

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

9th August, 2007

LG50 SERIES GASGUARD NOZZLE.

RECOMMENDED MAINTENANCE & REPAIR PROCEDURES.

The following statements on the maintenance and repair of the GasGuard L.G.50 Series L.P.Gas Nozzle are designed to offer L.G. Equipment's (L.G.E.) authorised international Distributors, O.E.M's and Service Centres recommended methods to bring back into serviceable condition such 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 and testing, and repair of such 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 all Nozzles repaired under such procedures, testing satisfactorily when recommended test 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.

NOZZLE INSPECTION: It is recommended that the GasGuard LG50 nozzle be inspected every **6-12 months** after initial installment and **3-6 months** after every subsequent repair to uphold the safe operation of the LG50 nozzle.

A. THE GASGUARD LG50 SERIES NOZZLE ASSEMBLY.

The LG50 Series GasGuard Nozzle is available in the following combinations:-

- i) LG50L - Nozzle with Latch Assembly .
- ii) LG50SL - Nozzle with Strainer fitted and Latch Assembly.
- iii) LG50S - Nozzle with Strainer.

All such GasGuard Nozzles are supplied with either a 15mm(1/2"), 20mm(3/4") N.P.T. or 1" BSPG internal inlet thread for hose end connection. It is necessary to specify this thread when ordering appropriate Nozzles and spare parts.

The L.G.50L Nozzle Assembly consists of the following Sub-assemblies:-

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|--|----------------------|
| iii) Body sub-assembly -1/2" (N.P.T.) | Part No. 10-1070-804 |
| Body sub-assembly - 3/4" (N.P.T.) | Part No. 10-1071-804 |
| Body sub-assembly – 1" (B.S.P.G.) | Part No. 10-1072-804 |
| iv) Locking Connector sub-assembly - | LG57 |
| v) Lever sub-assembly - | LG5SL |
| vi) Main Valve sub-assembly - | LG54 |
| vii) Latch sub-assembly - | LG8 |
| viii) Strainer sub-assembly (optional) - | LG9 |

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

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:-

- i) Adjustable Spanner (Wrench) - opening to 38 mm (1.50") across flats,
- ii) Long Nosed Pliers,
- iii) Light ball-peen hammer,
- iv) 3.2mm (1/8") dia. drift,
- v) 7mm long shank Socket Wrench,
- vi) Screw driver (large blade),
- vii) Bench and vice,
- viii) 2.5 and 3.0mm across flats allen keys,
- ix) Spring clamps (medium size) - two only.
- x) 22mm open end Spanner

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:-

- i) Aeroshell 22 (Grease) or equivalent grease for use on all threads - apply to external threads only,
- ii) Dow Corning Molycote FS3451 Fluorosilicone Grease (Molycote) for use on all dynamic O Ring seals - a thin film of Molycote is totally adequate.

The particular grease should be applied sparingly by a good quality small brush.

L.G.E. particularly recommends the use of the above greases where ambient temperatures can get down to -55 degrees Celsius. Of course they provide satisfactory properties up to +80 degrees Celsius.

Please check your local supplier of specialised lubricants for satisfactory alternatives for the above recommended greases. L.G.E. will supply the above recommended greases at its best cost.

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

D. MAINTENANCE & REPAIR PROCEDURES.

a) Nozzle Body Sub-assemblies - refer Dwg.No. X1042.

i) Inlet Swivel - Items 5 through 12.

