 11184, 11827, 12680 40M4CA (M4)	12.47"	40M4CA 40M4CB 40M4CC	12.40"
5.0	10948, 11181, 11182, 12342, 12341, 12963, 15378, 15380, 10910, 11851	10950, 10953, 11183, 11184, 11827, 12680	12.47"	40M4CA 40M4CB 40M4CC	12.40"
3.5	11100, 12354	10950, 10953, 11183, 11184, 11827, 12680	12.47"	40M4CA 40M4CB 40M4CC	12.40"

**Note: Only the 3.5, 5.0, and 5.3 M4 Pails with M4 Lids are rated for Hazardous Liquids.*

Lid Description	Gasket Material	Available fittings
M2 (B engraving) Tear tab lid	EPDM Black	Rieke Metal Spout FS-10-10-231 Rieke Vented Metal Spout FS-10-10-231-TFE Rieke Plastic Vented Spout FS-16AP-TFE Rieke Plastic Spout FS-16AP 70 mm Light Weight Screw Cap Vent Cap with Vent Spout (M2 Only) PV-20-52 and FS-16AP-TFE Rieke Tint Plug (M2 Only) TFS-2P APC-2 Plastic Vented Spout APC-2 Plastic Spout
M4 (A engraving) Liquids Non-tear tab lid	EPDM Black	Rieke Metal Spout FS-10-10-231 Rieke Vented Metal Spout FS-10-10-231-TFE Rieke Plastic Screw Cap FS-80 APC-2 Plastic Vented Spout APC-2 Plastic Spout

UN Markings for M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) Containers:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) containers are listed below.

Pail Size (gallons)	UN Mark	Lid	Certified for
6.5	1H2/Y27/S	M2	Solids only
5.5	1H2/Y25/S	M2	Solids only
5.3	1H2/Y25/S	M2	Solids only
5.0	1H2/Y27/S	M2	Solids only
5.5	1H2/Y25/S	M2	Solids only
5.3	1H2/Y40/S 1H2/X40/S	M4	Solids and Liquids

	1H2/Y1.2/30		
5.0	1H2/Y40/S 1H2/Y1.5/30 1H2/X40/S	M4	Solids and liquids
3.5	1H2/Y21/S	M2	Solids only
3.5	1H2/Y1.5/30	M4	Liquids Only

In accordance with the U.S. Department of Transportation's Title 49CFR, Section 178.2, manufacturers of U.N. Standard/DOT Specification packages are required to notify in writing each person to whom that packaging is transferred of all requirements in this part not met at the time of transfer, and with information specifying the type(s) and dimensions of the closures, including gaskets and any other components needed to ensure that the packaging is capable of successfully passing the applicable performance tests. This information must include any procedures to be followed, including closing instructions for inner packaging and receptacles, to effectively assemble and close the packaging for the purpose of preventing leakage in transportation.

Specifically, the following items pertain to the M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) containers:

1. M2/M2 (tear tab) and M4/M4 (non-tear tab lid) containers are certified to the UN/DOT performance-oriented packaging standards and are marked with the appropriate UN markings on the container.
2. The M-Style pail must always be used with the correct M2 or M4 lid to meet the UN/DOT performance-oriented packaging standards.
3. ONLY the 3.5-gallon, 5-gallon, and 5.3-gallon M4 pails with M4 lids are UN certified for liquid hazardous materials, and only for ground or vessel transportation.
4. M2/M2 (tear tab) and M4/M4 (non-tear tab lid) containers are **NOT** UN certified for air transportation of liquids.

A. CLOSING INSTRUCTIONS FOR THE M2/M2 and M4/M4 PAIL AND LIDS:

1. **Pneumatic press with 6" cylinder – 3.5-6.5-gallon sizes ONLY (Figure A),**
 - a. Adjust downward stroke of top plate so that it goes beyond pail rim by 1/16-1/8".
 - b. Center the pail and lid under the press.
 - c. Apply a minimum of 80 psi from a regulated air supply to the lid listening for a defining snap.
 - d. If the cylinder is less than 6", higher air pressure may be required to adequately seal the lid.
 - e. **Inspect lid after application to confirm it is properly seated.**

Figure A: Pneumatic Press



To mitigate air entrapment and doming of the lid during production filling, M M recommends the use of a “Burper Plug” measuring 3” Diameter by 1 ¼” Height attached to the bottom of the capper platen, centrally positioned. (Figure A1)

Figure A1: Burper Plug



2. **Rubber mallet (minimum 16 oz.) – all sizes 3.5 gallon through 6.5 gallon (5.3-gallon M4 for liquids excluded)**
 - a. Center the lid on the pail.
 - b. Hammer the cover into place by striking cover in the center of the cover’s outer ring (Figure B).

- c. Strike cover until it snaps onto the rim of the pail. For best results, strike cover starting at 12 o'clock position, then 6:00, then 3:00 and 9:00. Continue to hammer the cover into place 360 degrees, until the cover is evenly seated all the way around the pail.
- d. **Inspect lid after application to confirm it is properly seated.**

Figure B



Properly seated M2 lid:



Improperly seated M2 lid:



Properly seated M4 lid:



Improperly seated M4 lid:



- 3. **When using the cover with the screw cap fitting, the recommended application torque for the 80mm cap is 12-foot pounds. Use a calibrated torque wrench to apply the closure to the fitting.**

80 mm Screw Cap Lid:



80 mm Screw Cap Tightened with torque wrench:



4. If Rieke pour spout is supplied separately, refer to spout installation instructions below.

B. APPLICATION INSTRUCTIONS FOR RIEKE or APC SPOUT (if not pre-applied):

1. Use a Rieke/APC spout installer only.
2. Place lid into installer in the upright position (if applicable).
3. Place Rieke/APC plastic spout in spout hole of lid in upright position.
 - a. For automated crimper: Place right and left index fingers on each side of the spout installer to activate.
 - b. For Hand crimper: Apply per Rieke/APC crimping tool instructions.



Revision History:

Original issue - August 19, 2013

Revision 1 – January 12, 2015 – separated pneumatic press for 5-5.5-gallon sizes only.

Revision 2 – December 1, 2015 – added cylinder size to pneumatic press, stroke adjustment and mallet size.

Revision 3-June 3, 2020-Added New Mold Numbers, removed reference to 2.0 M2 Pails, removed reference to previous M4 Lid, added new Mold, corrected various wording and grammar.

Revision 4-9/3/2020-Added Burper Plug Information

Revision 5-6/3/2021-Added New Molds, UN Information for 5.3 M4 Pail and Lid

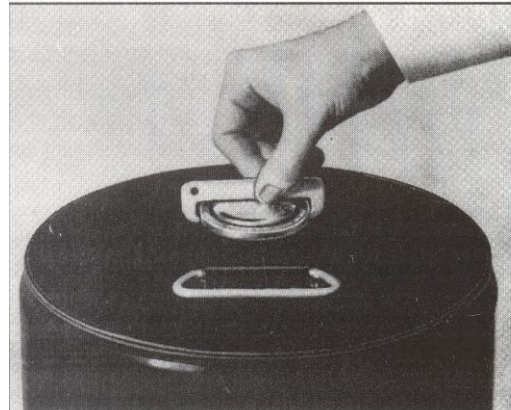
See instructions on next page to confirm proper application of spout.



This gauge is to be used to check FLEXSPOUT® Closure installations made by the following model tools: FS, Hand Operated Tool; IAFS Airmatic Tools. This gauge is to be used when gaging both steel and plastic pails.

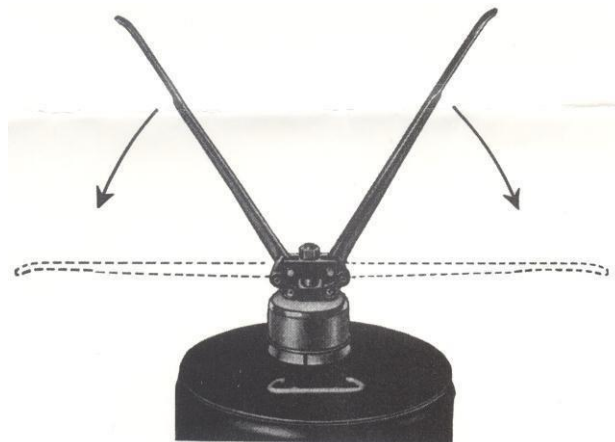
How to Use the Flex spout Closure Slip Gauge

Place gauge in position shown. Inner lands on gauge should rest on top of Flex Ring. In this position the gauge should clear freely the side wall of the installed FLEXSPOUT Closure when drawn across.



SHOULD THE GAUGE FAIL TO CLEAR the sides of the FLEXSPOUT Closure after it has been crimped on by hand tool, one of the following is the reason:

1. The operator failed to properly bottom the handles:



2. The tool is not functioning properly and should be returned to Rieke for adjustment.

SHOULD THE GAUGE FAIL TO CLEAR the sides of the FLEXSPOUT Closure after it has been crimped by either type of mechanically operated tool, the tool or power unit is not functioning properly and should be returned to Rieke for repair and adjustment.

TIPS ON THE USE AND CARE OF YOUR FLEXSPOUT CLOSURE TOOLS

- Be sure your operator is instructed to bottom the tool each time he affixes a FLEXSPOUT Closure to a container. This merely requires him to move handles downward as far as they will go.
- Rest the tool evenly on the container head, over the FLEXSPOUT Closure before starting the downward movement of the handles. This prevents "cocking" of the tool which results in an inferior seal.
- Keep your tools well-oiled and keep the closing collets or jaws free of dirt and paint.
- Do not attempt to adjust or dismantle your tools. They are precision adjusted at the factory for maximum sealing efficiency and received by you ready to use. Should your slip gauge reveal inefficient performance of any tool, return the tool to Rieke, transportation charges prepaid, for adjustment or repair.

- Do not remove mis crimped FLEXSPOUTS with the crimping tool. This will cause damage to the crimping tool by “popping out” or chipping the jaws. The M-066 removal tool should be used.



500 West 7th Street, Auburn, IN U.S.A. 46706
Phone: 260-925-3700 Fax: 260-925-4654

www.riekepacking.com PR225 rev-1.2.doc November 15, 2011

M&M INDUSTRIES, INC.

MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC. UN/DOT PACKAGING FOR HAZARDOUS SOLIDS

General Information:

At M&M Industries, we understand your goal to safely transport your valuable products along roads and highways. You want to provide your customers with value while keeping their trust. While we are legally bound to provide you with the following information, M&M Industries also wants you to know we value your endeavor and want to help you reach your goal, everyday.

Under the **U.S. Department of Transportation's Title 49CFR** it is the **Shipper's Responsibility** to determine that the packaging or container is an authorized packaging, including all part 173 requirements. The selected packaging must be properly assembled for transportation in accordance with the manufacturer's notification. **Please do all testing and research necessary to ensure that you have selected the proper M & M Industries container for use with your product.**

To meet UN/DOT Standards, this package must be properly closed for shipment. At the time of transfer, the packaging does not meet the UN standard because it is disassembled. Only when assembled as specified in the closure instructions below, and using the components described herein, is this packaging certified to meet the UN standard. Failure to follow the closure instructions or substituting package components with components other than those identified in the following paragraph will render the UN/DOT Certification invalid.

A copy of the manufacturer's notification, including closure instructions, must be made available for inspection by a representative of the Department of Transportation upon request for at least 90 days once the package is offered to the initial carrier for transportation in commerce, as of this time (June 2013). However, M&M Industries recommends that you retain these documents for a minimum of 365 days after the package is offered for shipment. The current record retention requirements are subject to change and are found in 49CFR 173.22(a)(4), <http://www.ecfr.gov>

M&M Industries takes superb pride in our Quality Assurance program and systems. However, even with our very best efforts, fittings on covers / pails can become damaged or shift during transportation or storage after leaving our facility. M&M Industries recommends that fillers/offerors take all steps deemed necessary to check the fittings on each pail / cover, to meet your quality standards. An example of this is a screw cap on a cover that may vibrate or back off during transportation. The offeror of a hazardous material may be open to liability if they do not take the necessary precautions. Should you have any questions, please contact customer service at **(800) 331-5305**.

THESE CLOSURE INSTRUCTIONS REMAIN IN EFFECT UNTIL FURTHER NOTICE.

CLOSURE INSTRUCTIONS FOR: Life Latch Drum

Identification of Packaging: This packaging type is identified by:

Size	Pail ID numbers	Matching lid ID numbers	Lid diameter (Ref only, measured at bottom of lid)
12 Gallon	12439	12440	16.29"

This packaging may or may not use a gasket and/or vent plug. If a gasket or vent plug is used it must meet the specification below for **SOLIDS**:

UN Markings for Life Latch Drums:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries Life Latch Drum containers are listed below.

Container Sizes	UN Rating (Without gasket)	UN Rating (with gasket)
12.0 Gallon	1H2/Y53/S	1H2/Y40/S

In accordance with the U.S. Department of Transportation's Title 49CFR, Section 178.2, manufacturers of U.N. Standard/DOT Specification packages are required to notify in writing each person to whom that packaging is transferred of all requirements in this part not met at the time of transfer, and with information specifying the type(s) and dimensions of the closures, including gaskets and any other components needed to ensure that the packaging is capable of successfully passing the applicable performance tests. This information must include any procedures to be followed, including closure instructions for inner packagings and receptacles, to effectively assemble and close the packaging for the purpose of preventing leakage in transportation.

Specifically, the following items pertain to the **Life Latch Drums**:

- **Life Latch Drums** are certified to the UN/DOT performance oriented packaging standards and are marked with the appropriate UN markings on the container.
- The Life Latch Drum must always be used with the correct Life Latch Drum lid in order to meet the UN/DOT performance oriented packaging standards.
- **Life Latch Drums are not UN certified for liquids.**

CLOSURE INSTRUCTIONS FOR SOLIDS:

NOTE: This container is not UN certified for liquid hazardous materials

Non-Gasketed lid:

Packaging Components required:

- Drum
- Lid (non-gasketed)

To close: Seat lid on top of drum. Rotate lid counter-clockwise until it drops down (this will help prevent cross-threading). Then, rotate lid clockwise until the raised rectangular mark on the lid (see Figure 1) is located to the left of the raised capsule-shaped marks on the left side of the drum trigger (see Figure 2). Continue rotating until the lid is fully tightened (see Figure 3). Inspect lid after application to confirm it is properly seated.

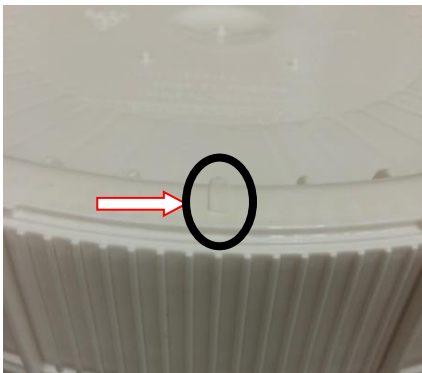


Figure 1



Figure 2

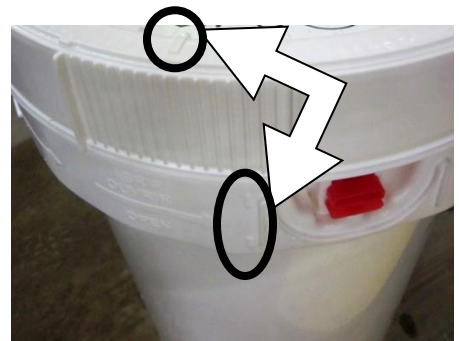


Figure 3

Gasketed Lid:

Packaging Components required:

- Drum
- Lid (gasketed)

To close: Seat lid on top of drum. Rotate lid counter-clockwise until it drops down (this will help prevent cross-threading). Then, rotate lid clockwise until the raised rectangular mark on the lid (see Figure 1) is located to the left of the raised circular mark on the right side of the drum trigger (see Figure 2). Continue rotating until the lid is fully tightened. Inspect lid after application to confirm it is properly seated.



FIGURE 1

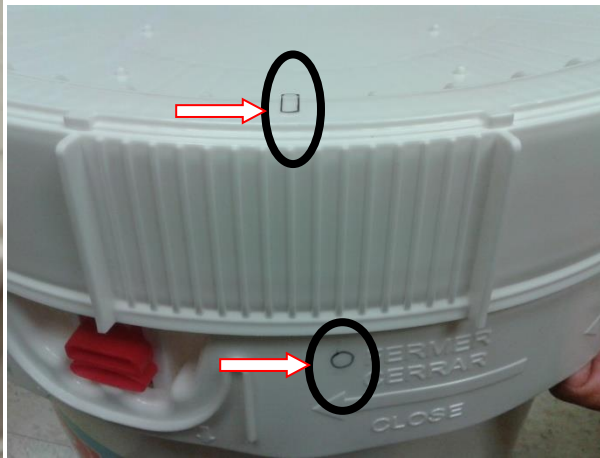


FIGURE 2

M&M INDUSTRIES, INC.

MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC. UN/DOT PACKAGING FOR HAZARDOUS SOLIDS/LIQUIDS

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THESE CLOSURE INSTRUCTIONS REMAIN IN EFFECT UNTIL FURTHER NOTICE.

CLOSURE INSTRUCTIONS FOR:

Life Latch ® Liquid Containers

Identification of Packaging:

This packaging is UN certified for both liquid and solid hazardous materials. For **LIQUIDS**, only the 5 gallon Life Latch® Liquid container is UN certified, and it must contain the following gasket:

Lid Size	Gasket Material	Gasket Length	Gasket Diameter	Spout Options
5.0 Gallon	Closed Cell Neoprene	36.938" – 38.445"	.260" - .340"	Sonically welded Polyethylene American Flange spout #BUB0380000N0112 with 1.50" opening, 2.50" total fitting.

This packaging type is identified by:

Size	Pail ID number	Matching lid ID number	Lid diameter (ref only, measured at bottom)
5 Gallon Liquid Screw top	11395	11396	13.053"



UN Markings for Life Latch ® Liquid Containers:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries Life Latch ® Liquid containers are listed below.

5.0 Gallon Liquid pail	1H2/Y30/S (for solids)
	1H2/Y1.5/30 (for liquids)

In accordance with the U.S. Department of Transportation's Title 49CFR, Section 178.2, manufacturers of U.N. Standard/DOT Specification packages are required to notify in writing each person to whom that packaging is transferred of all requirements in this part not met at the time of transfer, and with information specifying the type(s) and dimensions of the closures, including gaskets and any other components needed to ensure that the packaging is capable of successfully passing the applicable performance tests. This information must include any procedures to be followed, including closure instructions for inner packagings and receptacles, to effectively assemble and close the packaging for the purpose of preventing leakage in transportation.

Specifically, the following items pertain to the **Life Latch ® Liquid** containers:

1. **Life Latch ® Liquid** containers are certified to the UN/DOT performance oriented packaging standards and are marked with the appropriate UN markings on the container.
2. The **Life Latch ® Liquid** pail must always be used with the correct **Life Latch ® Liquid** lid in order to meet the UN/DOT performance oriented packaging standards.
3. **Life Latch ® Liquid** containers **are not** UN certified for air transportation.

CLOSURE INSTRUCTIONS FOR LIQUIDS and SOLIDS:

Only the 5 gallon Life Latch® Liquid style container with GASKETED lid is UN certified for liquid hazardous materials. Package components required:

- Appropriately marked UN/DOT certified M & M Industries pail, 5 gallon
- Matching lid size with trigger attached, with gasket

To Close:

Seat lid on top of pail and rotate lid clockwise a complete 360 degrees with the threads fully engaged. Continue rotating until lid is fully tightened. For ease of application, use built-in hand lever on cover.

Inspect lid after application to confirm it is properly seated.

Example of lid not properly seated, threads not fully engaged:



M&M INDUSTRIES, INC.

MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC. UN/DOT PACKAGING FOR HAZARDOUS SOLIDS/LIQUIDS

General Information:

At M&M Industries, we understand your goal to safely transport your valuable products along roads and highways. You want to provide your customers with value while keeping their trust. While we are legally bound to provide you with the following information, M&M Industries also wants you to know we value your endeavor and want to help you reach your goal, everyday.

Under the **U.S. Department of Transportation's Title 49CFR** it is the **Shipper's Responsibility** to determine that the packaging or container is an authorized packaging, including all part 173 requirements. The selected packaging must be properly assembled for transportation in accordance with the manufacturer's notification. **Please do all testing and research necessary to ensure that you have selected the proper M & M Industries container for use with your product.**

To meet UN/DOT Standards, this package must be properly closed for shipment. At the time of transfer, the packaging does not meet the UN standard because it is disassembled. Only when assembled as specified in the closure instructions below, and using the components described herein, is this packaging certified to meet the UN standard. Failure to follow the closure instructions or substituting package components with components other than those identified in the following paragraph will render the UN/DOT Certification invalid.

A copy of the manufacturer's notification, including closure instructions, must be made available for inspection by a representative of the Department of Transportation upon request for at least 90 days once the package is offered to the initial carrier for transportation in commerce, as of this time (March 2015). However, M&M Industries recommends that you retain these documents for a minimum of 365 days after the package is offered for shipment. The current record retention requirements are subject to change and are found in 49CFR 173.22(a)(4), <http://www.ecfr.gov>

M&M Industries takes superb pride in our Quality Assurance program and systems. However, even with our very best efforts, fittings on covers / pails can become damaged or shift during transportation or storage after leaving our facility. M&M Industries recommends that fillers/offerors take all steps deemed necessary to check the fittings on each pail / cover, to meet your quality standards. An example of this is a screw cap on a cover that may vibrate or back off during transportation. The offeror of a hazardous material may be open to liability if they do not take the necessary precautions. Should you have any questions, please contact customer service at **(800) 331-5305**.

CLOSURE INSTRUCTIONS FOR:

Life Latch® New Generation Containers

Identification of Packaging: This packaging type is identified by:

Size	Pail ID numbers	Matching lid ID numbers	Lid diameter (Ref only, measured at bottom of lid)
6.5 Gallon New Gen	11391,11393,12057, 10778	11074, 11386, 11390, 11394, 11392, 11388, 18402, 18403	12.87"
5.0 Gallon New Gen	11387,11389, 10975,13272,13271	11074, 11386, 11390, 11394, 11392, 11388, 18402, 18403	12.87"
3.5 Gallon New Gen	11385,10777,11073	11074, 11386, 11390, 11394, 11392, 11388, 18402, 18403	12.87"
2.5 Gallon New Gen	11302	11303	11.72"
2.0 Gallon New Gen	13189	11303	11.72"
1.25 Gallon New Gen	13905, 18792	13904,18793	8.9"
0.6 Gallon New Gen	13906, 18794	13907, 18795	7.03"

This packaging may or may not use a gasket and/or vent plug. If a gasket or vent plug is used it must meet the specification below for **SOLIDS**:

Cover Size	Gasket Material	Gasket Length	Gasket Diameter	Vent Plug
0.6 Gallon New Gen	Closed Cell Neoprene	18.110" to 18.897"	0.94" -.124"	N/A
1.25 Gallon New Gen	Closed Cell Neoprene	23.510" to 24.470"	.100" to .140"	Rieke Rubber Umbrella Vent PV-21 Part# 02500002
2.0 Gallon New Gen	Closed Cell Neoprene	28.607" to 29.393"	.109" to .141"	NA
2.5 Gallon New Gen	Closed Cell Neoprene	28.607" to 29.393"	.109" to .141"	NA
3.5 through 6.5 Gallon New Gen	Closed Cell Neoprene	33.075" to 34.425"	.134" to .166"	Rieke Rubber Umbrella Vent PV-21 Part# 02500002

UN Markings for Life Latch® New Generation Containers:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries **Life Latch® New Generation** containers are listed below.

Container Sizes	UN Rating
0.6 Gallon New Generation	1H2/Y4/S
1.25 Gallon New Generation	1H2/Y6/S
2.0 Gallon New Generation	1H2/Y15/S
2.5 Gallon New Generation	1H2/Y19/S
3.5 Gallon New Generation	1H2/Y19/S
5.0 Gallon New Generation	1H2/Y30/S & 1H2/X11.5/S
6.5 Gallon New Generation	1H2/Y30/S & 1H2/X11.5/S

In accordance with the U.S. Department of Transportation's Title 49CFR, Section 178.2, manufacturers of U.N. Standard/DOT Specification packages are required to notify in writing each person to whom that packaging is transferred of all requirements in this part not met at the time of transfer, and with information specifying the type(s) and dimensions of the closures, including gaskets and any other components needed to ensure that the packaging is capable of successfully passing the applicable performance tests. This information must include any procedures to be followed, including closure instructions for inner packagings and receptacles, to effectively assemble and close the packaging for the purpose of preventing leakage in transportation.

Specifically, the following items pertain to the **Life Latch® New Generation** containers:

- **Life Latch® New Generation** containers are certified to the UN/DOT performance oriented packaging standards and are marked with the appropriate UN markings on the container.
- The **Life Latch® New Generation** pail must always be used with the correct **Life Latch® New Generation** lid in order to meet the UN/DOT performance oriented packaging standards.
- **Life Latch® New Generation** containers **are not** UN certified for air transportation.

CLOSURE INSTRUCTIONS FOR SOLIDS:Packaging Components required:

- Appropriately marked UN/DOT certified M&M Industries Pail
- Matching lid size with trigger attached, **gasketed or non-gasketed**

2.0, 2.5, 3.5, 5.0 and 6.5 gallon NON-GASKETED lid: (Engraved MM on lid)

To close: Seat lid on top of pail (engraved MM on bottom of pail). Rotate lid clockwise until the small window by the trigger (see Ill. 1) is located to the left of the mark (see Ill. 2) on the side of the pail and continue rotating until the lid is fully tightened (see Ill. 4). **Inspect lid after application to confirm it is properly seated.**

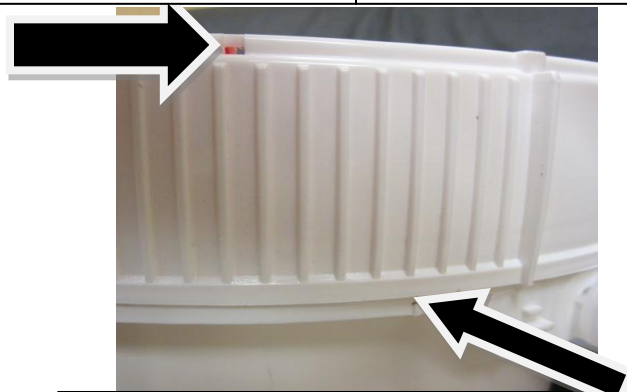
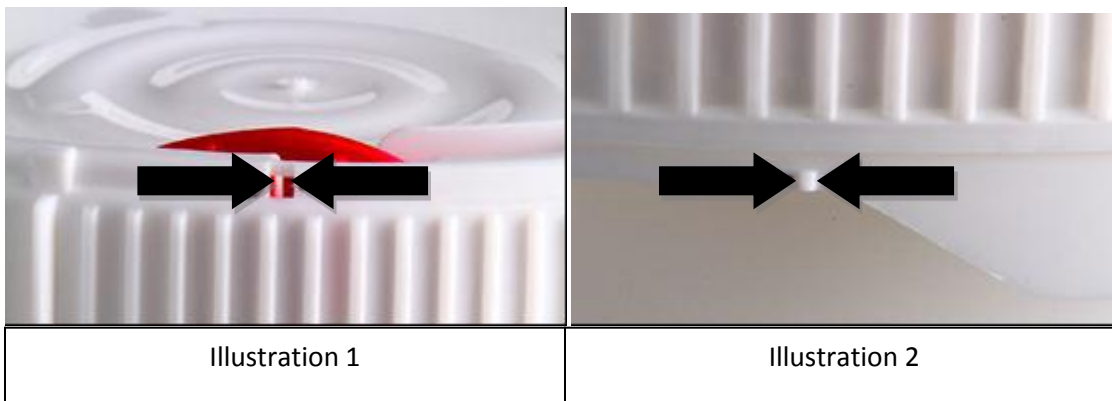


Illustration 4 – Example of lid fully tightened with the window to the left of the mark on pail, non gasketed lid.

