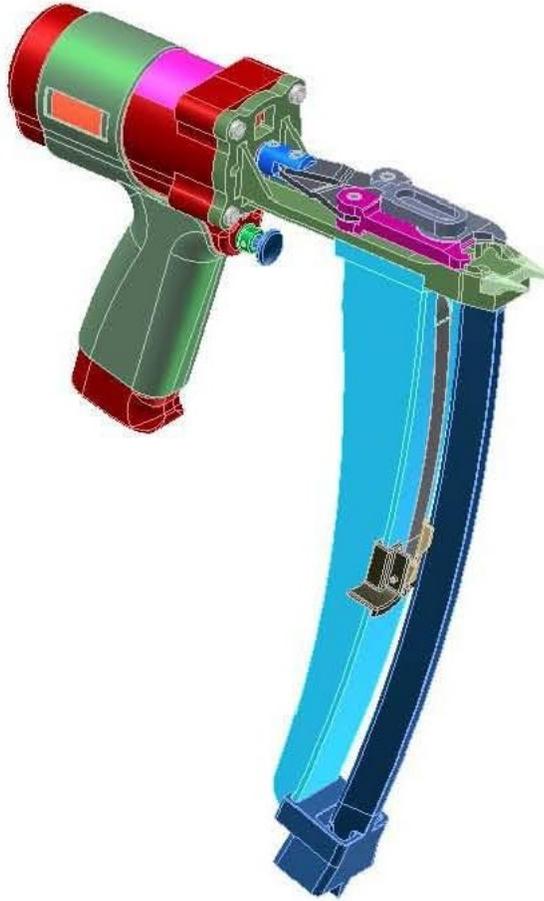


D-RING TOOL VA0277 OPERATING MANUAL



Operational Instructions for Vertex D-Ring Tool VA0277

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MAINTENANCE

Most problems with tools are a result of:

1. Normal wear and tear to components due to high usage.
2. Lack of proper lubrication.
3. Dirt or water that may enter the tool via air lines.

LUBRICATION

1. The **D-Ring tool VA0277** is designed for long, trouble free use with **minimal in-line lubrication**. (If an in-line lubricator is used, it should be set at a minimal rate of flow.)
2. When lubricating tool, **Pneumatic Fastening Tool Oil, VC0340** is recommended. When oiling, a couple of drops of oil should be placed through the airline fitting. Excess oil in tool will attract dirt, lint, and the tape used to collate rings, preventing smooth operation. Cycle tool to expel excess oil.
3. When servicing or repairing tool a **high grade lithium grease, Vertex part number VH0214** is recommended.

AIR FILTER AND REGULATOR

1. The airline should always contain a filter and regulator unit to provide tool with a constant flow of clean, dry air. Moisture and contaminants entering tool will decrease the serviceable life of the tool.
2. The regulator should be set between **70 and 90 psi (4.8 to 6.2 bar)**. **Never** operate tool **over 100 psi (6.9 bar)**.

TIPS ON EXTENDING TOOL LIFE

1. Always use **Vertex brand fasteners** and always use **Vertex genuine parts** when replacing worn or broken parts. **Generic fasteners, and parts** may shorten the tools life and **will void your tool warranty**.
2. Use tool at the minimum amount of air pressure needed to do the work at hand. **Excess air pressure will reduce the life of tool**.
3. Keep tool clean and dry and always use **clean dry air**.
4. Avoid dropping tool, a primary reason for parts replacement.

CARRIAGE ASSEMBLY ROTATION



1. The carriage is normally shipped in position #1, magazine pointing downward, parallel to handle.
2. To rotate carriage to a new position, remove (4) **10-32 SHCS VH0051**. This will enable you to put the carriage assembly into any of the remaining 3 positions.



3. **DO NOT** use excessive force when tightening any of the screws. Screws should be snug but not over-torqued.

