Audi-Larm™ Audible Alarm: AirHawk II® Air Mask

MAINTENANCE AND REPAIR

For More Information, call 1-800-MSA-2222 or Visit Our Website at www.MSAnet.com

MSA The Safety Company

MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

MSA 011 (L) Rev. 0

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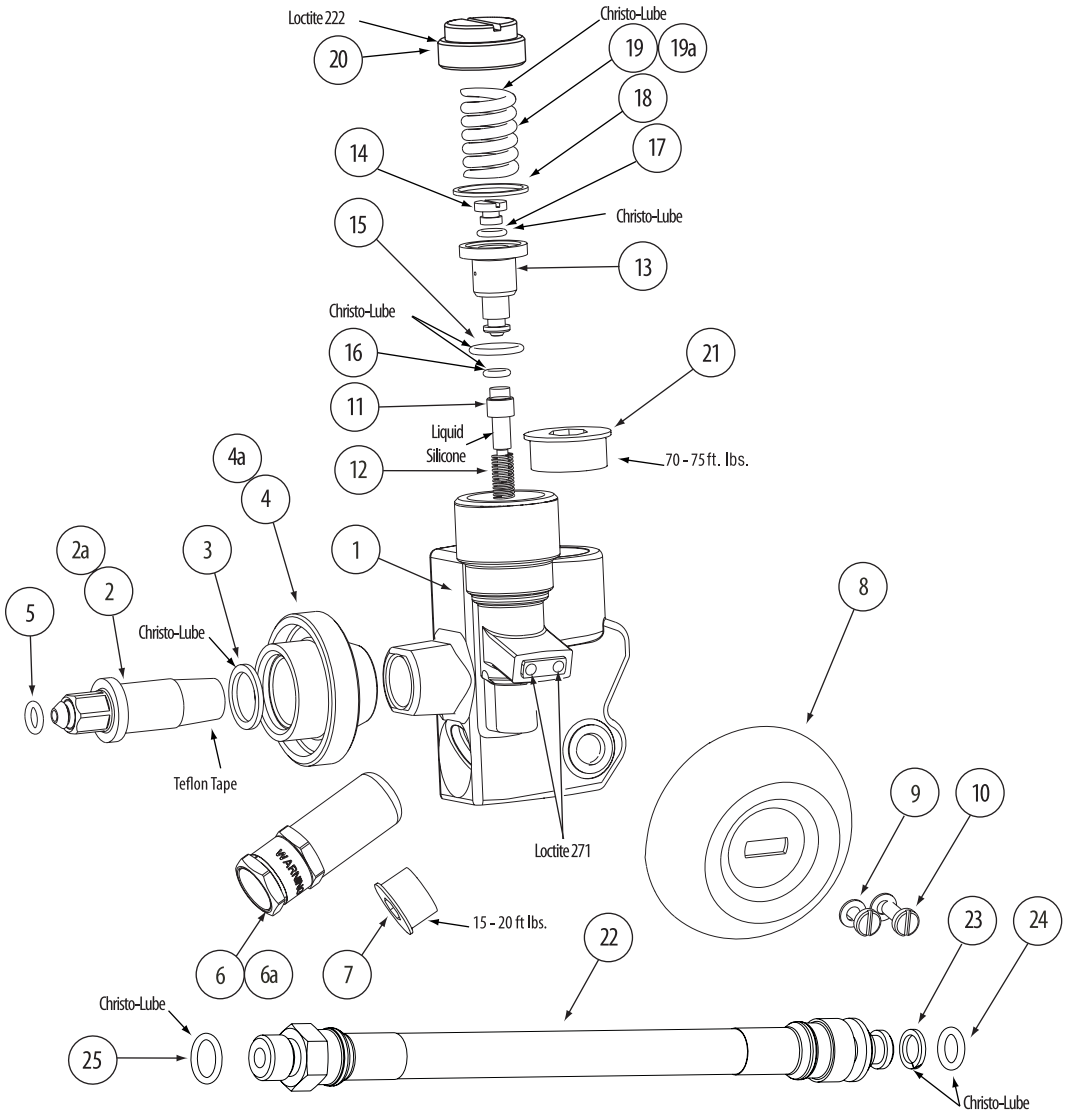
Prnt. Spec. 10000005389(I) Mat. 10104323
Doc. 10104323

