



Emergency Response Kit (ERK) B-240/B-243 Series

Instructional Manual

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1 Regulations and Safety Requirements

1.1 Regulations

Midland fittings, accessories and kits are used in connection with a variety of commodities. Many of those are hazardous materials and could cause serious injury or damage if mishandled.

This Midland product should only be installed, operated and maintained by qualified personnel. Read all of these instructions carefully before proceeding.

1.2 Safety Warnings and Precautions

Please carefully read each of the following warnings and cautions prior to performing any work.



WARNING: Toxic Hazard. Always use extreme caution and proper equipment when involved with hazardous materials. To avoid exposure to toxic or hazardous materials, make sure the tank car is empty and clean, and that the work area is free of hazardous chemicals before removing or installing any fitting or assembly.

- **Wear protective clothing and equipment suitable for withstanding the materials to which you may be exposed**
- **Position yourself on the upwind side of the valve when possible**
- **Work in a well-ventilated area**
- **Work with a partner who can help you in the event of an emergency**
- **Follow approved safety precautions for hazardous or toxic materials**



NOTICE: Be sure to read this manual thoroughly before using this ERK during an emergency. An emergency is no time for an on-the-job training course. It is recommended that you familiarize yourself with the contents of this ERK and practice assembling the cross-arm assembly with the individual covers on a tank car. Do not wait for an actual emergency to occur to attempt the installation procedure.



NOTICE: This ERK does not contain equipment that will stop leaks in the tank shell.



NOTICE: This ERK is designed to work with the majority of pressure-car cover plates. However, the individual valve covers cannot be applied on tank-car manway cover plates with valves and fittings positioned too close together to permit the installation of these covers. This ERK is also not designed to deal with leaks through the manway's ring gasket.



NOTICE: This ERK does not contain respiratory equipment. When investigating leaks, you should always utilize appropriate personal protective equipment (PPE).



NOTICE

NOTICE: Spark-resistant tools have been included to the extent possible. Extreme care must be exercised whenever working with tools in a flammable atmosphere.



NOTICE

NOTICE: Movement of tank cars with capped valves and fittings must be approved by the appropriate regulatory agency (FRA, TC, etc.).

2 Introduction

This instructional booklet covers the application of Midland B-240/B-243 Emergency Kits (ERK) to tank cars with leaking valves and fittings.



NOTICE

NOTICE: Be sure to read this manual thoroughly before using this ERK during an emergency. An emergency is no time for an on-the-job training course. It is recommended that you familiarize yourself with the contents of this ERK and practice assembling the cross-arm assembly with the individual covers on a tank car. Do not wait for an actual emergency to occur to attempt the installation procedure.

2.1 ERK Details – Component Identification and Parts Listing

QTY.	PART DESCRIPTION	MATERIAL	PART NO.
1	LARGE SAFETY VALVE COVER	STEEL	240-1-CS
1	2" ANGLE VALVE COVER	STEEL	240-2-CS
1	GAGING DEVICE/1" ANGLE VALVE COVER	STEEL	240-3-CS
1	SMALL SAFETY VALVE COVER	STEEL	240-4-CS
1	SAMPLE VALVE COVER/BEAM ASSEMBLY	ALUMINUM/STEEL	240-5-XL
1	CROSSARM CHANNEL ASSEMBLY	ALUMINUM	240-6-AL
1	SCREW/BLOCK ASSEMBLY	STEEL	240-7-CS
1	TIE BAR	ALUMINUM	240-8-AL
8	TIE BAR PIN 5/8"	STEEL	240-9-CS
1	THIN TIE BAR	ALUMINUM	240-10-AL
1	TIE BAR PIN 7/16"	STEEL	240-11-CS
2	PORTHOLE BRACKET	STEEL	240-12-CS
1	JACK PLATE WITH FOUR JACKSCREWS	STEEL	243-17-CS

Figure 2-1 B-240 and B-243 Parts Listing



NOTICE

NOTICE: Standard kit components are for a typical four port-hole opening housing on a pressure tank car.

3 Stopping Leaks

Suggested procedures for stopping leaks to individual valves and fittings that may be tried before installing a cover to the leaking valve include:

- Angle Valve
- Pressure Relief Valve
- Gaging Device
- Sampling Line
- Thermometer Well Fitting



TIP: Use the gasket seat included with the kit to make initial assessment of proper can size to apply.

