



Martin[®] Air Cannon Maintenance Instructions

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Martin[®] Hurricane
Air Cannon



Martin[®] Tornado
Air Cannon



**Operator's Manual
M3747**

Important

MARTIN ENGINEERING HEREBY DISCLAIMS ANY LIABILITY FOR: DAMAGE DUE TO CONTAMINATION OF THE MATERIAL; USER'S FAILURE TO INSPECT, MAINTAIN AND TAKE REASONABLE CARE OF THE EQUIPMENT; INJURIES OR DAMAGE RESULTING FROM USE OR APPLICATION OF THIS PRODUCT CONTRARY TO INSTRUCTIONS AND SPECIFICATIONS CONTAINED HEREIN. MARTIN ENGINEERING'S LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF EQUIPMENT SHOWN TO BE DEFECTIVE.

Observe all safety rules given herein along with owner and Government standards and regulations. Know and understand lockout/tagout procedures as defined by American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements* and Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*.

The following symbols may be used in this manual:



Danger: Immediate hazards that will result in severe personal injury or death.



Warning: Hazards or unsafe practices that could result in personal injury.



Caution: Hazards or unsafe practices that could result in product or property damages.



Important: Instructions that must be followed to ensure proper installation/operation of equipment.



Note: General statements to assist the reader.

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Martin® Hurricane Air Cannon Main Piston & Basket Rebuild Instructions

IMPORTANT

Read entire section before beginning work. All safety rules defined in your air cannon's documentation, and all owner/employer safety rules, must be strictly followed when installing and servicing this equipment.

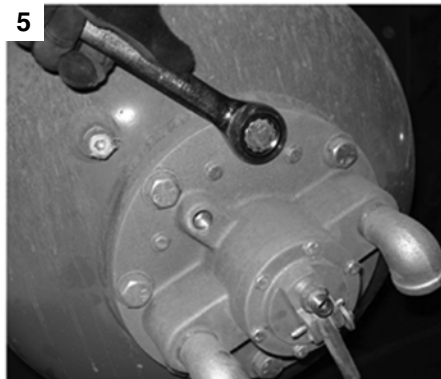
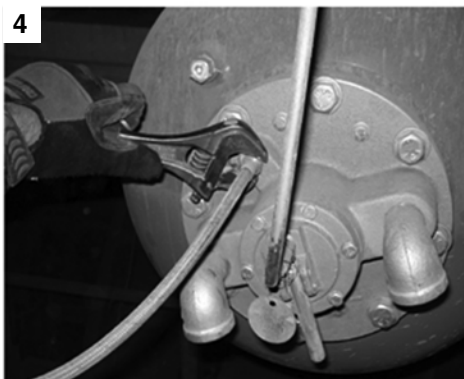
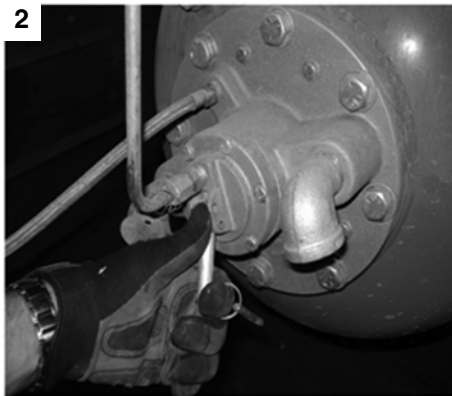


⚠ DANGER

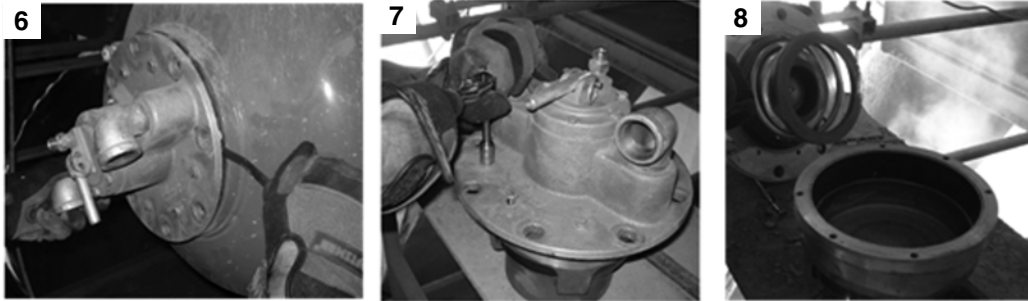
Turn off and lock out/tag out air supply and energy source before blasting air cannon to prevent air cannon from refilling.

Do not open door/port or enter structure before turning off compressed air source, locking out controls, purging line pressure, and venting air from tank. Opening structure door while cannon is operational can kill you.

1. Turn off and lock out/tag out energy source according to American National Standards Institute (ANSI) z244.1-1982 and Federal Register, Volume 54, Number 169, Part IV, 29 CFR Part 1910.
2. Blast air cannon to remove air from tank. If tank has a relief valve, pull ring to make sure air stored in cannon has been released.
3. Close safety slide gate if equipped with one. If air cannon has an open discharge port, make sure you are safely isolated from free flowing material or hazards inside the discharge area.
4. Disconnect air lines.
5. Remove bolts from valve assembly.