2. The Inlet Swivel is maintained by firstly removing same from the Nozzle Body(1).
3. Remove the Locking Screw(13) and unscrew the Inlet Swivel from the Nozzle Body via the spanner flats of the internal Swivel Body(5).
4. Remove the Ball Race Plug(12) and remove the Ball Bearings(7)-13 only-by counter-rotation and if necessary using some turps or similar to loosen the ball race grease. Pull apart the Internal and External Swivel Bodies. Remove all Seals, Back-up Rings and discard.
5. Clean all parts and wipe dry. Obtain and check new seals etc. from the **LG3SW Seal Set** for the Inlet Swivel, i.e. Items 8,10,10A,11.
6. 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.
7. Assemble the Main O Ring Seal- 2 off (10) and its 1 off Back-up Ring(10A) as follows:-
 - i) To the External Swivel Body(6) apply a thin film of Molycote grease or similar to the bearing surfaces. Fit the Back-up Ring(10A) to its leading end making certain that its concave face is facing the O Ring(10) which is now installed.
 - ii) To the Internal Swivel Body(5) apply a thin film of Molycote grease to the bearing surfaces and fit the remaining O Ring(10) to its internal groove.
7. Assemble the O Ring Dust Seal(11) to the External Body(6).
8. With an easy twisting and pushing motion assemble the External Swivel to the Internal Swivel. Place this assembly in the vice, using the flats of the Internal Swivel, and assemble the Ball Bearings(7) through the hole 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 13 Ball Bearings.
9. Fit the Ball Race Plug to the hole, with its extraction hole facing outward.
10. With a light smear of grease to the external diameters and external thread of the External Body only, fit the O Ring Body/Swivel Seal(8) and then its Back-up Ring(8A) to the bore of the Nozzle Body. Refer to para.6 above for orientation of Back-up Ring to this O Ring.
11. Screw connect the Inlet Swivel Assembly to the Nozzle Body(1) using a spanner on the flats of the Internal Swivel(5). Screw both together to the face of contact with a

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

maximum 41 Nm(30 ft.lbs.) torque. Assemble Locking Screw(13) to Nozzle Body with Allen Key.

12. Rotate External Swivel relative to Internal Swivel. This rotational torque may be high initially, but it will become easier with use.

b) Connector Assembly (LG57) - refer Dwg.No. X1030.

i) Disassembly.

2. To remove this Sub-assembly (LG57) from the Nozzle by:

Removing Split Pin(5) from Lever Pivot Pin(4) of the Lever Sub-assembly (LG.5SL), withdrawing the Pivot Pin, and sliding the Sub-assembly away from the Nozzle Body Sub-assembly.

3. Remove Circlip(4) from groove in rear inside diameter of Outer Sleeve (1). This is carried out by aligning Circlip with removal hole in the Outer Sleeve. Using a spike through the hole, to push Circlip from groove, lift Circlip end with a small screw driver and rotate the assembly and remove Circlip.
4. The Outer Sleeve (1) can now be removed from the Slide Sleeve (2) thus exposing the Connector Arms(3) and Spring(5).
5. Remove Connector Arms (3) and check for wear and distortion. Replace Arms if worn.
6. Inspect both Outer Sleeve and Slide Sleeve for wear or damage. In particular, check the Outer Sleeve/Connector Arm pivot points. Replace components if necessary.
7. Remove Lockout Balls (6) and inspect for damage. Replace if necessary.
8. All components can now be individually inspected and cleaned and made ready for re-assembly.

ii. Re-assembly.

1. Lightly grease Lockout Ball holes in Slide Sleeve (2) and fit the three balls (6).
2. Place Circlip (4) over Slide Sleeve (2) and fit Spring (5) making sure that the Spring sits square on the support shoulder of the Slide Sleeve.
3. Fit Outer Sleeve (1) over Slide Sleeve (2), making sure there is free movement of Outer Sleeve over the Slide Sleeve and Locking Balls.
4. Fit the Connector Arms (3) into the Outer Sleeve (1) and compress the Spring (5). Make sure there is free movement of the Locking Arms when the Outer Sleeve moves over the Slide Sleeve. Check that the Arms expand and retract correctly. The Connector Arms should sit flush with the front entire spigot of the Outer Sleeve when unactuated.

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

5. Fit the Circlip (4) into the groove in the Outer Sleeve(1).
6. The Locking Connector Assembly (LG57) is now ready to be assembled to the Nozzle Body, which is carried out in reverse to **Section b i)1.** above.

c) Main Valve Sub-assembly(LG54) - refer Dwg.No. X1029.

i) Disassembly.