3.1 Angle Valve

- 3.1.1 Make sure that the valve is open.
- 3.1.2 If the leak is between the valve and the cover plate, tighten down the stud nuts evenly using a 1-1/4" socket or 1-1/4" crow foot with driver.
- 3.1.3 If the leak is coming out through the side port, close the valve further if it is a rising-stem plug-type valve. If it is a ball valve, be sure the handle is all the way down as close to the cover plate as it will go. If this does not stop the leak, tighten the pipe plug with a pipe wrench. If the leak still persists from the discharge port, then carefully back out the pipe plug, bearing in mind that there is likely to be entrapped pressure that will be released when the pipe plug is completely disengaged. With the pipe plug removed, open the valve wide and use a wire brush to dislodge any dirt or debris that may be trapped between the valve seat and the closure before closing the valve off. Clean the plug thread, apply new Teflon[®] tape (or paste) to the pipe plug, wrapping it with at least three layers, wire brush the female thread in the valve port and reinsert the plug into the valve.
- 3.1.4 If the valve has a detachable side flange, and the leak is coming from this area, use a 3/4" or 5/16" socket wrench or open-end wrench to tighten up the bolts and fasten the side plate to the valve. Make sure that they are drawn up the same amount so that there is equal spacing between the side-port flange and the valve body.
- 3.1.5 If the leak is coming from the stem area, some valves, such as the Midland 1", 2" and 3", and the 1" chlorine angle valve, have adjustable glands. There is usually a locknut present, which must be backed off using an adjustable split-nut wrench, or a 1-3/4" or 1-7/8" open-end wrench. Wrench down the packing-gland screw using a 1-1/16" or 1-5/16" open-end wrench to try to stop the leak. Once this has been done, wrench the locknut back into place. Angle valves from different manufacturers may not have adjustable packing glands, but the packing gland may have vibrated loose, so it is still desirable to wrench down the screw to try to stop the stem packing gland from leaking.
- 3.1.6 If the leak is through the angle-valve casing, or all of the above procedures fail to stop the leakage, then prepare to apply the angle-valve cover. For the correct procedure for placing the cover cans in place, please see Section 4 Installation Instructions.

3.2 Pressure Relief Valve



NOTICE

NOTICE: This procedure should only be carried out by trained personnel.

- 3.2.1 If the leak is between the valve and the cover plate, tighten down the stud nuts evenly using a 1-1/4" socket or 1-1/4" crow foot with driver. For larger pressure relief valves, use a 1-7/16" crowfoot with driver.
- 3.2.2 If the leak is between the valve seat and O-ring retainer, there may be dirt, scale, etc., on the valve seat or O-rings, or the O-rings may be deteriorated. On Midland's large and small internal-style pressure relief valves (with spring under the cover plate), it is possible to clean the O-rings and seating surfaces without taking the valve off the cover plate. It is not possible to do this on the Crosby and Midland external-style pressure relief valves (with the spring above the valve seat). To remove the O-ring retainer from Midland internal-style valves, use the following steps:
 - 3.2.2.1 For large and small Midland valves, use a 3/4" socket or open-end wrench to remove the four (4) 1/2" nuts that hold the top guide in place.
 - 3.2.2.2 For the larger valve, use the wheel puller with two (2) pulling arms to remove the top guide. Screw down the square-headed threaded bolt against the top of the valve stem while the arms of the puller are locked under the center cup-shaped part of the top guide.
 - 3.2.2.3 For the small Midland valve, pry up the top guide with a screwdriver. If a screwdriver can't be inserted between the top guide and the valve body, tap a scraper between them with a hammer and pry upward.
 - 3.2.2.4 Back off the locknut while preventing the O-ring retainer from rotating.



NOTICE

NOTICE: For the large Midland valve, use an open-end 1-1/16" wrench. For the small Midland valve, use an open-end 15/16" wrench. The flats on the O-ring retainer of the large valve are 1-1/2" and on the small valves they are 1".

- 3.2.2.5 Lift off the O-ring retainer. If it can't be moved easily, it may be possible to pry it up with two (2) screwdrivers that are held 180° apart. When using the screwdrivers, be careful no to nick the valve seat, which is a sealing surface. If the retainer is stuck in place and cannot be pried up with the screwdrivers, use a wheel puller. Use emery paper to smooth out the nicks, pits and cracks, or to dislodge any dirt, scale or rust. Be sure to thoroughly wipe the crown of the valve seat, which is where the O-ring seals, as cleanly as possible.
- 3.2.2.6 Take the new O-ring retainer from the kit with the O-rings cemented in place. Using your fingers, smear on a light coat of silicone grease.



NOTICE

NOTICE: The largest O-ring retainer is for the A-3100, A-3400 and A-35000 series PRVs. The slightly smaller retainer is for the A-3200 and A-37000 series PRVs. The small retainer is for the small valves.