2.0, 2.5, 3.5, 5.0 and 6.5 gallon Gasketed lid: (Marked MM on lid):

To Close: Seat lid on top of pail (Marked MM on bottom of pail). Rotate lid clockwise until the small window by the trigger (see Ill. 1) is located to the left of the UN mark (see Ill.3) on the side of the pail and continue rotating until the lid is fully tightened (see Ill.5). **Inspect lid after application to confirm it is properly seated.**

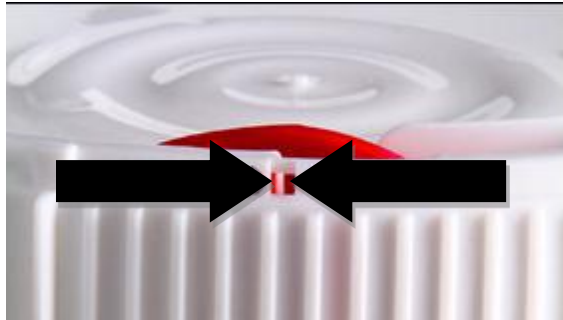


Illustration 1

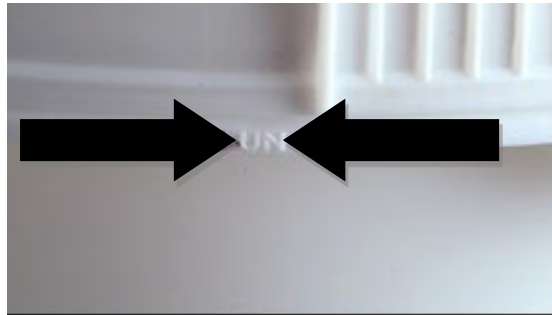


Illustration 2

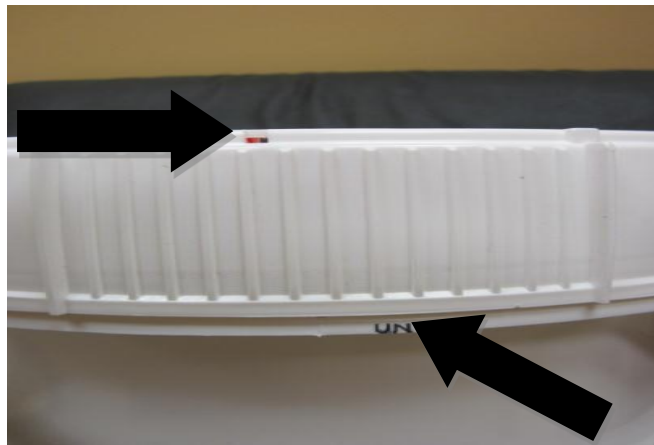


Illustration 5- Example of lid fully tightened, gasketed pail, window to left of UN mark.

0.6 and 1.25 gallon NON-GASKETED lid:

To close: seat lid on top of pail. Rotate lid clockwise until the trigger post (see Ill.6) is located to the left of the mark (see Ill. 7) on the side of the pail and continue rotating until lid is fully tightened. **Inspect lid after application to confirm it is properly seated.**



Illustration 6

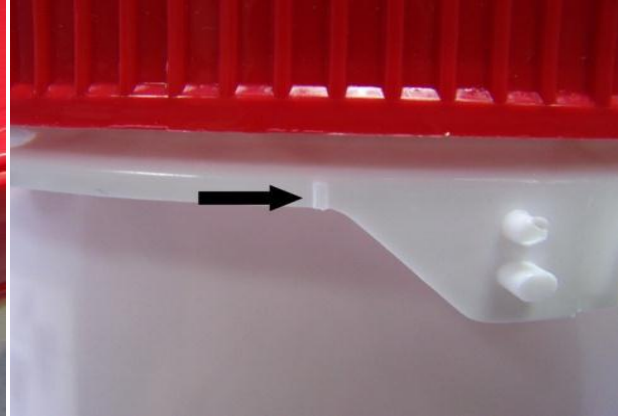


Illustration 7

0.6 and 1.25 gallon GASKETED lid:

To Close: seat lid on top of container. Rotate lid clockwise until trigger post (see Ill. 6) is located to the left of the UN mark (see Ill.8) on the side of the pail and continue rotating until the lid is fully tightened. **Inspect lid after application to confirm it is properly seated.**



Illustration 6



Illustration 8



**MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC. UN/DOT
PACKAGING FOR HAZARDOUS SOLIDS/LIQUIDS**

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To meet UN/DOT Standards, this package must be properly closed for shipment. At the time of transfer, the packaging does not meet the UN standard because it is disassembled. Only when assembled as specified in the closure instructions below, and using the components described herein, is this packaging certified to meet the UN standard. Failure to follow the closure instructions or substituting package components with components other than those identified in the following paragraph will render the UN/DOT Certification invalid.

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THESE CLOSURE INSTRUCTIONS REMAIN IN EFFECT UNTIL FURTHER NOTICE.

**CLOSURE INSTRUCTIONS FOR:
Life Latch® Square Containers****Identification of Packaging:**

This packaging type is identified by:

Pail Size (gallons)	Pail Mold Number	Lid Mold Number	Lid length (ref only, measured at top of lid, not including lift ledge)	Lid Width
4.0	19423	19424	11.75"	10"
5.0	20447	19424	11.75"	10"
6.5	20952	19424	11.75"	10"

UN Markings for Life Latch® Square Containers:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries Life Latch® Square containers are listed below.

Pail Size (gallons)	UN Mark	Lid	Certified for
4.0	1H2/Y15/S	NA	Solids only
5.0	1H2/Y23/S	NA	Solids only
6.5	1H2/Y25/S	NA	Solids only

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Specifically, the following items pertain to the Life Latch® Square containers:

1. Life Latch® Square containers are certified to the UN/DOT performance oriented packaging standards and are marked with the appropriate UN markings on the container.
2. The Life Latch® Square pail must always be used with the correct Life Latch® Square lid in order to meet the UN/DOT performance oriented packaging standards.
3. **Life Latch® Square containers are not UN certified for air transportation.**

CLOSURE INSTRUCTIONS FOR PLASTIC LINERS INSIDE OF Life Latch® Square PAIL.

1. Place the correct liner inside the Life Latch® Square Pail fill with product.

Pail Size	Liner Thickness	Liner Measurements
4.0	NA	NA
5.0	.006 mil	13 x 10.25 x 32
6.5	.006 mil	13 x 10 x 37.5

2. Twist the liner at the top and place a Zip Tie around the liner.
Zip Tie Specs: Tensile 40#, Length 8.9", Width .142" Color: Natural, Thickness .05".

A. CLOSURE INSTRUCTIONS FOR THE Life Latch® Square PAIL AND LID:

1. Rubber mallet (minimum 16 oz.)

- a. Center the lid on the pail by hand so that all four corners of the lid are aligned with the corners of the pail. (Figure A).

Figure A



- b. Hammer the cover into place with the rubber mallet by striking the cover in the corners of the cover's outer ring (Figure 1). Strike cover until it snaps onto the rim of the pail. For best results, strike all four corners and then strike at 12 o'clock position, 3 o'clock and 9 o'clock and then on each side of the trigger. (Figure 2)



Figure 1



Figure 2

- c. Continue to hammer the cover into place all the way around the outer ring, until the cover is evenly seated all the way around the pail.
2. **Pneumatic press with six" cylinder – 4, 5 and 6.5 gallon sizes (Figure B),**
 - i. Adjust downward stroke of top plate so that it goes beyond pail rim by 1/16-1/8"
 - ii. Center the pail and lid under the press.
 - iii. Apply a minimum of 80 psi from a regulated air supply to the lid listening for a defining snap.
 - iv. Inspect lid after application to confirm it is properly seated.

Figure B: Pneumatic Press



- d. **Inspect lid after application to confirm it is properly seated.**

Properly seated Square lid (Even, fully seated):

Life Latch® Square Container

November 9, 2015



Revision History

Rev.	Description of Change(s)	Written by:	Approved by:	Date:
0	Initial Release	T Nunley	S Blevins	Feb 2 , 2014
1	Added Pneumatic press instructions	T Nunley	TN Iker	Nov 9, 2015



**MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC. UN/DOT
PACKAGING FOR HAZARDOUS SOLIDS/LIQUIDS**

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THESE CLOSURE INSTRUCTIONS REMAIN IN EFFECT UNTIL FURTHER NOTICE.

CLOSURE INSTRUCTIONS FOR:

Lite Latch ® Containers

Identification of Packaging: This packaging type is identified by:

Gallon Size	Lite Latch Pail mold numbers	Corresponding Lite Latch Lid mold numbers	Lid diameter (ref only, measured at base of lid)
1.0 gallon	12583, 12588	12584, 12589	
2.0 gallon	12610, 12611	12608, 12609	
2.5 Gallon	12681	12608, 12609	
3.0 Gallon	12428, 12429	11554, 11947, 12294, 12295, 12430, 12431, 12607, 12678, 12679, 12688	
3.5 Gallon	11552, 11945, 12384, 12534	11554, 11947, 12294, 12295, 12430, 12431, 12607, 12678, 12679, 12688	12.84"
5.0 Gallon	11553, 11946, 12427	11554, 11947, 12294, 12295, 12430, 12431, 12607, 12678, 12679, 12688	12.84"
6.5 Gallon	11999, 12000, 12385, 12533	11554, 11947, 12294, 12295, 12430, 12431, 12607, 12678, 12679, 12688	12.84"

UN Markings for Lite Latch ® Containers:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries **Lite Latch** ® containers are listed below.

Container Size	UN Rating
3.5 Gallon Lite Latch	1H2/Y19/S
5.0 Gallon Lite Latch	1H2/Y25/S
6.5 Gallon Lite Latch	1H2/Y30/S

NOTE: Lite Latch ® containers are UN certified for solids only, using **NON-GASKETED** lids.

In accordance with the U.S. Department of Transportation's Title 49CFR, Section 178.2, manufacturers of U.N. Standard/DOT Specification packages are required to notify in writing each person to whom that packaging is transferred of all requirements in this part not met at the time of transfer, and with information specifying the type(s) and dimensions of the closures, including gaskets and any other components needed to ensure that the packaging is capable of successfully passing the applicable performance tests. This information must include any procedures to be followed, including closure instructions for inner packagings and receptacles, to effectively assemble and close the packaging for the purpose of preventing leakage in transportation.

Specifically, the following items pertain to the **Lite Latch** ® containers:

- **Lite Latch** ® containers are certified to the UN/DOT performance oriented packaging standards and are marked with the appropriate UN markings on the container.
- The **Lite Latch** ® pail must always be used with the correct **Lite Latch** ® lid in order to meet the UN/DOT performance oriented packaging standards.
- **Lite Latch** ® containers **are not** UN certified for liquids.

CLOSURE INSTRUCTIONS FOR SOLIDS:

Packaging Components required:

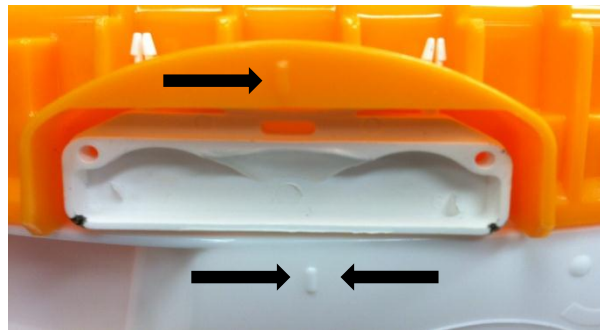
- Appropriately marked UN/DOT certified M & M Industries pail
- Matching lid size with trigger attached, non-gasketed

All sizes, NON-GASKETED lid:

To close, seat lid on top of pail. Rotate lid clockwise until the line on the lid above the trigger is located to the left of the mark on the side of the pail (see Ill 1). Continue rotating until the lid is fully tightened.

Inspect lid after application to confirm it is properly seated.

Illustration 1 – Line on lid is located to left of line on pail when lid is fully tightened.



Revision History:

Original issue – September 11, 2014

PolyCube Closure Instructions

March 2015

Update July 23, 2015 / Update November 30, 2015 / Update December, 2015

Reviewed January 2016 / Update April 2017 / Update December 2017

Update September 2018 / Update December 2019 / Update June 2020 / Update September 2021

Pursuant to the requirements of the Department of Transportation in CFR 49 Part 178.2 (c), this is your notification of the closing method used for the containers sold to you. This method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested. If there is any question regarding proper closing methods, contact your local PolyCube salesperson or manufacturing facility. Retain this form for your records; Department of Transportation requires one year retention of this record (CFR49.178.2 (c) (2)).

PRIOR TO CLOSING ALL PACKAGES BELOW:

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 and in good condition.

70MM SCREW CAP TYPES:

Regulated PolyCube containers have been designed and tested to accept the following Calico Closures as well as all acceptable “like” substitution closures as defined in the Department of Transportation Title 49 CFR; Performance Oriented Packaging Standards Section 178 such as Rieke / Tri-Sure / IPCC : 70 -6MM, 70-8MM

TO CLOSE:

- 1) With the cap in good condition and gasket properly seated, apply the cap by hand, by pressing cap down over the neck finish and rotating in a clockwise rotation to engage cap to neck finish threads.
- 2) Once thread engagement is started, tighten to 15 foot pounds using a calibrated and proper torque wrench with a proper fitting cap adapter.

60-61MM SCREW CAP TYPES:

Regulated PolyCube containers have been designed and tested to accept the following Tri-Sure Closures as well as all acceptable “like” substitution closures as defined in the Department of Transportation Title 49 CFR; Performance Oriented Packaging Standards Section 178: 60MM, 61MM

TO CLOSE:

- 1) With the cap in good condition and gasket properly seated, apply the cap by hand, by pressing cap down over the neck finish and rotating in a clockwise rotation to engage cap to neck finish threads.
- 2) Once thread engagement is started, tighten to 20 foot pounds using a calibrated and proper torque wrench with a proper fitting cap adapter

CRIMP CLOSURE TYPES:

Regulated PolyCube containers have been designed and tested to accept the following Rieke and acceptable “like” substitution closures as stated in the Department of Transportation Title 49 CFR; Performance Oriented Packaging Standards Section 178: FS10-6-300 Flex Spout Crimp On Closure

TO CLOSE: The Rieke Closure mentioned above is a Crimp On style closure that requires the use of a Rieke FS-600 Manual Crimp Tool, or a Rieke IAFS-600 Pneumatic Crimp tool to properly crimp the closure.

- 1) With the cap in good condition, apply the cap by hand, by pressing cap down over the neck finish evenly and flat.
- 2) Place the Crimp Tool over the closure and with an even downward pressure.
- 3) If using the FS-600 Manual Crimp tool, push the crimping levers of the crimp tool down and crimp the closure to the container. If using the IAFS-600 Pneumatic Crimp tool, push the trigger button on the unit to crimp the

closure to the container. Be sure not to cock the closure on the neck of the container. This will result in an insufficient seal.

- 4) Inspect the closure after crimping to ensure it was properly crimped under the locking bead of the neck finish. If the closure has been crimped across or over the locking bead, it has an improper crimp.
- 5) If an improper crimp occurs, the locking bead on the neck will most likely be damaged. PolyCube recommends that a container which has been improperly crimped not be used and should be discarded.

2 INCH BUTRESS INTERNAL TYPES:

Regulated PolyCube containers have been designed and tested to accept the following Rieke Closure as well as all acceptable “like” substitution closures as defined in the Department of Transportation Title 49 CFR; Performance Oriented Packaging Standards Section 178 such as TriSure : **EPDM GASKET**

TO CLOSE:

- 1) With the plug in good condition, gasket properly seated and the cap and neck threads dry, apply the cap by hand, by pressing cap down into the neck and rotating in a clockwise rotation to engage plug to neck finish threads.
- 2) Once thread engagement is started, tighten to 20 foot pounds using a calibrated and proper torque wrench with a proper fitting cap adapter.

OPEN VENT STEM CLOSURE TYPES:

Regulated PolyCube containers have been designed and tested to accept the following BeriCap Closure as well as all acceptable “like” substitution closures as defined in the Department of Transportation Title 49 CFR; Performance Oriented Packaging Standards Section 178 :

Open Vent System BeriCap - TO CLOSE:

- 1) With the cap in good condition and gasket properly seated, apply the cap by hand, by pressing cap down over the neck and rotating in a clockwise rotation to engage cap to neck finish threads.
- 2) Once thread engagement is started, tighten to 3.5 foot pounds using a calibrated and proper torque wrench with a proper fitting cap adapter. **

**** For containers with 2 inch internal buttress type closures the torque requirement is 4 foot pounds****

CLOSED VENT SYSTEM: Come with a standard white vent cap. The design is certified with or without the white vent cap provided the vent stem is factory sealed as a closed vent system sometimes referred to as a membrane. Once the closed vent is punctured the Cube is no longer suitable for HAZMAT shipments.

55 - 30 Gallon Open Head

TO CLOSE:

- 1) Place cover on drum.
- 2) Firmly apply downward pressure on the lid to snap the cover into the drum opening.
- 3) Snap the closing ring over the cover and top lip of drum. Make sure that the writing on the closure lever is right side up. Also make sure that the bottom edge of the closing ring engages under the top lip of the drum.
- 4) Pull the locking lever closed, at the same time, tap the outside edge of the closing ring, beginning directly opposite the closing lever, with a rubber mallet until the lever is fully closed against the edge of the ring.
- 5) Snap the latch into the lever until it locks.
- 6) Drums closed in this manner meet the UN performance test requirements as specified in the container markings.
- 7) Covers with bung openings must be torqued as follows: 2 inch to 20 foot pounds and the ¾ inch to 3 foot pounds.



Closing Instructions

The instructions provided herein are to be used with UN marked plastic tight head drums (UN 1H1) and jerricans (UN 3H1) that are in compliance with the US Department of Transportation's hazardous material regulations. This falls under the Title 49 Code of Federal Regulations, in accordance with subsection 178.2 (c).

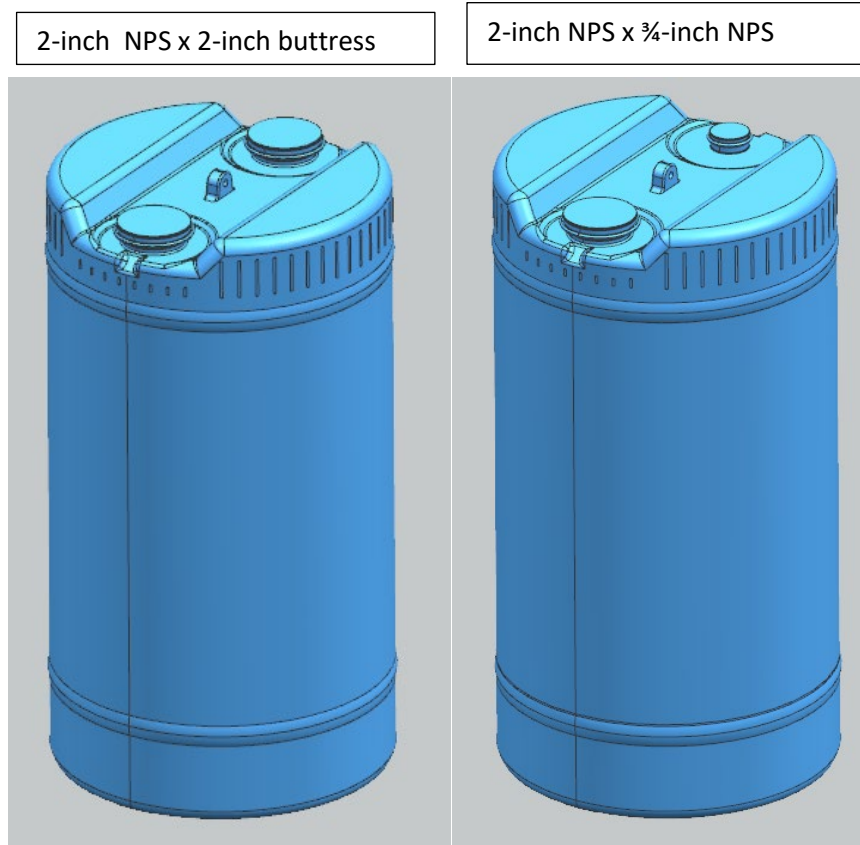
It is the obligation of the filler to use and follow these closure instructions to ensure that the product meets required UN markings and performance. Only when assembled in the manner below are these packages certified to meet the UN marking provided.

Purpose:

When following these instructions, the purpose of these closure instructions is to ensure that the UN container, with required fittings, are properly applied to the UN marked plastic drum or jerrican.

Drums:

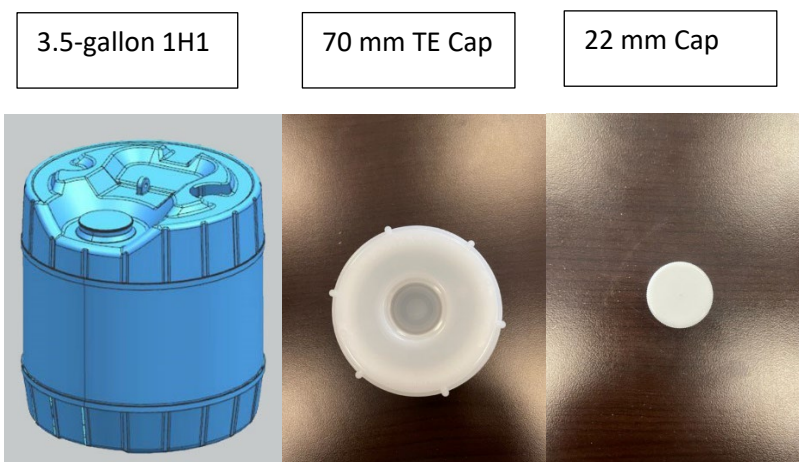
UN 1H1 tight head 15-gallon plastic drums



Procedure:

1. Inspect all threads on the plugs (NPS = fine thread, buttress = coarse thread). They must be clean, dry, and free of defects.
2. Inspect the gaskets on the plugs. They must be clean, dry, and free of tears or other defects.
3. Inspect the flanges (the threaded parts of the drum). The threads should be clean, dry, fully formed, and free of defects.
4. Turn the plug clockwise by hand to engage the threads and continue to “finger tight” making sure the threads are engaging and not cross threading. Attach appropriate adjustable or preset drum plug wrench and continue tightening to the following torque settings:
 - a. 2-inch NPS fine thread 20-25 ft-lbs.
 - b. 2-inch American buttress coarse thread 20 ft-lbs.
 - c. ¾-inch NPS fine thread 10 ft-lbs.
5. The plugs are tightened when the torque wrench makes an audible “click.” Do not tighten any further as the gaskets may be twisted or the plastic threads may be damaged.
6. Visually check the installation to verify the plugs are even in their flange and not loose or cross threaded.

UN 1H1 3.5 – 7.0 gallon plastic drums with 70 mm x 6 Tamper Evident screw caps and 22 mm vent caps



Procedure:

1. Inspect top of drum opening to ensure the sealing surface is smooth, clean, and free of debris or defects.
2. Inspect the 70 mm and 22 mm screw cap fittings to ensure the gaskets are installed properly and are not loose or torn.
3. Inspect the 70 mm and 22 mm screw cap fittings to ensure the fittings are clean and free of debris
4. Start installation of the Tri-Sure® 6TPI 70 mm screw cap fitting by hand, rotating the fitting in a clockwise direction. Ensure the fitting is being installed straight and does not cross-thread the drum threads. Continue to tighten as far as possible by hand.

5. Use a screw cap torque wrench to torque the fitting to 20 ft-lbs. The fitting is tight when an audible “click” or release is evident. Do not over tighten.
6. Rotate the 22 mm vent cap clockwise to “finger tight” Use a vent cap torque wrench to tighten to 1.7 ft-lbs. (20 in-lbs.)
7. Visually check the installation to verify the plugs are even in their flange and not loose or cross threaded

UN 1H1 3.5 – 7.0-gallon tight head drums with crimp-on spout fittings

UN 3H1 3.5 – 7.0- gallon square and rectangular jerricans with spout fittings

Procedure:

1. Inspect the top of the container and flange area to ensure the sealing surface is smooth, clean, dry, and free of defects and debris
2. Inspect the spout fitting to ensure it is clean, dry, and free of debris and defects.
3. Start the installation of the Rieke® spout fitting by hand, snapping the spout over the flange of the drum. Make sure the fitting is installed straight and alignment is square.
4. Use the only crimp on wrench supplied by the spout manufacturer. See Pictures below
 - a. Place the crimper securely and evenly (level) on the spout with the handles up as shown below.
 - b. In a firm even motion bring the handles down to crimp the spout to the drum.
5. Inspect the crimp to make sure the outer diameter of the spout has securely crimped around the flange of the container. It should look clean, flush, level and solid. There should be no gaps. The spout should not be able to be moved or rotated. If it can it is not crimped properly and should be rejected.

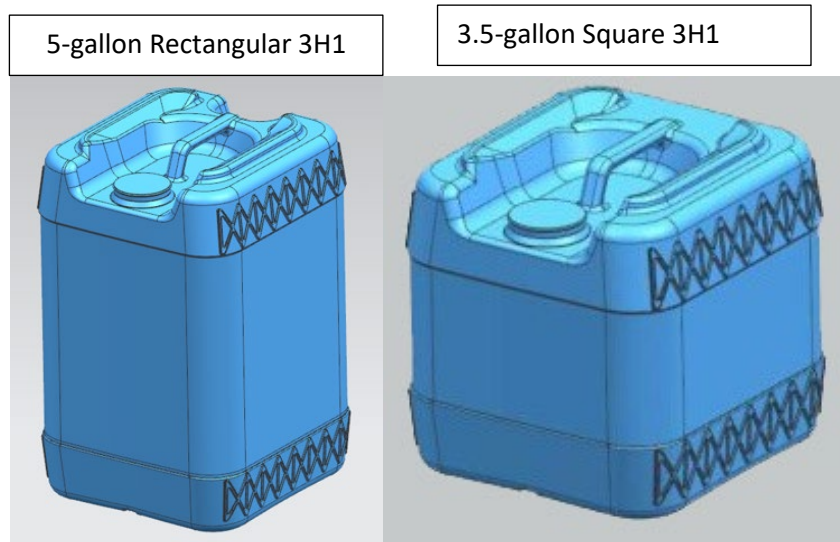
Rieke Spout and Crimper



TriSure Spout and Crimper



UN 3H1 square and rectangular 10 liter to 7-gallon tight head jerricans with Tamper Evident 70 mm closures with 22 mm vent caps and with no rear vent cap.



Procedure:

Note the closing instructions are the same for cross hatched jerricans as shown above and those without cross hatching

- 1. Inspect top of drum opening to ensure the sealing surface is smooth, clean, and free of debris or defects.**
- 2. Inspect the 70 mm and 22 mm screw cap fittings to ensure the gaskets are installed properly and are not loose or torn.**
- 3. Inspect the 70 mm and 22 mm screw cap fittings to ensure the fittings are clean and free of debris**
- 4. Start installation of the Tri-Sure® 6TPI 70 mm screw cap fitting by hand, rotating the fitting in a clockwise direction. Ensure the fitting is being installed straight and does not cross-thread the drum threads. Continue to tighten as far as possible by hand.**
- 5. Use a screw cap torque wrench to torque the fitting to 20 ft-lbs. The fitting is tight when an audible “click” or release is evident. Do not over tighten.**
- 6. Rotate the 22 mm vent cap clockwise to “finger tight” Use a vent cap torque wrench to tighten to 1.7 ft-lbs. (20 in-lbs.)**
- 7. Visually check the installation to verify the plugs are even in their flange and not loose or cross threaded**

Equipment-Available from drum supply houses, automotive supply, DIY centers and “Big-Box” Stores

Preset Torque Wrenches

Rieke 20 & 9 ft-lbs.



TriSure 20 & 9 ft-lbs.



Adjustable and Indicating Torque Wrenches

Adjustable w 70 mm cap adapter



Adjustable w 22 mm cap adapter





Metal Pails

CLOSING INSTRUCTIONS FOR PAILS

MANUAL CRIMPING TOOLS

Tool: Rieke FS-600 FLEXSPOUT Crimping Tool

(Rieke automatic crimp heads are approved, but their operation is not described herein)

1. Products

- a) FS-10-6 FLEXSPOUT
- b) FS-10-7 FLEXSPOUT
- c) FS-10-8V FLEXSPOUT
- d) FS-10-10 FLEXSPOUT
- e) FS-40 Poly-Flexcap
- f) FS-41 Poly-Flexcap – Retainer and diaphragm only
- g) PFA-22 3/4" Flange and plug assembly
- h) PFA-32 3/4" Flange and crimping ring only

2. Operation

- a) The closure is to be fully seated on the container opening.
- b) Place the FS-600 crimping tool over the closure, tool should rest on the container.
- c) Grasp the handles (one in each hand). Fully depress the handles applying even pressure on each handle to affect a full crimp.

3. Gauging

- a) Use the G-101-1 gauge to check the crimp. The gauge must pass freely over the crimped closure.

57 mm REL PLASTIC CLOSURE INSERTION

After the container is filled, place the closure in the opening and center it as closely as possible.

Apply downward force until the closure is fully seated. The closure will normally snap in with a distinct sound. Do not continue to apply force after the insertion is complete because this could result in damage to the opening.

After the closure has been inserted into the opening, there may be a need to remove the diaphragm and apply the screw cap. The application torque for the screw cap should be 20-25 inch pounds.

TFS-2 TINT PLUGS CLOSURE INSERTION

Apply downward force until the closure is fully seated. The closure will normally snap in with a distinct sound. Do not continue to apply force after the insertion is complete because this could result in damage to the opening or the tint plug. If removal of the tint plug is needed, inspect closure and lid surface area for obvious damage before reinsertion (replace any damage component). If none is found, the closure can be reinstalled by pushing in the center sump area and closure's rim.

DRUM FITTING APPLICATION TORQUE VALUES

Steel Plug with Visecar (Buna N)

2" 30 Foot Lbs.

1-½" 30 Foot Lbs.

¾" 15 Foot Lbs.

Steel Plug with Polyseal or Irradiated Polyseal

2" 40 Foot Lbs.

¾" 20 Foot Lbs.

Nylon or Plastic plug with White EPT or White Visecar

2" 30 Foot Lbs.

¾" 15 Foot Lbs.