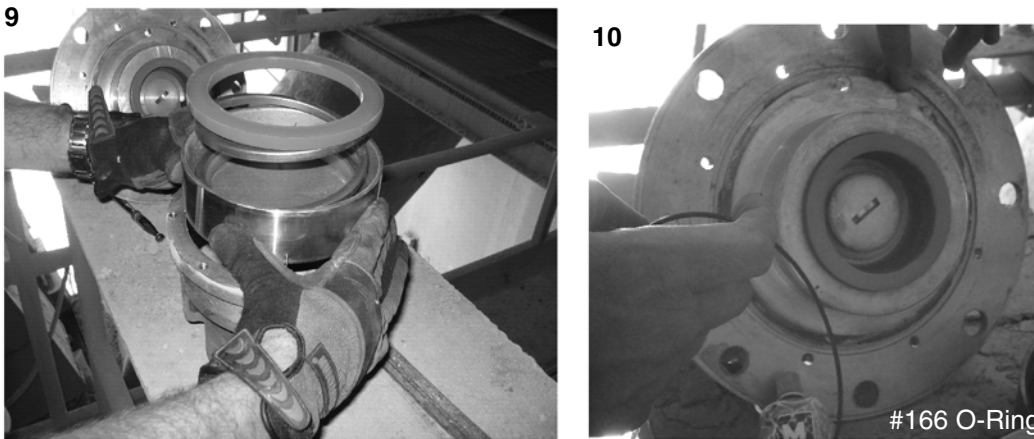
6. Remove the valve from tank.
7. Remove 1/4-in. bolts that hold basket to exhaust valve.
8. Remove old lower basket assembly.



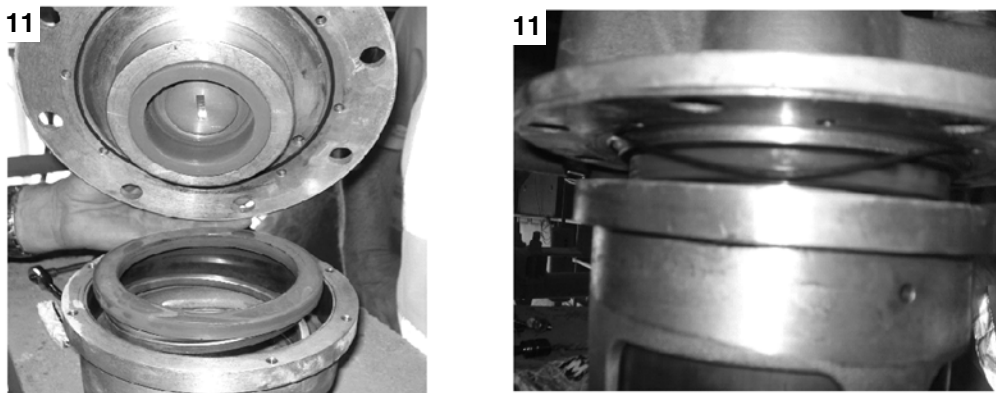
IMPORTANT

All o-ring mating surfaces need to be clean and smooth for an air tight seal. Apply a small amount of grease to o-rings to ensure o-rings stay secure in the o-ring groove during assembly. Make sure o-rings are not pinched during reassembly.

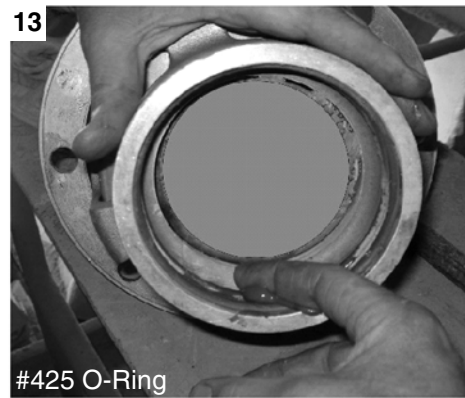
9. Install new lower basket kit. See Figure 1 for a list of components.
10. Install o-ring on exhaust valve.



11. Align bolt holes and install 1/4-in. bolts.



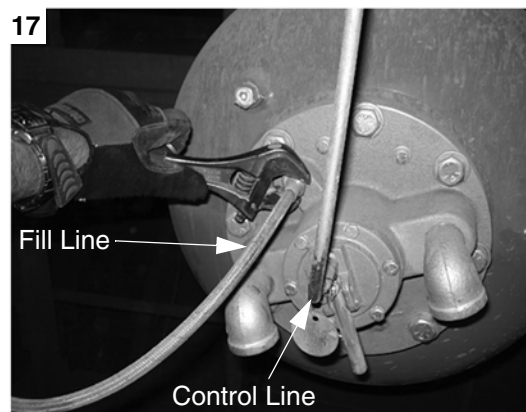
12. Apply a small amount of grease to bearing basket o-rings (#169) and install o-rings.
13. Apply a small amount of grease to discharge tube o-rings (#425).