TROUBLESHOOTING

HELPFUL HINTS FOR FIELD SERVICE TOOL JAMS

SAFETY FIRST – Always disconnect tool from air supply before attempting to clear a jam or servicing tool.

The most common reason for jamming problems is worn parts. Common parts that see a lot of wear are the jaws, pusher assembly and the pusher spring.

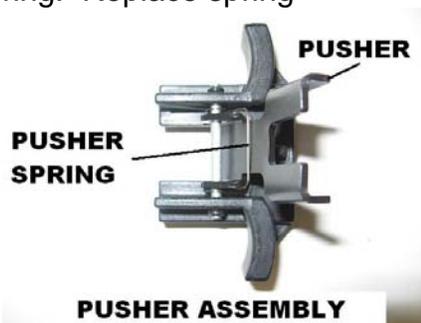
Note: refer to correct tool schematic for location of parts and correct part numbers.

Common causes of jams:

- Worn or chipped jaws. Replace jaws



- Damaged pusher. Replace pusher
- Damaged pusher spring. Replace spring



- Screw VH0026 missing. Replace screw (use Loctite 243)



- Defective fasteners. Return samples of rings to Vertex Fasteners representative for testing.

RING DOES NOT CLOSE COMPLETELY

- Check air pressure. Line pressure should be between **70 and 90 psi (4.8 – 6.2 bar)**.
- A 3/8" (9.5 mm) or larger air line should be used. Air lines in excess of 100' (30 meters) can starve the tool of air preventing normal operation.
- Air leak in tool – refer to repair section of manual.
- Check for foreign debris in jaw area.
- The jaws may be worn from extended use. Check ring groove, if worn or chipped replacement is recommended.

RING GROOVE



LOOK FOR CHIPPING ALONG THIS EDGE

- Unlubricated and/or corroded parts may cause tool to function poorly. Light oil should be applied on a regular basis to surfaces of carriage, jaws, linkages and pins in corrosive or humid environments. Excessive amounts of oil will only attract dirt and foreign material which will hamper tool operation.
- Defective rings –
 1. Wire too hard
 2. Rough surface
 3. Cut-off burrs
 4. Wrong rings - Return samples of rings to your Vertex Fasteners representative for testing.

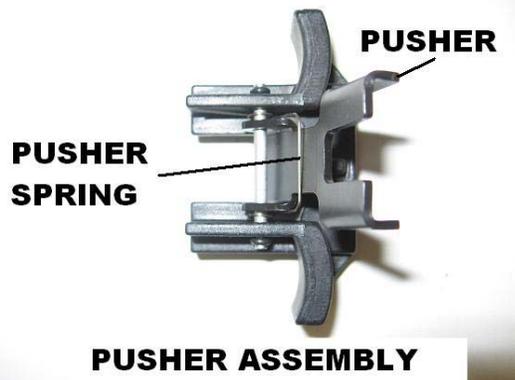
FEEDING PROBLEMS

- If rings do not feed smoothly down magazine, check constant force pusher spring for proper tension. There should be no kinks or bends in spring.



- Magazine should be free of dirt and other foreign matter.
- If rings feed freely down magazine but not into jaws, check jaws for freedom of movement and/or wear.

- Pusher worn, bent or broken. Replace pusher.
- Pusher spring broken or bent. Replace spring.



- Screw VH0026 missing. Replace screw (use Loctite 243)



- Defective rings
 1. Undersized (tight on magazine)
 2. Burrs
 3. Rings twisted
 4. Rings skewed on stick
 5. Rings out of line on stick
 6. Poor tape to ring adhesion
 7. Wrong rings - Return samples of rings to your Vertex Fasteners representative for testing.

TOOL LEAKS AIR

If tool leaks air the most common cause is failed o-rings. Where the tool leaks air is important in determining the cause.