Tri-Sure or Rieke Steel plug with Black Buna or EPDM gaskets

2" 30 Foot Lbs.

¾" 15 Foot Lbs.

SCREW NOZZLE AND ASSEMBLIES

Install inner seal if applicable by pressing firmly into the crevice of the nozzle.

The recommended application torque for 2-⅛" and 2-¼" inch screw nozzles is 80-100 inch pounds.

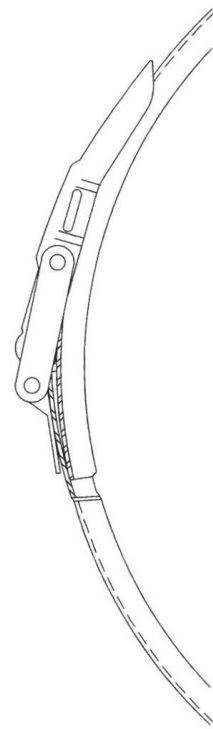
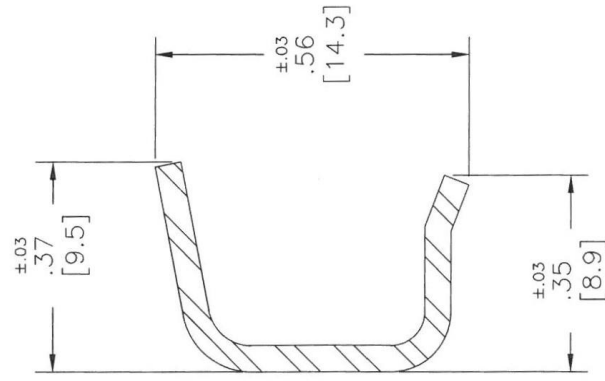
Thread-stripping can occur if the screw cap is over torqued.

OPEN HEAD PAILS WITH DISH COVER AND LEVER LOCK RINGS

1. Fill the container to the desired level. Do not exceed maximum gross mass or the rated fill volume.
2. Place the dish cover on top of the pail curl.
3. Select the proper lever lock ring for your application (solids-rated or liquid-rated).
4. Expand the lever lock ring to fit it over the circumference of the dish cover and pail curl, ensuring that the "up" arrow on the lever lock ring is oriented upward.
5. Apply tension to the lever lock ring so the ring is reduced in diameter, such that both the dish cover and the pail curl are encompassed by the lever lock ring.
6. Pull the lever on the lever lock ring to a closed position.
7. Secure the lever lock with a pin or zip tie through the opening in the lever to ensure that the ring will not come open.

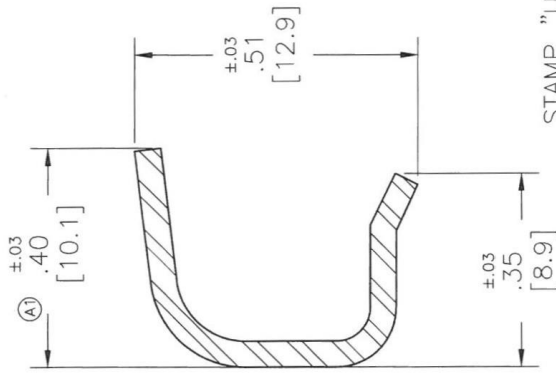
Lockband Specifications

Product #..... 09901009 AN285T4026RIEKE
 Description..... UN solid rated ring for 5-gallon steel
 Stock..... 18 Gauge
 Closed ID..... 11.78 ±.04 inches [299.3 ±1.0mm]
 Lever..... CHZT40AUPD010
 Coating..... Hot dip zinc galvanized



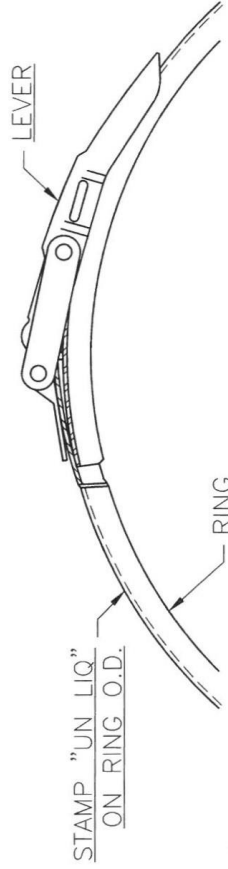
CUSTOMER DRAWING

Corporation — Auburn, Indiana				DETAIL NAME UN SOLID RATED RING FOR 5-GALLON STEEL	
TOOL ASSY. NAME		LOCKING BAND FOR STEEL DRUM		TOOL ASSY. NUMBER	
PRODUCT		09901009		TOOL ASSY. NUMBER	
DRAWING NUMBER		28002605		DETAIL NUMBER	
FOR		AUBURN		09901009	
MATERIAL		TEMPER			
CHANGE NUMBER		DATE		BY	
DRAWN BY		BNY			
CHECKED		DTE			
APPROVED		NTS			
DATE		3/12/10			
SCALE		NTS			
ANGLES		±1/4°			
HUNDRETH		±.015			
THOUSANDTH		±.002			



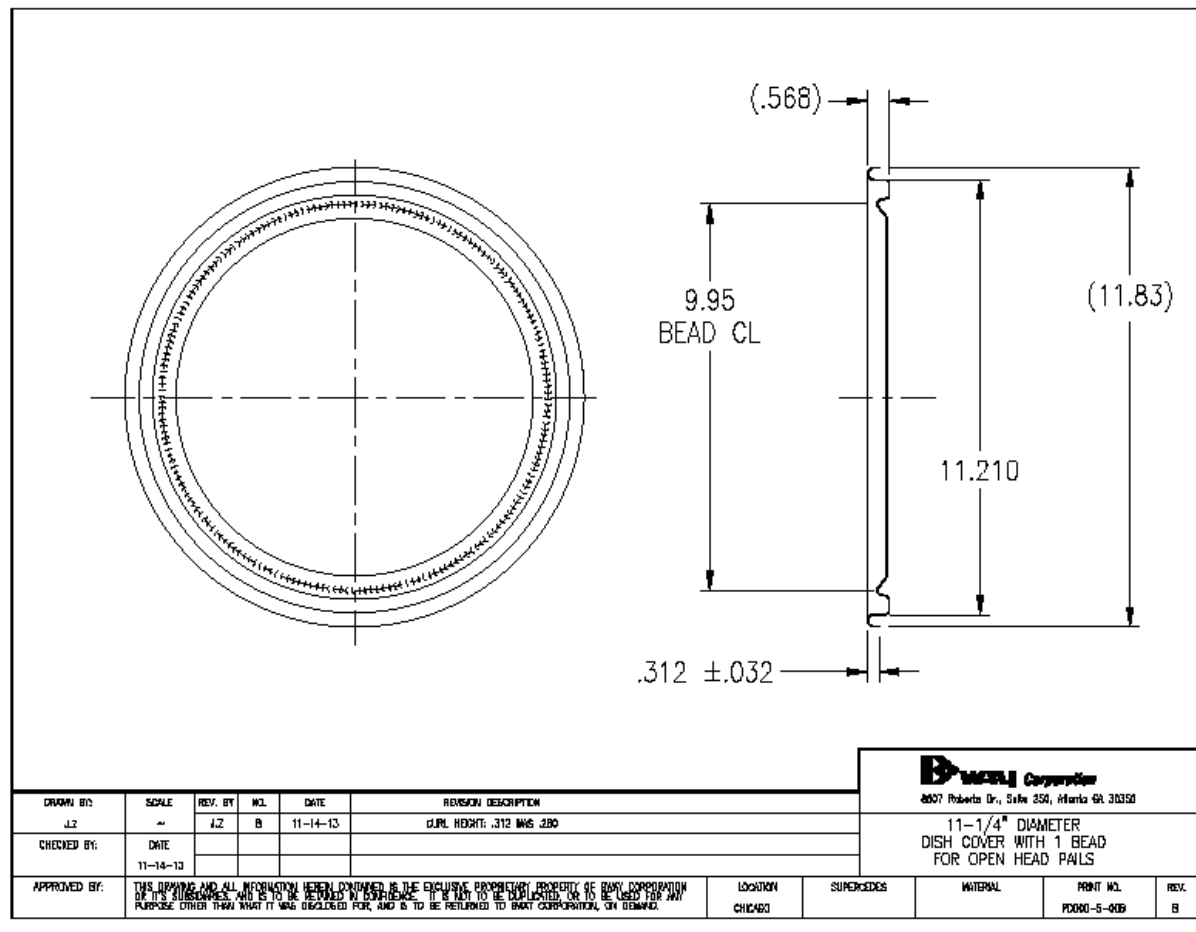
Lockband Specifications

Product #..... 09901002 ANZ285T40AD081A
 Description..... UN liquid rated ring for 5-gallon steel
 Stock..... 18 Gauge
 Closed ID..... 11.78 $\pm$.04 inches [299.3 $\pm$ 1.0mm]
 Lever..... CHZT40AUPD010
 Coating..... Hot dip zinc galvanized



CUSTOMER DRAWING

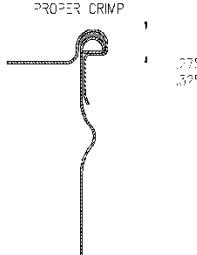
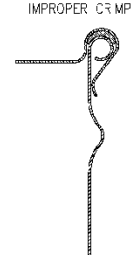
BREAK ALL SHARP EDGES UNLESS OTHERWISE SPECIFIED		DATE 10/1/09	DRAWN BY J. HESS	Rite-Hite® Corporation — Auburn, Indiana			
THE FOLLOWING TOLERANCES APPLY UNLESS OTHERWISE SPECIFIED:				DETAIL NAME UN LIQUID RATED RING FOR 5-GALLON STEEL			
ANGLES	±1/4°	SCALE NTS	CHECKED GMB			TOOL ASSY. NAME LOCKING BAND FOR STEEL DRUM	TOOL ASS'Y NUMBER 09901002
HUNDRETH	±.015		APPROVED			PRODUCT 09901002	DRAWING NUMBER 28001134
THOUSANDTH	±.002					FOR AUBURN	DETAIL NUMBER 09901002
				CHANGE NUMBER	A 1) WAS .43	DATE 01-10-14	BY JLH



OPEN HEAD PAILS WITH LUG COVER

1. Fill the container to the desired level. Do not exceed maximum gross mass or the rated fill volume.
2. Place the UN lug cover on top of the pail curl.
3. Align the eye of one lug over the welded side seam.
4. Lower the closer onto the cover such that the closer jaws are placed over the lugs covering the eyes on the lugs
5. Actuate the closer by pressing the pneumatic levers (pneumatic closer) or pushing the handles down until they stop (manual closer).
6. Remove the closer and ensure that the lugs are crimped under the curl of the pail at least 90° from the starting position.

Lug covers are available in 6½", 8½", and 11¼" diameters.

STEEL PAIL CLOSING INSTRUCTIONS

POSITION COVER ON PAIL. LOWER CLOSING TOOL LEVEL ACROSS THE COVER. MAINTAIN EVEN DOWNWARD PRESSURE DURING THE CRIMPING OPERATION. CRIMP DIMENSIONS MUST MEASURE BETWEEN .275/.325.



5607 Roberts Dr., Suite 250, Atlanta, GA 30350

DRAWN BY: CWS	SCALE: NONE	REV. BY: CWS	REV. NO: 1	DATE: 11/18/12	REVISION DESCRIPTION: BOLT RING CRIMP PROTECTIVE					
CHECKED BY: VTB	DATE: 2-18-99					PRODUCT DRAWING COVER CLOSURE CLOSING INSTRUCTIONS				
APPROVED BY: VTB						LOCATION: 75-3-585	SUPERVISOR: 75-3-585	MATERIAL: 	PART NO. PD005-4-001	REV.

LET'S REMEMBER: ALL INFORMATION ON THIS DRAWING IS THE PROPERTY OF B-WAY CORPORATION. IT IS TO BE USED ONLY FOR THE PURPOSES SPECIFIED HEREON. IT IS NOT TO BE REPRODUCED OR USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF B-WAY CORPORATION. ON ORDER.

OPEN HEAD PAIRS WITH LUG COVER AND BOLT RING

1. Follow the crimping process for "open head pails with lug cover" as described in these instructions.
2. Orient the bolt ring eyes to be below the crimp and opposite the welded side seam.
3. Place the bolt ring on the crimp, making sure to cover the circumference of the crimp with the bolt ring.
4. Slide the bolt through the unthreaded bolt eye to the threaded bolt eye.
5. Tighten the bolt to 50 in-lb.

Bolt Ring for 11 1/4" diameter pail, item # BRT-CD-KDC

Self Industries

3491 Mary Taylor Rd

Birmingham, AL 35235

(205) 655-3284

Use 5/16"x3-1/2" bolt



Tri-Sure Drum Fitting Closing Instructions

CSC Form # QA-FM-L256

Rev. 5

Date 10/20/10

Manual Hand Tool:

- I. Place the fitting on the top of the container in the threaded opening.
- II. Start turning the fitting to the right, till the threads have started to engage.
- III. Finish installing the fitting with the manufacturers suggested wrench.
- IV. Make sure that the fitting is tightened to the proper specification. (see chart below.)

Pneumatic Hand Tool:

- I. Place the fitting on the top of the container in the threaded opening.
- II. Start turning the fitting to the right, till the threads have started to engage.
- III. Finish installing the fitting by using the pneumatic tool.
- IV. Make sure that the fitting is tightened to the proper specification. (see chart below.)

2" Plugs

<u>Gasket Material</u>	<u>Plastic Plug</u>	<u>Steel Plug</u>	<u>Oven Temp</u>
Black Buna	20 ft-lbs	30 ft-lbs	450 F
White Buna	20 ft-lbs	30 ft-lbs	450 F
Irradiated L. D. Polyethylene	20 ft-lbs	30 ft-lbs	375 F
L. D. Polyethylene	20 ft-lbs	30 ft-lbs	120 F
Dapon	20 ft-lbs	30 ft-lbs	450F
E.P.T	20 ft-lbs	30 ft-lbs	450 F
White EPT	20 ft-lbs	30 ft-lbs	450 F

3/4" Plugs

Black Buna	9 ft lbs	15 ft lbs	450 F
White Buna	9 ft lbs	15 ft lbs	450 F
Irradiated L. D. Polyethylene	9 ft lbs	15 ft lbs	375 F
L. D. Polyethylene	9 ft lbs	15 ft lbs	120 F
Dapon	9 ft lbs	15 ft lbs	450 F
E.P.T	9 ft lbs	15 ft lbs	450 F
White EPT	9 ft lbs	15 ft lbs	450 F

Signature: _____





Rieke Tite-Grip and Vice-Grip Drum Fitting Closing Instructions

CSC Form # QA-FM-L255

Rev. 4

Date 10/20/10

Manual Hand Tool:

- I. Place the fitting on the top of the container in the threaded opening.
- II. Start turning the fitting to the right, till the threads have started to engage.
- III. Finish installing the fitting with the manufacturers suggested wrench.
- IV. Make sure that the fitting is tightened to the proper specification. (see chart below.)

Pneumatic Hand Tool:

- I. Place the fitting on the top of the container in the threaded opening.
- II. Start turning the fitting to the right, till the threads have started to engage.
- III. Finish installing the fitting by using the pneumatic tool.
- IV. Make sure that the fitting is tightened to the proper specification. (see chart below.)

2" Plugs

<u>Gasket</u>	<u>Material</u>	<u>Plastic Plug</u>	<u>Steel Plug</u>	<u>Oven Temp</u>
G-43	Black Buna	20 ft-lbs	30 ft-lbs	450 F
G-43w	White Buna	20 ft-lbs	30 ft-lbs	450 F
G-73-2	L. D. Polyethylene	20 ft-lbs	30 ft-lbs	120 F
G-73-3	Irradiated L. D. Polyethylene	20 ft-lbs	30 ft-lbs	375 F
G-83	Dapon	20 ft-lbs	30 ft-lbs	450 F
G-93	E.P.T	20 ft-lbs	30 ft-lbs	450 F
G-93w	White EPT	20 ft-lbs	30 ft-lbs	450 F

¾" Plugs

G-41	Black Buna	9 ft lbs	15 ft lbs	450 F
G-41w	White Buna	9 ft lbs	15 ft lbs	450 F
G-71-2	L. D. Polyethylene	9 ft lbs	15 ft lbs	120 F
G-71-3	Irradiated L. D. Polyethylene	9 ft lbs	15 ft lbs	375 F
G-81w	Dapon	9 ft lbs	15 ft lbs	450 F
G-91	E.P.T	9 ft lbs	15 ft lbs	450 F
G-91w	White EPT	9 ft lbs	15 ft lbs	450 F

Signature: _____





Document ID: UN1A1-Y1.6-170 6-20-13 Certification.doc

Approved Certification

June 20, 2013

The sample containers tested have satisfied the testing requirements and are in conformance with the United Nations/DOT, IATA, ICAO and IMO packaging regulations and are eligible to bear the following markings required by 49CFR, section 178.601.

Package Marking:



1A1/Y1.6/150/13

USA/M4121(Homerville), M4071(Chicago),M5380(North Brunswick)

Alternative Marking:

1A1/Y1.5/170/13

USA/M4121(Homerville), M4071(Chicago),M5380(North Brunswick)

Packaging Description

5.0 Gallons (18.93 l.) or lower capacities are valid under this certification. 28 Gauge Tapered Body, 26 Gauge Bottom, 24 Gauge Top.

Closures

Rieke FS-10 – crimped per Rieke Corporation instructions

2 1/4" Screw nozzle & cap, torqued to 80-100 in.-lbs.

2-1/8" Screw nozzle & cap, torqued to 80-100 in.-lbs.

Packaging Performance Tests

All tests were done in accordance with 49 CFR , Subpart M – Testing of Non-bulk Packagings and Packages.

<u>Test</u>	<u>Spec</u>	<u>Test Level</u>	<u>Result</u>
Drop Test	paragraph 178.603	1.6 meters	pass
Leakproofness Test	paragraph 178.604	20 kPa	pass
Hydrostatic Pressure Test	paragraph 178.605	170 kPa	pass
Stack Test	paragraph 178.606	3 meters	pass
Vibratory Standard	paragraph 178.608	1 hour	pass

All tests were performed at the Garland manufacturing facility. A copy of this test report can be provided upon request.

A handwritten signature in cursive script, reading 'Harold DePriest'.

Harold DePriest
Technical Service Engineer

RIEKE CUSTOMER SERVICE REPORT

Subject: Crimping Tools

MANUAL CRIMPING TOOLS

Tool: FS-600 FLEXSPOUT Crimping Tool

Products

FS-10-6	FLEXSPOUT
FS-10-7	FLEXSPOUT
FS-10-8V	FLEXSPOUT
FS-40	Poly-Flexcap
FS-41	Poly-Flexcap- Retainer and diaphragm only
PFA-22	¾" Flange and plug assembly
PFA-32	¾" Flange and crimping ring only

Operation

The closure is to be fully seated on the container opening. Place the FS-600 crimping tool over the closure, tool should rest on the container. Grasp the handles (one in each hand). Fully depress the handles applying even pressure on each handle to affect a full crimp.

Gauging

Use the G-101-1 gauge to check the crimp. The gauge must pass freely over the crimped closure.

SCREW NOZZLE AND ASSEMBLIES

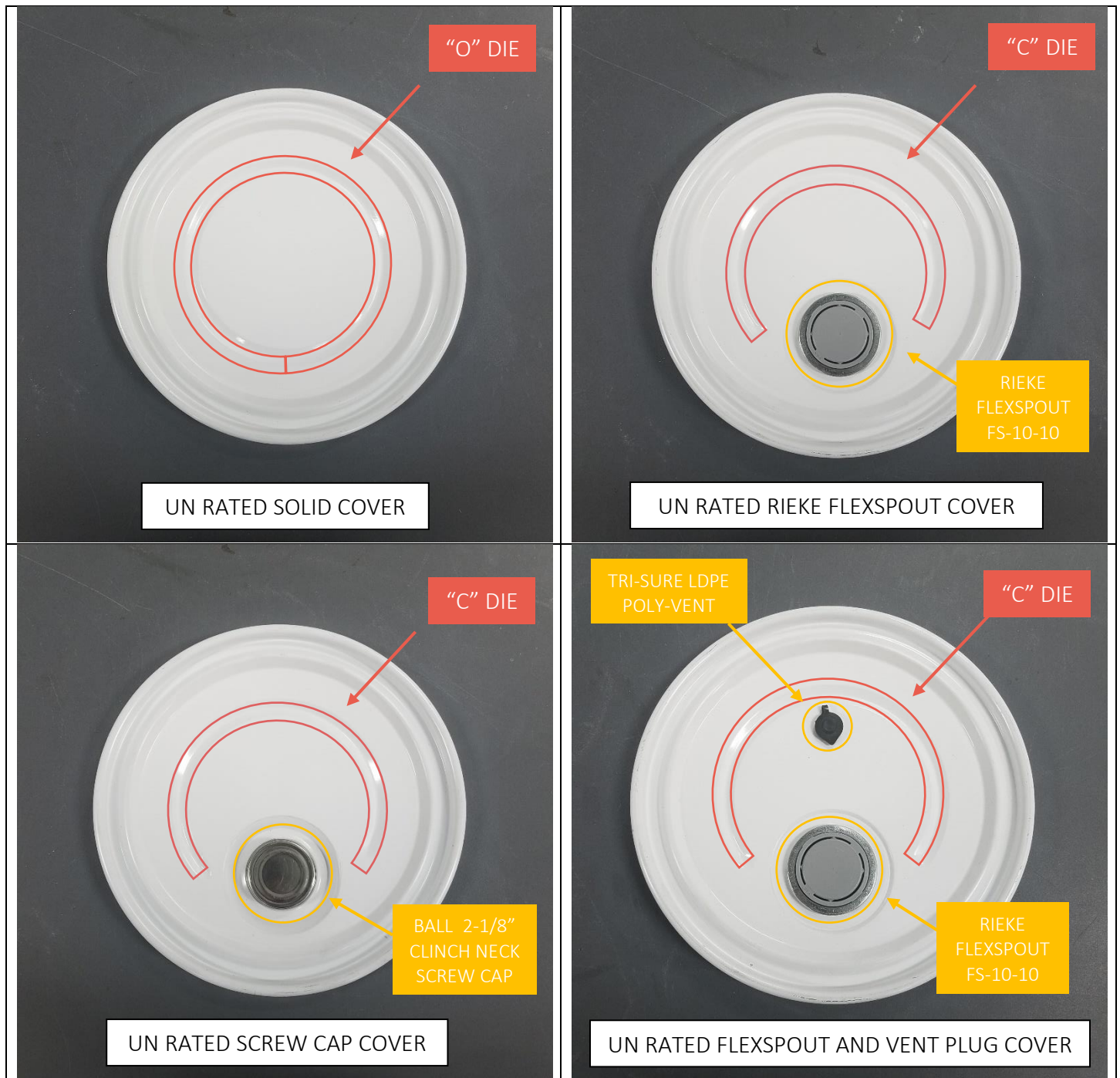
The recommended application torque for 2-1/8 and 2-1/4 inch screw nozzles is 40-60 inch pounds. Thread-stripping can occur if the screw cap is over torque.

UN CLOSING INSTRUCTIONS

UN Rated Open Head Covers

Unican manufactures different style covers for UN rated and Non-UN rated drums. It is important to understand the difference. All UN covers feature a "C" or "O" indentation. Below describes how to correctly identify UN rated Unican Open Head Drum Covers and the various fitments.

RATING WILL BE VOID IF FILLER DOES NOT USE THE CORRECT LID AND DRUM COMBINATION. IT IS UP TO THE FILLER TO ENSURE THIS COMBINATION IS CORRECT.



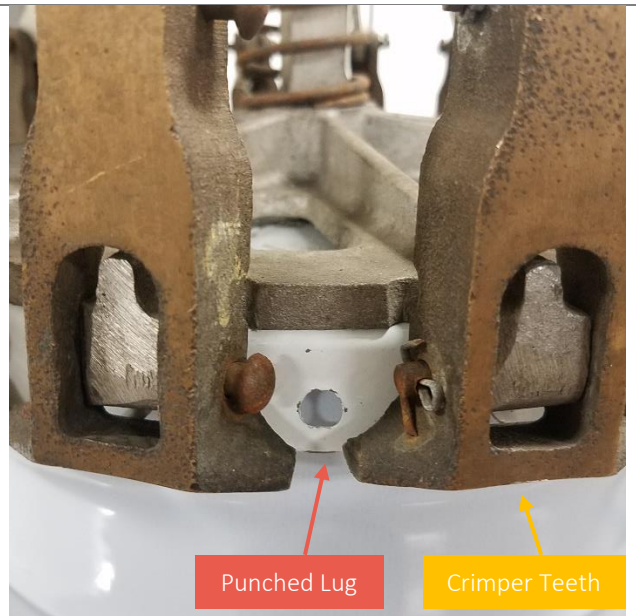
UN CLOSING INSTRUCTIONS

Open Head Drums (2.5 Gallon – 6 Gallon)

Process	Instruction
Fill drum and apply the cover.	1. Fill the drum to the appropriate volume. 2. Locate and position the UN rated cover on top of the drum. 3. Open head covers can be placed on sizes ranging from 2.5-gallon to 5.3-gallon depending on the certification. * Potential UN Open Head Fitments: • FS-10-10 Rieke Flexspout ** • 2-1/8" Clinch Neck with 2-1/8" innerseal and 2-1/8" cap (Yellow Silite liner) • Tri-sure LDPE Polly-Vent TSB-3000006 with Diaphragm *Contact Customer Sales Rep. to ensure rating is covered at desired volume. **Pictured in image to right.



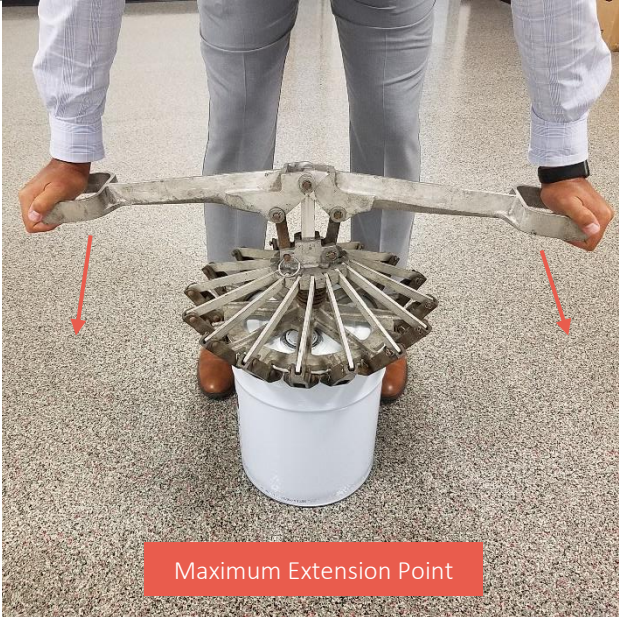
Process	Instruction
Place crimper on cover and align.	4. Place the 16-lug steel drum crimper on top of the drum. 5. Align the crimper so the punched lugs are between the teeth of the crimper. 6. Firmly grab the crimper handles and prepare to apply downward pressure.



UN CLOSING INSTRUCTIONS

Open Head Drums (2.5 Gallon – 6 Gallon)

Process	Instruction
Crimp the open head drum.	7. Apply downward pressure to the crimper, moving the handles toward the floor. 8. Push the handles down until the crimper reaches its maximum extension point. 9. Return the crimper to the starting position. * *NOTE: Often a pneumatic/automated crimper is used to close the drums. Regardless of which closing device is utilized, the resulting crimp must be the same (described in steps 12 and 13).

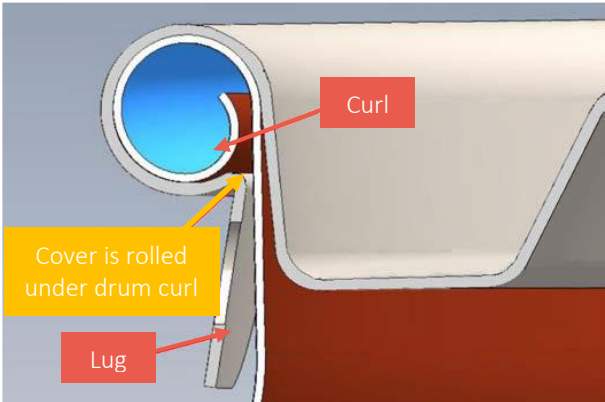


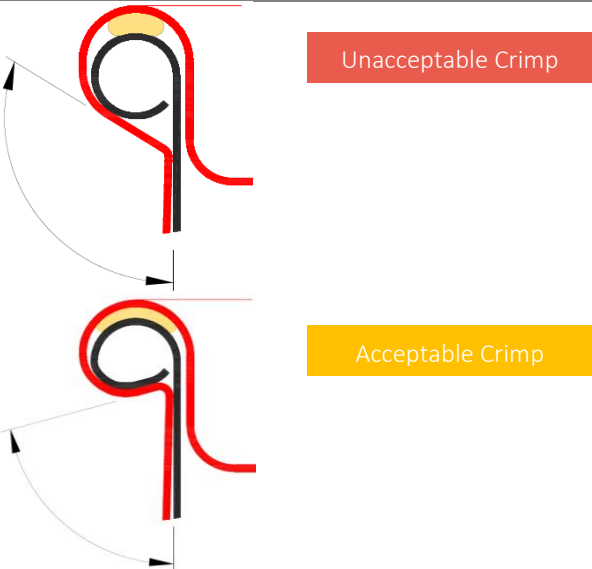
Process	Instruction
Crimp the open head drum.	10. Rotate the crimper head so that the crimper teeth are over the punched lugs. 11. Repeat steps 7 through 9.



