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# GG10 SERIES GASGUARD NOZZLE RECOMMENDED MAINTENANCE & REPAIR PROCEDURES

The following statements on the maintenance and repair of the GasGuard GG10 Series L.P.Gas Nozzle are designed to offer L.G. Equipment’s (L.G.E.) authorised Distributors, O.E.M’s and Service Centres recommended methods to bring back into serviceable condition Nozzles which have been found to be faulty from any reason whatsoever.

L.G.E’s recommendations are based on many years of experience in the manufacture, assembly testing, and repair of GasGuard Nozzles. Whilst L.G.E’s recommended procedures, as set out below, allow for proper repair and maintenance to be carried out on such Nozzles, L.G.E. cannot be held responsible for Nozzles repaired under such procedures, testing satisfactorily when recommended text procedures are carried out.

Age, wear and abuse of the product can many times render repair ineffective/inappropriate, and it is considered sensible to replace full Sub-assemblies or even scrap the Nozzle where service inspection clearly indicates such action is required.

**NOZZLE INSPECTION:** It is recommended that the GasGuard GG10 nozzle be inspected every 3-6 months after installment for continual safe operation.

## A. THE GASGUARD GG10 NOZZLE ASSEMBLY

The GG10 GasGuard Nozzle is supplied with either a 1” or 1 ¼” N.P.T. internal inlet thread for hose end connection. It is necessary to specify this thread when ordering appropriate spare parts or Nozzle assemblies.

The GG10 Nozzle Assembly consists of the following Sub-assemblies:-

- |      |                         |   |               |
|------|-------------------------|---|---------------|
| i)   | Swivel Sub- Assembly    | - | L.G.102 x 1”  |
|      |                         | - | L.G.102 x 1¼” |
| iii) | Connector Sub-Assembly  | - | GG107         |
| iv)  | Lever Sub-Assembly      | - | GG105         |
| v)   | Valve/Body Sub-Assembly | - | GG104         |



## **B. TOOLS RECOMMENDED FOR SERVICE ON THE GASGUARD NOZZLE.**

L.G.E. recommends the following tools be available to facilitate repair and maintenance of the Nozzle:-

1. Adjustable Spanner (Wrench) – Opening to 51mm (2”) across flats,
2. Large Face Screw Driver,
3. 1/8” Drift (Punch),
4. Bench vice,
5. 3.0mm + 5.0mm across flats allen key, (Long Shank),
6. Small hammer for use with Drift,
7. Pin Spanner for Dash Pot Housing.

## **C. ASSEMBLY GREASE RECOMMENDED FOR SERVICE ON THE GASGUARD NOZZLE.**

L.G.E. recommends and uses the following greases for general lubrication of moving parts and threads in the assembly of the Gasguard Nozzle:-

- Aeroshell 22 (Grease) or equivalent grease for use on all threads – Apply to external threads only.
- Nulon – L90 “Xtreme Pressure” Anti seize Lubricant. A thin film is adequate.
- Dow Corning Molycote FS3451 Fluorosilicone Grease (Molycote) for use on all dynamic O Ring seals – a thin film of Molycote is adequate.

L.G.E particularly recommends the use of the above greases where ambient temperatures can reach to –55 degrees Celcius. They provide satisfactory properties up to +80 degrees Celcius.

Aeroshell 22 Grease should be applied sparingly by a small brush. It should be used to lubricate all threads and close fitting parts prior to their assembly to mating components and/or assemblies.

Molycote grease may be used to assist easy fitment of seals: U cup, Back-up ring concave face and O-Ring type before their assembly into their related grooves/recesses, or shoulders. A thin film of Molycote is adequate.

Nulon L90 Grease is recommended to be used on rotating parts. Used sparingly with a small brush it should be applied to the slide sleeve, from the bearing at the top down to the ball groove, after seals and bearings have been assembled. It can then be mated to the swivel nut. More details are found on page 6 GG7N connector Assembly.

The above greases are available from most lubricant specialist outlets.