REPLACEMENT KITS AND PARTS LIST

Item	P/N	Description
1	10038417	Audi-Larm Body
2	10062086	Fitting, Nipple, 2216psi
2a	10062087	Fitting, Nipple, 4500 psi
3	93031	Washer, CGA Nut
4	10062084	Coupling Nut, 2216 psi
4a	10062085	Coupling Nut, 4500 psi
5	633553	Nipple O-ring
6	10036292	Pressure Relief Valve with O-ring, 4500 psi
6a	10036291	Pressure Relief Valve with O-ring, 2216 psi
7	10086491	Relief Valve with O-ring
8	485829	Bell
9	54197	Lock Washer (2 required)
10	635245	Screw, #8-32 x 7/16 LG (2 required)
11	10044574	Striker with Pellet
12	85055	Striker Spring
13	85049	Piston Assembly
14	85052	Piston Plug
15	635953	Piston Bore O-ring
16	635954	Piston Nose O-ring
17	66395	Piston Plug O-ring
18	68523	Retaining Ring
19	455941	Spring, 2216 psi
19a	474352	Spring, 4500 psi
20	474369	Adjusting Nut
21	10086390	URC Adapter Plug w/ O-ring
	635068	O-ring (not shown)
22	804382	High Pressure Hose w/ Back-up Ring and O-rings
23	635278	Back-up Ring
24	63198	O-ring
25	638166	O-ring
	809028	Chisto-Lube Lubricant (2 cc tube)
	28907	Teflon Tape
	29787	Loctite 222
	26875	Loctite 271
	494992	Liquid Silicone Lubricant

Audi-Larm Audible Alarm Replacement and Maintenance Kits		
10037310	Audi-Larm Audible Alarm, 2216 psi, complete	
10037312	Audi-Larm Audible Alarm, 4500 psi, complete	
Maintenance Kit		
10045831	635953	Piston Bore O-ring
	635954	Piston Nose O-ring
	66395	Piston Plug O-ring
	85055	Striker Spring
	85051	Striker
	85053	Pellet
	68523	Retaining Ring
	603342	Liquid Silicone Lubricant
Bell Replacement Kit		
10090907	485829	Bell
	54197	Lockwasher Lock
	635245	Screw (2)
	26875	Loctite 271
Piston Replacement Kit		
10090908	635953	Piston Bore O-ring
	635954	Piston Nose O-ring
	66395	Piston Plug O-ring
	85052	Piston Plug
	85049	Piston Assembly
Striker Replacement Kit		
10044574	85051	Striker
	85053	Pellet
	603342	Liquid Silicone Lubricant
Dust Cover Replacement Kit		
10090909	10038031	Dust Cover Assembly
	10037952	Screw
	10041962	Washer
Audi-Larm Audible Alarm O-ring Replacement Kit		
10090910	633553	Nipple O-ring Kit (pack of 10)

AIRHAWK II AUDI-LARM AUDIBLE ALARM



AIRHAWK II AUDI-LARM AUDIBLE ALARM

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AUDI-LARM AUDIBLE ALARM DISASSEMBLY

Only MSA-certified personnel may maintain and repair the apparatus. Use only replacement parts from MSA to assure proper performance. Thoroughly understand all instructions, inspection procedures, cautions, and warnings that pertain to the breathing apparatus.

Most repairs require standard tools. However, certain special tools, tapes, lubricants, and a tester from MSA are required. See **AirHawk II Air Mask Maintenance and Repair, Introduction, P/N 10104216** for a complete tool list.

Follow maintenance procedures exactly. Deviation from written repair procedures is unacceptable, unless approved by authorized MSA personnel.

⚠ WARNING

Relieve all pressure from the system. Close the cylinder valve. Be sure that nothing blocks the regulator outlet. Open the bypass valve to release trapped air. Failure to follow this warning can result in serious personal injury or death.

Removing the Bell

1. Use a flat-blade screwdriver to remove the screws and lock-washers holding the bell to the Audi-Larm housing.



2. Discard the screws and washers.

⚠ WARNING

Do not remove the bell from the alarm housing unless the bell is damaged. If the bell is damaged replace it with a new bell. Failure to follow this warning can result in serious personal injury or death.

Removing the Nipple O-Ring

1. Use the o-ring removal tool to remove the o-ring.



Note: Be careful not to scratch the o-ring groove.

2. Discard the o-ring

AIRHAWK II AUDI-LARM AUDIBLE ALARM

Removing the Coupling Nut

1. Remove the nipple.
   a. Secure the alarm body with a wrench or vise.

Note: Use protective sleeves on the jaws of the vise.



b. Use a **7/16" deep-well socket** to unscrew the nipple.

c. Remove the nipple and coupling nut.



d. Remove the washer.

e. Clean Teflon tape residue from the thread.