Tool leaks from valve at rest

- Loose trigger. Tighten trigger using 7/16" wrench



- O-ring cut, cracked or twisted. Replace o-rings



Tool leaks air when actuated operation weak

- Piston o-ring damaged. Replace o-ring
- O-rings cut or cracked (valve area). Replace o-rings
- Trigger defective. Replace trigger

Note: some air may leak from trigger when actuated, this is normal. If leaking is excessive where it affects tool operation then trigger should be replaced.

LACK OF POWER; SLOW TO CYCLE

- Tool dry, lacks lubrication. Use Vertex air tool lubricant
- O-rings cut or cracked. Replace o-rings
- Dirt/tar build up on moving parts. Clean, lubricate with lithium grease.
- Check valve/trigger dirty. Clean, lubricate
- Competitors valve parts used. Use only genuine Vertex repair parts
- Broken return spring. Replace spring
- Air pressure too low. Check air supply

REPAIR

Rail and Carrier (Magazine)

1. Remove **VH0026, 4-40 X 1/4 SHCS.**



2. Slide rail **VC9110** straight out and off **VC9109** carrier.



3. Remove **VH0461**, 1/4-20 X 3/8 SHCS.



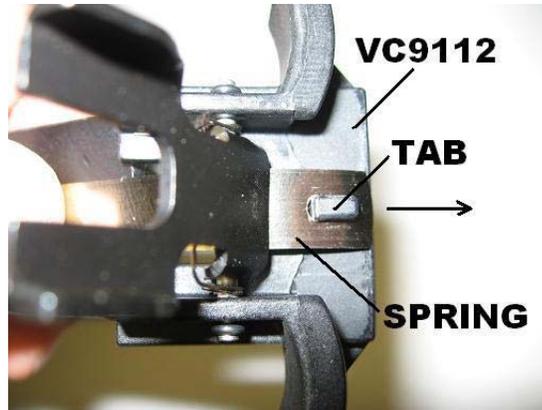
4. Slide **VC9109** carrier towards main body and remove from carriage.



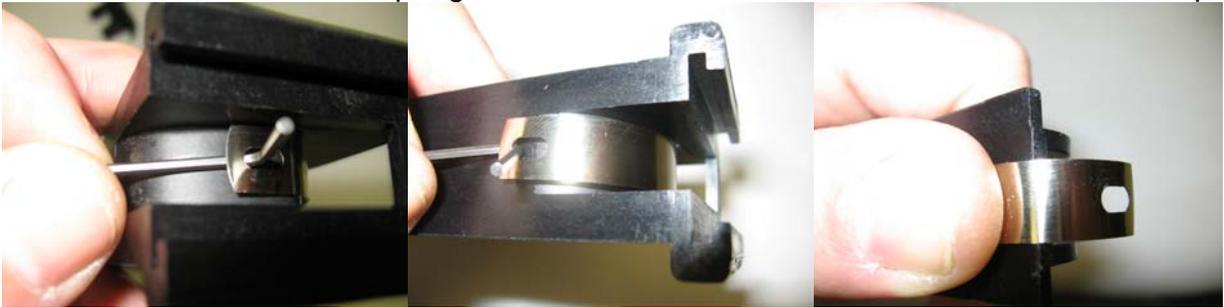
Assembly is in reverse order. Note that **VH0461** acts as a stop for **VC9103** slide, you must push the slide and jaws forward to reinstall **VH0461**. If the slide is **not pushed forward** during screw installation, **breakage** of the slide **will occur**.

Spring and Pusher

1. Remove rail and carrier from tool as outlined above.
2. Slide **pusher assembly VC9112** to the end of the carrier, sliding the pusher completely off with **spring VC9122** hooked over the edge. While holding the **pusher assembly VC9112** stationary, push the end of the spring forward unhooking spring from tab on pusher.



3. To replace **spring VC9122** remove the old spring and place new spring in pocket of carrier. Pull tab end of spring to end of carrier use of a small allen wrench will help.