14. Inspect the interior of the air cannon.
15. Install valve assembly onto discharge tube.



16. Install compression washers and bolts.
17. Connect air lines and check for leaks.



18. Move the safety slide gate to the open position and install pin.

19. Slowly pressurize the air cannon and check for leaks.
20. Pressurize the air cannon and test fire to make sure all connections are correct.
21. The Martin[®] Hurricane Air Cannon is now ready for operation. Watch air gauge when cannon is fired. The needle should drop to “zero” instantly. The exhaust port elbows should be pointing down, so dirt does not fall into the exhaust valve.

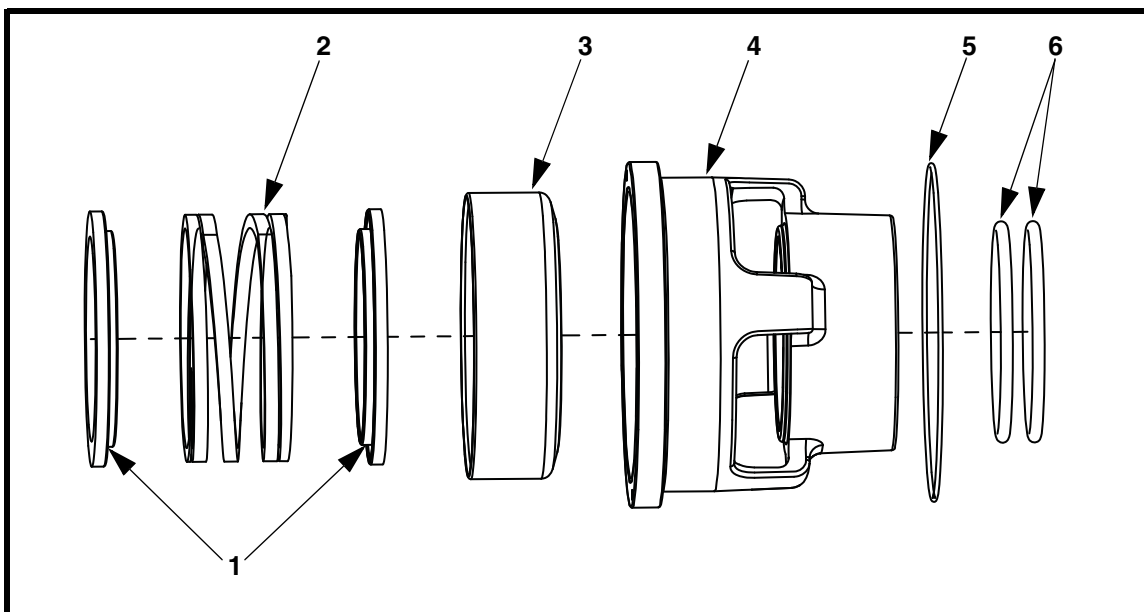
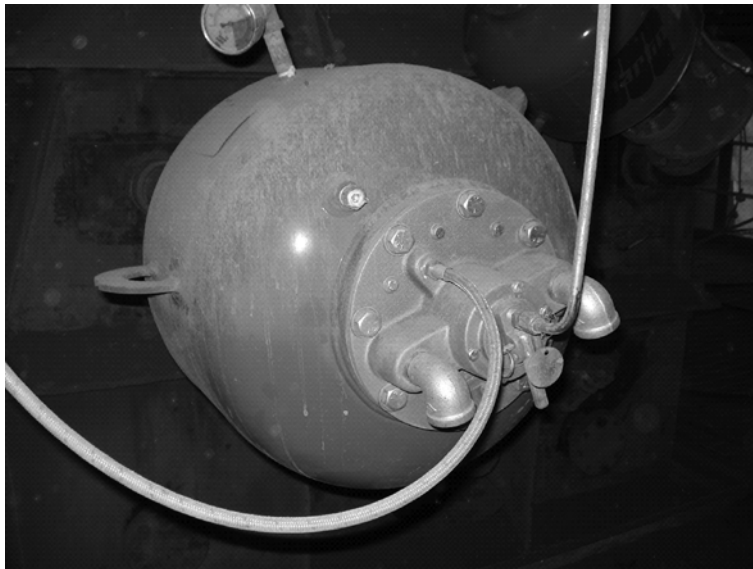


Figure 1. Martin[®] Hurricane Air Cannon Main Piston Rebuild Kit, P/N 38426

Item	Description	Qty
1	Spring Bumper Pad	2
2	Compression Spring	1
3	Piston	1

Item	Description	Qty
4	Basket	1
5	O-Ring #169	1
6	O-Ring #425	2

Martin® Air Cannon Exhaust Valve Repair Kit Instructions

1. Remove lever cap and pipe elbows.
2. Hold woodruff key, supplied in the kit, in the valve stem slot using locking pliers. Remove the flat head screw from the valve stem. Usually a quick hit with a dead blow hammer will break the threadlocker adhesive free.
3. Disassemble the rest of the exhaust valve, and check for wear on the piston pocket and valve stem seat.
4. Clean all areas of the exhaust valve.