Disassembling the Audi-Larm Audible Alarm

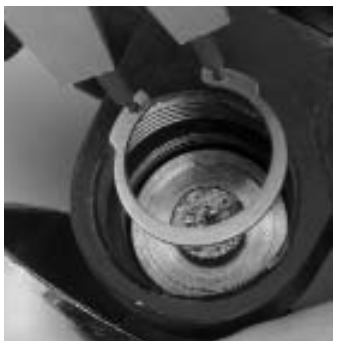
Extraction Tool 482426

1. Remove the Audi-Larm coupling nut from the Audi-arm Audible Alarm.



2. Use a large flat-blade scrwdriver to remove the adjusting screw.

3. Remove the spring.



4. Use retaining-ring pliers to remove the ring. Apply only enough pressure to remove the ring.

   a. Discard the retaining ring.



5. Unscrew and remove the piston plug and o-ring.

   a. Discard the o-ring.



6. Screw the extraction tool into the back of the piston.

⚠ CAUTION

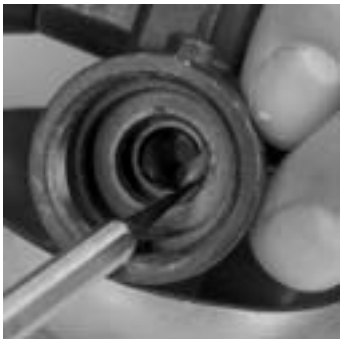
Be careful not to damage the piston valve seat on the opposite end of the piston.



7. Remove the piston by gently rocking and pulling the extraction tool.

8. Remove the extraction tool.
9. Remove and discard piston o-ring and the piston plug.
10. Turn the alarm over to remove the striker and spring from the alarm housing.
11. Discard striker and valve pellet.

12. Remove and discard the o-ring beneath the alarm housing shoulder.



13. Wipe all dirt and grease from the striker.

Removing the Relief Valve

⚠ WARNING

If label on relief valve is missing or damaged, install a new relief valve. Failure to follow this warning can result in serious personal injury or death.

1. Use an **11/16" wrench** to loosen and remove the relief valve.



2. Discard the o-ring.

Installing the Relief Valve

1. Remove the protective cap.
2. Install a new o-ring
   a. Apply a small amount of Christo-Lube lubricant to the o-ring.
3. Screw the relief valve into the alarm body and hand tighten.

4. Use a inch-pound torque wrench and **11/16" socket** to tighten the relief valve to **200-250 in lbs.**



Installing the Relief Valve Plug

1. Install a new o-ring.
   a. Apply a small amount of Christo-Lube lubricant to the o-ring.
2. Screw the plug into the alarm body.
3. Use a foot-pound torque wrench and hex bit to tighten the plug to 15-20 ft.lbs.

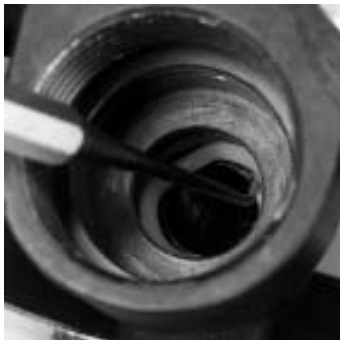
Note: Be careful not to cross-thread the relief valve.

Reassembling the Audi-Larm Audible Alarm

Piston Replacement Kit	10090908
Audi-Larm Audible Alarm Maintenance Kit	10045831
Striker Replacement Kit	10044574
Silicone Lubricant	494992

Note: Replace all o-rings. Reuse of o-rings is the most frequent cause of alarm malfunction. Apply a small amount of Christo-Lube lubricant to each o-ring before installing.

1. Install the o-ring under the shoulder inside the alarm housing. Use the o-ring removal tool to push the o-ring into place.



2. Apply a small amount of Silicone Lubricant to the striker shaft.
3. Place the spring over the striker.

4. Insert the spring and striker into the alarm housing.



5. Ensure that the striker extends through the hole and can touch the bell.
6. Install new o-rings on the piston and the piston plug.

7. Screw the plug into the piston and tighten.



8. Apply a small amount of Christo-Lube lubricant to the beveled shoulder of the piston assembly.

9. Insert the piston into the alarm housing and press it into place.



Note: Be careful not to damage the piston seat. The striker will extend through the forward hole toward the bell.

10. Use retaining-ring pliers to install the new retaining ring flat side out.



Note: The ring must seat in the groove located about 1/16" above the piston. Use the o-ring removal tool if necessary to push the ring into the groove. If the ring is bent, or does not fit tightly, replace it.