UN CLOSING INSTRUCTIONS

Open Head Drums (2.5 Gallon – 6 Gallon)

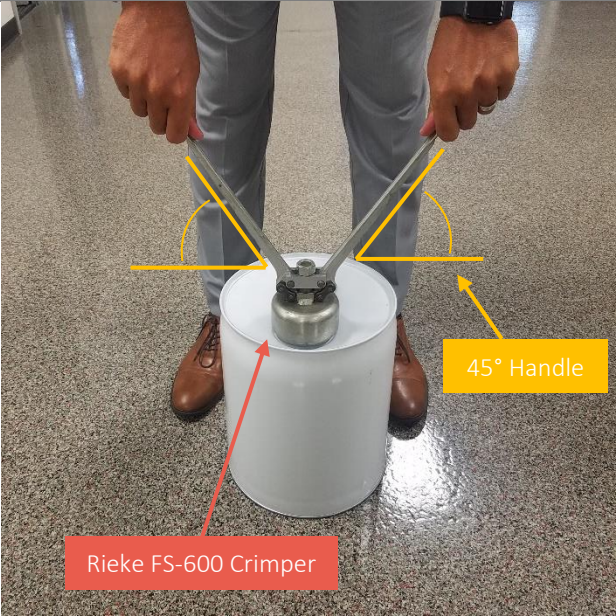
Process	Instruction
Ensure proper crimp.	12. Analyze the crimp to ensure the lug of the cover is properly applied under the drum curl. 

Process	Instruction	Image
Acceptable crimp analysis.	13. To ensure the cover is properly closed on the open head drum, please use the diagram to the right. If the crimp is deemed acceptable, the drum is officially closed and ready for shipment.	

UN CLOSING INSTRUCTIONS

Tight Head Drums w/ Rieke Flexspout (2.5 Gallon – 6 Gallon)

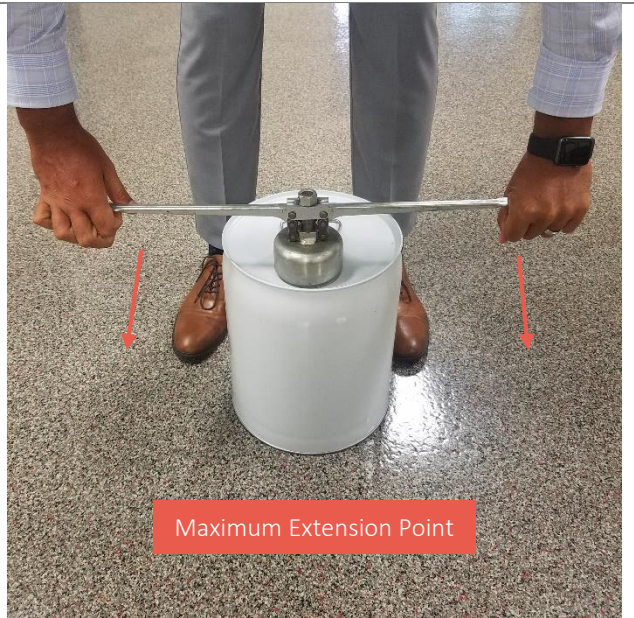
Process	Instruction	
Fill and apply the Flexspout.	1. Fill the drum to the appropriate volume. 2. Place Rieke Flexspout (FS-10-10) on the punched hole.	

Process	Instruction	
Crimp and seal the Flexspout.	3. Place the Flexspout crimper (FS-600) evenly over top of the Rieke Flexspout 4. Firmly grab the handles and prepare to apply downward pressure. The handles should be in a resting position at around 45°.	

UN CLOSING INSTRUCTIONS

Tight Head Drums w/ Rieke Flexspout (2.5 Gallon – 6 Gallon)

Process	Instruction
Crimp and seal the Flexspout.	5. Apply downward pressure to the crimper, moving the handles toward the floor. 6. Push the handles down until the crimper reaches its maximum extension point. 7. Return the crimper to the starting point.* 8. Rotate the crimper slightly (around 25 degrees) and crimp again (repeat steps 5 through 7). *NOTE: Often a pneumatic/automated crimper is used to close the drums. Regardless of which closing device is utilized, the resulting crimp must be the same (described in steps 9 and 10).



Process	Instruction
Acceptable crimp analysis.	9. A Rieke GO-NO GO gauge (G-101-1) is used to analyze the efficacy of the crimp. Start by placing the gauge on top of the Flexspout. * 10. Move the gauge across the Flexspout. The gauge should move freely across without pinching. If the gauge can slide across the crimp without interference, it is considered an acceptable crimp. If the crimp is deemed acceptable, the drum is officially closed and ready for shipment. *Contact Rieke® Corporation, or your Unican Sales Representative, to obtain this gauge.



UN CLOSING INSTRUCTIONS

Tight Head Drums w/ Rieke Flexspout and Rieke Vise Grip (2.5 Gallon – 6 Gallon)

Process	Instruction
Fill and apply the Flexspout and ViseGrip.	1. Fill the drum to the appropriate volume. 2. Place Rieke Flexspout (FS-10-10) in the punched hole. 3. Place the Rieke ViseGrip (S-250 VISEGRIP® II BLACK BUNA) in the threaded hole.



Threaded Hole

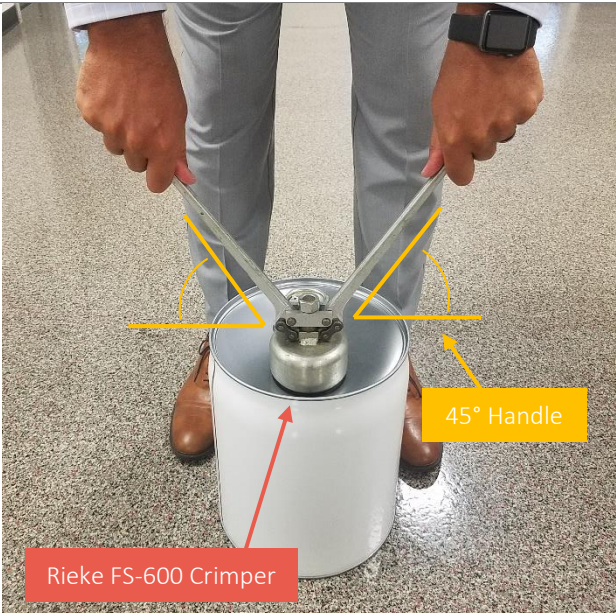
WISEGRIP S-250 II



Punched Hole

Flexspout FS-10-10

Process	Instruction
Crimp and seal the Flexspout.	4. Place the Flexspout crimper (FS-600) evenly over top of the Rieke Flexspout 5. Firmly grab the handles and prepare to apply downward pressure. The handles should be in a resting position at around 45°.



45° Handle

Rieke FS-600 Crimper

UN CLOSING INSTRUCTIONS

Tight Head Drums w/ Rieke Flexspout and Rieke Vise Grip (2.5 Gallon – 6 Gallon)

Process	Instruction
Crimp and seal the Flexspout.	6. Apply downward pressure to the crimper, moving the handles toward the floor. 7. Push the handles down until the crimper reaches its maximum extension point. 8. Return the crimper to the starting point.* 9. Rotate the crimper slightly (around 25 degrees) and crimp again (repeat steps 5 through 7). *NOTE: Often a pneumatic/automated crimper is used to close the drums. Regardless of which closing device is utilized, the resulting crimp must be the same (described in steps 10 and 11).



Process	Instruction
Acceptable crimp analysis.	10. A Rieke GO-NO GO gauge (G-101-1) is used to analyze the efficacy of the crimp. Start by placing the gauge on top of the Flexspout. * 11. Move the gauge across the Flexspout. The gauge should move freely across without pinching. If the gauge can slide across the crimp without interference, it is considered an acceptable crimp. If the crimp is deemed acceptable, the Rieke Flexspout has been officially applied. Next the Rieke VISEGRIP must be properly closed. *Contact Rieke® Corporation, or your Unican Sales Representative, to obtain this gauge.



UN CLOSING INSTRUCTIONS

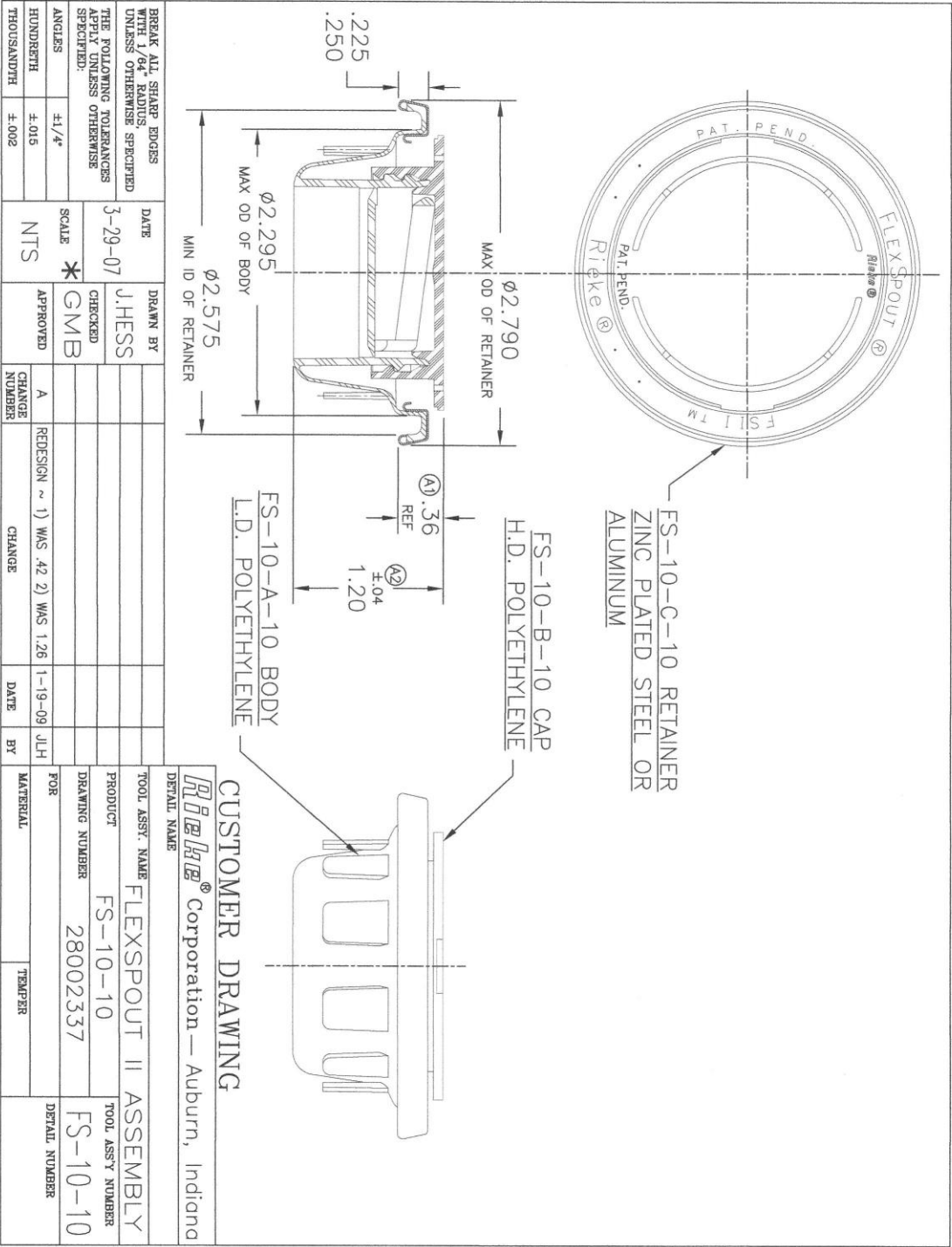
Tight Head Drums w/ Rieke Flexspout and Rieke Vise Grip (2.5 Gallon – 6 Gallon)

Process	Instruction
Apply and torque the VISEGRIP.	12. Place a torque wrench on the Rieke VISEGRIP. * 13. Turn the tool clockwise into the threaded opening to tighten the cap. The Rieke S-250 VISEGRIP II must be torqued to 30ft/lbs. Once the VISEGRIP is torqued to 30ft/lbs amount, the drum is officially closed and ready for shipment. *Contact Rieke® Corporation, or your Unican Sales Representative, to obtain this gauge.



UN Rated Fitments

Rieke Flexspout FS-10-10 Fitment Technical Information



SPECIALTY FITTINGS



Style – Pour Top Nozzle and Plug

2-3/4" Pour Top Nozzle and Plug

Style – Spouts

2-1/8" Pull Out Spout Assembly

Style – Clinch Neck

1-3/4" with 1-3/8" diameter opening
2" with 1-5/8" diameter opening
2-1/8" for Spout #666
2-1/8" with 1.872 diameter opening
2-1/4" Neck
1-3/4" Neck with 2-1/8" base
Pour Spouts available for the 2-1/8" Neck

Style – Paper Tube Necks

Sizes available: 1-1/2", 1-3/4", 2", 2-1/4", 2-1/2", 2-7/8", 3" and 3-1/2"

Style – Screw Caps

Sizes available: 3/4", 1", 1-1/4" (6 & 7 TPI), 1-1/2", 1-3/4" (6 & 7 TPI), 2", 2-1/8", 2-1/4", 2-1/2", 2-7/8", 3" and 3-1/2"
Available unlined or with Yellow Silite liner installed (aluminum or F217 liners are also available on some sizes)
3" and 3-1/2" sizes are only available unlined.
Custom colors and custom embossing are available. Contact a customer service representative for quote.

Assemblies – Hand-Tight & Machine-Tight Options

2-1/8" Clinch Neck with 2-1/8" innerseal and 2-1/8" cap (Yellow Silite liner)
2-1/8" Clinch Neck with 2-1/8" innerseal
2-1/8" Clinch Neck (1.872 opening) with 2-1/8" innerseal (1.872") and 2-1/8" cap (Yellow Silite liner)
2-1/4" Clinch Neck with 2-1/4" Innerseal

Style – Innerseal

Plain sizes available:

1", 1-1/4", 1-1/2", 1-3/4", 2", 2-1/8", 2-1/4" & 2-7/8"

Embossed with "Pry Out": 1-3/4" and 2-1/8"

Wick Holes & Vents: Contact a customer service representative for details

Style – Solder Type Screw Necks

3/4" International Straight Neck
1" International Straight Neck w/.706 opening
1-1/4" International Straight Neck w/.946 opening
1-1/2" International Straight Neck
1-3/4" International Straight Neck
2" International Straight Neck
2-7/8" International Straight Neck
1-1/4" International Straight Neck available in
6 threads/inch and 7 threads/inch



If you don't see a desired size or specification, please contact us!

specialtysales@ball.com • 800-436-6830 ext. 2 • www.ballsteeltinusa.com





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Page 1 of 2

TECHNICAL BULLETIN

June 2, 2006

VISEGRIP II™

Plug Use & Closing Torque Instructions

PRODUCT No's: ViseGripII™ Plugs and Gaskets

Product Overview: The ViseGrip II™ closure system closing torque requirements and recommendations for Plugs are discussed below. The following may be helpful to determine the correct closing torque wrenches. The drum manufacturers closing instructions may vary.

1. Original ViseGrip® Nylon plugs were PPN-51 and PPN-11 plugs. Another original ViseGrip® plug series is the PPN-61 and the PPN-21 nylon plugs. These plugs were often referred to as "fire plugs". The PPN-61 and PPN-21 are plugs which met the Factory Mutual test requirements. The torque used on the fire plugs with irradiated poly gaskets was 20 ft-lbs on 2" and 9 ft-lbs on the ¾". When using rubber gaskets on all plugs above the torque recommended is 20 ft-lbs (2") and 9 ft-lbs ¾" for both types of plugs.
2. The new ViseGripII™ nylon plugs are PPN-81 (2") and PPN-41, (¾"). These plugs meet Factory Mutual (FM) requirements. The recommended torque for these plugs is 20 and 9 ft-lbs with rubber gaskets or with poly-irradiated gaskets, 2 inch and ¾ inch plugs respectively. Please see the closing torque listings on page 2. A complete plug and gasket torque instruction sheet is available for all RIEKE® plug and gasket combinations.
3. Special Notes:

Plastic plugs must not be subjected to oven temperatures.

Irradiated gaskets must not be tightened when hot or above 120 F. Gaskets must be finger tightened during oven processing temperatures or gasket will be damaged.

All gaskets must be finger tight during oven processes – torque after cooling.

UN Rated Fitments

Rieke VISEGRIP S-250 II Fitment Technical Information



Gasket Numbers ~ Material Type		Assembly Torque Steel Plugs	
($\frac{3}{4}$ ")	(2")	$\frac{3}{4}$ "	2" (ft-lbs)
GV041W	GV043W ~ White Nitrile (Buna)	15	30
GV041	GV043 ~ Black Nitrile (Buna)	15	30
GV071-3	GV073-3 ~ Irradiated Poly (lt. Green)	20	40
GV091W	GV093W ~ White EPDM	15	30

Gasket Number ~ Material Type		Assembly Torque "PPN" Nylon Plugs	
($\frac{3}{4}$ ")	(2")	$\frac{3}{4}$ "	2" (ft-lbs)
GV041W	GV043W ~ White Nitrile (Buna)	9	20
GV041	GV043 ~ Black Nitrile (Buna)	9	20
GV071-3	GV073-3 ~ Irradiated Poly (lt. Green)	9	20
GV091W	GV093W ~ White EPDM	9	20

Gasket Number ~ Material Type		Assembly Torque "PPA" Poly Plugs	
($\frac{3}{4}$ ")	(2")	$\frac{3}{4}$ "	2" (ft-lbs)
GV041W	GV043W ~ White Nitrile (Buna)	9	20
GV041	GV043 ~ Black Nitrile (Buna)	9	20
GV071-3	GV073-3 ~ Irradiated Poly (lt. Green)	9**	20 **
GV091W	GV093W ~ White EPDM	9	20

Plastic plugs cannot to be subjected to oven temperatures.

Irradiated gaskets must not to be tightened when hot or above 120 F.

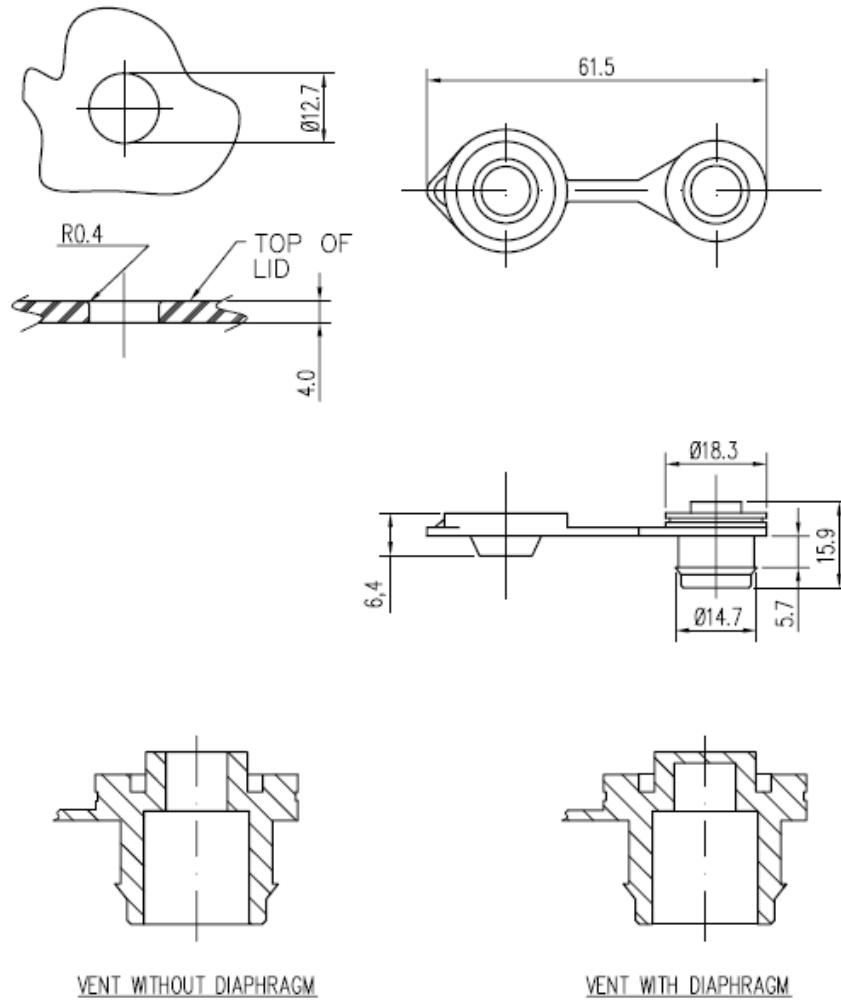
All gaskets on any type plug must be finger tightened during oven processing temperatures or gasket will be damaged.

** Limited performance may be achieved.

A comprehensive Plug and Gasket Closing Instruction Sheets are available from Rieke. If you have any questions please contact your Rieke Packaging Representative or call 260-925-3700.

UN Rated Fitments

TRI-SURE Poly Vent Technical Information



Item nr	Qty	Description	Product reference	LDPE
Drawn: Alex Pavezi				Material
Checked: Marcos Santos				
Passed: Alessandra Krasowski				
Tri-Sure® CLOSURES WORLDWIDE			Title: Polly-Vent (TM) – with retainer ring Customer Drawing: TSB-3000006 Rev: 3 Date Released: 15-10-2009 Scale: 1:1 Size: A4	
Greif Embalagens, Ind. do Brasil Ltda. Av. Dos Pinheiros 465 83.705-570 Araucária - PR Brazil			This drawing is our property and is confidential. It must not be copied or shown to third parties. Printed versions are uncontrolled.	



Plastic Drums

SCHUETZ

packaging update

PACKAGING CLOSURE INFORMATION

September 8, 2016

CLOSURE SPECIFICATIONS FOR TIGHT HEAD DRUMS

PLUGS MUST BE TORQUED TO THE FOLLOWING

2" NPS AND 2" BUTTRESS - 150 kPa and 250 kPa - 30 FT LBS,

Dip tubes - 20 ft lbs, 3/4" NPT - 9 FT LBS

Note: Closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR OPEN HEAD DRUMS

CLOSE AND SECURE LID WITH LOCKING RING - ATTACH HOLDING PIN FOR HANDLE TO KEEP RING CLOSED.

PLUGS MUST BE TORQUED TO THE FOLLOWING :

2" NPS AND 2" BUTTRESS - 20 FT LBS

3/4" NPS - 9 FT LBS

note: closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR IBC'S

FILL PORT CAP AND VALVE MUST BE TORQUED TO THE FOLLOWING:

6" AND 9" FILL PORT CAP - 75 FT LBS

2" plug in 6" or 9" fill port cap must be torqued to 15 ft lbs. (Schuetz does not recommend that you remove this plug. Filling should be done through the 6" or 9" opening)

*** 56 x 4 mm plug - 20 ft lbs**

Old style valves and EVOH valves

VALVE NUT - 55 FT LBS

note: caps, valves, and plugs must have gaskets to seal

New Style valves - valve must have gasket to seal. Two complete turns and line up the hole in the valve body and the hole in the bottle insert and insert clip.

*** - Underline indicates the latest change to the instructions.**



Intermediate Bulk Containers

All reconditioned Intermediate Bulk Containers marked UN31HA1, of capacity 275 – 330 gallons US, and supplied with plastics caps must be closed for shipment using the closures and gaskets supplied by the manufacturer and according to the following instructions:

1. Place cap (6” or 9”), with rubber gasket installed, on opening of IBC bottle.
2. Turn the cap clockwise to engage the threads.
3. Depending upon the manufacturer, as identified on the bottle, tighten caps to:
 - a. Encore- 50 ft-lbs
 - b. Greif- 45 ft-lbs
 - c. IBCNA- 55 ft-lbs
 - d. Mauser- 70 ft-lbs
 - e. Schutz- 75 ft-lbs
 - f. Varicon- 50 ft-lbs
4. If present, 2” plugs (with gasket) should be tightened to 20 ft-lbs.
5. If present, ¾” plugs (with gasket) should be tightened to 9 ft-lbs.

Plastic Open Head Drums

All open head plastic drums marked UN1H2, of capacity 20 – 59 gallons US, and supplied with plastic lids and locking rings must be closed for shipment using the closures and gaskets supplied and according to the following instructions:

1. Place drum lid on top opening and ensure that drum chime is under gasket area.
2. Place locking ring over cover and secure lid.
3. If present, 2” plugs (self sealing) should be hand tightened plus an additional quarter turn.
4. If present, ¾” plugs (self sealing) should be hand tightened plus an additional quarter turn.

Plastic Tight Head Drums

All tight head plastic drums marked UN1H1, of capacity 20 – 59 gallons US, and supplied with plugs and gaskets must be closed for shipment using the closures and gaskets supplied and according to the following instructions:

1. Install 2” Buttress and/or 2” NPT plugs (with gasket) in the corresponding drum opening and tighten to 25 ft-lbs.

Effective Date: 10/7/14

Approved By: C. Key

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 § 172.704(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. Many companies use electronic copies as site specific work instructions and/or use laminated hard copies posted at the fill lines for reference by the fill line operators. A hard copy (printed) must be maintained by the filler or offeror for shipment.

The following tables and text give examples of the parts and closing torque required to prepare the drum 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 or components other than those as sold with the original packaging design 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 removable head drums the lids, gaskets and locking rings 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 those in the design qualification.

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. Ad suitable wrenches available at hardware stores, auto parts stores, and through equipment catalog suppliers and drum parts suppliers.

PLASTIC NON-REMOVABLE HEAD DRUMS

All non-removable head, UN 1H1, 1H1W Plastic Drums, 49 CFR § 178.509(a)(1), 15 gallon to 65 gallon nominal capacity supplied with plug or screw cap closures with gaskets must be **closed for shipment using only the closures and gaskets supplied and specified in the design qualification test** for the drum as indicated below:

	Part Size / Part Number (Plug number with gasket) ¹	Torque
A	2-inch buttress: L10 EPDM; L10B Buna; L10VT FPM ^{II}	20-25 ft.-lbs.
B	2-inch NPS: L16 EPDM ^{II} ; L16B Buna; L16VT FPM; L16RVCLG	20-25 ft.-lbs.
C	2-inch buttress: L10V Vented EPDM; L10V-B Buna; L10V-VT FPM	20-25 ft.-lbs.
D	2-inch NPS: L16 Vented EPDM; L16V Buna; L16VT FPM	20-25 ft.-lbs.
E	2-inch NPS: L16R with L12 EPDM	20-25 ft.-lbs.
F	2-inch ACT¹ buttress: SA10B with A72	30-40 ft.-lbs.
G	3/4-inch NPS: C34 or C39 (S) AD with C31 EPDM; C31 Silicone	6-9 ft.-lbs.
H	2-inch: L10RHD with L11FHD; L16RHD; Polyolefin and Santoprene® gaskets	25-30 ft.-lbs.
I	Metric: 70x6 BCS LR10W w/LR11EPDM; 70x6 BCS LR10W w/LR11VT FPM gaskets	35-40 ft.-lbs.
J	Metric: 56x4 BCS LR17 with LR12 EPDM	20-25 ft.-lbs.
K	Polycon II²: 2-inch NPS L16-6RK/EPDM	37-42 ft.-lbs.
L	Polycon II: 3/4-inch NPD C34-6RK/EPDM	8-10 ft.-lbs.

¹ ACT drums may also be supplied with the standard NPS and buttress fittings noted above and should be closed to those torque values

² Polycon II may also be supplied with the standard NPS fittings noted above and should be closed with those torque values

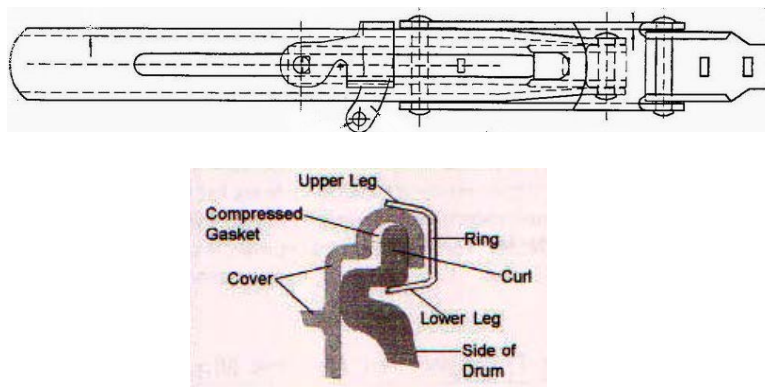
PLASTIC REMOVABLE HEAD DRUMS

	Part Size / Part Number (Plug number with gasket)	Plug Torque
A	Vanguard and Vanguard HLR lid with 2 inch NPS plug	15-20 ft.-lbs.
B	Vanguard and Vanguard HLR lid with 1 inch NPS plug	6-9 ft.-lbs.