## D. MAINTENANCE & REPAIR PROCEDURES

All drawings needed for the repair and maintenance of the GG10 Nozzle are available at [www.gasguard.com.au](http://www.gasguard.com.au), click on the GG10 icon and scroll down to repairs. The following drawings are required:

- Drawing Number 1432 – Complete GG10 Nozzle Assembly (Assemblies A-D)
- Drawing Number 1402 – GG10 Inlet Swivel Assembly (A)(Parts 1-8)
- Drawing Number 1404 – GG10 Valve/Body Assembly (B)(Parts 1-21)
- Drawing Number 1407 – GG10 Connector Assembly (C)(Parts 1-12)
- Drawing Number 1405 – GG10 Lever Assembly (D)(Parts 1-2)

KEY: Components will be referenced with Assemblies A, B, C, or D following by the Parts 1, 2, 3.. of those assemblies. Example (A6) refers to Assembly A: Inlet Swivel, Part 6: Ball Bearings.

## E. GG10 NOZZLE DISASSEMBLY - REFER TO DRAWING. NO. 1432

### a) GG10 Inlet Swivel Assembly (GG102 - Assembly A, Drawing No. 1402)

1. The Inlet Swivel is maintained by firstly removing same from the GG10 Valve/Body Assembly (B).
2. This is done by removing the Locking Screw (B20), then unscrew the Inlet Swivel from the Nozzle Body via the spanner flats of the internal Swivel Body (A1).

For the deconstruction of the GG102 Inlet Swivel Assembly, please refer to Drawing Number 1402 – GG10 Inlet Swivel Assembly (A)(Parts 1-8).

3. Remove the Ball Race Plug (A7) and remove the Ball Bearings (6A), 22 only, by counter-rotation and if necessary using some turpentine or similar to loosen the ball race grease. Pull apart the Internal (A5) and External (A1) Swivel Bodies. Remove all Seals, Back-up Rings and discard.
4. Clean all parts and wipe dry. Obtain and check new Seals etc. from the LG103SW Seal Set for the Inlet Swivel, i.e. items A4, A3, A2i, A2ii, and A8.
5. Apply a thin film of Molycote or similar grease to the Seal areas and Ball Race grooves of both the Internal and External Swivel Bodies.
6. Assemble the Main O Ring Seal (A2i, A2ii) then its Back-up Ring (A3) to the Internal Body (A5), make sure that the concave section of the Back-up Ring is against the O Ring. Ensure that this 'O' Ring set is properly housed square in bore of the Internal Body. Assemble the O Ring Dust Seal (A4) to the External Body.



7. With an easy twisting and pushing motion, assemble the External Swivel Body (A1) to the Internal Swivel Body (A5). Place this assembly in the vice, using the flats of the Internal Swivel, and assemble the Ball Bearings (A6) through the holes concerned. A slight axial pressure may be necessary to insert the first ball, thereafter they can be inserted by turning the External Swivel Body slowly to facilitate assembling all 22 Ball Bearings. Fit the Ball Race Plug (A7) to the hole, ensuring that the curved face of the plug is facing outward.

**b) GG10 Connector Assembly (GG107, Assembly C - Drawing Number 1407)**

1. Remove Swivel Nut Sub-assembly from Nozzle by unfastening Grub Screw (C12), and withdrawing the Lever Pivot Pin (D2) of GG105 Lever Assembly Drawing Number 1405. The Swivel Nut Assembly (C) can now be removed from the Valve/Body Assembly (B).
2. Unscrew the Ball Plug (C10) of the Connector Assembly and remove the Ball Bearings (C9) - 31 only. A small amount of turpentine or similar dropped into the Ball Plug screw hole will assist the Ball Bearing removal.
3. Withdraw the Connector (C8) and remove the Internal (C4i) and External (C4ii) Split Bearings from their grooves in the Slide Sleeve (C3) and discard same.
4. Remove Internal (C5) and External Lip Seal (C6) and replace with new Seals.
5. Remove GG106 Nose Piece (C1 with C2). Thoroughly clean the Nose Piece, and refit the replacement Nose Piece "O" Ring (C2).
6. Clean all disassembled parts and dry thoroughly, these are to be used in the re-assembly of this GG107 Assembly. Apply a thin film of Grease to the internal machined surface of the Connector Nut (C8) and external machined surface of the Slide Sleeve (C3).
7. Insert the GG106 Nose Piece Assembly (C1 with C2) into the Connector Nut (C8). Gently rotate and push the Slide Sleeve (C3) into the Connector Nut (C8) and align the ball race groove of the Slide Sleeve with the Ball Plug tapped hole of the Connector Nut.
8. Hold the Connector lightly in a vice with the Ball Race Plug hole facing upwards and insert the thirty-one (31) only stainless steel Ball Bearings (C9) into the groove, at the same time slowly rotate the Slide Sleeve (C3) to assist entry.
9. Apply a small amount of Loctite 262 Thread locker or similar to the Ball Plug (C10) and screw same into its position flush with the Lug of the Connector Nut (C8).



