

GREIF
CLOSURE INSTRUCTIONS

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) Covers supplied with the drums must be attached to the drums with Lever-Action or Bolt Ring locking bands, as supplied with the drums.
- 2) a) For the Lever-Action locking band, the plastic cover is placed onto the top of the open-head plastic drum and the channel shaped locking band is drawn by the lever closing device and secured in place with a latch device.
- 3) b) For the Bolt-Ring locking band, the plastic cover is placed onto the top of the open-head plastic drum and the channel shaped Bolt Ring locking band is drawn by the bolt closing device and secured in place with a nut device.
- 4) For covers with fittings: 2" fittings bearing NPS thread must be tightened to a torque level of 9 FT-LBS, and 3/4" fittings bearing NPS threads must be tightened to a torque level of 3 FT-LBS.
- 5) Gaskets are not required on closures intended for use on drums with packaging of dry products.
- 6) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

REV-KF-06/26/03

Drum Code: POH14

Report #: P-260

Date Tested: 4/1/2008

Technician: JC

(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.

The closure notification form should be completed using information from the actual customer specification. These values may differ from the sample closing instructions supplied with the UN test certification report.

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

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

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To Close:

- 1) Covers supplied with the drums must be attached to the drums with Lever-Action or Bolt Ring locking bands, as supplied with the drums.
- 2) a) For the Lever-Action locking band, the plastic cover is placed onto the top of the open-head plastic drum and the channel shaped locking band is drawn by the lever closing device and secured in place with a latch device.
- 3) b) For the Bolt-Ring locking band, the plastic cover is placed onto the top of the open-head plastic drum and the channel shaped Bolt Ring locking band is drawn by the bolt closing device and secured in place with a nut device.
- 4) For covers with fittings: 2" fittings bearing NPS thread must be tightened to a torque level of 9 FT-LBS, and 3/4" fittings bearing NPS threads must be tightened to a torque level of 3 FT-LBS.
- 5) Gaskets are not required on closures intended for use on drums with packaging of dry products.
- 6) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

REV-KF-06/26/03

Drum Code: O30MB _____

Report #: P-217 _____

Date Tested: 2/27/2008 _____

Technician: DP _____

(Sample drums were closed exactly as described above.)

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GREIF
CLOSURE INSTRUCTIONS FOR FITTINGS

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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>
(2) 2" NPR	Poly	Poly	9
(2) 2" NPT	Poly	Poly	9

Drum Code: O30MB

Report #: P-217

Date Tested: 2/27/2008

Technician: DP

(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 test certification report.

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

Greif -Testing and Technical Services
366 Greif Parkway, Delaware, OH 4301
(740) 657-6565

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CLOSURE INSTRUCTIONS FOR FITTINGS

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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>
(2) 2" NPT	Poly	Poly	9

Drum Code: O55BT

Report #: P-226

Date Tested: 2/22/2008

Technician: DP

(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 test certification report.

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To Close:

- 1) Covers supplied with the drums must be attached to the drums with Lever-Action or Bolt Ring locking bands, as supplied with the drums.
- 2) a) For the Lever-Action locking band, the plastic cover is placed onto the top of the open-head plastic drum and the channel shaped locking band is drawn by the lever closing device and secured in place with a latch device.
- 3) b) For the Bolt-Ring locking band, the plastic cover is placed onto the top of the open-head plastic drum and the channel shaped Bolt Ring locking band is drawn by the bolt closing device and secured in place with a nut device.
- 4) For covers with fittings: 2" fittings bearing NPS thread must be tightened to a torque level of 9 FT-LBS, and 3/4" fittings bearing NPS threads must be tightened to a torque level of 3 FT-LBS.
- 5) Gaskets are not required on closures intended for use on drums with packaging of dry products.
- 6) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

REV-KF-06/26/03

Drum Code: O55BT

Report #: P-226

Date Tested: 2/22/2008

Technician: DP

(Sample drums were closed exactly as described above.)