1. All removable head, UN 1H2, Plastic Drums, 49 CFR § 178.509(a)(2), of nominal capacity 15 to 60 U.S. gallons supplied with plastic lids, gaskets and associated clamp bands, or locking rings, or bolt rings, must be **closed for shipment using only the components supplied and specified** in the design qualification tests according to the following installation instructions:

- Place drum lid with gasket and selected clamp band as supplied on the top opening of the drum body.
- Firmly place lid onto top opening by applying downward pressure to lid above drum sidewall.
- While pressing down on lid, engage locking mechanism of clamp band to secure the lid in place. Make sure the locking mechanism is completely latched. Insert locking tab into slots in lever lock handle.

Lever Lock Side View

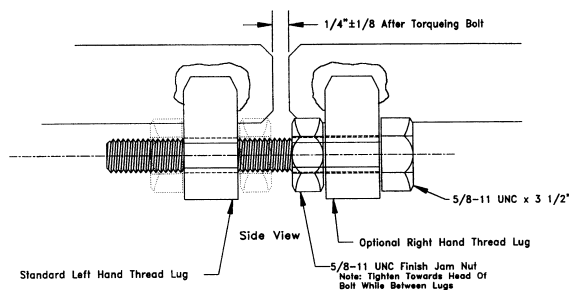


2. Please note that the Vanguard 57 gallon HLR drum carries a liquid rating Y1.2/100 with a bolt ring or lever lock closure. This is valid when the lid is factory installed with a lid press. This drum should be filled through the 2-inch opening in the lid and bungs closed as in the steps listed above. If the lid is removed the liquid rating is no longer valid unless a new lid is installed with a lid press and a MAUSER bolt ring or lever lock is used for closure.

3. The MAUSER removable head plastic drum may be provided with a bolt ring closing device. This bolt ring is closed as follows:

- Place lid with gasket in place, as supplied, on the curl at the top of the drum body.
- Place bolt ring around the drum head and curl.
- Using a head compressor, apply force to the top of the drum head assembly to compress head gasket.
- Drive bolt into ring until the ends of the bolt ring are at a 3/8-inch or less ring gap.
- If a head compressor is not available, start bolt into threaded eye, alternating tapping of ring with a mallet and drive bolt with a wrench, until bolt ring ends meet the above requirements.
- When ring has been tightened as required, the jam nut, if supplied, must be tightened against the left threaded eye.
- In the case of the Vanguard V57 HLR drum supplied with a bolt ring for liquid service, the bolt may have no jam nut but may use a shoulder type bolt. Follow the previous steps to tighten the bolt until the shoulder meets the threaded eye.

Bolt Ring Closure



CAP SEALS AND TAMPER EVIDENT DEVICES

Many fillers order their drums with closures “factory torqued” or with cap seals and tamper evident device factory installed. Keep in mind that the filler is responsible to close the packaging prior to shipment and having a closure inaccessible may be viewed by regulators as a failure to properly close the packaging. It has been demonstrated repeatedly that plastic plugs can relax their torque thus “factory torqued” plugs may not stay that way and should be verified.

Further cap seals are used that-seals. If a vented closure is required on a lading a cap seal can seal off the vented plug allowing for potentially dangerous pressure build up in the drum. Vented or less occlusive plug caps are available and should be used with vented plugs.

DIP TUBES AND EXTRACTION VALVE ASSEMBLIES

As more users strive to keep their purchased product clean as possible and address employee safety, drums can be outfitted at MAUSER with extraction valves and dip tubes. These systems reduce the potential for human contact and many are totally closed, keeping dust and dirt out of the product. For self installation these are suggested torques as they represent the values used for factory installed units. Manufacturers specific recommendations should always be consulted these are only a guide.

	Part Size / Part Number (Plug number with gasket)	Plug Torque
A	Micro Matic EPV (plastic w/FKM or EPDM gaskets)	20-25 ft.-lbs.
B	Micro Matic RSV (stainless steel w/FKM, EPDM, or PE gaskets)	20-25 ft.-lbs.
C	Colder Products Drum Quick Pro buttress and NPS (FKM, Buna, EPDM, PE or silicone rubber gaskets)	20-25 ft-lbs
D	Entegris QCII Shipping Cap	5 ft-lbs
E	Entegris QCII Drum Insert	20 ft-lbs
F	Entegris QCIII	20 ft-lbs
G	Taylor Cain DV-155	5 ft-lbs
H	Taylor Cain A-PIC-36	36 ft-lbs

COMPOSITE DRUMS

All non-removable head, UN 6HA1, Composite drums, 49 CFR § 178.522(a)(1), 55 gallon nominal capacity supplied with plug or screw cap closures with gaskets must be **closed for shipment using only the closures and gaskets supplied and specified** in the design qualification test for the drum as indicated below:

	Part Size / Part Number (Plug number with gasket)	Torque
A	HDPE Liner 6HA1/X1.8/350 and X1.8/300: 2 inch double buttress L10 with L11 EPDM	29-32 ft.-lbs
B	HDPE Liner 6HA1/Y1.8/100: 2-inch double buttress: L10-xx with L11 EPDM	20-25 ft.-lbs.
C	Liner 5510 :2-inch double buttress: L10-HD with L11F-HD Polyolefin gasket	25-30 ft.-lbs.
D	Nylon/Polypropylene 2 inch with EPDM Gasket	12-15 ft.-lbs.
E	HDPE Liner 6HA1 with 56x4 mm PP metric plugs with BUNA Gaskets	18-22 ft.-lbs

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



Riecke Brand Preset Wrenches

ⁱ Note: MAUSER uses various buttress and NPS plugs under the generic part numbers L10 and L16 respectively. They are supplied with the drum with gasket-installed ready for final closing for shipment. The plug and gasket are specific to the drum as tested. The closures must be properly installed and tightened to the torque shown or specified on the particular closing instructions for the drum supplied. Closures must be tightened to recommended torque using pre-set or variable-range machinist torque wrenches calibrated to the indicated value. Variable range 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.

ⁱⁱ **MAUSER L-ring drums marked UN 1H1/Y1.9/150 must have a torque applied of 25-27 ft.-lbs (34-37 N-m)**

Plastic Drum Closing Instructions

PLASTIC REMOVABLE HEAD DRUMS

We recommend that these procedures be observed for all Regulated and Non-regulated materials.

1. All removable head, UN 1H2, Plastic Drums, 49 CFR 178.509(a)(2), of nominal capacity 20 to 60 U.S. gallons supplied with plastic lids, gaskets and associated clamp bands, or locking rings, must be closed for shipment using only the components supplied and specified in the design qualification tests according to the following installation instructions:

- a) Place drum lid with gasket as supplied on the top opening of the drum body.
- b) Firmly place lid onto top opening by applying downward pressure to lid above drum side wall and observe that drum chime is under gasket area.
- c) Place locking band over cover and drum chime without dislocating proper cover drum interface.
- d) While pressing down on lid, engage locking mechanism of clamp band to secure the lid in place. Make sure the locking mechanism is completely latched and the cover is uniformly covered by the band.
- e) Engage or install latch or T clip to insure lever remains locked.
- f) If covers are supplied with openings check closures are tight by making contact between the cover and the plug sealing surface and tighten an additional quarter turn to compress gasket or sealing surface.

PLASTIC NON-REMOVABLE HEAD DRUMS

1. All non-removable head, UN 1H1, Plastic Drum, 49 CFR 178.509(a)(1), 15 gallon to 65 gallon nominal capacity supplied with plug or screw cap closures with gaskets must be closed for shipment using only the closures and gaskets supplied and specified in the design qualification test for the drum as indicated below:
 - a. 2-inch buttress and NPS versions of caps must be installed in the corresponding drum opening (bung) of corresponding size and thread pattern and tightened to 25 ft.-lbs. torque as recommended by the manufacturer.

INTERMEDIATE BULK CONTAINERS

1. All UN Intermediate bulk containers of nominal capacity 220 to 330 U.S. supplied with plastic caps (either 611 or 9" diameter) must be closed for shipment using only the components supplied and specified in the design qualification tests according to the following installation instructions:
 - a. Place IBC cap with gasket as supplied on the top opening of the IBC body.
 - b. Firmly place cap onto top opening and turn the cap clockwise to engage the threads.
 - c. Torque the cap to a minimum of 50 foot lbs.



CLOSING INSTRUCTIONS FOR UN TIGHTHEAD DRUMS (1H1) AND JERRICANS (3H1)

Customer Document No. ETS-CD-1012

STATEMENT OF NOTIFICATION REQUIREMENTS

These instructions are provided by Mauser Packaging Solutions (MPS) to the filler of UN certified plastic packaging marketed under the BWAY, NAMPAC, or K LW brand names in accordance with §178.2(c) of the U.S. Department of Transportation's (DOT) hazardous materials regulations, Title 49 of the Code of Federal Regulations (CFR). The instructions apply exclusively to 1H1 and 3H1 single unit packaging of the type and style as described herein and bearing a UN certification marking. At the time of transfer, any package or packaging component supplied by MPS does not meet the UN standard because it is disassembled. Only when assembled in the manner, and using the components described herein, is this packaging certified by MPS to meet the UN standard.

It is the regulatory obligation of the packaging filler to properly assemble and close UN certified packaging. If the packaging is not assembled and closed per these instructions, or if any of the components are omitted or replaced with substitute components, this packaging is not certified by MPS as meeting the UN performance standard. It is the regulatory obligation of the shipper to determine that the filled package is authorized for transportation. When transporting by air, the general requirements for transportation by aircraft in §173.27 of Title 49 CFR must also be met.

SCOPE OF CLOSING INSTRUCTIONS – PACKAGINGS INCLUDED

The instructions contained herein apply to self-stacking round tighthead drums and square/rectangular tighthead jerricans in sizes of 15-gallon and under manufactured and sold by Mauser Packaging Solutions under the BWAY, NAMPAC, and K LW brand names. These packages are hazmat rated for UN-LIQUIDS. UN MARKINGS may appear on the top or sidewall of the container. The package, when properly closed per these instructions, shall be rated to the UN marking embossed into the container.

SCOPE OF CLOSING INSTRUCTIONS – PACKAGINGS EXCLUDED

- PEPSI Small Form EZ Pour tightheads (2-gallon and under) are not covered under these instructions (See ETS-CD-1031).
- AutoChlor 10-Liter jerricans with RDI dip tubes are not covered under these instructions (See ETS-CD-1032).
- These instructions DO NOT apply to MPS tighthead drums and jerricans when used as an inner packaging of a 4G package.

APPLICABLE MPS UN 1H1 and 3H1 COMPONENTS

The instructions found in this closure document are applicable to the following molded plastic containers as manufactured and sold by Mauser Packaging Solutions and their associated closures.

1H1 ROUND TIGHTHEAD DRUM:

- UN Rated Round tighthead Drums (15 Gallon & Below)
- UN Rated Large Drums (30 Gallon – 60 Gallon)

3H1 SQUARE, RECTANGLE and DELEX JERRICANS:

- UN Rated (STH-Series) Square tighthead (4 Gallon thru 7 Gallon)
- UN Rated (RTH-Series) Rectangle tighthead/swing handle (4 Gallon thru 6 Gallon))
- UN Rated (RST-Series) Rectangle tighthead/integrated handle (4 Gallon thru 7 Gallon)
- UN Rated (DLX-Series) Delex tighthead (20 Liter/5 Gallon)
- UN Rated SQRD Jerrican tighthead (3 Gallon – 6 Gallon)
- UN Rated SI-Series Rectangular tighthead/integrated handle (13 Liter thru 27 Liter)
- UN Rated EG-Series Rectangular tighthead/integrated handle
- UN Rated 10-liter jerricans, multiple styles

CLOSURES:

- 50/51mm DIN Screw Cap (4 TPI)
- 60/61mm DIN Screw Cap (4 TPI)
- 63mm Screw Cap (8 TPI)
- 70mm Screw Cap with Gasket (6 TPI & 8 TPI)
- 70 mm with Gore Vent (8 TPI)
- Crimp-On Pour Spouts
- American Flange Tab Seal Pour Spout (Crimp-On)
- 2 inch & 56mm Internal Buttress Bung Plugs
- 2 Inch Internal Buttress Bung Plug with microporous vent
- American Flange / Tri-Sure Plastiplug

VENTS:

- ¾" bung plug
- ¾" plug vents with membrane
- ¾" Acorn vents
- 18mm vent
- 22mm vent
- 24mm vent
- 28mm vent
- 22/24mm captive vent

50/51, 60/61, 63 and 70mm Screw Cap Closure Instructions

PURPOSE:

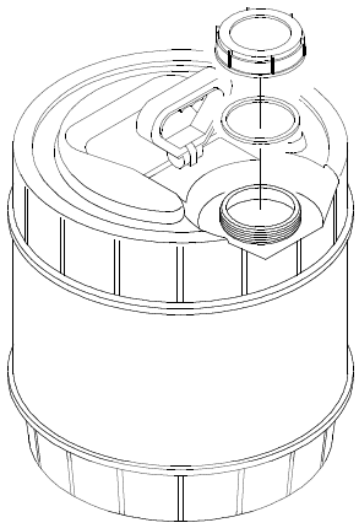
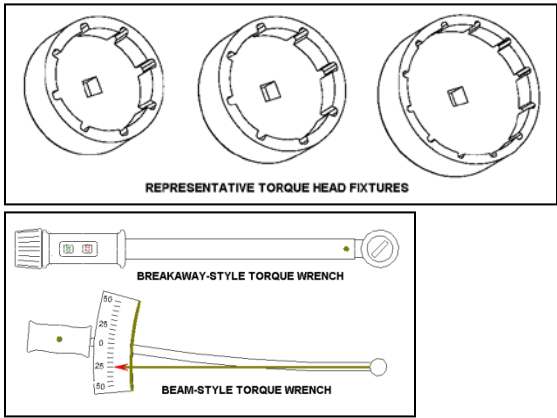
To ensure that the threaded screw cap is properly sealed when assembled onto MPS’s jerricans and tighthead drums. The DOT/UN Performance Certification only applies to a Tight Head Container that is closed per this procedure.

SIGNIFICANCE:

The sealing performance of the Cap is compromised if the top surface of the neck is rough, has a burr, or is not clean; in addition, if the gasket in the cap is not properly seated in the O-Ring groove, twisted, or is not clean. The Caps are only to be assembled on the jerrican after all sealing surfaces pass inspection.

APPARATUS:

- 50/51, 60/61, 63 or 70mm Torque Head Fixture
- Torque Wrench (Adjustable from 10 - 15 ft-lbs or 120 - 180 in-lbs)
- The use of a calibrated automatic torque application machine is permissible if it does not damage the threads or seating surface of the container.



permissible if it

PROCEDURE:

1. Inspect the top surface of the neck to ensure an acceptable sealing surface, clean and free of any debris.
2. Inspect the cap to ensure the gasket is properly assembled and is clean.
3. Start the cap on the neck by hand, rotating the cap in a clock-wise direction. Take care not to cross thread the cap; this will result in damage to the cap or to the neck finish.
4. Using the 50/51, 60/61, or 70mm torque head fixture mounted onto a torque wrench, tighten the cap per the table below.

CAP SIZE (DIA)	Thread Pitch	INSTALLATION TORQUE
50/51mm	6mm (4TPI)	180 IN-LBS (15 FT-LBS)
60/61mm	6mm (4TPI)	180 IN-LBS (15 FT-LBS)
63mm	8TPI (3mm)	120 IN-LBS (10 FT-LBS)
70mm	8TPI (3mm)	120 IN-LBS (10 FT-LBS)
70mm	6TPI (4mm)	120 to 150 IN-LBS (10 to 12.5 FT-LBS)

2" Buttress or 2" NPT Bung Plug Closure Instructions

PURPOSE:

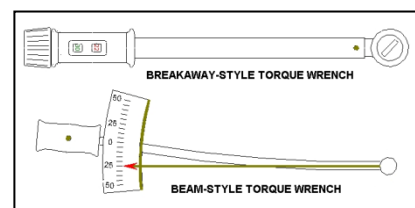
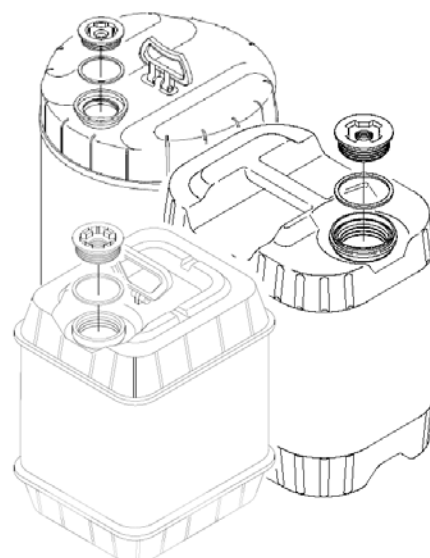
These instructions are designed to ensure the proper installation of any one of several 2" buttress threaded bung plugs into jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the Bung Plug can be compromised if the top gasket sealing surface of the neck is rough, has a burr, or is not clean; in addition, if the gasket on the Bung Plug is not properly seated in the O-Ring groove, is twisted, or is not clean. The Bung Plugs are only to be assembled on the jerrican after all sealing surfaces have passed visual inspection.

APPARATUS:

- Torque wrench of suitable measuring capacity (25 ft-lbs minimum), digital breakaway style preferred
- Torque Wrench Fitting specific to the bung plug being installed. Fitting should be shape matched to and fit securely inside the center impression in the bung plug and mount directly to the torque wrench shaft. Contact the specific bung plug manufacturer for additional Torque Wrench Fitting information.
- The use of a calibrated automatic torque application machine is permissible if it does not damage the threads or seating surface of the container.



ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container neck is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed onto the closure and fully seated against the closure flange. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Start the bung plug into the container neck by hand, turning clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Wrench Fitting as described above to finish seating the closure to the recommended torque (see **Closure Application** table).

2" Bung Plug Closure Style	Gasket Material	Application Torque for 100 kPa rating	Application Torque for 150 kPa rating
Wolverine 2" Buttress Plug, Plain	EPDM	20 ft-lbs (240 in-lbs)	20 ft-lbs (240 in-lbs)
Wolverine 2" Buttress Plug, Vented	EPDM	20 ft-lbs (240 in-lbs)	N/A
Wolverine 2" Buttress Plug	B4	N/A	25 ft-lbs (300 in-lbs)
Rieke PP57-B-5 2" Buttress Plug	EPDM	20 ft-lbs (240 in-lbs)	20 ft-lbs (240 in-lbs)
Rieke PP57-B-5 2" Buttress Plug, Vented	EPDM	25 ft-lbs (300 in-lbs)	N/A
Brandt/Mauser 2" Buttress Plug	EPDM	N/A	25 ft-lbs (300 in-lbs)
Tri-Sure (American Flange) 2" PlastiPlug	EPDM	20 ft-lbs (240 in-lbs)	25 ft-lbs (300 in-lbs)

63mm Crimp-On Fitting Closure Instructions

PURPOSE:

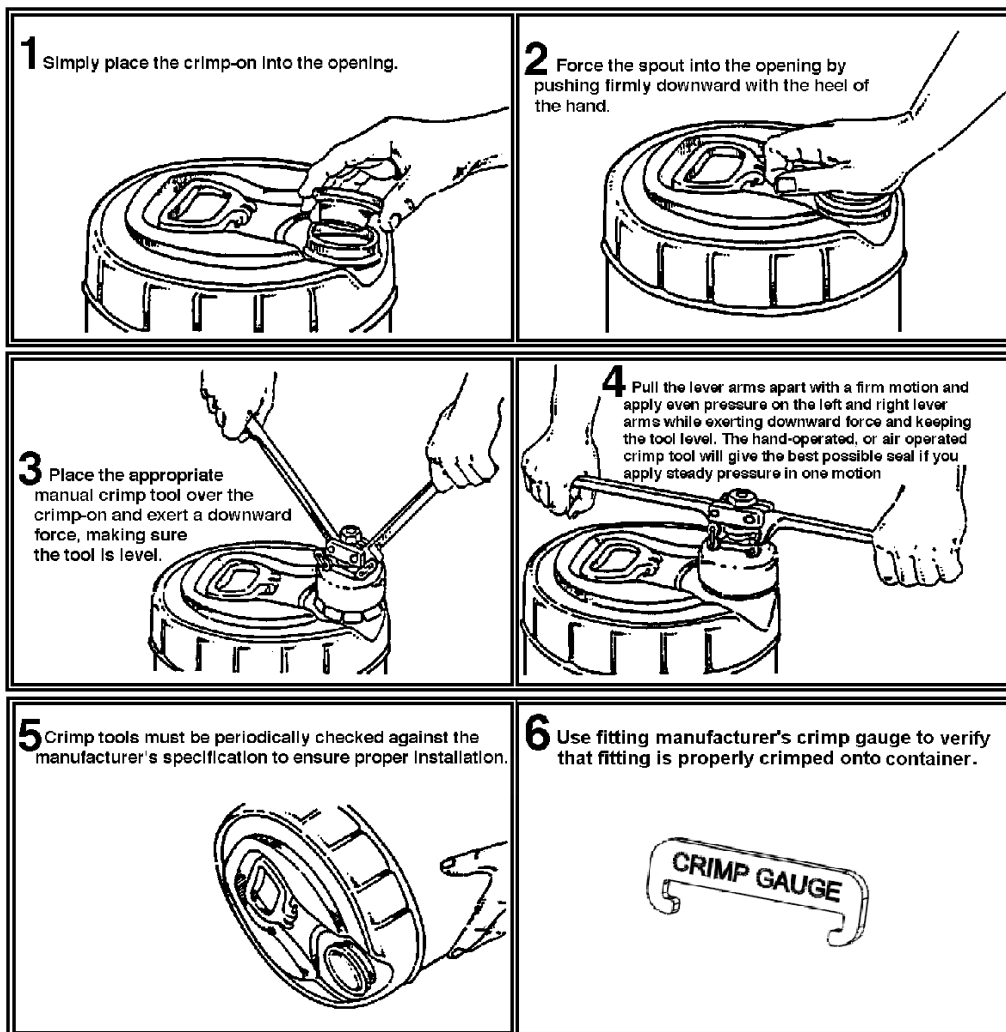
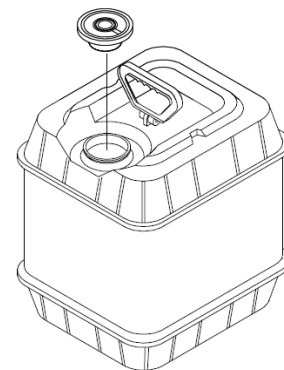
These instructions are designed to ensure the proper installation of any one of several 63mm crimp-on fittings onto jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling. Ensure that the crimp bead around the top of the container neck is clean and free of burrs, ragged edges, or other defects and verify that the inner surface of the fitting is clean and defect free before assembling the components.

APPARATUS:

- Manual or automatic multi-jaw crimp head (manual model shown in instruction diagrams)



3/4" NPS Bung Plug Closure Instructions

PURPOSE:

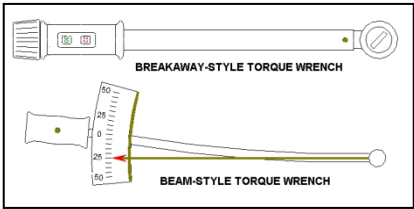
These instructions are designed to ensure the proper installation of any one of several vented and non-vented 3/4" NPS threaded bung plugs into the vent orifice on jerricans and tighthead drums produced by Mauser Packaging Solutions.

SIGNIFICANCE:

The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed properly, as per this procedure. Failure to follow this procedure may render the UN certification null. The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling and all components should be inspected prior to cover application.

APPARATUS:

- o Torque wrench of suitable measuring capacity (25 ft-lbs minimum), breakaway style preferred
- o Torque Wrench Fitting specific to the bung plug being installed. shape matched to and fit securely inside the center impression in and mount directly to the torque wrench shaft. Contact the specific manufacturer for additional Torque Wrench Fitting information.
- o The use of a calibrated automatic torque application machine is permissible if it does not damage the threads or seating surface of the container.



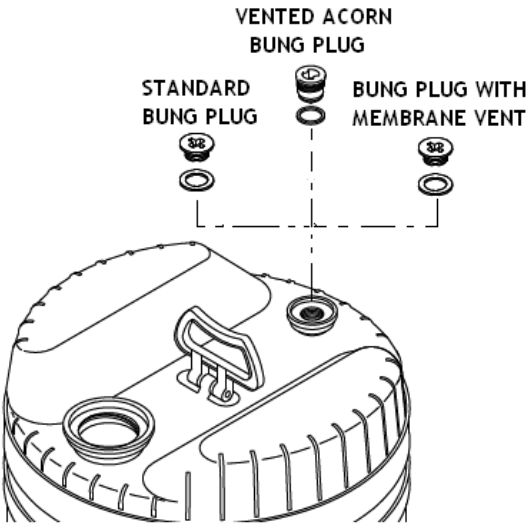
digital
Fitting should be
the bung plug
bung plug

ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container vent is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed onto the closure and fully seated against the closure flange. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Start the vent plug into the container neck by hand, turning clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Fitting as described above to finish seating the closure to the recommended torque (see **Plug Installation Torque** table

Wrench
below).

Vent Plug Type	Installation Torque
3/4" Standard Bung Plug	85 in-lbs (7 ft-lbs)
3/4" Bung Plug with Membrane	85 in-lbs (7 ft-lbs)
3/4" Vented ACORN Bung Plug	85 in-lbs (7 ft-lbs)



18, 22, 24 and 28mm Screw Cap Vent Closure Instructions

PURPOSE:

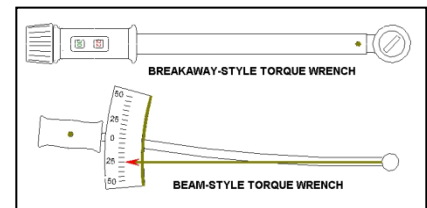
These instructions are designed to ensure the proper installation of 18, 22, 24, and 28mm screw caps onto their respective threaded vent openings on jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling and all components should be inspected prior to cover application.

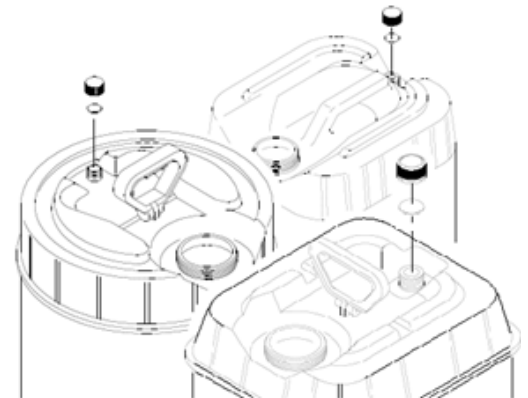
APPARATUS:

- o Torque wrench of suitable measuring capacity (25 ft-lbs minimum), digital breakaway style or T-Handle preferred.
- o Torque Wrench Head Fixture specific to the screw cap being installed. Wrench Head should be shape matched and fitted securely to the outer diameter of the screw cap and mount directly to the torque wrench shaft. Contact the specific screw cap manufacturer for additional Wrench Head Fixture information.



ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container vent is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed inside the closure and fully seated against the closure's top inner surface. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Start the screw cap onto the container neck by hand, turning clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Wrench Fitting as described above to finish seating the closure to the recommended torque (see **Closure Application Torque** table below).



Screw Cap Size	Application Torque
18mm SP400	15 in-lbs (1.3 ft-lbs)
22mm SP400	20 in-lbs (1.6 ft-lbs)
24mm SP400	23 in-lbs (1.9 ft-lbs)
28mm SP400	25 in-lbs (2.0 ft-lbs)

21/24mm Captive Screw Cap Vent Closure Instructions

PURPOSE:

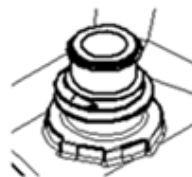
These instructions are designed to ensure the proper installation of 21/24mm captive screw caps onto the mating threaded vent nipple on jerricans and tighthead drums produced by Mauser Packaging Solutions. The UN Regulated Container Certification applies only to marked UN 1H1 and 3H1 Tight Head packages that are closed per this procedure.

SIGNIFICANCE:

The sealing performance of the UN components can be compromised if the components have been damaged in shipment or handling and all components should be inspected prior to cover application.



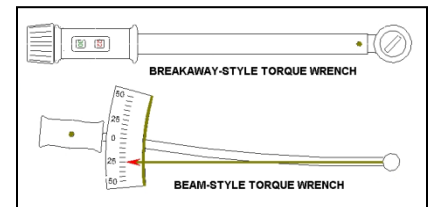
21/24mm Captive Closure



21/24mm Vent Nipple

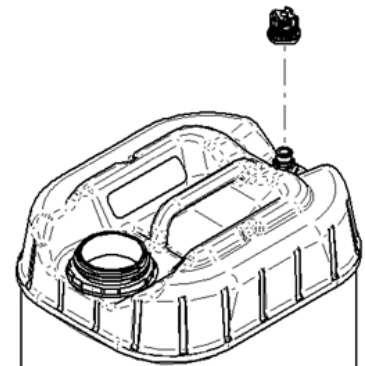
APPARATUS:

- 0 Torque wrench of suitable measuring capacity (20 in-lbs minimum), digital breakaway style or T-Handle preferred.
- 0 Torque Wrench Head Fixture specific to the screw cap being installed. Wrench Head should be shape matched and fitted securely to the outer diameter of the screw cap and mount directly to the torque wrench shaft. Contact the specific screw cap manufacturer for additional Wrench Head Fixture information.