1. Unscrew the Main Valve Assembly from the Nozzle Body, holding the Nozzle in a vice and applying a close fitting wrench to the flats of the Valve Body Extension(1).
2. Remove the Nyloc Nut(10) and then the Valve(5) by using a wide blade screw driver through the flow path of the Nose Piece(6). (The Nyloc Nut and Valve thread are M5.) The Valve Body(3) and Nose Piece(6) can now be removed from the Valve Body Extension(1).
3. Place the Valve Body(3) in a vice and grip it between the machined flats. Using a 22mm. opened ended spanner, unscrew the Nose Piece(6). This will allow access to the Valve Seat(8) and Valve(5).

Note: This screw thread has had a thread sealer used in its assembly, so initial torque may be high to break the sealer.

4. There are four(4) seals in this Main Valve Assembly - Items 2, 4, 7 & 8 on Dwg. No. X1029. L.G.E. recommends that these seals should be carefully examined whenever the Nozzle is serviced. If there is any doubt concerning their condition, they should be replaced with a new set, classified as L.G.53VA Seal Set.
5. Thoroughly clean all metal parts, and check for any damage, pitting etc. on the sealing face of the Valve(5). Replace the Valve(5) if there is such damage

ii) Re-assembly.

1. Using parts of the L.G.53VA Seal Set, fit the:-

a) *Nose Piece Seal (7) to the Nose Piece (6).*

This carried out by lightly lubricating the inside and outside diameters of the Seal (7). Place this Seal over the groove of the Nose Piece (6), and using a flat faced screwdriver or similar, urge, with a downward pressure on the Seal, its outside diameter into the groove, rotating the Nose Piece in the process. Ensure that the assembled Seal is lying flat in the groove and it is not pinched on its exposed outside and inside diameters.

b) *Fitment of the “U” cup Seal (4) to the Valve Body (3).*

Referring to the Assembly Drawing - X1029, make sure that the Seal orientation is correct. Check the groove for cleanliness before assembly, then carefully roll the Seal into this groove.

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

c) *Fitment of the Valve Seat (8).*

Place the Valve (5) into the Nose Piece(6). Fit the Valve Seat(8) into the recess in the Nose Piece((6). It is critical that this Valve Seat is sitting in the recess correctly, otherwise the Valve Seat can be damaged when assembled to the Valve Body(3).

d) *Fitment of the Sealing O ring (2).*

Fit this O ring to the Valve Body Extension (1) ensuring that there are no contaminants in the O ring groove.

2. The Valve Assembly can now be rebuilt as follows:-

- Apply a drop of Thread Sealer (Loctite 262 or similar) to the Valve Body (3) external thread. Screw the Nose Piece (6) containing the Valve (5), Valve Seat (8) into the Valve Body (3) until firm(approx. 14 Nm.).
- Lightly grease the inside diameter of the “U” cup Seal (4). Stand the Valve Body/Nose Piece sub-assembly on its Nose Piece Seal (7) on a clean, flat surface and centralise the Valve (5) in the bore of this sub-assembly.
- Fit the Valve Body compression Spring (9) to the Valve Body Extension (1). Holding the Valve Body Extension and the Spring, push the Valve Body Extension into the Valve Body(3), making sure that the M5 Valve thread engages through its mating hole in the Valve Body Extension(1). Screw the M5 Locknut onto the protruding Valve thread and tighten firmly.
- Check that there is freedom of spring loaded movement of the Valve(5) in the Main Valve Assembly.
- Fit the O Ring(2) to the O Ring groove in the Valve Body Extension(1).
- Screw connect the Valve Body Sub-assembly to the Nozzle Body, using a smear of Grease on the external thread of the Valve Body(1). Tighten to a maximum of 41Nm.(30ft.lbs.) torque.
- If a Strainer Sub-assembly (LG9) is to be fitted**, place the cleaned Strainer into the bore of the Nozzle Body and screw connect the Valve Body Sub-assembly to the Nozzle Body as per para.7 above.

d) Latch Sub-assembly(LG8)- refer Dwg. No. X0787.