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To Close:

- 1) Telescoping cover must fit securely on drum. Cover must be pushed onto drum until the top edge of the drum body touches the inside top of the cover.
- 2) The cover must be secured to the drum body using adhesive backed tape, Intertape - Model RG3, 3-inch wide filament tape or equivalent. The tape must wrap around the drum body three times. There should be approximately 1-1/2" of tape on the cover and 1-1/2" of tape on the body of the drum. Press and rub the tape firmly into place around the entire drum.
- 3) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

REV-KF-05/03/07

Drum Code: FAT200X1406U1

Report #: F-1232

Date Tested: 12/10/2007

Technician: JA

(Sample drums were closed exactly as described above.)

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To Close:

- 1) Place cover on drum.
- 2) Snap the closing ring over the cover and top lip of the drum. Make sure that the writing on the closing lever is right side up. Also, make sure the bottom edge of the closing ring engages under the top lip of the drum.
- 3) Pull the locking lever closed. At the same time, tap along the entire outside edge of the closing ring, beginning directly opposite the closing lever, with a mallet until the lever is fully closed against the edge of the ring.
- 4) Snap the latch into the lever until it locks, then apply a sealing wire or other sealing device through the holes on the latch lever.
- 5) Drums closed in this manner have met the UN performance test requirements as specified in the container markings.

REV-KF-05/03/07

Drum Code: FLR640X2180U1

Report #: F-1357

Date Tested: 10/19/2007

Technician: DP

(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.

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**STEEL DRUM CLOSING STATEMENT
CFR 49 PART 178 –178.2 © (1) NOTIFICATION**

All Steel container should be closed after filling and before transportation in accordance with the tightening torques in Appendix 1.

APPENDIX 1			
Closing Torques for Plug/Gasket Combinations			
PLUG TYPE	GASKETS	TIGHTENING TORQUE	
		¾" Dia Plugs Ft lbs.	2" Dia Plugs Ft lbs.
Tri-Sure Steel	Elastomer	8 - 15	15-22
	Thermoplastic	11-18	15-22
Tri-Sure Plastic	All	8 - 11	15-22
Rieke Steel	Elastomer	15	30
For 1-1/12" Use 2" Torques	Thermoplastic	20	40
Rieke Plastic	All	9	20
Elastomer Gaskets include Nitrile (Buna), EPDM, VITON and Butyl.			
Thermoplastic Gaskets include Polyethylene			

OPEN HEAD CONTAINERS

All Open Head containers should have the Locking Ring Bolt torque's checked after filling & before transportation in accordance with Appendix 2.

APPENDIX 2		
Closing Torques for Locking Rings for 30 & 55 AG Drums		
BOLT-RING CLOSURE	GASKET TYPES	
12 GA Forged Lug – X391 55 Gallon Only	½" Diameter (G557)	For the Bolt-Ring locking band, snap the closing ring over the cover and top lip of the drum. Insert the bolt, through the lug without threads. Next, (if applicable) screw on the locking nut. Finally, screw the bolt into the threaded lug. While tightening the bolt, tap the entire perimeter of the ring with a mallet, starting directly across from the bolt. When required, tighten the locking nut 20-25 Ft. Lbs against the unthreaded lug. 45 Ft lbs. - Ring Gap 1/16" to 3/8"
12 GA Forged Lug "C" Section All Types (55 & 30 Gallon)	All Gaskets Except ½" Diameter (G557)	60 Ft lbs. - Ring Gap 1/8" to 5/8"
16 GA Bolt Ring (55 & 30 Gallon)	All Gaskets	8 to 15 Ft lbs. – Ring Gap 1/8" to 5/8"
For the Lever-Action locking band, snap the closing ring over the cover and top lip of the drum. Pull the locking lever closed, and at the same time, tap the edge of the closing ring, beginning directly opposite the closing lever, with a mallet until the lever is fully closed against the edge of the ring. Snap the latch into the lever until it locks, then apply a seal wire or other sealing device through the hole in the latch lever.		