11. Apply a small amount of Christo-Lube lubricant to both ends of the spring.

12. Insert the adjusting spring into the alarm housing.



13. Insert the screw into the alarm housing and tighten about 1-1/2 turns.



14. Verify proper Audi-Larm operation by performing the required ring-up, set point, and ring-down tests specified in the Audi-Larm Audible Alarm Testing.

Note: After testing, place one drop of Loctite 222 on the adjusting screw threads.

15. Check the alarm for air leaks. (See **Leak Testing-Audi-Larm P/N 10104247**).

Reassembling the Coupling Nut and Nipple

Coupling Nut	2216 psig	10062084
	4500 psig	10062085
Nipple	2216 psig	10062086
	4500 psig	10062087

1. Reinstall the Coupling Nut

a. Apply Teflon tape to the nipple thread.



2. Apply a small amount of Christo-Lube lubricant to the new washer.

3. Slide the new washer onto the threaded end of the nipple.



4. Slide the coupling nut onto the threaded end of the nipple.

   a. Screw the coupling nut and nipple into the Audi-Larm body.



   b. Use a torque wrench and **7/16" deep well socket** to tighten the nipple to **25 ft lbs.**



⚠ CAUTION

Do not over-tighten to prevent damage the Audi-Larm body or the nipple thread.

Installing the Nipple O-Ring

Nipple O-ring 10090910

1. Roll the new o-ring into the groove until seated.



Note: An improperly seated o-ring can cause an air leak.

Installing the Bell

Bell 10090907

1. Align the bell with the boss on the alarm housing. The rim of the bell must not touch the alarm housing.
2. Remove residual Loctite thread locker.
3. Apply one drop of Loctite 271 (P/N 26875) into each hole.
4. Insert screws with lock-washers (P/N 54197) into the Audi-Larm body and tighten.

5. Ensure that the bell is tight.



AUDI-LARM AUDIBLE ALARM TESTING

MSA recommends that C.A.R.E. facilities use the upgraded Biosystems PosiChek[3] SCBA Test Benches to test Audi-Larm accuracy.

Upgrades to the PosiChek[3] Machine are available through Biosystems:
54-21-A12 - EP (Enhanced Precision) Upgrade Only, and
54-21-A13 - Sound Detection System Upgrade Only, and
54-21-A14 - EP and Sound Detection System Upgrade Combined.

MSA also authorizes the use of the Audi-Larm tester (P/N 10045522) to evaluate the accuracy of the Audi-Larm Audible Alarm.

⚠ WARNING

If upgrades have not been performed to the Biosystems PosiChek[3] Test Bench, MSA requires C.A.R.E. facilities to use the Audi-Larm Tester (P/N 10045522) to check the accuracy of the Audi-Larm Audible Alarm during each flow test of the SCBA. Failure to follow this warning can cause Audi-Larm malfunction, resulting in serious personal injury or death.

Contact Biosystems (www.biosystems.com) for information regarding other necessary upgrades.

TROUBLESHOOTING

Trouble	Probable Cause	Remedy
Audi-Larm does not ring when pressurized.	Audi-Larm bell is loose	Install new screws and washers. Refer to PIN P/N 10041212 (Single Screw) and PIN P/N 10041213 (Dual Screw)
	Dirt or foreign matter may have affected the o-ring seals inside the Audi-Larm or the proper operation of the Audi-Larm striker.	Overhaul Audi-Larm.
	Internal Leak	Overhaul Audi-Larm.
		Overhaul Audi-Larm and replace piston.
Audi-Larm leaks	Audi-Larm insert o-ring is leaking	Try to hand tighten coupling nut further onto the cylinder valve. If this is unsuccessful, the insert o-ring may need to be replaced.
	Leakage at the pipe thread fitting	Completely leak test all fittings on the Audi-Larm assembly. Relieve pressure, and then tighten if necessary.
Audi-Larm does not fully pressurize	Cylinder pressure too low	Replace cylinder with a fully pressurized cylinder.
	Internal leak	Overhaul Audi-Larm and replace piston.
	External leak	Replace coupling nut nipple O-ring.
Audi-Larm does not start to ring at required setting	Adjustment too high	Adjustment: Turn the adjusting screw counter clockwise (out) 1/8 turn. Retest the Audi-Larm.
	Adjustment too low	Adjustment: Turn the adjusting screw clockwise (in) 1/8 turn. Retest the Audi-Larm.
Audi-Larm does not ring continually all the way down to within color code mark or lower.	Internal leak	Overhaul Audi-Larm.
		Overhaul Audi-Larm and replace piston.

Note: If after performing the *remedy*, the Audi-Larm still does not perform properly during the Audi-Larm test, it must be replaced.

Note: Overhaul Kit P/N 10045831