- 3.2.2.7 With the locknut ready, hand press on the new O-ring retainer and quickly thread on the locknut, being sure that the O-rings did not become dislodged and then pinched between the retainer and the stem. On the last fraction of a turn, wrench down the locknut while holding the O-ring retainer to prevent it from rotating.
- 3.2.2.8 Replace the top guide, orienting the sides the same way as when removed in steps 3.2.2.2 and 3.2.2.3. Be sure the top guide seats down all the way on the valve body. To seat the locating surfaces of the top guide down on the body, it may be necessary to gently tap the top guide with a brass hammer. On the small valve, the bottom of the top guide should rest flush on the valve-body. On the larger valve, the top guide, when correctly positioned, may still be 1/16" above the valve body surface that engages the top guide. Replace the four (4) 1/2" nuts.
- 3.2.2.9 If the valve continues to leak, install the pressure relief valve cover.

- 3.2.3 To install the pressure relief valve cover, use the following steps:
- 3.2.3.1 If the valve has a stack on the discharge channel, this must be removed before putting on the cover. In many cases, the stack is threaded and probably corroded tight, or welded to the valve's top guide, so that it will be necessary to remove the top guide in order to get the stack off.
 - 3.2.3.2 Fit the pressure relief cover with its gasket in place over the leaky valve. Refer to instructions for applying the angle valve in Section 3 Installation Instructions.



NOTICE: For the large pressure relief valve, use cover can #1. For the small internal-style and the top-style pressure relief valve, use cover can #4.

3.3 Magnetic Gaging Device

Procedure for a Midland Magnetic Gaging Device:

- 3.3.1 If there is a leak between the magnetic gaging device's body and the cover plate, tighten the flange nuts evenly with a 1-1/16" open-end wrench. If the leak doesn't stop, the tongue on the bottom of the gaging-device body may have moved out of the groove in the cover plate. Should this be the case, tap with a hammer on the side of the gaging-device body to center it and drop it into the groove. Then tighten the flange nuts with the open-end wrench.
- 3.3.2 If there is a leak between the gaging-device body and the top cover, further wrench the cover clockwise with a pipe wrench or 1-5/16" open-end wrench.
- 3.3.3 If the leak persists between the body and the top cover, carefully remove the cover. **Do not stand over the gaging device as the gage rod may be propelled by pressure below the rod.** Clean out the 2" pipe threads in the cap and on the body with a wire brush and paper wipers. Put at least three (3) layers of Teflon[®] tape on the 2" tapered pipe thread. Replace the top cover.
- 3.3.4 If there is still a leak, install the gaging-device cover following the instructions for the angle valve in Section 3 Installation instructions. One cover will act as a spacer to balance the other and can be placed in any convenient location on the cover plate.



NOTICE: Use cover can #3 or cover can #5 for the magnetic gaging device with 2" threaded mounting to cover the plate. Note that if cover can #5 is used, there will be two (2) covers on an I-beam.

3.4 Sampling Line

- 3.4.1 Close the valve completely.
- 3.4.2 If the leak is through the side port, tighten the valve handle and install a 1/4" pipe plug.
- 3.4.3 If the valve is loose on the nipple, tighten the valve with a 1-1/8" open-end wrench.
- 3.4.4 If the leak is between the nipple and the cover plate, tighten the nipple with a pipe wrench.
- 3.4.5 If the leak persists, install cover can #5 according to the instructions for the angle valve in Section 4 Installation instructions.

3.5 Thermometer Well Fitting

- 3.5.1 If a leak is detected at the cap, screw the cap down with a 1-1/4" open-end wrench.
- 3.5.2 If a leak is between the cover plate and the 3/4" threaded pipe, use a pipe wrench to tighten the pipe.
- 3.5.3 If the leak persists, install cover can #5 according to the instructions for the angle valve in Section 4 Installation instructions.

4 Installation Instructions

4.1 Guidelines for Installing Capping Kit for Product Valves and Appliances



NOTICE

NOTICE: The following suggested installation procedure to cover the valve and fittings uses the angle valve as an example.

- 4.1.1 Make sure loading and unloading product valves are properly closed. Check pressure of car. Establish what valve or fitting is leaking. Bring only the gaskets (x5) up to the car and determine what gasket will fit the leaking valve or fittings.
- 4.1.2 The surface on the pressure plate around the leaking valve/appliance must be thoroughly prepared and cleaned using the brass scraper, brass wire brush, and emery cloth (not supplied in the kit). All loose paint, rust and nicks must be removed and nicks, especially radial nicks, must be smoothed out or removed. Use a soft cloth to remove all debris.
- 4.1.3 **It is suggested that the following instruction is prepared on the ground and not on top of the car.** Install the 3/4" needle valve into the 2" x 3/4" hex reducer bushing. Install this assembly into the 2" female bushing on the side of the selected can. The 2" x 3/4" hex reducer bushing is not needed for the sample valve cover/beam assembly, as it has a 3/4" female bushing welded to the side. In both cases, wrap Teflon[®] tape (when permitted) around the pipe threads. **A hose or tube should be attached to the 3/4" port opening on the needle valve and be brought outside the housing to prevent gases or liquid from collecting on the inside of the housing.**
- 4.1.4 Install the proper gasket on the selected can.