ASSEMBLY INSTRUCTIONS:

1. Verify that the top sealing surface of the container vent is clean and free of defects or debris. Clean as needed.
2. Verify that the gasket is properly placed inside the closure and fully seated against the closure's top inner surface. Install or adjust the gasket if required and ensure that the gasket surfaces are free of defects or debris.
3. Press the closure downward to snap it onto the vent nipple, then turn the closure clockwise until the threads have engaged.
4. Use the manual or mechanical Torque Wrench and Torque Wrench Head Fixture as described above to finish seating the closure to the recommended torque.
5. Application torque for this closure is **20 in-lbs (1.6 ft-lbs)**.



CLOSURE TOOL REFERENCE TABLE

Closure Mfg'r	Closure Types	Closure Size (mm)	Closure Tool Model	Closure Tool Description
Various	Vent Caps	18,22,28		T-Handle Torque wrench
American Flange	Tri-Sure Tab Seal		UG	Manual Crimping Tool
	Tri-Sure Uni-Grip		UAG	Pneumatic Crimping Tool
Norpak / Norton	Norcap	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your Norpak/Norton representative for equivalent adapter
	Norcap Vented			
Republic	Comack	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your Republic representative for equivalent adapter
	Comack TEXT			
	SC63R Vented			
Brandt (MAUSER)	Brandt 70mm Brandt 70 Vented Brandt 70mm TE	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Brandt (MAUSER)	Brandt 61mm Brandt 61 Vented Brandt 61mm TE	61		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
BeriCap	60/61mm DIN	60/61		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Westphal Lange	Westphal Lange 61mm TE	61		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Brandt (MAUSER)	Brandt 51mm Vented	51		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394; or contact your BWAY representative for equivalent adapter
Rieke	FS-60	70		Seekonk Torque Wrench (Gauge) or Equivalent with Rieke Cap Wrench Adapter, W394
	FS-70 FS-70 TE FS-70 Vented			
	SC-76 SC-76 TE			
	FS-80 FS-80 TE FS-80 Vented			
	SC-86 SC-86 TE			
Rieke/Bomag/Technocraft Pour Spouts	FS-10-6-300 FS-10-6-624 FS-10-8V-300 FS-300 FS-II		FS-600 IA-FS-600 HFS-600	Manual Flexspout Crimping Tool Airmatic Flexspout Crimping Tool Airdraulic Flexspout Crimping Head and Hose
	Bomag Crimp-on		FS-600 IA-FS-600 HFS-600	Manual Flexspout Crimping Tool Airmatic Flexspout Crimping Tool Airdraulic Flexspout Crimping Head and Hose
	Technocraft Crimp-on		FS-600 IA-FS-600 HFS-600	Manual Flexspout Crimping Tool Airmatic Flexspout Crimping Tool Airdraulic Flexspout Crimping Head and Hose

MAUSER PACKAGING SOLUTIONS – PLASTIC MANUFACTURING LOCATIONS – SMALL CONTAINERS

Bryan, Texas, 1591 N. Harvey Mitchell Parkway, Bryan, Texas 77803

Cedar City, Utah, 1033 N. Production Road, Cedar City, Utah 84721

Cidra, Puerto Rico, Road 172 KM 13.4, Cidra, Puerto Rico 00739

Dayton, New Jersey, 7 Wheeling Road, Dayton, New Jersey 08810

Elk Grove Village, Illinois, 1350 Arthur Avenue, Elk Grove Village, Illinois 60007

Elk Grove Village, Illinois, 2350 Lively Boulevard, Elk Grove Village, Illinois 60007

Indianapolis, Indiana, 6061 Guion Road, Indianapolis, Indiana 46254

LaGrange, Georgia, 1603 Orchard Hill Road, LaGrange, Georgia 30240

Langley, British Columbia, Canada, 5850-272nd Street, Langley, British Columbia, Canada V4W 3Z1

Leominster, Massachusetts, 196 Industrial Road, Leominster, Massachusetts 01453

Mansfield, Texas, 1501 East Dallas Street, Mansfield Texas 76063

Newnan, Georgia, 98 Amlajack Boulevard, Newnan, Georgia 30265

Oakville, Ontario, Canada, 2240 Wyecroft Road, Oakville, Ontario, Canada L6L 6M1

Springhill, Nova Scotia, Canada, 29 Memorial Crescent, Springhill, Nova Scotia, Canada B0M 1X0

Valparaiso, Indiana, 4002 Montdale Drive, Valparaiso, Indiana 46383

For more information on Mauser Packaging Solutions, visit our website at: <https://www.mauserpackaging.com>

Revision History:

Version	Description	By	Date
4.5	Updated to Mauser Packaging Solutions format.	F. Burney	15-Aug-2018
5.0	Updated Application Torque Chart for 2" Plugs, Expanded Scope of Instructions	F. Burney	01-Mar-2019
5.1	Placed steps for crimping on spouts into correct order. Corrected web address.	F. Burney	25-Jun-2019

GREIF
CLOSURE INSTRUCTIONS FOR FITTINGS

Pursuant to the requirements of the Department of Transportation in CFR 49 Part 178.2(c)(1), this method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested. If there is any question regarding proper closing methods, contact your local Greif salesperson or manufacturing facility. "Effective until further notice".

To Close:

- 1) Insert and tighten all fittings into their appropriate threaded flanges until snug.
- 2) Using a torque wrench, tighten each fitting to the correct torque. See the list below for correct torques.
Torques are based on closure manufacturer's recommendations.
- 3) If this is an open head drum, follow the additional closing instructions for top head.
- 4) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

Fittings:

<u>Size/Thread</u>		<u>Flange</u>	<u>Plug</u>	<u>Torque Foot Lbs</u>
Tri-Sure	2" BTR	Poly	Poly	20
Tri-Sure	2" NPS	Poly	Poly	20

Drum Code: GP55-3

Report #: P-308-LV-100719

Date Tested: 10/7/2019

Technician: TK (Sample drums were closed exactly as described above.)

This UN test certification report form is a sample of the closure notification form. The data on this form reflect the components of the tested sample drums; it details the closing methods followed at the lab for the fittings supplied.

The closure notification form should be completed using information from the actual customer specification, referencing fitting type, manufacturer and gasket, along with the associated torque values for the closures supplied. These values may differ from the sample closing instructions supplied with the UN

To obtain this form for your customer service use, contact:

Greif -Testing and Technical Services
366 Greif Parkway, Delaware, OH 43015
(740) 657-6565

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CLOSURE INSTRUCTIONS FOR FITTINGS

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Torques are based on closure manufacturer's recommendations.
- 3) If this is an open head drum, follow the additional closing instructions for top head.
- 4) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

Fittings/Original Design Type:

<u>Brand</u>	<u>Size</u>	<u>Flange</u>	<u>Plug</u>	<u>Torque Foot Lbs</u>
Tri-Sure	2" NPS	Poly	Poly	20
Tri-Sure	3/4" NPS	Poly	Poly	9

Report #: P-1110-XX-100119

GBC Code / Drum Type: PPX15ANXBEBFHD / P15

Date Tested: 10/1/2019

Technician: TK (Sample drums were closed exactly as described above.)

This UN test certification report form is a sample of the closure notification form. The data on this form reflect the components of the tested sample drums; it details the closing methods followed at the lab for the fittings supplied.

The closure notification form should be completed using information from the actual customer specification, referencing fitting type, manufacturer and gasket, along with the associated torque values for the closures supplied. These values may differ from the sample closing instructions supplied with the UN

To obtain this form for your customer service use, contact:

Greif -Testing and Technical Services
366 Greif Parkway, Delaware, OH 43015
(740) 657-6565



Steel Drums

MAUSER Packaging Solutions CLOSING INSTRUCTIONS – METAL DRUMS

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 § 172.704(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 with the shipping documents with each shipment of drums. This document provides specific information on closing MAUSER packaging.

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 offeror for shipment.

The following tables and text give examples of the parts and closing torque required to prepare the drum 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.** Each closure is supplied with the proper gasket in accordance with the UN design type tests for the packaging supplied. In the case of removable head drums the lids, gaskets and locking rings are supplied as tested. Any modification of the drum components that changes the design of the drum from the design that was tested by or on behalf of MAUSER Packaging Solutions, or any deviation from the above, voids said certification

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. Open head cover gasket performance can be affected by time (age), temperature, exposure to chemicals and ozone. 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 as sold with the original packaging.

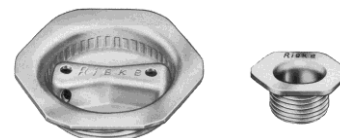
CLOSING PROCEDURES FOR PLUGS AND CAPS:

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. 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.

STEEL NON-REMOVABLE HEAD DRUMS

All non-removable head, UN 1A1, Steel Drums, 49 CFR § 178.504(a)(1), that are supplied with plugs and gaskets must be **closed for shipment using only the plugs and gaskets supplied and specified** in the design qualification test for the drum, as indicated below:

HEXAGONAL HEAD PLUGS TORQUE (RIEKE VISE GRIP & VICE GRIP II STYLE)



Closing Torques in ft.-lbs. (by Type)	Gasket Type	3/4 Plug Torque	1 Plug Torque	2 Plug Torque
Rieke¹: VISE-GRIP II Plug - Plastic Flange	Polyethylene	8-10 ft.-lbs.	----	18-22 ft.-lbs.
Rieke: VISE-GRIP II Plug - Plastic Flange	Rubber	8-10 ft.-lbs.	----	18-22 ft.-lbs.
Rieke VISE-GRIP II Plug - Steel Flange	Polyethylene	8-10 ft.-lbs.	----	18-22 ft.-lbs.
Rieke: VISE-GRIP II Plug - Steel Flange	Rubber	8-10 ft.-lbs.	----	18-22 ft.-lbs.
Rieke: VISE-GRIP II Plug with built-in gasket - Plastic Flange		8-10 ft.-lbs.	----	18-22 ft.-lbs.
Rieke: VISE-GRIP II Plug with built-in gasket - Steel Flange		8-10 ft.-lbs.	----	18-22 ft.-lbs.
Rieke: Steel Plug - Steel Flange	Polyethylene, Teflon	18-22 ft.-lbs.	36-44 ft.-lbs.	36-44 ft.-lbs.
Rieke: Steel Plug - Steel Flange	Rubber	14-17ft.-lbs.	27-33 ft.-lbs.	27-33 ft.-lbs.

¹ ISO 15750-3 Circular Serrated Closure Type B. ANSI MH2-2003 § 3.1.4



ROUND HEAD PLUGS TORQUE

TS Type (Tite Seal or Tri-Sure®)

Closing Torques in ft.-lbs. (by Type)	Gasket Type	3/4 Plug Torque	2 Plug Torque
TS Typeⁱⁱ: Polypropylene and Nylon Plugs	Polyethylene	8-12 ft.-lbs.	11-20 ft.-lbs.
TS Type: Polypropylene and Nylon Plugs	Rubber	8-12 ft.-lbs.	18-25 ft.-lbs.
TS Type: Polyethylene Plugs	Rubber	8-12 ft.-lbs.	18-25 ft.-lbs.
TS Type: Self-Gasketing, polyethylene plug		5 ft.-lbs.	12 ft.-lbs.
TS Type: Steel Plugs	Polyethylene, Teflon	8-15 ft.-lbs.	15-25 ft.-lbs.
TS Type: Steel Plugs	Rubber	8-15 ft.-lbs.	15-25 ft.-lbs.
TS Type: Zinc Die-Cast Plugs	Polyethylene, Teflon	8-15 ft.-lbs.	15-25 ft.-lbs.
TS Type: Zinc Die-Cast Plugs	Rubber	8-15 ft.-lbs.	15-25 ft.-lbs.

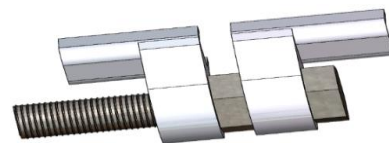
STEEL REMOVABLE HEAD DRUMSⁱⁱⁱ

If a head compressor is not available, start bolt into lug, alternating tapping of ring with a mallet and drive bolt with a wrench, until bolt ring ends meet the below requirements.

If using a 0.625" shoulder type bolt a jam nut is not required. These particular bolts claim easier ergonomics for the person closing the drums and less deformation of the ring in closing—hence better fit. Thread the bolt into the ring nut and tighten until the threaded portion is through the nut. The smooth unthreaded portion will not engage the threads and tightening stops at the prescribed gap.

CLOSING RINGS BOLT LOCKING RINGS (Including Overlapping Style Ring)

1. Snap the closing ring over the cover and curl area of the drum, making sure that it is seated over the entire perimeter. For drums with 12 gauge forged lug rings, use of a mechanical head-compressing device is required to assure proper gasket compression. Ring bolts should be tightened while the cover/gasket is being compressed. Drums assembled without using a mechanical head compressing device may not perform to the certified level.
2. While a head compressing device is preferred for all rings, for rings 12 gauge or lighter, it is acceptable to tighten the ring bolt while simultaneously tapping the outside of the closing ring around the entire perimeter, with a non-sparking mallet. In order to compress the gasket uniformly. If a head-compressing device is used, make sure that the cover is centered on the drum curl. Check to see that the cover and the drum curl are pinched together and within the recess of the ring.
3. Torque the bolt and nut until the gap between the closing ring ends is $\frac{1}{4}$ " or less but with no bending of the lugs. Aim for $\frac{1}{8}$ " gap. For drums with poly liner "bags", the gap should be $\frac{1}{2}$ " or less while ensuring that the liner is seated uniformly over the curl of the drum and protruding out from under the cover. Generally, the closing ring ends must not touch when the ringbolt has been fully torqued (see paragraph "b" below).
 - a. **On rings supplied with a jam nut between the lugs**, tighten the nut securely against the unthreaded lug. The closing ring ends should not touch when the ringbolt has been fully torqued.
 - b. **Rings supplied without a jam nut may look very similar to those supplied with a jam nut, however these are not interchangeable.** It is important that jam nuts not be used with rings for which they are not supplied. The closing ring ends may touch when these rings are fully torqued. See the Solid Seal ring closing instructions for specific torque values, etc. for these rings. **



ⁱⁱ ISO 15750-3 Octagonal & Hexagonal Closures Type A. ANSI MH2-2003 §3.1.4

ⁱⁱⁱ ANSI MH2-2003 §3.2 and 3.2.4

4. Ring gap is critical. If it cannot be obtained, utilize the following torques:

Plant Supplying

Mason/Pine Bluff/Warren/Harrisburg
Burlington/Houston/Woodbridge
ALL
Mason/Warren
Mason/Warren

Drum/ring configuration

55-gallon 12 ga. Forged Lug ring w/ 5/8" bolt
55-gallon 12 ga. Forged Lug ring w/ 5/8" bolt
55-gallon, 5/16" and 3/8" bolts
Intermediate drums, 12 ga. Forged Lug ring
Intermediate drums, all other bolt rings

Applied Torque

60-65 ft.-lbs.
70-80 ft.-lbs.
not less than 15 ft.-lbs.
not less than 50 ft.-lbs.
not less than 8 ft.-lbs.

See the Solid Seal I II closing instructions for specifics on Solid Seal Rings

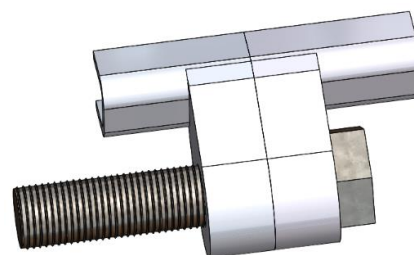
Note: Manufacturing location identification is marked in Inkjet on drum. Burlington(2-889), Harrisburg(M5369), Houston(M4601), Mason(M4453), Pine Bluff(M5368), Warren(M6066), Woodbridge((M4599).

LEVER RINGS



1. Snap the closing ring over the cover and curl area of the drum, making sure that it is seated over the entire perimeter. In order to compress the gasket uniformly, tap around the entire perimeter of the ring. For some ring/gasket combinations, a mechanical head compressing device may be necessary to accomplish this while closing the lever assembly handle.
2. For side lever locking rings, the ring latch must be snapped securely in place. For top lever locking rings, the top lever must be fully locked in place under the securing bar.
3. Sealing the eyelets of lever rings is necessary not only for evidence tampering, but for the integrity of the closure.

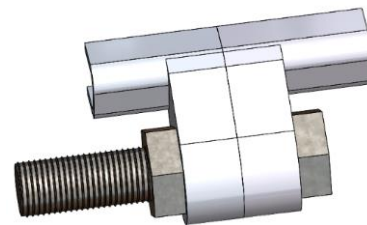
CLOSING INSTRUCTIONS FOR 1A2 FULL OPEN HEAD DRUMS WITH SOLID SEAL™ BOLT RING CLOSURE – TYPE II (TYPE II HAS A 5/8" BOLT WITH A NYLON LOCKING PATCH, WHICH ELIMINATES THE NEED FOR A RETAINING NUT OR JAM NUT)



- 1.) Snap the closing ring over the cover and curl area of the drum, making sure that it is seated over the entire perimeter. Check to see that the cover and drum curl are fully contained and centered within the recess of the ring.
- 2.) The bolts for this application have a nylon-locking patch on the threads. Insert the 5/8" diameter nylon patched bolt through the unthreaded ring lug and tighten the bolt while compressing the gasket with a mechanical head press or while tapping the outside of the closing ring around the entire perimeter with a non-sparking mallet.
 - a.) The bolt should be tightened until the two lugs meet and touch each other with no gap. A torque of at least 30 ft-lb should be applied. If a mechanical head compressor is not used, the torque required to bring the lugs together with no gap may be higher.
 - b.) When the ring and bolt are assembled and tightened correctly the two lugs should meet and touch each other with no gap, regardless of the torque required. If the lugs do not meet, go back to step 1 and repeat steps 1 through 3.
 - c.) For drums with poly liner bags, the gap should be 3/8" or less while ensuring that the liner is seated uniformly over the curl of the drum and protruding out from under the cover.

Note: Per IFI STD 124, a nylon patch bolt may be reused (re-torqued) a maximum of five times, after which it should be replaced.

CLOSING INSTRUCTIONS FOR 1A2 FULL OPEN HEAD DRUMS WITH SOLID SEAL™ BOLT RING CLOSURE – TYPE I (TYPE I HAS STANDARD 5/8" BOLT AND RETAINING NUT)



1) Snap the closing ring over the cover and curl area of the drum, making sure that it is seated over the entire perimeter. Check to see that the cover and drum curl are fully contained and centered within the recess of the ring.

2) Insert the 5/8" diameter bolt through the unthreaded ring lug and tighten the bolt while compressing the gasket with a mechanical head compressor or tapping the outside of the closing ring around the entire perimeter with a non-sparking mallet.

a.)The bolt should be tightened until the two lugs meet and touch each other with no gap. A torque of at least 30 ft-lb should be applied. If a mechanical head compressor is not used, the torque required to bring the lugs together may be higher.

b.)When the ring and bolt are assembled and tightened correctly the two lugs should meet and touch each other with no gap, regardless of the torque required. If the lugs do not meet, go back to step 1 and repeat steps 1 through 3.

COMPOSITE DRUMS

1. All non-removable head, UN 6HA1, Composite drums, 49 CFR § 178.522(a)(1), 55 gallon nominal capacity supplied with plug or screw cap closures with gaskets must be **closed for shipment using only the closures and gaskets supplied and specified** in the design qualification test for the drum as indicated below:

	Part Size / Part Number (Plug number with gasket)	Torque
A	HDPE Liner 6HA1/X1.8/350 and X1.8/300: 2 inch double buttress L-10xx with L11EP-xx	29-32 ft-lbs
B	Liner 5506: 2-inch NPS: L16-xx with L12-xx	14-18 ft.-lbs.
C	Liner 5506: inch NPS: C39-xx	4-6 ft.-lbs.
D	HDPE Liner 6HA1/Y1.8/100: 2-inch double buttress: L10-xx with L11EP-xx	21-25 ft.-lbs.
E	LDPE Liner 6HA1/Y1.8/100 and Y2.0/100: 2-inch combination plug: A16 EPG-TR	14-18 ft.-lbs.
F	LDPE Liner 6HA1/Y1.8/100 and Y2.0/100: 3/4 inch NPS: C34TR with C31EP-TR gasket	4-6 ft.-lbs.
G	Liner 5510 :2-inch double buttress: L10-HD with L11F-HD	25-30 ft.-lbs.
H	Nylon/Polypropylene 2 inch with EPDM Gasket	12-15 ft-lbs.

CAUTION

Per 49 CFR 172.22, it is the responsibility of the person offering a hazardous material for shipment to assure that the containers selected are appropriate to the product being shipped, and that the containers are properly assembled, as per the above Closing Instructions. The correct installation and torqueing of all closures, rings, plugs, etc. should be verified by the shipper prior to releasing a package for transportation.

Additionally, it is the responsibility of the Shipper to determine the suitability of any Mauser Packaging Solution packaging for transportation of hazardous materials by Air. For shipments by Air, the shipper must refer to all applicable provisions (including the Hazardous Materials Table and 172.321) in 49 CFR, and take into account the characteristics of the material being shipped and the performance capabilities of the container sold to you.

North Coast Container Corp.

Closing Instructions

49 CFR / UN Requirements

North Coast Container Corp. certifies that the drums we supply meet the requirements of Title 49 Code of Federal Regulations, part 178, subparts L and M. If, after receiving our drums, you, as the filler and shipper alter the drums in anyway you release North Coast Container Corp. from its responsibilities as the drum manufacturer.

Specifically, North Coast Container Corp. installs all closure devices in a way that satisfies all performance test requirements.

To comply with parts 178.2, 178.601 (b), and to assist you as the shipper and our customer in fulfilling your responsibilities, we list the following pertinent information.

Fitting Torque Requirements (Ft. –lbs.)

C1 OCTAGONAL BASE CLOSURE SYSTEM (See Note 1)

Recommended Minimum APPLICATION Torque (Steel)

<u>Gasket</u>	<u>3/4" (20 mm)</u>	<u>2" (50mm)</u>
Black Buna	12 ft. – lbs.	20 ft. – lbs.
White Buna	12 ft. – lbs.	20 ft. – lbs.
Butyl	12 ft. – lbs.	20 ft. – lbs.
White Neoprene	12 ft. – lbs.	20 ft. – lbs.
Polyethylene	15 ft. – lbs.	30 ft. – lbs.
Irradiated Poly	15 ft. – lbs.	30 ft. – lbs.
Viton	12 ft. – lbs.	20 ft. – lbs.
Hypalon	12 ft. – lbs.	20 ft. – lbs.
Teflon	20 ft. – lbs.	30 ft. – lbs.
Silicone	12 ft. – lbs.	20 ft. – lbs.
EPDM	12 ft. – lbs.	20 ft. – lbs.

Recommended Minimum APPLICATION Torque (Nylon)

<u>Gasket</u>	<u>3/4" (20 mm)</u>	<u>2" (50 mm)</u>
All	8 ft. – lbs.	20 ft. – lbs.

Recommended Minimum APPLICATION Torque (Polypropylene & HDPE)

<u>Gasket</u>	<u>3/4" (20 mm)</u>	<u>2" (50 mm)</u>
All	5 ft. - lbs	10 ft – lbs.

1. The “as shipped” torques may be up to 35% less than the application torques and still with stand normal conditions of transportation.

C2 SERRATED BASE CLOSURE SYSTEM

Recommended Minimum Torque (Steel)

<u>Gasket</u>	<u>3/4" (20 mm)</u>	<u>1 1/2" (38 mm)</u>	<u>2" (50 mm)</u>
Black Buna	15 ft. – lbs.	25 ft. – lbs. .	30 ft. – lbs.
White Buna	15 ft. – lbs.	NA	30 ft. – lbs.
Gray Neoprene	15 ft. – lbs.	NA	30 ft. – lbs.
Polyethylene	20 ft. – lbs.	40 ft. – lbs.	40 ft. – lbs.
Irradiated Poly	20 ft. – lbs.	40 ft. – lbs.	40 ft. – lbs.
Dapon	15 ft. – lbs.	NA	30 ft. – lbs.
EPT/EPDM	15 ft. – lbs.	25 ft. – lbs.	30 ft. – lbs.
Viton	15 ft. – lbs.	NA	30 ft. – lbs.

Recommended Minimum Torque (Plastic)

<u>Gasket</u>	<u>3/4" (20 mm)</u>	<u>2" (50 mm)</u>
Black Buna	9 ft. – lbs.	20 ft. – lbs.
White Buna	9 ft. – lbs.	20 ft. – lbs.
Gray Neoprene	9 ft. – lbs.	20 ft. – lbs.
Polyethylene	9 ft. – lbs.	20 ft. – lbs.
Irradiated Poly	9 ft. – lbs.	20 ft. – lbs.
Dapon	9 ft. – lbs.	20 ft. – lbs.
EPT	9 ft. – lbs.	20 ft. – lbs.
Viton	9 ft. – lbs.	20 ft. – lbs.

Recommended Minimum Torque for Self Gasketing Plastic Plugs

<u>3/4" (20 mm)</u>	<u>2" (50 mm)</u>
5 ft. – lbs.	12 ft. – lbs.

Most Important: Open head cover gasket performance can be affected by time (age), temperature, exposure to chemicals and ozone. This could result in loss of cover gasket elasticity. Consequently, North Coast Container Corp. recommends checking the closing ring bolt for proper torque prior to shipping.

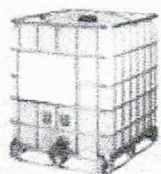
On open heads North Coast Container Corp. applies pressure to the cover to compress its gasket and facilitate proper tightening of the closing ring. Consequently, we strongly recommend filling through a top opening rather than by removing the cover. If you find it necessary to remove the cover for any reason then reinstallation should proceed as follows:

Closing Instructions:

- Install drum cover and closing ring on the drum.
- Optimum tightening for a 12 gage closing ring with forged lugs is to jam the nut between the two lugs.
- Note: For Lord code 1001769 black & orange drums and code 1001765 black & green agitator drums the rings must be tightened until their ends butt.
- If the nut cannot be jammed between the lugs then tighten the ring bolt to a minimum of 65 ft.-lbs. of torque then tighten the jam nut against the inside of the non-threaded lug.
- During the torquing process, tap the outside of the closing ring with a non-sparking mallet.
- Tighten all plugs to the recommended torques.
- Note: By removing the cover from an open head drum, 49 CFR §173.22 and §178.2 make you responsible for that drum's performance and safety during transport.

These closing instructions are valid for all drum specifications North Coast Container Corp. supplies you and are in effect until further notice.

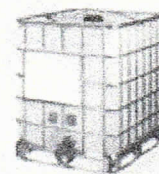
North Coast Container Corp.



Chambers Drum Company, Inc.

(770) 964-7467

IBC CLOSURE REQUIREMENTS



Pursuant to the requirements of the U.S. Department of Transportation at 49 CFR 178.2 (c) (1), we hereby provide this notification of the closing method used for the containers procured from Chambers Drum Company, Inc. This method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested and qualified for hazardous materials. Under the applicable U.S. DOT regulations, any changes made to the type, materials or dimensions of closures, or the method of closure **may constitute a change to the design type of these containers, voiding the UN certification and performance levels we have marked on them.** If there are any questions regarding proper closing methods, please contact Chambers Drum Company, Inc. at (770) 964-7467.

Closures must be tightened to assure that the container does not leak under conditions of normal transportation. If a filled container is left in storage without being shipped for more than 24 hours, closures should be checked again for tightness. If a filled container is not shipped for more than 30 days, gaskets should be replaced and closures tightened according to these instructions.

The torque values presented here are recommended torques; they are levels at which closure manufacturers have tested and certified the closure/gasket/IBC combination as capable of passing U.S. and UN packaging standards, and performing to the levels marked on the IBC. Fillers are advised to have readily available at filling operations a torque wrench with which to measure applied torque. U.S. DOT has indicated that it will enforce all provisions appearing in a Closure Notification. Not having a torque wrench available when torque levels are specified has been, in some cases, cited as a violation. Procedures in addition to simply tightening closures must be followed carefully, as they are a required part of the closure process.

Greif Closure Requirements

Top Openings in Greif UN IBC's must be fitted with 6" covers and gaskets supplied by Greif, Inc. 6" Covers must be tightened 1/2 turn after gasket makes contact with top of bottle and to at least 45 ft.-lbs. torque. Fittings or bungs in the cover must be tightened to a torque of 20 ft.-lbs. for 2" NPT fittings and 9 ft.-lbs. for 3/4" bungs, if installed.