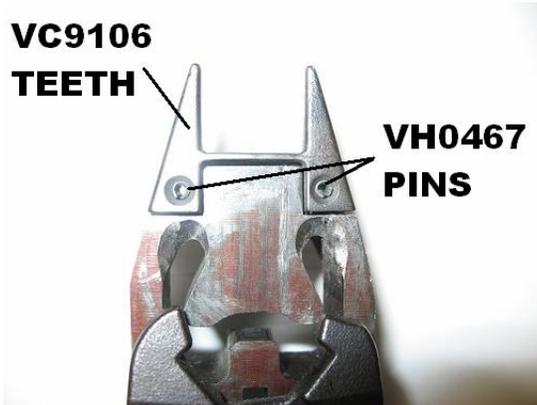
4. Bring end of spring between plastic piece and metal part of pusher assembly and push hole over tab on pusher. Be sure that end of spring is firmly seated and hooked on undercut of tab on pusher.



5. Reinstall carrier and rail as outlined above.

Teeth

1. Detach **teeth VC9106** by driving (2) **roll pins VH0467** from carriage and teeth using pin punch.



2. Reattach new teeth by placing the teeth on carriage and driving roll pins back in place.

Piston and Jaws

1. Detach **body VC9100** from rest of tool by removing (4) **VH0051 SHCS**. Separate by pulling the carriage/piston assembly straight out from body.



2. Remove piston **o-ring VH0455**.
3. Remove **5/16 – 24 nut VH0454** from **piston rod VC9113**. If necessary, apply heat as needed to breakdown thread lock adhesive on threaded end of piston rod.



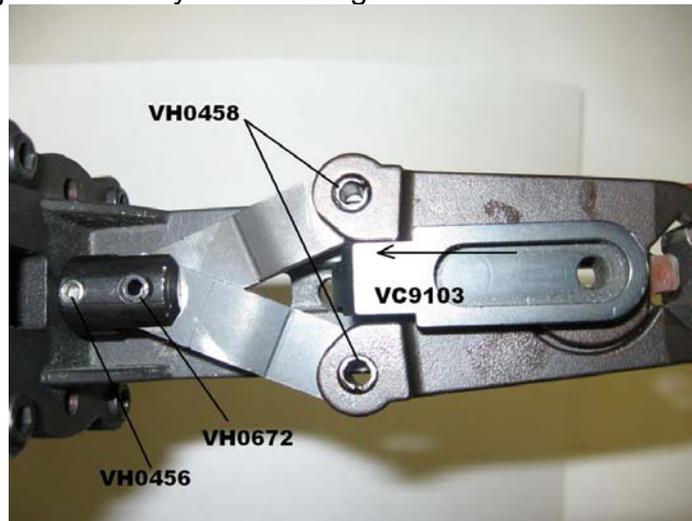
4. Remove **piston, bumper and spring (VC9114, VC9120 and VC9123.)**



5. Remove ¼ - 20 SHCS **VH0461**.



6. Remove **slide VC9103** by sliding it away from teeth area and pulling it up and out of carriage.
7. Remove the jaw assembly from carriage.



8. Using pin punch, drive out (2) **VH0458** pins from **jaws VC9104, VC9105** and **VC9107 links**.
9. Drive out **pin VH0672** from links and **clevis VC9117**.
10. Remove **set screw VH0456** from clevis.
11. Remove clevis from piston rod. Apply heat if needed to breakdown thread lock adhesive on threaded end of piston rod.
12. Re-assembly is in reverse order.
13. Orient links per drawing and fasten to clevis using **pin VH0672**. Links should be free to move.
14. Connect **left jaw VC9104** to the left link by driving **roll pin VH0458** into aligned holes.
15. Connect **right jaw VC9105** to the right link by driving **roll pin VH0458** into aligned holes. Make sure to match the correct jaw with the correct link for tool to operate correctly.
16. Screw short threaded end of **piston rod VC9113** into clevis using Loctite (242 or 243 blue) on threads.
17. Insert rod and jaw assembly through carriage.
18. Install **bumper VC9120** and **spring VC9123** onto piston rod per drawing.
19. Apply Loctite (242 or 243) to long thread of piston rod and screw **piston VC9114** firmly onto piston rod.
20. Apply Loctite (242 or 243) to remaining threads and tighten **nut VH0454** in place.