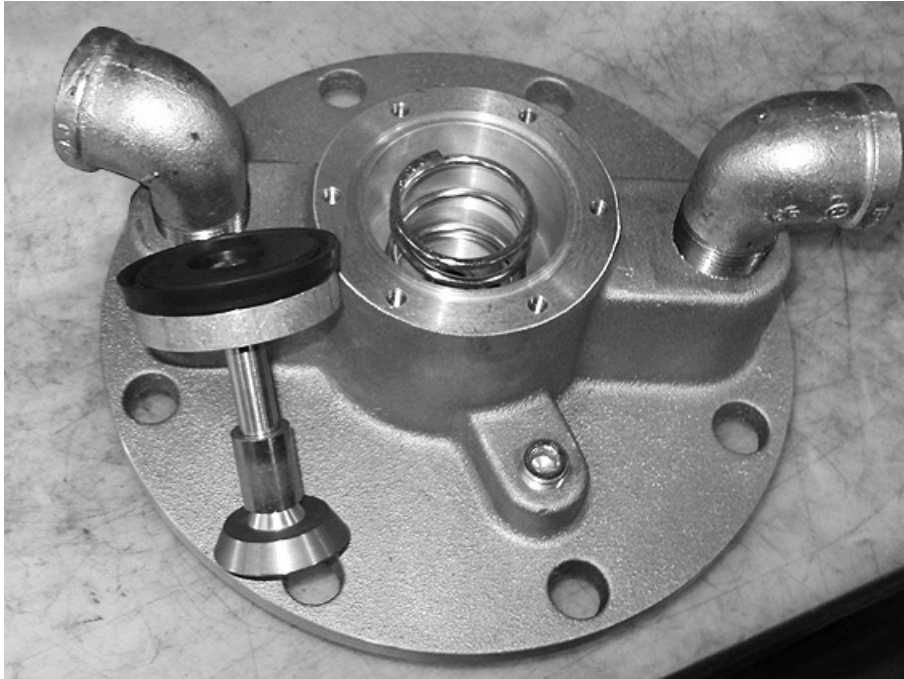


Valve
Stem Seat

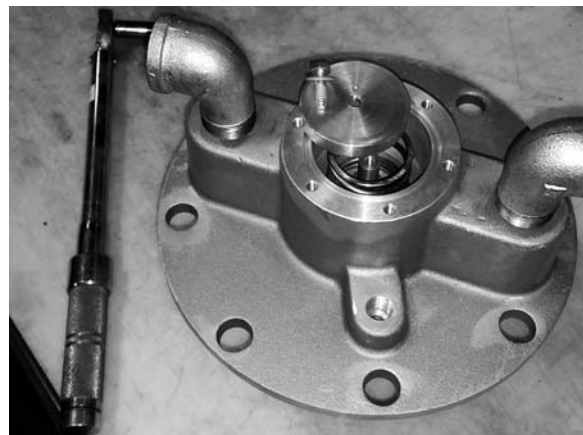
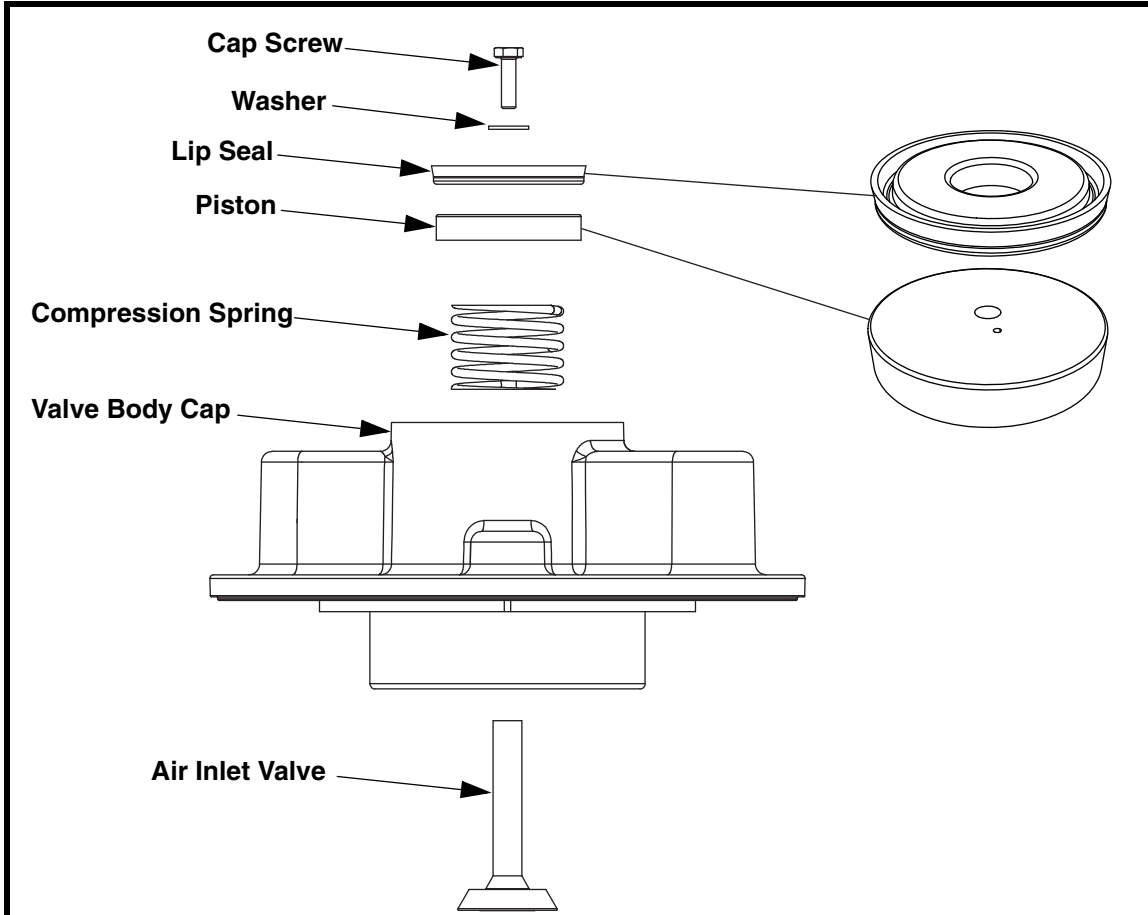
Pocket