NOTICE

NOTICE: It is suggested that the gasket is fastened to the can with duct tape or equal material to prevent the gasket from falling off during installation.



NOTICE

NOTICE: It is recommended that the following is prepared on the ground and not on top of the car. It is suggested to assemble the strongback on top of the car.

- 4.1.5 Pre-assemble the cross arm (bridge/strongback) assembly. For standard flammable gas housings, place one tie bar such that it will be on the outside of the housing and one such that it will be on the inside. Install the 5/8" tie bar pins in the top holes on the tie bars, above the cross arm (bridge/strongback). Install the porthole brackets to the bottom of the tie bars (attach only one side to the tie bar that will be on the inside of the housing.)



NOTICE

NOTICE: The following will take place on top of the car.

- 4.1.6 Place the selected can over the leaking valve/appliance. Make sure the 3/4" needle valve is open and positioned away from you. Install the four (4) jackscrews into the jack plate. On can #1 through #4 the jack plate with the four (4) jackscrews is recommended. Run the nut on the jack screw down towards the rounded end. Place the jack screw with the rounded end into the hemispheric recess on top of the can. Lower the square jack plate over the jack screw.

- 4.1.7 Lower the pre-assembled cross arm (bridge/strongback) over the housing, assuring that one tie bar goes on the outside of the housing and one on the inside, on each side. Assure that two (2) of the jack screws will be in between the two channels on the cross arm (bridge/strongback) when the cross arm (bridge/strongback) is lowered into place. **Also, make sure two of the flats on the jackscrew nut go inside the cross arm (bridge/strongback) I-channels.** Bring the porthole bracket through the porthole on each side and attach it to the outside tie bar with a 5/8" tie bar pin. (Tie bar pins should be connected with a chain and the chain should go through the porthole.)
- 4.1.8 Depending on the height of the can and the location of the porthole related to the top of the housing, the pins initially installed in top hole of the tie bars may need to be adjusted to a lower hole (to save time when the jackscrew is tightened).
- 4.1.9 Turn the jackscrew downward, using the 1-1/8" socket and the T-handle, until the cross arm (bridge/strongback) assembly is snug. The jackscrew is not intended to provide the force needed to stop the leak.
- 4.1.10 Turn the four (4) jackscrews until they touch the flange on top of the can, using a 1-1/16" socket and the T-handle.
- 4.1.11 Using the 1-1/16" open-end wrench, turn the jackscrews in 1/2-turn increments, alternating 1, 3, 2 and 4. It is important that one person does this as they will know how much torque is being used each turn.
- 4.1.12 Once there is sufficient force applied to the can, close the valve and check for leaks with appropriate testing media. The entire capping assembly should be checked for leaks and that it is secure. **Do not attempt to turn the four (4) jackscrews with pressure in the can!**
- 4.1.13 If the leak cannot be stopped, open up the needle valve to relieve pressure in can, remove the cross arm (bridge/strongback) and go back to 4.1.2 for the cleaning procedure and reinstallation of the cross arm (bridge/strongback) as described in 4.1.7 through 4.1.12.



NOTICE: If the sample line or the thermowell needs to be capped, the #5 capping assembly can be used. It may require that the handle on the loading or unloading product valve needs to be removed. This assembly will not require the jack plate with the four (4) jackscrews or the 2" x 3/4" hex reducer bushing, as it has a 3/4" female bushing welded to the side that will accept the 3/4" needle valve. The installation of the cross arm (bridge/strongback) will be the same as described in 4.1.7 through 4.1.12.