Schutz Closure Requirements

Fill port openings in UN IBC's must be fitted with a 6" or a 9" fill port cap and gasket supplied by Schutz. Fill port caps must be tightened to a torque level of 75 ft.-lbs. Plugs in the fill port caps must be tightened to a torque of 15 ft.-lbs. for 2" NPT and Buttruss thread.

Mauser Closure Requirements

Fill port openings in UN IBC's must be fitted with a 6" or 9" fill port cap and gasket supplied by Mauser. Fill port caps must be tightened to a torque level of 70 ft.-lbs. Plugs in the fill port caps must be tightened to a torque of 20 ft.-lbs.

Varicon Closure Requirements

All Varicon IBC's, identified and marked UN31HA1 and M5568, of nominal capacity 275 to 330 U.S. gallons supplied with plug or screw cap closures with gaskets must be closed for shipment using the closures and gaskets supplied and specified in the design qualification test according to the following instructions:

- Place 6" cap with rubber gasket installed on top opening of the IBC body
- Using firm downward pressure on cap, turn cap clockwise to engage threads
- Tighten cap to 50 ft.-lbs.
- If installed within 6" cap, tighten 2" NPT closure with rubber gasket to 20 ft.-lbs. of torque and tighten 3/4" NPT closure (self-seal) to 9 ft.-lbs. of torque.

IBC North America Closure Requirements

Fill port openings in UN IBC's must be fitted with 6" or 9" fill port caps and gaskets supplied by IBC NA. You must use the approved gasket and closure tightened to the appropriate torque specification to meet DOT requirements, **outlined in the chart below.**

Type Cap	Material	Gasket	Torque
6" Cap w or w/o 2" Bung	HDPE	Santoprene / Viton	40 ft. lbs. & Lubricant
6" Cap w or w/o 2" Bung	HDPE	EPDM	55 ft. lbs.
6" Cap w or w/o 2" Bung	HDPE	Sponge Rubber	75 ft. lbs.



Chambers Drum Company, Inc.

(770) 964-7467

CLOSED TOP STEEL AND PLASTIC DRUM CLOSURE REQUIREMENTS



Pursuant to the requirements of the U.S. Department of Transportation at 49 CFR 178.2 (c) (1), we hereby provide this notification of the closing method used for the containers procured from Chambers Drum Company, Inc. This method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested and qualified for hazardous materials. Under the applicable U.S. DOT regulations, any changes made to the type, materials or dimensions of closures, or the method of closure **may constitute a change to the design type of these containers, voiding the UN certification and performance levels we have marked on them.** If there are any questions regarding proper closing methods, please contact Chambers Drum Company, Inc. at (770) 964-7467.

Closures must be tightened to assure that the container does not leak under conditions of normal transportation. If a filled container is left in storage without being shipped for more than 24 hours, closures should be checked again for tightness. If a filled container is not shipped for more than 30 days, gaskets should be replaced and closures tightened according to these instructions. The torque values presented here are recommended torques; they are levels at which closure manufacturers have tested and certified the closure/gasket/drum combination as capable of passing U.S. and UN packaging standards, and performing to the levels marked on the drum. Fillers are advised to have readily available at filling operations a torque wrench with which to measure applied torque. U.S. DOT has indicated that it will enforce all provisions appearing in a Closure Notification. Not having a torque wrench available when torque levels are specified has been, in some cases, cited as a violation. Procedures in addition to simply tightening closures must be followed carefully, as they are a required part of the closure process.

CLOSED HEAD STEEL DRUM (1A1)

1. Check gaskets and ensure that they are properly seated on the plugs.
2. Tighten plugs using a torque wrench to the torque specifications presented here.
3. Take care not to cross threads.

REQUIRED TORQUE				
Size & Fitting Style	STEEL PLUGS		NYLON OR POLY PLUGS	
	Buna Rubber Gasket	Poly Gasket	Buna Rubber Gasket	Poly Gasket
2" Rieke Type	30 ft. lbs.	40 ft. lbs.	20 ft. lbs.	20 ft. lbs.
3/4" Rieke Type	15 ft. lbs.	20 ft. lbs.	9 ft. lbs.	9 ft. lbs.
2" Tri-Sure Type	18 - 22 ft. lbs.	18 - 22 ft. lbs.	18-22 ft. lbs.	10 - 20 ft. lbs.
3/4" Tri-Sure Type	11 - 15 ft. lbs.	14 - 18 ft. lbs.	7 - 11 ft. lbs.	8 - 12 ft. lbs.

CLOSED HEAD PLASTIC DRUMS (1H1)

1. Place plugs (with gasket) into the corresponding drum opening of corresponding size and thread pattern.
2. Tighten to torque values as follows:

REQUIRED TORQUE			
Size & Fitting Style	NYLON & POLYPROPYLENE		POLYETHYLENE
	Buna Rubber Gasket	Poly Gasket	Self-Gasketing
2" Rieke Type	20 ft. lbs.	20 ft. lbs.	20 ft. lbs.
3/4" Rieke Type	9 ft. lbs.	9 ft. lbs.	9 ft. lbs.
2" Tri-Sure Type	20 ft. lbs.	30 ft. lbs.	12 ft. lbs.
3/4" Tri-Sure Type	8 ft. lbs.	8 ft. lbs.	5 ft. lbs.

I acknowledge receipt of drum closure Notification instructions from Chambers Drum Company, Inc.

A copy of the Notification for each packaging design-type is to be maintained on file for at least one year by the packaging manufacturer and each subsequent distributor

CUSTOMER

NAME

DATE

CHAMBERS DELIVERY TICKET

Fairburn Printers 770.964.4613

1A2 Container Closure Assembly Instructions

1A2 CONTAINERS

1. Inspect cover gasket to ensure it is fully retained in cover curl.
2. Place cover on container false wire (OH curl).
3. Install 12 ga. locking ring over cover curl and false wire.
4. Insert $\frac{5}{8}$ " bolt and locking jam nut, if applicable.
5. Tighten $\frac{5}{8}$ " bolt completely (ring ends should be within $\frac{1}{2}$ " $\pm$ $\frac{1}{8}$ " each end for optimum seal).
6. Tighten jam nut against locking ring bolt lug.

Note: If drum is filled through bungs, follow procedure for 1A1 containers.

1A1 CONTAINERS

1. Inspect all bungs which have been removed to ensure gaskets are in place.
2. Insert all bungs and hand thread in clockwise direction until bungs are hand tight.
3. With a calibrated torque wrench, torque tighten all applicable bungs (Ref. Chart 1).
4. Wipe clean any spillage or debris.
5. Apply applicable cap seals.

CHART 1

Recommended Plug (Bung) Torque in FT/LBS

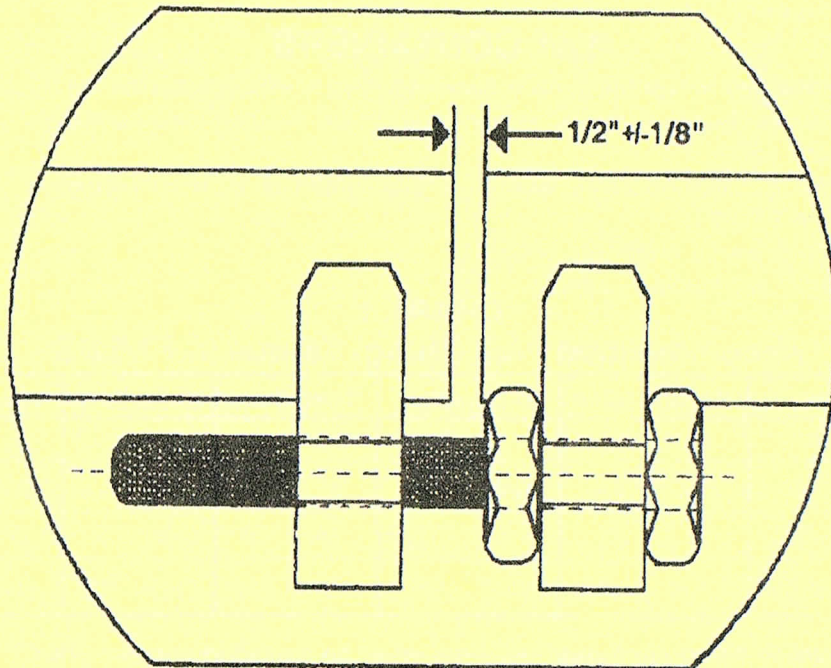
Size/Type	Tri-Sure Steel		Tri-Sure Poly		Rieke Steel		Rieke Poly		Nylon
2"	20	30	12	12	30	40	20	20	40
1½"	N/A	N/A	N/A	N/A	25	30	N/A	N/A	N/A
¾"	12	20	5	15	15	20	9	9	20
Gasket Type	Rubber	Poly	Rubber	Poly	Rubber	Poly	Rubber	Poly	Poly

UN certified container closures must be installed and secured in accordance with the above procedure and specifications.

Note: To ensure compliance to the UN marking, filler should inspect and re-tighten all applicable closures prior to shipment.

1A2 CLOSURE SYSTEM COMPONENTS

12 Gauge Forged Lug Locking Ring
 $\frac{5}{8}$ " Standard Drum Bolt
 $\frac{5}{8}$ " Standard Jam Nut (Optional)



Customer

Name

Date

CLOSURE NOTIFICATION ADVICE

STEEL DRUMS

Pursuant to the requirements of the U.S. Department of Transportation at 49CFR178.2(c)(l), we hereby provide this notification of the closing method used for the containers sold to you. This method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested. Under the applicable DOT regulations, any changes made to (a) the type materials or dimensions of closure or (b) the method of closure may constitute a change to the design type of these containers, voiding the UN certification we have marked on them.

TO CLOSE FITTINGS IN HEADS OR COVERS:

1. Insert and tighten all plugs into their appropriate threaded flanges until snug.
2. Using a torque wrench, tighten each fitting to the correct torque. See below for correct torques.

Torques are based on the closure manufacturers' recommendations.

SIZE & FITTING STYLE	REQUIRED TORQUE			
	STEEL PLUGS		NYLON OR POLY PLUGS	
	Buna Rubber Gasket	Poly Gasket	Buna Rubber Gasket	Poly Gasket
2" Rieke Type	30 ft. lbs.	40ft. lbs.	20 ft. lbs.	20ft. lbs.
3/4" Rieke Type	15 ft. lbs.	20 ft. lbs.	9 ft. lbs.	9 ft. lbs.
2" Trisure Type	20ft.lbs.	30 ft. lbs.	20ft. lbs.	30ft. lbs.
3/4" Trisure Type	12 ft. lbs.	20ft. lbs.	8 ft. lbs.	8 ft. lbs.

TO CLOSE OPEN HEAD DRUMS:

1. Place cover on drum, using only the cover gasket we have supplied.
2. Snap the closing ring over the cover and the bead of the drum. Make sure the rings' lugs point down, toward the floor. Also, make sure that sufficient downward pressure is applied to the cover so that the bottom edge of the closing ring is fully engaged under the bottom edge of the drum bead.
3. Insert the bolt through the lug without threads. If your specifications included lock nuts, screw on the lock nut. Finally, screw the bolt into the threaded lug.
4. Tighten the bolt in the locking ring lugs to 65 ft. lbs. of torque. While tightening the bolt, pound the entire perimeter of the locking ring with either a non-sparking brass/beryllium or rawhide mallet until there is no further ring movement. Do not rely on wrench tightening to bring closure without pounding ring as stripping of nut and/or lug will occur. Begin each pounding cycle 180" across the drum head from the locking ring lugs. Check to ensure that the ring is seated tightly against the bottom edge of the drum bead and cover. Note: for UN drums which do not utilize a 1 2-gauge bolt ring, tighten bolt to 10ft. lbs. while pounding ring to minimize lug deformation. Bottom of ring should be snug against drum body.
5. If your specifications included lock nuts, the lock nut must be tightened against the threaded lug of the bolt ring. Tighten lock nut to 25-30 ft. lbs. of torque. We advise all customers to recheck the torque on all fittings and bolts before your full container of product leaves your facility. Drums closed in the above manner meet the UN Performance Oriented Packaging Standards test requirement for the container markings shown on the drum.



Rieke Tite-Grip and Vice-Grip Drum Fitting Closing Instructions

CSC Form # QA-FM-L255

Rev. 4

Date 10/20/10

Manual Hand Tool:

- I. Place the fitting on the top of the container in the threaded opening.
- II. Start turning the fitting to the right, till the threads have started to engage.
- III. Finish installing the fitting with the manufacturers suggested wrench.
- IV. Make sure that the fitting is tightened to the proper specification. (see chart below.)

Pneumatic Hand Tool:

- I. Place the fitting on the top of the container in the threaded opening.
- II. Start turning the fitting to the right, till the threads have started to engage.
- III. Finish installing the fitting by using the pneumatic tool.
- IV. Make sure that the fitting is tightened to the proper specification. (see chart below.)

2" Plugs

<u>Gasket</u>	<u>Material</u>	<u>Plastic Plug</u>	<u>Steel Plug</u>	<u>Oven Temp</u>
G-43	Black Buna	20 ft-lbs	30 ft-lbs	450 F
G-43w	White Buna	20 ft-lbs	30 ft-lbs	450 F
G-73-2	L. D. Polyethylene	20 ft-lbs	30 ft-lbs	120 F
G-73-3	Irradiated L. D. Polyethylene	20 ft-lbs	30 ft-lbs	375 F
G-83	Dapon	20 ft-lbs	30 ft-lbs	450 F
G-93	E.P.T	20 ft-lbs	30 ft-lbs	450 F
G-93w	White EPT	20 ft-lbs	30 ft-lbs	450 F

¾" Plugs

G-41	Black Buna	9 ft lbs	15 ft lbs	450 F
G-41w	White Buna	9 ft lbs	15 ft lbs	450 F
G-71-2	L. D. Polyethylene	9 ft lbs	15 ft lbs	120 F
G-71-3	Irradiated L. D. Polyethylene	9 ft lbs	15 ft lbs	375 F
G-81w	Dapon	9 ft lbs	15 ft lbs	450 F
G-91	E.P.T	9 ft lbs	15 ft lbs	450 F
G-91w	White EPT	9 ft lbs	15 ft lbs	450 F

Signature: _____



**STEEL DRUM CLOSING STATEMENT
CFR 49 PART 178-178.2 (c) (1) NOTIFICATION**

All steel containers should be closed after filling and before transportation in accordance with the tightening torque's in Appendix 1.

Containers fitted with crimped over seals over the closures will be fully torqued at the plant of manufacture.

APPENDIX 1

Closing Torques for Plug/Gasket Combinations

PLUG TYPE	GASKETS	Tightening Torque	
		¾" Dia Plugs	2" Dia Plug
Tri-Sure Steel	Rubber-Black Buna, White Buna, Butyl, White Neoprene, Viton, Silicone & EPDM	12 Ft. lbs	20 Ft lbs
	Polyethylene, Irradiated Polyethylene & Teflon	20 Ft. lbs	30 Ft lbs
Tri-Sure Polyethylene Polypropylene/Nylon	Rubber-Black Buna, White Buna, Butyl, White Neoprene, Viton, Silicone & EPDM	12 Ft lbs	20 Ft lbs
	Polyethylene, Irradiated Polyethylene & Teflon	8 Ft lbs	30 Ft lbs
Rieke Steel	Rubber-Quartermaster Hycar, White Buna, White Asbestos, White Dapon, EPT Wht&Black	15 Ft lbs	30 Ft lbs
	Poly Seal (Plastic) Irradiated & Non-irradiated	20 Ft lbs	40 Ft lbs
Rieke Polyethylene Polypropylene/Nylon	Rubber-White Buna EPT Black& White Dapon, Irradiated & Non-Irradiated	9 Ft lbs	20 Ft lbs

Open Head Containers

14" diameter, 16" diameter, 18 ¼" diameter

All Open Head containers should have the Locking Ring Bolt torque's checked after filling & before transportation in accordance with Appendix 2
Procedure for checking bolt tightening torque's:

- 1) Release the Jam Nut
- 2) Tighten the locking ring bolt to torque's stated in Appendix 2.
While torquing, bump the ring with a mallet directly opposite the lugs, and on both sides.
Note: Bump the ring at a 30-degree downward angle.
- 3) Retighten the Jam Nut to 20-25 Ft-lbs torque, against the unthreaded lug.

APPENDIX 2

Closing Torques for locking rings for 14", 16", 18 ¼" diameter drums

14" diameter rings	GASKET TYPES	BOLT TIGHTENING TORQUE
12 GA BOLT TYPE	Flow-in gaskets, 5/16 EPDM	45 Ft lbs.-Ring gap 1/8" to 5/8"
13 GA BOLT TYPE	Flow-in gaskets	35-40 Ft lbs-Ring gap 1/8" to 5/8"
13 GA BOLT TYPE	Neoprene, EPDM, & Tubular gaskets	35-40 Ft lbs-Ring gap 1/8" to 5/8"
18 GA BOLT TYPE	Flow-in gaskets	8-15 Ft lbs-Ring gap 1/8" to 5/8"
18 GA BOLT TYPE	Neoprene, EPDM, & Tubular gaskets	8-15 Ft lbs-Ring gap 1/8" to 5/8"
16" diameter rings	GASKET TYPES	BOLT TIGHTENING TORQUE
18 GA BOLT TYPE	Flow-in gaskets	8-15 Ft lbs-Ring gap 1/8" to 5/8"
18 GA BOLT TYPE	Neoprene, EPDM, & Tubular gaskets	8-15 Ft lbs-Ring gap 1/8" to 5/8"
18 ¼" diameter rings	GASKET TYPES	BOLT TIGHTENING TORQUE
12 GA FORGED LUG	3/8" square sponge 5/16" Round solid black rubber 3/8" Round White Tubular Neoan	30 to 35 Ft lbs Ring Gap 9/16" to ¼"
	Body Gasket EPDM Sponge Pinocchio gasket	50 to 60 ft lbs 9/16" to 1/8"
16 GA BOLT RING	3/8" square sponge 3/8" round white tubular ½" Dia Tan sponge	15 Ft lbs Ring Gap 5/8" to 3/8"

Note: For Lever Locking rings; Rings should be closed securely and latched.
A stiff wire should be placed thru eyelet of latch and twisted for security purposes.

Revised 10/26/15

S77

***** CLOSURE NOTIFICATION *****

Pursuant to the requirements of the Department of Transportation in CFR 49 Part 178.2(c)(1), this is your notification of the closing method used for the the containers sold to you.

These instructions for closure are based upon the closure methods used to enable these containers to pass the United Nations test requirements as outlined by the UN marking on the package. This method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested. To be UN certified, this drum must be closed with the same plugs used for certification. If the drum is purchased without these parts, contact the supplying Greif plant for the correct components.

Your product may adversely affect container materials, bung threads or closing devices. Product compatibility with the container is the shipper's responsibility.

The closure recommendations do not take into account any hazards present at your facility, or the handling, filling or shipping of your product.

Any container used for packaging hazardous materials should be inspected before filling and shipment. Containers with obvious damage or deterioration should not be filled or shipped.

Plug Closing Instructions:

- 1) Place the plugs into the appropriate bung.
- 2) Turn the plug gently clockwise, making sure that the plug is entering the bung properly.
- 3) Using a torque wrench, tighten the plug according to the manufacturer's recommended torque below.

Drums with plugs closed in this manner have met the UN performance requirement as specified in the container markings.

For Item # DRST01989NA20001

Closing Ring	Torque	Gap
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Plugs

American Flange 3/4" Steel with Poly Irradiated	11 to 18	ft-lbs
American Flange 2" Steel with Poly Irradiated	15 to 22	ft-lbs
American Flange 2" Nylon with Poly Irradiated	15 to 22	ft-lbs
American Flange 3/4" Nylon with Poly Irradiated	8 to 11	ft-lbs

Steel Drum Regulated and Non Regulated Container Closure & Assembly Instructions



UN certified container closures must be installed and secured in accordance with the following procedure and specifications

This Procedure is for new steel drums manufactured by GENERAL STEEL DRUM, LLC only!

To ensure compliance to UN markings, the filler/shipper must inspect and confirm all closures are properly installed and at proper torque prior to shipping.

DO NOT MIX DIFFERENT DRUM MANUFACTURERS' COMPONENTS! For drums manufactured / re-manufactured by others suppliers, consult your specific supplier closing requirements.

OPENHEAD DRUM CLOSURE PROCEDURE

1. Inspect gasket for proper seating and remove any residue from curl prior to cover installation.
2. Place cover on drum, making sure the cover gasket is seated against drum curl and gasket is securely recessed in cover channel. The gasket may not protrude outside the cover or drum curl or be sagging inside drum. If drum has a poly liner, the curl area must be free of wrinkles.
3. Place cover ring onto drum. Make sure bolt ring is oriented so lugs are positioned below top surface of drum. Ensure it is centered on drum curl. Verify cover and drum curl are pinched together and within the recess of ring profile. You are required to pound ring with non-sparking mallet or use head press to compress gasket.
4. **For bolt ring-insert** bolt into ring right lug. Thread jam nut onto bolt, if needed, and then into threaded lug, and tighten bolt to specification. Hammer around circumference of ring while torque is applied to further seat head onto drum. Continue hammering on ring circumference and torque the bolt until the torque does not loosen when further hammering on the ring circumference is performed. Tighten jam nut against unthreaded lug. Ring ends must not touch when proper torque is applied.

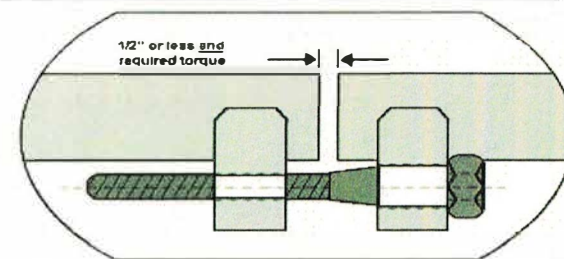
For lever ring-hammer around circumference until lever can lock in place.

It is the filler's responsibility to verify the container has been properly closed prior to shipping filled drums



Notes:

- This document must be passed along with the container within your facility, or to whom the packaging is transferred, and ultimately to the personnel responsible for shipping and closure. It must be used as a training document to complete proper closure of your container.
- In order for your drum to safely perform to its rated ability, these assembly instructions must be strictly adhered to. Any other method of assembly will immediately invalidate the UN certification.
- Disassembly of a poly lined drum voids UN certification.



BUNG CLOSING PROCEDURES- Do not over tighten!

1. Inspect all bungs to ensure gaskets are in place and not twisted or damaged
2. Insert all bungs and hand thread in a clockwise direction until hand tight. Do not cross thread
3. Utilizing a CALIBRATED TORQUE WRENCH to torque and confirm all bungs are at required minimum torque.
4. Wipe clean any spillage or debris.
5. If required, apply applicable cap seals

16 Gauge Ring: Torque: 15 to 20 ft-lbs- **No Jam Nut**

12 Gauge Forged Lug Ring: Torque: 60 to 70 ft-lbs

1 1/8" Standard Drum Bolt... **Jam Nut Required**

5/8" Shoulder Bolt... **No Jam Nut**

Manufacturer's Recommendations [ft-lbs]-(tolerance +/- 10%)

Bung Type	O Round Bung				O Hexagon Bung			
	Steel		Poly / Nylon		Steel		Poly / Nylon	
Gasket Type	Rubber	Poly	Rubber	Poly	Rubber	Poly	Rubber	Poly
2"	20 ft-lb	30 ft-lb	20 ft-lb	15 - 20 ft-lb	30 ft-lb	40 ft-lb	20 ft-lb	20 ft-lb
1-1/2"	n/a	n/a	n/a	n/a	30 ft-lb	40 ft-lb	n/a	n/a
3/4"	9 ft-lb	15 ft-lb	9 ft-lb	9 ft-lb	15 ft-lb	20 ft-lb	9 ft-lb	9 ft-lb

For more information, call (800) 796-4226

www.generalsteeldrum.com



CLOSURE NOTIFICATION ADVICE **STEEL DRUMS**

(INCLUDING BUT NOT LIMITED TO 16-, 30-, AND 55-GAL DRUM SIZES)

Pursuant to the requirements of the U.S. Department of Transportation at 49 CFR 178.2(c)(1), we hereby provide this *Notification* of the closing method used for the containers sold to you under our *Quotation*. This method of closure should be used to ensure that your containers have been closed in the same manner as when they were initially tested. Under the applicable DOT regulations, any changes made to (a) the type, materials or dimensions of closures or (b) the method of closure **may constitute a change to the design type of these containers, voiding the UN certification we have marked on them.** If there are any questions regarding proper closing methods, please contact your Account Manager or Customer Service representative. **Industrial Container Services highly recommends a copy of this *Notification* be kept on file and posted in a conspicuous location at your facility.**

TO CLOSE FITTINGS IN HEADS OR COVERS:

1. Use only the plugs and gaskets we have supplied with the drums.
2. Insert and tighten all plugs into their appropriate threaded flanges until snug.
3. Using a torque wrench, tighten each fitting to the correct torque. See below for correct torques. Torques are based on the closure manufacturers' recommendations.

REQUIRED TORQUE

SIZE & FITTING STYLE	STEEL PLUGS			NYLON OR POLY PLUGS	
	Buna Rubber Gasket	Poly Gasket	EPT Gasket	Buna Rubber Gasket	Poly Gasket
2" Rieke Type	30 ft. lbs.	40 ft. lbs.	N/A	20 ft. lbs.	20 ft. lbs.
1 ½ Rieke Type	30 ft. lbs.	40 ft. lbs.	30 ft. lbs.	N/A	N/A
3/4" Rieke Type	15 ft. lbs.	20 ft. lbs.	N/A	9 ft. lbs.	9 ft. lbs.
2" Trisure Type	20 ft. lbs.	30 ft. lbs.	N/A	20 ft. lbs.	30 ft. lbs.
3/4" Trisure Type	12 ft. lbs.	15 ft. lbs.	N/A	8 ft. lbs.	8 ft. lbs.
2" Leak Lock Type	25 ft. lbs.	N/A	N/A	N/A	N/A
¾" Leak Lock Type	20 ft. lbs.	N/A	N/A	N/A	N/A

Drums closed in this manner meet the UN performance oriented packaging standards test requirements for the container markings shown on our *Quotation*. It is the responsibility of the shipper to ensure that the container is closed according to these instructions prior to shipment per 49 CFR 173.22(a)(4).



CLOSURE NOTIFICATION ADVICE STEEL DRUMS

TO CLOSE OPEN HEAD DRUMS:

A. FOR CUSTOMERS WHO ASSEMBLE THE COVER AND RING AFTER FILLING:

1. Place cover on drum, using only the cover gasket we have supplied and which is described in our *Quotation*.
2. Snap the closing ring over the cover and the bead of the drum. Make sure the ring's lugs point down, toward the floor. Also make sure that sufficient downward pressure is applied to the cover so that the bottom edge of the closing ring is fully engaged under the bottom edge of the drum bead.
3. If there are fittings in the cover, the ¾" bung should be oriented between 45 to 90 degrees from the ring lug. If no ¾" bung, orient the 2" bung 45 to 90 degrees from the ring lug.
4. Insert the bolt through the lug without threads. Then screw lock nut on bolt (if provided see section 6). Finally, screw the bolt into the threaded lug.
5. Tighten the bolt in the locking ring lugs to 60 ft-lbs. of torque. **While tightening the bolt, tap the entire perimeter of the locking ring with a mallet until there is no further loosening of the ring. Begin each tapping cycle 180° across the drum cover from the locking ring lugs; repeat several times. Check to ensure that the ring is seated tightly against the bottom edge of the drum bead and cover and ring ends are not touching.**
6. If jam nuts are provided, ensure nut spins freely between lugs during ring torqueing process. Finger tighten jam nut against threaded lug of ring (metal to metal); then wrench tighten the jam nut an additional 14 to 28 degrees. **Note:** If Fas lok bolts or shoulder bolts are provided (which manufacturers are using at an increased rate), they do not require a jam nut for proper closure.

B. FOR CUSTOMERS WHO PURCHASE DRUMS ASSEMBLED:

1. Ensure that the locking ring, bolt and nut have not been disturbed from the time of our delivery.
2. After filling, close the fitting in the cover used for filling, as described on the reverse.
3. Check the tightness of the bolt and nut, per A.5 & 6, above. (Some loosening of the ring is inevitable, over time, because of gasket compression.) Ensure that torque levels meet those shown above.

Drums closed in the above manner meet the UN performance-oriented packaging standards test requirements for the container markings shown on the attached *Quotation*. It is the responsibility of the shipper to ensure that the container is closed according to these instructions prior to shipment per 49 CFR 173.22(a)(4).

Note: Consideration should be given to the possible effects heating and cooling may have on containers resulting in the need to tighten the closure(s). Drum gaskets will compress and lose their memory over time affecting their ability to seal. It is recommended that you limit to a minimum the time assembled gaskets are kept under full compression.

Under DOT regulations, any changes made to the type and dimensions of closures or the method of closure may constitute a change in design type of this packaging, voiding the certification we have marked on it and requiring retesting and recertification.