5. Drive out bearing sleeve using a standard (7/16") deep well socket.
6. Press in new bearing sleeve using the next size socket (1/2") on the bearing and lightly tapping with the dead blow hammer.

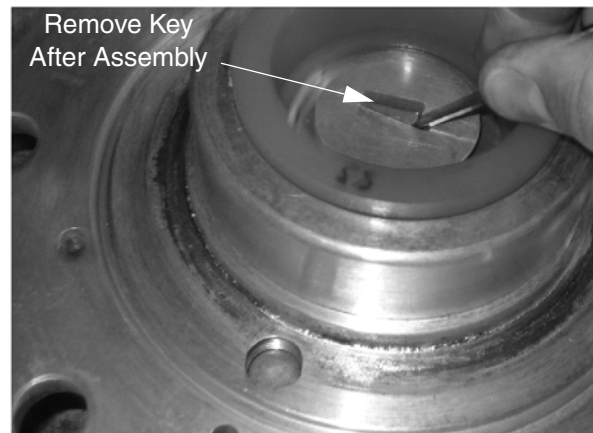
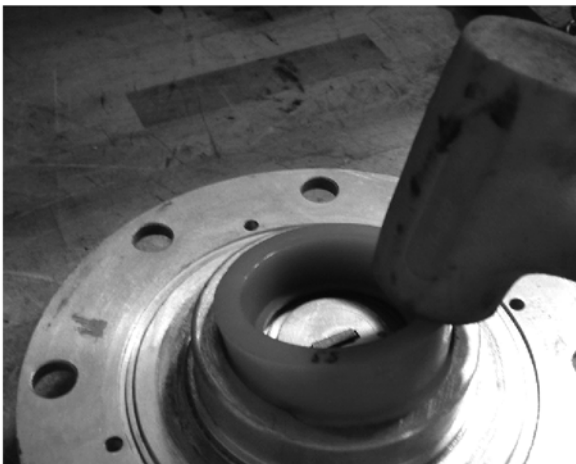


7. Insert woodruff key into key way in valve stem. Tap the key with a hammer to press it into key way.
8. Insert air inlet valve into valve body cap.
9. Insert compression spring and piston into valve body cap.
10. Hold the key using locking pliers while tightening the screw. Tighten the screw to 12 ft-lbs.
11. Insert lip seal into valve body cap. Make sure orientation of lip seal is correct.





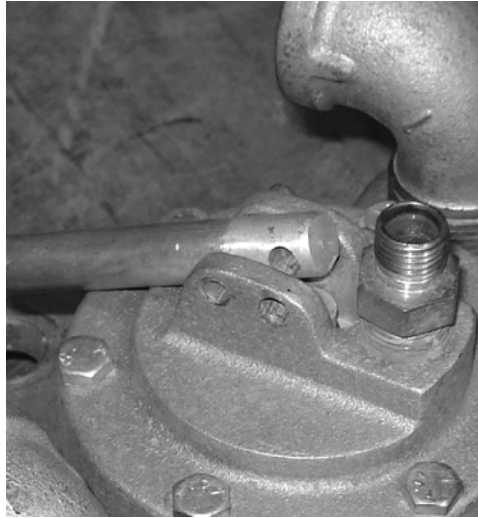
12. Insert the urethane bumper into the hub using a dead blow hammer.
13. Remove the woodruff key. It is only to be used for assembly purposes.