PART NO.	PART DESCRIPTION	USED FOR
10-3-CS	RETAINER	REPLACING RETAINER AND O-RINGS ON THE SMALLER SERIES PRESSURE RELIEF VALVES
10-10-VA	O-RING	
10-11-VA	O-RING	
31-3-CS	RETAINER	REPLACING RETAINER AND O-RINGS ON THE A-3100, A-3400 AND A-35000 SERIES PRESSURE RELIEF VALVES
31-11-VA	O-RING	
27-11-VA	O-RING	
32-3-CS	RETAINER	REPLACING RETAINER AND O-RINGS ON THE A-3200 AND A-37000 SERIES PRESSURE RELIEF VALVES
32-10-VA	O-RING	
32-11-VA	O-RING	
240-100	3/4" SQUARE DRIVE REVERSIBLE RATCHET WRENCH	DRIVE HEAVY-DUTY SOCKETS
240-101	1-1/4" SOCKET, 3/4" SQUARE DRIVE	
240-102	1-5/16" SOCKET, 3/4" SQUARE DRIVE	DRIVE FOR 3/4" NUT FOR ANGLE VALVE
240-103	1-13/16" SOCKET, 3/4" SQUARE DRIVE	
240-110	24" OR 26" TOOLBOX	
240-111	11 PCS. DEEP SOCKET SET	FOR REMOVAL OF NUTS ON PRESSURE RELIEF VALVES
240-112	1-7/16" CROW-FOOT WRENCH, 3/4" SQUARE DRIVE	ANGLE VALVE MOUNTING NUTS
240-113	1-1/4" CROW-FOOT WRENCH, 3/4" SQUARE DRIVE	PRESSURE RELIEF VALVE MOUNTING NUTS
240-114	T-HANDLE WITH 3/4" SQUARE DRIVE	CROW-FOOT WRENCH DRIVER
240-115	16" EXTENSION BAR WITH 3/4" SQUARE DRIVE	CROW-FOOT WRENCH DRIVER
240-116	3/4" X 1/2" MALE ADAPTER	
240-120	ADJUSTABLE SLIP-NUT WRENCH	REMOVAL OF PIPE PLUGS
240-130	18" OFFSET PIPE WRENCH	
240-131	WISE GRIP WRENCH	REMOVAL OF NUTS, PIPES AND OTHER SMALL PARTS
240-140	18" BOLT CUTTER	CUTTING OF CHAINS ON PIPE PLUGS
240-150	5 PCS. SCREW DRIVER SET	PRYING UP PRESSURE RELIEF VALVE TOP GUIDE AND O-RING RETAINER
240-160	1-1/16" X 1/8" OPEN-END WRENCH	
240-161	15/16" X 1" OPEN-END WRENCH	
240-162	3/4" X 7/8" OPEN-END WRENCH	
240-163	1-1/2" 15" ANGLE CHECK-NUT WRENCH	
240-164	1-5/16" 15" ANGLE CHECK-NUT WRENCH	
240-180-CS	18" X 3/4" OR 24" X 3/4" CROWBAR	PRY BAR, CHISEL, SCRAPING SCALE OFF COVER PLATE

240-181	BRASS FLAT-BLADE SCRAPER	CLEANING OF GASKET SURFACES
240-182	BRASS WIRE BRUSH	CLEANING OF GASKET SURFACES
240-183	BRASS MALLET	SCREW DRIVERS AND CROWBAR
240-184	BRISTLE BRUSH	CLEANING OF GASKET SURFACES
240-185	PAPER WIRES	CLEANING OF GASKET SURFACES
240-186	RETRACTABLE BLADE KNIFE (3 POSITION)	CLEANING OF GASKET SURFACES
240-187	COTTON ROPE	PULLING CANVAS BAG (240-189) WITH TOOLS TO TOP OF CAR
240-188	RIGID EYE SPRING HOOK	ATTACH COTTON ROPE (240-187) TO PULL CANVAS BAG (240-189) WITH TOOLS TO TOP OF CAR
240-189	CANVAS BAG	TRANSPORT OR CARRY TOOLS TO TOP OF CAR
240-148-CS	2-JAW, TWO-TON PULLER	REMOVE PRESSURE RELIEF VALVE TOP GUIDE AND O-RING RETAINER
240-194-CS	2" X 1" HEX REDUCER BUSHING	
240-195-XS	12" FLEXIBLE METAL HOSE WITH 1" MALE NPT NIPPLES IN BOTH ENDS	
240-196	FLASHLIGHT	
240-204	TUBE OF HEAT RESISTANT GREASE	LUBRICANT AND SEALANT
240-205-TF	CAN OF TEFLON SEAT ROPE	
240-206-TF	1/2" TEFLON TAPE	
A-256-SS-VA	MIDLAND A-258 NEEDLE VALVE WITH 1/4" FEMALE NPT	
240-211	2" CARBON STEEL BALL VALVE	
240-212	2" NPT SHORT NIPPLE (2)	
240-13-MI	2" 90-DEGREE ELBOW, FEMALE THREADS	
240-DVD	DVD	
	INSTRUCTIONS	

Table 5-1 Tool Chest Contents