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Steel Drum Closure & Assembly Instructions

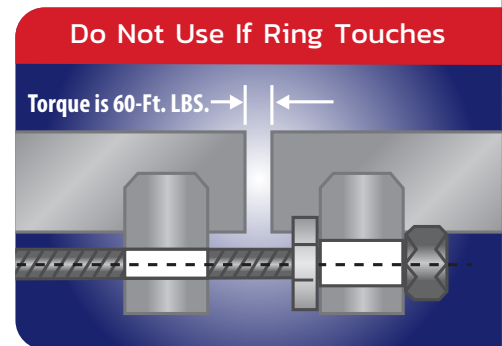
CLOSURE SYSTEM COMPONENTS

To ensure compliance to the UN marking, the filler must inspect and re-tighten as necessary all applicable closures prior to shipping. Damaged gaskets must be replaced prior to shipment. Damage includes, but is not limited to tearing, twisting, and deterioration.

This procedure is for new steel drums manufactured by North Coast Container only!

DO NOT MIX DIFFERENT DRUM MANUFACTURERS' COMPONENTS!

For drums manufactured/re-manufactured by others suppliers, consult your specific supplier for torque and closing requirements



1A2 Openhead Drum Closure Procedure (5/8-Inch Bolt)

- 1** Inspect the gasket for proper seating and remove any residue from curl prior to cover installation.
- 2** Place the cover on the drum, making sure the cover gasket is seated against the lip of the drum opening (the curl) and the gasket recess on the cover. The gasket should not protrude beyond the cover or the drum curl.
- 3** Place the bolt ring onto the drum. Make sure that the bolt ring is oriented so that the lugs are positioned below the top surface of the drum. You will be required to pound on the cover with a rubber or other non-sparking mallet, or use the ahead press to compress the gasket. Make sure it is centered on the drum curl. Check to see that the cover and drum curl are pinched together and within the recess of the ring.
- 4** Thread jam nut onto bolt and then into threaded lug, and tighten bolt to 60 ft-lb of torque. Hammer around the circumference of the ring while torque is applied to further seat the head onto the drum. Continue hammering on the ring circumference and torque the bolt until the torque is stabilized at 60 ft-lb, and does **(Step 4 continued on next page)**

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not loosen when further hammering on the ring circumference is performed. Tighten the jam nut against the unthreaded lug. The ring ends must not touch when 60 ft-lb of torque is applied.

If a shoulder bolt is used instead of a standard bolt, tighten the ring bolt to 60 to 70 ft-lbs. of torque.

***It is the filler's responsibility to verify the container has been properly closed prior to shipping filled drums**



Routing: Instructions: This document must be passed along with the container within your facility, or to whom the packaging is transferred, and ultimately to the personnel responsible for shipping and closure. It must be used as a training document to complete the closure of your container.

- For 7 A/Type A tested packages – please refer to the test document for additional requirements
- In order for your North Coast Container drum to safely perform to its rated ability, these assembly instructions must be strictly adhered to. Any other method of assembly will immediately invalidate the UN and DOT performance rating of the drum.
- The shipper must verify the appropriate use of a liner. A liner which extends between the gasket and the curl may only be used if UN Performance tests indicate a liner was used in the testine.

Bung Closure Procedures

- 1 Inspect all bungs to ensure gaskets are in place and not twisted or damaged
- 2 Insert all bungs and hand thread in a clockwise direction until hand tight. **Do not cross thread**
- 3 Utilizing a CALIBRATED TORQUE WRENCH to torque and confirm all bungs are at required minimum torque. Do not over tighten
- 4 Wipe clean any spillage or debris.
- 5 If required, apply applicable cap seals

As tested, torque settings are listed. Acceptable tolerance $\pm$ 2 ft-lbs

Plug Type	Type-I Octa on Base With Round Threaded Bung				Type II - Serrated Base, Hexagon Bung			
Plug Material	Steel	Steel	Poly/Nylon	Poly/Nylon	Steel	Steel	Nylon	Poly/Nylon
Gasket Type	Rubber	Poly	Poly	Rubber	Rubber	Poly	Rubber	Rubber
2"	20 ft-lb	20 ft-lb	20 ft-lb	20 ft-lb	30 ft-lb	40 ft-lb	20 ft-lb	20 ft-lb
¾"	13 ft-lb	16 ft-lb	9 ft-lb	9 ft-lb	15 ft-lb	20 ft-lb	9 ft-lb	9 ft-lb

49 CFR 178.2 © Notification for North Coast Container and UN Assembly Instructions for Non-Bulk NCC Packaging



Fiber Drums

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 § 172.704(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.

These closing instructions must be given to the individuals responsible for closing the packagings prior to shipment. Many companies use electronic copies as site specific work instructions and/or use laminated hard copies posted at the fill lines for reference by the fill line operators. A hard copy (printed) must be maintained by the filler or offeror for shipment.

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 or components other than those as sold with or specified by the original packaging design are used. In the case of removable head drums the lids, gaskets and locking rings are supplied as tested.

PRIOR TO CLOSING:

Inspect each lid to ensure that the lid has the proper gasket (if applicable) and that both lid and gasket (if applicable) are in good condition. Inspect the sealing surface on the drum for damage and make sure the sealing surface is dry. Replace any defective lids or gaskets (if applicable) with new, defect free parts identical to those listed in the design qualification and periodic recertification tests.

FIBER REMOVABLE HEAD DRUMS

1. All removable head, UN 1G, Fiber Drums, 49 CFR § 178.508(a), of nominal capacity 8 to 65 U.S. gallons supplied with plastic lids, or fiber lids, or metal lids, gaskets (if applicable) and associated locking rings, must be closed for shipment using only the components specified in the design qualification and periodic recertification tests according to the following installation instructions:
 - For fiber drums with poly bags:
 - o Insert poly bag into drum. Standard bag is a 3 mil (0.076 mm) polyethylene bag. A "B2" or "B3" will be in the product code for drums sold with this bag installed. Specialty heavy duty and/or antistatic bags will be noted in like manner in the product code and certification documentation. Customer supplied bags must be at least identical to the bag specified in the certificates in terms of material of construction, size, thickness and strength.
 - o Fill contents and close bag with wire tie or plastic cable (zip) tie as specified. Customer supplied ties must be at least identical to those in the certification documents in terms of size, material of construction, size and strength.
 - For all fiber drums, place drum lid with gasket (if applicable) and selected locking ring as supplied on the top opening of the drum body.
 - o Place locking ring tab up for top latch style rings & tab down for bottom latch style rings.
 - Firmly place lid onto top opening by applying downward pressure to lid above drum sidewall.
 - While pressing down on lid, engage locking mechanism of locking ring to secure the lid in place. Make sure the locking mechanism is completely latched. Insert locking tab into slots in locking ring handle.

IBCs

SCHUETZ

packaging update

PACKAGING CLOSURE INFORMATION

September 8, 2016

CLOSURE SPECIFICATIONS FOR TIGHT HEAD DRUMS

PLUGS MUST BE TORQUED TO THE FOLLOWING

2" NPS AND 2" BUTTRESS - 150 kPa and 250 kPa - 30 FT LBS,

Dip tubes - 20 ft lbs, 3/4" NPT - 9 FT LBS

Note: Closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR OPEN HEAD DRUMS

CLOSE AND SECURE LID WITH LOCKING RING - ATTACH HOLDING PIN FOR HANDLE TO KEEP RING CLOSED.

PLUGS MUST BE TORQUED TO THE FOLLOWING :

2" NPS AND 2" BUTTRESS - 20 FT LBS

3/4" NPS - 9 FT LBS

note: closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR IBC'S

FILL PORT CAP AND VALVE MUST BE TORQUED TO THE FOLLOWING:

6" AND 9" FILL PORT CAP - 75 FT LBS

2" plug in 6" or 9" fill port cap must be torqued to 15 ft lbs. (Schuetz does not recommend that you remove this plug. Filling should be done through the 6" or 9" opening)

*** 56 x 4 mm plug - 20 ft lbs**

Old style valves and EVOH valves

VALVE NUT - 55 FT LBS

note: caps, valves, and plugs must have gaskets to seal

New Style valves - valve must have gasket to seal. Two complete turns and line up the hole in the valve body and the hole in the bottle insert and insert clip.

*** - Underline indicates the latest change to the instructions.**

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 § 172.704(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 IBCs. 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 offeror 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 the 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, IBC's, 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	MAUSER® Passport 135/220/275/330 gallon	EPDM	40 ft.-lbs. using compatible lubricant
B	MAUSER® Passport 135/220/275/330 gallon	FKM/FPM	40 ft.-lbs. using compatible lubricant
C	MAUSER® Passport 135/220/275/330 gallon	Santoprene	40 ft.-lbs. using compatible lubricant
D	2" plug in 150 mm lid, vented and solid on Passport 135/220/275/330 gallon	Santoprene	10-15 ft.-lbs.
E	MAUSER® Passport 135/275/330 gallon 9" lid	Santoprene	75 ft.-lbs.
F	MAUSER® SM and MaschioPack 275/330 gallon	EPDM	70 ft.-lbs.
G	MAUSER® SM and MaschioPack 275/330 gallon	FKM/FPM	70 ft.-lbs.
H	MAUSER® SM and MaschioPack 275/330 gallon	Santoprene	70 ft.-lbs.
I	2" plug in 150 mm lid, vented and solid MAUSER® SM and MaschioPack 275/330 gallon	EPDM/FKM	20-25 ft.-lbs.
J	56 mm plug in 150 mm lid, vented and solid MAUSER® SM and MaschioPack 275/330 gallon	EPDM/FKM	20-25 ft.-lbs.
K	2" Buttress plug in top of MAUSER® SM series 275/330 gallon	EPDM/FKM	20 ft.-lbs.

All UN 31HA1 (UN 31HZ1) Composite IBC's 49CFR §§ 178.704 & 178.707 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.

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 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 § 178.704 (e) and §§ 180.350 -180.352. 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 recipients 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, 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 cannot reach 70 ft-lbs, it may be cross threaded or 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. Passport 1.5" or 2" ball valves: Using a torque wrench with a valve adapter as above tighten the valve to 60 ft-lbs, finishing the procedure with the valve in the proper vertical orientation. If the valve reaches 60 ft-lbs and will not orient properly, or if it cannot reach 60 ft-lbs, it may be cross threaded or bad thread. Discard the bottle. Passport bottle may not be reused if torque is not reached on the first attempt.
6. MaschioPack 2" butterfly valve: Begin with valve handle starting in the 12:00 position, turn valve three complete rotations with valve handle finishing in the 12:00 position.
7. 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 bungs 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



Intermediate Bulk Containers

All reconditioned Intermediate Bulk Containers marked UN31HA1, of capacity 275 – 330 gallons US, and supplied with plastics caps must be closed for shipment using the closures and gaskets supplied by the manufacturer and according to the following instructions:

1. Place cap (6” or 9”), with rubber gasket installed, on opening of IBC bottle.
2. Turn the cap clockwise to engage the threads.
3. Depending upon the manufacturer, as identified on the bottle, tighten caps to:
 - a. Encore- 50 ft-lbs
 - b. Greif- 45 ft-lbs
 - c. IBCNA- 55 ft-lbs
 - d. Mauser- 70 ft-lbs
 - e. Schutz- 75 ft-lbs
 - f. Varicon- 50 ft-lbs
4. If present, 2” plugs (with gasket) should be tightened to 20 ft-lbs.
5. If present, $\frac{3}{4}$ ” plugs (with gasket) should be tightened to 9 ft-lbs.

Plastic Open Head Drums

All open head plastic drums marked UN1H2, of capacity 20 – 59 gallons US, and supplied with plastic lids and locking rings must be closed for shipment using the closures and gaskets supplied and according to the following instructions:

1. Place drum lid on top opening and ensure that drum chime is under gasket area.
2. Place locking ring over cover and secure lid.
3. If present, 2” plugs (self sealing) should be hand tightened plus an additional quarter turn.
4. If present, $\frac{3}{4}$ ” plugs (self sealing) should be hand tightened plus an additional quarter turn.

Plastic Tight Head Drums

All tight head plastic drums marked UN1H1, of capacity 20 – 59 gallons US, and supplied with plugs and gaskets must be closed for shipment using the closures and gaskets supplied and according to the following instructions:

1. Install 2” Buttress and/or 2” NPT plugs (with gasket) in the corresponding drum opening and tighten to 25 ft-lbs.

Effective Date: 10/7/14

Approved By: C. Key



**GREIF INDUSTRIAL PACKAGING & SERVICES LLC
DOT REQUIRED NOTIFICATION STATEMENT
INTERMEDIATE BULK CONTAINERS**

The below listed statement is printed on the bottom of each packing list copy of the customer order that is shipped from Greif, Inc. Lavonia, Georgia Intermediate Bulk Container plant.

The recent general revisions of the **DOT's Hazardous Materials Regulations** requires that manufacturers of the packaging for hazardous materials notify their customers in writing of:

1. Any packaging specification requirements that are not met when the empty packages are shipped, and
2. Information on closures needed to satisfy the performance test requirements.

The following **NOTIFICATION STATEMENT** is intended to comply with that regulatory requirement.

UN IBC'S

- **TOP OPENINGS IN GREIF UN-IBC's MUST BE FITTED WITH 6" COVERS AND GASKETS SUPPLIED BY GREIF INC. 6" COVERS MUST BE TIGHTENED ½ TURN AFTER GASKET CONTACT WITH THE TOP OF THE BOTTLE AND TO AT LEAST 45 FT. LBS TORQUE. FITTINGS IN THE COVER MUST BE TIGHTENED TO A TORQUE OF 20 FT-LBS FOR 2"NPT FITTINGS AND 9 FT-LBS FOR ¾" BUNGS, IF INSTALLED.**

01/01/2023

Guideline for Tightening of Closures

Based on the guidelines provided by the United States Department of Transportation regulations, the packaging manufacturer is required to provide the operating instructions to the user of the packaging product. Packaging products need to meet and qualify for the requirement laid down in Title 49, Code of Federal Regulations (49 CFR), Part 178 Specifications for Packaging. In addition to the above, the packaging manufacturer needs to provide the closure tightening process and procedure to the users of packaging prior to shipment.

It is solely the shipper's responsibility to ensure adherence of the instructions provided by the packaging manufacturer. Core Plastech International INC is committed to providing all the necessary Standard Operating Procedure (SOP) which needs to be followed while handling and usage of packaging products.

Core Plastech further would like to provide adequate training to the users of packaging products for their safe handling and usage. As a continual improvement process, the Core team are dedicated to providing the best of support and guidelines to the users for following the standard practices as the manufacturer has got the packing tested and approved for the UN rating performances.

Core Plastech recommends the standard torque required for the closures of the PE drums and Intermediate Bulk Containers (IBCs). 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. The process of sending the closing instructions is followed by Core Plastech along with the shipping documents with each shipment of drums and IBCs.

Note –

Before applying the designated torque on the closures, it is a must to ensure the closure has the desired gasket in place along with the condition of the closures and the gasket. The drums and the IBC sealing surface need to be inspected for no visual defect or damage to the sealing surface.

TIGHT HEAD & OPEN HEAD PE DRUMS

TIGHT-HEAD 55 PE DRUMS:

For tightening the plugs, a suitable adaptor needs to be used matching the slot provided on the top of the plug. A torque wrench is recommended use for tightening the plug.

Sr. No.	Description	Torque (ft-lbs)
1	2" NPS AND 2" BUTTRESS @ 150 kPa	30
2	2" NPS AND 2" BUTTRESS @ 100 kPa	20
3	3/4" NPS @ 150 kPa	9
4	3/4" NPS @ 100 kPa	9

OPEN HEAD PE DRUMS:

Snap fit lid having gasket secured by metal clamping ring with locking clip.

Sr. No.	Description	Torque (ft-lbs)
1	2" NPS AND 2" BUTTRESS	20
2	3/4" NPS	9

INTERMEDIATE BULK CONTAINER (IBC) : 135 G /275 G /330 G

The top lid needs to match with the threading of filling opening prior to applying the torque with the help of torque wrench.

Sr. No.	Description	Torque (ft-lbs)
1	6" Top Filling Cap	80 - 90
2	G2 Plug	15 -18
3	Discharge Valve	70 -75

Note:

The above recommended torques is only applicable for Core Plastech International Inc. packaging material. Core Plastech is not liable for any consequential or third party liability. The user has to ascertain and undertake all liability in respect to application, processing or use of aforementioned information.

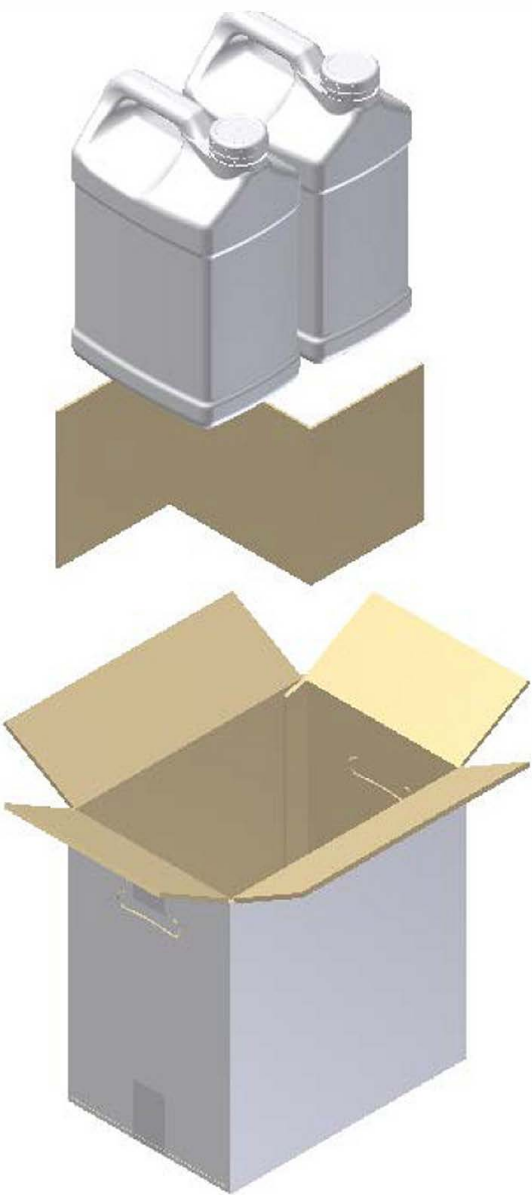
Disclaimer –

The information given in this paper is believed at the time of publication as true and accurate. It is based on our today's knowledge. We may not make any changes to this specification but reserve the rights to do it do for better results of the product.

Miscellaneous

SECTIONS II & V: PACKAGING DESCRIPTIONS / COMPONENT DRAWINGS

2 x 2.5 Gallon Trimline HDPE Bottle Packaging – VARIABLE #1 (Phoenix 63mm Vented Cap / Taped)

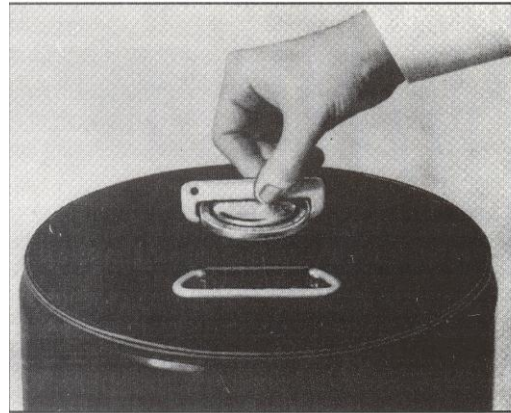
ASSEMBLY DRAWING	TEST LEVELS
	Certification Type: Periodic Retest
	Packaging Code Designation: 4G
	Packing Group: II
	Specific Gravity: 1.4
	TEST SAMPLE PREPARATION (Refer to Section IV)
	Overall Packaging Tare Weight: 1,666.0 Grams
	Fill Capacity (98% Maximum Capacity):
	Propylene/Glycol Solution 11,224.6 Grams
	Water 10,897.6 Grams
	Package Test Weight:
	Propylene/Glycol Solution 24.1 Kg 53.1 Lbs.
	Water 23.4 Kg 51.5 Lbs.
	Authorized Package Gross Mass: 32.1 Kg 70.7 Lbs.
	CLOSING METHODS – INNER PACKAGING
	63 mm Threaded Closure:
	Application Torque: 55 In-Lbs.
	Equipment: Torque Wrench #E702
	CLOSING METHODS – SHIPPER
	Top Flaps:
	Manufacturer: 3M, St. Paul
	Type: 3M #373 Pressure Sensitive Tape
	Width: 3"
	Overlap: 2-1/2" Minimum
	Tape Pattern: Center Seam
	Bottom Flaps:
	Manufacturer: 3M, St. Paul
	Type: 3M #373 Pressure Sensitive Tape
	Width: 3"
	Overlap: 2-1/2" Minimum
	Tape Pattern: Center Seam



This gauge is to be used to check FLEXSPOUT® Closure installations made by the following model tools: FS, Hand Operated Tool; IAFS Airmatic Tools. This gauge is to be used when gaging both steel and plastic pails.

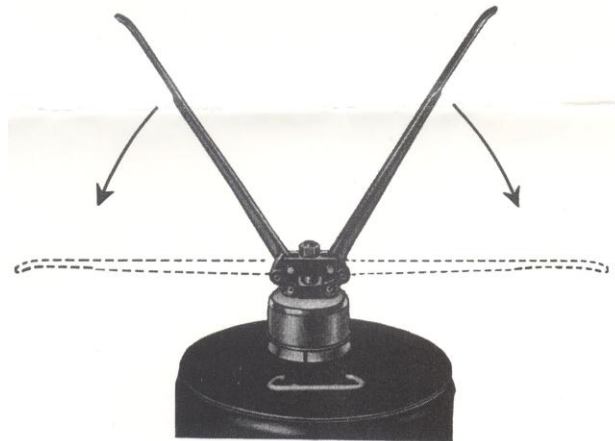
How To Use The Flexspout Closure Slip Gauge

Place gauge in position shown. Inner lands on gauge should rest on top of Flex Ring. In this position the gauge should clear freely the side wall of the installed FLEXSPOUT Closure when drawn across.



SHOULD THE GAUGE FAIL TO CLEAR the sides of the FLEXSPOUT Closure after it has been crimped on by hand tool, one of the following is the reason:

1. The operator failed to properly bottom the handles:



2. The tool is not functioning properly and should be returned to Rieke for adjustment.

SHOULD THE GAUGE FAIL TO CLEAR the sides of the FLEXSPOUT Closure after it has been crimped by either type of mechanically operated tool, the tool or power unit is not functioning properly and should be returned to Rieke for repair and adjustment.

TIPS ON THE USE AND CARE OF YOUR FLEXSPOUT CLOSURE TOOLS

- Be sure your operator is instructed to bottom the tool each time he affixes a FLEXSPOUT Closure to a container. This merely requires him to move handles downward as far as they will go.
- Rest the tool evenly on the container head, over the FLEXSPOUT Closure before starting the downward movement of the handles. This prevents "cocking" of the tool which results in an inferior seal.
- Keep your tools well oiled and keep the closing collets or jaws free of dirt and paint.
- Do not attempt to adjust or dismantle your tools. They are precision adjusted at the factory for maximum sealing efficiency and received by you ready to use. Should your slip gauge reveal inefficient performance of any tool, return the tool to Rieke; transportation charges prepaid, for adjustment or repair.
- Do not remove miscrimped FLEXSPOUTS with the crimping tool. This will cause damage to the crimping tool by "popping out" or chipping the jaws. The M-066 removal tool should be used.



500 West 7th Street, Auburn, IN U.S.A. 46706
Phone: 260-925-3700 Fax: 260-925-4654
www.riekepacking.com

CKS One Gallon UN in Box

CLOSURE INSTRUCTIONS:

1. BOTTLE TO BE SEALED WITH 38-400mm Saf-Cap I CRC F-217 .040"FOAM LINED OR FLAT CAP F-217 .030"FOAM LINED
CAP CLOSURE APPLICATION TORQUE - 23 in-lbs
2. Package to include "H" divider supplied, Top to be closed and sealed with 2" p.s. polytape on the top of the box, extending approximately 3" over each end of the box. Hot melt adhesive on the bottom of box.
3. Shipper is responsible for applying any additional markings to include but not limited to, Hazard warning labels, proper shipping name, and ID number of product.
4. All packing components must be used to complete the total package in compliance with UN Certification number as listed on this box.

RECOMMENDED CLOSING TORQUE FOR DRUM MAKERS

1. Steel Drums *		G 3/4 Closure		G 2 Closure	
Plug type	Washer/ Gasket type	Ftlbs	Nm	Ftlbs	Nm
Tri-Sure® Steel Plugs	Rubber	8 - 15	10 - 20	8 - 15	10 - 20
	P.E.	11 - 18	15 - 25	11 - 18	15 - 25
Tri-Sure® Plastic Plugs	Rubber	8 - 11	10 - 15	8 - 15	10 - 20
	P.E.	8 - 11	10 - 15	8 - 15	10 - 20
G3/4 in G2 Combination plug		--	--	3 - 4	4 - 6

2. Composite Drums *& **		BCS 24x4 Buttress		BCS 56x4 Buttress	
Plug type	Washer/ Gasket type	Ftlbs	Nm	Ftlbs	Nm
PLASTIPLUG™ Plastic Plugs	Rubber	Min. 8	Min.10	Min.9	Min. 12
	P.E.	Min. 8	Min.10	Min.9	Min. 12
G3/4 in 56x4 Combination plug		--	--	3 - 4	4 - 6

3. Free standing Plastic Drums *& ** Europe		BCS 24x4 Buttress		BCS 56x4 Buttress	
Plug type	Washer/ Gasket type	Ftlbs	Nm	Ftlbs	Nm
PLASTIPLUG™ Plastic Plugs	Rubber	Min. 8	Min.10	Min.9	Min. 12
	P.E.	Min. 8	Min.10	Min.9	Min. 12
G3/4 in 56x4 Combination plug		--	--	3 - 4	4 - 6

4. Free standing Plastic Drums *& ** US		BCS G2x11,5 NPS		BCS G3/4x14 NPS	
Plug type	Washer/ Gasket type	Ftlbs	Nm	Ftlbs	Nm
PLASTIPLUG™ Plastic Plugs	Rubber	Min. 20	Min.27	Min. 9	Min. 12
	P.E.	--	--	--	--
G3/4 in G2x11.5 Combination plug		3 - 4	4 - 6	--	--

5. Free standing Plastic Drums *& ** US/EU		BCS G2x5 Buttress		BCS 70x6 Buttress	
Plug type	Washer/ Gasket type	Ftlbs	Nm	Ftlbs	Nm
PLASTIPLUG™ Plastic Plugs	Rubber	Min. 20	Min.27	Min.22	Min. 30
	P.E.	--	--	Min. 30	Min. 40
G3/4 in G2x5 Combination plug		3 - 4	4 - 6	--	--

Trade-marks

Tri-Sure Tri-Sure
Tab-Seal SambaCap
Push-Lock PLASTIPLUG
PLASTICAP

*NOTE: Please contact your Tri-Sure® Closure Sales and Service center when the above recommended closing torques does not give satisfactory results.

**NOTE: The upper limit for closing torques is determined by the configuration of the container neck. In any case both plug and Tab-Seal® cap should seat in their design position after tightening. For neck configurations reference is made to our recommended neck drawings.

- Because of our high standards, any "mixing" of the Tri-Sure® Closure System with a "look-alike" will negate your warranty.
- To ensure maximum security and tightness the use of Tri-Sure® Tab-Seal® caps is recommended.

6. General

The above **recommended** closing torques are only valid for the **Tri-Sure®** Closure System and **PLASTIPLUG™** plastic plugs.

The conversion Nm to Ftlbs has been rounded off; 1 Nm = 0.74 Ftlbs.

After tightening of plugs, torques will reduce over time. Particularly plastic components are subject to stress relaxation resulting in a reduction of torque. In general no re-tightening of plugs will be required when the recommended torques have been applied.

For Quality assurance purposes it is recommended to regularly check the process parameters that have an influence on the applied torque (e.g. air-pressure, wrench setting).

It should be noted that torques measured clockwise are different when measured anti-clockwise.

Rubber washers include Nitrile, EPDM, Viton and Butyl; P.E. stands for Polyethylene.

Any "mixing" of the **Tri-Sure®** Closure System with a "look-alike" will void the above recommendations and our warranty.

The performance of our closures is limited to closing by the container manufacturer and opening/closing by the drum filler (provided they use recommended closing torques. It is the decision of the end-user if the closure is suitable for multiple closing purposes.

Reference is made to our liability statement on page 2 of this document.

Closing a drum that is hot to the touch requires special attention as to r.p.m of the closing-tool and the temperature of the drum/product. Temperatures around and above 40 °C (100 °F) will have an influence on the application and performance of especially PE gaskets.

Reference is made to our document **PERFORMANCE CHARACTERISTICS OF WASHERS/GASKETS**.

The above recommendations are based on laboratory testing and market feedback.

All information on our behalf in relation to our products, whether in nature of date, recommendations or otherwise, is supported by research and believed reliable, but we assume no liability whatsoever in respect of application, processing or use made of the aforementioned information or products or any consequence thereof. The user undertakes all liability in respect of the application. Processing or use of the aforementioned information or products, whose quality and other properties he shall verify, or any consequence thereof. No liability whatsoever shall attach to us for any infringement of the rights owned or controlled by a third party on intellectual, industrial or other property by reason of the application, processing or use of the aforementioned information or products by the user.