14. Install elbows pointing down during service, so material will not collect in the exhaust valve. The elbow connections should be snug, but still adjustable. Install manual lever cap and tighten the cap screws to 12 ft-lbs.



15. Operate the manual lever to ensure the valve stem has a full range of movement. There should be a tight fit around the valve stem and seat. Apply a small amount of grease on the plunger for operating the manual lever.



16. The Martin[®] Air Cannon Exhaust Valve is now ready for service.

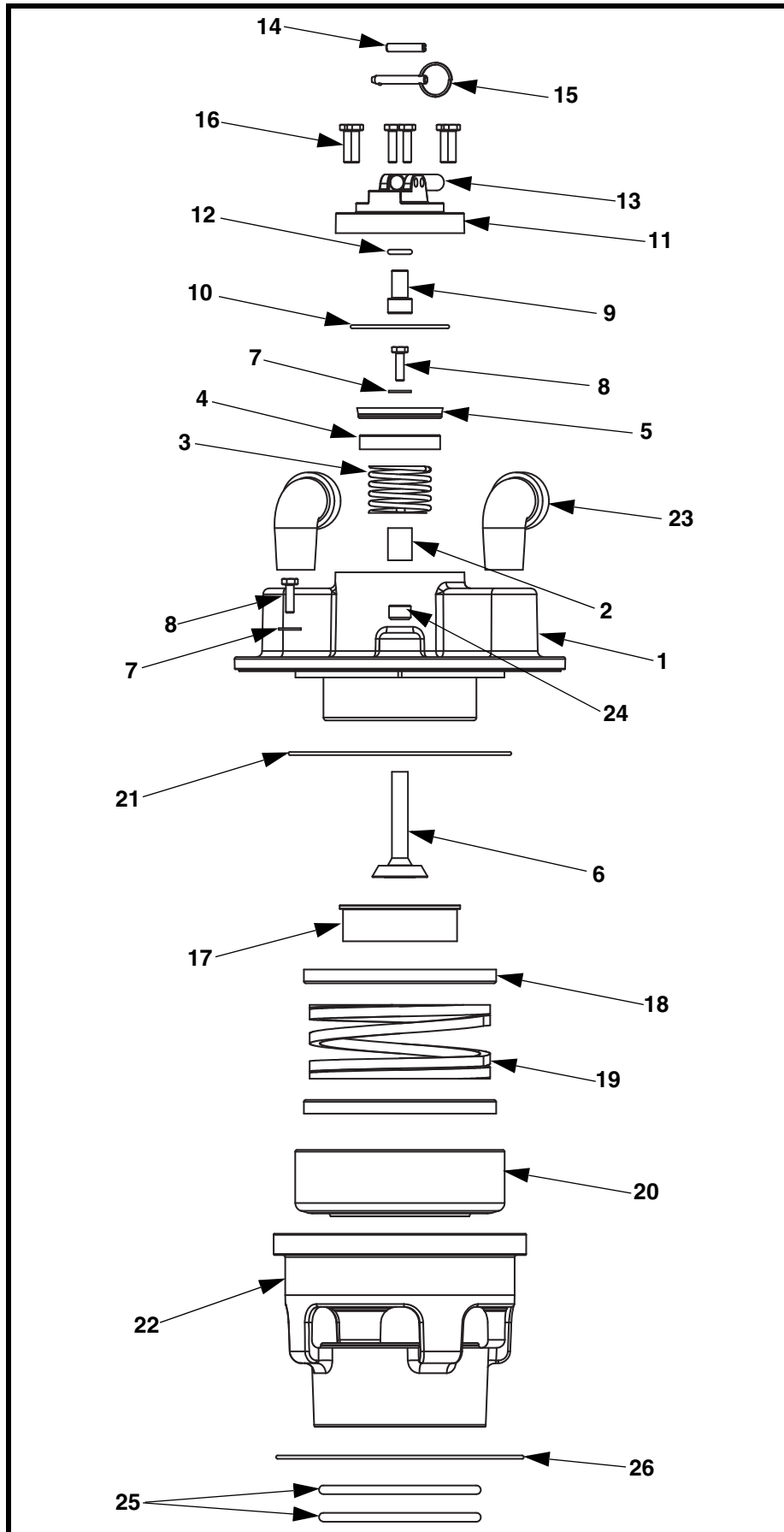


Figure 2. Martin[®] Hurricane Air Cannon Exhaust Valve, P/N 38071

Item	Description	Qty
1	Valve Body Cap	1
2	Bearing Sleeve	1
3	Compression Spring 1.937 OD	1
4	Piston	1
5	Lip Seal Puck	1
6	Air Inlet Valve with Brass Seat	1
7	Washer Compression 1/4	7
8	Screw HHC 1/4-20NC x 7/8 ZP	7
9	Plunger	1
10	O-Ring #150 2.862 ID x 1.03 CS	1
11	Top Cap	1
12	O-Ring #206 .484 ID x .139 CS	1
13	Handle	1
14	Slotted Spring Pin 1/4 x 1-1/4 SS	1
15	Quick Release Pin 1/4 x 1.63 ZP	1
16	Screw HHC 1/4-20NC x 1 ZP	6
17	Urethane Bumper	1
18	Spring Bumper Pad	2
19	Compression Spring	1
20	4.00" Piston Assembly	1
21	O-Ring #166 6.737 ID x .094 CS	1
22	Basket	1
23	Street Elbow 1.00" 90 degree	2
24	Hex Socket Plug 3/8	1
25	O-Ring #425 4.500 ID x .275 CS	2
26	O-Ring #169 7.487 ID x .103 CS	1