10. Rotate the Connector Nut (C8) on the Slide Sleeve (C3) to ensure free movement of same. Place the Connector Assembly - GG107 on one side for final assembly to the repaired GG10 Nozzle.

**c) GG10 Valve/Body Assembly (GG104, Assembly B - Drawing Number 1404)**

Unless the Valve Body (B11) is damaged or worn, it is not necessary to remove the Valve Assembly from the Nozzle Body

1. Remove the Dashpot (B9) from the Nozzle Body (B13) using a Pin Spanner. The Valve Springs (B16, B17) and Valve Shaft Assembly (B1-B8) can now be extracted.
2. There are two parts that require replacement in the Valve Shaft Assembly:
  - i. Valve Seat (B7): Unscrew the Valve Head (B8) from the Valve Housing (B6). To accomplish this place the flats of the Valve Housing (B6) in a vice, using a flat head screw driver unscrew the Valve Head (B8) from the Valve Housing (B6). The Valve Seat (B7) can then be removed.
  - ii. The Dashpot Bearing (B2): Slide a small flat face screwdriver under the bearing to remove. Refit the new Dashpot Bearing (B2) onto the Dash Pot Piston (B1).
3. Clean and check the condition of the metal Valve Shaft Assembly (B1-B8) components. If in doubt about the condition of the component they should be replaced.
4. Check orientation and refit a new Valve Seat (B7) to the Valve Housing (B6). Using a small amount of thread Locktite 262 screw the Valve Head (B8) firmly into the Valve Housing (B6). The Valve Stem Assembly (B1-B8) is now ready to be placed into the Valve/Body Assembly.
5. It is important to replace the Tail “U” Cup Seal (B12) before assembling the above Valve Shaft Assembly (B1-B8). Slide a small flat faced screw driver under the “U” Cup Seal (B12) and carefully remove it from the front seal groove in the Valve Body (B11). Clean the Seal Groove, check for any damage and then replace the old Tail “U” Cup Seal (B12).

Having changed out all Valve Assembly Seals and replacing, when necessary, the Valve components, the re-assembly can begin.

6. Lightly clamp the Nozzle Body (B13) vertically in a vice with the Valve Body (B11) pointing down). Lower the Valve Stem Assembly (B1-B8) with the Valve Seat (B7) first into the open cavity at the back of the Nozzle Body (B13). Refit the two Valve Springs (B16, B17) onto the Dash Pot Piston (B1) and position vertically.
7. Refit a new Dashpot O’ring (B15) to the cleaned Dashpot (B9). Lightly grease the thread of the Dashpot (B9). With downward pressure and clockwise rotation, refit the Dashpot



(B9) over the Valve Springs (B16, B17) and engage the thread using the Pin Spanner until tight.

**d) Complete Assembly of GasGuard GG10 Nozzle – Refer to Drawing No. 1432**

At this stage there will be four (4) Sub-assemblies ready for assembling to complete the reconditioned GG10 Nozzle, these are:

- GG10 Inlet Swivel Assembly (A)
- GG10 Valve/Body Assembly (B)
- GG10 Connector Assembly (C)
- GG10 Lever Assembly (D)

1. Fit the Dashpot & Inlet O’ring (A8) into the Nozzle Body (B13), ensuring Seal is sitting in correct position. Lightly grease the thread of the External Swivel Body (A1) and screw Inlet Swivel Assembly into the Nozzle Body (B13) (using Flats on the External Swivel Body (A1). When the flange of the External Swivel Body (A1) is flush with Nozzle Body (B13), insert and tighten Locking Screw (B20).