21. Apply a small drop of Loctite (242 or 243) onto **set screw VH0456** and install into clevis securely.
22. Pivot jaws and links apart so slide can be installed onto carriage.
23. Install **o-ring VH0455** onto piston.
24. Apply o-ring grease to piston, o-ring and rod shaft.
25. Install carriage/piston assembly into tool body. (Care should be taken not to damage o-ring during installation).



26. Re-install (4) **SHCS VH0051**. **DO NOT** use excessive force when tightening screws. Screws should be snug but not over-torqued.



27. Attach air line and cycle tool to insure everything is operating freely.
28. Cycle tool with rings. If tool is picking up next ring or breaking the next ring from strip this is due to wear. **Disconnect air from tool.**
29. Push slide back toward the housing and remove.
30. Install **cup washer VH0465** or **wavy washer VH0466** onto post of slide.
31. Re-install slide onto tool.
32. Cycle tool again for pickup of next ring. If picking up next ring, repeat steps 29 – 31.
33. Make sure tool is disconnected from air. Push slide towards teeth. Install $\frac{1}{4}$ - **20 X 3/8 SHCS VH0461** into carriage. Note that **VH0461** acts as stop for slide keeping it from coming out during use. If slide is **not** pushed forward when installing screw **breakage** of the slide **will occur**.

Valve

1. Remove **trigger assembly VC9116** from housing.
2. Remove **o-ring VH0570**, **ball VH0463**, **valve seat VC9118** and **o-ring VH0464**.



3. Assembly is in reverse order. Assemble **o-ring VH0464**, **valve seat VC9118**, **ball VH0463** and **o-ring VH0570** and insert into bore of housing, apply grease to both ends.



4. Coat end of **trigger assembly VC9116** lightly with grease to prevent o-ring from twisting, and install trigger into housing. **(DO NOT OVER TIGHTEN.)**



RECOMMENDED SPARE PARTS LIST

PART #	DESCRIPTION	1	5	10
PART #	DESCRIPTION	NO. OF TOOLS		
VC9103	SLIDE	0	0	1
VC9104	JAW, LEFT	0	1	2
VC9105	JAW, RIGHT	0	1	2
VC9106	TEETH	0	1	2
VC9107	LINK	0	2	4
VC9108	LATCH	0	1	1
VC9109	CARRIER	0	0	1
VC9110	MAGAZINE	0	0	1
VC9111	PUSHER	0	1	1
VC9113	PISTON, ROD	0	1	2
VC9114	PISTON	0	1	2
VC9116	TRIGGER ASSEMBLY	0	0	1
VC9118	AIR VALVE SEAT	0	0	1
VC9120	BUMPER	0	0	1
VC9121	SPRING, TORSION	0	1	1
VC9122	SPRING, C.F.	0	1	2
VC9123	SPRING, RETURN	0	1	2
VC9130	PIN, RETAINING	0	1	1
VH0026	SHCS, 4-40 X 1/4	1	2	4
VH0051	SHCS, 10-32 X 1/2	4	8	12
VH0454	NUT, NYLOCK	0	1	2
VH0455	O-RING, PISTON	0	1	2
VH0456	SET SCREW, CLEVIS	0	1	2
VH0458	PIN, ROLL, JAW	0	2	4
VH0463	SS BALL	0	1	2
VH0464	O-RING	0	1	2
VH0465	WASHER, CUP	1	2	4
VH0466	WASHER, WAVY	1	2	4
VH0467	PIN, ROLL, TEETH	0	0	2
VH0570	O-RING	0	1	2
VH0609	O-RING	0	2	2
VH0672	PIN, ROLL, CLEVIS	0	1	2