- If a new Latch Assembly is to be fitted to the Nozzle, firstly remove the damaged Assembly by carefully knocking out the Latch Pin(4) with a 1/8" (3mm.) drift, and discard the Assembly.
- Gently hammer one end of the new Latch Pin(4) to one of the Bushes(3) oriented as per the Dwg.No. X0787.
- Assemble the special Latch Spring(2) to the Latch(1) using the closed end of same, thread the Bush fitted Latch Pin through the Spring circle and start hole of the Latch(1). Fit this assembly to the Nozzle Body rear web, aligning the free end of

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

the Latch Pin(4) with the 1/8" dia. hole in the web and carefully tap the fitted Bush(3)/Latch Pin(4) through the hole, ensuring that the open end of the Latch Pin extends through the Spring circle on its opposite side.

4. Using a suitable metal block as a steady, carefully apply the other Bush (3) to the free end of the Latch Pin (4) and tap home flush with the end of the Latch Pin.
 5. Centralise the Latch Assembly with the flange of the Nozzle Body by carefully tapping either Bush.
 6. Operate the Latch Assembly for free and spring return condition and, on assembly of the GasGuard Nozzle, check its proper latching to the Lever Latch Pin (2) of the L.G.5 Lever Sub-assembly.
- e) **Assembly of GasGuard Nozzle - Dwg. No. R1034A.**

1. You will have six(6) Sub-assemblies ready for assembling into a Nozzle Assembly, i.e. **Nozzle Body, Connector Assembly, Main Valve Assembly, Lever and Strainer (optional) and Latch.**
2. Having already assembled the Nozzle Body Sub-assembly to the Main Valve Sub-assembly (with or without Strainer Assembly fitted), assemble the Connector Sub-assembly to the Main Valve Sub-assembly and ensure that there is free but spring loaded movement between the two.
3. The Lever Sub-assembly - **Dwg.No. X0768** - can now be fitted. Firstly assemble the two Slippers (3) to the Lever (1) ensuring correct orientation of same. Fit the Lever to the Nozzle Body, ensuring that the fork at the heel of the Lever is engaged on the web of the Nozzle Body.
4. Push the Nozzle Body/Valve Body Sub-assembly into the Connector Sub-assembly, until the pivot pin hole in the Slide Sleeve aligns with the holes in the Lever. Fit the Lever Pivot Pin (4) fully through these aligned holes.
5. Operate the Nozzle Lever in the normal manner to ensure free and full operation of same.

f) **Testing the GasGuard Nozzle.**

6. 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.
7. L.G.E. recommends two(2) series of tests be carried out, viz. i)a static and ii)a dynamic flow test. With the static test, the Nozzle is assembled to a supply hose and the loaded with LPGas.

L.G.E. recommends that an isolating valve be installed at the connection end of the hose to the Nozzle for safety purposes.

LG50 Series GasGuard Nozzle - Recommended Maintenance & Repair Procedures

8. Check with detergent loaded water the swivel connection to the Nozzle for total pressure security, applying a bending moment to same of approx. 27 N.m (20 foot pounds) whilst rotating the Swivel slowly.
9. 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 down stream choked outlet or piped away to a receiving tank or safe outlet to atmosphere.
6. Check the performance of the Nozzle for flow and pressure security when the Lever is actuated and on release a small amount of LPGas is caused to escape to the atmosphere.

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

7. If LPGas is not available a satisfactory substitute testing medium is bottled nitrogen set on its Regulator at 1800 kP.
8. At the conclusion of satisfactory tests, remove the Nozzle from the hose, carefully depressurise the hose, and fit the Split Pin(5) of the Lever Sub-assembly to the Lever Pivot Pin(4).

IF ALL THE ABOVE PROCEDURES ARE CARRIED OUT WITH CARE AND ATTENTION TO DETAIL, YOUR 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 YOUR DISTRIBUTOR FOR ASSISTANCE.

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