At this stage the Valve should be ready for hydro testing. This is accomplished by pressurizing the nozzle from the Inlet Swivel Assembly (A) with Nitrogen gas at 350psi. Once pressurized, submerge in water to detect any leaks, if none are detected the final stages of the nozzle assembly can begin.

2. Assemble the Connector Assembly (C) to the Valve/Body Assembly (B) and ensure that there is free but spring loaded movement between the two.
3. The Lever Assembly (D) can now be fitted. Firstly, hold Assemblies B and C in a vertical position with the front of the nozzle pointing downwards. Fit the Lever (D1) to the Valve/Body Assembly (B), the lever should sit horizontally between the forks of the Connector Assembly (C). Press Lever (D1) downwards so that the hole in same is flush with the holes in the forks of the Connector Assembly (C). The Lever Pivot Pin (D2) can now be inserted through these aligned holes.
4. Operate the Nozzle Lever (D1) in the normal manner to ensure free and full operation of same.

**F. TESTING THE GASGUARD NOZZLE**

1. It is recommended that the GasGuard Nozzle be tested using LPGas (propane) as the testing medium at the normal flow pressures (1600-2000kPa) (230-290 p.s.i.) experienced in practice.
2. L.G.E. recommends two (2) series of tests be carried out, viz. a static and dynamic flow test. With the static test, the Nozzle is assembled to a supply hose and then loaded with



L.P.Gas. We recommend that an isolating valve be installed at the connection end of the hose to the Nozzle for safety purposes.

3. Check with detergent loaded water, the connection between the Inlet Swivel Assembly (A) and the Valve/Body Assembly (B) for total pressure security, applying a bending moment to same of approx. 20 foot pounds whilst rotating the Inlet Swivel (A) slowly.
4. Check the security of the Main Valve and its operation by activating the Lever fully. In this condition there must be no leak from the Main Valve to atmosphere.
5. With the flow test, connect the Nozzle Assembly to a Filler Valve fitted with a downstream choked outlet or piped away to a receiving tank for safe outlet to atmosphere.
6. Check the performance of the Nozzle for flow and pressure security when the Lever is actuated and released. The interstitial trapped gas will not release on Lever shutdown. The operator is required to unscrew the Nozzle Swivel Nut (C8) from the 1 3/4" refueling point fitting and control the slow release of entrapped gas.

**PLEASE NOTE THAT ALL SUCH TESTS USING LPGAS SHOULD BE CARRIED OUT OUTSIDE ANY ENCLOSED FACTORY/WORKSHOP ENVIRONMENT.**

7. If L.P.Gas is not available a satisfactory substitute testing medium is bottled nitrogen set on its Regulator at 1800 kPa.
8. At the conclusion of satisfactory tests, remove the Nozzle from the hose, carefully depressurise the hose, and fit the Lever Locking Screw (C12) of the Connector Assembly (C) until it touches the Lever Pivot Pin (D2).

**IF ALL THE ABOVE PROCEDURES ARE CARRIED OUT WITH CARE AND ATTENTION TO DETAIL, YOUR GG10 GASGUARD NOZZLE WILL PROVIDE YOU WITH SATISFACTORY SERVICE. HOWEVER, L.G.E. CANNOT BE HELD RESPONSIBLE FOR ANY INCORRECT OPERATING PROCEDURES ASSOCIATED WITH THIS RECOMMENDED REPAIR AND MAINTENANCE PROCEDURE.**

**IF YOU FIND THAT THERE IS/ARE OPERATING FEATURE(S) FOR WHICH YOU HAVE CONCERN, L.G.E. RECOMMENDS THAT YOU CONTACT ITS DISTRIBUTOR OR HEAD OFFICE FOR ASSISTANCE. CONTACTS DETAILS ARE AVAILABLE AT THE GASGUARD WEBSITE [www.gasguard.com.au](http://www.gasguard.com.au)**

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Prepared by:  
**L.G. EQUIPMENT PTY. LTD.**  
**N.S.W. AUSTRALIA**