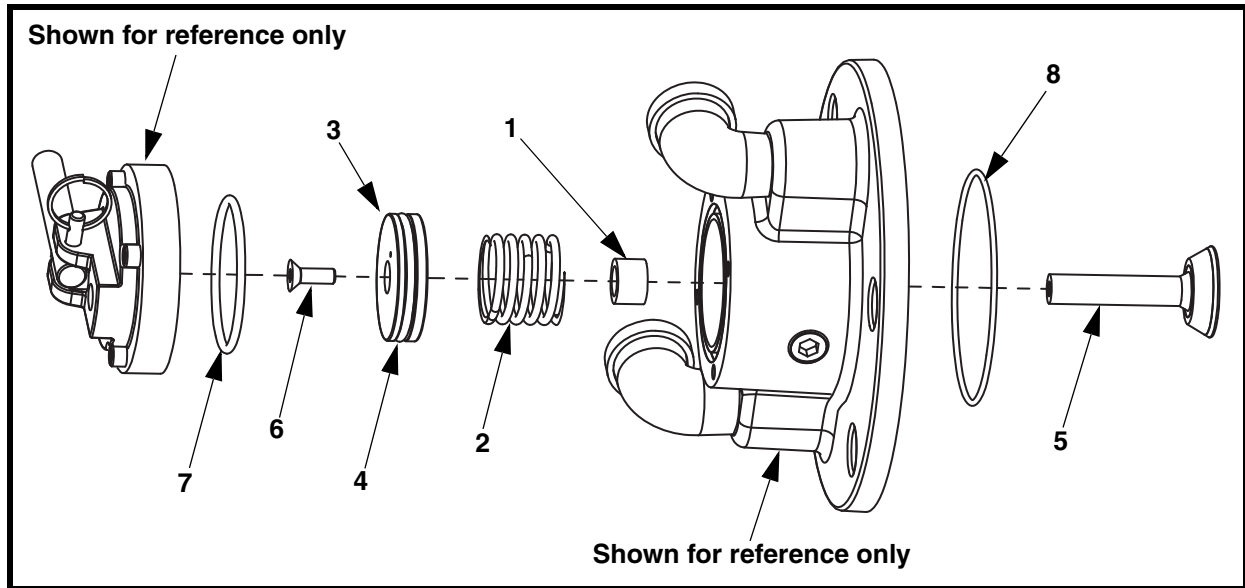


Figure 3. Martin® Tornado Air Cannon BB2 Exhaust Valve Rebuild Kit, P/N 38137-2

Item	Description	Qty
1	Bearing Sleeve	1
2	Compression Spring 1.50 OD 302 SS	1
3	Piston	1
4	O-Ring #225 1.86 ID x .139	1
5	Air Inlet Valve	1
6	Screw FSHCS 1/4-20NC x .75	1
7	O-Ring #229 2-3/8 ID x .139 CS	1
8	O-Ring 3-3/4 ID Viton	1
9	Key Woodruff	1

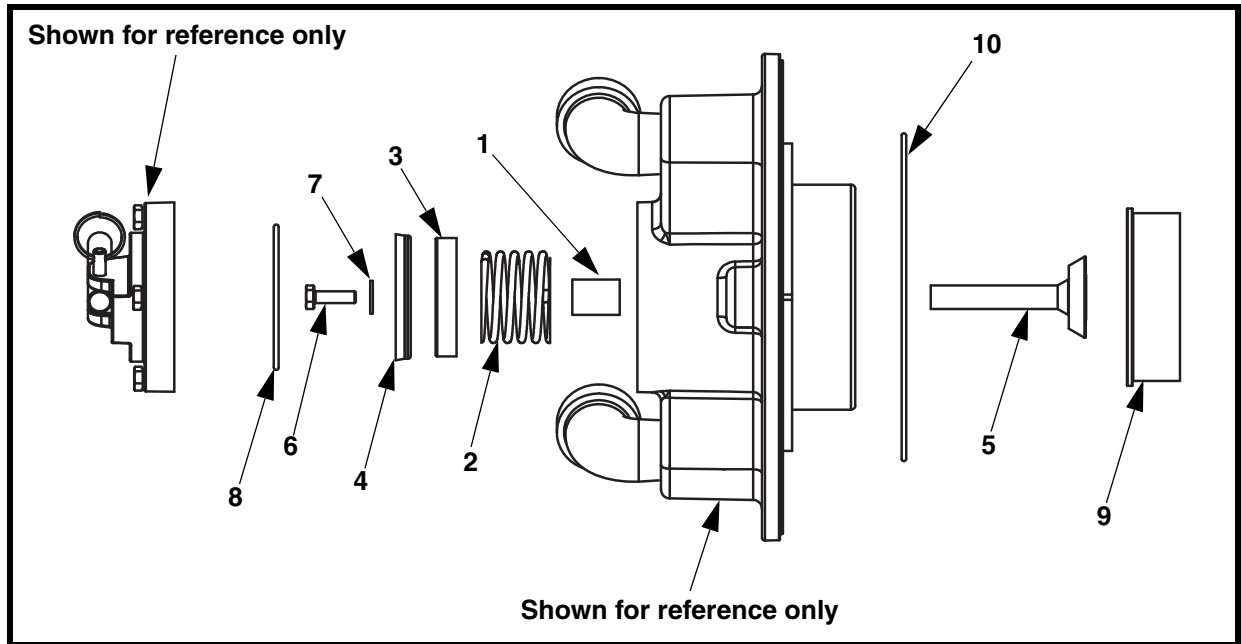


Figure 4. Martin® Tornado Air Cannon BB4 Exhaust Valve Rebuild Kit, P/N 38137-4

Item	Description	Qty
1	Bearing Sleeve	1
2	Compression Spring 1.937 OD	1
3	Piston	1
4	Lip Seal Puck	1
5	Air Inlet Valve	1
6	Screw HHC 1/4-20NC x 7/8	1
7	Washer Compression 1/4	1
8	O-Ring #150 2.862 ID x .103 CS	1
9	Urethane Bumper	1
10	O-Ring #166 6.737 ID x .094 CS	1
11	Key Woodruff	1

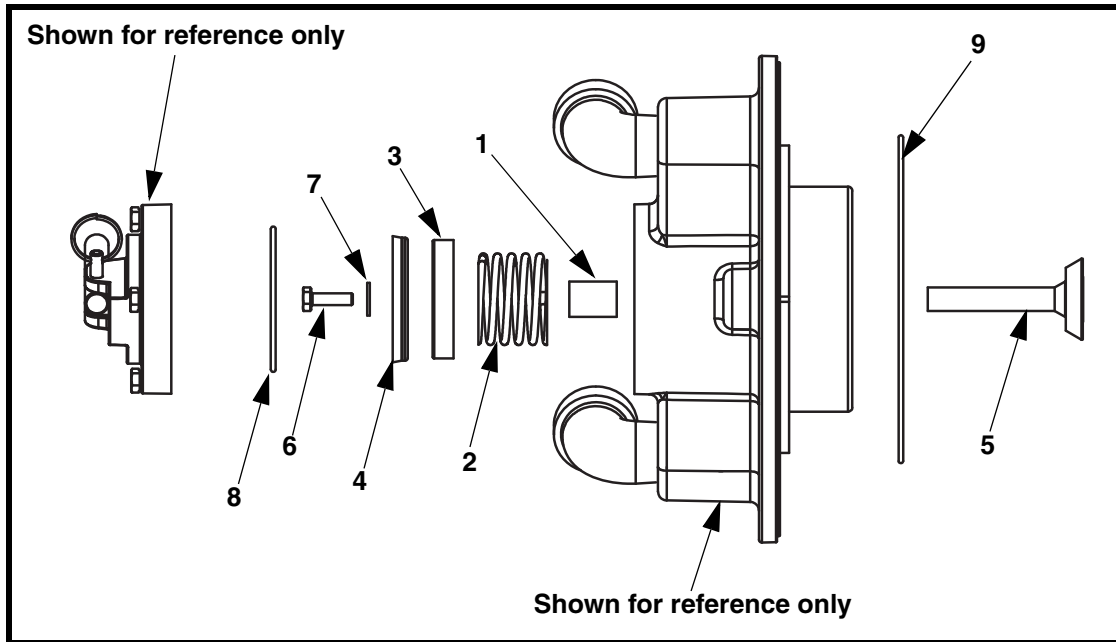
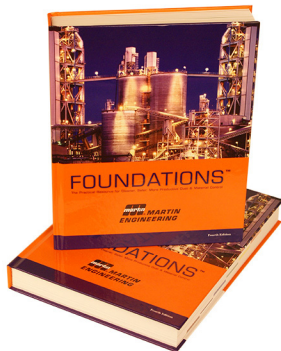


Figure 5. Martin® Tornado Air Cannon BB6 Exhaust Valve Rebuild Kit, P/N 38137-6

Item	Description	Qty
1	Bearing Sleeve	1
2	Compression Spring 1.937 OD	1
3	Piston	1
4	Lip Seal Puck	1
5	Air Inlet Valve	1
6	Screw HHC 1/4-20NC x 7/8	1
7	Washer Compression 1/4	1
8	O-Ring #150 2.862 ID x .103 CS	1
9	O-Ring #275 10.484 ID x .139 CS	1
10	Key Woodruff	1

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